BRUHN TAXIMETER PATENTS 2022

CONTENTS

TAXIMETER PATENTS **SECTION**

Compiled by Paul Yardley 01/01/2022 @ www.hackneyman.com

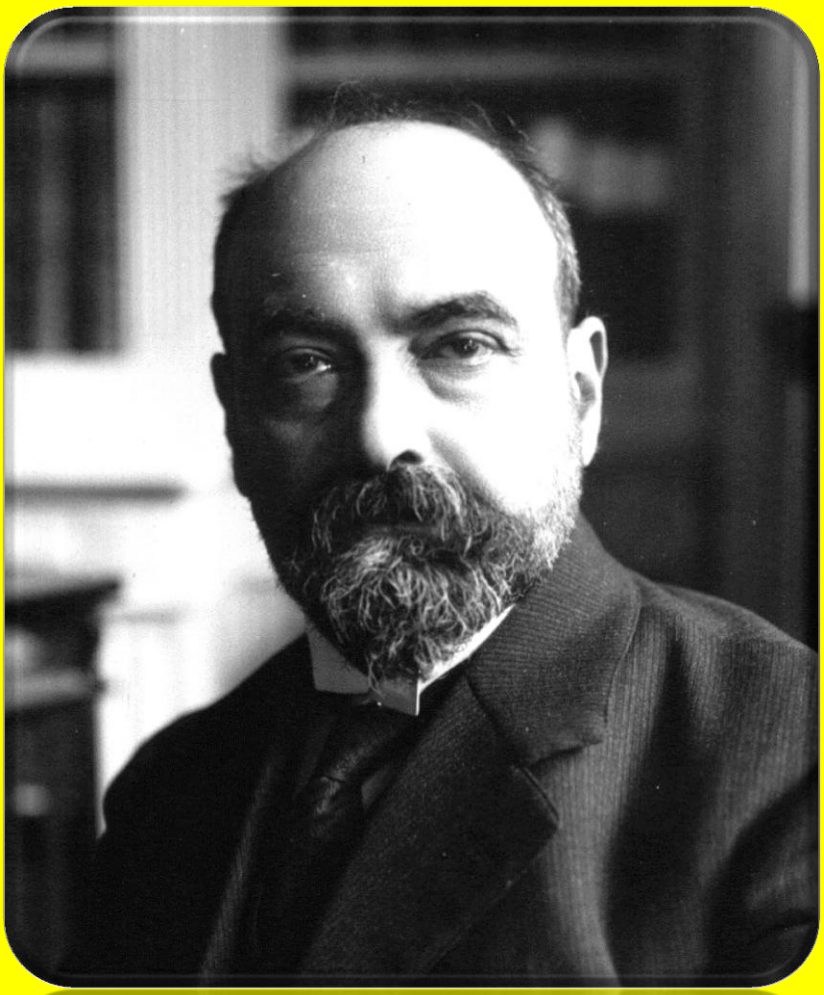
SECTION 1

TAXIMETER

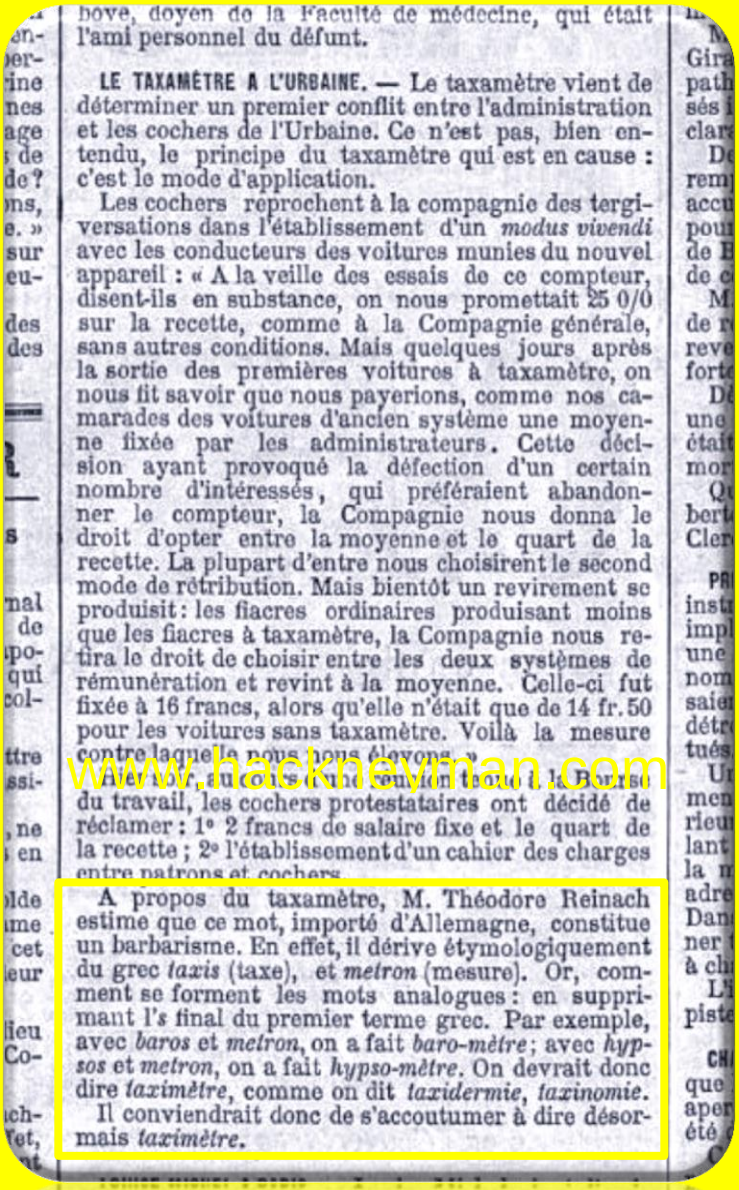
ANNEX B

(TO PAGE 8, TFHG @ WWW.HACKNEYMAN.COM)

CONTENTS



Theodore Reinach (1860-1928) who proposed the use of the word “taximeter” in 1904



bove, doyen de la Faculté de médecine, qui était l'ami personnel du défunt.

LE TAXAMÈTRE A L'URBAINE. — Le taxamètre vient de déterminer un premier conflit entre l'administration et les cochers de l'Urbaine. Ce n'est pas, bien entendu, le principe du taxamètre qui est en cause : c'est le mode d'application.

Les cochers reprochent à la compagnie des tergiversations dans l'établissement d'un *modus vivendi* avec les conducteurs des voitures munies du nouvel appareil : « A la veille des essais de ce compteur, disent-ils en substance, on nous promettait 25 0/0 sur la recette, comme à la Compagnie générale, sans autres conditions. Mais quelques jours après la sortie des premières voitures à taxamètre, on nous fit savoir que nous payerions, comme nos camarades des voitures d'ancien système une moyenne fixée par les administrateurs. Cette décision ayant provoqué la défection d'un certain nombre d'intéressés, qui préféraient abandonner le compteur, la Compagnie nous donna le droit d'opter entre la moyenne et le quart de la recette. La plupart d'entre nous choisirent le second mode de rétribution. Mais bientôt un revirement se produisit : les fiacres ordinaires produisant moins que les fiacres à taxamètre, la Compagnie nous retira le droit de choisir entre les deux systèmes de rémunération et revint à la moyenne. Celle-ci fut fixée à 16 francs, alors qu'elle n'était que de 14 fr. 50 pour les voitures sans taxamètre. Voilà la mesure contre laquelle nous nous élevons. »

Avec [illegible] du [illegible] du travail, les cochers protestataires ont décidé de réclamer : 1° 2 francs de salaire fixe et le quart de la recette ; 2° l'établissement d'un cahier des charges entre patrons et cochers.

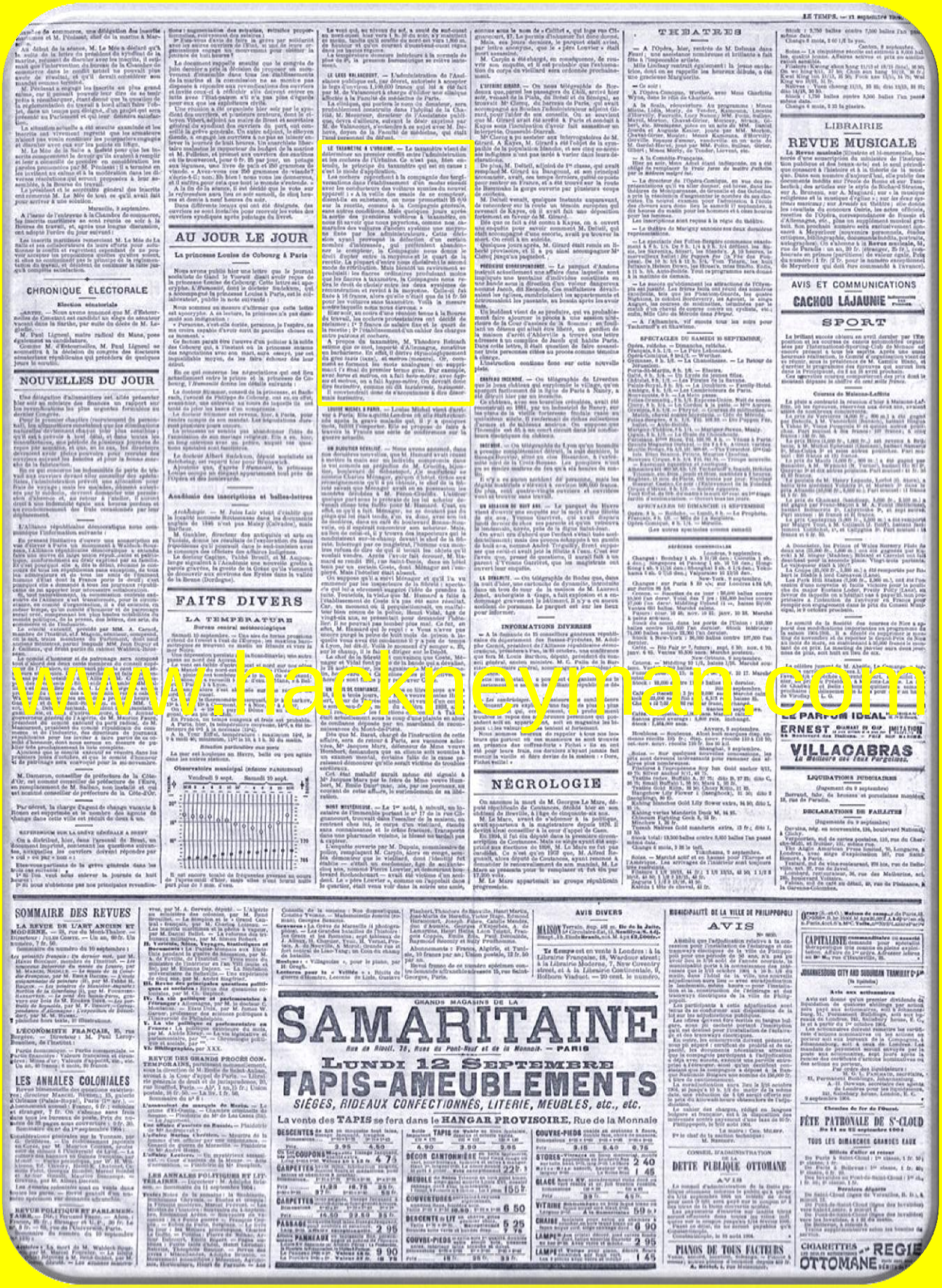
A propos du taxamètre, M. Théodore Reinach estime que ce mot, importé d'Allemagne, constitue un barbarisme. En effet, il dérive étymologiquement du grec *taxis* (taxe), et *metron* (mesure). Or, comment se forment les mots analogues : en supprimant l's final du premier terme grec. Par exemple, avec *baros* et *metron*, on a fait *baro-mètre* ; avec *hypsos* et *metron*, on a fait *hypso-mètre*. On devrait donc dire *taximètre*, comme on dit *taxidermie*, *taxinomie*.

Il conviendrait donc de s'accoutumer à dire désormais *taximètre*.

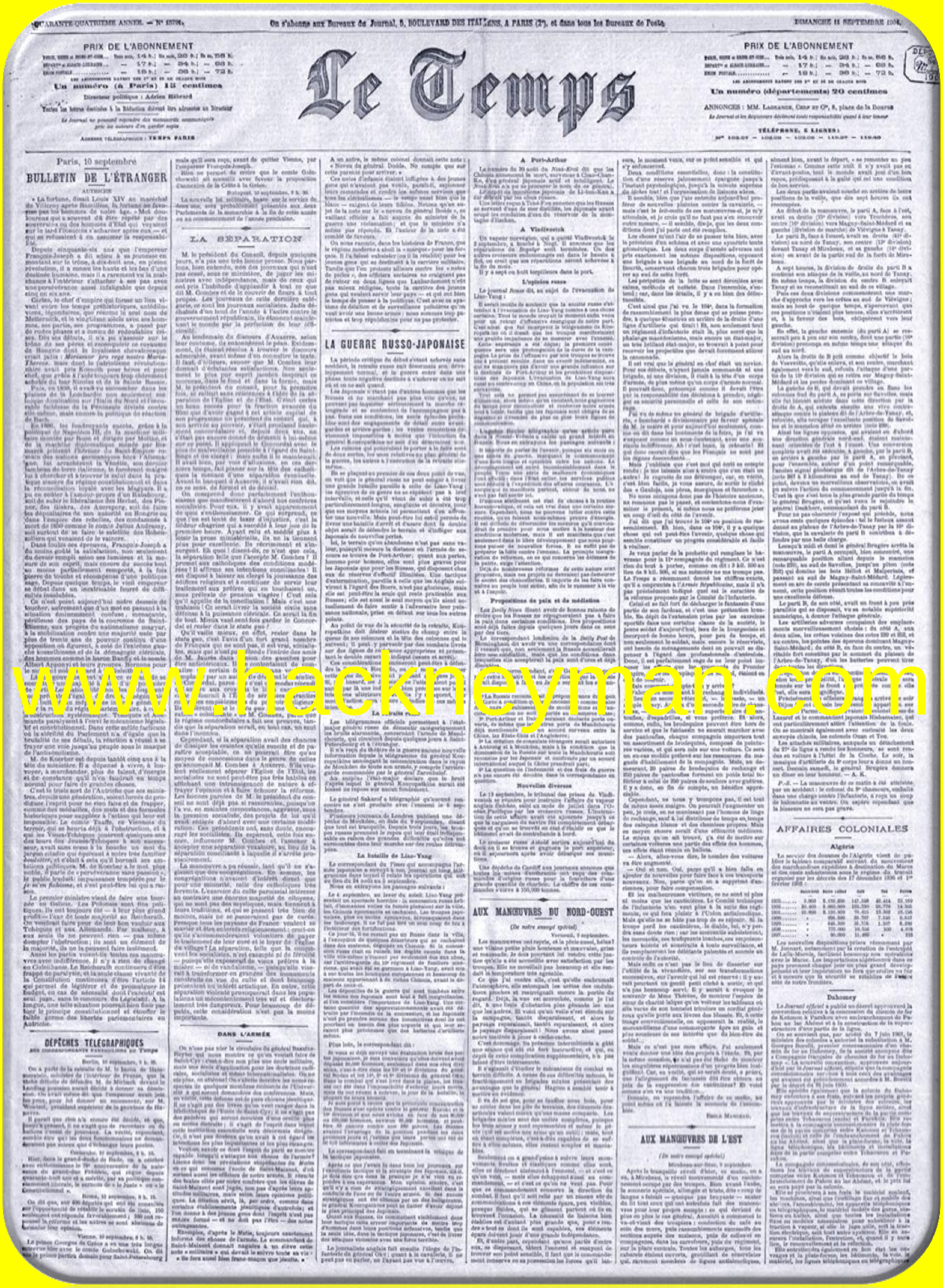
THE URBAN TAXAMETER

". … About the taxameters, Mr. Theodore Reinach believes that this word imported from Germany, constitutes a barbarism. In fact, it derives etymologically from the Greek *taxis* (tax), and *metron* (measure). Now analogous words can be forcibly suppressed by suppressing the final s of the first Greek term. For example, with *baros* and *metron*, we did *baro-meter*; with *hypsos* and *metron*, we did *hypso-meter*. So we should say *taximeter*, as we say *taxidermy*, *taxonomy*. It should therefore be accustomed to say now *taximeter* [sic]."

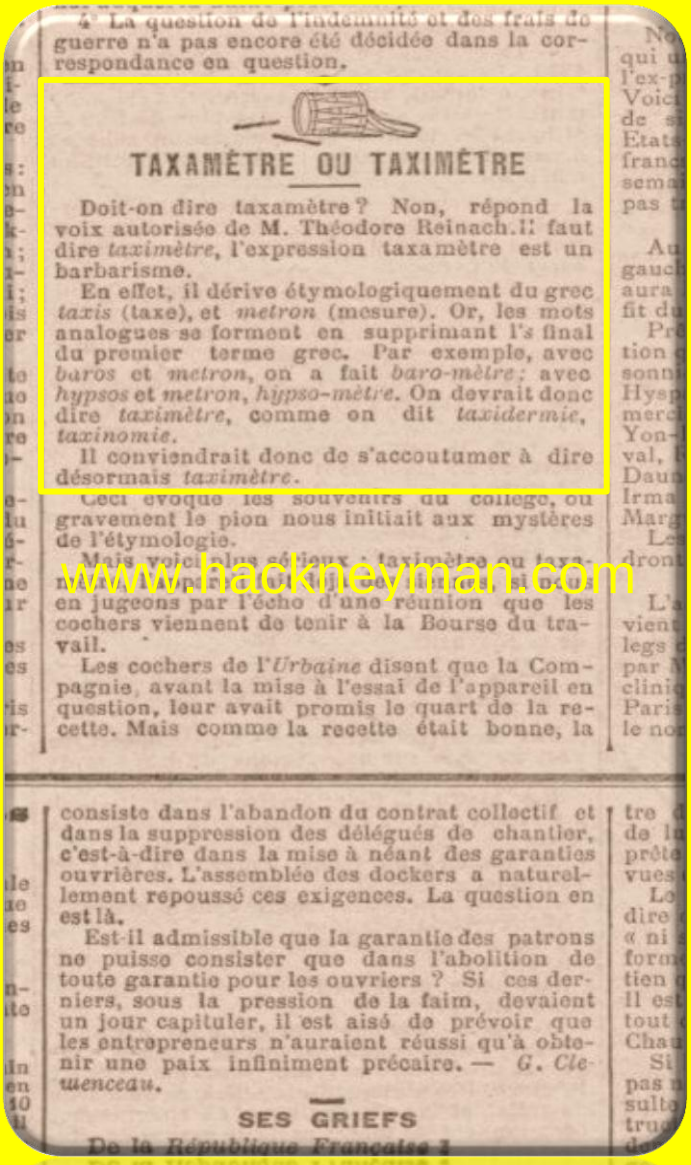
(GOOGLE TRANSLATE)



Le Temps 11th September 1904



Front Page of Le Temps 11th September 1904 ("The Times" 1861-1942)



4° La question de l'indemnité et des frais de guerre n'a pas encore été décidée dans la correspondance en question.

TAXAMÈTRE OU TAXIMÈTRE

Doit-on dire taxamètre? Non, répond la voix autorisée de M. Théodore Reinach. Il faut dire *taximètre*, l'expression taxamètre est un barbarisme.

En effet, il dérive étymologiquement du grec *taxis* (taxe), et *metron* (mesure). Or, les mots analogues se forment en supprimant l's final du premier terme grec. Par exemple, avec *baros* et *metron*, on a fait *baro-mètre;* avec *hypsos* et *metron*, *hypso-mètre*. On devrait donc dire *taximètre*, comme on dit *taxidermie*, *taxinomie*.

Il conviendrait donc de s'accoutumer à dire désormais *taximètre*.

Ceci évoque les souvenirs du collège, où gravement le pion nous initiait aux mystères de l'étymologie.

Mais voici plus sérieux : taxi-mètre ou taxa-mètre [illegible] en jugeons par l'écho d'une réunion que les cochers viennent de tenir à la Bourse du travail.

Les cochers de l'*Urbaine* disent que la Compagnie, avant la mise à l'essai de l'appareil en question, leur avait promis le quart de la recette. Mais comme la recette était bonne, la

consiste dans l'abandon du contrat collectif et dans la suppression des délégués de chantier, c'est-à-dire dans la mise à néant des garanties ouvrières. L'assemblée des dockers a naturellement repoussé ces exigences. La question en est là.

Est-il admissible que la garantie des patrons ne puisse consister que dans l'abolition de toute garantie pour les ouvriers ? Si ces derniers, sous la pression de la faim, devaient un jour capituler, il est aisé de prévoir que les entrepreneurs n'auraient réussi qu'à obtenir une paix infiniment précaire. — *G. Clemenceau.*

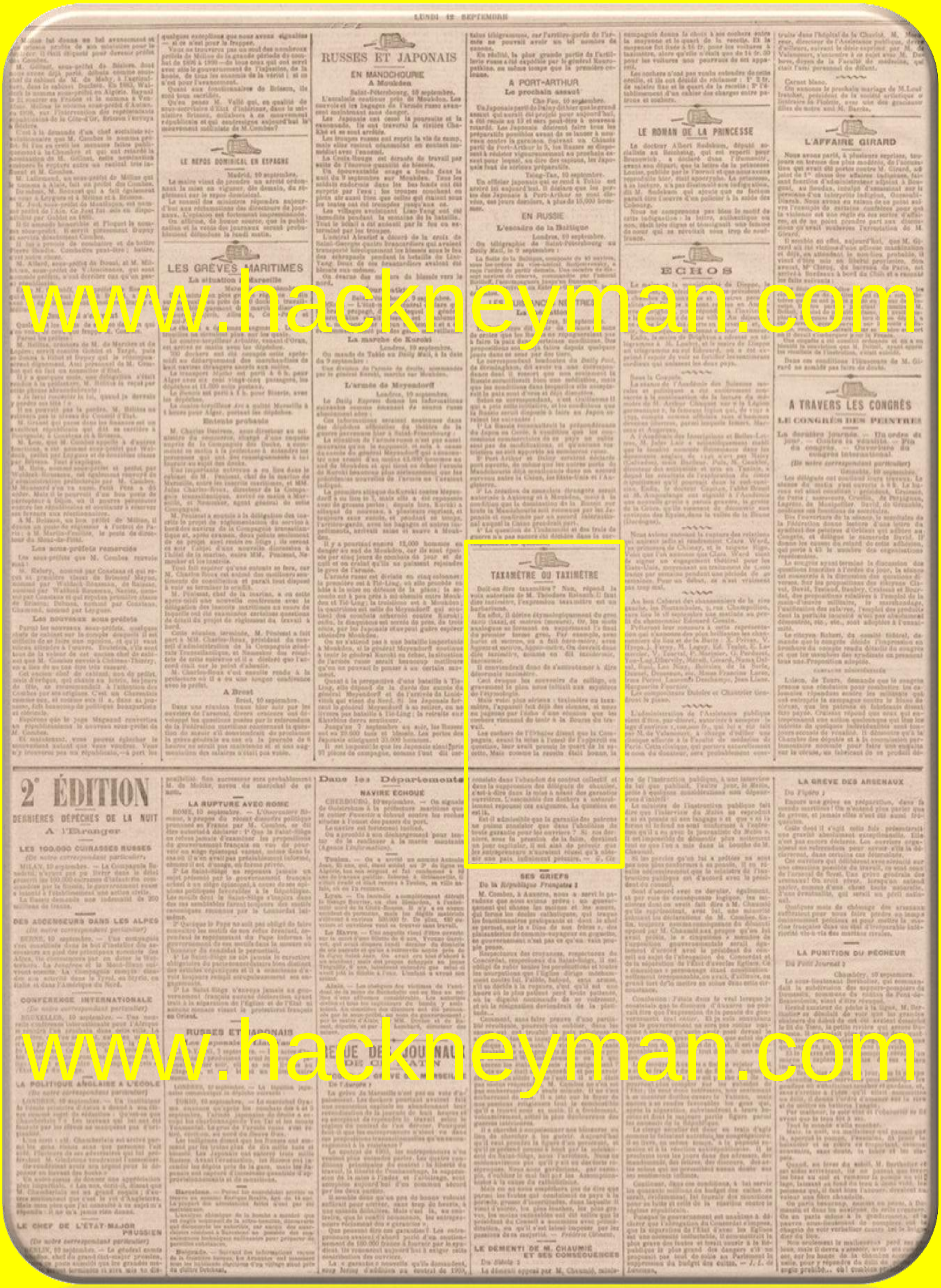
SES GRIEFS

De la *République Française* :

TAXAMETER OR TAXIMETER

"Must we say taxameter? No, says the self-styled voice of Theodore Reinach. It must be *taximeter*, the expression taxameter is a barbarism. In fact, it derives etymologically from the Greek *taxis* (tax), and *metron* (measure). Now analogous words are formed by suppressing the final s of the first Greek term. For example, with *baros* and *metron*, we were *baro-meter*; with *hypsos* and *metron*, *hypso-meter*. So we should say *taximeter*, as we say *taxidermy*, *taxonomy*. It would therefore be advisable to say that you are now talking about *taximeter*. ... [SIC]."

