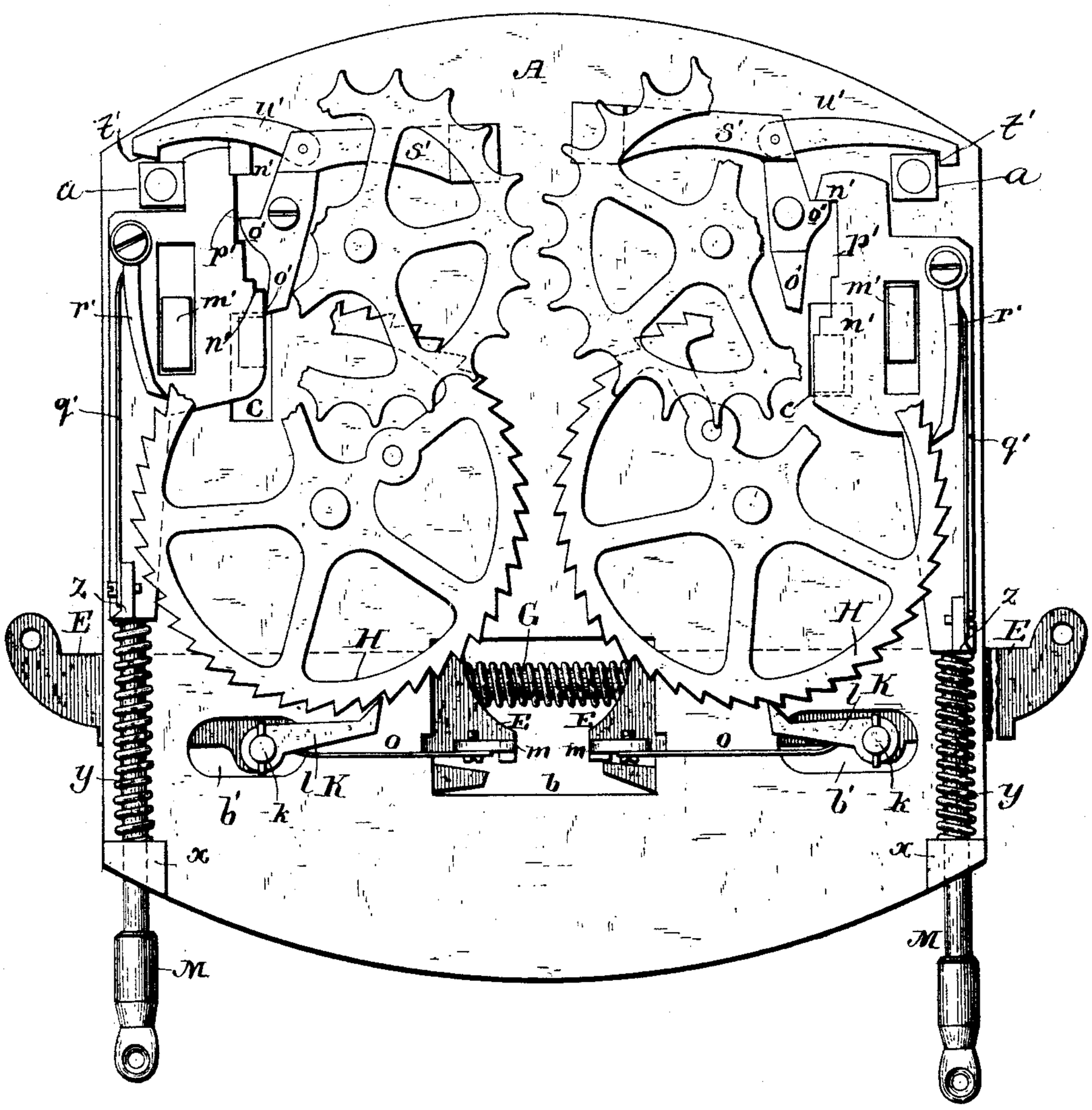
(No Model.) 4 Sheets—Sheet 1.

J. L. HARLEY.

FARE REGISTER.

No. 402,445. Patented Apr. 30, 1889.

FIG. 1.



