

No. 657,678.

Patented Sept. 11, 1900.

G. P. ROSE, JR.  
SECONDARY ELECTRIC CLOCK.

(Application filed Oct. 30, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

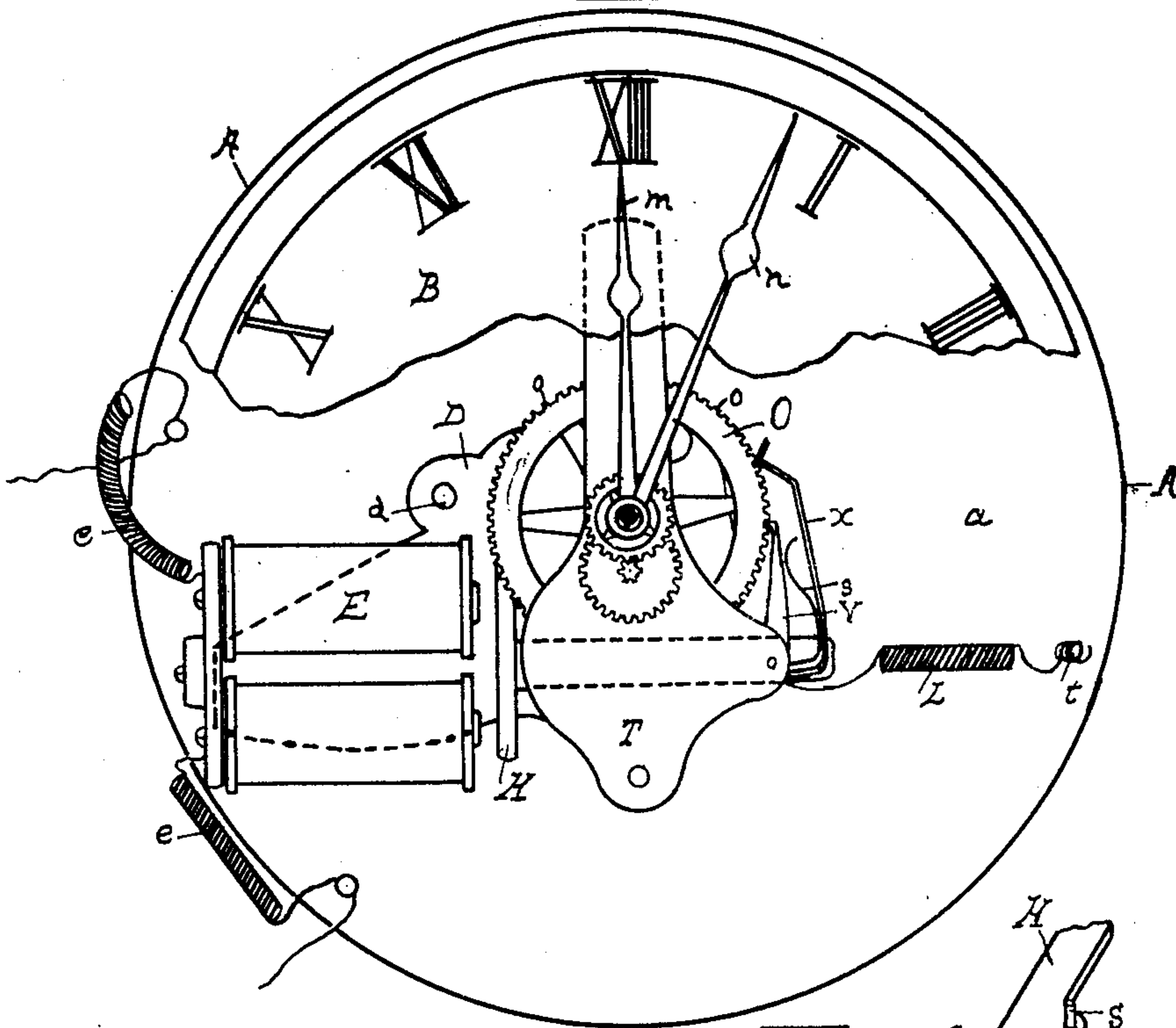


Fig. 4

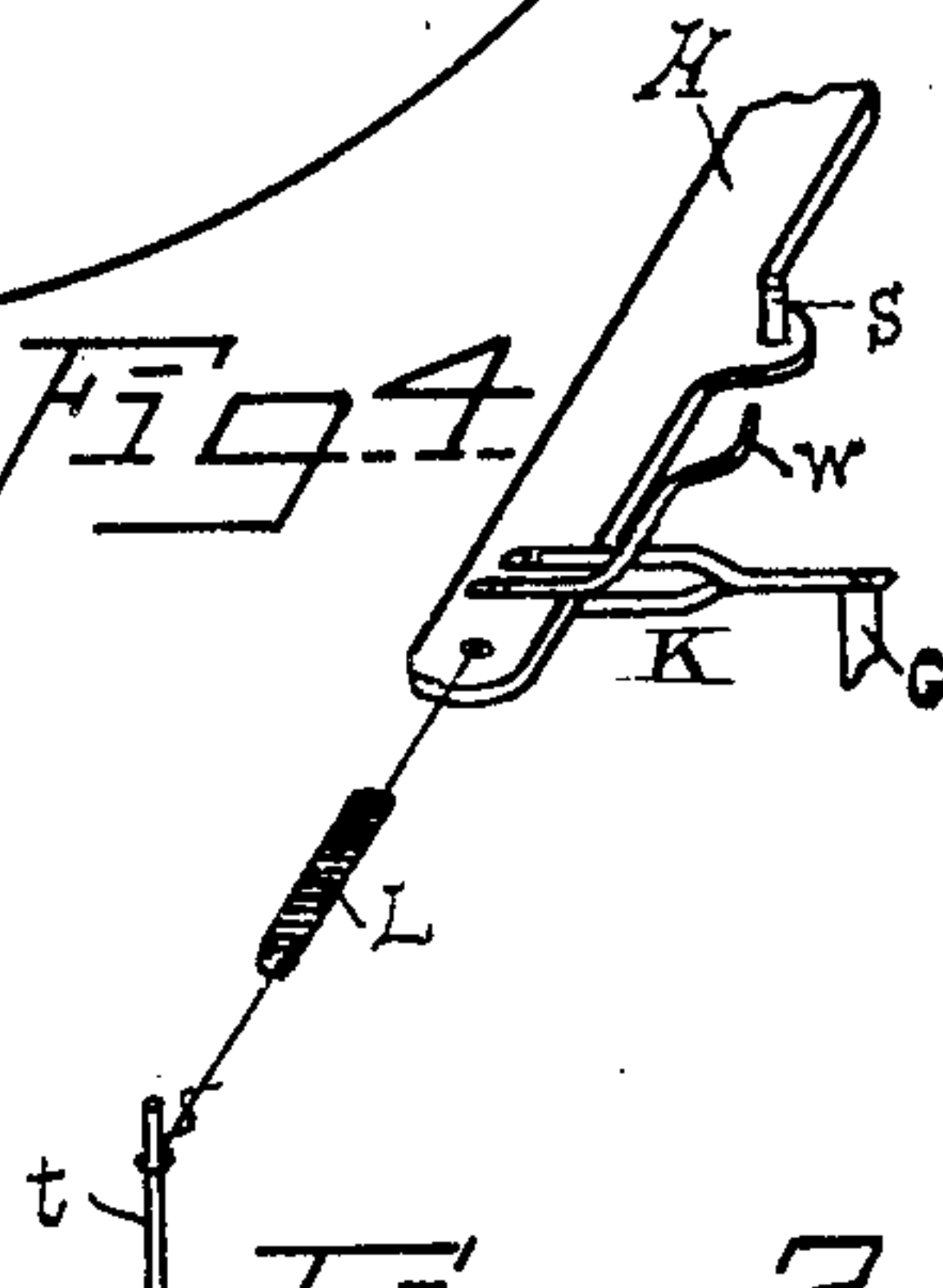