(GOOGLE TRANSLATE)



Le Rappel 12th September 1904

N° 12603. — 25 FRUCTIDOR AN 112 — CINQ CENTIMES LE NUMÉRO — LUNDI 12 SEPTEMBRE 1904. — N° 12603

FONDATEUR : AUGUSTE VACQUERIE

ABONNEMENTS

Paris	2 fr.	5 fr.	9 fr.	18 fr.
Départements	2 —	6 —	11 —	20 —
Union Postale	3 —	9 —	16 —	32 —

LE RAPPEL

DIRECTEUR POLITIQUE : CHARLES BOS

ANNONCES : MM. CH. LAGRANGE, CERF & Cie, 6, Place de la Bourse, 6 ET AUX BUREAUX DU JOURNAL

Secrétaire Général : A.-F. CECCALDI

RÉDACTION : 14, RUE DU MAIL, PARIS. — TÉLÉPHONE 102.02 — Adresser les communications au Rédacteur en Chef

Rédacteur en Chef : HENRY MARET

ADMINISTRATION : 14, RUE DU MAIL. — TÉLÉPHONE 102.02 — Adresser lettres et mandats à l'Administrateur

Aller de l'avant

HENRY MARET.

LES ON-DIT

L'ESPRIT MILITAIRE

CHRONIQUE

Un vœu

LA GRANDE PIROUETTE

CHARLES BOS A ROCHEFORT

L'enquête de la marine

LES ANGLAIS AU THIBET

Lhassa, 9 septembre.

LE MOUVEMENT A WALDECK-ROUSSEAU

Front Page of Le Rappel 12/09/1904 ("The Reminder" 1869-1933)

Parisian Taxmeter Vehicle circa 1905

(Note: no accent on the letter *é* in the French Word *taxe*)

Photograph: www.roger-viollet.fr

French Taximeter Vehicle circa 1906

Photograph: www.roger-viollet.fr

Parisian Taximeter Vehicle circa 1907

Photograph: www.roger-viollet.fr

French Taximeter Vehicle circa 1906

Photograph: www.roger-viollet.fr

Parisian Taximeter Vehicle circa 1905

Photograph: www.roger-viollet.fr

HACKNEYMAN.COM™

SECTION 2

(No Model.) 5 Sheets—Sheet 1.

F. W. G. BRUHN.

FARE REGISTERING APPARATUS FOR VEHICLES.

No. 485,529. Patented Nov. 1, 1892.

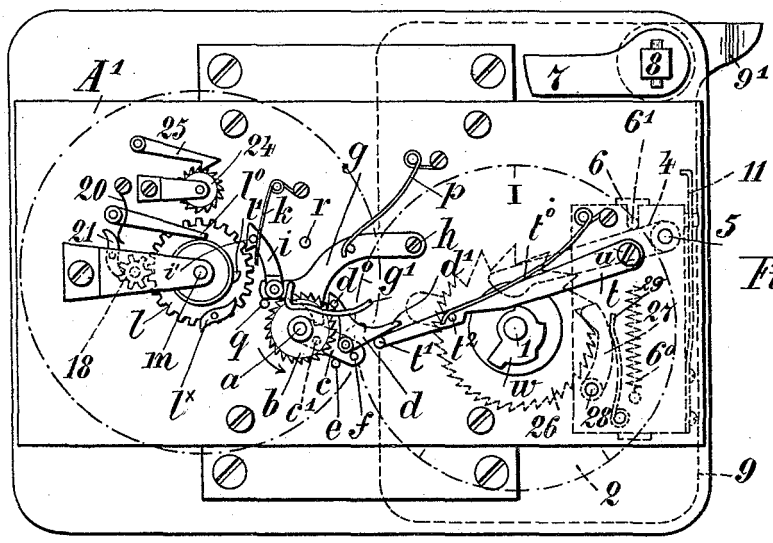


Fig. 1.

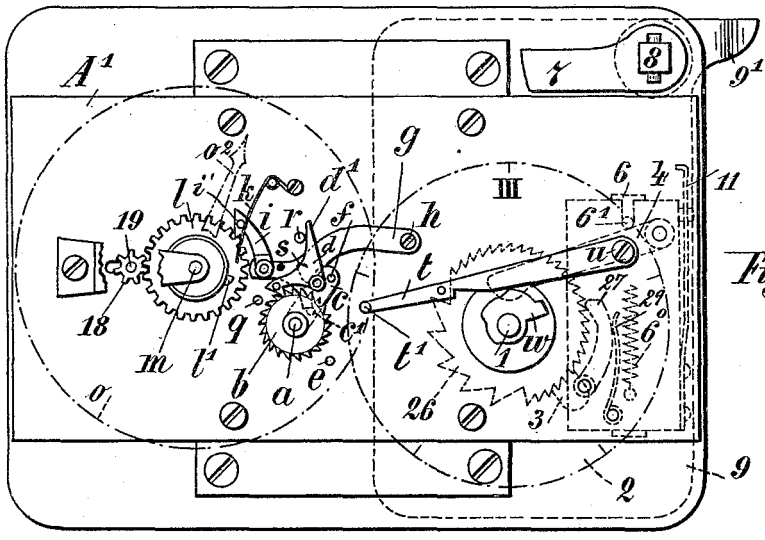


Fig. 3.

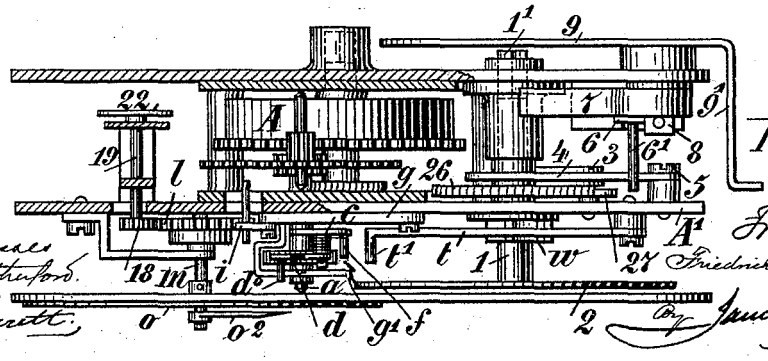


Fig. 4.

Witnesses
J. A. Rutherford.
Robt. Burnett.

Inventor:
Friedrich W. G. Bruhn.
by James L. Norris.
Attorney.

(No Model.) 5 Sheets—Sheet 2.

F. W. G. BRUHN.

FARE REGISTERING APPARATUS FOR VEHICLES.

No. 485,529. Patented Nov. 1, 1892.

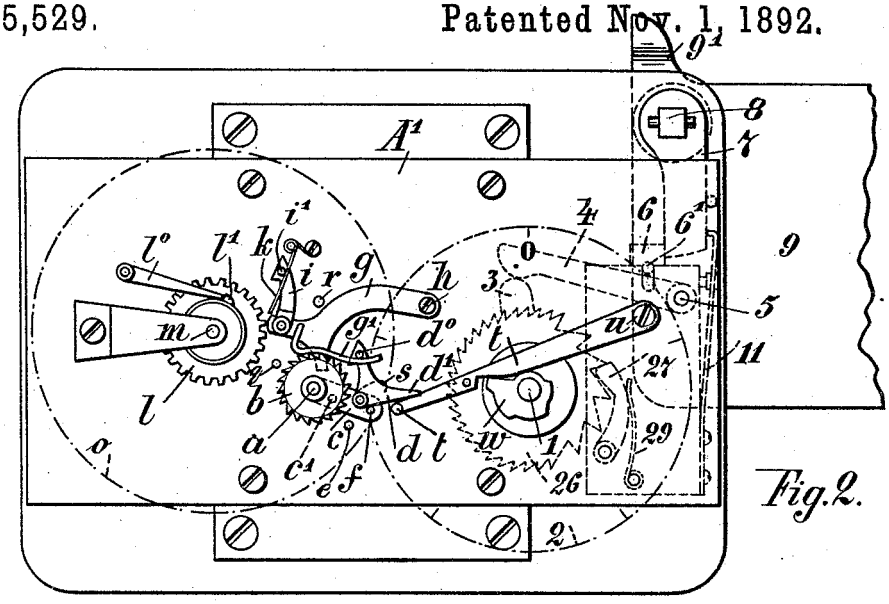


Fig. 2.

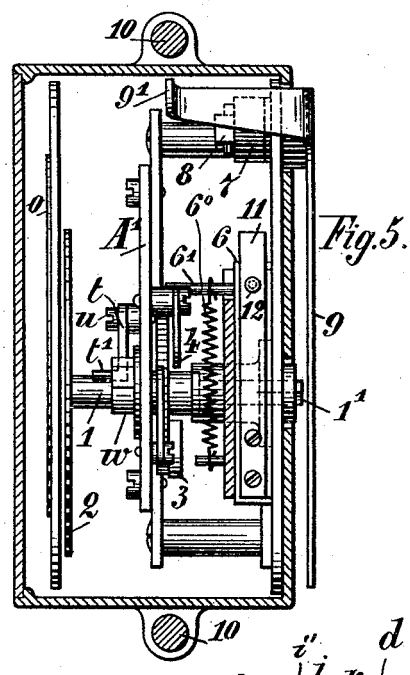


Fig. 5.

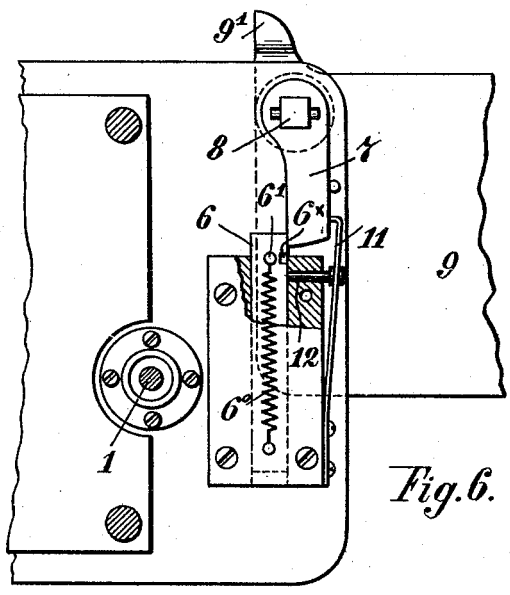


Fig. 6.

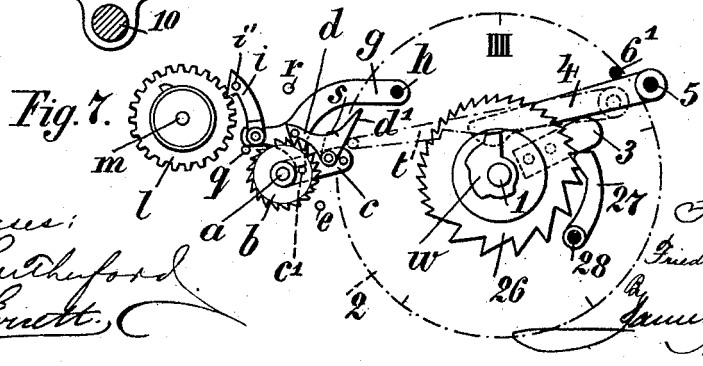


Fig. 7.

Witnesses:
J. A. Rutherford.
Robt. Ernott.

Inventor:
Friedrich W. G. Bruhn.
By James L. Norris.
Attorney.

(No Model.) 5 Sheets—Sheet 3.

F. W. G. BRUHN.

FARE REGISTERING APPARATUS FOR VEHICLES.

No. 485,529. Patented Nov. 1, 1892.

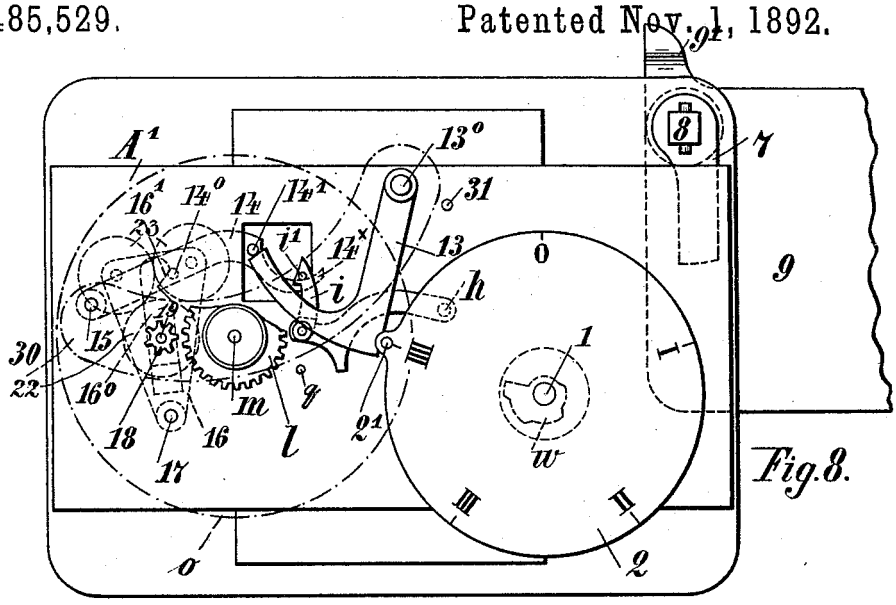


Fig. 8.

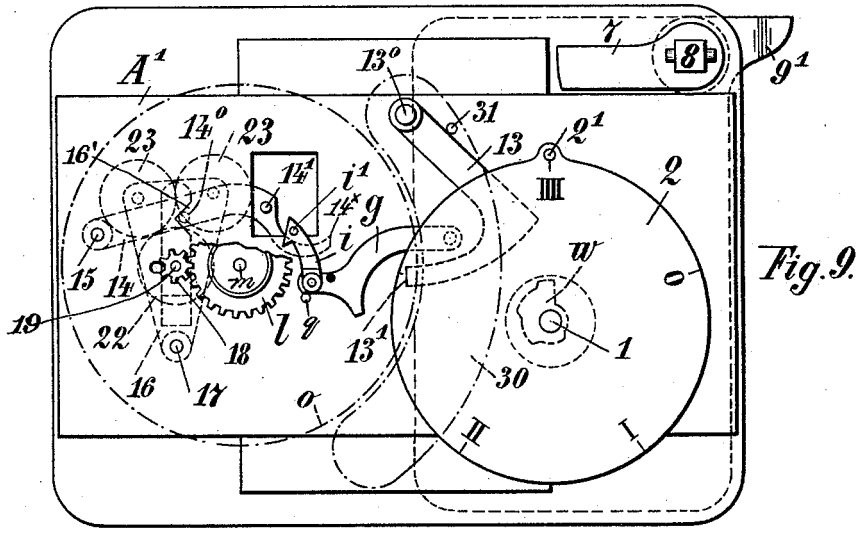


Fig. 9.

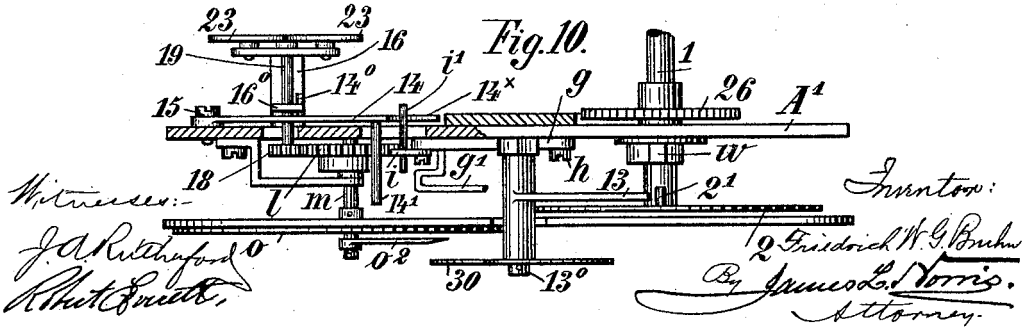


Fig. 10.

Witnesses:-
J. A. Rutherford
Robert Smith.

Inventor:
Friedrich W. G. Bruhn
By James L. Norris.
Attorney.

(No Model.) 5 Sheets—Sheet 4.

F. W. G. BRUHN.

FARE REGISTERING APPARATUS FOR VEHICLES.

No. 485,529. Patented Nov. 1, 1892.

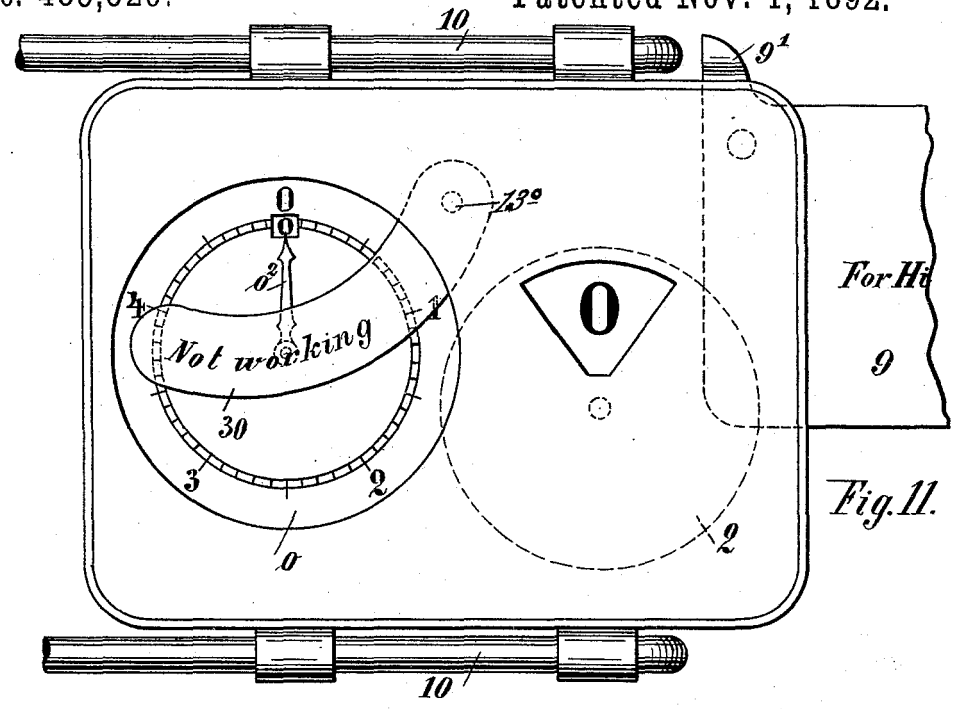


Fig. 11.

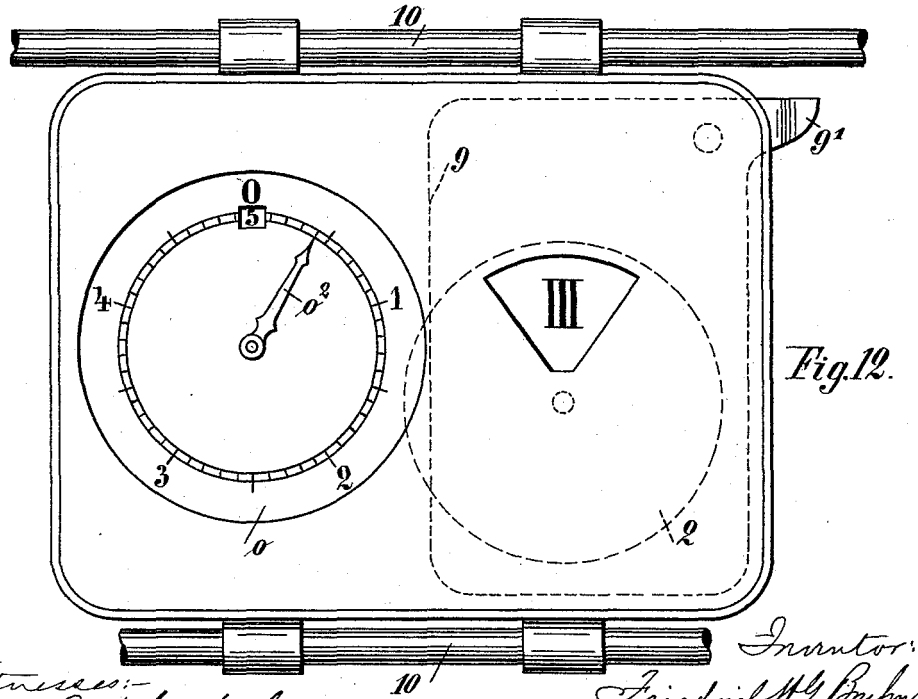


Fig. 12.

Witnesses:-
J. A. Rutherford.
Robert Arnott.

Inventor:
Friedrich W. G. Bruhn
By James L. Norris.
Attorney.

(No Model.) 5 Sheets—Sheet 5.

F. W. G. BRUHN.

FARE REGISTERING APPARATUS FOR VEHICLES.

No. 485,529. Patented Nov. 1, 1892.

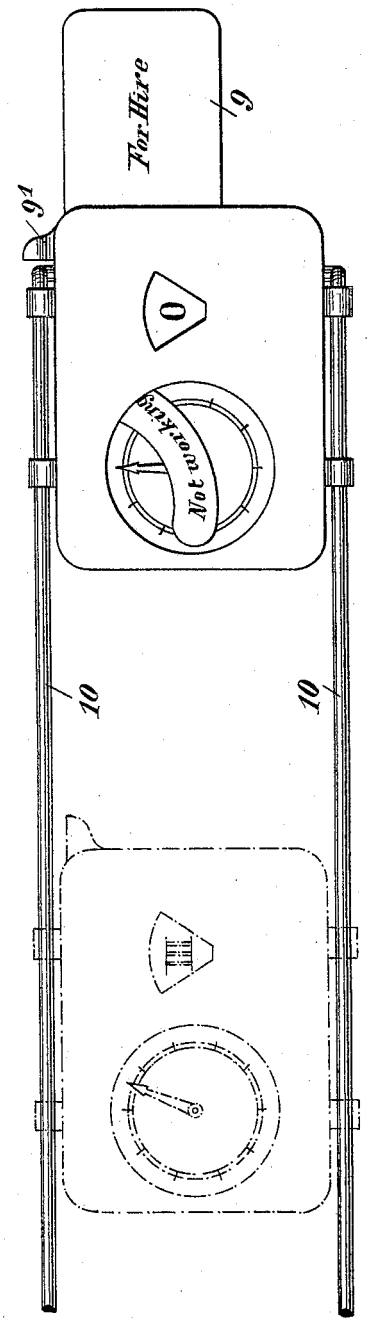


Fig. 13.

Witnesses:—
J. A. Rutherford.
Robert Everett.

Inventor:
Friedrich W. G. Bruhn
By James L. Norris.
Attorney

UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM GUSTAV BRUHN, OF HAMBURG, GERMANY.

FARE-REGISTERING APPARATUS FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 485,529, dated November 1, 1892.

Application filed April 6, 1892. Serial No. 428,063. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH WILHELM GUSTAV BRUHN, a subject of the German Emperor, residing at Hamburg, in the German Empire, have invented certain new and useful Improvements in Fare-Registering Apparatus for Vehicles, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a fare-registering apparatus for vehicles in which the registration of the fare takes place solely in proportion to the time occupied on the journey. I provide special devices for enabling the fare-registering apparatus to be adjusted to different tariffs, according to the number of persons to be conveyed or according to the earlier or later time of day, and for protecting the passengers against the fraudulent tampering with the apparatus by the driver—for instance, during the time he has to wait. Such a fare-registering apparatus is represented in the accompanying drawings, in which—

Figures 1 to 3 show front views of the improved apparatus in different positions, the casing and dial-plate being removed for the sake of clearness. Fig. 4 is a plan; Fig. 5, a transverse section of the fare-registering apparatus, while Figs. 6 and 7 illustrate details of the same. Figs. 8 to 10 show two front views and a plan of the device designed for changing the apparatus to different tariffs. Figs. 11 and 12 illustrate the means for applying the fare-registering apparatus to the vehicle, Fig. 11 indicating the position in which the apparatus is in a state of rest, and Fig. 12 the position in which it is ready for use. Fig. 13 shows, on a reduced scale, the outer view of the apparatus in its two terminal positions in the guide on the carriage, one of said positions being indicated in dotted lines.