ATTEST

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Joseph L. Harley

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Wm. C. Rice Atty

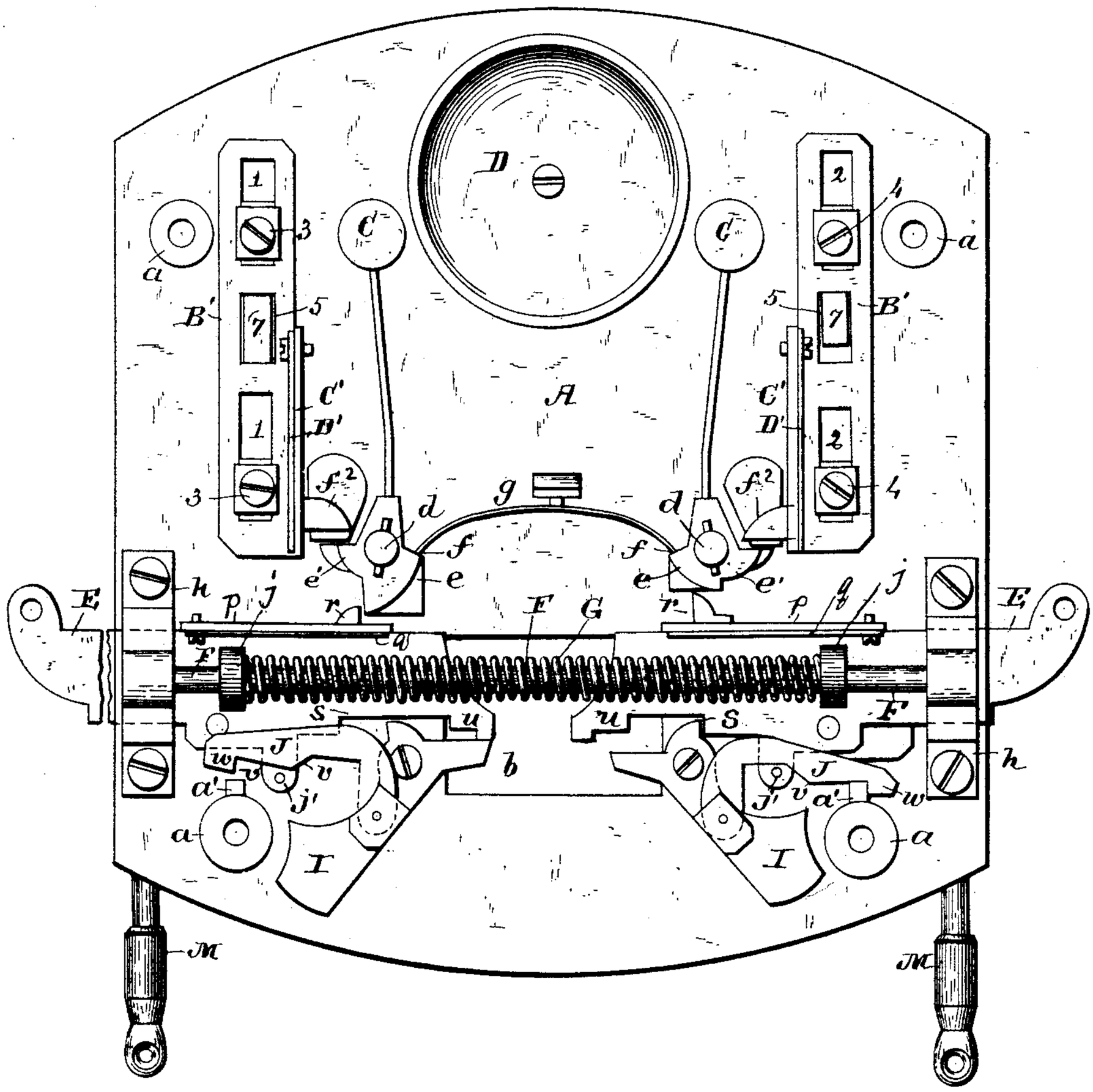
(No Model.) 4 Sheets—Sheet 2.

J. L. HARLEY.

FARE REGISTER.

No. 402,445. Patented Apr. 30, 1889.

FIG. 2.



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(No Model.) 4 Sheets—Sheet 3.

J. L. HARLEY.

FARE REGISTER.

