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FLAG LOCKING MECHANISM FOR TAXIMETERS

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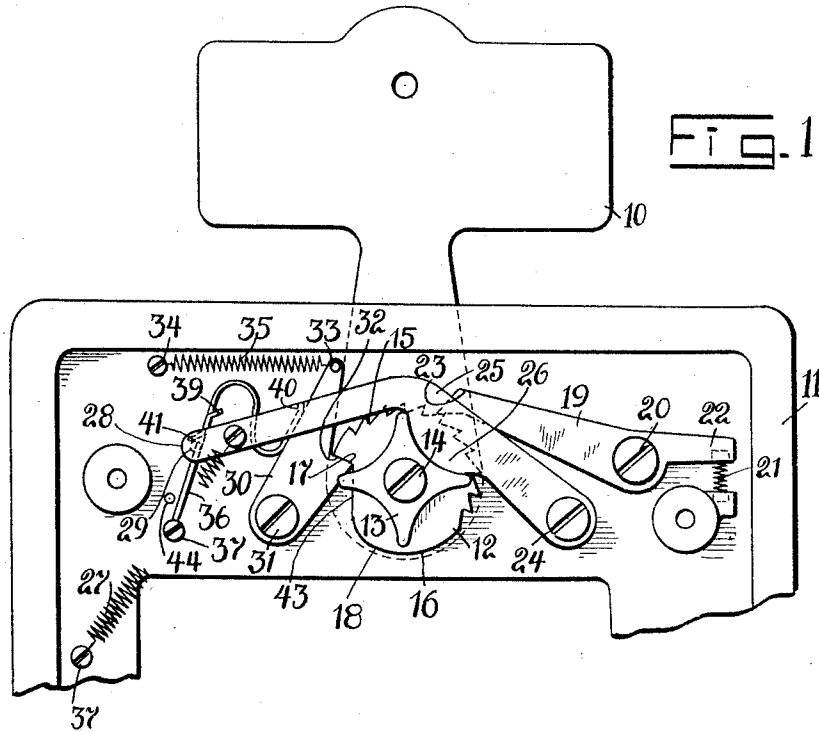


FIG. 2.

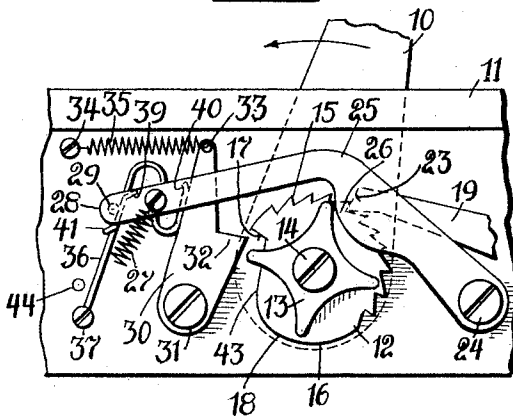
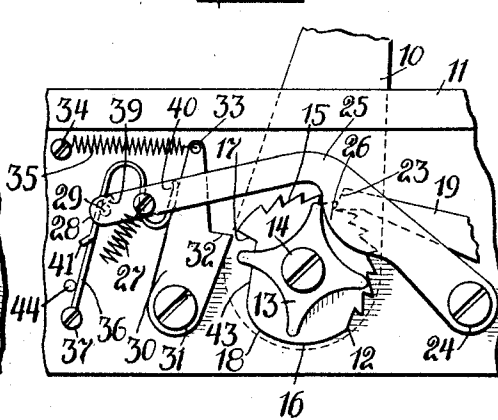
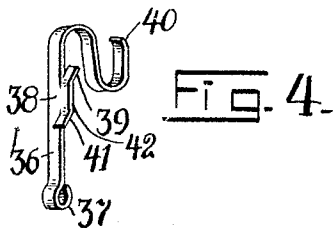


FIG. 3.



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FLAG LOCKING MECHANISM FOR TAXIMETERS

Substitute for application Serial No. 159,628, filed January 7, 1927. This application filed December 7, 1931. Serial No. 579,512.

This application is the same as a previous application, Serial No. 159,628, filed January 7, 1927.

This invention relates to devices for locking the flag and the flag shaft of taximeters in the "vacant" or "for hire" positions thereof, and contemplates the provision of positively acting means for preventing the flag and the flag shaft from over-running said positions under the impulse of undue or unnecessary force, or by reason of fraudulent manipulation.

In taximeters of various constructions, it has been possible by means of a sudden jerk, or by considerable force, or by excessively slow manipulation to cause the flag to move from fare registering position past its proper position, for indicating that the taxicab is vacant. When such movement occurs an additional trip is registered on the totalizer, and the chauffeur is charged therewith.