In the improved fare-registering apparatus a clockwork A, Fig. 4, of any desired description, is used for continually turning a spindle *a*. A ratchet-wheel *b* is secured upon this spindle *a*, which has an arm *c* adapted to turn upon it, a pawl *d* being pivoted to the free end of this arm. When the pawl *d* engages with the ratchet-wheel *b*, the arm *c* in the arrangement illustrated is caused to turn to the left, which arm, under the action of a helical spring (not shown) surrounding the spindle *a*, tends to turn in the opposite direction to that of the turning movement of the ratchet-wheel *b*. In state of rest the arm *c* occupies the position indicated in Fig. 1, inasmuch as a stop-pin *e*, carried by the plate A′, counteracts the tendency of the spring pressing against the arm. When this arm *c* has accomplished a certain portion of its turning movement to the left, a pin *c′*, projecting from the rear surface of the same, encounters an arm of the lever *g*, extending into its path, the said lever being adapted to oscillate upon a pin *h*, secured to the aforesaid plate A′. To the free end of this lever *g* is pivoted a pawl *i*, which under the action of a spring *k*, bearing against a protruding pin *i′*, is continually forced between the teeth of a wheel *l*, arranged on a spindle *m*. The wheel *l*, which is provided with a number of teeth determined by the monetary system in use, is connected with the spindle *m*, so that the pointer o^2, fixed upon this spindle, will indicate upon a dial-plate *o* up to a certain extent the amount to be paid by the passenger. In every turning movement of the lever *g* the pawl *i* will slide on the wheel *l* over the top of the tooth, so that on the liberation of the said lever *g*, actuated by the clockwork through the medium of the ratchet-wheel *b*, spindle *a*, and arm *c*, it will, under the action of a turning-spring *p*, supported on a pin of the plate A′, cause the toothed wheel *l* and the pointer o^2 to advance through one division. The turning movement of the lever *g*, taking place under the action of the spring *p*, is limited by a stop-pin *q* on the plate A′. The lever is released from the said arm *c*, actuated by the ratchet-wheel *b* on the spindle *a* of the clockwork, by a stop-pin *r* on the plate A′, which in the continued movement of the arm *c* encounters the arm *d′* of the pawl *d*, Fig. 3, thereby disengaging the latter from the ratchet-wheel *b*. When the pawl *d* is thus disengaged, there will be no connection between the arm *c* and the continuously-turning ratchet-wheel *b*. Accordingly the arm *c* can yield to the action of the turning-spring as far as the stop-pin *e*, as the pawl *d* by a spring *s* and a bent arm *g′*, provided on the lever *g*, is prevented from en-

gaging with the ratchet-wheel again during the return motion of the arm *c* to its position of rest. This engagement can take place only when the arm *d'* of the pawl encounters a stop *t'*. The position of this stop *t'* may be changed in the manner hereinafter described, so that the pawl *d* may, if necessary, again engage with the ratchet-wheel *b* before the arrival of the arm *c* in its position of rest, in order to be carried away again for actuating the lever *g*, pawl *i*, and toothed wheel *l*. This will occur oftener within a given time, according as the angle of oscillation of the arm *c* with regard to the position of the said stop *t'* is smaller. From this it also follows that a forward movement of the pointer o^2 will take place the less often if more teeth are passed over by the pawl *d* in its return movement—that is to say, if the distance which it is carried by the clockwork in order to be released again is greater. The adjustable stop *t'* is arranged on the free end of an arm *t*, which oscillates upon a fixed pivot *u* on the front side of the plate A', and is continually forced by a spring t^0, acting upon its projection t^2 against the periphery of a stepped cam-disk *w*. The latter, fixed upon a spindle 1, provided with a square 1' for a key, is of such shape that, according to the step determining the position of the arm *t*, the disengagement of the pawl *d* from the continually-turning ratchet-wheel *b* will take place sooner or later. This change of position of the arm *t* can be observed by the passenger by the aid of a letter or inscription which a disk 2, secured upon the spindle 1, renders visible from the outside through an aperture, Figs. 11 and 12, provided in the casing. The passenger can thus also observe to which higher or lower tariff the fare-registering apparatus has been adjusted by the driver. On this also depends the number of the divisions of the dial-plate passed over by the dialwork within a definite space of time.

In the position indicated in Fig. 2, in which the fare-registering apparatus is not in connection with the driving clockwork and the dialwork and the tariff-changing mechanism are at zero, which is rendered visible from a distance by the position of a flag 9, a cam 3, secured upon the spindle 1, has moved an arm 4, held behind the plate A' upon a pivot 5, to its upper terminal position, in which the projection 6' on a bar 6 bears upon it. This bar, guided in a fixed vertical path in the arrangement shown, serves in conjunction with a finger 7, which is firmly connected with the pivot 8 of the said signaling-flag 9, for blocking the latter. The flag 9 is of such a size that when turned down, Figs. 1, 3, 4, 5, 9, and 12, in which case the fare-registering apparatus is in the operative position, access to the square 1' of the spindle is prevented, on account of its being covered by said flag, so that the driver cannot fraudulently adjust the fare-registering apparatus to a higher tariff during the working. As, however, the casing of the fare-registering apparatus is adapted to be moved in the horizontal direction between guide-bars 10, fixed to the carriage, and a projecting nose 9' on the flag is arranged in the plane of the guide-path formed by said bars, a displacement of the flag (equivalent to putting the fare-registering apparatus in and out of operation) is only possible when the apparatus is shifted out of said guide-path 10, Figs. 2, 6, 8, 11, and 13, to such an extent that a turning movement of the flag can take place laterally to the driver's seat—that is to say, in a position which is noticeable by the passenger or the public. In such a movement of the flag 9 access is given to the square 1' for the key; but a pin 12, Fig. 6, connected with the spring 11 is simultaneously drawn back by the finger 7 from the path of the bar 6. The bar 6, thereby released and continually pulled downward by a spring 6^0 is therefore locked by means of the said pin 12, adapted to be moved in a fixed guide, as soon as this pin has an opportunity for entering a recess $6^\times$ in the bar. Accordingly the latter will be disengaged only when the flag 9 is placed quite horizontal, and as the finger 7 in the latter part of its movement carries away the spring 11, it is only then possible to adjust to zero the disk 2, which renders the higher and the lower tariff visible and to put the apparatus out of operation. The driver cannot, therefore, stop the operation of the apparatus without putting the flag 9 in the position indicating that the vehicle is empty.

In the zero position of the tariff-disk 2 a stop-pin 2' (shown only in Figs. 8 to 10) comes into action. It moves an angular arm 13, pivoted at 13^0 to the plate A' from the position indicated in Fig. 9 to that shown in Fig. 8, in which the surface 13' of the same bears against a pin 14' of the arm 14, adapted to turn upon a pin 15, Fig. 10, behind the plate A'. A second pin 14^0 on the latter acts upon an inclined surface 16', which forms part of a frame 16, capable of turning upon a pin 17 on the plate A', while the horn $14^\times$ on the arm 14 is designed to catch underneath the pin *i'* on the pawl *i* in the passage from one terminal position, Fig. 9, to the other, Fig. 8, and to disengage this pawl from the toothed wheel *l*. Under the action of a spring (not shown) the frame 16 always tends to move in the direction toward a third spindle *m*, in order to cause the toothed pinion 18, which is fixed upon a spindle 19, supported in the frame 16, to engage with the toothed wheel *l*. The pinion 18, with its pawl 21, Fig. 1, acted upon by a spring 20, serves as a stop for the toothed wheel *l*, inasmuch as it prevents a return movement of the latter in the direction of a sliding spring acting upon the same. When, therefore, by the action of the arm 13 both the toothed pinion and the pawl *i* are disengaged from the toothed wheel *l* this wheel can yield to the action of the aforesaid spring sliding upon the spindle *m* until its nose *l'* strikes against a stop l^0, at which mo-

ment the fare-registering apparatus or the pointer o^2 will occupy its zero position. The said pinion 18, serving as a stop for the toothed wheel l, is used for transmitting the movement of the latter to a counter provided for facilitating the control of the apparatus by the owner of the vehicle, this counter comprising two wheels 22 23, supported in the frame 16.

In case a complete revolution of the pointer o^2 is not sufficient to indicate the full value of a journey I provide on the toothed wheel l a carrying-pawl $l^\times$, which on the completion of every revolution of this toothed wheel l or of the pointer o^2 causes a wheel 24, stopped by a pawl 25, to turn one tooth, or a pointer arranged upon the axis of the same or a dial-plate to turn through a division corresponding to a higher monetary value. The wheel 24, similarly to the toothed wheel l, is fixed upon its axis and therefore on the disengagement of the pawl 25, effected by the arm 14, moves back simultaneously with the wheel l to the zero position.

When the apparatus is out of action, the arm t returns in the described manner to its position of rest, Fig. 3, so that the arm c, adapted to turn upon the spindle a of the clockwork, can follow, as shown, as the pawl d is disengaged from the ratchet-wheel b by the stop-pin r, a premature engagement of the pawl with the ratchet-wheel being prevented by the pin d°, provided on the pawl and adapted to slide along an arm g', Fig. 2.

For the purpose of rendering it difficult for the driver, at the expense of the owner of the vehicle, to tamper with the counter serving for the control of the apparatus by repeatedly lifting and lowering the above-mentioned arm t by causing the second spindle 1 when the apparatus is in use to turn continuously or turn repeatedly to and fro, for instance, from the zero position, Fig. 2, of the cam-disk w to the position Fig. 7 for the highest tariff in order to move the lever g, wheel l, and pinion 18, and therefore the controlling or counting wheels 22 23 past the highest number to be indicated by them either again to zero or to another number which is lower than the correct number, I use the following arrangement: Upon the aforesaid second spindle 1 is fixed a ratchet-wheel 26, (see Fig. 3,) of peculiar construction, a portion of the periphery of said ratchet-wheel being provided with large teeth and another portion provided with small teeth, which, engaging with a pawl 27, pivoted at 28, on the plate A′, will enable, when the apparatus is in operation, a change from the lowest to the highest tariff and vice versa, but not from zero to the highest position or from the lowest tariff to the zero position, so that, for instance, when a change occurs during the journey in the number of the persons conveyed, a change in the fare can at any time be indicated by the driver if he draws the apparatus from its guide-path 10 to such an extent that the flag 9 passes to the position Fig. 2 or 11, so that the keyhole becomes free by being uncovered.

The ratchet-wheel 26 is provided at its periphery with a number of larger and smaller teeth with which the pawl 27 is caused to engage by the pressure of a spring 29. This pawl is of such a shape at the end engaging with the wheel that, although preventing an automatic movement of the ratchet-wheel 26, it can slide over the smaller teeth in the turning movement of this wheel in either direction, while within the arc of a circle occupied by the larger ratchet-teeth it permits the turning movement of the spindle 1 only in one direction. If, therefore, as in the arrangement represented, the steps of the cam-disk w are properly arranged relatively to the teeth of the ratchet-wheel 26, the driver in order to put the tariff-disk on zero must always turn the spindle 1 in the direction in which the adjustment of the apparatus to a higher tariff is effected. Accordingly, if the key for effecting the change of the tariff or the keyhole therefor is arranged as in apparatus of the same class, so that without being removed from the keyhole it can perform not a complete turn, but only a turning movement, whereby the cam-disk is caused to move forward or backward one step within the positions for the highest and lowest tariff, the intention to change the position of the controlling-wheels for purposes of fraud would be so extremely troublesome to carry out and would take so much time that the possible gain would not have any proportion to the amount of trouble spent. This becomes evident when, as in the arrangement shown, the key has to be five times introduced into the keyhole and removed again from the same in order to turn the spindle once or turn the wheel l one tooth farther in case the controlling-wheels are in gear. If, moreover, the counter provided for the control, and consisting of the wheels 22 23, is so arranged that it returns to zero only after it has passed beyond the maximum of the amount indicated by the same—for instance, ten thousand marks—the security of the owner of the vehicle against fraud on the part of the driver is proportionately increased.

Upon the pivot 13° of the arm 13 is usually fixed a sickle-shaped covering-plate 30 (marked with the legend "Not Working,") Figs. 11 and 13, in order to draw the attention of the passenger to the fact that the fare-registering apparatus has not been set in action if such be the case, the said covering-plate passing to the front of the dial-plate o when the apparatus is put out of action. For this purpose the pivot 13° is provided with a spring, which is capable of causing the arm 13 and cover-plate 30 to return to the position of rest, Fig. 8, as soon as the nose 2′ on the tariff-disk 2 ceases to act. This movement of the arm 13 is limited by a stop 31, provided on the plate A′ and extending into the path of the arms 13.

What I claim is—

1. In a fare-registering apparatus, the com-

bination of a clockwork A, the spindle *a*, actuated by the clockwork and having a ratchet-wheel *b* secured thereon, the arm *c*, mounted on said spindle, the pawl *d*, pivoted to said arm and adapted to engage the ratchet-wheel, the lever *g*, provided with a spring *p* and extended into the path of a pin *c'*, carried by the arm *c*, the pawl *i*, pivoted to the lever *g* and provided with a pin *i'*, the spring *k*, bearing on said pin, the toothed wheel *l*, the spindle *m*, provided with pointer o^2, and the dial-plate *o*, substantially as described.

2. In a fare-registering apparatus, the combination of the spindle *a*, having the ratchet-wheel *b* secured thereon, the arm *c*, mounted on said spindle, the pawl *d*, carried by said arm and adapted to engage the ratchet-wheel, the fixed stop *r*, supported in the path of the pawl *d* on one hand, the lever *t*, provided with a stop *t'* on the other hand, and the stepped cam-disk *w*, substantially as described.

3. In a fare-registering apparatus, the combination, with the fixed guide-bars 10 to receive the casing of the apparatus, of the pivotally-supported signaling-flag 9, adapted to be turned down over the keyhole of the apparatus and provided with a nose 9′ to engage one of the guide-bars and prevent the hoisting of the flag until the apparatus has been moved to a prescribed position on said guide-bars, substantially as described.

4. In a fare-registering apparatus, the combination of the fixed guide-bars 10, the stepped cam-disk *w*, the cam 3, connected with said disk, the signaling-flag 9, provided with nose 9′ and finger 7, the bar 6, the spring 11, and the pin 12, substantially as described.

5. In a fare-registering apparatus, the combination, with the count-controlling mechanism, of the plate A′, the spindle 1, the ratchet-wheel 26, mounted on said spindle and provided with large teeth and small teeth, the pawl 27, pivoted to the plate A′ and provided with the spring 29, the stepped cam-disk *w*, and the arm *t*, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 19th day of March, 1892.

FRIEDRICH WILHELM GUSTAV BRUHN.

Witnesses:
ALEXANDER SPECHT,
DIEDRICH PETERSEN.

SECTION 3

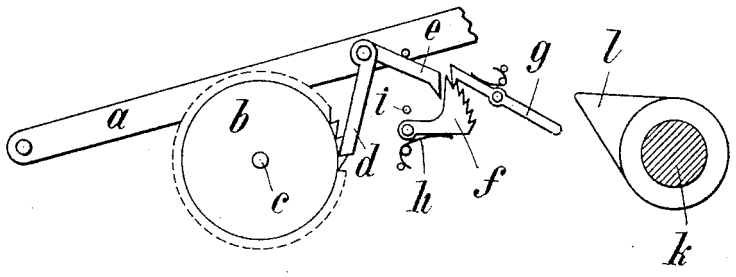
(No Model.)

F. W. G. BRUHN.

FARE REGISTERING APPARATUS.

No. 571,989. Patented Nov. 24, 1896.

Fig. 1.



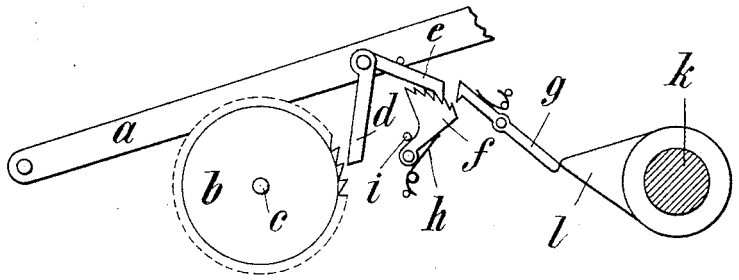


Fig. 2.

Witnesses:
B. S. Ober.
Henry Orth & Co.

Inventor.
Friedrich Wilhelm Gustav Bruhn.
By Henry Orth & Co.
Atty.

UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM GUSTAV BRUHN, OF BERLIN, GERMANY.

FARE-REGISTERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 571,989, dated November 24, 1896.

Application filed February 7, 1896. Serial No. 578,340. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH WILHELM GUSTAV BRUHN, a subject of the German Emperor, and a resident of Berlin, in the German Empire, have invented certain new and useful Improvements in Fare-Registering Apparatus, of which the following is a specification.

My invention relates to improvements in devices connected with apparatus for automatically indicating the fare due on a cab or other public conveyance, said fare indicating or registering apparatus being of any construction indifferent whether the registration of the fare takes place solely in proportion to the time occupied on the journey or according to both time and distance, apparatus of such kind being particularly described in the specification forming part of United States Patents No. 183,960, dated October 31, 1876, and No. 383,758, dated May 29, 1888, granted to Wilhelm Nedler; No. 450,602, dated April 14, 1891, granted to Dencker and Erhardt; No. 485,529, dated November 1, 1892, granted to myself, and No. 509,799, dated November 28, 1893, granted to Erhardt.

In the use of such fare-registering apparatus it often happens that it becomes necessary to stop their action for a certain time, for example, when the horse falls, in which case the fare-indicator should be thrown out of action until the horse has gotten up again. The apparatus should also be stopped during the time expiring while the passenger is settling the payment of his fare with the driver.

The object of my invention is to meet this requirement and to provide means whereby the driving mechanism of the fare-indicating apparatus can be thrown out of gear for a certain time, during which time the position of the fare-indicating hand or figure remains unchanged. After such lapse of time the driving mechanism becomes automatically reëngaged, and the fare-indicator then advances, as before, in the prescribed manner.

The characteristic feature of my improved device is a segment of a circle, which, by a certain movement of a movable mechanism to which the driver has access, (for example, the shaft of the tariff-changing mechanism or the shaft to which the signaling device, indicating to the public whether the carriage is engaged or disengaged, is connected,) is interposed between the fare-indicating shaft and the main actuating part of the fare-registering apparatus, and must be moved back by the latter to the initial position before the fare-indicating shaft can be further acted upon by the driving mechanism. The connection of the segment with the intermediate mechanisms may be effected in different ways.

To make my said invention more clearly understood, reference may be had to the accompanying drawings, in which, by way of example, my improved device is diagrammatically shown by Figure 1 in the ordinary position in which the fare-registering apparatus is in action, and by Fig. 2 in the position in which the driving mechanisms of the fare-registering apparatus are thrown out of gear.

Similar letters refer to similar parts throughout both views.

In the present example, *a* indicates a lever designed to operate through the pawl *d*, the intermittently-rotating wheel *b*, connected to the spindle or axis *c*, carrying the hand which indicates the fare to be paid on the dial of the fare-registering apparatus. The said lever *a*, forming a main part in the apparatus hereinbefore particularly referred to, is in time apparatus caused to oscillate about its pivot by a clockwork, while in combined time and distance apparatus the said lever is caused to oscillate by clockwork as well as by a measuring-wheel (a wheel of the cab from which motion is derived for actuating the fare-registering apparatus) through the medium of suitable intermediate mechanism.

When the advancing motion of the hand or hands is required to be stopped for a certain time, the driver turns the shaft *k* (forming the accessible part of the tariff-changing mechanism or of the signaling device, as the case may be) until an arm or cam *l* thereon disengages the stop lever or pawl *g* from the teeth of the segment *f*, which is then moved by a controlling-spring *h* against a stop *i*, Fig. 2. In this position of the said segment the branch *e* of the actuating-pawl *d* of the oscillating lever *a* is supported by the segment *f*, and therefore the pawl *d* cannot be caused by the lever *a* to engage with the indicator-wheel *b*. The oscillating lever on its next downward

oscillation is therefore unable to actuate the indicator. The downward movement of the oscillating lever *a*, however, by means of the adjunct or branch *e* of the pawl *d*, which adjunct itself acts as a pawl, causes the toothed segment *f* to return toward its former position to the extent of one tooth. The aforesaid stop lever or pawl *g*, which, after having been released by its actuating arm or cam *l*, can reëngage the teeth of the segment *f*, arrests the latter in the lowered position, so that each downward movement of the oscillating lever *a* causes the segment *f* to return by steps toward its initial position. When the adjunct *e* of the pawl *d* has displaced the last tooth of the segment *f*, the lever *a* is again enabled to produce a downward oscillation to such an extent that the pawl *d* again engages the indicator-wheel *b*, whereby the spindle *c* and the hand thereon are again actuated.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a fare-register, the combination with the indicator-ratchet, and its actuating lever and pawl, of a hand-operated stop adapted to move and hold said pawl out of engagement with its ratchet and means for automatically disengaging the stop from the pawl, for the purpose set forth.

2. In a fare-register, the combination with the indicator-ratchet, its actuating lever and pawl, of a hand-operated stop adapted to move and hold said pawl out of engagement with its ratchet without interfering with the oscillations of the lever, and means controlled by said oscillations for automatically disengaging the stop from the pawl, for the purpose set forth.

3. In a fare-register, the combination with the indicator-ratchet, its actuating-lever, and a two-armed pawl pivoted thereto, one of said arms normally engaging said ratchet; of a spring-actuated ratchet-stop adapted to be moved by its spring into engagement with the second arm of the aforesaid pawl, a spring-actuated locking-lever normally in engagement with the ratchet-stop, and means operated by hand for moving said locking-lever out of engagement with the stop, whereby the latter is automatically returned into its engagement with its locking-lever by the indicator-ratchet pawl through the oscillations of its lever, for the purpose set forth.

4. The combination with the ratchet *c*, the lever *a*, and the two-armed pawl *d*; of the ratchet-segment *f*, its locking-lever *g* and the cam-shaft *k*, said parts arranged and operating substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 14th day of January, 1896.

FRIEDRICH WILHELM GUSTAV BRUHN.

Witnesses:
W. HAUPT,
CHARLES H. DAY.

SECTION 4

(No Model.)

F. W. G. BRUHN.

FARE INDICATING AND REGISTERING APPARATUS FOR CABS, &c.

No. 605,442. Patented June 7, 1898.

Fig. 1.

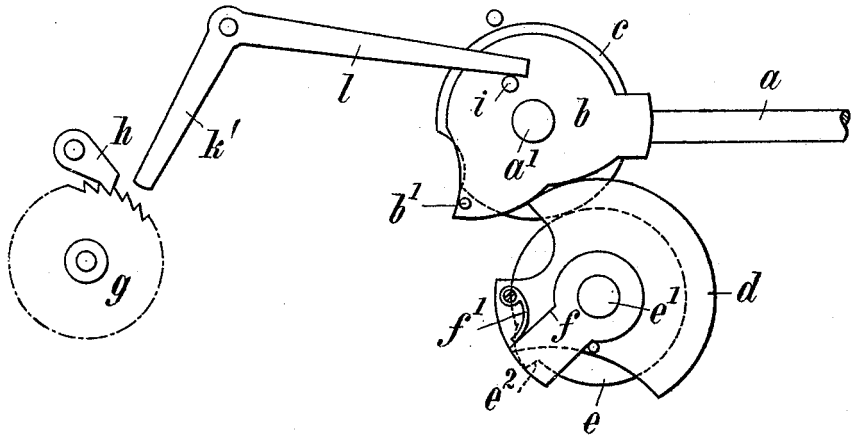
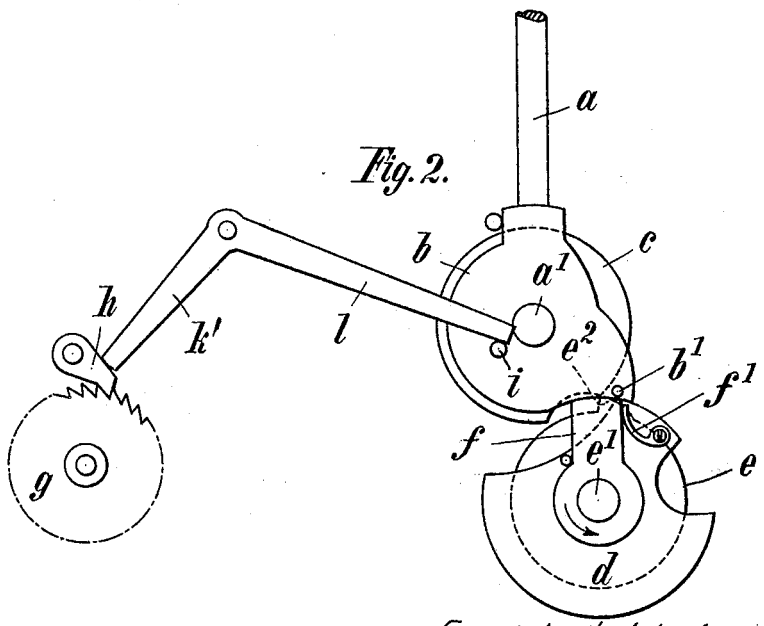


Fig. 2.



