

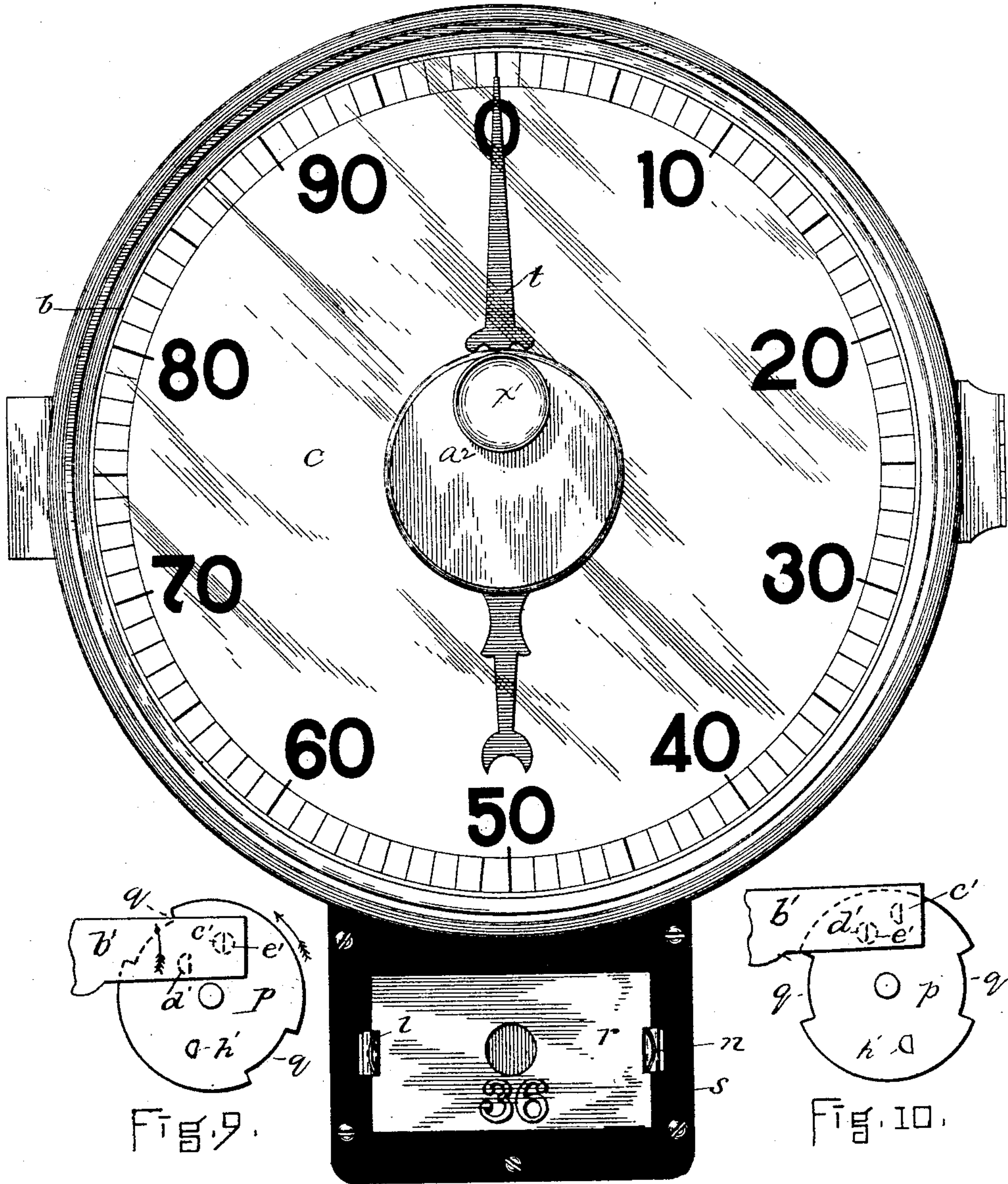
(No Model.)

4 Sheets—Sheet 1.

C. A. NEUERT.  
FARE REGISTER.

No. 455,050.

Patented June 30, 1891.



WITNESSES.  
*R. H. Marsh*  
*W. B. Bartlett*

FIG. 1.

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by *Wm. Brown & Co.*  
*Attorneys*



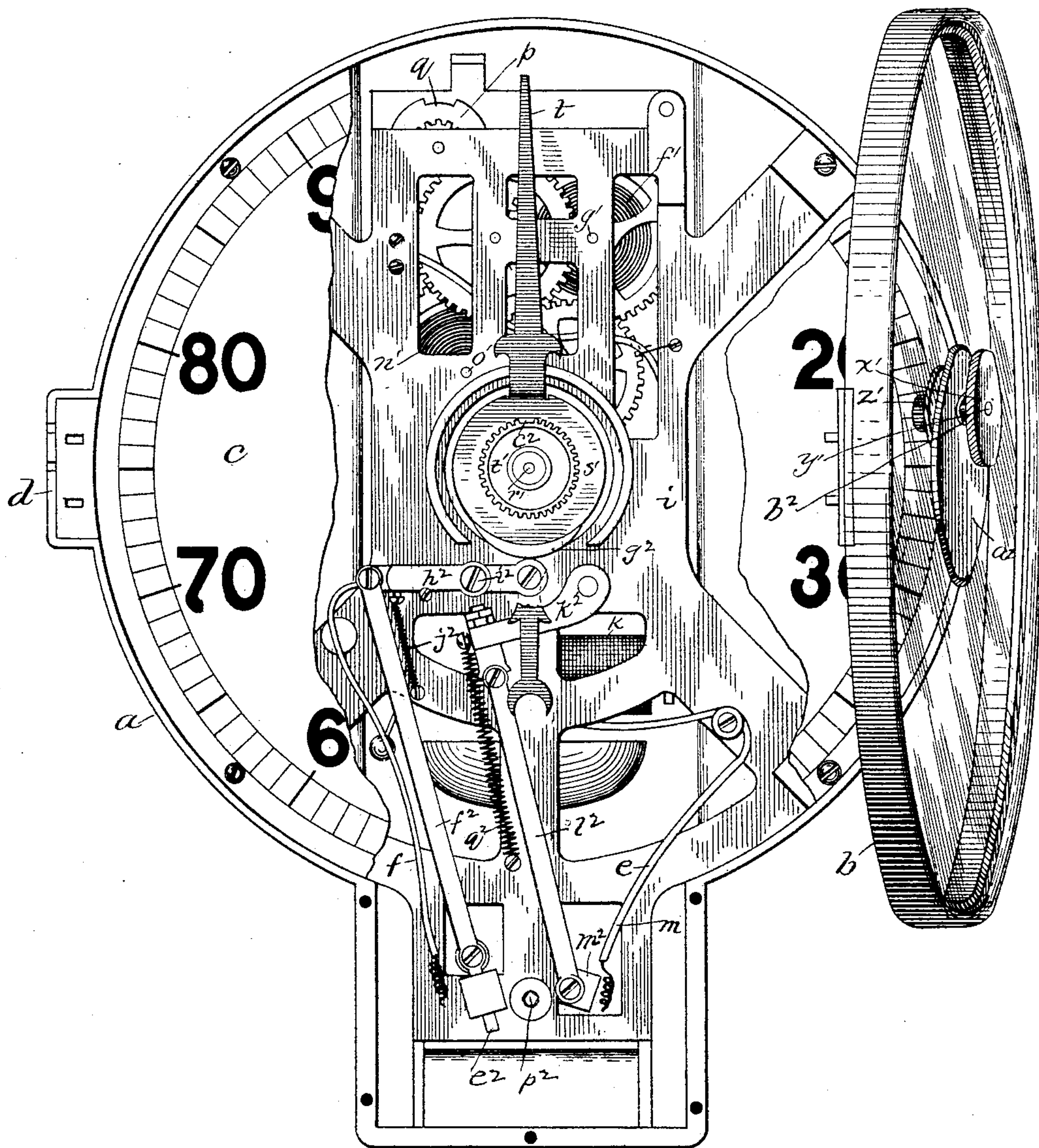
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4 Sheets—Sheet 2.