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FIG. 3.

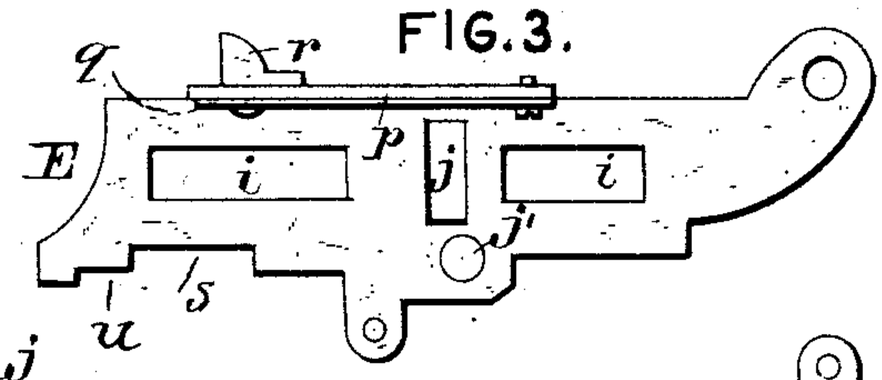


FIG. 5.

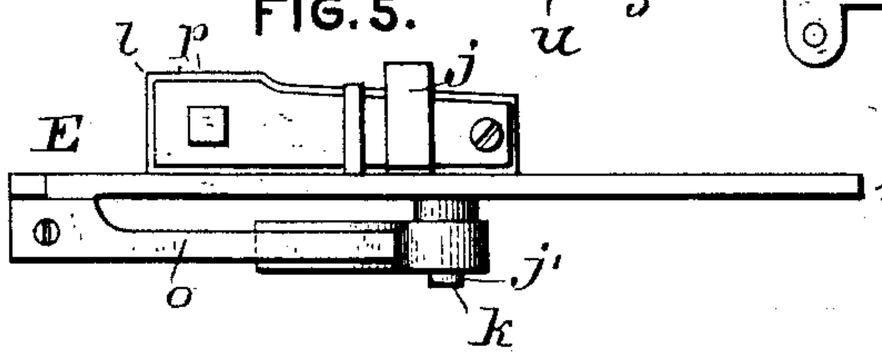


FIG. 4.

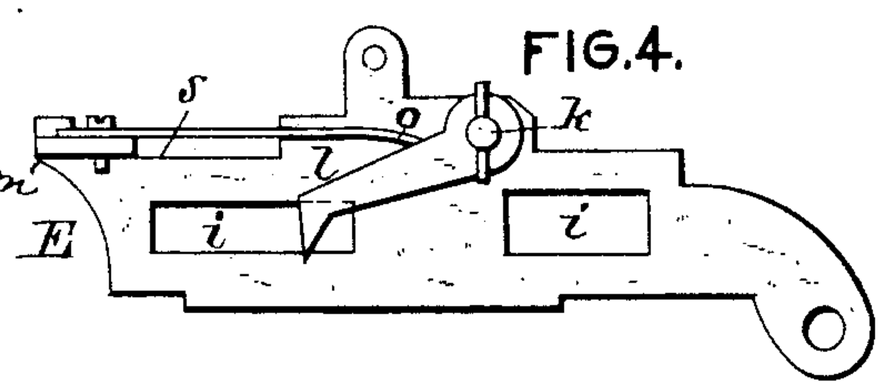


FIG. 7.

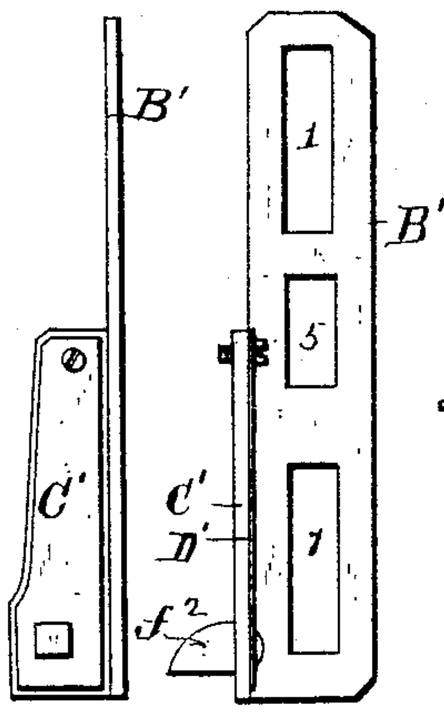


FIG. 8.

