

(No Model.)

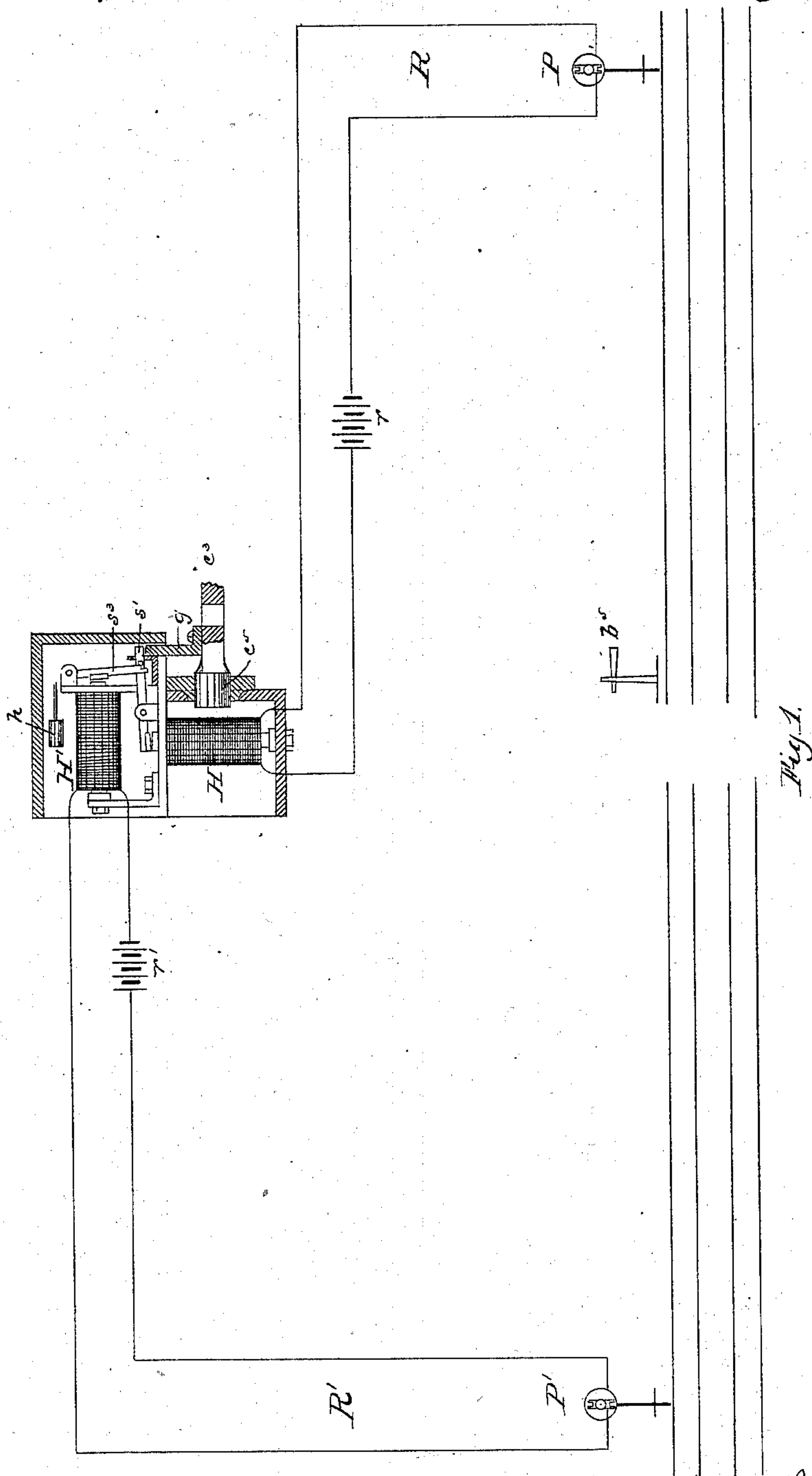
3 Sheets—Sheet 1.

O. GASSETT.

ELECTRIC LOCKING MECHANISM FOR SWITCH AND SIGNAL LEVERS.

No. 283,231.

Patented Aug. 14, 1883.



Witnesses.

R. H. Whittlesley
C. M. Clarke

Invención. Oscar Gasset.

By Attorney. George H. Christy

(No Model.)