C. A. NEUERT.  
FARE REGISTER.

No. 455,050.

Patented June 30, 1891.



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FIG. 2.

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*24 Solicitor.*

(No Model.)

4 Sheets—Sheet 3.

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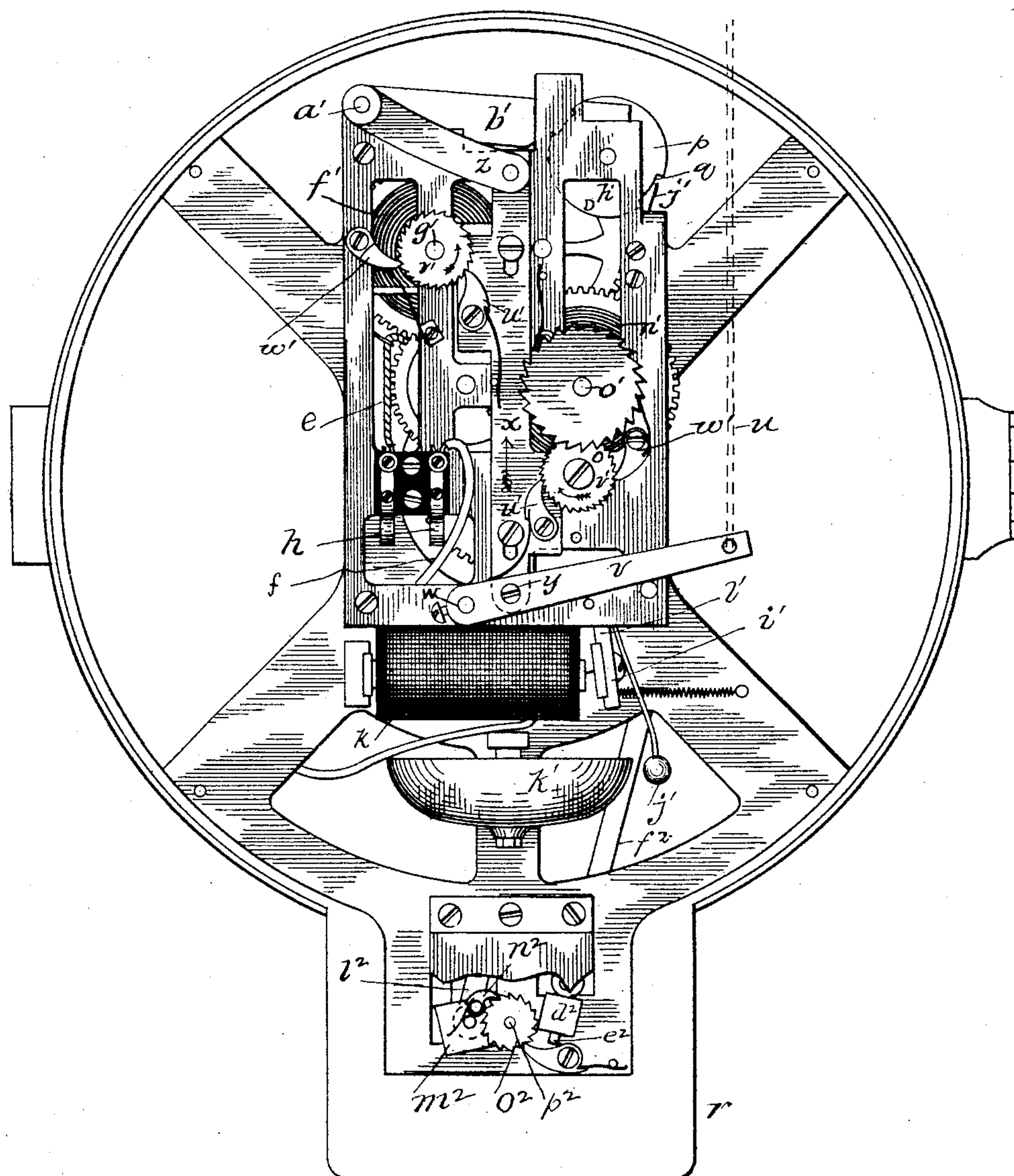


Fig. 3.