Witnesses:
B. L. Oberg
C. H. Sommers

Inventor:
Friedrich Wilhelm Gustav Bruhn.
by Munn & Co
Attys.

UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM GUSTAV BRUHN, OF BERLIN, GERMANY.

FARE INDICATING AND REGISTERING APPARATUS FOR CABS, &c.

SPECIFICATION forming part of Letters Patent No. 605,442, dated June 7, 1898.

Application filed January 25, 1898. Serial No. 667,845. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH WILHELM GUSTAV BRUHN, a subject of the German Emperor, and a resident of Berlin, in the German Empire, have invented certain new and useful Improvements in Fare Indicating and Registering Apparatus for Cabs, Carriages, and the Like, of which the following is a specification.

This invention relates to improvements in fare indicating and registering apparatus for cabs, carriages, and the like; and the objects of the same are means for insuring the relative blocking between the mechanism which serves to indicate whether the carriage is vacant or engaged and those devices by which the fare-indicator is adjusted to various tariffs applying to trips or journeys to be paid for according to distance or time and the like or such devices which indicate any additional fee to be paid for conveying luggage or for rendering similar special services, &c.

On fare-indicators a signal device, usually presenting the shape of a flag, is provided, from the position of which the public, the controlling police officials, &c., are enabled to see at a distance whether the carriage is engaged or not; also, an engaging and disengaging device by means of which the apparatus is adjusted to the various tariffs or brought into the position indicating the termination of the journey or trip. Now in order to prevent the driver of the carriage from either cheating the passenger or defrauding the proprietor of the vehicle, or both, the signal device and the engaging and disengaging mechanism are brought into such relative connection that the one device can only be moved when the other device occupies a certain given position, and vice versa. Both devices are, in other words, to block each other, and this mutual blocking action being such as to admit of its being suspended only in case where both devices occupy quite a definite relative position. Moreover, frequently a particular supplementary registering device is arranged by which the driver is intended to indicate the fees for conveying luggage or the like; also, this latter device may be connected with the signal device or with the engaging or disengaging mechanism, or with both, in such a manner that the said supplementary registering device may only be actuated when occupying absolutely definite positions.

In order to make my invention more clearly understood, I have described it with reference to the accompanying drawings, in which—

Figure 1 is an elevation of the engaging and disengaging mechanism, the supplementary registering device, and the signal device in the position when the carriage is engaged; and Fig. 2, the same elevation of the like parts when the carriage is not engaged.

Similar letters refer to similar parts in both figures.

a is the signal device, in most cases in the shape of a flag. In Fig. 1 this signal device *a* is shown turned down, thus indicating that the carriage is engaged, while in Fig. 2 the same is shown standing upright, so that an inscription "Free" or "Vacant" or the like is clearly visible. *a* is mounted on the shaft *a'*, upon which two non-circular disks or cams *b* and *c*, placed side by side and rigidly connected with the shaft *a'*, are provided.

The lower shaft *e'*, by means of which the apparatus is adjusted to various tariffs or thrown out of engagement, carries three non-circular disks or cams. In the plane of the disk *c* of the upper shaft *a'* lies the disk *e*, in the plane of disk *b* the disk *d*, and upon the latter the cam *f*.

The disk *e* has a projecting nose e^2, for which a notch is provided in the otherwise circular disk *c*, and it is only in case that this notch and the nose e^2 engage that the signal-indicator *a* can be turned from its engaged, Fig. 1, to its disengaged position, Fig. 2.

The disk *b* is provided with several notches, into which fit the several projections of disk *d*. The latter, moreover, possesses two notches for receiving the projections of disk *b*. The movement of the shaft *a'*, as well as the rotation of the shaft *e'*, are thus made interdependent upon the respective positions of the disks *c* and *e* and *b* and *d*.

Moreover, for specially fixing the signal device *a* in its upright or disengaged position is provided a cam *f*, which is elastically connected with the shaft *e'* by means of the spring *f'* and the disk *d*, and a pin *b'* of disk *b* is

adapted to slide upward, Fig. 2, while yielding to the tendency of the spring f', whereby a is held in its upright position. Thus the signal device a cannot be turned down until the shaft e' has been moved forward (in the direction of the arrow) to such an extent that the cam f is brought out of contact with the pin b'.

For blocking the disk g, which actuates the supplementary registering device, a lever $k\ l$ is arranged, which is displaced by means of a catch i, provided on disk b. The lever $k\ l$ is moved into such a position with respect to the pawl h of disk g that the latter cannot be rotated in the position indicated in Fig. 2.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I claim—

1. In a fare indicating and registering apparatus for cabs, carriages and the like, the combination of the signal device a, the shaft a', the disks b and c, with the shaft e' and disks e and d, substantially as and for the purpose specified.

2. In a fare indicating and registering apparatus for cabs, carriages and the like, the combination of the signal device a, the shaft e', the disk b and pin b', with the shaft e', disk d, cam f and spring f', substantially as and for the purpose specified.

3. In a fare indicating and registering apparatus for cabs, carriages and the like, the combination of the signal device a, shaft a', disk b and catch i, with the lever $k\ l$, pawl h and disk g, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 10th day of January, 1898.

FRIEDRICH WILHELM GUSTAV BRUHN.

Witnesses:
CHAS. H. DAY,
HENRY HASPER,

SECTION 5

W. G. BRUHN.

TAXIMETER.

APPLICATION FILED MAR. 4, 1910.

993,645. Patented May 30, 1911.

2 SHEETS—SHEET 1.

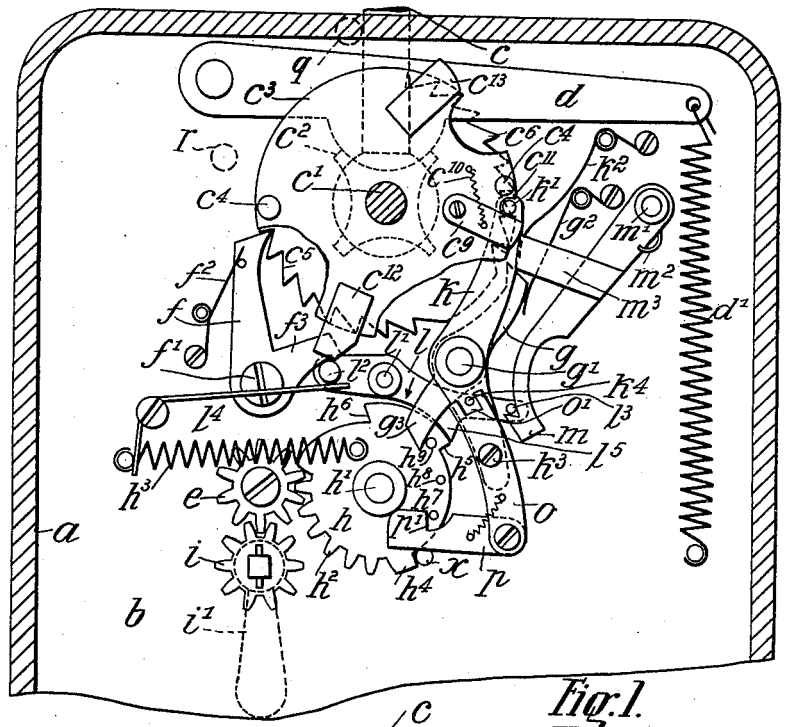


Fig. 1.

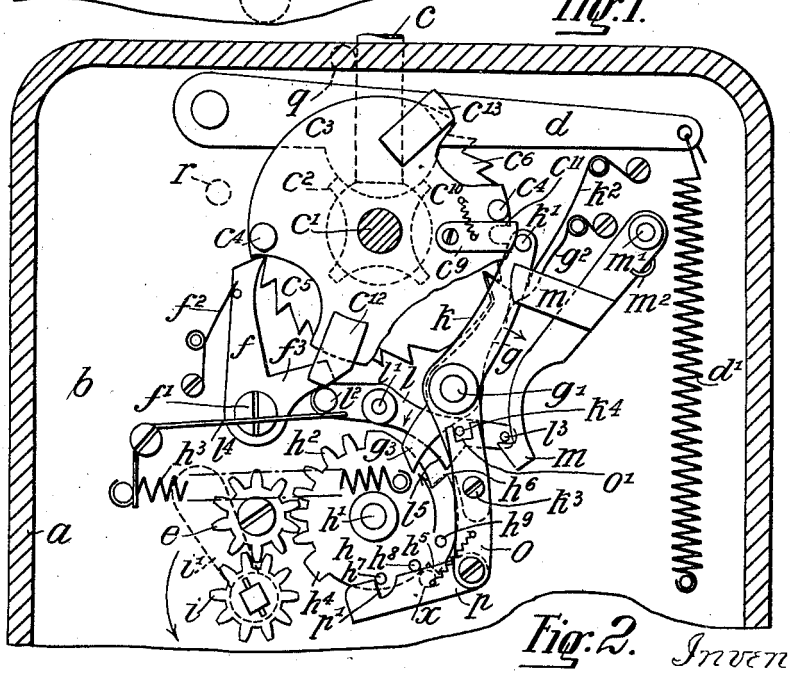


Fig. 2.

Witnesses
Chas. E. Brock
Annie Cooper.

Inventor
Wilhelm G. Bruhn
by S. Brashears
Attorney

W. G. BRUHN.

TAXIMETER.

APPLICATION FILED MAR. 4, 1910.

993,645. Patented May 30, 1911.

2 SHEETS—SHEET 2.

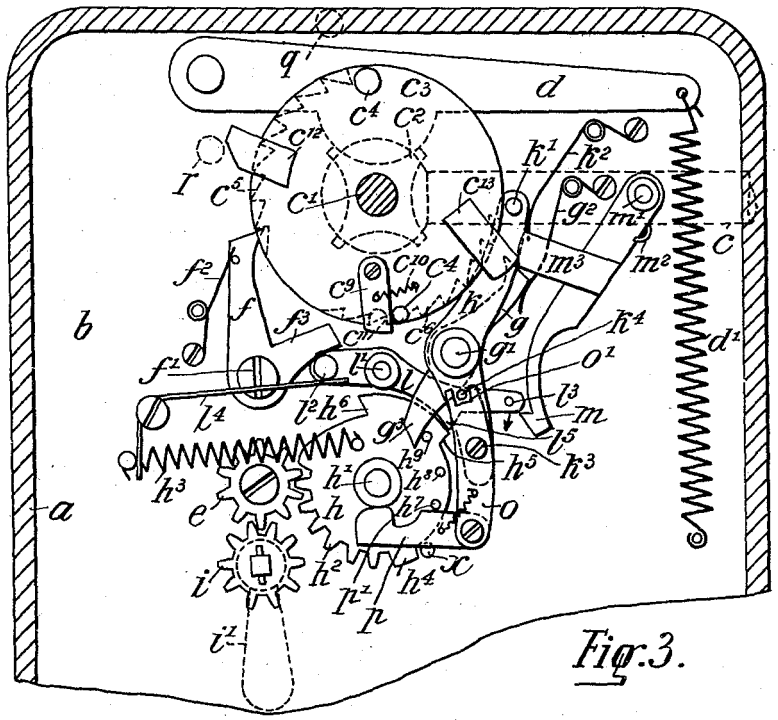


Fig. 3.

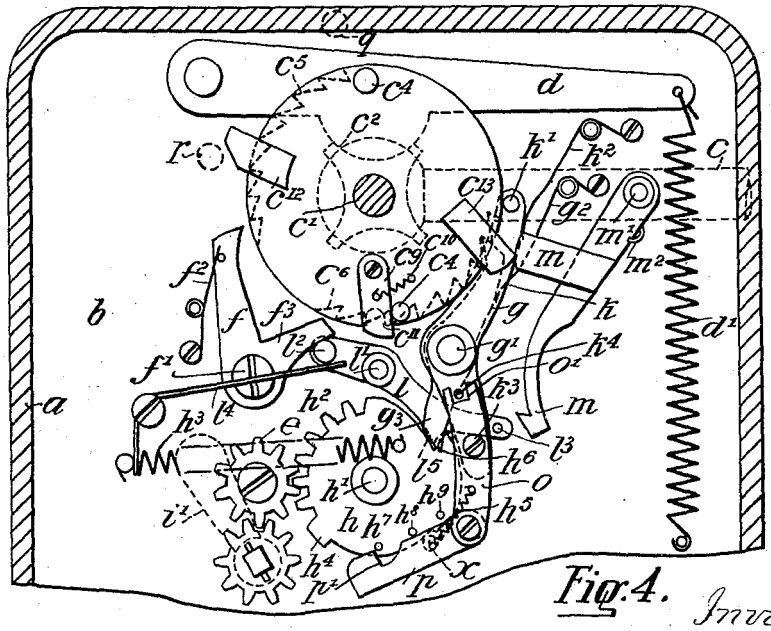


Fig. 4.

Witnesses

Chas. E. Brock

Annie Cooper

Inventor

Wilhelm G. Bruhn

by S. Brashears

Attorney

UNITED STATES PATENT OFFICE.

WILHELM G. BRUHN, OF BERLIN, GERMANY.

TAXIMETER.

993,645. Specification of Letters Patent. Patented May 30, 1911.

Application filed March 4, 1910. Serial No. 547,346.

To all whom it may concern:

Be it known that I, WILHELM G. BRUHN, a citizen of the German Empire, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Taximeters, of which the following is a specification.

The present invention relates to certain means in taximeters of the kind wherein the setting of the apparatus to the different positions is effected by one device or part, for example the flag or signal, and the invention has for object to prevent the apparatus when in the operative or "Engaged" position, from being set in rapid succession to the inoperative position and back again to the operative or engaged position. As the disks, drums or the like which indicate the fare have to be returned to their initial position in the setting of the taximeter to the inoperative or "Disengaged" state, it is possible, if the taximeter is quickly set to disengaged and then at once quickly set to engaged, that the fare indicating disks, drums or the like have not time to return fully to their zero or initial position, but are caught or arrested before they reach the same. It is possible for the driver to take advantage of this fact for the purpose of dishonestly indicating and charging to a new fare (a foreigner for example) a considerably higher minimum fare than that of the tariff.

The drawings illustrate an example of apparatus constructed in accordance with the invention.

The taximeter to which the invention is assumed to be applied is one of the kind in which the setting to the different positions is effected by means of the flag, and wherein when the apparatus is in the "Engaged" position it cannot be set again to the "Disengaged" position before turning a special lever, which causes a plate bearing a suitable indication ("End of journey" or the like) to be exhibited in the known way at the front of the apparatus.

The taximeter shown is also assumed to be a three-tariff apparatus. In the upright position of the flag, the taximeter is at "Disengaged". When the flag is turned over to the right the taximeter is set to "Tariff 1" while the turning of the flag through a further 90° sets the apparatus to "Tariff 2", and turning through still another 90° sets it to "Tariff 3".

The invention is not concerned with the manner in which the taximeter is set to the different positions by the said four positions of the flag, nor with the construction and arrangement of the mechanism of the actual apparatus for automatically calculating and indicating the fare. I have therefore only shown the rear wall of the taximeter and those parts which serve for preventing the flag from being turned in rapid succession from "Engaged" to "Disengaged", and back again to "Engaged".

Figures 1 to 4 are views of the rear wall seen from the inside of the apparatus. Fig. 1 shows the parts in the "Disengaged" position; Fig. 2 shows the position after the commencement of the preparatory manipulations necessary for setting the taximeter to "Engaged". Fig. 3 shows the position immediately after the taximeter has been set to "Engaged". Fig. 4 shows the position after the preparatory manipulations necessary for setting the taximeter to "Disengaged".

a is the casing of the apparatus and b the rear wall.

c is the flag for setting the taximeter to "Engaged" (Tariff 1, Tariff 2, Tariff 3) and to "Disengaged".

c^1 is the spindle of the flag.

c^2 is a multiple cam which, together with a lever d, held in engagement therewith by a spring d^1, forms a retaining catch or detent.

c^3 is a disk fixed on the flag spindle c^1 and carrying pins c^4 serving in the known way for moving or operating the parts whereby the operations necessary for setting the taximeter to "Engaged", "Disengaged", and for different tariffs are effected.

To the disk c^3 is attached another disk of the same diameter. This latter disk is formed at one part of its circumference with ratchet teeth c^5 and at another part of its circumference with oppositely directed ratchet teeth c^6. A pawl f pivoted at f^1 and having a lateral arm f^3 and subject to the action of a spring f^2 engages with the teeth c^5.

g is a pawl pivoted at g^1, having an ex-

tension g^3 and pressed into engagement with the teeth c^6 by a spring g^2.

The taximeter is set to operative condition by turning the flag c from the vertical position shown in Figs. 1 and 2 into that shown in Figs. 3 and 4. During this movement the pawl f is in engagement with the teeth c^5 and thus prevents the flag from being raised again when once it has been partly turned down.

The taximeter is set to the inoperative condition by turning back the flag c from the horizontal position shown in Figs. 3 and 4 into the vertical position shown in Fig. 1. During this movement of the flag the pawl g is in engagement with the teeth c^5 and prevents the partly raised flag from being turned down again.

Means hereinafter described are provided such that during the setting from "Disengaged" to "Engaged", *i. e.* from the position shown in Fig. 2 to that shown in Fig. 3, only the pawl f is in engagement with the teeth c^5, and that during the setting from "Engaged" to "Disengaged", *i. e.* from the position Fig. 4 to the position Fig. 1, only the pawl g is in engagement with the teeth c^6. Means hereinafter described are further provided such that it is necessary to turn a lever through a considerable angle before the taximeter can be set from "Disengaged" to "Engaged"; also that the lever shall be automatically released and turned back into its original position as soon as the flag has been fully raised, *i. e.* when the taximeter is set to "Disengaged"; and also that the said lever must be completely returned to its original position, then again turned through a considerable angle and again returned to the initial position before the taximeter can be again set from "Disengaged" to "Engaged". The control or actuation of the parts serving for these locking and releasing operations is effected by means of a disk h rotatably mounted at h^1.

e is a toothed wheel which meshes with the teeth h^2 of disk h and with a toothed wheel i adapted to be turned from the position shown in Fig. 1 to that shown in Fig. 2, by means of a handle or lever i^1 fitted outside the rear wall of the casing.

By turning the lever i^1 the disk h is caused to turn in the same direction through the medium of the toothed wheels, and the spring h^3 which tends to turn the disk h back into the position shown in Fig. 1, is stretched. The rotation of the disk h under the action of the spring h^3 (see Fig. 1) is limited by a fixed stop-pin x which engages a projection h^4 of the disk h. The disk h can be turned against the action of the spring h^3 by raising the handle or lever i^1 and this turning movement is limited by a projection h^5 of the disk coming against the same stop-pin x. (In Fig. 2 this position is not quite reached.) The disk h is likewise formed with a gap or nose h^6 and carries three pins, h^7, h^8, and h^9. On the stud g^1 about which the pawl g turns is likewise pivoted a two-armed lever k. The upper arm of this lever carries a pin k^1 and is pressed with its pin k^1 against the periphery of the disk c^3 by a spring k^2. On the disk c^3 is likewise pivotally mounted a pawl c^9 the outer edge of which projects beyond the periphery of the disk c^3. A small spring c^{10} tends to draw the pawl c^9 up against one of the pins c^4 (see Figs. 2, 3 and 4). In this position the pawl c^9 covers a notch c^{11} formed in the periphery of the disk c^3. When the flag c is turned up from the position shown in Fig. 4 into that shown in Fig. 1, the pin k^1 slides upon the periphery of the disk c^3. Before the flag is fully raised, the pin k^1 comes against the projecting pawl c^9 and pushes it aside. When the flag is fully raised, the pin k^1 snaps into the notch c^{11} of the disk c^3. This is the position shown in Fig. 1. In Fig. 1 the parts concerned are in the following position: The pawl g has been lifted out of engagement with the teeth c^6 owing to the pin h^9 of the disk h^3 having moved the tail g^3 of the pawl g aside against the action of the spring g^2. The flag c cannot, however, be turned down, because, as already explained, the pin k^1 is seated in the notch c^{11} of the disk c^3 and thus locks the disk c^3 against movement. The pawl f is held in engagement with the ratchet teeth c^5 by its spring f^2. Below the disk c^3 and above the disk h is a two-armed lever l pivotally mounted at l^1. The left arm of this lever carries a pin l^2 and the right arm a pin l^3. A strong spring l^4 tends to turn the lever l in the direction of the arrow. When the lever l is turned in this direction, the pin l^2 rises, comes against the arm f^3 of the pawl f and lifts the pawl f out of engagement with the teeth c^5, the spring f^2 being considerably weaker than the spring l^4. In the position shown in Fig. 1, however, the pin l^2 is pressed down by a nose c^{12}, fixed on the disk c^3, to such an extent that the pin l^2 releases the pawl f so that this is free to obey the action of the spring f^2 and engage with the teeth c^5. Moreover the pin l^3 has risen to a position in which it is engaged by a hooked locking catch m subject to the action of a spring m^2 and pivoted at m^1.

On the lower arm of the lever k is pivoted at k^3 a two-armed lever o. The upper arm of this lever o is formed at the end with a gap o^1 in which is located a pin k^4 fixed on the lever k. To the lower arm of the lever o is pivoted a pawl p formed with a notch p^1.

In the position shown in Fig. 1 the flag c is locked. It cannot be turned to the left, as its rod is against a fixed stop q. Moreover the pawl f is in engagement with the last tooth of the series c^5. The pawl g is raised out of engagement with the teeth c^6 by the pin h^9 and would therefore not prevent the turning of the flag to the right, but the turning of the flag in this direction is prevented by the fact that the pin k^1 is engaged in the notch c^{11} of the disk c^3. If the lever i^1 is now turned up toward the left, the disk h will be turned in the same direction against the action of the spring h^3, through the medium of the toothed wheels, i, e and h^2. In this movement the pin h^9 moves away from the tail g^3 of the pawl g, so that the pawl g again engages with the teeth c^6. The pin h^7 engages in the notch p^1 of the pawl p and draws the pawl toward the left. The result of this is first to turn the lever o about k^3 until the pin k^4 strikes the other side of the notch o^1. In the continued movement of the pawl p toward the left, therefore, the lower arm of the lever k is also moved toward the left. Consequently the pin k^1 is raised out of engagement with the notch c^{11} to such an extent as to allow the pawl c^9 to be pulled in front of the pin k^1 by its spring c^{10}. In this position the pawl c^9 covers the notch c^{11}, so that the pin k^1 cannot return into engagement therewith. It is still not possible, however, to turn down the flag to the right, as the pawl g is again in engagement with the teeth c^6. The parts are shown, in this position, in Fig. 2. If now the lever i^1 is turned a little farther, the pawl p is turned downward by the pin h^8, the pin h^7 moves up out of the notch p^1 of lever p and consequently the lever k is free to obey the action of the spring k^2. But, as before mentioned, the pin k^1 is prevented by the pawl c^9 from engaging in the notch c^{11}. If the lever i^1 is now released, the disk h and the lever i^1 are turned back in the direction of the arrows into their initial position by means of the spring h^3. In this position the pawl g is raised out of locking position by the pin h^9. The flag c can now be turned down from the position shown in Fig. 2 into that shown in Fig. 3, so as to set the apparatus to operative position. Until the lever i^1 was turned right back to its initial position, the pawl g remained in engagement with the teeth c^6 and thus rendered it impossible to turn down the flag.

As the lever l is kept locked in the position shown in Figs. 1 and 2 by the catch m, the pawl f remains in engagement with the teeth c^5 while the flag is being turned down, and therefore prevents the partly depressed flag from being raised again.