Trouble between the owner of the taxicab and the chauffeur frequently arises from this source and leads to the possibility of fraud on the part of the chauffeur, who may try to account for trips for which he is charged by attributing the recording of certain trips to the faulty operation of the taximeter flag locking mechanism.

My improved mechanism obviates this difficulty by positively locking the flag and the parts connected thereto in the vacant indicating position, when the flag is moved into that position by any movement, whether forceful or gentle. Said mechanism is furthermore, so constructed that once the flag has been moved into said position, it can be removed therefrom only by first moving the flag backwardly to a slight extent, as is more or less customary, whereupon the flag may be again set to fare registering position.

The various objects of my invention will be clear from the description which follows and from the drawing, in which,

Fig. 1 is a front elevation of my improved flag locking mechanism, showing the flag in the locked position thereof.

Fig. 2 is a similar view of the same showing the positions assumed by the parts just before

the flag has been rotated into the locked position thereof.

Fig. 3 is a similar view of the same, showing the positions assumed by the parts when the flag is moved slightly backwardly from the locked position thereof, preparatory to its movement into the fare registering position, and

Fig. 4 is a perspective view of the peculiar spring for operating the locking pawl.

In the embodiment of my invention illustrated, and which shows the preferred form of a number of possible operative mechanisms which may be made in accordance with my invention, the usual taximeter flag 10 is secured to a suitable flag shaft, projecting in the usual manner outside of the casing 11. On the inside of said casing, the mutilated ratchet wheel and cam 12 is fixed to the flag shaft, as is the usual four-point wheel 13, said wheels being suitably maintained in position as by means of the screw 14, so that rotation of the flag 10 and the flag shaft causes rotation of the wheels 12 and 13. Substantially half of the wheel 12 has the ratchet teeth 15 made therein, while the other half is formed to provide the cam 16 having the comparatively deep cam notch 17 at one point, and an arcuate cam surface 18 of the diameter of a circle joining the outermost point of the ratchet teeth 15, for about a quarter of the wheel circumference.

For normally preventing material backward movement of the flag through the angle subtended by more than one of the ratchet teeth 15, a ratchet pawl as 19, pivoted to the casing at 20, is provided. The spring 21 by action upon the end 22 of said pawl, serves to maintain the end 23 in engagement with the ratchet teeth 15 throughout substantially half of a revolution. Pivoted to the casing 11 as at 24 is the quarter stop lever 25, which is provided with the segmental projection 26 adapted to engage the four-point wheel 13 for temporarily stopping the flag at vertical and horizontal positions, and resisting, though not preventing, further movement of the flag past those positions. A spring 27, secured to the frame 10 and to a point on the lever 25 and near the end 28 thereof, serves

to maintain said stop lever in engagement with the four-point wheel 13. A pin 29 on, and near the end 28 of, the stop lever 25 projects therefrom toward the casing for the purpose soon to be described.

The locking pawl 30 is pivoted to the casing at 31 and is provided with a suitable tooth 32 adapted to enter the notch 17 of the wheel 12 at the proper time, as will be hereinafter described. Both the effective edge of the tooth 32 and the edge of the notch 17 which engages the tooth edge, are somewhat acute, that is, said edges are inclined to a radius of the wheel 12 drawn to the outer extremity of the notch 17, whereby the tooth 32 may be retained in the notch when in locking position. To the upper end 33 of the locking pawl 30 and to a suitable point 34 of the casing are secured the respective ends of the tension spring 35 which normally withdraws the said pawl from engagement with the wheel 12. The normally weaker spring 36 is preferably bent into S-shape, the lower end as 37 being secured to the casing 11.

The spring 36 has a wide portion as 38 preferably formed integral therewith and having a central portion 42 substantially perpendicular to a line drawn from the center thereof to the pivot point 24. The upper end 39 of said portion 38 is bent toward the free end 40 of the spring, and the lower end 41 is preferably bent away from said free end, both of said ends 39 and 41 projecting somewhat beyond the adjacent flat faces of the portion 42. The free end 40 is normally in engagement with the locking pawl 30 urging said pawl into engagement with the wheel 12 but being without sufficient strength to overcome the action of the spring 35 unless said spring 36 is given more power by the additional pressure put thereon by the action of the pin 29, when said pin is brought to bear on the outer face of the spring 36 in a manner soon to be described.