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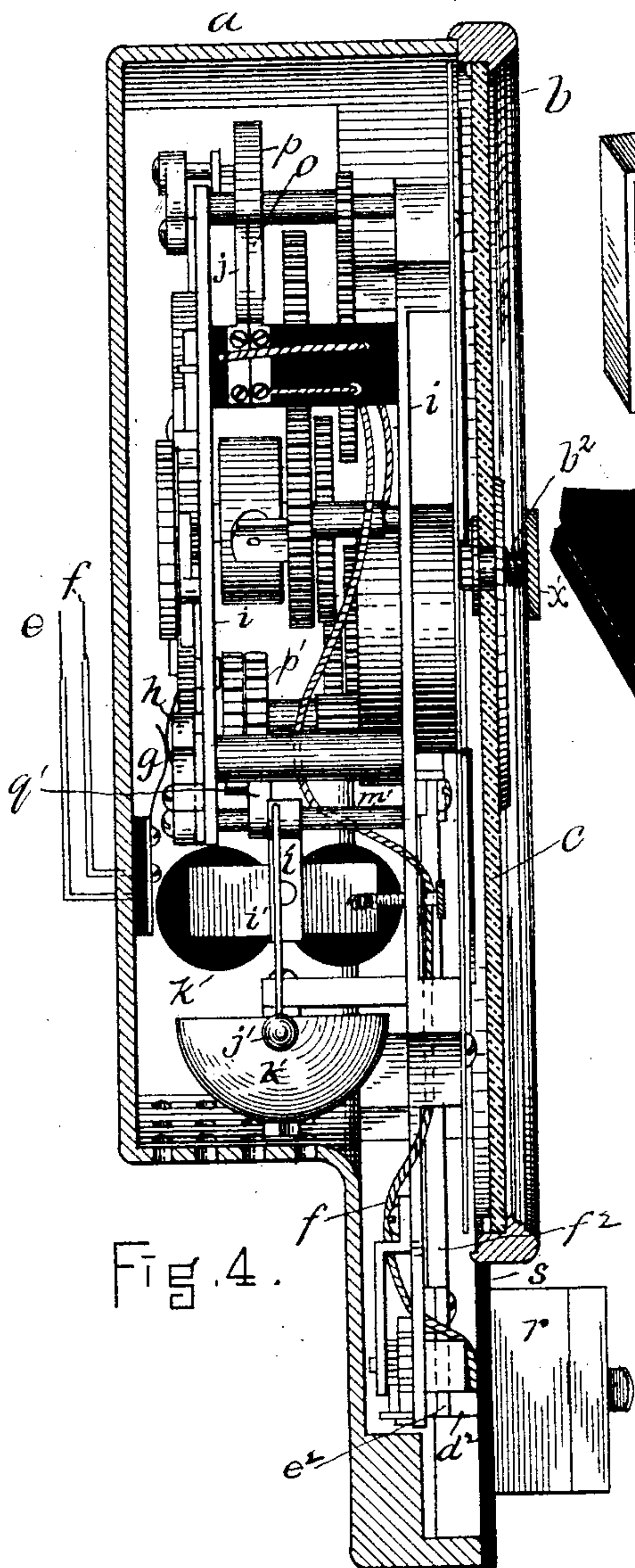


Fig. 4.

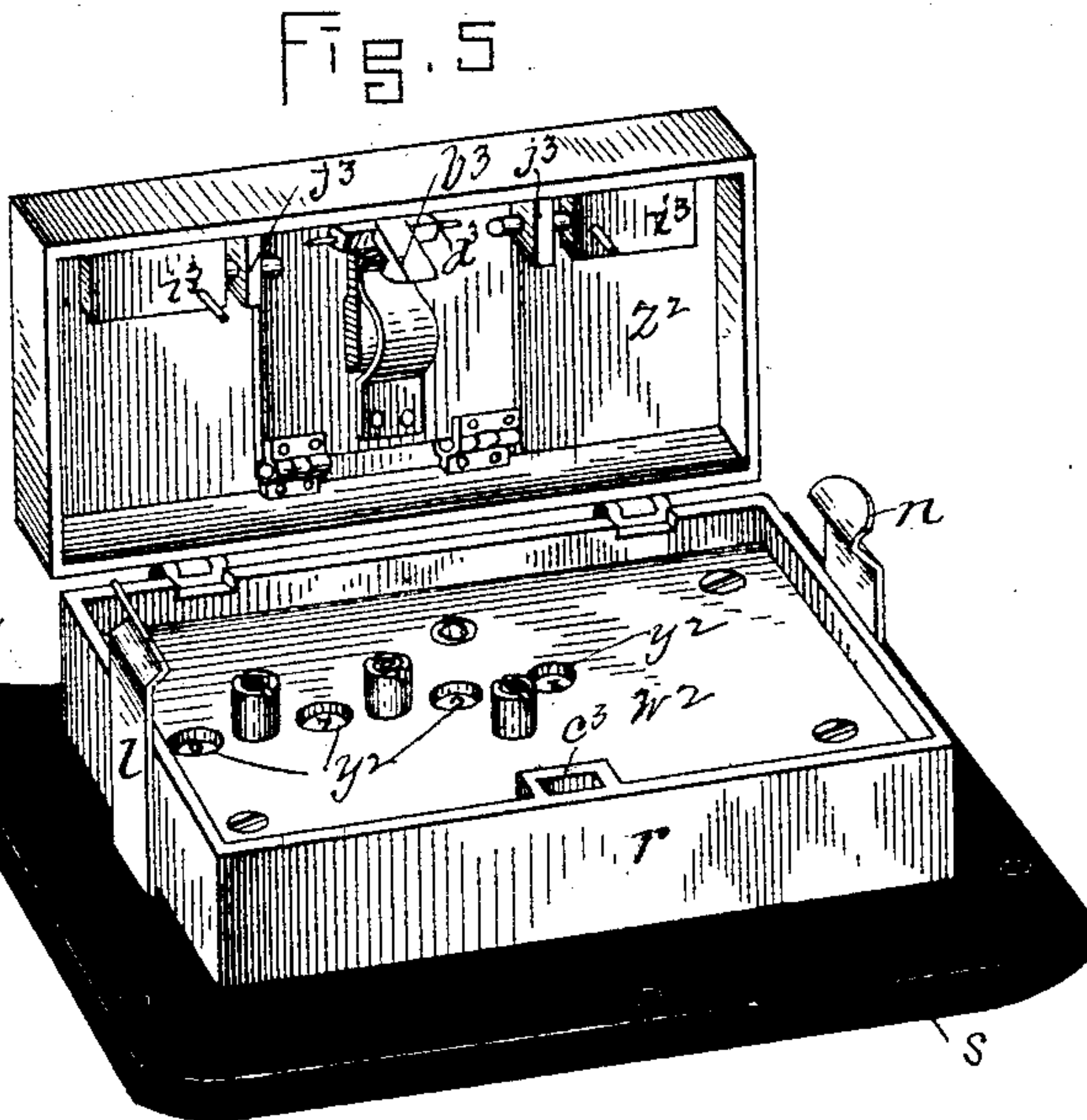


Fig. 5.