3 Sheets—Sheet 2.

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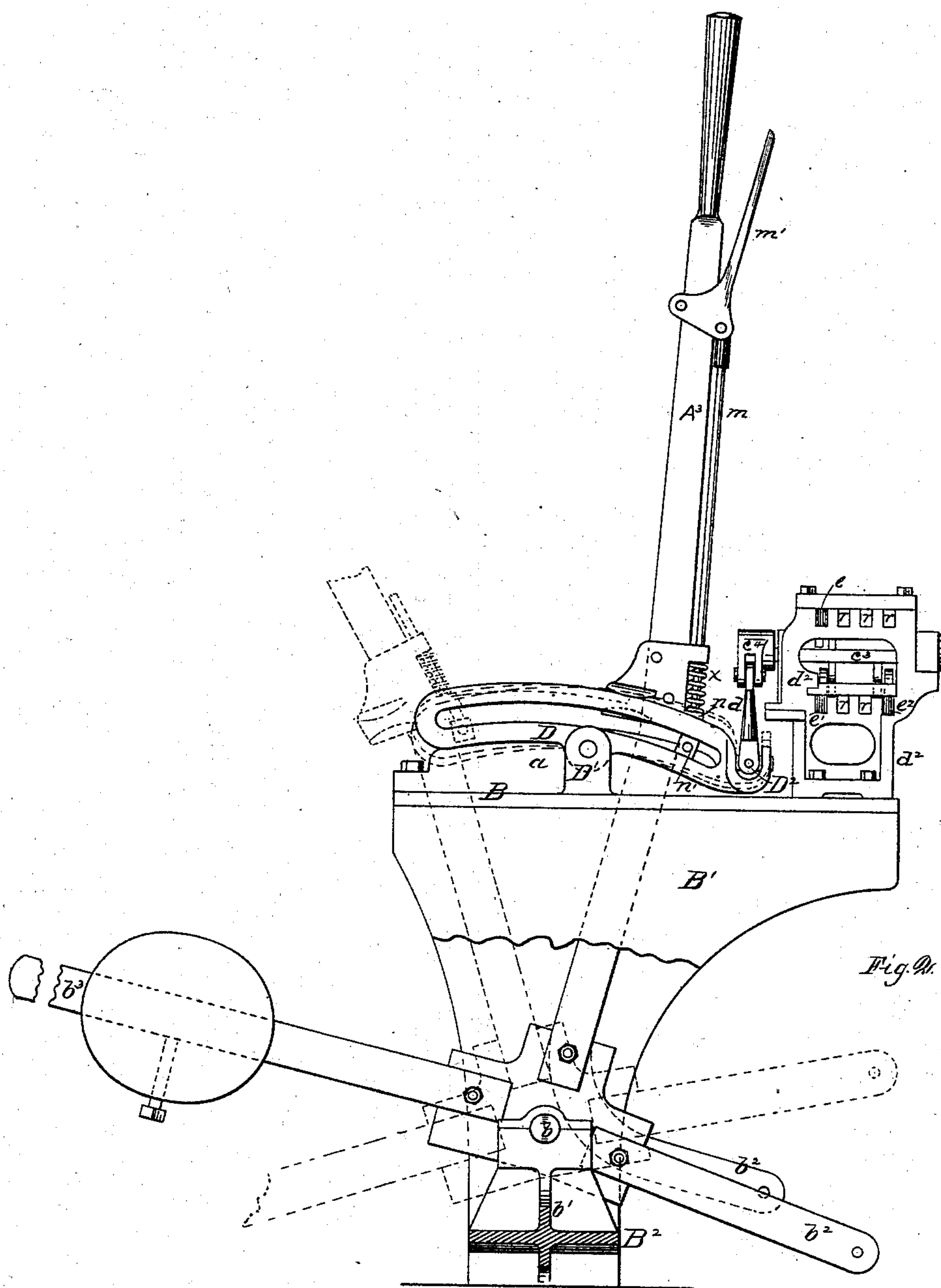


Fig. 2.

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R. H. Whittlesby
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Inventor, Oscar Gasset,
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(No Model.)

