



J. N. HARDY.  
Fare Register.

No. 231,165.

Patented Aug. 17, 1880.

Fig 3

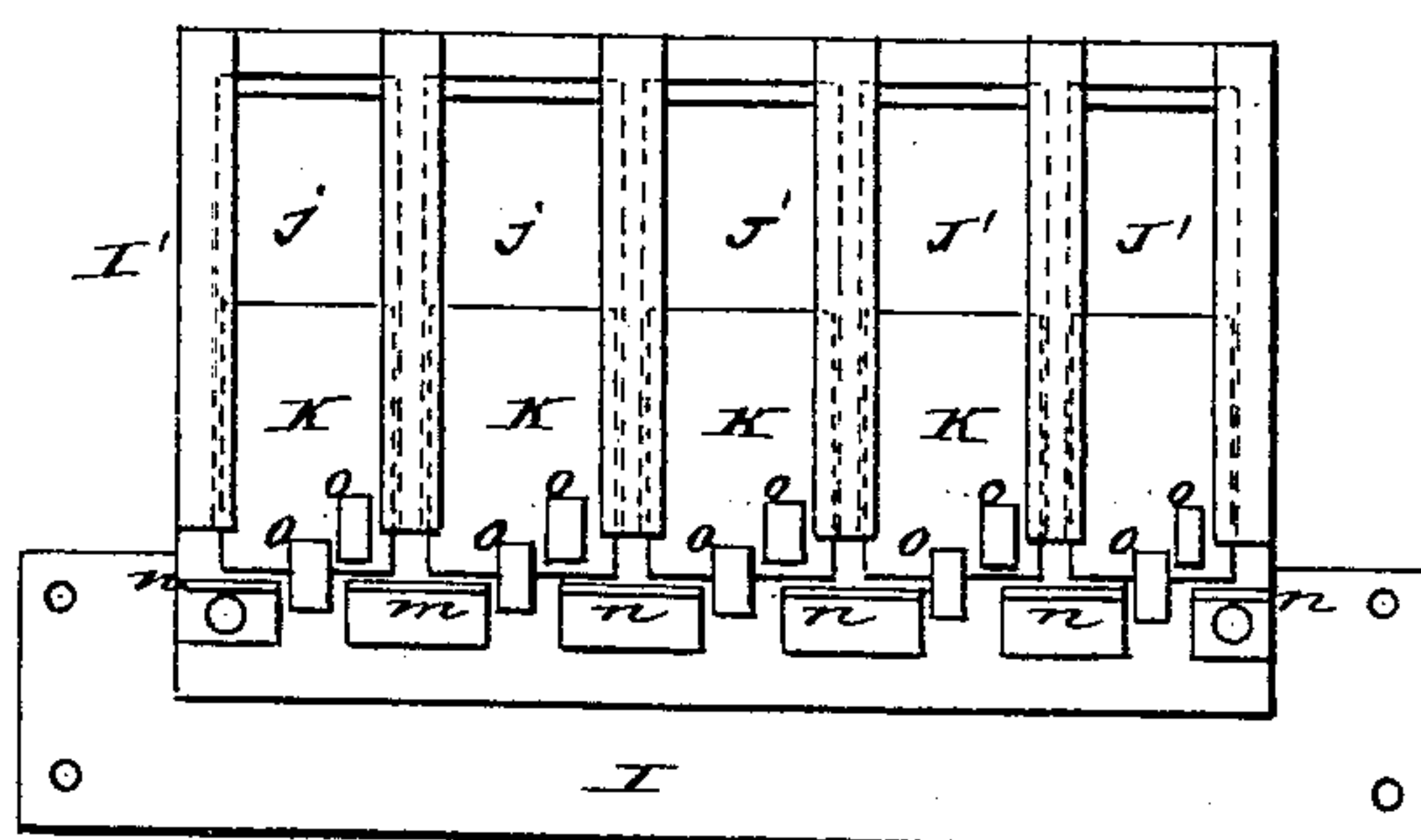
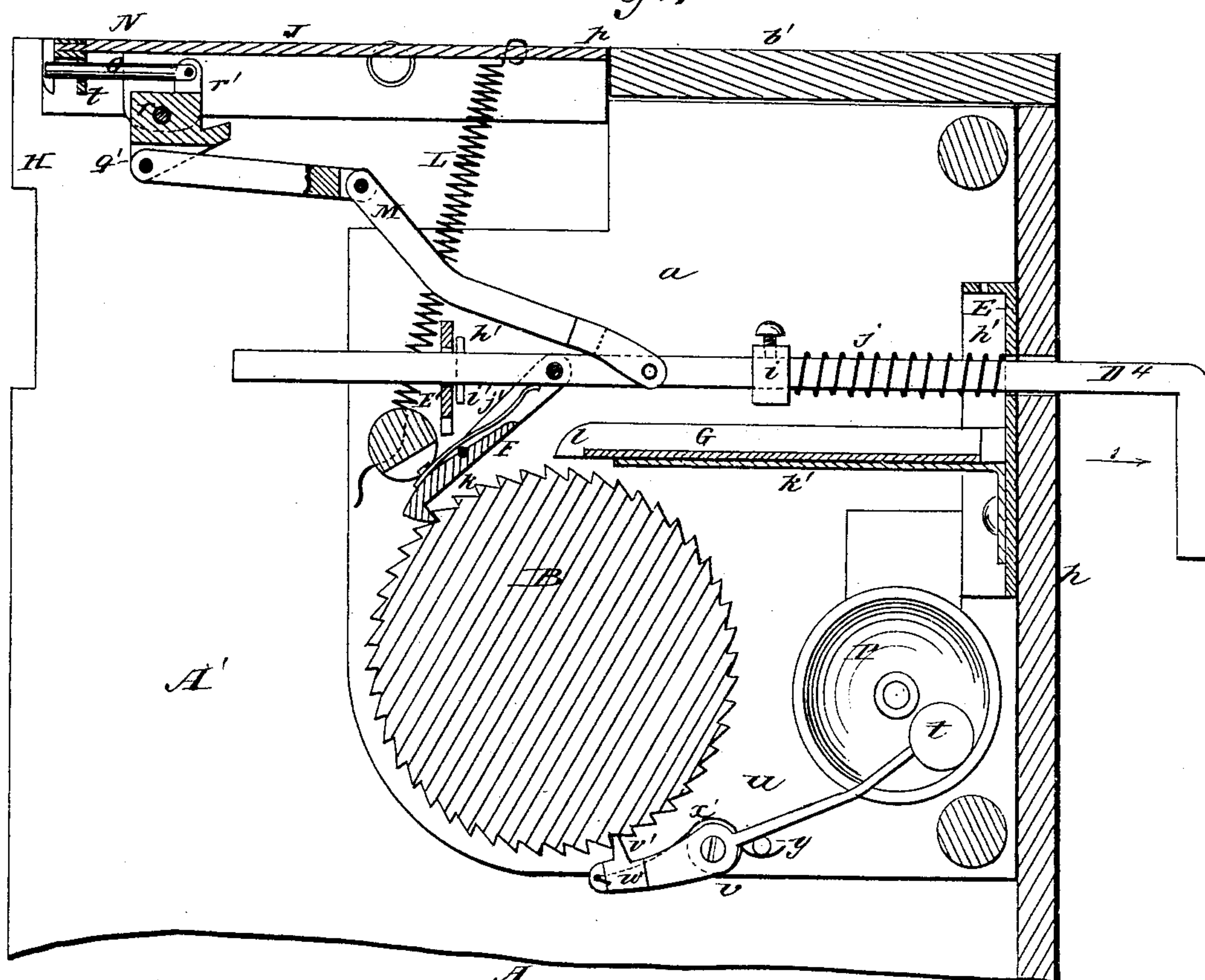