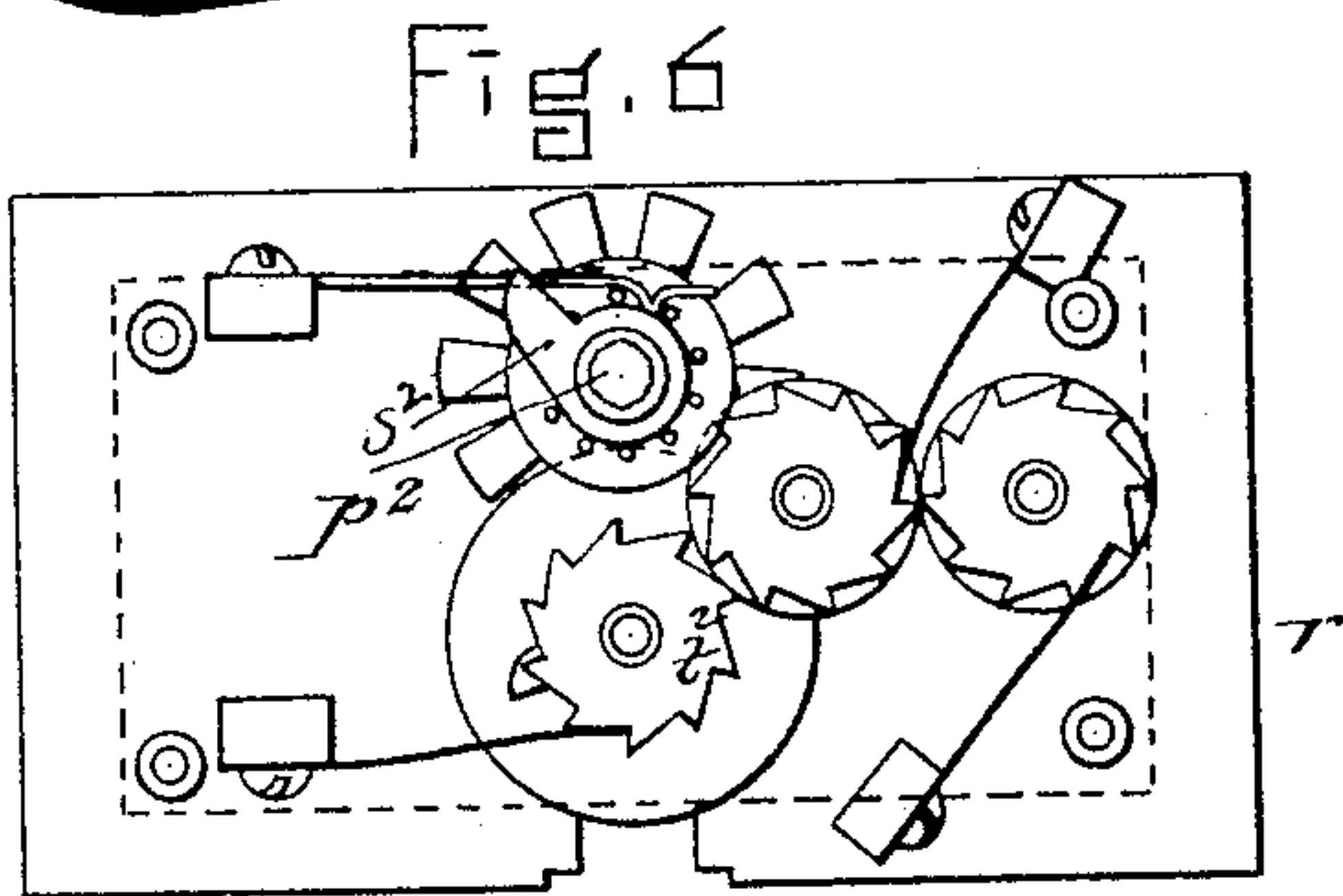


Fig. 6.