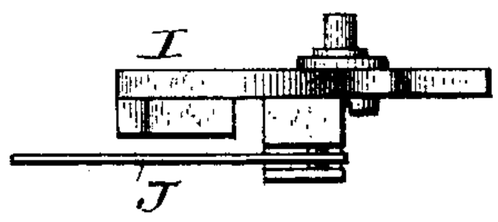


FIG. 6.

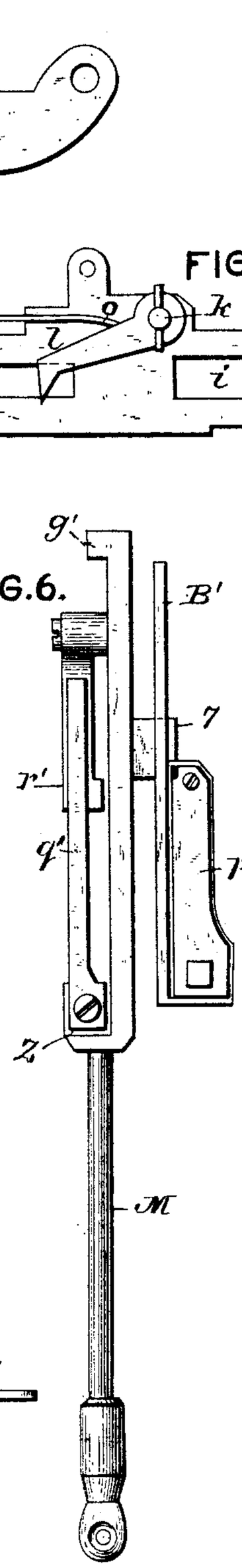
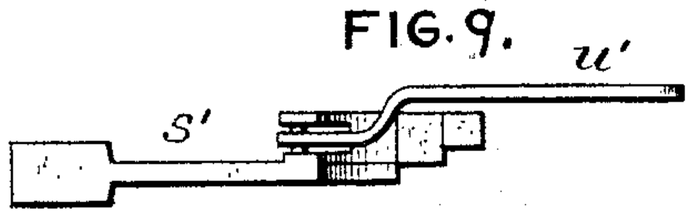


FIG. 9.



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(No Model.)

4 Sheets—Sheet 4.

J. L. HARLEY.

FARE REGISTER.

No. 402,445.