Fig 4



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C. Sedgwick

INVENTOR:

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Fig. 5

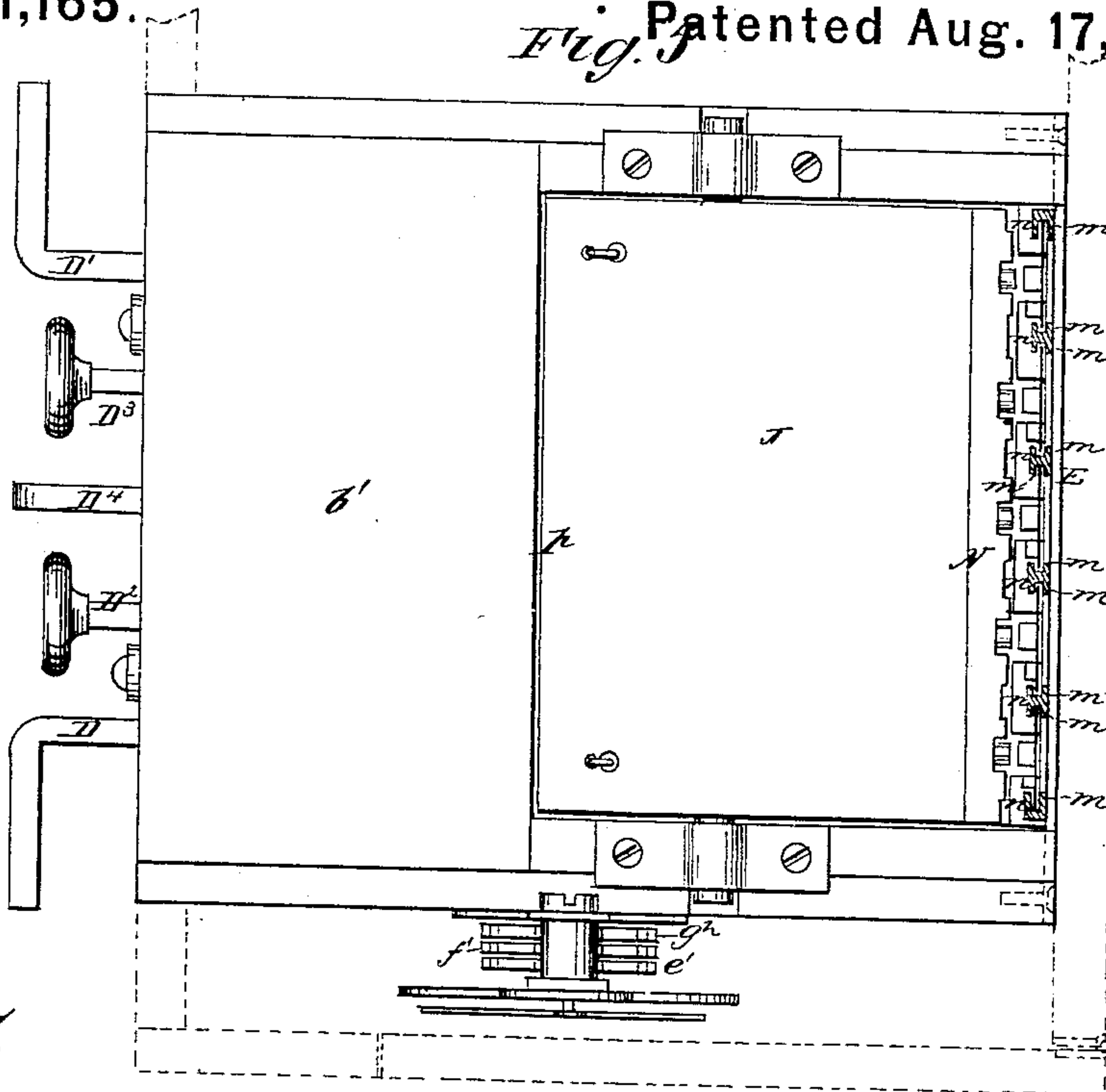


Fig. 7

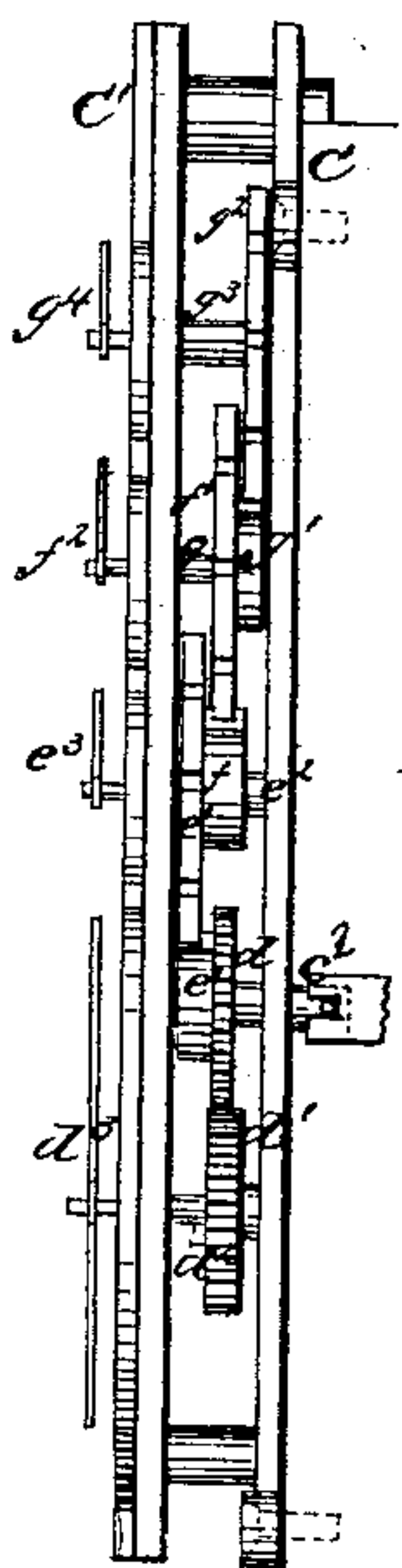
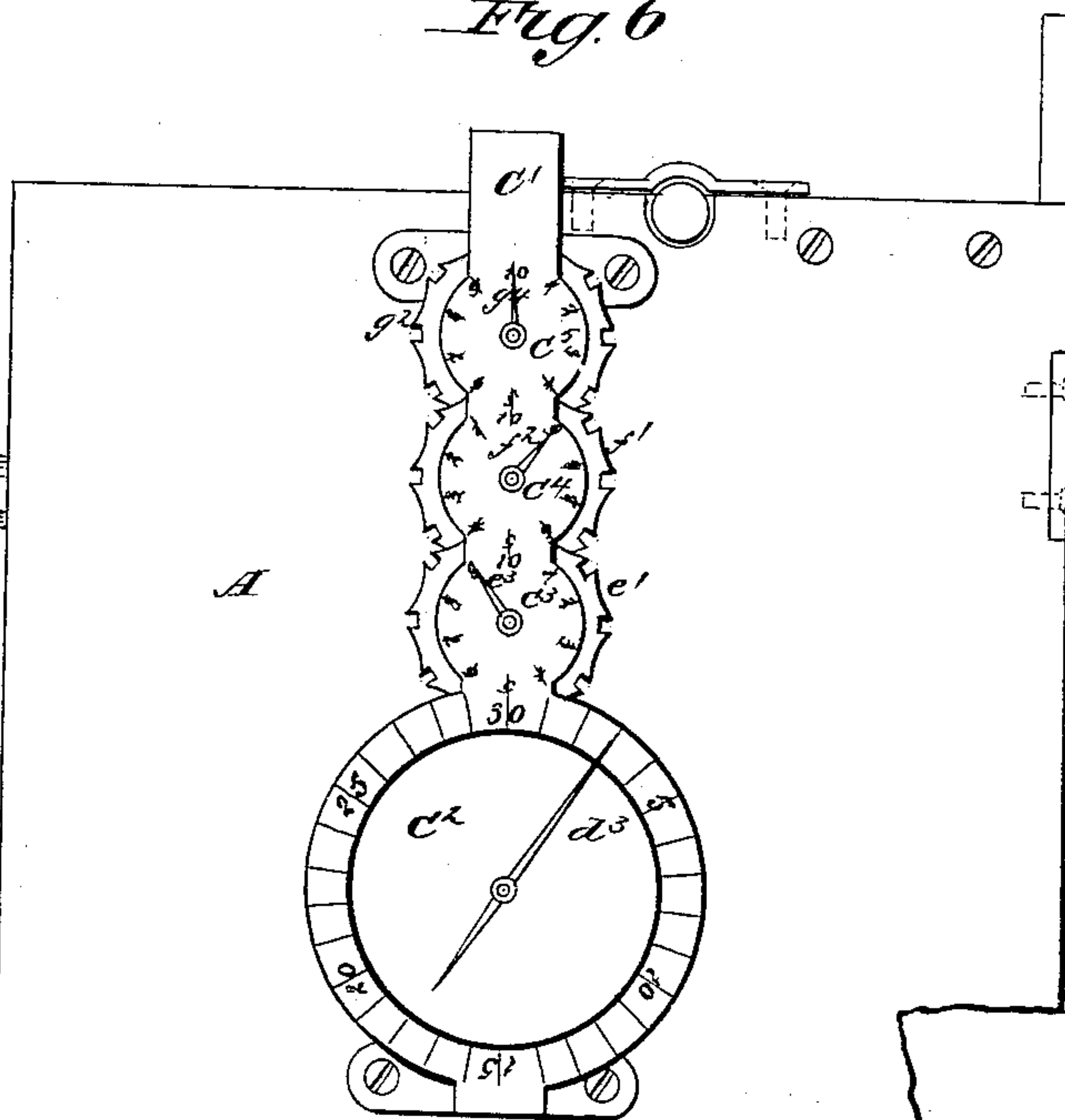