It is only when the flag has been fully depressed (see Fig. 3) that a nose c^{13} fixed to the disk c^3 comes against a projection m^3 of the catch m and moves the latter aside, so as to release the pawl. The lever l, however, can at first only be turned slightly in the direction of the arrow by its spring l^4, namely until a nose l^5 of this lever comes upon the periphery of the disk h. The pawl f therefore remains in engagement with the teeth c^5 (see Fig. 3) and prevents the flag from being again raised to "Disengaged". On the other hand the flag can be turned down through another 90° (Tariff 2) and can be then turned through a further 90° in the same direction (Tariff 3). Any further turning of the flag in the same direction is prevented by the stop pin r. Between Tariffs 1, 2 and 3 the flag can be set backward and forward without obstruction. Before however the flag can be set back from Tariff 1 (Fig. 3) to "Disengaged" (Fig. 1), the lever i^1 must be turned up from the position shown in Fig. 3 to that shown in Fig. 4. The disk h is thereby turned against the action of the spring h^3 to such an extent that the nose l^5 of lever l can engage the notch or tooth h^6 of the disk h (see Fig. 4). By this means the pawl f is raised out of engagement with the teeth c^5 and the disk h is held locked by the nose l^5 so that neither this disk nor the lever i^1 can be drawn back into their initial positions by the spring h^3. It will now also be understood why it was necessary to keep the lever l locked by the catch m until the flag c was turned right down from the position shown in Fig. 2 to that shown in Fig. 3. For if the lever l were not locked by the catch m during this time, it would be possible, after partly depressing the flag, to raise the lever i^1 sufficiently to allow the nose l^5 to engage in the notch or tooth h^6 and thereby release the pawl f. The partly depressed flag could then be raised again. Moreover as the disk h is held locked in the position shown in Fig. 4, the pawl g cannot be disengaged from the teeth c^6 by the pin h^9. The pawl g therefore remains in engagement with the teeth c^6 during the whole time the flag is being raised and prevents any possibility of the flag being depressed again after it has been partly raised. If now the flag c is raised from the position shown in Fig. 4 (Tariff 1) to the position shown in Fig. 1 ("Disengaged"), the nose c^{13} first released the catch m. Just before the flag has been quite raised the pin k^1 moves the pawl c^9 aside so that this pin can engage in the notch c^{11} when the flag is fully raised. Further the nose c^{12} depresses the pin l^2 so that the nose l^5 is raised from engagement with the notch or tooth h^6. Consequently the disk h and lever i^1 spring back into the

position shown in Fig. 1. When the pin l^2 moves down, the pin l^3 rises so that the catch m can engage under it.

The same series of operations as above described is repeated when the apparatus is again set to the operative and inoperative conditions.

From the foregoing description it will be seen that the flag or other part which serves for setting the taximeter to the different positions of service cannot be set directly from "Disengaged" to "Engaged," but is locked in the "Disengaged" position until a lever has been moved to and fro between two positions.

Another feature of the invention is that the locking of the flag is effected in the raising thereof, by a pin adapted to move a pawl aside and engage in a notch of a disk connected with the flag, and that in order to release the flag it is necessary first to turn the lever last mentioned, so as to move the said pin out of engagement with the notch and so that the said pawl moves in front of this pin and prevents it from reëngaging with the notch, the releasing of the lever then serving to release a second intermediately effected locking of the flag.

I claim:

1. In a taximeter or fare indicating apparatus, means for setting the apparatus to the different positions to indicate different conditions of service, comprising a movable element, a lever adapted to be moved to and fro between two positions, and means whereby said element is locked in the "Disengaged" position until the said lever has been moved to and fro between said positions.

2. In a taximeter or fare indicating apparatus, means for setting the apparatus to the different positions to indicate different conditions of service, comprising an indicator, a lever adapted to be moved to and fro between two positions, and means whereby said indicator is locked in the "Disengaged" position until the said lever has been moved to and fro between said positions.

3. In a taximeter or fare indicating apparatus, means for setting the apparatus to the different positions to indicate different conditions of service, comprising a pivoted indicator, a lever adapted to be moved to and fro between two positions, and means whereby said indicator is locked in the "Disengaged" position until the said lever has been moved to and fro between said positions.

4. In a fare indicating apparatus, the combination of a movable element, for setting the apparatus to the different positions to indicate different conditions of service, a locking pin, a disk connected with the setting element provided with a notch adapted to be engaged by the pin to lock said element during the setting, a lever adapted to be moved to and fro between two positions, and means operated by said lever when moved in one direction, for disengaging the locking pin from the notch.

5. In a fare indicating apparatus, the combination of a movable element, for setting the apparatus, to the different positions to indicate different conditions of service, locking means, a disk locked by said means when the setting element is moved during the setting, a lever adapted to be turned to and fro between two positions, and means, operated by said lever in its movement in one direction, for disengaging the locking means from the disk.

6. In a fare indicating apparatus, the combination of a pivot, an element adapted to be rotated on said pivot for setting the apparatus from the "Disengaged" to the "Engaged" position, a lever adapted to be turned to and fro between two positions, means for normally and yieldingly holding the lever in one of said positions, means for locking the setting element in the "Disengaged" position, and means operated by said lever in its movement to and from its normal position for disengaging the locking means and permitting the setting element to be moved to the "Engaged" position.

7. In a fare indicating apparatus, the combination of a pivot, a disk thereon provided with a notch in its periphery, a setting element projecting from said disk adapted to be moved with the disk about the pivot to set the apparatus to different positions to indicate different conditions of service, a locking pin held yieldingly upon the periphery of the disk and engaging the notch to lock the disk when the latter is rotated in one direction, and a pawl pivoted on the disk in position to shunt the pin over the notch when the disk is moved in the opposite direction.

8. In a fare indicating apparatus, the combination of a pivot, a disk thereon provided with a notch in its periphery, a setting element projecting from said disk adapted to be moved with the disk about the pivot to set the apparatus to different positions to indicate different conditions of service, a locking pin held yieldingly upon the periphery of the disk and engaging the notch to lock the disk when the latter is rotated in one direction, a pawl pivoted on the disk in position to shunt the pin over the notch when the disk is moved in the opposite direction, a lever adapted to be turned to and fro between two positions, and means, operated by said lever when moved in one direction, for disengaging the locking pin from the notch.

9. In a taximeter or fare indicating apparatus, the combination of a movable element, for setting the apparatus to the different positions to indicate different conditions of service, a locking pin, a disk connected with said setting element and having a notch adapted to be engaged by said pin during the setting of said element to lock said element, a lever adapted to be turned to and fro between two positions, means operated by the movement of said lever in one direction for disengaging the locking pin from said notch, a pawl adapted to mask the said notch when the locking pin is disengaged from the notch and to be moved aside by the locking pin in its locking motion, and means for intermediately locking said setting element, said means being released by the release or movement of the said lever in the other direction, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILHELM G. BRUHN.

Witnesses:
WALDEMAR HAUPT,
HENRY HASPER.

SECTION 6

W. G. BRUHN.

TAXIMETER.

APPLICATION FILED SEPT. 27, 1910.

1,054,903.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

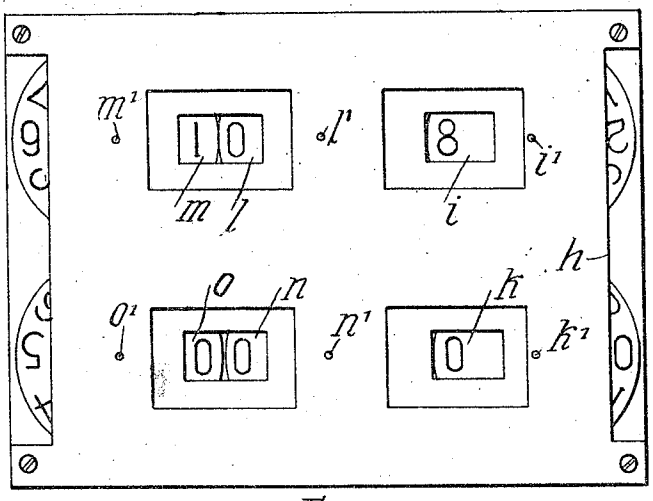
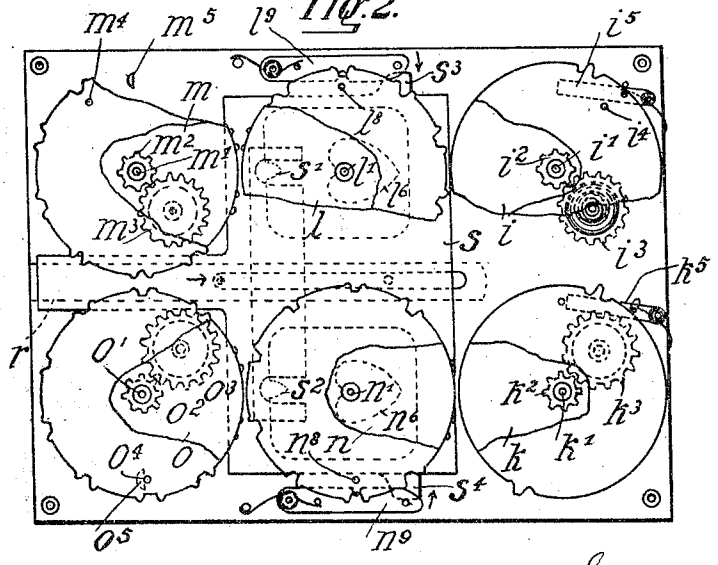


Fig. 2.



Witnesses:

James J. Shelley.

A. Cooper

Inventor

Wilhelm G. Bruhn

by S. Brashears

Attorney

W. G. BRUHN.

TAXIMETER.

APPLICATION FILED SEPT. 27, 1910.

1,054,903.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 2.

Fig. 3.

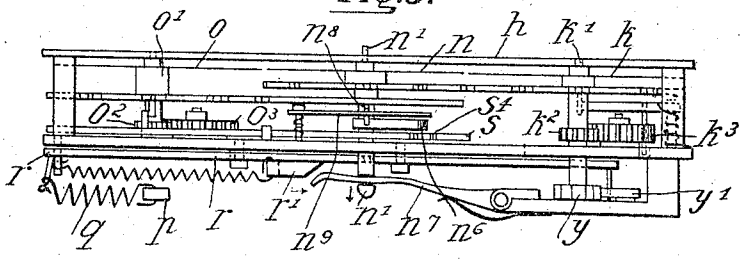
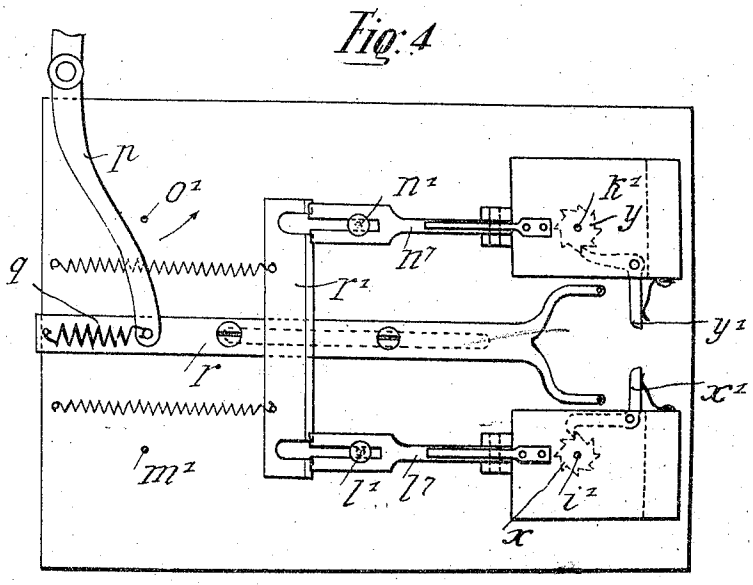


Fig. 4



Witnesses:

James J. Shelby

A. Cooper

Inventor:

Wilhelm G. Bruhn

by S. Brashears

Attorney

UNITED STATES PATENT OFFICE.

WILHELM GUSTAV BRUHN, OF BERLIN, GERMANY.

TAXIMETER.

1,054,903. Specification of Letters Patent. Patented Mar. 4, 1913.

Application filed September 27, 1910. Serial No. 584,087.

To all whom it may concern:

Be it known that I, WILHELM GUSTAV BRUHN, a citizen of the German Empire, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Taximeters, of which the following is a specification.

The present invention relates to a combined apparatus for indicating fares and extras in taximeters. This apparatus can be constructed separately and fitted complete into the taximeter. It can be relatively simply and cheaply made, operates with perfect certainty and enables the zeroizing of all the disks appertaining to the two combined indicating apparatus to be effected by one single slide.

The accompanying drawings show by way of example a form of apparatus constructed in accordance with the invention.

Figure 1 is a front elevation of the combined indicating apparatus. Fig. 2 is a similar view with the cover plate removed. Fig. 3 is a bottom plan and Fig. 4 is a rear elevation.

The cover plate h is formed with two upper and two lower apertures. The fare is exhibited behind the two upper apertures, by the three numeral disks i, l, and m. The extras are indicated behind the two lower apertures by the three disks k n and o. The disks i k l m n o are respectively fixed on the spindles i^1 k^1 l^1 m^1 n^1 o^1. Upon the spindles i^1 and k^1 are secured the ratchet wheels x and y respectively. The feed or operation of the ratchet wheel x whereby the fare is increased by a unit of price, for example 10 pfennige, is effected automatically in the known way after a given distance has been traveled or after a given period of time has elapsed. The operation of the ratchet wheel y whereby the extras indicated are increased for example by units of 25 pfennige at a time, is effected in the known way by a knob or other manually operable device (not shown) usually situated at the back of the apparatus and turned by the driver. The decimal transmission from the spindle i^1 of the first indicating disk i to the spindle l^1 and from this spindle to the spindle m^1 is effected in the known way by notched counting wheels, and the decimal transmission from the spindle k^1 to the spindle n^1 and from the latter to the spindle o^1 is similarly effected.

The zeroizing is effected in the following way:—The middle spindles l^1 and n^1 are adapted to slide axially so that the notched counting wheels of the right hand spindles i^1 k^1 come out of engagement with the corresponding notched counting wheels upon the middle spindles l^1 and n^1 and the notched counting wheels on the spindles l^1 and n^1 come out of engagement with the notched counting wheels upon the spindles m^1 o^1. The middle spindles l^1 and n^1 are now set to zero by means of heart shaped cams, while the left and right hand spindles are moved back into the zero or starting position by means of springs. For this purpose there is fixed on the left and right hand spindles respectively a toothed wheel i^2 m^2 k^2 o^2. These toothed wheels gear respectively with spring barrels i^3 m^3 k^3 o^3. The spring barrels contain slip springs, that is to say springs having their inner end fixed to the axis of the barrel while their outer end rubs on the cylindrical wall of the barrel. If such a spring barrel is turned in the direction in which the spring is coiled the spring will be taken around with it owing to the friction between the outer end of the spring and the wall of the barrel, and the spring will therefore wind up. When this tension attains a certain amount, the spring will slip on the inside of the barrel in the continued turning of the latter. If the spring barrel is released it will be rotated back by the spring until the latter is slack. The disks i, m, k, o, carry respectively pins i^4 m^4 k^4 and o^4, which in the backward rotation of the disks under the action of the spring barrels, strike against stops i^5 m^5 k^5 o^5. The stops m^5 and o^5 are fixed, while the stops i^5 and k^5 are formed of spring levers, which in the forward feed of the disks i k are moved aside by the pins i^4 k^4 and therefore allow their respective disks i k to make any desired number of revolutions, whereas they only allow their disks to turn backward until the pins i^4 k^4 strike against the levers i^5 k^5. Upon the middle spindles l^1 n^1 are respectively fixed heart shaped cams l^6 n^6. The axial sliding of the middle spindles l^1 n^1 and the zeroizing of the heart shaped cams l^6 n^6 is effected as follows. In setting the apparatus to the disengaged or inoperative position, a lever p (Figs. 3 and 4) is turned in a direction of the arrow. This lever imparts its motion by a spring q to a slide r

mounted at the underside of the apparatus. The slide r moves the catch pawls x^1 and y^1 out of engagement with the ratchet wheels x and y so that the disks i and k can be turned back into their initial position by the spring barrels i^3 and k^3.

To the slide r is fixed a wedge cross arm r^1 which in the sliding movement of the slide r passes under forks l^7 n^7 which engage in notches in the spindles l^1 n^1 respectively. Therefore the movement of the slide r has the effect of sliding the spindles l^1 n^1. To the slide r is connected a slide s provided on the other side of the bottom plate. This slide s has two noses s^1 and s^2 which, when the slide s is moved toward the right, engage in the heart shaped cams l^6 and n^6 and set the same to zero. Owing to the fact that the lever p which actuates the slides r and s is not connected rigidly with the lever r but only through the medium of the spring q the important advantage is attained that the projections s^1 and s^2 are allowed a certain time to reach the deepest portions of the heart shaped cams l^6 and n^6, and that if a projection s^1 or s^2 should happen to come exactly upon the point of the heart shaped cam l^6 or n^6, so that further movement of the slides r and s toward the right would be prevented, no breakage of any part whatever could be therefore occasioned, and the only effect would be that the spring q would be stressed to a correspondingly greater extent. As however the slides r and s, owing to the interposition of the spring q, are not compelled to follow the lever p at once, but can follow it during the whole of the time in which the lever is moving toward the right, it will be seen that even in such a case the zeroizing of the heart shaped cams l^6 and n^6 would be effected as a rule even if somewhat tardily.

If the apparatus is put very quickly into the disengaged or inoperative position, and is immediately thereafter put very quickly into the engaged or operative position, it may be possible under some circumstances owing to the rapid motion of the projections s^1 and s^2 toward the right that a very rapid rotation of the disks l and n will be produced. It might occur that in the return motion of the projections s^1 and s^2, the disks l and n owing to their momentum, would retain the rotation imparted to them, and thereby move away again from the zero position. In order to prevent this, pins l^8 n^8 are provided on the disks l and n respectively. These pins are located opposite corresponding notches in spring levers l^9 n^9. During the setting of the apparatus to the engaged or operative position, the spring levers l^9 n^9 are held out of engagement by projections s^3 s^4 provided on the slide s. When the slide s begins to move toward the right, the levers l^9 n^9 are released and move into their engaging position. If now in the further movement of the slide s toward the right, the disks l and n are turned to zero, which occurs in the one or other direction of rotation, according to the previous position of the disk l or n, the levers l^9 n^9 are moved aside by the pins l^8 n^8, and when the zero position of the disks l n is reached in the pins l^8 n^8 snap into the corresponding notches of the levers l^9 n^9 and prevent any over-running of the disks l n. The levers l^9 and n^9 are not again lifted out of engagement by the projections s^3 and s^4 to release the disks l and n, until directly before the slide s has returned to its left hand position, and after the decimal counting wheels of the spindles l^1 or n^1 have come into gear with the right and left hand counting wheels.

It should be noticed that the arrangement just described for preventing overrunning of the middle disks l and n when the taximeter is set rapidly to the disengaged position and immediately thereafter to the engaged position, operates entirely automatically, and that, according to the position which the disks l and n have assumed before the setting to the disengaged position, the return of the disks to the zero position occurs in the one or other direction of rotation; also that in each of the two directions of rotation, the levers l^9 n^9 are pushed aside by the pins l^8 or l^9 and come automatically into engagement by their notches with the pins l^8 n^8 when the disks have been moved to the zero position. This arrangement therefore differs essentially from previously known arrangements wherein, for the purpose of zeroizing, the numeral or indicating disks must always be turned in the same direction, namely in the direction of feed, so that it is necessary to turn the said disks a short distance backward and to remove a stop before the disks can be fed forward again in further use of the counting mechanism.

I claim:

1. In an indicating apparatus for taximeters, the combination with two indicating mechanisms one for indicating the fares and the other for indicating the extras, each of said indicating mechanisms comprising a plurality of counting elements operatively connected with each other, of a plate supporting both indicating mechanisms, zeroizing mechanisms for the counting elements of both of said indicating mechanisms, actuating means common to all the zeroizing mechanisms comprising a sliding bar, and means operated by said sliding bar for axially sliding disconnecting the gearing of the counting elements of the indicating mechanisms.

2. In an indicating apparatus for tax-

imeters, the combination with two indicating mechanisms one for indicating the fares and the second one for indicating the extras, each of said indicating mechanisms comprising three counting elements successively connected with each other, of a plate supporting both of said indicating mechanisms, automatic zeroizing mechanisms for the outer ones of said counting elements, cam actuated zeroizing mechanisms for the inner ones of said counting elements, a slide adapted to shift the inner ones of the counting elements of both indicating mechanisms axially and out of engagement with the outer ones of said counting elements and to disconnect both indicating mechanisms from their operating devices, and means actuated by said slide for operating said cam actuated zeroizing mechanisms.

3. In an indicating apparatus for taximeters, the combination with two indicating mechanisms one for indicating the fares and the second one for indicating the extras, each of said indicating mechanisms comprising three counting elements successively connected with each other, of a plate supporting both of said indicating mechanisms for the inner ones of said counting elements, a spring actuated slide, a wedge attached to said slide adapted to shift the inner ones of the counting elements of both indicating mechanisms axially and out of engagement with the outer ones of said counting elements and to disconnect both indicating mechanisms from their operating devices, and means actuated by said slide for operating said cam actuated zeroizing mechanisms.

4. In an indicating apparatus for taximeters, the combination with a counting element, of zeroizing means for said counting element adapted to turn the same in either direction, means operative during the zeroizing operation to arrest said counting element in its reset position, said arresting means being operative upon rotation of said counting elements in both directions, and means operative at the end of the zeroizing operation to throw said arresting means out of operation.

5. In an indicating apparatus for taximeters, the combination with a counting disk, of a pin rotating with said counting disk, a notched lever adapted to engage said pin with its notch when the counting element is in its zero position, a heart shaped cam connected with said counting element and adapted to zeroize the same, operating means for said cam, and means connected with said cam operating means and operative during the resetting in operation to throw said notched lever into operative position, and a spring to move the lever into operative position.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILHELM GUSTAV BRUHN.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.

SECTION 7

F. W. G. BRUHN.

INDICATING APPARATUS FOR SHAFTS.

APPLICATION FILED MAR. 28, 1916.

1,251,859.

Patented Jan. 1, 1918.

Fig. 1.

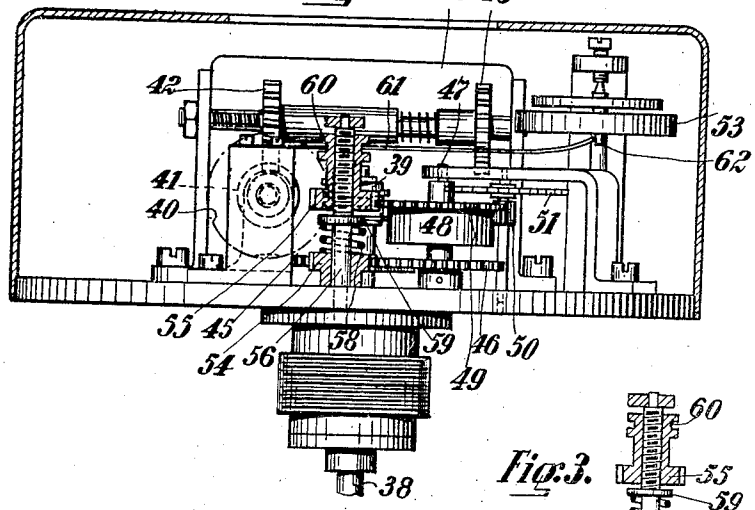
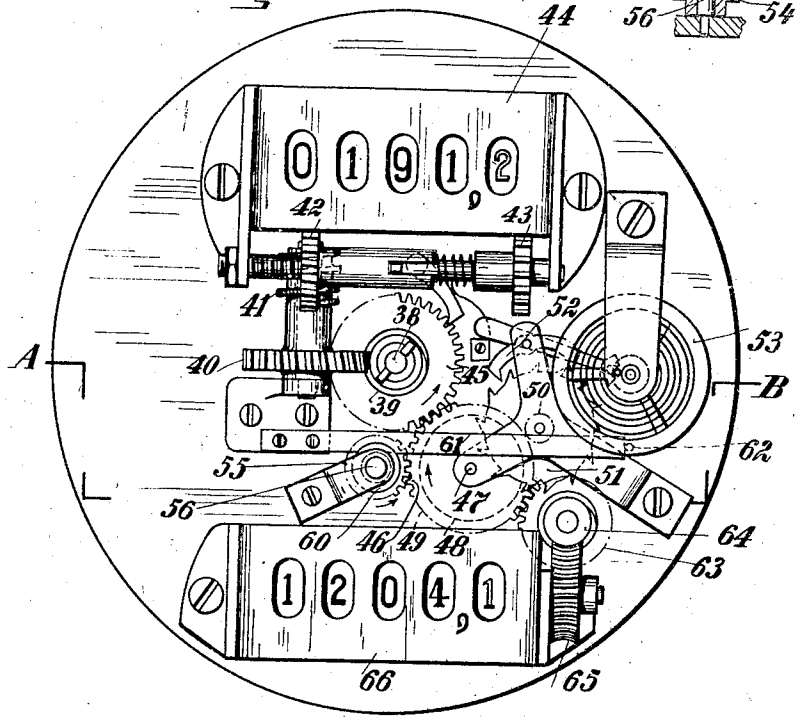


Fig. 3.

Fig. 2.



Inventor.

Friedrich Wilhelm Gustav Bruhn,

By Henry Orth & Co

atty.

UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM GUSTAV BRUHN, OF BERLIN, GERMANY.

INDICATING APPARATUS FOR SHAFTS.