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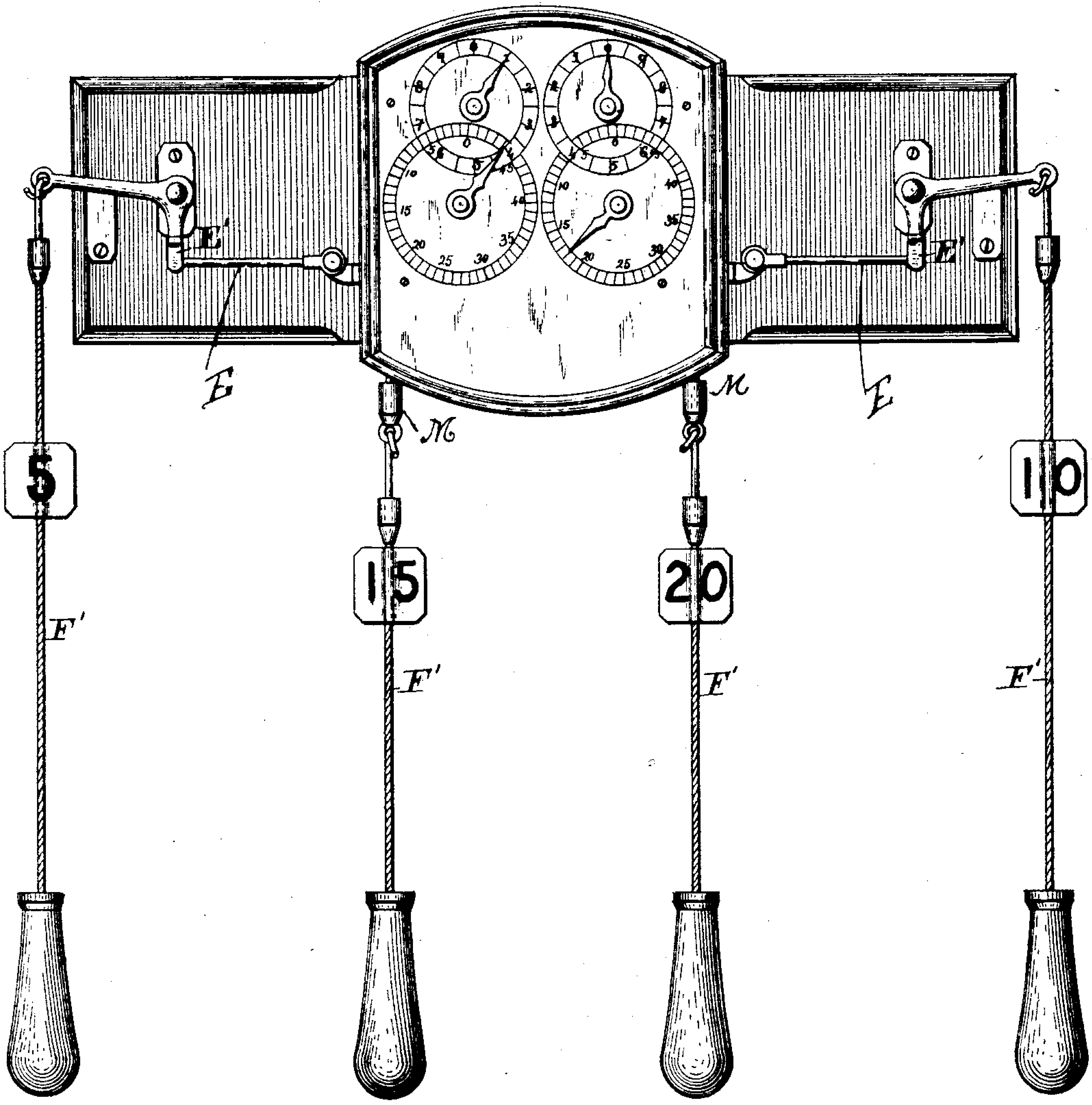
FIG. 10.



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Joseph L. Harley

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Wm. C. McIntire Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH L. HARLEY, OF BALTIMORE, MARYLAND.

FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 402,445, dated April 30, 1889.

Application filed August 14, 1888. Serial No. 282,702. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. HARLEY, a citizen of the United States, residing at Baltimore, Maryland, have invented new and useful Improvements in Fare-Registers, of which the following is a specification.

This invention relates to certain new and useful improvements in fare-registers.

The particular class of cash-registers to which the invention pertains is such as is represented in Letters Patent No. 277,130, granted to me on the 8th day of May, 1883; and the object of the present invention is to remedy several defects that have been found to exist with the invention covered by the said Letters Patent, and to dispense with the use of several of the operative parts thereof, whereby simplicity of construction and cheapness of cost are obtained.

A further object of the present invention is to so construct and arrange the devices constituting the register mechanism as that cash or fares of different quantity or denominations may be registered at one operation without having to operate the register mechanism as many times as would be necessary to express or indicate the amount of cash or number of fares received.

A further object of the invention is to more effectually provide for the locking or retention of the sliding push and pull bars which actuate the register and alarm mechanisms, so that when either of the said sliding push and pull bars are operated to register a fare or quantity of cash no sounding of the alarm will occur until the registration has actually taken place, thereby insuring perfect accuracy in the accounting for each and every fare or quantity of cash received.