Fig. 6



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# UNITED STATES PATENT OFFICE.

JOSEPH N. HARDY, OF NEW ORLEANS, LOUISIANA.

## FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 231,165, dated August 17, 1880.

Application filed December 10, 1879.

*To all whom it may concern:*

Be it known that I, JOSEPH N. HARDY, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Fare-Register, of which the following is a specification.

The object of my invention is to furnish a register for registering the number of fares deposited in the fare-boxes used in street-railway cars, stages, and for other purposes.

The invention consists of a toothed cylinder pivoted in the lower part of the fare-box below the tilting trap. The shaft of this toothed cylinder is connected with an index on a circular dial, so that as the cylinder revolves it turns the index, which shows on the dial the number of fares paid.

The invention also consists in operating the cylinder by means of pawls connected with pulls having regularly-graduated movements, so that the cylinder can be moved different distances to register different numbers of single fares paid at a single time.

The invention also consists of mechanism connected with each of the several pulls, whereby, when one of the pulls is operated, a slide is thrown up which indicates the number of single fares paid.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my improved register, taken on line *x x*, Fig. 2. Fig. 2 is a plan of the register with the top plates removed and exposing the interior arrangement of the operating mechanism. Fig. 3 represents the plate which carries the slides on which the fares are printed. Fig. 4 is an enlarged sectional view of the registering mechanism. Fig. 5 is a plan of the box containing the registering mechanism, also a sectional view, in dotted lines, of the case surrounding said box. Fig. 6 is a side elevation of the box containing the registering mechanism, showing the registering-dials; and Fig. 7 is a side elevation of the gearing by which the dials are operated.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A is the lower part of the fare-box, in the space A' whereof is placed the iron box which receives the fares.

In box A, on either side, are fixed metal plates *a a*, parallel to the sides *b b* of the box A.

B is a ratchet or toothed faced cylinder, placed transversely within box A behind the space A'. Said cylinder is provided at the ends with short shafts *c c'*, which are pivoted in plates *a a*. Shaft *c* is connected by a cross-pin to a shaft, *c'*, that is journaled in vertical plates C C' outside of the box, whereby the parts can be operated.

Between plates C C' shaft *c'* carries a pinion, *d*, which meshes with a spur-wheel, *d'*, on shaft *d'*, which projects through plate C', and carries an index, *d'*, which moves around a dial, C<sup>2</sup>, on the lower part of plate C'.

On shaft *c* is another single-toothed wheel, *e*, which meshes with a mortised wheel, *e'*, on shaft *e'*. Shaft *e'* projects through a dial, C<sup>3</sup>, and carries an index, *e'*.

On shaft *e'* is a single-toothed wheel, *f*, which meshes with a mortised wheel, *f'*, on shaft *f*, which projects through a dial, C<sup>4</sup>, and carries an index, *f'*.

On shaft *f* is a single-toothed wheel, *g*, which meshes with a mortised wheel, *g'*, on shaft *g'*, which projects through a dial, C<sup>5</sup>, and carries an index, *g'*.