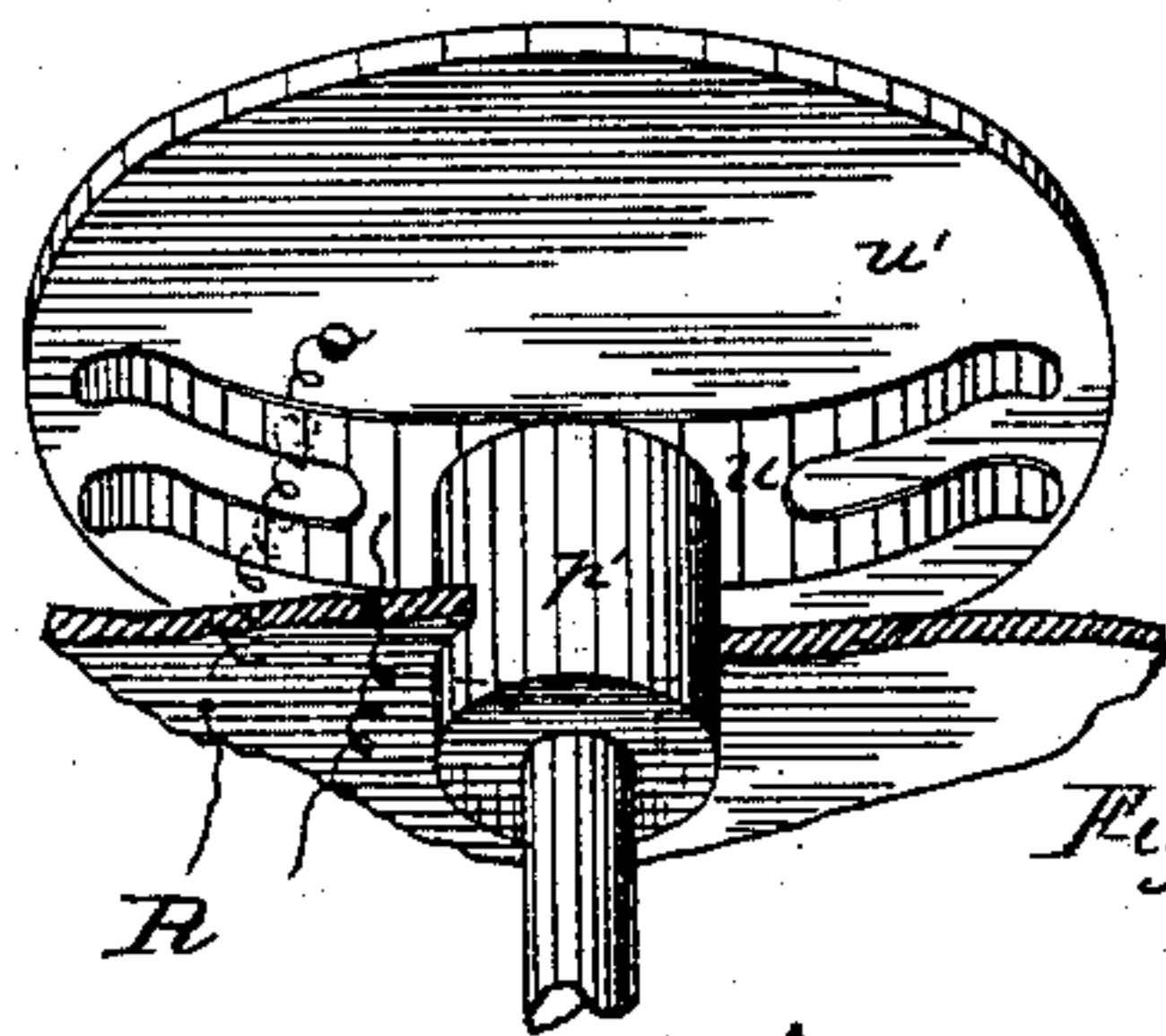
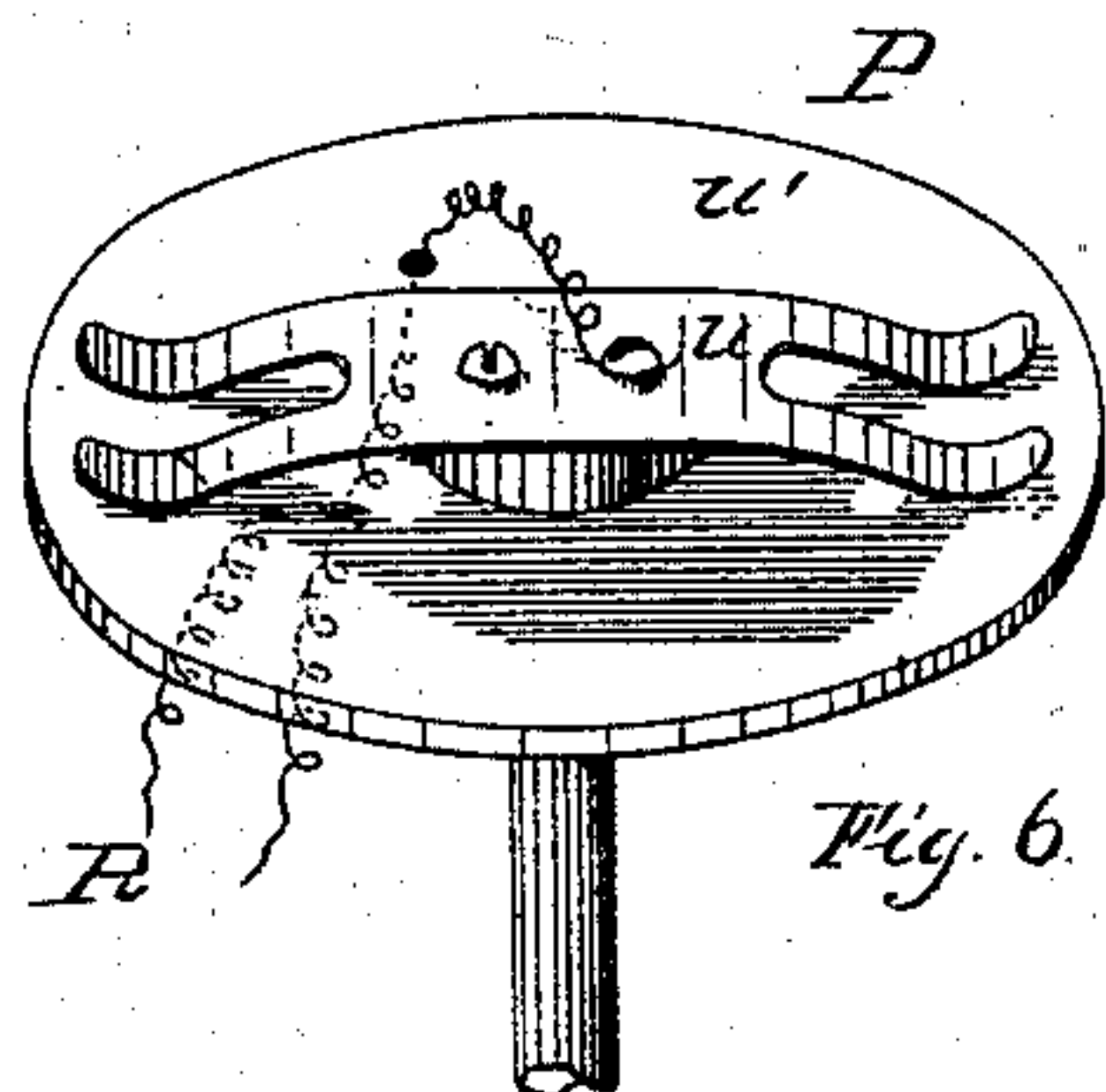