The invention also has further objects in view, all as will more fully hereinafter appear when taken in connection with the accompanying drawings, wherein—

Figure 1 represents a front view of my improved cash or fare register as it appears when the indicators and dials are removed, and Fig. 2 is a rear view thereof with the back removed. Fig. 3 is a view of one side of one of the horizontal sliding push-bars, showing the construction thereof and the arrangement therewith of the spring for tripping its bell-hammer. Fig. 4 is a view of the said horizontal push-bar taken from the opposite side, the same being shown in an inverted or upside-down position to that which it occupies in use. Fig. 5 is a view of said sliding push-bar taken from the under side, this view and the one shown in the preceding figure illustrating the pawl *l* for operating the register-wheel, and the spring for keeping the said pawl in place. Fig. 6 is a side view of one of the vertically-sliding pull-bars, together with the vertical slide which it actuates to trip or throw its particular bell-hammer. Fig. 7 represents a side and front view, respectively, of one of the vertically-moving slides. Fig. 8 is a top view of one of the gravitating locking-dogs for the horizontal sliding push-bars, together with its pivoted catch or locking-lever. Fig. 9 is a similar view of one of the gravitating locking-dogs for the vertically-sliding pull-bars, together with its catch or lever; and Fig. 10 is a vertical front elevation of my improved cash or fare register as it appears when inclosed and ready for operation or use.

In the practice of my invention, in order to regulate the degree of movement of the register devices by which to indicate the registration of one, two, or more fares, I predetermine the extent of movement necessary for both the vertical and horizontal slide-bars to effect the proper extent of movement of the toothed register-wheels, and notch the said bars for a distance equal to one, two, or more of the teeth of said wheel, accordingly as it may be the wish to register one, two, or more fares at one operation, and then when the said bars have been forced or brought to the full limit of their movement inwardly the proper registration will be effected simultaneously with the sounding of the alarm or signal bell. As soon as either one of the bars is moved the slightest extent its corresponding bell-hammer will be carried away from the bell, and at the same time a gravitating dog or detent will be brought upward into the notch of the bar and thereby prevent return of the same until moved the full extent permitted by said notch. When either of the operating-bars has been moved its fullest extent, notice that the registration has been

made will be given by the sounding of the bell, and at this time a pivoted or swinging lever will become so engaged as to maintain the nose of the locking-dog in a plane free of the bar, to thereby permit the return of said bar to its normal position. If desired, I may provide several notches in the sliding bars, so as to cause the said bars to become locked or engaged by their dogs or detents at various points in the movement of said bars.

Reference being had to the several parts by the letters marked on the accompanying drawings, A represents the plate upon which the several operative parts of my improved register are assembled, the same having upon its rear side, at or near each corner, a post, *a*, the two lower ones of which are formed or provided with a squared shoulder, *a'*, (see Fig. 2,) each of said parts being adapted to receive a screw for securing the back (not shown) in place. The said plate A is also formed with a lower central opening, *b*, two side openings, *b' b'*, and two upper vertically-elongated openings, *c c*.

C C represent two bell-hammers pivoted upon studs *d d*, cast with the plate A, the pivoted ends of said hammers being formed with beveled lips *e e* and *e' e'*, as well as with a shoulder, *f f*, the said shoulders serving to support the ends of a curved spring, *g*, for returning the bell-hammers to their normal positions. The general construction and arrangement of the devices referred to in this paragraph are the same as is given in my former Letters Patent referred to with but slight deviation, and in the present case, as in the former one, a single bell, D, is employed.

E E represent two sliding horizontal push-bars, the two operating in like manner from opposite sides, and each moving in a bracket, *h*, screwed or otherwise secured to the plate A, the said brackets serving also to support the ends of a guide-bar, F, on which is arranged a single retracting-spring, G, for the two horizontal slide-bars. The said bars are each slotted, as shown at *i* in Figs. 3 and 4 of the drawings, by which they are perfectly guided by pins on the plate A (not shown) passing through them, and on the rear side of each is formed a collar, *j*, fitting over the guide-bar F, and between which collars the spring G exerts its force or tension. The bars are also provided with studs *j' j'*. The said horizontal sliding push-bars are provided on their opposite sides with studs *k k*, which project through the openings *b' b'* in plate A, and on which are pivoted the pawls *l l*, while formed on the inner ends of said bars are projections *m m*, which pass through the opening *b* of said plate, and fastened to the under side of said projections *m m* are springs *o o*, the free ends of which press against the under side of the said pawls *l l*, and serve to keep them in engagement with the teeth of the toothed register-wheels H H.