1,251,859. Specification of Letters Patent. Patented Jan. 1, 1918.

Application filed March 28, 1916. Serial No. 87,234.

To all whom it may concern:

Be it known that I, FRIEDRICH WILHELM GUSTAV BRUHN, a citizen of the German Empire, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Indicating Apparatus for Shafts, of which the following is a specification.

My invention relates to an indicating apparatus for shafts or spindles rotating with any intermittences, whereby both the number of revolutions of a revolving shaft or spindle and else, with the aid of an indicating mechanism driven from a clockwork mechanism (hereinafter for shortness referred to as a clock) the total duration of the periods of rotation of the rotary shaft or spindle are indicated.

The rotary shaft may appertain to any machine or apparatus, or it may receive its drive from the wheel of a motor or other vehicle or the like. In the latter case the indicating apparatus can measure and indicate the total of the distances traversed by the vehicle and the total duration of the periods of traveling.

According to the invention the throwing in and out of the indicating mechanism serving for indicating the total duration of the periods of revolution of the rotary shaft or spindle is effected by the relative axial movement of two wheels, one of which is driven from the rotary shaft, and the other from the clock that serves to drive the indicating mechanism.

The invention is illustrated in one example in the accompanying drawings in which Figure 1 is a front sectional elevation of the apparatus, the section being taken on A—B Fig. 2; Fig. 2 is a plan of the apparatus, while Fig. 3 is a detail view in which, for greater clearness, the wheels whose relative axial movement effects the throwing in and out of the indicating mechanism are shown separately from Fig. 1.

38 is the rotary shaft of which the total number of revolutions and the total duration of the periods of rotation are to be measured and indicated. From the shaft 38 a counter 44 is driven in the known way by means of a worm 39, worm wheel 40, worm 41, worm wheel 42 and toothed wheel 43, and serves, according to the particular purpose or application of the apparatus, for indicating either the number of revolutions of the shaft or the distances run say in kilometers or tenths of kilometers. On the shaft 38 is fixed a wheel 45 which meshes with a wheel 46 fixed on its spindle 47. To the spindle 47 is fixed the inner end of a clockwork driving spring (not shown) the outer end of which bears and slips in the known way against the inner wall of a barrel 48. The toothed wheel or rim 49 of the spring barrel is of the same size as the wheel 46 and meshes direct with the pinion 50 of the escapement wheel 51, which is checked in the known way by an anchor 52 and balance wheel 53. The wheels 46 and 49 mesh with two smaller wheels 54 and 55 mounted on a common spindle 56 and likewise of the same size as each other. The wheel 54 is not fast on the spindle 56 but is connected thereto by a friction clutch. In the example illustrated the friction clutch consists of a spring 58 bearing on the one hand against a collar or flange 59 of the spindle 56, and on the other hand against the wheel 54. The wheel 55 is likewise not fast on the spindle 56, but by means of inclined engaging faces it is constrained to move axially on the spindle 56 as soon as it is turned relatively to the spindle. In the example illustrated the spindle 56 is formed with a screw thread at its upper part and the toothed wheel 55 works thereon as a nut. Consequently when relative turning motion occurs between toothed wheel 55 and spindle 56 the toothed wheel 55 is caused to move axially on the spindle 56. In the boss of the toothed wheel 55 is turned a groove 60 in which engages a light lever 61 capable of pivoting or swinging about its left hand end. In the example illustrated the lever 61 consists of a leaf spring connected at its left hand end to a fixed part of the apparatus. The right hand end of the lever 61 is bent obliquely upward. When the wheel 55 is moved axially up or down on the spindle 56, the right hand end of the lever 61 will also be raised or lowered. Within the range of travel of the right hand end of the lever 61 lies the path of oscilla-

tion of a pin 62 fixed to the balance wheel 63. When the lever 61 is in its lower position the balance wheel 53 can vibrate freely. When the lever 61 is raised to the position shown, the balance wheel 53 is stopped, as the right hand end of the lever 61 then comes in front of the pin 62. The lever 61 and the pin 62 are so arranged that the balance wheel 53 is held near its point of reversal. On release of the stop the balance wheel at once begins to vibrate.

Let us assume that the parts of the apparatus are in the position seen in Fig. 1, that the slip spring (not shown) in the barrel 48 is wound up a little and that the rotary shaft 38 is stationary. If now the rotary shaft 38 commences to rotate, the wheels 45, 46 and 54 will be turned in the directions shown by the arrows. The spindle 56 will be driven by the wheel 54 and in the same direction as this wheel by means of the friction clutch 58. As the spring barrel wheel 49 is stationary owing to the stoppage of the balance wheel, the wheel 55 is held against rotation. Consequently the spindle 56, rotating with the wheel 54, screws into the wheel 55 and causes this to move down axially, with the result that the lever 61 is rocked downward and releases the balance wheel; the clock work 48, 49, 50, 51, 52, 53 begins to go, the motion being controlled by the escapement. The wheel 46 usually runs faster than the wheel 49. Consequently the wheel 54 also runs faster than the wheel 55. Therefore the wheel 55 is moved farther down until it comes against the collar or flange 59. On the occurrence of further lead of the wheel 54, the spindle 56 cannot be rotated by the wheel 54 at the same speed as this wheel, but lags behind it, this being rendered possible by the friction clutch 58.

As the wheel 49 rotates slower than wheel 46, said wheel 49 cannot move wheel 55 faster than spindle 56 is driven by wheel 54, hence wheel 55 will not be moved upward on the spindle during the rotation of shaft 38.

When, however, the shaft 38 is stationary the wheel 55, driven by the wheel 49, screws upward again and the clock is again stopped.

The transmission ratio is so chosen that at the very least speed which can occur in practice the wheel 49 is overtaken by the wheel 46.

By reason of the arrangement described therefore the clockwork will go so long as the shaft 38 is rotating.

As the clockwork itself represents a time meter it is only necessary to transmit its motion to an indicating mechanism or other indicating device. In the example illustrated the indicating device consists of a counter 66 similar to the counter 44, and receiving its drive from the wheel 49 by means of the wheel 63, worm 64 and worm wheel 65.

The apparatus as illustrated can be employed direct as a distance and time meter for any vehicle. If the shaft 38 is driven from a vehicle wheel the distances traveled will be indicated in kilometers and tenths of kilometers by the counter 44, and the total duration of the times occupied by the individual journeys will be indicated in hours and tenths of hours by the counter 66.

The drive of the wheel 49 may also be effected by a separate or special clock wound up by hand. In such a case the throwing out and in of the time counter can be effected, as in the example illustrated, by stoppage or release of the balance wheel.

I claim:

1. In a device of the character described, the combination of a rotary shaft, mechanism for indicating the duration of rotation of said shaft, clock mechanism for driving the indicating mechanism, a spindle, a wheel thereon driven by the shaft and adapted to rotate the spindle, a wheel on the latter adapted to be driven by the clock mechanism, and movable axially on the spindle by the rotation of the latter, and means operated by said axial movement to release the clock mechanism.

2. In a device of the character described, the combination of a rotary shaft, mechanism for indicating the duration of rotation of said shaft, clock mechanism for driving the indicating mechanism, a spindle, a wheel thereon driven by the shaft and adapted to rotate the spindle, a stop member for the clock mechanism, and a wheel axially movable on the spindle in driving connection with the clock mechanism to actuate the stop member to lock the clock mechanism.

3. In a device of the character described, the combination of a rotary shaft, mechanism for indicating the duration of rotation of said shaft, clock mechanism for driving the indicating mechanism, a spindle, a wheel thereon in driving connection with said shaft, a friction clutch connecting the wheel and spindle, a wheel on the spindle in driving connection with the clock mechanism and movable axially on the spindle by a relative movement of the wheel and spindle and a stopping device for the clock mechanism actuated by the axial movement of said axially movable wheel.

4. In a device of the character described, the combination of a rotary shaft, mechanism for indicating the duration of rotation of said shaft, clock mechanism for driving the indicating mechanism, a spindle, a pinion thereon in gear with said shaft, a friction clutch connecting the pinion and

spindle, an internally threaded pinion mounted on a threaded portion of the spindle, a gear included in the clock mechanism in mesh with the threaded pinion, and a stopping device for the clock mechanism adapted to be actuated by said threaded pinion to stop and start the clock mechanism.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FRIEDRICH WILHELM GUSTAV BRUHN.

Witnesses:
HENRY HASPER,
ALLEN F. JENNINGS.

SECTION 8

F. W. G. BRUHN.

FARE INDICATOR FOR VEHICLES.

APPLICATION FILED FEB. 10, 1922.

1,436,646.

Patented Nov. 28, 1922.

4 SHEETS—SHEET 1.

Fig. 1

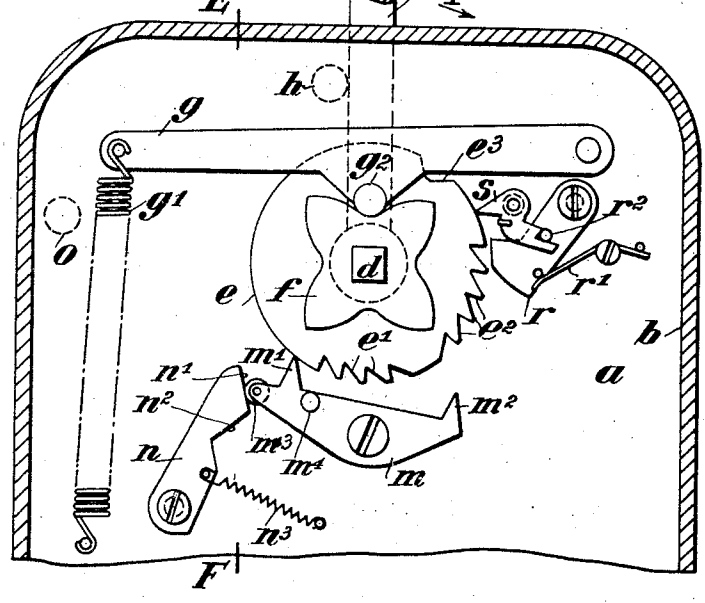
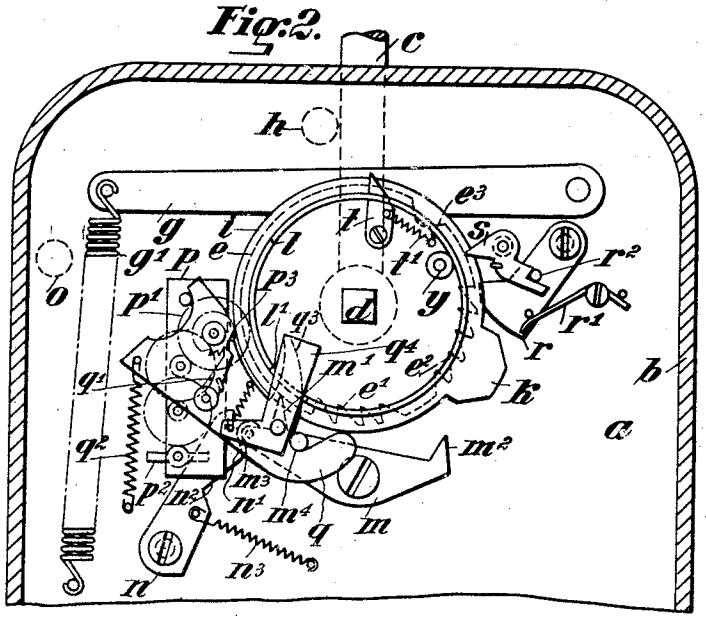


Fig. 2.



Inventor.

Friedrich W. G. Bruhn,

By Henry Orth & Co

Atty.

F. W. G. BRUHN.

FARE INDICATOR FOR VEHICLES.

APPLICATION FILED FEB. 10, 1922.

1,436,646.

Patented Nov. 28, 1922.

4 SHEETS—SHEET 2.

Fig. 3.

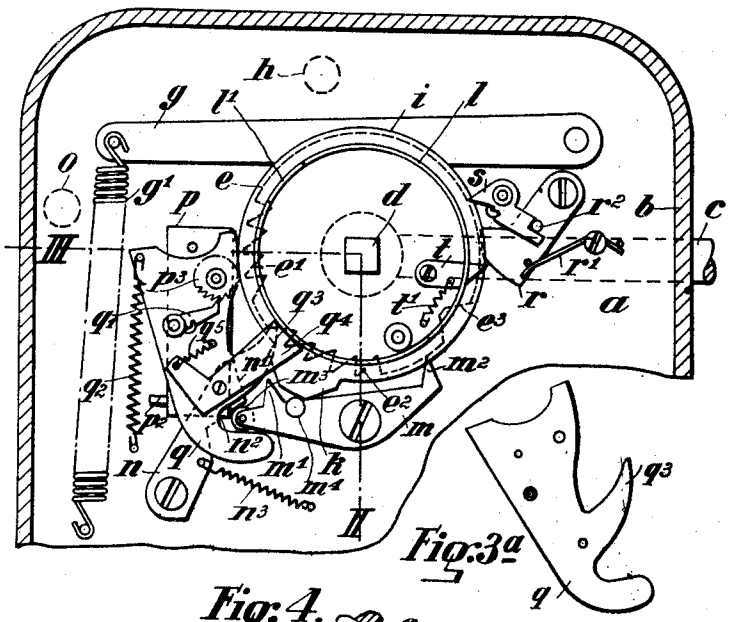
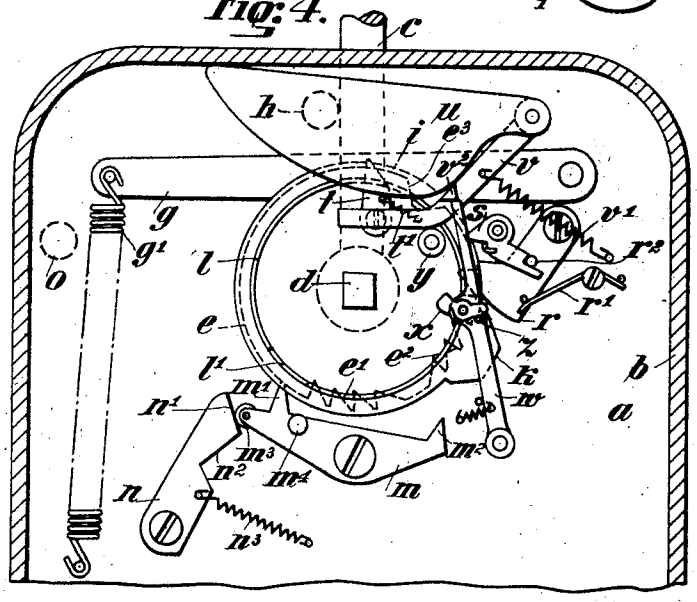


Fig. 3a.

Fig. 4.



Inventor.

Friedrich W. G. Bruhn.

By Hauptman & Co

Atty.

F. W. G. BRUHN.

FARE INDICATOR FOR VEHICLES.

APPLICATION FILED FEB. 10, 1922.

1,436,646.

Patented Nov. 28, 1922.

4 SHEETS—SHEET 3.

Fig. 5.

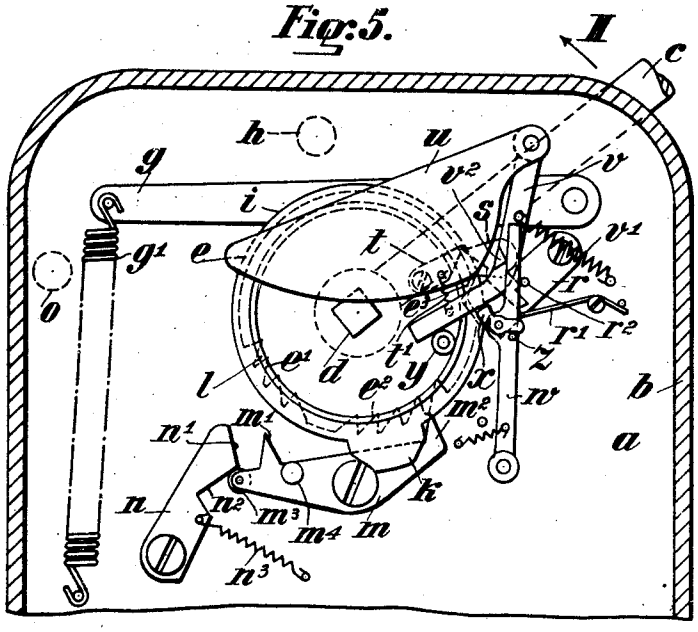
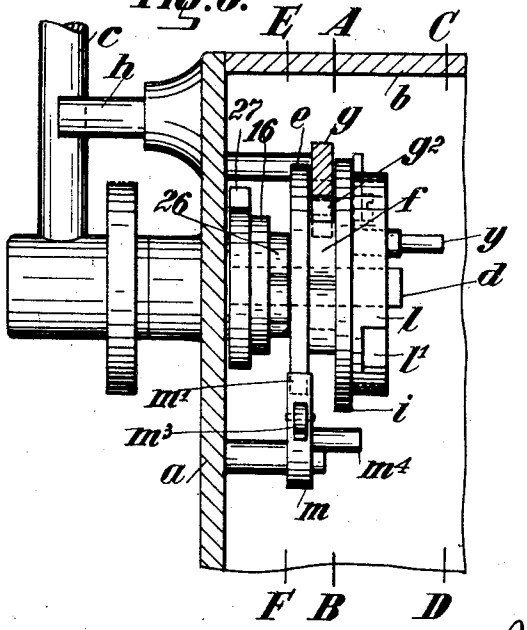


Fig. 6.



Inventor.

Friedrich W. G. Bruhn,

By Manny & Orth

Atty.

F. W. G. BRUHN.

FARE INDICATOR FOR VEHICLES.

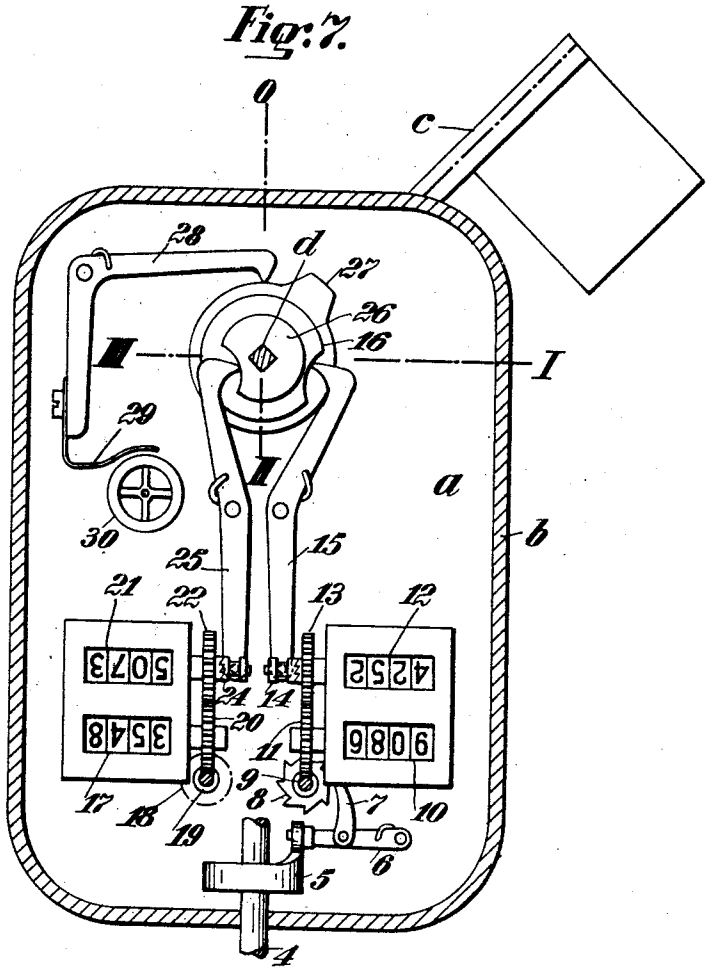
APPLICATION FILED FEB. 10, 1922.

1,436,646.

Patented Nov. 28, 1922.

4 SHEETS—SHEET 4.

Fig: 7.



Inventor.

Friedrich W. G. Bruhn.

By Kenyon & Kenyon Atty.

Patented Nov. 28, 1922. 1,436,646

UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM GUSTAV BRUHN, OF WILMERSDORF, NEAR BERLIN, GERMANY.

FARE INDICATOR FOR VEHICLES.

Application filed February 10, 1922. Serial No. 535,577.

To all whom it may concern:

Be it known that I, FRIEDRICH WILHELM GUSTAV BRUHN, a citizen of Germany, residing at Wilmersdorf, near Berlin, Germany, have invented certain new and useful Improvements in Fare Indicators for Vehicles, of which the following is a specification.

This invention relates to fare indicators which are set for different conditions of service by means of a signal that may consist of a flag adapted to be swung into a number of positions. The object of the invention is to simplify the manipulation required for setting the apparatus for the various conditions of service, to reduce the number of parts required for thus setting the apparatus, and above all to provide perfect security against certain possibilities of fraud.

The possibilities of fraud, with which the invention is intended to cope by simple means in the simplest possible manner, are more particularly the following:

Every fare indicator must, at the beginning of a trip, be set into operative condition and adjusted for the proper tariff. At the end of a trip the fare indicator must first be set to "cash." During the operation of setting the apparatus to "cash" the hirer of the vehicle pays his fare. Therefore the fare to be paid for the trip must remain visible. When the fare has been paid the apparatus must be set out of operative condition, i. e. to "disengaged." The fare recorded for the last trip must disappear. When the apparatus is then again set for service the initial charge according to the particular tariff in question must be recorded. The operation of restoring to their zero or initial positions the members (such as disks, cylinders or the like) that serve to indicate the fare requires a certain length of time. Hence, if only a single member—the signal—is provided for setting the apparatus for the different conditions of service, it will be possible for the driver at the end of a trip, when the apparatus records a certain fare, to set the apparatus so quickly to "disengaged" and then into its operative or "engaged" condition that the said indicating members do not have time enough to return to their zero or initial positions. The driver is thus enabled to prevent the recorded fare from disappearing and to commence a new trip with a recorded fare that is higher than the proper initial charge. Various means have been proposed for preventing the apparatus from being set too rapidly to "disengaged" and then to "engaged." One of these means consists in an arrangement by which the signal, when brought into the "disengaged" position, is locked and thus prevented from being set to "engaged" until a slight reversed motion is imparted to it.

It has been found that this arrangement in itself does not afford sufficient security, because the driver, after a little practice, is still able to carry out the necessary motions fast enough to prevent a recorded fare from disappearing. Another attempt to overcome this evil involved a renewed application of the old plan of providing a manually operated member such as a lever in addition to the manually operated signal. The arrangement in accordance with this plan was such that the signal was locked when moved into the disengaged position and had to be unlocked by manipulating the second member before it could again be set to "engaged." This arrangement, in addition to rendering the apparatus inconvenient to handle, involves the drawback of necessitating the provision of a second manually operated member and special locking devices. Besides, even this arrangement does not afford perfect security against the fare being maintained recorded on the apparatus, because the driver, after sufficient practice, is able to carry out the necessary manipulations so quickly that the indicating disks or drums are not given time enough to return to their zero positions.

The too rapid manipulation of the fare recorder may be used as a means for practicing fraud in other ways. Thus, if the apparatus is arranged to be set for all conditions of service by means of the signal, the driver may "inadvertently" switch over from the tariff for which the apparatus happens to be set to "cash" and then to "disengaged" so quickly that the fare disappears before the hirer of the vehicle has had time to read it. The driver will then be able to pretend that the fare was higher than the proper, recorded fare, and if the hirer complains, the

driver will be able to make the excuse that he inadvertently used too much force and switched over to "cash" too quickly, so that the signal immediately went to "disengaged." To provide against this, fare indicators have been equipped with a special member for setting the apparatus to "cash." There could then be no question of switching too rapidly, but this arrangement also involved a second manually operated member, locking devices that had to be provided in order to compel the driver to work the second member, and inconvenient switching manipulations.

The operation of setting the apparatus to "cash" may also be utilized for fraudulent purposes. In existing apparatus the circumstances involved in this operation are generally the following: When the apparatus is set to "cash" the motion of the clockwork is arrested to prevent it from augmenting the fare while the hirer of the vehicle, after having been taken to his destination, is paying for his trip. But the "distance mechanism," which causes the fare indicator to record a fare in accordance with the distance covered, will still be connected to the indicator. Therefore if, while the apparatus is left at "cash", the driver were to drive on, or take in a new passenger, the fare and the fare-checking-devices would be advanced by the distance mechanism. Two possibilities of fraud are given in particular and these are the following:

1. The driver has just reached the end of the trip and set the apparatus to "cash". He receives payment from his fare and notices another person who desires to engage his car. He now omits to set the apparatus to "disengaged" and thus omits to obliterate the fare charged for the last trip while covering the apparatus with his cloak so that the passenger does not notice that it is set at "cash." At the end of the trip the apparatus will appear to be set to "cash" in the proper manner, but in reality the passenger will have to pay for the last passenger's trip in addition to his own.