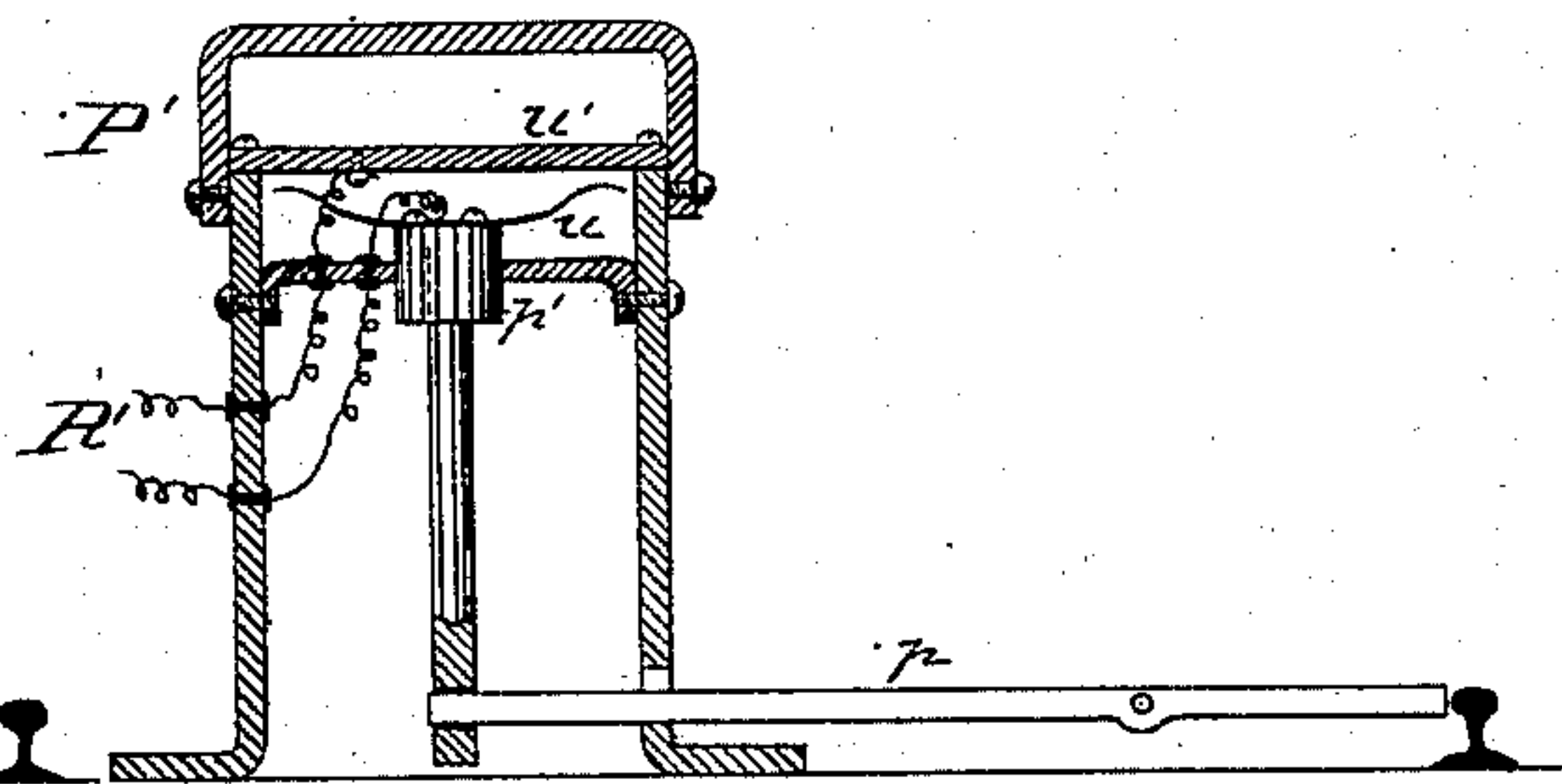