The upper edge of each bar E E is formed with a right-angle shelf, *p*, Figs. 2 and 3, to the under side of which is fastened a spring-arm, *q*, Figs. 2, 3, and 5, having a beveled lip, *r*, passing through the shelf and adapted to come in contact with the lip *e* on the bell-hammer, and to slide over the same when the bevel face of each comes in contact.

The lower edge of each of the bars E E is notched, as is shown at *s*, and by referring to Fig. 2 it will be seen that the notch in the bar on the left is longer or of greater extent than in the one on the right. The bar on the right is notched for a distance equal to one tooth of the register-wheel with which it co-operates, and will permit the indicating-hand to move but one space upon the dial, and thereby show the registry of one fare, while the bar on the left is notched for a distance equal to two teeth of its register-wheel, which serves to move the indicator-hand two spaces on the dial, and thereby exhibit the registration of two fares. By varying the extent of the said notches *s s*, I am enabled to obtain a movement of the register-wheels equal to one, two, or more spaces on the indicator-dial, as will be apparent.

I I represent two weighted dogs pivoted to the plate A, and which, normally, are in the position indicated at *t* in Fig. 2, at the left-hand side thereof, but which, as soon as the horizontal bars are moved inward, will slip into the notches *s s* and thereby prevent the outward return of said bars until they are forced in their full extent, as shown at the right-hand side in Fig. 2.

In the drawings I have shown intermediate notches, *u u*, in the bars, and, as before stated, by using several notches the said bars may be locked at varying positions of their inward movement. The said notches *u u* are not essential, but are preferably shown. Until the horizontal bars have been forced inward all the way the weight of the dogs I will maintain the noses of the latter in a position to check the return of said bars; but after the bars have been forced in, in order to bring said dogs to a position by which the bars will be free to return outwardly, I resort to the use of the locking-levers J J, which are pivoted to the sides of the dogs. These levers are curved, as shown, and are formed on their under side with double inclines *v v* and terminate on their outer ends in hooks *w w*. Normally, the intersecting point of the inclines *v v* of these levers rests upon the studs *j' j'* of the bars E E, and when said bars are moved inward all the way the said levers will ride over the studs and their hooked ends will drop over the shoulders *a' a'* on the two lower posts, *a a*, and form a temporary locking-connection therewith. While in this position the levers will maintain the noses of the dogs in a plane beneath the lower edge of the bars so as to permit the outward return of the latter; but as soon as the levers have ridden back upon the studs *j' j'* they will be released and will drop back to their original positions. The position of the dogs

when the levers are temporarily locked is illustrated at the right-hand side of Fig. 2.

M M represent the two vertically-sliding pull-bars, the stems of which move in brackets $x\,x$, cast on the plate A at the two lower corners, and on such stems are arranged springs $y\,y$, which bear or exert their tension between said brackets and lugs $z\,z$, cast with said vertical bars. The upper portions of these vertically-moving bars are widened, as shown, and are slotted to receive guiding-posts $m'\,m'$ therefor, cast on the plate A, and they are also shouldered in their upper edges at $n'\,n'$, so as to be arrested by studs or shoulders $o'\,o'$ on their return movement upwardly. The said vertical bars are notched on their inner edges, as shown at $p'\,p'$, in like manner and for a similar purpose as the horizontal bars are notched, and in the present instance the vertical bar shown on the left of Fig. 1 is notched for a distance equal to three teeth of the ratchet-wheel with which it co-operates, while the vertical bar on the right is notched for a distance equal to four of the teeth of its wheel. Thus the first-mentioned of these bars will actuate the register-wheel to move the indicator-hand three spaces around the dial, showing that three fares have been paid, while the second-named vertical bar will actuate the mechanism to register and indicate four fares.

Secured to the lugs $z\,z$ of the bars M M are springs $q'\,q'$, as shown in Figs. 1 and 6 of the drawings, the free ends of which press or bear against the sides of the pawls $r'\,r'$, pivoted to the sides of the bars at their upper ends, and serve to keep said pawls in engagement with the teeth of the register-wheels H. (See Fig. 1.)