In the locked position of the parts as shown in Fig. 1, the flag 10 is preferably upright, and the tooth 32 of the locking pawl 30 having been pressed into the cam notch 17 of the ratchet wheel 12, urged thereto by the action of the spring 36 aided by the pressure of the pin 29. No forward movement of the flag is possible since the spring 27 acting on the lever 25 maintains the tooth 32 frictionally against the notch 17 with sufficient force to prevent withdrawal of said tooth by the spring 35. The end 23 of the ratchet pawl 19 is riding up on a tooth near the end of one of the ratchet teeth 15, so that backward rotation of the flag through an angle subtended by less than one of the teeth 15 is possible. The segmental projection 26 of the lever 25 rests in one of the depressions between the points of the four-point wheel 13, while the pin 29 at the end of said lever is in a position just past the bent end 41 of the

portion 38 of the spring 36, ready to move up on the inner or lower face of the portion 41 on movement of said lever. It is obvious that when the parts reach the positions just described, owing not only to the shape of the tooth 32 but also to the fact that the spring 35 is not of sufficient strength to overcome the frictional engagement of the tooth 32 with the notch 17, and it is therefore impossible to force the flag further forwardly, that is in a counter-clockwise direction as viewed in Fig. 1 without destroying or seriously injuring the mechanism.

When it is desired to move the flag forwardly into the fare registering position, the flag must first be moved slightly backwardly. The latter movement rotates the flag shaft and the wheels 12 and 13 thereon through an angle subtended preferably by a major fraction of a tooth 15 until the pawl end 23 engages the radial wall of a tooth 15 whereupon further backward movement is prevented (Fig. 3). At the same time the wheel is rotated backwardly, releasing the locking pawl from its frictional engagement with the notch 17 so that the tension spring 35 becomes active to withdraw the locking pawl 30 from the wheel 12, and the flag is freed for forward rotation.

During the initial part of the rotation of the flag in the first quarter of the revolution, or the first quadrant, the segmental projection 26 of the lever 25 rides up on one of the points of the four-point wheel, causing upward movement of said lever and of the pin 29 at the end thereof. Said pin, on movement of the lever 25, engages the under face of the bent end 41 of the spring 36 and rides up on the inner face of the portion 42. On the continued rotation of the flag, the lever 25 is raised to its highest position, the pin 29, passing the inner or under face of the spring portion 39 and forcing the spring 36 against the stop 44. As the rotation of the flag is further continued, the pin 29 passes the upper end of the portion 39, after which the lever 25 drops and the pin 29 carried thereby passes to the outer surface of the spring 36, whereby the inward pressure of said pin on the spring is begun. As the flag reaches the end of the quadrant, the pin 29 presses against the outer surface of the portion 41, imparting an inward movement to the spring 36 and so increasing the power or the pressure exerted by said spring as to overcome the withdrawing action of the spring 35 on the pawl 30, whereby said pawl is forced toward the locking position thereof.

In all of the quadrants except the last, the notch 17 of the wheel 12 is not presented to the pawl tooth 32, and the mechanism is not, therefore, locked. In the last quadrant, however, the notch 17 is brought into proper position by the rotation of the flag to receive the tooth 32. Said tooth therefore enters

said notch, preferably at the time when the flag is in upright position as illustrated in Fig. 1, whereby the parts become locked-as hereinbefore pointed out, no matter how fast or with what force the flag is operated. It will be seen that the locking mechanism is positive in its action, and that the locking action cannot fail to take place, unless, indeed, the mechanism is deliberately injured by the excessive nature of the force exerted on the flag.

It will also be seen that I have provided an efficient locking mechanism, adapted to withstand the rough handling to which the taximeter may be subjected by taxicab drivers, and which is not susceptible to fraudulent manipulation. It will be understood that the embodiment of my invention shown and described is intended to be illustrative and that various modifications thereof are contemplated and may be employed without departing from the scope of the invention or the range of equivalents afforded by the appended claims.

I claim:

1. In a taximeter flag locking mechanism, a locking pawl operative to lock the flag when said flag is rotated into locked position, a pair of springs differing in power and acting in opposite directions on said pawl, and means for imparting additional force to the weaker one of said springs when the movement of the flag into the locked position is begun.

2. In a taximeter flag locking mechanism, a locking pawl, a spring urging said pawl into locking position, a second spring of greater power than the first mentioned spring urging said pawl into unlocking position, and means for rendering said first spring operative to lock said mechanism when the movement of the flag into the locked position is begun.

3. In a taximeter flag locking mechanism, spring-pressed positively acting means for preventing forward or material backward rotation of the flag from the locked position thereof and for locking the flag in a predetermined point in the rotation thereof, and means for unlocking the mechanism on the slight backward movement of the flag including opposed springs and means for nullifying the locking action of one of said springs.