The dials and indexes above mentioned register the movements of the mechanism, and their operation is as follows:

Index *d'* moves once around dial C<sup>2</sup> at every revolution of cylinder B. Index *e'* moves once around dial C<sup>3</sup> at every ten revolutions of index *d'*. Index *f'* moves once around dial C<sup>4</sup> at every ten revolutions of index *e'*, and in like manner index *g'* makes one revolution to every ten of index *f'*.

D D' D<sup>2</sup> D<sup>3</sup> D<sup>4</sup> are pulls, which are passed horizontally through the front plate, *h*, of box A, so as to slide freely back and forth on their bearings in slots *h'* in plates E E', fixed transversely within box A above cylinder B.

On each of the pulls is a stop, *i*, and between stop *i* and plate E a spiral spring, *j*, is wrapped around the shaft of the pull. The stops *i* and springs *j* limit the distance to which the pulls can be drawn out in the direction of arrow 1, and the springs *j* serve to throw the pulls back by acting against the stops *i*. The inward movement of the pulls is limited by the pins



$i'$  passed through the shafts of the pulls, which come in contact with the plate  $E'$ , and thus prevent the springs from forcing the pulls in too far.

5 To the shaft of each of the pulls, just over the cylinder B, is pivoted a spring-pawl, F, which is forced by the spring  $j'$ , attached at one end to the said pawl and having its free end bearing against the shaft, down on the toothed face of cylinder B, so that said pawls F are held by said springs  $j'$  in position to en-  
10 gage the teeth of the cylinder B. Transversely through pawls F are passed pins  $k$ .

G G are fingers fixed to plates  $k'$ , which pro-  
15 ject horizontally from plates E under the shafts of the pulls. A pair of these fingers, G G, is provided for each of the pulls, and the pawls F and the ends  $l l$  of said fingers project over the top of cylinder B, and the said  
20 ends  $l$  are rounded off in the manner shown in Figs. 1 and 4. The position of these fingers G is such that when the pulls are drawn back in the direction of arrow 1 the pawls F pass between the ends  $l l$  and the transverse  
25 pins  $k$ , striking against the rounded ends  $l l$ . The said ends pass under the pins  $k$  and throw the pawls up out of contact with the face of cylinder B. As the cylinder B is revolved by the pawls F engaging the teeth of said cylin-  
30 der when said pawls are drawn back in the direction of arrow 1, and as the cylinder B is intended to be moved different distances by the different pulls, the fingers G G are provided to limit the engagement of the pawls F with the  
35 teeth of cylinder B.

The number of teeth on cylinder B is intended to correspond precisely with the graduations on dial  $C^2$ , and each of the graduations on said dial indicates one fare, so that the  
40 pawls are arranged to turn the cylinder so as to move the index  $d^3$  one step, two, three, four, and five, and upward, to any desired number, the number of fares it is possible to register at one time depending on the number  
45 of pulls and pawls employed. Thus pull D operates cylinder B through its pawl F, so as to move the index  $d^3$  one step and register one fare. Pull  $D'$  moves the index two steps and registers two fares. Pull  $D^2$  moves the  
50 index three steps and registers three fares. Pull  $D^3$  moves the index four steps and registers four fares, and pull  $D^4$  moves the index five steps and registers five fares. This limitation of the movement of the index  $d^3$  is  
55 brought about by the position which the ends  $l l$  of fingers G occupy relatively to the pawls F. Thus when pull D is drawn to register one fare the pawl F attached to the shaft of said pawl draws or revolves cylinder B suffi-  
60 ciently far to cause the said cylinder to move the index  $d^3$  one step on the face of dial  $C^2$ . When the pawl has moved the cylinder sufficiently far for this purpose the transverse pin  $k$  of the pawl strikes the rounded ends  $l$  of the  
65 fingers, and the pawl is raised up out of connection with the tooth with which it was en-

gaged, and the further movement of the cylinder B by the said pawl is prevented.

On releasing the pull D the spring throws it back, and the pawl F, connected to the  
70 shaft of said pull, is moved back the length of one tooth of the cylinder B. Thus by graduating the lengths of the fingers G G and the position of pins  $k$  the pawls are permitted to move the cylinder B sufficiently far to turn  
75 the index  $d^3$  on dial  $C^2$  one, two, three, four, and five steps, each indicating the same number of fares, respectively, for the pulls D  $D'$   $D^2$   $D^3$   $D^4$ , and when the pulls are released the pawls move back the number of teeth corre-  
80 sponding to the number of fares the respective pulls register. Thus the pawl connected with pull D moves back the length of one tooth of cylinder B, the pawl of pull  $D^2$  moves back two teeth, the pawl of  $D^3$  moves back three  
85 teeth, and the pawl of  $D^4$  moves back four teeth.