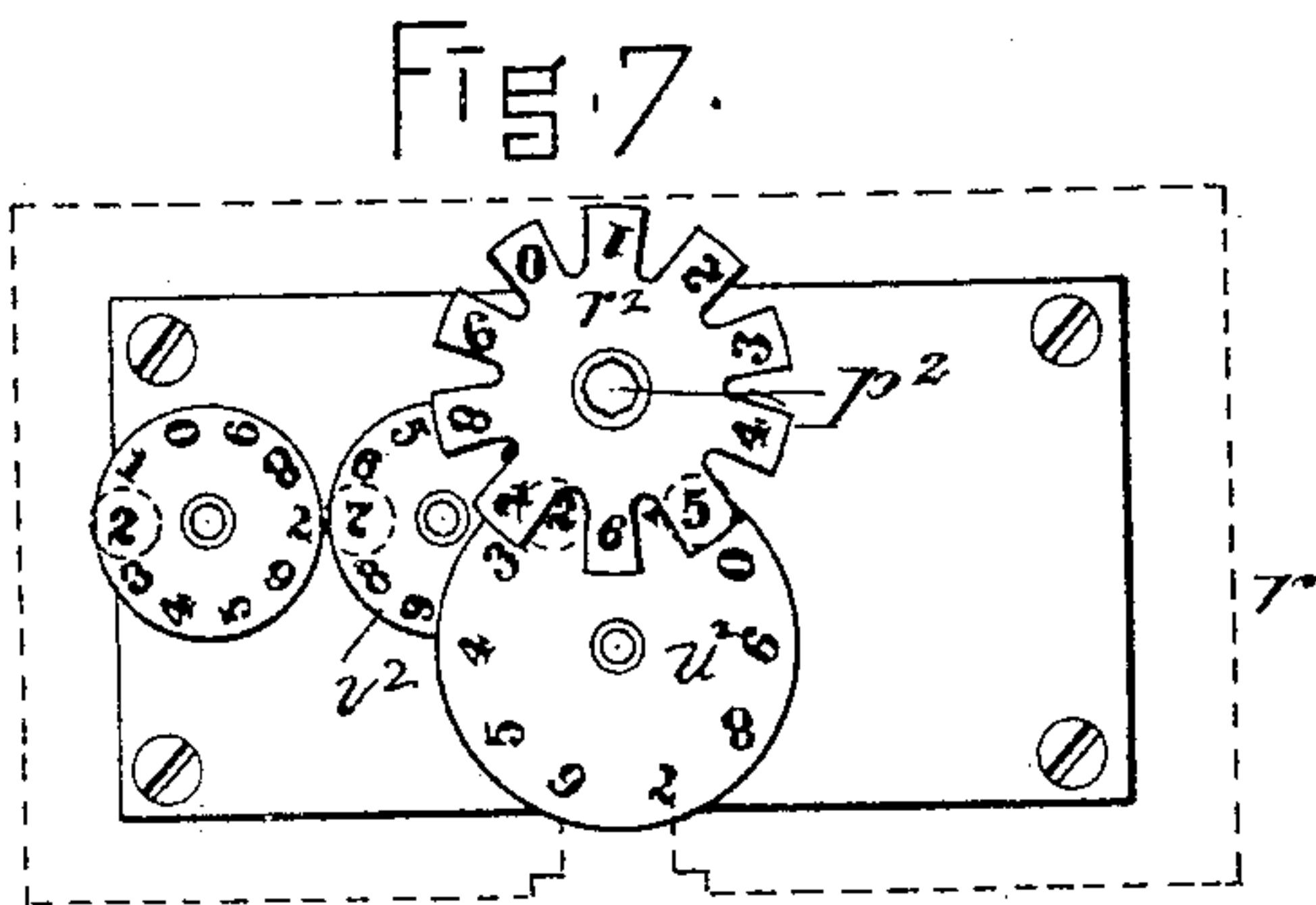
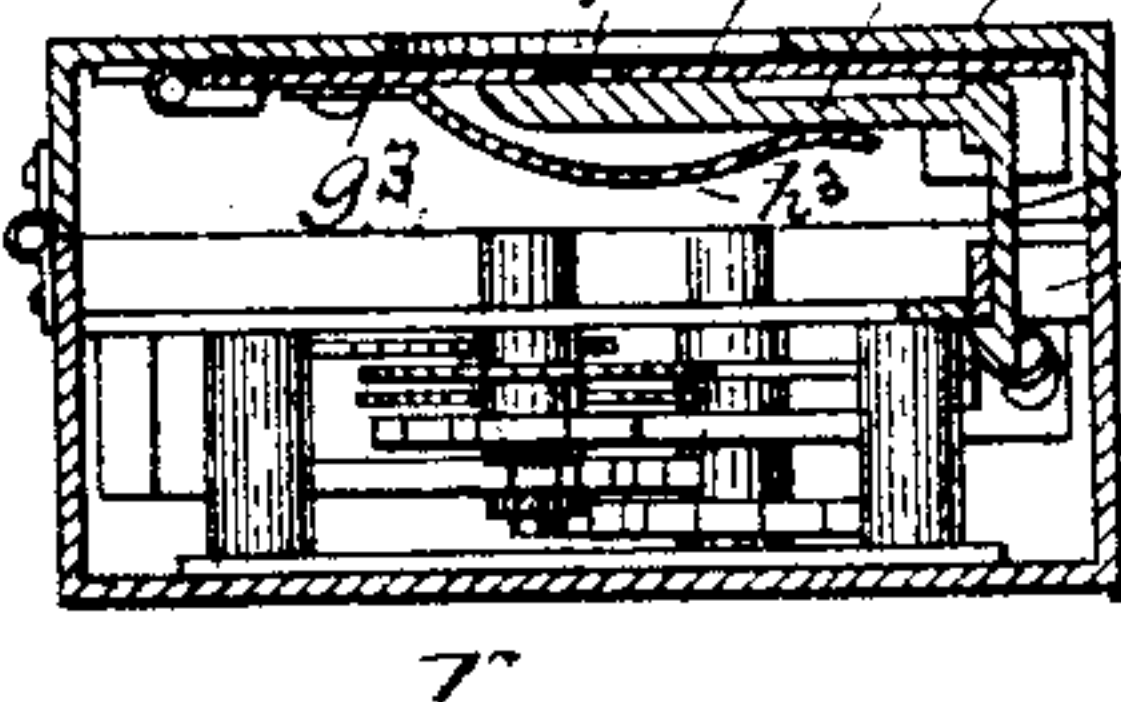


Fig. 7.

Fig. 8.



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# UNITED STATES PATENT OFFICE.

CHARLES A. NEUERT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE  
BOSTON ELECTRIC REGISTER COMPANY, OF KITTERY, MAINE.

## FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 455,050, dated June 30, 1891.

Application filed July 5, 1890. Serial No. 357,735. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. NEUERT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Registering Apparatus, of which the following is a specification.

My invention has for its object the improvement of registering apparatus and, especially the provision of a fare-register which shall preferably comprise in its construction a main or trip register visible to the passengers in the car, so that they may have notice of the registration of each fare from one end of the route to the other, and a removable auxiliary or tell-tale register adapted to be operated each time that the main or trip register is operated, which tell-tale register shall show the number of fares taken or registered each day or for any period of time, so that the conductor of a car may receive a tell-tale register from the main office in the morning, attach the same to the main register, detach it in the evening, and return it to the main office as a record of all the fares taken and registered by him during the day or from one period of time to another. It will be understood that the tell-tale registers will preferably be made interchangeable, so that any tell-tale register may be used with any of the main registers on the line, and a tell-tale register be assignable to any conductor and form his return for the day or other period of time independently of the car to which he is assigned.