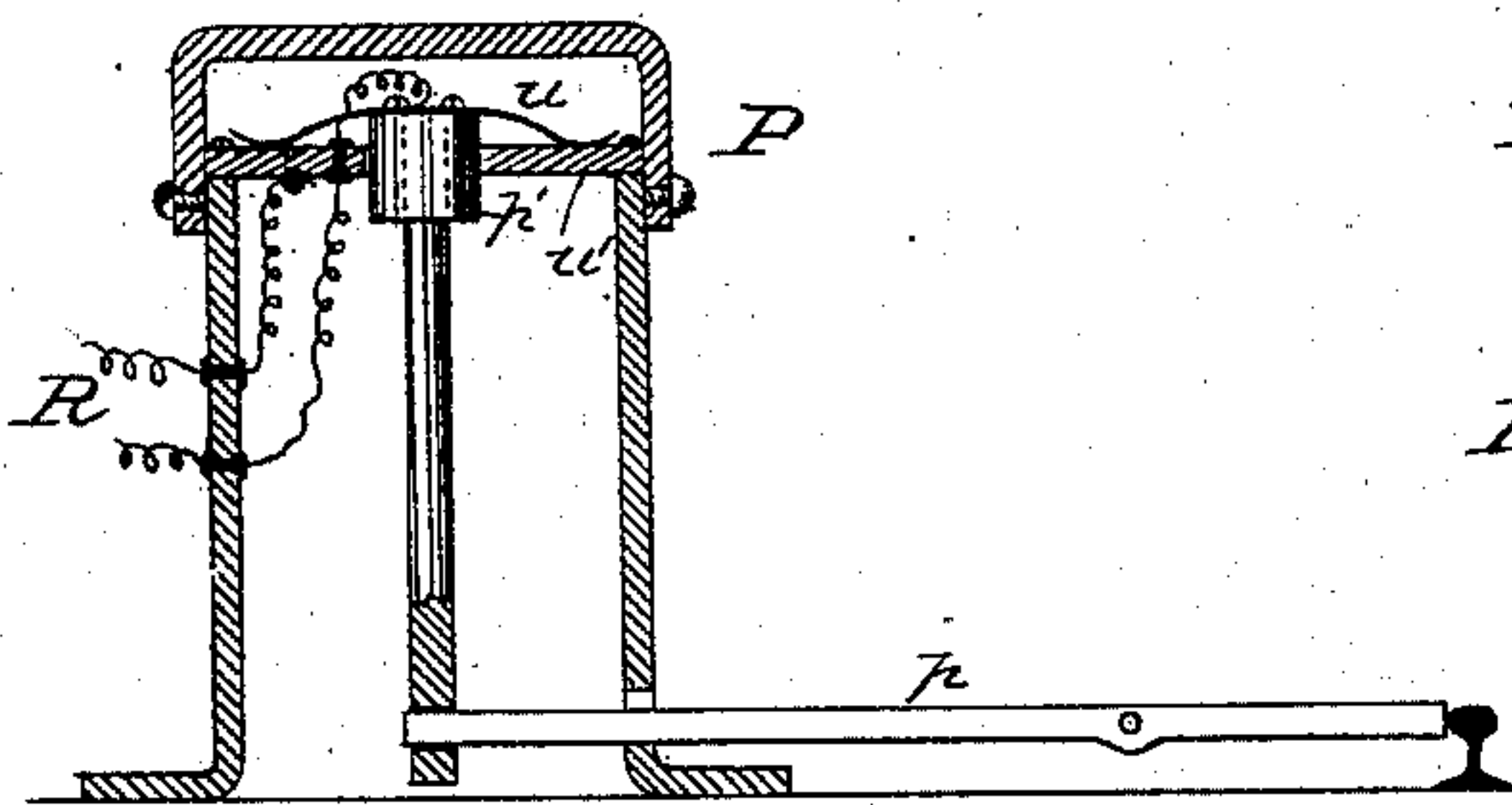
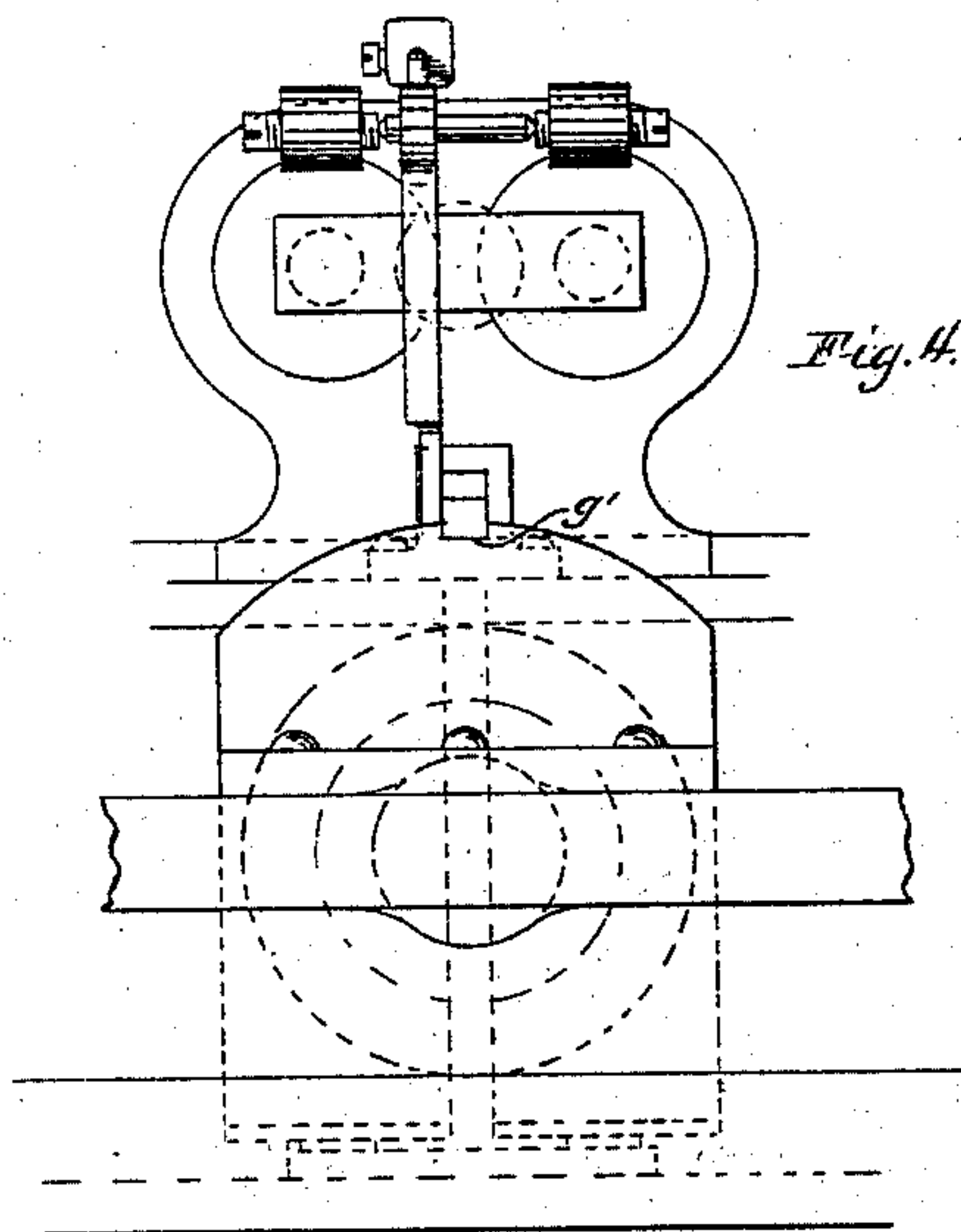