From this description it will be readily seen that by drawing the pull corresponding to the number of fares deposited in the fare-box at  
90 one time the pawl connected with the pull operates the cylinder B so that the index  $d^3$  is moved the number of steps on the dial corresponding to the number of fares deposited.

To show to the passengers and others inside  
95 the car the number of fares deposited at one time and registered, and thus furnish means whereby it can be determined by the passengers or others whether the driver draws the right pull, I place in the side H of the fare-  
100 box that faces the inside of the car a metal plate, I, just in front of and at right angles to the tilting plate J when said plate is in a horizontal closed position, as in Fig. 4. The  
105 part  $I'$  of plate I extending above the level of the tilting plate J is provided with vertical slots or openings  $J'$ , and the sides of these slots are provided with vertical grooves  $m m$ , which extend some distance below the open-  
110 ings  $J'$ . In grooves  $m m$  are held the edges of slides K, which are adapted to be thrown up in the openings  $J'$  and to fall down behind plate I into the position they occupy in Figs. 1 and  
3. When the slides are down they are supported by stops  $n$  fixed to the back of plate J.  
115 The slides are provided at their bottom edges at the back with lugs  $o$ . A slide, K, thus constructed and arranged is provided for each of the pulls D  $D'$   $D^2$   $D^3$   $D^4$ , and on the outside of the slides, in view of the passengers or others  
120 in the car, are printed or otherwise exhibited numbers corresponding respectively with the fares which the several pulls register. Thus the slide corresponding to pull D has "1" printed on it, slide corresponding to pull  $D'$   
125 has "2" printed upon it, and so on. One of these slides K is intended to be thrown up and held whenever the corresponding pull is drawn, and the manner of operating the said slides is as follows: The tilting plate J, on which  
130 the fares fall, is pivoted in the top of box A, between the top plate,  $b'$ , of said box and the



plate I. Said tilting plate turns freely on its pivots from the horizontal position it occupies in Fig. 4 to the inclined position it occupies in Fig. 1. When in a horizontal position the rear edge, *p*, of tilting plate J rests on stops *q* in the adjacent edge of top plate, *b'*, where said edge is retained until tilted by the spiral springs L connected with said edge *p*. The springs L also serve to draw the tilting plate to a horizontal position after it has been tilted. The tilting plate J is intended to be tilted by each of the pulls D D' D<sup>2</sup> D<sup>3</sup> D<sup>4</sup> independently of the others, and for this purpose the shaft of each of the pulls D, &c., is connected by a jointed connecting-rod, M, with one end, *q'*, of lever *r*, which is pivoted between jaws *s s* underneath the outer edge, N, of the tilting plate J. Now, when either one of the pulls D, &c., is drawn in the direction of the arrow 1 the connecting-rod M is drawn in the same direction, and said connecting-rod, acting through the lever *r*, draws the edge N of the tilting plate J down into the position it occupies in Fig. 1. The end *r'* of lever *r* opposite its end *q'*, which is pivoted to the connecting-rod M, is pivoted to the end of a bolt, O, which slides in an eye or guide, *t*, depending from the under side of the tilting plate J close to the edge N. By this connection of the levers *r* with the bolts O, when one of the pulls D, &c., is pulled out in the direction of the arrow 1 the connecting-rod M, in addition to tilting the plate J, turns the lever *r* on its fulcrum, and thereby throws the bolt O out beyond the edge of tilting plate J into the position it occupies in Fig. 1. When the bolt O is in this manner thrown out, at the movement of the tilting of plate J the end of said bolt O passes under the lug *o* of the sliding plate K corresponding to the pull D, &c., drawn out, so that, when the said pull is released and is forced back and the springs L recover the tilting plate J to its horizontal position, the bolt O, bearing against one lug *o* and the tilting plate catching the upper lug *o*, as the bolt withdraws, forces the slide K up into its opening or slot J', and the passengers or others in the car can see, by examining the figures on the slide so thrown up, whether the right pull was drawn to register the number of fares deposited in the box. After one slide K has been thrown up in the manner above described, and another fare is deposited in the box, as soon as one of the pulls D, &c., is pulled and the plate J is tilted, the slide K last thrown up drops down behind plate I, and the connecting-rod M and lever *r* corresponding to the pull drawn operate a bolt, O, connected with said lever *r*, and thereby throw up a slide corresponding to the pull drawn out. At the same time all the levers *r*, except the one connected with the pull drawn out, are turned on their fulcrums in jaws *s s* in the direction of the arrow 2, Fig. 1, by the tilting of plate J, and thereby the bolt O, which was thrust out before the tilting of plate J, is drawn in, and thereby said bolt and