My invention also has for its object the provision of various improvements in fare-registers and other registering apparatus, all of which will be fully described hereinafter, and be subsequently pointed out in the claims.

My invention will first be described in connection with the accompanying drawings and the letters of reference marked thereon, forming a part of this specification, and then be particularly pointed out in the claims appended to the detailed description.

In the said drawings, Figure 1 is a front view of my improved register complete. Fig. 2 is a similar view, the auxiliary or tell-tale register being removed, the door of the main or trip register being open and a portion of the face-plate and a part of the indicating-

hand broken away in order to show the mechanism beyond. Fig. 3 is a rear elevation of the machine with the back plate removed and parts broken away. Fig. 4 is a vertical central sectional view of the machine. Fig. 5 is a perspective view of the tell-tale register detached and open. Fig. 6 is a plan view of the mechanism for operating the indicating-disks of the tell-tale register. Fig. 7 is a front view of the indicating-disks of the tell-tale register. Fig. 8 is a cross-section of the tell-tale register complete, showing one way in which it may be closed and locked and unlocked and opened. Figs. 9 and 10 are detail views hereinafter more particularly referred to.

The same letters of reference indicate the same parts in all of the views.

*a* designates the case or frame, which may be constructed of iron or any other suitable material.

*b* designates a door consisting of a glass in a suitable frame adapted to cover the main register-indicating face-plate *c* and be locked in closed position by means of a lock *d*. The main registering device may be of any suitable construction, but is herein shown as electrically operated, and this part of the invention will first be described.

*e f* designate wires connected with a battery or any other source of electricity, which wires may be arranged to enter the casing from the rear, as shown in Fig. 4, and connect with contact-plates *g* on the casing, the said contact-plates bearing upon similar contact-plates *h*, connected with the frame *i*, which supports the mechanism in the case *a*. From one of the contact-plates *h* the wire *e* is led in any suitable manner between parts of the mechanism to and connected with the contact-plate *j*. (Shown most clearly in Fig. 4.) The other wire *f* is led down to and connected with one of the coils of the electro-magnet *k*. A wire, which for convenience we may designate by the same letter as the last-mentioned wire *f*, extends from the other coil of the magnet to the contact-plate *l*. A wire *m* extends from a contact-plate *n* to and is connected with the contact-plate *o* adjacent to the contact-plate *j*, before mentioned. The contact-plates *j o* are adapted to be connected, so as to complete the circuit, so far as they are concerned, by con-



tact with the raised portions of the periphery of the disk *p*, the periphery of said disk being cut away, as indicated at *q*, (see Figs. 9 and 10,) so that in a rotation of the said disk the circuit may be broken when the disk is turned to bring the cut-away part *q* opposite the points of the contact-plates *j o*, in which position the contact-plates will not touch the disk *p*. The circuit may be closed or broken by the removal or replacement of the tell-tale register *r*, which is composed of any electric conducting material, and is seated or placed against a non-conducting plate *s*, as is clearly represented in Figs. 4 and 5.

Supposing the tell-tale register to be in position on the machine, so as to electrically connect the contact-plates *l n*, and it is desired to register a fare and indicate the same by means of the hand or pointer *t* on the indicating-face *c*, the operator will draw upon the cord *u*, (see Fig. 3,) drawing up the outer end of the lever *v*, fulcrumed at *w*, with the effect of raising the bar *x*, as indicated by the arrow marked thereon. This movement of the bar *x*, which is pivotally connected at its lower end, as at *y*, with lever *v*, and in like manner connected with one end of a lever *z*, will effect the raising of said end of lever *z* and partially rotate the stud *a'*, with which lever *z* is rigidly connected. The end of stud *a'* opposite that shown in Fig. 3 is rigidly connected with one end of a lever *b'*, provided at its opposite end with studs *c' d'*, (see Figs. 9 and 10,) the former adapted to engage the stud *e'* on the side of the disk *p* when the lever *b'* is in lowered position, and the stud *d'* to engage the said stud *e'* when the lever is raised. The disk *p* is adapted to be operated in the direction indicated by the arrow marked thereon through a train of gears and pinions, as shown, and, as is quite common in clock mechanisms, by means of a spring *f'*, coiled about the arbor *g'*. It will now be understood that by raising the free end of the lever *b'* from the position in which it is represented in Fig. 9 to that indicated in Fig. 10 the stud *c'* on the lever *b'* will slip up away from the stud *e'* on the disk *p*, and the stud *d'* will be brought into the path of the stud *e'*, and by lowering the said lever again to the position shown in Fig. 9 the stud *e'* will escape from the stud *d'*, and the disk *p* will have a partial revolution imparted to it by means of spring *f'* and intermediate mechanism, and a stud *h'*, opposite to the stud *e'*, will be brought into contact with the stud *c'* and so stop the revolution of the disk *p* with the points of the contact-fingers *j o* opposite a cut-away portion *q* of the disk *p*. In the partial revolution of the disk *p*, as described, the free ends of the contact-fingers *j o* will be brought to bear upon the raised portions of the periphery of the disk *p* and close the circuit, with the result of energizing the magnets *k*, attracting the armature *i'* thereto, and causing the hammer *j'*, connected with the armature, to strike the bell *k'* one blow. The

armature *i'* is connected by means of a bar *l'* with a shaft *m'*, as shown in Fig. 4.

*n'* designates a spring coiled about an arbor *o'*, which spring is adapted to actuate a train of wheel-work similar to a clock mechanism to convey motion to an escape-wheel *p'*, which is engaged by means of suitable pallets on the ends of an anchor or escapement device *q'* in any watch or clock mechanism. Said escapement device *q'* is secured to the arbor or shaft *m'*, with which the armature *i'* is connected, as aforesaid. It will now be understood that upon the movement of the disk *p*, as aforescribed, so as to close the circuit through the contact-plates *j o* and attract the armature *i'* to the magnets *k*, the arbor *m'* will be rocked in its bearings, so as to operate the escapement-anchor to permit the toothed wheel *p'* to move a distance of one tooth, the said movement communicating motion through a train of gearing to the arbor *r'*, upon which are secured the disk *s'* and gear-wheel *t'*, the pointer or indicating-finger *t* being attached to said disk and actuated by the movement of the train of gearing last described a distance sufficient to indicate one fare on the scale of the indicating-dial *c*.