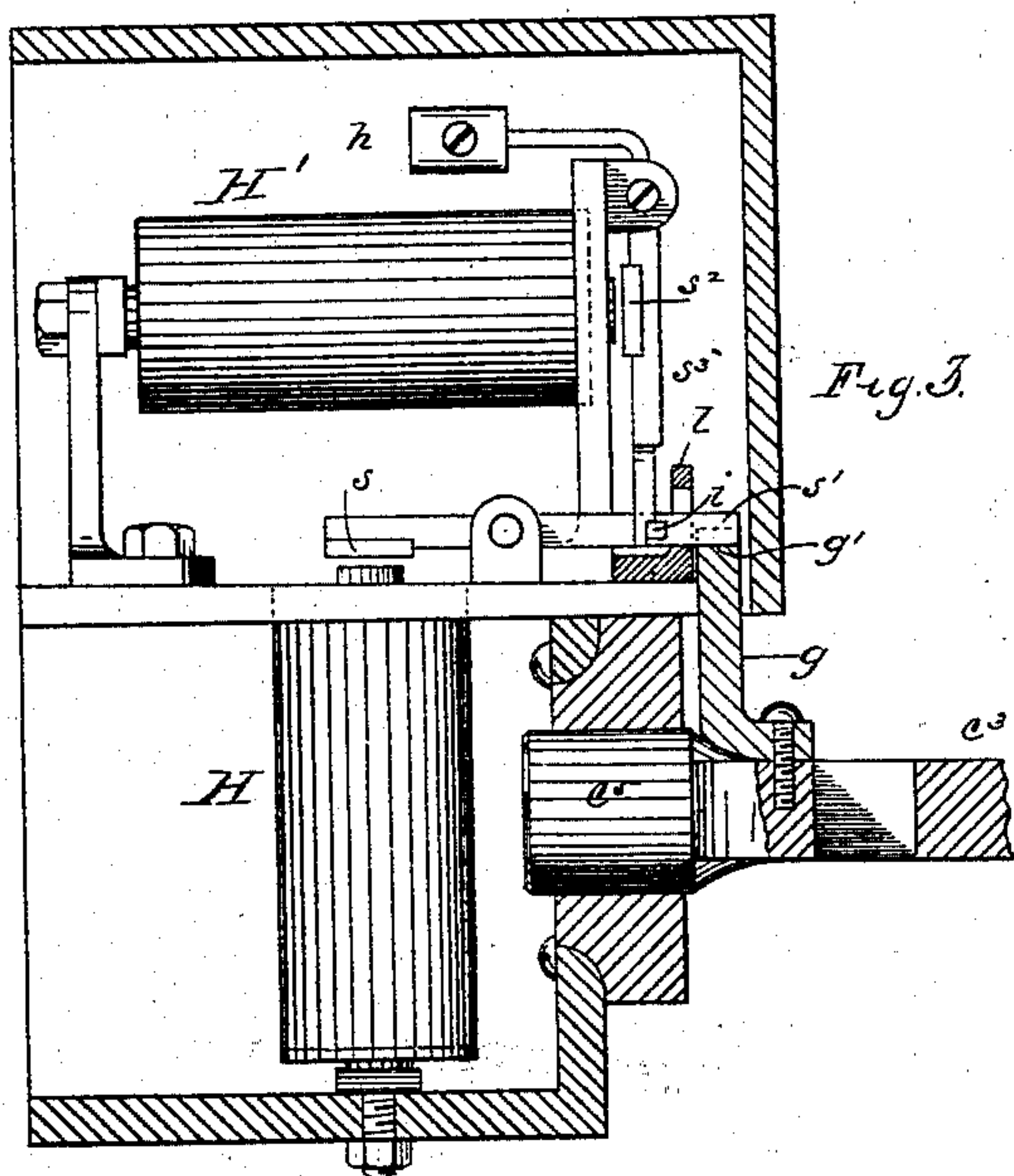
3 Sheets—Sheet 3.