Pivoted on the plate A at one side of the vertical bars M M are weighted gravitating dogs $s'\,s'$, having shoulders $t'\,t'$, and pivoted to said dogs are locking levers or catches $u'\,u'$, having hooked ends, as shown. The purposes of these dogs and levers are similar to those of the dogs I I and levers J J—that is to say, when the vertical bars have been drawn downward but part of the way the studs $o'\,o'$ of the dogs $s'\,s'$ will gravitate into or enter the notches $p'\,p'$ and serve to prevent upward return of the bars until after they have been drawn all the way down, thus rendering it necessary to complete a registration before the bell is sounded. The upper ends of the vertical bars are cast or formed with projections $g'\,g'$, and on reaching the extent of the downward movement of the said bars the said projections come into contact with the shoulders on the dogs, and thus throw or carry the latter far enough outward to one side to permit the full return of said bars to their original positions, such return being caused by the extension of the springs y on their stems. At the time the dogs are carried outward by the projections on the bars the catches or levers $u'\,u'$ fall upon and become temporarily locked with the studs $o'\,o'$ and remain so until they are lifted off by the return of the bars, this locking of the catches or levers serving to hold the dogs outward to permit the return of the bars.

For the purpose of actuating the striking or alarm mechanism on the downward movement of the vertical bars, I provide at the back of plate A the slides B′ B′, slotted at 1 1 and 2 2 and moving upon pins or posts 3 3 and 4 4. The said slides are also slotted at 5 5 to receive through the openings $c\,c$ in the plate A projections 7 7, cast or formed with the vertically-sliding bars M M. The said slides B′ B′ are formed or provided each with a vertical right-angle shelf, C′, having spring-arms D′ D′, provided with curved lips $f^2\,f^2$, for tripping the bell-hammers in the same manner as they are tripped by the spring-arms of the horizontal push-bars hereinbefore described.

When the vertical bars M are drawn downwardly, the projections 7 7 thereon will carry the slides B′ B′ down with them, and it is evident that the hammers will be tripped and the bell sounded.

The manner in which both the horizontal and vertical bars are operated in practice will be best understood by referring to Fig. 10. In this figure it will be seen that I have shown a simple pull-cord, F′, for each bar, each cord having a tab indicating the number of fares or quantity of cash its particular bar will cause to be registered; and in order to give to the horizontal bars the necessary longitudinal movement I resort to the use of combined bell-crank and toggle levers E′ E′, the operation of which will be fully understood without further explanation.

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

1. In a fare-register, the plate A, having the lower posts, a, squared as shown, forming guide-bearings for the push-bars E, in combination with the pawls J and l and the said push-bars E, substantially as and for the purposes specified.

2. In a fare-register, the horizontal push-bars, each having a notch in its lower edge of a different extent from that of the other, and having studs K K, in combination with the levers v and the wheels H, substantially as and for the purposes specified.

3. The combination, with the toothed register-wheels H, of the sliding push-bars E, notched on their under sides for a distance equal to the distance between one, two, or more teeth of the said wheels, and the spring-actuated pawls $l\,l$, adapted to engage said wheels, substantially as specified.

4. In a fare-register, the combination, with the sliding push-bars having notches in their inner lower sides, of the pivoted gravitating pawls, the disks or wheels operated thereby, the detent-levers secured thereto, and the projections on the bars, whereby the levers are released when the bars are moved inward, substantially as specified.

5. The combination, with the bell or alarm mechanism, of the plate A, provided with brackets *h h*, the horizontal bars having collars *j j*, the right-angled shelves, and the guide-rod having a surrounding spring interposed between the sliding bars, whereby they are pressed normally outward, substantially as specified.

6. In a fare-register, the combination, with the registering-wheels, of the vertically-sliding pull-bars, each being notched for a length differing or varying from the other, the said bars being slotted to receive guide-pins and notched at their upper edges, substantially as and for the purposes specified.

7. The combination, with the registering-wheels, of the pull-bars having notches in their sides, each of a different length from the other, and provided with projections *g' g'*, the weighted dogs S' S', having shoulders, and the levers *u'*, arranged to operate substantially as specified.

8. The combination, in a fare-register, of the vertically-sliding bars, the slides B' B', having right-angled shelves and spring-arms D' D', provided with lips *f f*, and the alarm-hammers, the whole arranged to operate substantially as specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOS. L. HARLEY.

Witnesses:
E. EVERETT ELLIS,
CURTIS LAMMOND.