Upon the bar *x* are pivoted pawls *u' u'*, adapted to engage ratchet-wheels *v' v'* and move the same a distance of one tooth. When said bar is raised, the ratchet-wheels *v'* are constructed and arranged to impart motion to the arbors *g' o'*, around which are coiled the springs *f' n'*, and so "wind up" the said springs to the extent that they will "run down" in actuating the lever *v* to secure the registration of a fare, as before mentioned, this winding-up mechanism maintaining the actuating-springs in position to act with the same resilient force at all times.

By the removal of the tell-tale register the circuit will be broken between the contact-fingers *l n*, thus rendering it impossible to actuate the indicating finger or pointer *t* of the main register, even though the lever *v* should be moved to operate the wheel *p* and its connecting mechanism.

*w' w'* designate holding-pawls adapted to engage the teeth of the ratchet-wheels *v' v'* and keep the same from turning backward.

*x'* is a thumb-disk secured upon the outer end of an arbor *y'*, to the inner end of which arbor is attached a pinion *z'*. (See Fig. 2.)

A metallic plate *a<sup>2</sup>* is arranged at a central point on the glass face of the dial *b*, and between this plate and the thumb-disk *x'* is arranged a spring *b<sup>2</sup>*, coiled about the arbor *y'*, which passes through the plate *a<sup>2</sup>*, as also through the glass face of the door. The spring *b<sup>2</sup>* operates to press the arbor *y'* and thumb-disk *x'* outwardly as far as the pinion on the inner end of said arbor will permit. The pinion *z'* is constructed and arranged when pressed inwardly to engage the teeth of the wheel *t'* and turn the same, so as to bring the pointer back to zero from any point to which it may be moved on the indicating-dial



$c$ , and when the indicator reaches the point zero the pinion will reach the point  $c^2$  in the wheel  $t'$ , where the teeth are mutilated or cut away, and said pinion will therefore not effect the turning of the wheel  $t'$ . When the operator ceases to press upon the thumb-disk  $x'$ , the spring  $b^2$  will move said disk, arbor  $y'$ , and pinion  $z'$  outward, releasing the pinion from contact with the teeth of the wheel  $t'$ .

10 The tell-tale register  $r$  is provided on its rear with a stud  $d^2$ , having a hole formed therein, through which hole the lower end  $e^2$  of a rod  $f^2$  is adapted to pass, as is shown in Fig. 4.

15 The disk  $s'$  is provided with a cam  $g^2$  on its periphery at a point which adapts it, when the hand or pointer  $t$  is turned so as to point to zero, (0,) to engage the inner end of a lever  $h^2$ , fulcrumed at  $i^2$  and pivotally connected at its outer end to rod  $f^2$ , with the result of moving said lever  $h^2$  and raising rod  $f^2$ , so as to disengage its lower end  $e^2$  from stud  $d^2$  and permit the tell-tale register to be removed or replaced.

25 The tell-tale register must always be placed in position when the hand  $t$  is turned to point to zero and the rod  $f^2$  is raised. After one or two fares have been registered on the main or trip register the cam  $g^2$  will be carried away from contact with the inner end of lever  $h^2$ , and the rod  $f^2$  will be lowered by the action of the spring  $j^2$ , passing the lower end of the said rod through the hole in stud  $d^2$ , locking the tell-tale register in place, so that it cannot be removed until the hand  $t$  is again turned back to zero.

The contact-spring fingers  $l$  serve to hold the tell-tale register in place until it is locked in position by the rod  $f^2$ .

40 The lever  $v$  is rigidly connected with its fulcrum stud or shaft  $w$ , and the said stud extends through the frame  $i$  to the front thereof, where it is rigidly attached to one end of a lever  $k^2$ , the opposite end of which is connected to a jointed rod or bar  $l^2$ , pivotally connected at its lower end to a lever  $m^2$ , provided with a pawl  $n^2$ , adapted to engage the teeth of a ratchet-wheel  $o^2$ , secured to arbor  $p^2$ , and move the said ratchet-wheel and arbor the distance of one tooth each time that the rod  $l^2$  is raised through the medium of lever  $k^2$ , stud or shaft  $w$ , and lever  $v$ . The rod  $l^2$  is moved downwardly by the operation of the spring  $q^2$ .

55 The forward end of the arbor  $p^2$  is squared and adapted to enter the tell-tale register and operate a train or group of devices which will register units, tens, hundreds, and thousands, somewhat as is done by gas-meters and like devices. Any suitably-constructed mechanism may be employed for this purpose. That here shown consists of a units-indicating disk  $r^2$ , the arbor of which is operated by the arbor  $p^2$ , passing therethrough. A dog or finger  $s^2$  is connected with the arbor of the units-indicating disk and so constructed and arranged as at each revolution of the said arbor to engage

one of the teeth of the ratchet-disk  $t^2$  on the arbor of the tens-disk and move the last-mentioned disk a tenth of a revolution. The arbors of the tens and hundreds indicating disks  $u^2$   $v^2$  are equipped similarly to the arbor of the units-indicating disk, so that the hundreds and thousands indicating disks may be properly operated.

75 The plate  $w^2$ , covering the indicating-plate, in the tell-tale register, may have apertures  $y^2$  formed therein, through which the numbers opposite said apertures may be seen, it being understood that the disks will preferably be "set" at the beginning, so that the zero figures will be displayed through the apertures.

80 The lid  $z^2$  of the tell-tale register may be made of glass or metal and may be locked in closed position by any suitable lock placed at any suitable point, the said locking mechanism being herein shown as provided with a seal  $a^3$ , composed of paper, tin-foil, or other material which may be punctured or indented, which seal is arranged over the key-hole, so that the tell-tale register cannot be unlocked without indenting or puncturing the seal.