2. Suppose the driver has to wait for some hours, as on a race course for instance. In such cases he will be able to defraud the owner of the car in the following manner: He gets the passenger to agree to pay a certain sum for the time lost in waiting and when he arrives at the race-course he sets his apparatus to "cash".

During the long waiting time the fare on the fare indicator will now not be increased at all and the fare-checking-devices will not advance either and as the apparatus has not yet been set to "disengaged" the car will not be available for another passenger. At the commencement of the return trip the driver, after having collected the amount recorded and the sum the passenger agreed to pay for the waiting time, either resets the apparatus (by switching it to "disengaged" and then to "engaged"), or he leaves the apparatus in the "cash" position during the return trip.

In accordance with the present invention the signal used for setting the fare indicator into and out of operative condition, is, when switched into the disengaged position, forcibly kept there for a certain time, that is long enough to enable the various mechanisms to go back into their initial or zero positions. With this method of operation only one manually operated member, viz. the signal, is required. The length of time for which the signal is positively held in the disengaged position is quite independent of the volition and skill of the driver, so that it cannot be influenced by him.

The operation of setting the apparatus to "cash" is also performed without a second manually operated member and with the aid of the said signal in such a way that it is impossible to "inadvertently" set the apparatus to "disengaged" without making a pause at "cash". Another feature of the invention consists in a sign-plate with a suitable inscription being disclosed to view by the operation of the signal when this latter is set to "cash". In an apparatus that is set into and out of operative condition by turning the signal in opposite directions the disclosure of the said sign-plate is only effected when the signal is turned in one of the two directions.

In accordance with the present invention abusive use of the cash position is precluded by means of one or more checking devices arranged to automatically check the operation of setting the apparatus to "cash". By means of a separate recording device the distances are recorded that are covered by the car while the fare indicator is set in its "cash" position. As the driver should never drive with his apparatus at "cash" the distances recorded by the said checking device will completely expose all such fraudulent acts. The time during which the apparatus was set at "cash" can also be checked and the driver can thus be prevented from acting contrary to the car owner's instructions to the effect that the apparatus should not be kept long in the "cash" position. The two said checking devices may both be provided together.

A constructional form of the invention is illustrated in the drawing in which only the back of a fare indicator and the parts to which the invention refers are shown.

Fig. 1 is a front view of the back wall and the parts mounted thereon in section on the line A—B of Fig. 6. The signal is at "disengaged" and it is assumed that a

period during which the signal was locked in the disengaged position has expired, so that the apparatus is ready to be set for service. Figs. 2 to 5 show sections taken on the line C—D of Fig. 6 with the mechanism of the fare indicator in different positions.

Figs. 2 and 3 show the parts by which the signal is locked in the "disengaged" position and by which it is controlled in other positions, but the parts for setting the apparatus to "cash" are omitted. Figs. 4 and 5 show the parts for setting the apparatus to "cash", the gear for locking and controlling the signal being omitted.

In Fig. 2 the parts of the apparatus are in the same position as in Fig. 1 so that the apparatus is at "disengaged" and ready to be set for service.

Fig. 3 shows the apparatus at "engaged".

Fig. 3a shows a detail of the signal locking mechanism.

Fig. 4 shows the apparatus at "disengaged" and ready to be set for service as in Fig. 2.

Fig. 5 shows the apparatus in its "cash" position.

Fig. 6 is a section of the apparatus taken on the line E—F of Fig. 1.

Fig. 7 is a section on the line E—F of Fig. 6 showing a view of the inner side of the back wall of the apparatus. Fig. 7 corresponds to Fig. 6 but is drawn on a reduced scale.

a is the back wall and b the casing of the fare indicator c, which bears a flag-like signal at its upper end, as shown in Fig. 7, is journalled in the back a.

It will be assumed that the setting of the fare indicator in its "engaged" and "disengaged" positions, and into the positions for recording the various rates or tariffs, is effected by turning the signal c, and that, when the signal c is turned upward (see Figs. 1, 2, 4 and 6) the apparatus is at "disengaged". It will be assumed further that the apparatus is set for service by turning the signal in the direction of the arrow I, (see Fig. 1) and that it is set into its "disengaged" position by turning the signal in the direction of the arrow II (see Fig. 5). To get the apparatus into its "disengaged" position the signal is turned in the direction of the arrow II (see Fig. 5) until it strikes against the fixed pin or stop h.

It is also assumed that the fare indicator is to be capable of being set for three rates or tariffs, and that when the signal is in the position shown in Fig. 3 the fare indicator is set for tariff No. I, while the signal positions shown by the lines II and III in Fig. 3 correspond to tariffs II and III.

Fixed on the shaft d of the signal c (see Fig. 6) are six disks, viz:

(1) a locking disk e. One part of the circumference of this disk has oblique teeth e' inclined in a counter clockwise direction and at other parts there are teeth e^2 inclined in the opposite direction and a notch e^3.

(2) a positioning disk f which operates to set the signal into the four above-mentioned positions. The positioning disk f is made in the form of a four-armed star-wheel and, in conjunction with a lever g pressed against it by a spring g' it turns the signal c into, and holds it in, any one of four definite positions. At its point of engagement with the disk f the lever g carries a roller g^2 of the same thickness as itself. The lever g embraces more than one half of the periphery of the roller g^2 so that the latter is securely journalled in the lever. By this arrangement special pivots or gudgeons for the roll g^2 may be dispensed with and space is thus saved. The lever g is almost as thick as the positioning disk f and has a little play between the disks e and i;

(3) the controlling disk i which has a projection k located in the same plane as itself and a forwardly extending annular projection l whose axis coincides with that of the disk itself, but whose diameter is somewhat smaller than that of the disk i;

A two-armed pawl or detent m has two teeth m^1 and m^2 either of which can be made to engage with the locking disk e. When the tooth m^1 engages with the locking disk (see Figs. 1, 2 and 4) a lowering of the signal c will result in the tooth m^1 coming into engagement with the teeth e^1 and thus preventing the partly lowered flag or signal from being raised again. Hence, if an operation of setting the apparatus for service has been commenced, it is not possible to restore the apparatus to its inoperative condition again without completing the said operation. At its left end the detent m carries a roll m^3 against which either one of two oblique surfaces n^1 or n^2 of a wedge-shaped part of a dog n is pulled by a spring n^3, according to the position of the detent m. When the detent m is in the position in which its tooth m^1 engages with the disk s (see Figs. 1, 2 and 4) the dog m will have its oblique surface n^1 pressed against the roll m^3 and it will tend to turn the detent m clockwise. When the position of the detent m is such that its tooth m^2 engages with the locking disk s (see Figs. 3 and 5) the oblique surface n^2 of the dog n will be pulled against the roll m^3, and t will tend to turn the detent m counterclockwise.

When the signal c is turned down into the position it is illustrated in Fig. 3, and in which the apparatus is set for service at tariff No. I, the projection k of the controlling disk i engages with a pin m^4 of the two-armed detent m and turns it out of the position shown in Figs. 1 and 2 into the position illustrated in Fig. 3. During this op-

eration the roll m^3 pushes the dog n aside and swings down into engagement with the oblique surface n^2 of the dog.

The signal c can be turned forward from position I to the positions II and III (Fig. 3), and to and fro between these three positions, without being detained by the detent m, because the tooth m^2 of the detent slides along the periphery of the disk i and the notch e^3, which the tooth m^2 enters, affords no hold for it. Rotation of the signal beyond the position III is prevented by a fixed stop pin o. It is thus seen that the apparatus can be set without hindrance to any position between the positions of tariffs Nos. I and III. But when the signal c is raised from an engaged position, as the "tariff I" position (see Fig. 3), for the purpose of being restored to the disengaged or inoperative position, the tooth m^2 of the detent m enters into engagement with the teeth e^2 of the locking disk e and prevents the partly raised signal o from being turned down again.

Another feature of the invention consists in the signal o when being raised to "disengaged," i. e. on its way from the "tariff I" (Fig. 3) to the "disengaged" position (Figs. 1, 2 and 4), being arranged to be detained in an intermediate position, the "cash" position. This "cash" position and the means for detaining the signal in it will be described in detail hereinafter, and at this place the operations that occur in restoring the apparatus to "disengaged" will first be described.

When the apparatus is set to "disengaged," i. e. when the signal c is completely raised, its rotation in one direction will be prevented by the stop h, and its rotation in the opposite direction is also prevented because of the engagement of the tooth m^2 of the detent m with a tooth e^2 of the locking disk e. It is thus seen that when the apparatus is set to "disengaged" it is locked so as to be prevented from being immediately reset for service. This locked condition of the apparatus must be maintained for a certain time so as to give the mechanism of the fare indicator sufficient time to return to its normal position, and especially to enable the disks or cylinders that serve to indicate the fare to be paid to regain their zero or initial positions. When this time has expired the apparatus must be capable of being reset for service. This requirement is met by the following means:

Mounted on a support (not shown) attached to the back of the apparatus is a going train p (see Figs. 2 and 3) which comprises a fly p^2, which, due to the gearing of the wheels of the going train (see Fig. 2), has to execute a large number of revolutions when a wheel p^1 is turned through a small angle. Fixed on the shaft of the wheel p^1 in a ratchet wheel p^3. A lever q is revolubly mounted on the shaft that carries the wheel p^1 and the ratchet wheel p^3. The lever q carries a pawl q^1 that engages with the ratchet wheel p^3. It is thus seen that the lever q can turn clockwise without carrying the ratchet wheel p^3 around with it. But when the lever q is turned counter-clockwise by a spring q^2 the ratchet wheel p^3 is carried round by the pawl q^1 and the going train is driven at a speed that is regulated by the fly p^2.

The lever q has a curved, pointed projection q^3, which, when the parts are in the position shown in Figs. 2 and 3, is covered by a plate q^4 pivotally attached to the lever q and adapted to be swung round by a spring. The lever q is acted upon by a spring q^2 so that its curved projection q^3 presses against the annular projection l of the controlling disk i (see Fig. 3). When the signal c is raised, and the disk i with its annular projection l is thus turned, a perforation l^1 in the annular projection is brought opposite to the curved projection q^3 and the cover-plate q^4. The curved projection q^3 and the cover-plate q^4 cannot enter into the perforation l^1 until the right-hand edge of the perforation l^1 has moved past the right corner of the end of the cover-plate q^4. But the moment this happens the lever q can be turned by the spring q^2. The lever q is then swung around into the position shown in Fig. 2 in which the curved projection q^3 and the cover-plate q^4 have completely entered the perforation l^1 in the annular projection l. A definite interval of time is required for swinging round the lever q because the pawl q^1 attached to the latter carries the ratchet wheel p^3 around with it and thus drives the going train and the fly p^2 by which the latter is governed. The time required for overcoming the resistance offered by the going train and fly p^2 is made such as to enable the mechanism of the apparatus to return without fail to its normal or zero position. When the lever q is swung round into the position shown in Fig. 2 the two-armed detent m is shifted from the position shown in Figs. 3 and 5 into the position represented in Figs. 2 and 4. This reversal of the detent m is performed by the right end of the lever q, which carries the pin m^4 and the left arm of the detent m upward when the lever q is swung round as described. It is thus seen that the tooth m^2 of the detent m is moved away from the locking disc e while the tooth m^1 is moved into engagement with the same. It follows that, when the time required for swinging round the lever q has expired, the apparatus can be again set for service, i. e. the signal can be lowered again from the raised position shown in Fig. 2 into the position in which it is represented in Fig. 3. During this lower-

ing of the signal the right-hand edge of the perforation l^1 of the ring-shaped projection l turns the cover-plate q^4 aside and the lever q is then lifted by the right oblique edge of the projection q^3 until this projection q^3 is restored to the position in which its point contacts with the periphery of the annular projection l of the controlling disk i (Fig. 3). The lever q then remains in this position until the next operation of setting the apparatus to "disengaged" occurs.

It is thus seen that the devices heretofore described operate to reverse the two-armed detent m. As explained above, just before the apparatus is completely set for service, i. e. just before the signal is set into its horizontal position, the two-armed detent m is turned into the position shown in Fig. 3 in which the teeth e^2 of the locking disk (which permit of the signal being lifted, but prevent it from being lowered again after it has been partly raised) can become effective, and after the apparatus has been set into its disengaged position in which the raised signal is locked against rotation in the one direction by the stop h, and prevented from rotating in the other direction by the tooth m^2, the detent m is thrown round into the position that it is shown in Figs. 2 and 4, and in which the teeth e^1 (which permit of the lowering of the signal—i. e. the setting for service of the apparatus—and prevent the signal from being raised once it has been partly lowered) become effective. Due to the action of the going train p the reversal of the detent m just alluded to (and hence the release of the signal c) takes place so slowly that the operation of restoring the recording devices of the mechanism of the fare indicator to normal will be completed before the signal can be lowered again. The reversing gear cannot be affected in any way by the driver. The driver has only a single member, viz. the signal, to attend to, and he need not perform any manipulations except raising the signal to set the apparatus in its disengaged position and lowering the signal to set the apparatus for service. If, after setting the apparatus to "disengaged", the driver should attempt to lower the signal again before the time required for reversing the detent m has expired, the tooth m^2 will engage with a tooth e^2 of the locking disk. The detent m will be held thereby in the position in which it happens to be at that moment, because the spring q^2 is not strong enough to overcome the considerable friction that then arises by the teeth m^2 and s^2. The reversal of the position of the detent m will therefore not be completed until the signal is let go by the driver. Hence, when the signal is lowered prematurely, the time that it is locked will not be shortened but prolonged.

The means by which the apparatus is set to "cash" and by which the "cash" position is indicated are as follows:

Arranged at the right of the locking disk e is a pivoted dog r. A spring r^1 tends to press the dog r against the locking disk e. The dog r is, however, normally kept out of contact with e, this being effected by a small pin r^2 on the dog abutting against a ledge of the right end of a pivoted two-armed catch s. A spring tends to rotate the catch s counter-clockwise, but the latter is prevented by the pin r^2 from turning beyond its dog-detaining position shown in Figs. 1, 2, 3 and 4. Pivotally attached to the controlling disk i is a tappet t which is normally pulled by a spring t^1 into the position shown in Figs. 2 and 5 in which it rests against a stop. The tappet t lies in the same plane as the catch s.

When the signal c is lowered from the position in which it is represented in Fig. 2 into the position of Fig. 3, the tappet t strikes against the left arm of the catch s and is pushed round counter-clockwise against the action of the spring t^1 so that it can move past the catch s. When it has passed the catch s the tappet t is pulled forward again up to its front stop.

But when the signal c is raised from the horizontal position shown in Fig. 3 the tappet t will, when the signal has been turned through about 45°, strike against the left arm of the catch s and turn it counter-clockwise so that the pin r^2 will lose the support afforded by the ledge of the catch s, and the dog r is allowed to yield to the action of the spring r^1. On the signal c now being raised a little further the dog r enters the notch e^3 in the locking disk s (see Fig. 5) and the lower oblique surface of the notch e^3 will strike against the lower end of the dog r and tend to rotate the dog clockwise. But as the pivots of the disk e and the dog r are fixed, further upward movement of the end of the dog r will be prevented and this will also prevent any further raising of the signal. It is therefore impossible to "inadvertently" move the signal past this position, (which is the "cash" position of the apparatus) by turning it too rapidly or violently. When the "cash" position is reached the tappet t will have passed the left arm of the catch s.

In order to be able to raise the signal c any further the driver must now first let it go again, and when he does this the positioning device, that consists of the star-wheel f and the lever g turns the signal c back again through a certain angle. This backward rotation of the signal c is stopped when the next tooth e^2 ahead of the tooth m^2 of the detent m strikes against the latter tooth m^2. During this reversed movement the tappet t remains above the left arm of the catch s. The slight lowering of the signal c by the positioning device results in the dog r being lifted out of the notch e^3 again by the ob-

lique contacting surface of the latter and in the dog r being again locked in its inoperative position by the right arm of the catch s which is turned counter-clockwise by its spring. When the signal c is now raised from the position shown in Fig. 5 into its vertical position the locked condition of the dog r is not affected in any way.

It is thus seen that when the flag or signal is raised the dog r is first released so as to prevent the signal from being rotated upward beyond the "cash" position. When the signal is then let go the dog r is restored to, and relocked, in its normal or inoperative position so as to enable the signal to be fully raised. When the signal is lowered the dog r is not affected. The operation of raising the signal into the "cash" position has the affect of causing a special "cash" sign-plate u (see Figs. 4, 5 and 7) to drop into view (see Figs. 5 and 7); when the signal c is fully raised this sign-plate is caused to disappear again (see Fig. 4). When the signal c is lowered the sign plate is not affected. The means for controlling the "cash" sign-plate u are as follows:

The sign-plate u, which is preferably colored so as to be conspicuous and bears an appropriate inscription such as "End of trip. Please pay", is pivotally attached to the back of the apparatus. An arm v is rigidly fixed to the sign-plate u (see Figs. 4 and 5). A spring v^1 attached to the arm v tends to turn the sign plate u out of the position shown in Fig. 4, in which it is covered by the front b^1 of the casing b, into the position shown in Fig. 5. The sign-plate u is usually locked in its normal position, in which it is represented in Fig. 4, and this is accomplished by a locking member in the shape of a prop w whose upper end props up a projection v^2 (see Fig. 4) that juts out from the arm v. Pivotally mounted on the prop w is a small two-armed tappet x whose right arm is normally turned by a spring into the position shown in Fig. 4 in which it abuts against a stop z. The left arm of the tappet x then lies in the path of a pin y fixed on the controlling disk i.

When the signal c is lowered from the vertical position in which it is shown in Fig. 4 into the position represented in Fig. 3 the pin y turns the left arm of the tappet x aside and brushes past it without affecting the prop w. But when the signal c is turned up from its horizontal position the pin y strikes against the lower oblique surface of the left arm of the tappet x and pushes the prop w aside, since the tappet x is prevented from rotating by the pin z. The top end of the prop w being now moved away from the projection v^2 the sign-plate u will have lost its support and it will be turned by the spring v^1 into the position shown in Figs. 5 and 7. The projection v^2 will move the prop w clockwise still further than it was moved by the pin y, the ultimate position of the prop w being shown in Fig. 5. It is thus seen that when the apparatus is set to "cash", the "cash" sign-plate is automatically caused to drop into view. This sign-plate then covers the heading, as for example the word "Tariff", above the tariff indicator (see Fig. 7).

On the signal c now being let go by the driver in the manner described above so as to enable it to be fully raised, and on its being thereupon fully raised into the position shown in Fig. 4, the pin y that engages with the arm y will raise the sign-plate u with its arm v and restore it to the position shown in Fig. 4 in which it will again be locked by the prop w that is turned counter-clockwise by a spring.

The means for precluding abusive use of the "cash" position are in evidence in Fig. 7.

The signal is shown in the position it occupies when the apparatus is set at "cash".

From the driving shaft 4 of the distance mechanism motion is transmitted to the counting train 10 in a known manner, as for example through a cam 5, an arm 6, a pawl 7, a ratchet 8, a worm 9 and a wheel 11 on the shaft of the counting train 10 so that the distances covered by the car are recorded and displayed by the numeral disks.

A novel feature in accordance with the invention consists in providing a second counting train 12 which, when the apparatus is set to "cash," is coupled to the counting train 10.

In the arrangement shown in the drawing a wheel 13, arranged to revolve but not to move longitudinally relatively to the shaft of the second counting train 12, is driven by the wheel 11. The wheel 13 is arranged to be firmly fixed on the shaft of the counting train 12 by a clutch 14 adapted to move longitudinally but not to rotate on the said shaft. When the fare recorder is set to "cash" the clutch 14 is thrown into gear in the manner illustrated by means of a lever 15 acted upon by a cam 16 mounted upon the shaft 2 of the signal or flag.

It follows that the counting train 12 directly records the sum of all the distances covered with fare recorder set at "cash" by the driver. If the apparatus is manipulated in the proper manner no change of the figures displayed by the counting train 12 will take place, even after the car has been used for weeks or months.

The operation of checking the total time that the apparatus was set to "cash" is performed as follows: In the exemplified form of construction it is assumed that a counting train 17 is provided for checking the total time during which the fare indicator was set for service. A clockwork, of which the balance wheel 30 only is shown, acts

through any preferred means (not shown) on a wheel 18 which, by means of a worm 18, drives a wheel 20 on the shaft of the counting train 17. When the fare recorder is set to "cash" a second counting train 21 is coupled with the counting train 17. This coupling operation can be carried out as follows: The wheel 20 meshes with a wheel 22 arranged to rotate, but not to move longitudinally, on the shaft of the counting train 21, and the wheel 22 can be fixed on the said shaft by a clutch 24 arranged to move longitudinally, but not to turn, on the shaft of 21. The clutch 24 is thrown into gear when the apparatus is set to "cash" by means of an arm 25 and a cam 26 mounted on the shaft *d* of the signal *c*. With this arrangement the clockwork must not already be arrested on the apparatus being set to "cash" but only on its being set to "disengaged." The arresting function may be performed by a cam 27 which, when the signal is thrown into the "0" position, causes an arresting member in the form of a spring 29 to engage with the balance wheel 30 of the apparatus. As the clockwork in the novel apparatus is not arrested as in ordinary apparatus when it is set to "cash", but in spite of this the fare must not be increased as the time passes, the act of setting the apparatus to "cash" must be made to sever the connection between the clockwork and the mechanism for advancing the fare recorder and fare checking device. This is effected at any suitable point by any preferred means (not shown).

The counting train 21 serves to record the total time during which the fare indicator was set at "cash."

The numerals of the counting trains 10, 12, 17 and 21 may be arranged to be read through sight holes in the back wall of the apparatus.

I claim:—

1. In a fare indicator, a manually-operated signal adapted to be set into an "engaged" and "disengaged" position, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, and means for automatically unlocking the signal after the said lock has been operative for a certain time.

2. In a fare indicator, a manually-operated signal adapted to be set into an "engaged" and "disengaged" position, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, a movable member for holding the lock in its locking position, and a going train for rendering the said member inoperative after it has held the lock for a certain time.

3. In a fare indicator with an "engaged" and a "disengaged" position, a manually-operated signal which is adapted to be raised into the "disengaged" position and lowered into the "engaged" position, a primary locking means for preventing the signal, when raised towards its "disengaged" position, from being immediately lowered again, a secondary locking means for preventing the signal, when lowered towards its "engaged" position, from being immediately raised again, and a device for automatically putting the primary locking means out of gear and for putting the secondary locking means into gear only when a certain time after the raising of the signal has elapsed.

4. In a fare indicator with an "engaged" and a "disengaged" position, a manually-operated pivoted signal adapted to be rotated into the "engaged" and "disengaged" positions, a locking wheel mounted on the signal shaft and provided with groups of ratchet teeth that are inclined in different directions, and extend around parts of the circumference of the locking wheel, a two-armed detent which engages with one said group of teeth while the said signal is being rotated into its disengaged position, a reversing member for throwing the said detent into engagement with a second one of the said groups of teeth, and a retarding mechanism for operating the reversing member when a certain time after the signal has been turned into its disengaged position has elapsed.

5. In a fare indicator with an "engaged" and a "disengaged" position, a manually-operated pivoted signal adapted to be rotated in the "engaged" and "disengaged" positions, a locking wheel mounted on the signal shaft and provided with groups of ratchet teeth that are inclined in different directions and extend around parts of the circumference of the locking wheel, a two-armed detent with a normal and off-normal position and adapted to engage with one said group of teeth while it is in its off-normal position and with a second one of the said groups of teeth when it is in its normal position, a positively acting member for throwing the detent into its off-normal position shortly before the operation of setting the signal into its engaged position is completed, a reversing member for throwing the said detent into its normal position, and a retarding mechanism for operating the reversing member when a certain time after the signal has been turned into its disengaged position has elapsed.

6. In a fare-indicator with an "engaged" and a "disengaged" position, a manually-operated pivoted signal adapted to be rotated in the "engaged" and "disengaged" positions, a locking wheel mounted on the signal shaft and provided with groups of ratchet teeth that are inclined in different directions and extend around parts of the circumference of the locking wheel, a two-armed de-

tent with a normal and off-normal position and adapted to engage with one said group of teeth while it is in its off-normal position and with a second one of the said groups of teeth when it is in its normal position, a positively acting member for throwing the detent into its off-normal position shortly before the operation of setting the signal into its engaged position is completed, a pivoted arm for throwing the said detent into its normal position, a spring for turning the said arm into a position in which it throws the detent into its normal position, means for tensioning the said spring when the signal is turned out of its "disengaged" position, means for preventing the arm from being moved by the said spring while the signal is in its "disengaged" position, a going train, and means for coupling the said arm to the going train and for releasing the arm to permit its movement by the said spring when the signal is set into its disengaged position.