those not connected with the pull drawn out are prevented from throwing others of the slides K than the one which is intended to indicate the fare last paid.

It is also intended to indicate by the ringing of a bell the number of fares paid. For this purpose a gong-bell, P, is attached to one of the plates *a* behind the toothed cylinder B. The tapper *t* has its arm *u* pivoted at *v* to the plate *a*, and the end *w* of the arm beyond the pivot *v* is provided with a tooth, *v'*, which is held in contact with the toothed face of cylinder B by a spring, *x*, fixed at one end to the end *w* of the arm, while its free end is held under a stud, *y*. When the cylinder B is revolved the teeth bearing against the tooth *v'* operate the arm so as to throw the tapper *t* against the gong P, and thereby sound said gong, and as every tooth of cylinder B represents a single fare it follows that when pull D is drawn, the cylinder being moved by the pawl F through the space of one tooth, the gong is sounded once, pull D' sounds it twice, pull D<sup>2</sup> sounds it three times, pull D<sup>3</sup> sounds it four times, and pull D<sup>4</sup> sounds it five times. Thus it can be determined in two ways whether the car or stage driver registers the payment of the proper fare or fares by the slides K and by the sounding of the gong.

The apparatus above described is placed within the casing S (shown in dotted lines in Fig. 5) of the fare-box, so that the registering-dials C<sup>2</sup>, &c., will be entirely concealed within the said casing. Access will be had to the said dials through a door, which will be kept locked, so that it can only be opened by the proper parties.

The pulls D, &c., project through the front of the car convenient to the driver, so that he can operate them from his position without trouble.

The fare is deposited in the upper part of the fare-box in the usual way, and it falls down on the tilting plate J, where the driver inspects it through a window in the casing of the fare-box to see if it is correct. Then he draws one of the pulls D, &c., and tilts the plate J. The fare drops down into the iron draw, which is intended to be placed in A', and simultaneously the cylinder is revolved, the number of fares paid at that one time is registered on dial C<sup>2</sup>, the slide K is thrown up into view, and the gong is sounded.

This apparatus serves as a check both on the driver and "stripper," or the one who takes the fares from the fare-box at each trip, as the register is entirely concealed, and it is impossible for any one to know the amount registered without inspecting the dials C<sup>2</sup>, &c., so that when the register is examined by the authorized parties the amount registered should correspond with the amount turned in by the stripper. If it does not so correspond, it is easy to fix the responsibility of the deficiency. The driver is checked by the watchfulness of the passengers or others in the car, as when



fares are paid the attention is attracted to the fact by the appearance of the slide K and also by the ringing of the gong.

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

1. As an improvement in fare-registers, in combination with the tilting plate J, the toothed cylinder B, pulls D, &c., connected  
10 with the tilting plate by suitable connecting-rods, spring-pawls F, index  $d^3$ , and dial  $C^2$ , as and for the purpose substantially as described.

2. In combination with the cylinder B and the pulls D, &c., and spring-pawls F, the fin-  
15 gers G, constructed and arranged substantially as described.

3. In combination with the cylinder B, pulls D, &c., connecting-rods M, levers  $r$ , tilting plate J, and bolts O, the slides K, constructed and operating in the manner substantially as 20 described.

4. In combination with the cylinder B and the operating-pulls and spring-pawls, a series of registering-dials,  $C^2$   $C^3$ , &c., provided with suitable indexes, and the gearing connecting 25 said indexes with the shaft of cylinder B, substantially as hereinbefore described.

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Witnesses:

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