85 A "Yale" or other lock may be employed, though I have here shown a catch  $b^3$ , adapted to engage a loop or staple like part  $c^3$  when the lid is closed. The catch  $b^3$  is pivoted at  $d^3$  and is provided with an angular arm  $e^3$ , extending out over the key-hole  $f^3$ , formed in the plate  $g^3$ , by which the seal  $a^3$  is held in place. A spring  $h^3$  bears upon the angular arm  $e^3$  to cause the catch to engage and remain in engaged position with the staple-like part  $c^3$ . The plate  $g^3$  is hinged at its inner edge to the lid, and bolts or slides  $i^3$ , arranged to slide in holes formed in lugs  $j^3$ , engage the plate and hold it down upon the seal  $a^3$ , placed between the inner side of the lid and the said plate. By placing the key in the key-hole  $f^3$ , puncturing the seal, and pressing down the angular arm  $e^3$  the catch  $b^3$  will be disengaged from the staple or loop  $c^3$ , and the box will be unlocked and may be opened. The seals may be marked on the outside or inside with a mark that cannot be readily duplicated, or they may be made to bear a signature, which it would be forgery to counterfeit, and so render it a matter out of question to unlock the tell-tale register without detection. It is to be observed that as soon as the lever  $v$  is raised a fare will be registered in the tell-tale register, and the moment the lever  $v$  is released the electric circuit will be closed, and the trip-register will be operated and indicate the taking of a fare.

125 While I have for the sake of convenience merely mentioned the electrically-operated main register as a "main" register and the mechanically-operated auxiliary or tell-tale register as a "daily" register, each may be used without respect to trips or particular periods of time.

This improvement affords a register which cannot be tampered with and which affords



a most convenient and exact means of registering fares and of making up the conductor's accounts. I prefer to employ both the main or trip register and the auxiliary or tell-tale register together; but it is evident that the main register may be omitted and the tell-tale register used alone with some of the other features of my invention. Should the electrical energy fail, the mechanical part may still be operated to register fares in the tell-tale register, from which the conductor's accounts may be made up.

By the term "separately-incased register," used in the claims, I mean and intend to cover a register which is provided with a casing separate from and independent of the casing of the registering apparatus of which the register forms a part or of the casing of another register combined therewith, so that the register when removed is still incased and protected, and may thus be handled conveniently independently of the registering apparatus or other register.

Having thus explained the nature of my invention and described a way of constructing and using the same, I declare that what I claim is—

1. In a registering apparatus, a separately-incased tell-tale register removable from the apparatus and locked to prevent change of the registration when removed from the apparatus, substantially as described.

2. In a registering apparatus, a tell-tale register removable from the apparatus and locked to prevent change of the registration when removed from the apparatus, substantially as described.

3. The combination, with a main register, of a tell-tale register coacting with and made removable from the main register, said tell-tale register being locked to prevent change of the registration when removed from the apparatus, substantially as described.

4. The combination, with a main register, of a plurality of tell-tale registers adapted to be connected with the main register and made removable from the main register and interchangeable, said tell-tale registers being locked to prevent change of the registration when removed, substantially as described.

5. The combination, with a main register, of a tell-tale register detachably secured to the main register and operated in unison with the main register, said tell-tale register being locked to prevent change of the registration when detached from the main register, substantially as described.

6. A registering apparatus comprising a main register, combined with a separately-incased tell-tale register removably connected with the main register, substantially as described.

7. In a registering apparatus, the combination, with a removable register, of a signal operated with the register and inoperative when the register is removed from the apparatus, substantially as described.

8. The combination of two coacting registers, one of which is removable and the other inoperative when the removable register is removed, substantially as described.

9. The combination of coacting main and tell-tale registers, one of which is removable and the other inoperative when the removable register is removed, substantially as described.

10. The combination, with a removable tell-tale register, of a main register coacting with the tell-tale register and inoperative when the tell-tale register is removed, substantially as described.

11. The combination, with a main register, of a removable tell-tale register and means whereby the removal of the tell-tale register renders the main register inoperative, substantially as described.

12. The combination, with a main register, of a removable tell-tale register and means whereby the removal of the tell-tale register is prevented when the main register is at any other point than zero, substantially as described.

13. The combination, with a main register, of a removable tell-tale register and means whereby the attachment of the tell-tale register is prevented when the main register is at any other point than zero, substantially as described.

14. The combination, with a main register, of a removable tell-tale register, and a locking device actuated by a registering movement of the main register to secure the tell-tale register against removal, substantially as described.

15. The combination, with a main register, of a removable tell-tale register, means for locking the tell-tale register against removal, and means whereby the return of the main register to zero unlocks the tell-tale register and permits it to be removed, substantially as described.

16. In a registering apparatus, the combination, with a main register, of a removable tell-tale register, means for locking the registering apparatus against the attachment of the tell-tale register, and means whereby the return of the main register to zero unlocks the registering apparatus for the attachment of the tell-tale register, substantially as described.

17. The combination of two coacting registers, one of which is removable, and means whereby the attachment of the removable register is prevented, except when the fixed register is in a certain position, substantially as described.

18. The combination of two coacting registers, one of which is removable, and means whereby the removal of the removable register is prevented except when the fixed register is in a certain position, substantially as described.

19. The combination of two coacting registers, one of which is removable, and a locking



device actuated by a registering movement of the fixed register to secure the removable register against removal, substantially as described.

5 20. The combination of two coacting registers, one of which is removable, and a locking device actuated by a registering movement of the fixed register to secure the removable register against removal and released by the  
10 return of the fixed register to a certain position, substantially as described.

21. The combination, with a fixed register provided with an electro-magnet, of a removable register coacting with the fixed register  
15 and forming a circuit-closer for said magnet, substantially as described.

22. The combination, with a signal provided with an electro-magnet, of a removable register coacting with said signal and forming a  
20 circuit-closer for said magnet, substantially as described.

23. A registering apparatus comprising a

main register, combined with a separately-incased removable tell-tale register, the casing of said tell-tale register being locked to prevent change of the registration when removed from the apparatus and having an opening for unlocking the case, and a seal arranged over the opening, substantially as described.

24. The combination, with two registers, of a spring-actuated mechanism for operating one of the registers, a lever or other mechanical device operating the other register, and a rewinding mechanism for the spring-actuated mechanism operated by the mechanical device, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of May, A. D. 1890.

CHARLES A. NEUERT.

Witnesses:

ARTHUR W. CROSSLEY,  
A. D. HARRISON.