O. GASSETT.

ELECTRIC LOCKING MECHANISM FOR SWITCH AND SIGNAL LEVERS.

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Patented Aug. 14, 1883.



Witnesses:
R. H. Whittlesey
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UNITED STATES PATENT OFFICE.

OSCAR GASSETT, OF BOSTON, MASSACHUSETTS.

ELECTRIC LOCKING MECHANISM FOR SWITCH AND SIGNAL LEVERS.

SPECIFICATION forming part of Letters Patent No. 283,231, dated August 14, 1883.

Application filed April 4, 1883. (No model.)

To all whom it may concern:

Be it known that I, OSCAR GASSETT, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented or discovered a new and useful Improvement in Electric Locking Mechanism for Switch and Signal Levers; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1, Sheet 1, shows a diagram of two railway-tracks with my present system of apparatus applied thereto, the latter being shown partly in diagram and partly in section, but the sectional view being to a larger scale than the tracks. Fig. 2, Sheet 2, shows in side elevation a Saxby and Farmer switch or signal shifting lever with such of the appliances thereunto appertaining as are necessary to illustrate the present invention. Fig. 3, Sheet 3, shows by sectional view the electrical apparatus of Fig. 1, but to an enlarged scale. Fig. 4 is an end elevation of Fig. 3. Figs. 5 to 8 illustrate constructions of electric-circuit make-and-break mechanisms, or "track-instruments," as they are generally called, suitable for use in the present system of apparatus.

My present invention relates to a system of apparatus wherein the hand-actuated lever by which a switch is shifted, or a signal is set, or a draw-bridge or switch-lock is operated is automatically locked in position by the use of a train-actuated track-instrument controlling an electric current as the train approaches, and is automatically unlocked by like means operated by the train while departing. In this system any form or construction of hand or manual lever may be employed, such as is adapted when moved to set or shift a switch, a signal, or switch or draw-bridge lock, or other movable appliance on, along, or in connection with a railway-track; but for convenience of illustration I have shown in the drawings a lever such as is employed in the Saxby and Farmer apparatus. This lever A^3 , Fig. 2, with its connected devices, will be found described under like letters of reference as those herein used in the United States Patent of John Saxby, No. 230,200, of July 20, 1880, and hence such

description need not here be repeated. In the manner and by the operation described in said patent the lever motion is transmitted to a flop, there and here lettered c^3 , only the edge and end of the flop being here represented. This flop has an oscillatory or rocking motion on its axis, (and hence its name,) and one end of said axis is represented by the bearing c^5 , Figs. 1 and 3.

From the arm b^2 of the lever, or in other suitable way, motion is transmitted by any suitable connection to the object or thing to be moved—as, say, to a switch or other device—as above stated, and as a representative of such device I have shown a semaphore-signal, b^5 , which may be arranged at any point where protection is desired; and for the purposes of this part of my description I will assume that the signal b^5 is at or near a street or grade track-crossing, and that it is set at "safety" position by the movement of the lever A^3 in one direction, and comes back to "danger" under the influence of a weight or spring, or is pulled back when the lever A^3 is reversed.

On the flop c^3 is affixed a disk, g , the upper edge of which is curved to or approximately to the arc of a circle struck from the axis of the bearing c^5 as a center. In the edge of this disk is a notch or recess, g' , of suitable shape and size to receive the end of an armature-lever, s' , the armature s of which comes within the influence of the electro-magnet H . This armature-lever is so weighted, pivoted, and adjusted that when the electro-magnet is excited by an electric current, or is in a closed electric circuit, the locking end s' will be drawn up clear of the notch or recess, and when the circuit is broken it will drop into the notch or recess, if the latter be in proper position therefor, or as soon as it comes into position. A retractile spring may obviously be used to cause the lever to enter the recess.

It will now be seen that when the end of the armature-lever is in the recess the flop cannot be moved, and as the hand or main lever A^3 can only be moved when the flop is free to rotate, the lever A^3 is consequently locked also; and, still further, that when the electro-magnet H is in a closed circuit the flop c^3 , and with it the lever A , will be unlocked.

On the side of the armature-lever s' , I make

a stud, i , and arrange another armature-lever, s^3 , in such position that when its armature s^2 is attracted by the core of another electro-magnet, H' , the free end of armature-lever s^3 will swing clear of the stud i ; but when the circuit of electro-magnet H' is broken the free end of the armature-lever s^3 will engage the stud i , and so lock the armature-lever s^3 in its downward position in the recess g' , or as soon as it enters such recess. This locking motion of the armature-lever s^3 may be given by means of a counter-weight, h , or by a retractile spring. By this means the armature-lever s' is locked when in the disk-recess, and unlocked by electro-magnetic action; and it will be observed that the locking of the flop c^3 , through the coaction of the disk g and the armature-lever s' , takes place in the first instance when the electro-magnet H is in a broken, or open circuit, and that such locking will continue so long as such circuit is broken, and also so long as it is kept in a locking position by the armature-lever s^3 ; and it will also be seen that the armature-lever s^3 will be in operation as a locking device so long as its electro-magnet H' is in a broken or open circuit, and that to unlock the lever A^3 the circuit of H' must be closed, and the circuit of H must be closed. A loop or clip, l , is to be added to hold or guide the armature-lever s' in its proper motions.

The apparatus thus described is organized into a system for operation by connecting the electro-magnet H into a circuit, R , which includes a battery, r , and a track-instrument, P , suitably arranged at a greater or less distance up the track from which trains are expected in the normal operation of the road, which track-instrument P , as presently to be described, may be caused to act as a circuit-breaker by the action of the approaching train. The other electro-magnet, H' , is coupled in another circuit, R' , which includes a battery, r' , and a track-instrument, P' , which latter is arranged down the track in the direction trains normally move in departing, at any desired distance, and which, as presently to be described, is caused to operate as a circuit-closer under the action of the departing train.