7. In a fare indicator, a manually-operated signal adapted to be set into an "engaged" and "disengaged" position, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, a casing with a sight-hole therein, a movable sign-plate, means for holding the sign-plate in a normal position, and means connected with the said signal for bringing the sign-plate into an off-normal position behind the sight-hole.

8. In a fare indicator, a manually-operated signal adapted to be set into an "engaged" and "disengaged" position, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, a casing with a sight-hole therein, a movable sign-plate, a locking arm for holding the sign-plate in a normal position, an actuating member connected to the said signal, a member on the said locking arm adapted to cooperate with the actuating member and to give way to it when the signal is moved into its engaged position, and a stop for preventing the said member from giving way to the actuating member when the signal is moved towards its disengaged position into an intermediate position, whereby the said locking arm is moved to release the said sign-plate.

9. In a fare indicator, a manually-operated signal adapted to be set into an "operative," an "intermediate" and a "disengaged" position, a lock for locking the signal when it is shifted from the "operative" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, and means for enforcing a stoppage of the signal in the intermediate position when it is moved from the operative into its disengaged position.

10. In a fare indicator, a manually-operated signal adapted to set into an "operative", an "intermediate" and a "disengaged" position, a lock for locking the signal when it is shifted from the "operative" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, a notched disk connected to the said signal, a spring-pressed stopping member adapted to enter the notch in the said disk, a catch for normally holding the stopping member out of engagement with the said notch, a tappet adapted to be carried round by the said signal, and to trip the said catch when the signal, while being moved towards its disengaged position, reaches a certain point, and is thereafter moved a slight distance in the opposite direction, and means for restoring the catch and the stopping member to their normal positions when the signal is again moved forward into the disengaged position.

11. In a fare indicator with an "engaged", "disengaged", and an intermediate position, a manually-operated signal adapted to be set into positions corresponding to the said "engaged", "disengaged" and "intermediate" positions, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, and a checking device for indicating that the signal has been moved into and kept in, the intermediate position.

12. In a vehicle, a fare indicator with an "engaged", "disengaged" and an "intermediate" position, a manually-operated signal adapted to be set into positions corresponding to said "engaged", "disengaged" and "intermediate" positions, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, a shaft whose amount of motion corresponds to the distance covered by the said vehicle, a counting train, means for sometimes transmitting motion from the said shaft to the said counting train, and means for making the motion-transmitting means operative when the signal is moved into the said intermediate position.

13. In a fare indicator with an "engaged", "disengaged", and an "intermediate" position, a manually-operated signal adapted to be set into positions corresponding to the said "engaged", "disengaged" and "inter-

mediate" positions, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, a counting train, a going train, means for transmitting motion from the going train to the counting train, and means for rendering the motion-transmitting means operative when the signal is moved into the said intermediate position.

14. In a vehicle, a fare indicator with an "engaged", "disengaged" and "intermediate" position, a manually-operated signal adapted to be set into positions corresponding to the said "engaged", "disengaged" and "intermediate" positions, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, a shaft whose amount of motion corresponds to the distance covered by the said vehicle, a primary counting train, means for transmitting motion from the said shaft to the said primary counting train, a secondary counting train, and means for coupling the secondary counting train to the primary counting train when the said signal is moved into the said intermediate position.

15. In a fare indicator with an "engaged", "disengaged", and an "intermediate" position, a manually-operated signal adapted to be set into positions corresponding to the said "engaged", "disengaged" and "intermediate" positions, a lock for locking the signal when it is shifted from the "engaged" to the "disengaged" position, means for automatically unlocking the signal after the said lock has been operative for a certain time, a primary time-indicating counting train, a going train, means for starting the going train when the signal is moved out of the disengaged position, a permanent coupling between the going train and the said primary time indicating counting train, a secondary time-indicating counting train, and means for coupling the secondary counting train to the primary counting train when the said signal is moved into the intermediate position.

In testimony whereof I have signed this specification in the presence of two witnesses.

FRIEDRICH WILHELM GUSTAV BRUHN.

Witnesses:

E. H. GERMAN,

CHARLES D. TURRELL.

SECTION 9

Oct. 26, 1926. 1,604,382

F. W. G. BRUHN

LOCKING MECHANISM FOR TAXIMETER CONTROL LEVERS

Filed March 21, 1925 3 Sheets-Sheet 1

Fig. 1.

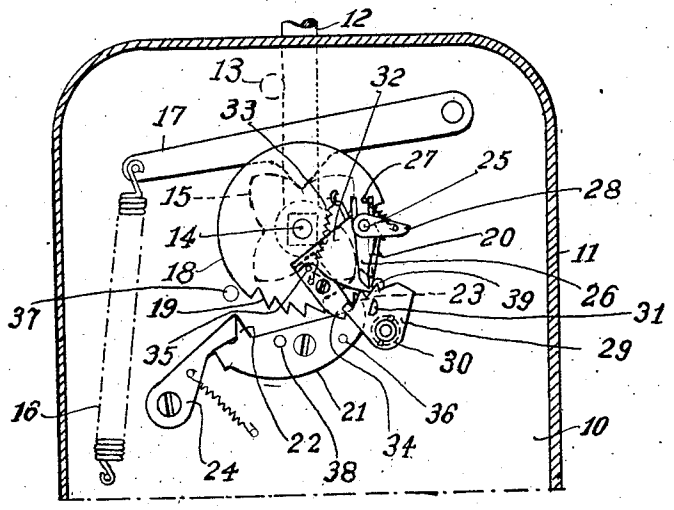
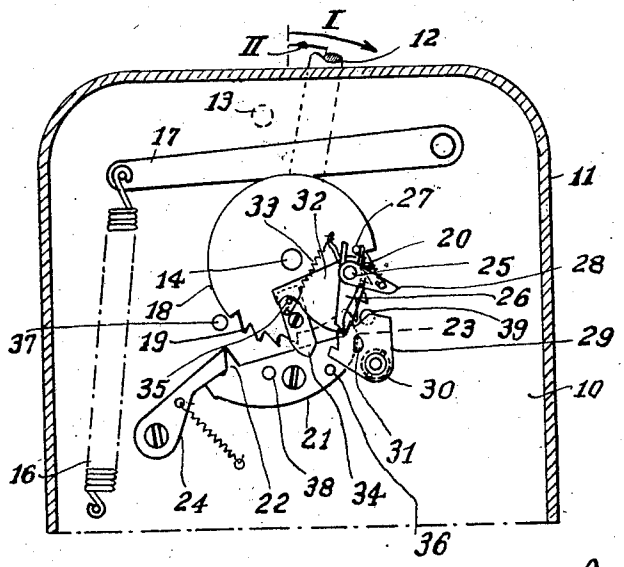


Fig. 2.



Inventor,
Friedrich W. G. Bruhn,
By Henry Orth & Co Atty.

Oct. 26, 1926. 1,604,382

F. W. G. BRUHN

LOCKING MECHANISM FOR TAXIMETER CONTROL LEVERS

Filed March 21, 1925 3 Sheets-Sheet 2

Fig. 3.

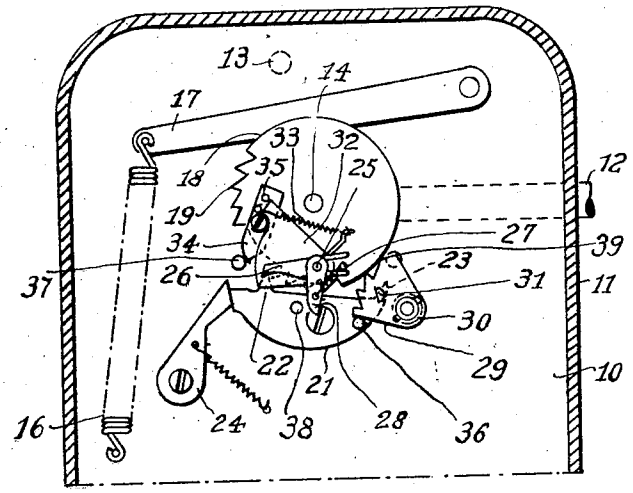
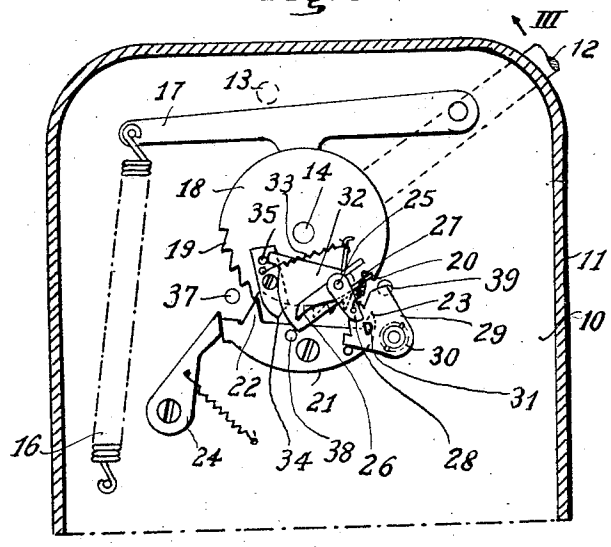


Fig. 4.



Inventor.
Friedrich W. G. Bruhn,
By Cleary & Orth
Atty.

Oct. 26, 1926. 1,604,382

F. W. G. BRUHN

LOCKING MECHANISM FOR TAXIMETER CONTROL LEVERS

Filed March 21, 1925 3 Sheets-Sheet 3

Fig. 5.

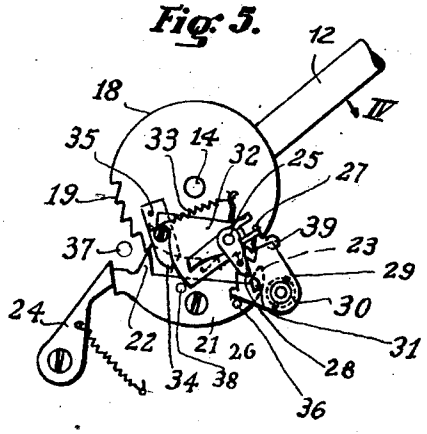


Fig. 6.

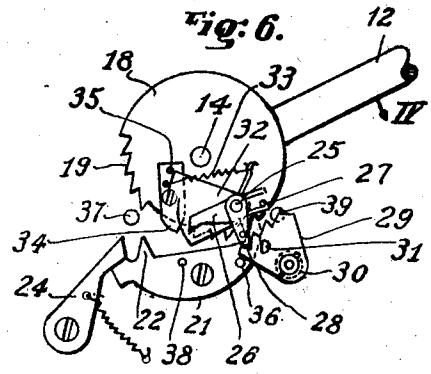


Fig. 9.

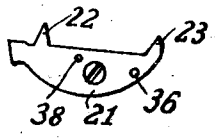


Fig. 7.

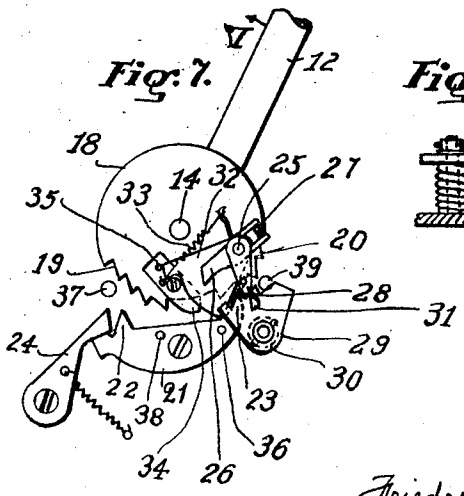
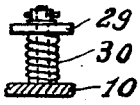


Fig. 8.



Inventor
Friedrich W. G. Bruhn,
By Atty.

Patented Oct. 26, 1926. 1,604,382

UNITED STATES PATENT OFFICE.

FRIEDRICH WILHELM GUSTAV BRUHN, OF BERLIN-WILMERSDORF, GERMANY.

LOCKING MECHANISM FOR TAXIMETER CONTROL LEVERS.

Application filed March 21, 1925, Serial No. 17,265, and in Germany March 24, 1924.

This invention relates to a locking mechanism for the control lever of a taximeter, adapted to prevent cheating on the part of the vehicle driver, especially to prevent the swinging back of the indicator after an initial forward movement of the indicator has been carried out, and furthermore to prevent the driver from throwing quickly "by mistake" the indicator from its engaged position through the "cash" position into its disengaged position, and, finally, to prevent the driver from suddenly moving the indicator from the engaged position to the disengaged position and thence, just as suddenly, back into the engaged position.

The invention is illustrated by way of example in the drawing in which only the back wall of the taximeter is shown together with the parts that cooperate with the rotatable indicator when it is turned into its different positions. The mechanisms by which the distance covered by the vehicle and the time taken for the drives is measured for the automatic calculation, indication and checking of the fares to be paid and the mechanisms for setting the taximeter for various tariffs and for setting the taximeter to its "cash" position, form no part of the invention and are therefore omitted from the drawing.

Fig. 1 shows the back of the taximeter with the parts in the disengaged position.

In Fig. 2 the parts are shown with the rotatable indicator commencing its downward rotary movement as indicated by the arrow I. This downward rotation of the indicator cannot be continued beyond a certain point until the rotatable signal has been swung back in the direction of the arrow II.

In Fig. 3 the rotatable signal is shown swung down into its horizontal position or engaged position (tariff I). The rotation or setting of the taximeter for tariffs II and III and the return movements from these positions can be carried out in any desired manner and are not illustrated.

In Fig. 4 the rotatable signal has been turned back, i. e. has been turned in the direction of the arrow III into the "cash" position where, for a time, it is locked.

In Fig. 5 the rotatable signal has been turned down again, that is has been turned in the direction of the arrow IV a short distance.

After a short rotary motion in the direction of the arrow IV the reversing of the double-acting locking pawl is accomplished as illustrated in Fig. 6.

In Fig. 7 the parts are in a position in which they enable the rotatable indicator to be turned upwards, that is in the direction of the arrow V, completely back into its upright position in which all parts assume the positions shown in Fig. 1.

Fig. 8 is a side view of a toothed sector pivoted on the back wall of the taximeter which acts as a member for reversing the double-acting locking pawl or detent.

Fig. 9 is a side view of the double-acting locking pawl or rocking detent.

In Figs. 1–4 there are shown a back wall 10 and a casing 11 of a taximeter according to the invention. Journalled in the back wall 10 is a manually rotatable indicator 12 which, when completely raised into its vertical position as shown, strikes against a stop 13. Fixed on the shaft 14 of the indicator is a four-lobed star wheel or cam 15, which, together with a lever 17 that is pressed down against the cam by a spring 16, forms a setting or centering mechanism that effects the proper setting of the indicator in any of the four positions: disengaged, tariff I, tariff II, tariff III. Also fixed on the shaft 14 in a known manner is a locking disk 18 which has, on a part of its periphery, a set of locking teeth 19 and on another part of its periphery a set of oppositely directed locking teeth 20. Pivotally attached to the back wall 10 is a rocking detent 21 which either engages with the teeth 19 by its tooth 22 or with the other set of teeth 20 on the disk 18 by its tooth 23. A spring dog 24 is arranged to co-operate with the rocking detent 21 in such a manner that when the latter is rocked beyond a certain position in the one direction the dog 24 tends to keep the tooth 23 of the detent 21 in engagement with the one set of locking teeth 20 of the disk 18 and when the rocking detent 21 is oscillated beyond a certain position in the opposite direction the dog 24 tends to keep the tooth 22 in engagement with the other set of teeth 19 of the disk 18.

Arranged to rotate on one and the same pin or pivot 25 on the disk 18 are the following parts:

(1) The stepping pawl 26 which has a rearwardly extending fork. Between the prongs of the fork is a pin 27 that is fixed to the disk 18. A spring tends to turn the stepping pawl 26 so that the right hand prong of the fork lies against the pin 27. Fixed to the stepping pawl 26 is an arm 28. The stepping pawl 26 lies in the plane of a toothed sector 29 that is pivoted on the back wall 10. When the manually rotatable indicator is turned downward the stepping pawl 26 engages with a tooth of the sector-shaped ratchet 29 and steps it around. Cooperating with the ratchet 29 is a strong friction spring 30 (see Fig. 8) which, although it does not prevent the ratchet from being stepped around, holds it in any position into which it is forcibly turned. Attached to the ratchet 29 is a pin 31 which lies in the plane of the arm 28. The mechanisms described in this paragraph are for the purpose of reversing the rocking detent in one direction when the rotatable indicator is oscillated to and fro to accomplish a downward rotation of the same through a considerable angle.

(2) Also pivoted on the pin 25 is a sector-shaped reversing member 32 whose function it is to throw back the rocking detent 21 into the position shown in Figs. 1 and 2 after it has been reversed by the ratchet 29 into the position shown in Figs. 3, 4 and 5. A spring 33 tends to turn the sector-shaped reversing member 32 counterclockwise, but this is prevented by a pin 35 on the arm 34 which keeps the reversing member 32 in its raised position shown in Figs. 1 and 2. The reversing member 32 operates when the manually rotated indicator is oscillated to and fro prior to its being swung upward through a considerable angle.

When the taximeter is in its disengaged position all parts are in the position shown in Fig. 1. The tooth 23 of the rocking detent 21 engages the disk-shaped locking member 18 so that the indicator 12 can only be turned through a small angle in the direction of the arrow I into the position shown in Fig. 2, for when this position is reached the tooth 23 of the rocking detent will strike against a tooth 20 of the locking disk 18. By this short rotary movement of the indicator 12 the stepping pawl 26 is caused to step the ratchet 29 around one step. The indicator must now be rotated back in the direction of the arrow II so as to cause the stepping pawl 26 to seize the next tooth of the ratchet 29. When the indicator is now rotated clockwise again, that is in the direction of the arrow I, the ratchet 29 is turned another step so that it strikes against the pin 36 on the rocking detent 21, thus causing the latter to rock into its reverse position in which its tooth 22 engages with the tooth 19. The pawl and ratchet 29 may also be arranged so that the indicator 12 has to be oscillated back and forth several times before the rocking detent 21 is tilted over into its reverse position.

When the rocking detent 21 has been reversed as described the indicator can be swung down into its engaged position, that is the position shown in Fig. 3. When the indicator 12 is thus rotated the tooth 22 rides over the teeth 19 and prevents the indicator from being raised again during its transition into the horizontal position shown in Fig. 3.

Just before the indicator reaches the horizontal position shown in Fig. 3 a catch 34 strikes against a pin 37 fixed to the back wall 10. When the indicator is turned completely into its horizontal position (Fig. 3) the catch 34 is rotated around its pivot sufficiently to move the holding pin 35 out of the path of the extension at the left top corner of the sector-shaped reversing member 32 so that this latter can be turned through a small angle by the action of the spring 33. The indicator 12 can now be swung further around into the tariff II position or into the tariff III position and to and fro between these positions at will.

Assuming that the taximeter is now to be set to its "cash" and "disengaged" positions, the indicator is swung in the direction of the arrow III into the position shown in Fig. 4. In this position a cam (not shown) fixed to the shaft 14 sets the taximeter by means of suitable intermediate mechanisms to its "cash" position. The indicator 12 cannot however be swung in the direction of the arrow III beyond this position because the tooth 22 of the rocking detent engages with one of the locking teeth 19 (see Fig. 4). But during the movement of the indicator into the position shown in Fig. 4, the sector-shaped reversing member 32 will have dropped behind the pin 38 on the rocking detent 21. When the indicator is now turned through a short angle in the direction of the arrow IV (see Fig. 5) into the position shown in Fig. 6 the sector-shaped reversing member 32 pushes the pin 38 downward and thus tilts the rocking detent 21 back into its former position as shown in Fig. 6, in which its tooth 23 engages with the teeth 20 of the locking disk 18. Further downward rotation of the indicator 12, that is rotation in the direction of the arrow IV, is thus prevented. But the indicator can now be turned up in the direction of the arrow V, see Fig. 7 into the disengaged position during which motion, on account of the engagement of the tooth 23 with the tooth 20 a downward rotation of the partly raised indicator is prevented. When the indicator is

thus turned upward the arm 28 strikes against the pin 31 and thereby rotates the sector-shaped ratchet 29 back into its initial position shown in Fig. 1. Just before the indicator reaches its vertical position the sector-shaped reversing member 32 strikes against a pin 39 fixed in the wall 10 and is thus rotated clockwise into a position in which it is held by the pin 35 of the catch 34.

From the foregoing description and the drawing it is seen that all the requirements and advantages set forth in the opening statement of the specification are met and obtained by simple and reliable means without the aid of a separate clockwork.

I claim:—

1. In a device of the kind described, a manually rotatable indicator for indicating various conditions of the device, a rotary shaft on which said indicator is fixed, a locking member for locking said indicator, said locking member being fixed on said shaft so as to rotate with same and comprising two sets of oppositely operative locking teeth, a pivot, a rocking detent mounted on said pivot and provided with teeth at opposite sides of said pivot, the one tooth co-operating with one said set of teeth and the other tooth co-operating with the other said set of teeth, a spring tilting detent for holding the one or the other tooth of the rocking detent in engagement with the one or other set of teeth of the rotatable locking member, a pawl pivoted on the locking member, a rotary ratchet pivoted adjacent said locking member and having teeth engageable by said pawl, and means for throwing the locking detent out of engagement with the one said set of teeth on the locking member and thus releasing the manually rotatable indicator for a full downward rocking movement after said rotary ratchet has been rotated a plurality of steps by said pawl.

2. In a device of the kind described, a manually rotatable indicator for indicating various conditions of the device, a rotary shaft on which said indicator is fixed, a locking member for locking said indicator, said locking member being fixed on said shaft so as to rotate with same and comprising two sets of oppositely operative locking teeth, a pivot, a rocking detent mounted on said pivot and provided with teeth at opposite sides of said pivot, the one tooth cooperating with one said set of teeth and the other tooth co-operating with the other said set of teeth, a spring tilting detent for holding the one or the other tooth of the rocking detent in engagement with the one or other set of teeth of the rotatable locking member, a pawl pivoted on the locking member, a rotary ratchet pivoted adjacent said locking member and having teeth engageable by said pawl, a friction producing spring for keeping the rotary ratchet in any position into which it is set by said pawl, and means for throwing the locking detent out of engagement with the one said set of teeth on the locking member and thus releasing the manually rotatable indicator for a full downward rocking movement after said rotary ratchet has been rotated a plurality of steps by said pawl.

3. In a device of the kind described, a manually rotatable indicator for indicating various conditions of the device, a rotary shaft on which said indicator is fixed, a locking member for locking said indicator, said locking member being fixed on said shaft so as to rotate with same and comprising two sets of oppositely operative locking teeth, a pivot, a rocking detent mounted on said pivot and provided with teeth at opposite sides of said pivot, the one tooth co-operating with one said set of teeth and the other tooth co-operating with the other said set of teeth, a spring tilting detent for holding the one or the other tooth of the rocking detent in engagement with the one or other set of teeth of the rotatable locking member, a pawl pivoted on the locking member, a rotary ratchet pivoted adjacent said locking member and having teeth engageable by said pawl, means for throwing the locking detent out of engagement with the one said set of teeth on the locking member and thus releasing the manually rotatable indicator for a full downward rocking movement after said rotary ratchet has been rotated a plurality of steps by said pawl, and an arm fixed to said pawl for restoring the rotary ratchet to its normal position when the manually rotatable indicator is swung back into its initial position.

4. In a device of the kind described, a manually rotatable indicator adapted to be swung from an initial position first into an "engaged" position and then back into a "cash" position, a rotary shaft on which said indicator is fixed, a locking member for locking said indicator, said locking member comprising two sets of oppositely operative locking teeth, a pivot, a rocking detent mounted on said pivot and provided with two teeth at opposite sides of said pivot, the one tooth co-operating with one said set of teeth and the other tooth co-operating with the other said set of teeth, a spring tilting detent for holding the one or other tooth of the rocking detent in engagement with the one or other set of teeth of the rotatable locking member, a pawl carried with said locking member, means operated by said pawl for throwing the locking detent from engagement with one said set of teeth into engagement with the other set of teeth of the locking member when the indicator is swung into its "engaged" position and for thus preventing the indicator from being swung back beyond its "cash" position, a

reversing member pivoted on the locking member so as to rotate therewith, a spring tending to rotate the reversing member, a catch pivoted on the locking member for normally holding the reversing member against rotation by said spring, means for releasing the reversing member from said catch when the indicator has been swung completely down, and means for restoring the reversing member into engagement with said catch when the indicator is swung back into its initial position.

In testimony whereof I affix my signature.

FRIEDRICH WILHELM GUSTAV BRUHN.

HACKNEYMAN.COM™