4. In a taximeter flag locking mechanism, a locking pawl, a spring tending to urge said pawl into locking position, guide projections on said spring bent in opposite directions, and means adapted to engage said projections alternately for alternately aiding and nullifying the locking action of said spring on the rotation of the flag.

5. In a taximeter flag locking mechanism, a locking pawl, a spring normally urging said pawl into locking position, guide projec-

tions on said spring bent in opposite directions, and means adapted to engage said projections alternately aiding and nullifying the locking action of said spring on the rotation of the flag, comprising a pin and means for bringing said pin into engagement alternately with the opposite faces of said spring.

6. In a taximeter, a flag, and means for locking said flag against forward movement from a given position thereof including a ratchet wheel having a depression therein and rotatable with said flag, a pawl adapted to enter said depression, and a pair of springs of different strength acting on said pawl in opposite directions, and means for rendering the weaker of said springs operative to move said pawl into locking position when said locking means is to be locked.

7. In a taximeter, a rotatable flag and means for locking said flag in a predetermined position thereof against continued forward movement but allowing the forward movement to take place after an initial backward movement from the locked position, comprising a spring, means operatively connected to said flag and urged by said spring into locking position for locking said flag, and means for causing said spring to operate in the locking position of the parts and for causing said spring to become ineffective to lock the flag in the other positions.

8. In a taximeter flag locking mechanism, a rotatable flag, a ratchet wheel having a notch therein mounted for rotation with said flag, ratchet teeth throughout substantially half the circumference of said wheel, a pawl adapted to engage said teeth for preventing material backward rotation of said flag for about half the angle of rotation of said flag, and for allowing backward movement of said flag in the locked position thereof through an angle less than that subtended by a tooth of said wheel, a pawl adapted to enter the notch of said wheel when the flag is in a predetermined position, a spring adapted to force said pawl into locking position, and means acting on said spring for rendering said spring alternately operative and inoperative.

9. In a taximeter flag locking mechanism, means associated with the flag for resisting movement of said flag past a point in each quadrant of a revolution including a pivoted lever, a locking pawl, a spring tending to urge said pawl into locking position, oppositely bent projections on said spring, and a pin on the end of said lever adapted to pass into engagement with opposite faces of said spring alternately and to engage said projections alternately for operating said spring.

10. In a taximeter flag locking mechanism, a flag, an inter-engaging pivoted lever and a four-point wheel associated with the flag for resisting movement of said flag past the ver-

tical and horizontal positions thereof, and positively acting means operative independently of the speed and force of rotation of the flag for locking the flag in one of the vertical positions thereof during the rotation of said flag including a locking pawl, a wheel operatively connected to the flag adapted to be engaged by said pawl, a spring urging said pawl out of locking position, a weaker spring tending to urge said pawl into locking position, projections on said weaker spring, and means on said lever adapted to engage said weaker spring and the projections thereon for alternately aiding and nullifying the locking action of said spring.

11. In a taximeter flag locking mechanism, a flag, spring pressed positively acting means for locking said flag at a predetermined point in the rotation thereof, independently of the speed and force of rotation of said flag into locking position, and means including a pair of oppositely acting springs for alternately urging said locking means into, and for withdrawing said locking means from locking position on the rotation of said flag.

12. In a taximeter flag locking mechanism, a wheel having a quadrantal notch therein, ratchet teeth over approximately half the circumference thereof and an arcuate surface over the remaining quadrant thereof, a four-point wheel having arcuate depressions therein, a pivoted stop lever, a quadrantal projection on said lever adapted to enter the depressions of said four-point wheel for temporarily halting the flag in the horizontal and vertical positions thereof, a pawl engaging said ratchet teeth for preventing backward movement of the flag through an angle equal to and greater than that subtended by a complete tooth in the first and third quadrants, a locking pawl adapted to enter the notch of the ratchet wheel, a spring normally urging said locking pawl into locking position and a pin on the end of said stop lever for alternately engaging opposite faces of said spring and for alternately aiding and nullifying the locking action of said spring.

13. In a taximeter flag locking mechanism, means for locking the flag at a predetermined point in its forward rotation, including a stop lever, a pin on said lever, a spring operated by said pin and a locking element moved to locking position by said spring, means for maintaining the locking means in locked position, and means for releasing said locking means on a slight backward rotation of the flag from its locked position.

14. In a taximeter flag locking mechanism, means associated with the flag for locking the flag at a predetermined point in the revolution thereof, a spring tending to urge the locking means into the locking position, said spring having a widened guide portion and ends on said portion bent in opposite direc-

tions, and a movable pin acting on the guide portion and ends of the spring to make said spring alternately operative and inoperative.

In testimony whereof I affix my signature.

GEORGE VLAHOV. 70

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