The track-instrument P P' may be of any desired construction, many suitable ones being known in the art. One such, suitable for use at P , is shown in its main features in Figs. 5 and 6, where p represents a lever suitably arranged to be actuated by the wheels of a passing train, and in such manner as to raise a plunger, p' , and thereby cause a spring contact-plate, u , to which one terminal wire is secured, to clear the fixed contact-plate u' , to which the other terminal is secured. Proper insulating material is of course to be employed at the proper points. This instrument acts as a circuit-breaker to the electro-magnet H , and the plunger p' may be weighted, or a spring be employed to reclose the circuit.

The other track-instrument, P' , may have the construction shown in Figs. 7 and 8, where, the contacts being reversed, the circuit will be closed as the train departs. Assume now that the signal or signals are set for the approach or passage of a train. The movement of the lever A^3 , which so sets it or them, will bring the recess g' under the free end of the armature-lever s' . The train in passing track-instrument P will break the circuit R , so as to release the armature-lever s' and allow it to enter the recess g' , and the free end of the armature-lever s^3 will then engage the stud i and lock the lever s' , for, it will be observed, the electro-magnet H' is then in a broken circuit. The signal-lever A^3 will then be locked in position, so that the signal operated thereby cannot be changed until the train shall have acted on the track-instrument P' . This action closes the circuit through H' , attracts the armatures s^2 , and unlocks the armature-lever s' , so that its electro-magnet, which then is in a closed circuit, may cause it to clear the recess g' and unlock the lever A^3 .

In actual use I construct the track-instruments in any of the ways known to the art, by which their action will, if need be, be sufficiently prolonged to produce the effect described; and for this purpose any suitable form of track-instrument may be employed—such as, for example, a bar arranged beside and near to the rail, so that the tread of the wheel may engage both, the terminals being properly arranged and connected with reference to the function described; or, still further, short section of track may be insulated at about the points where the making and breaking of circuits is desired, and the connections be so made that in the manner well known in the art the circuits will be made and broken by train action, as described; and all such appliances are included herein under the term "track-instruments;" nor is the stud i essential, as any shape or conformation of the two armature-levers s' s^3 may be employed which will secure the locking and unlocking actions substantially in the manner described.

It will also come within the present invention to reverse or change the connections and circuits and the arrangements of the magnets and armature-levers, so that the locking shall be effected by closing the circuit R by the action of the incoming train, and opening or breaking the circuit R' by the action of the train when departing, and the making of such changes as will attain this order of operation will come within the ability of the mechanic skilled in the art; nor is it essential to the whole of the present invention that the armature-levers s' should engage a disk or other device secured to the flop, though I believe this to be the best, and a combination of which such construction forms a part is included herein as of my invention. This armature-lever may be caused to do its work by engaging the main lever itself, or its catch-rod, or any device so connected with the

main lever that the latter cannot be moved so long as the former is locked. Many such locks are known in the art, and they need not be further described.

5 This system of apparatus may be utilized by applying it to any desired hand-actuated lever, as already stated, whether for actuating a safety-signal on the line over which the train is passing, or a switch or locking-bolt lever on the
10 same line, or for setting a danger-signal out on the line of a crossing track, so that such danger-signal lever shall be locked with the signal at "danger" by the approaching train operating one track-instrument, and shall remain locked until the train shall have passed the crossing and shall have actuated another track-instrument to unlock it; and having
15 shown and illustrated the manner of locking and unlocking one hand-lever, the skilled constructor will have no difficulty in applying the system of apparatus described to the locking and unlocking of any hand-actuated lever ordinarily used in connection with the movable appliances employed on or along railway-
20 tracks, or on any one of a series of levers such as are used in the Saxby and Farmer system or other similarly-operating systems.

I claim herein as my invention—

1. In combination with a hand-actuated lever
30 for shifting a movable appliance on or along a railway-track, a track-instrument arranged to be operated by an approaching train, an electric circuit extending thence to an electro-

magnet, an armature-lever arranged to lock such hand-actuated lever, a second armature-
35 lever to lock the first in a locking position, a track-instrument arranged beyond the point to be protected, and in suitable position to be actuated by the departing train, and an electric circuit extending thence to the electro-
40 magnet of such second armature-lever, substantially as set forth.

2. The combination of a hand-actuated lever and electrically-actuated locking and unlocking mechanism, a track-instrument arranged
45 at each side of the point to be protected, an electric locking circuit extending from one track-instrument, through a battery, to the locking mechanism, and an electric unlocking circuit extending from the other track-instrument, through a battery, to the unlocking
50 mechanism, substantially as set forth.

3. The combination of the rotary flop of an interlocking machine, a recessed disk, *g*, thereon, armature-levers *s'* *s*³, for locking, holding
55 locked, and unlocking said disk, and through it the flop and its hand-lever, electro-magnets *H* *H'*, for actuating said armature-levers, and the respective circuits and track-instruments thereof, substantially as set forth. 60

In testimony whereof I have hereunto set my hand.

OSCAR GASSETT.

Witnesses:

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FRED A. POWELL.