Fig. 2

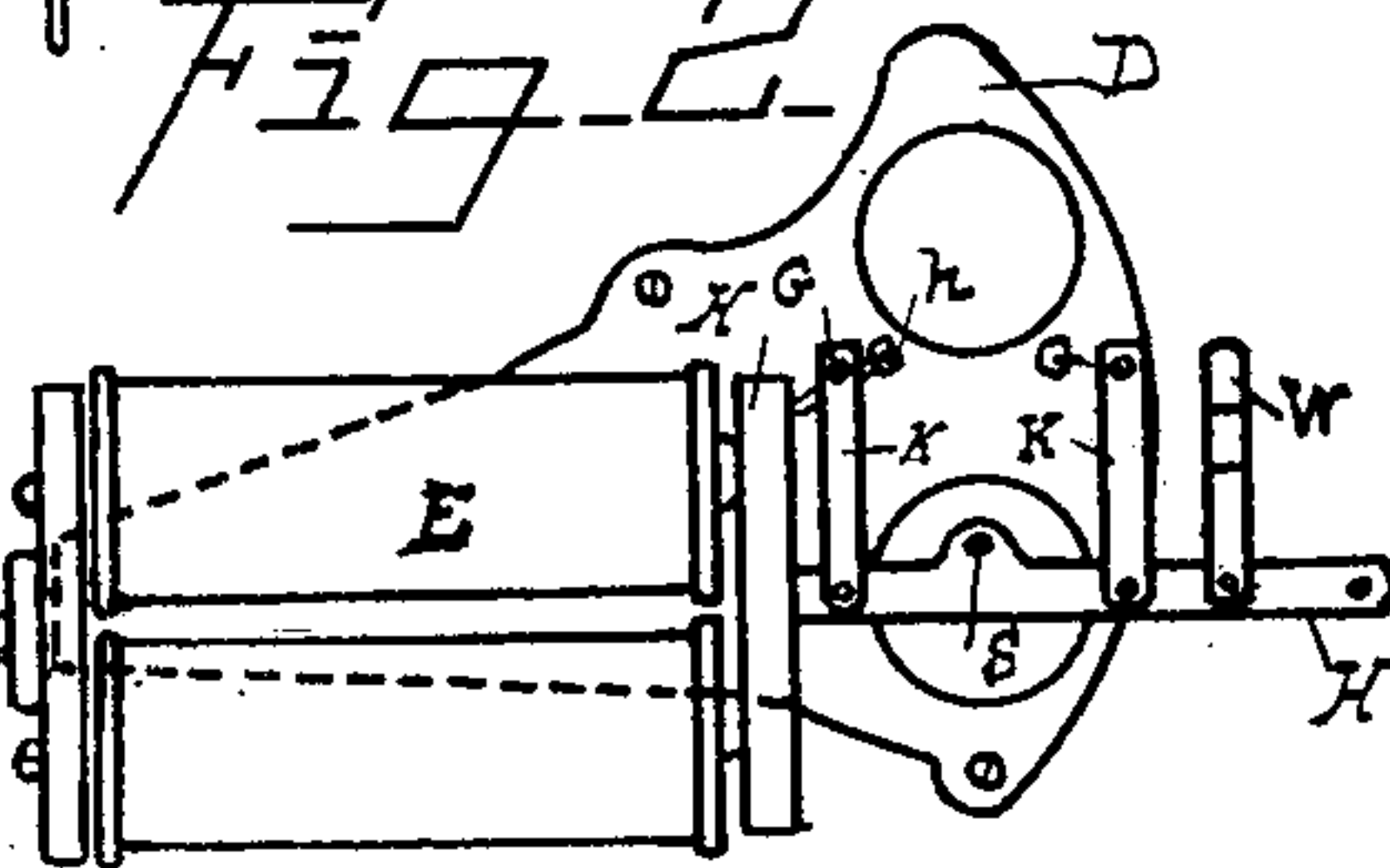
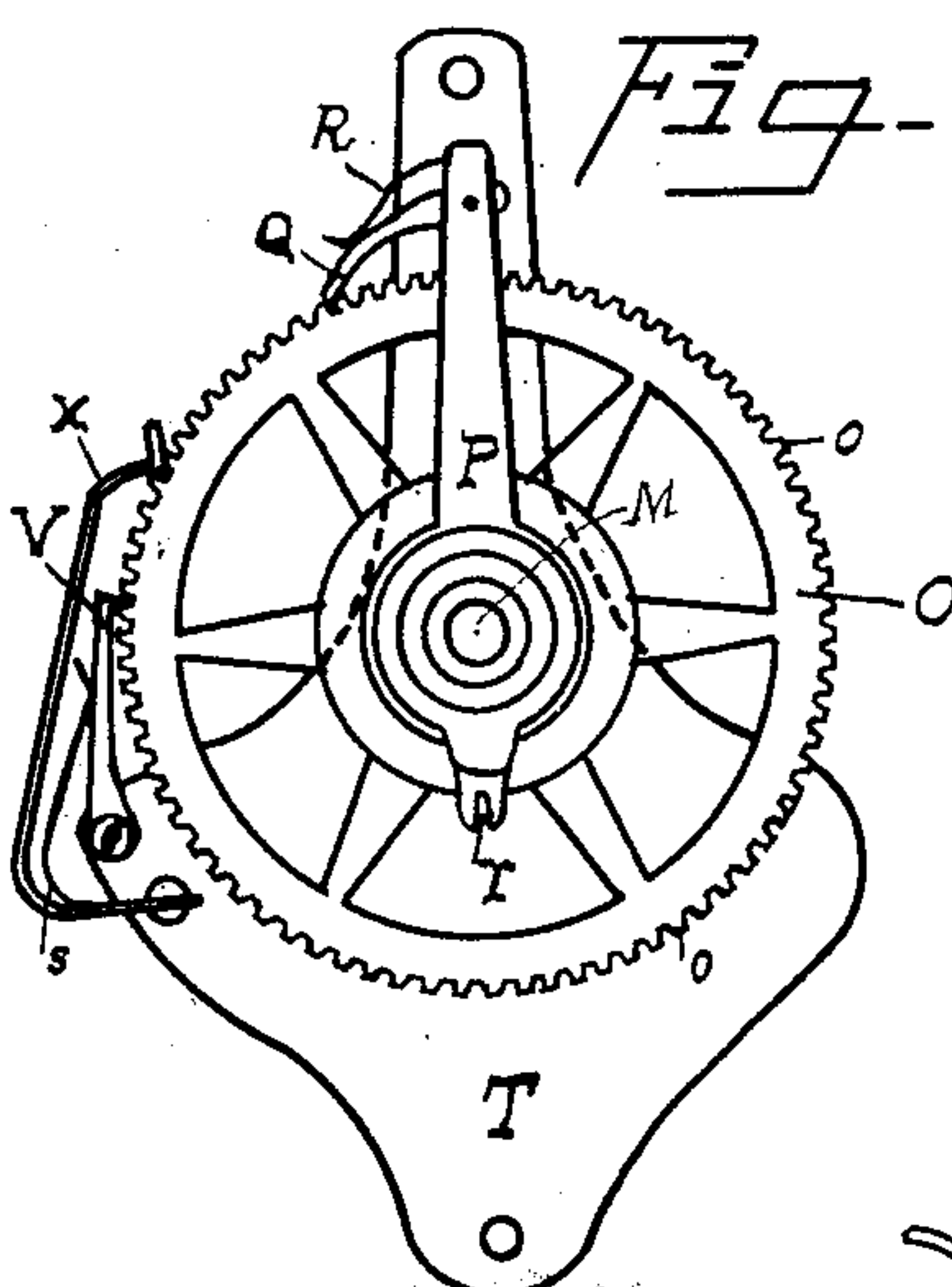
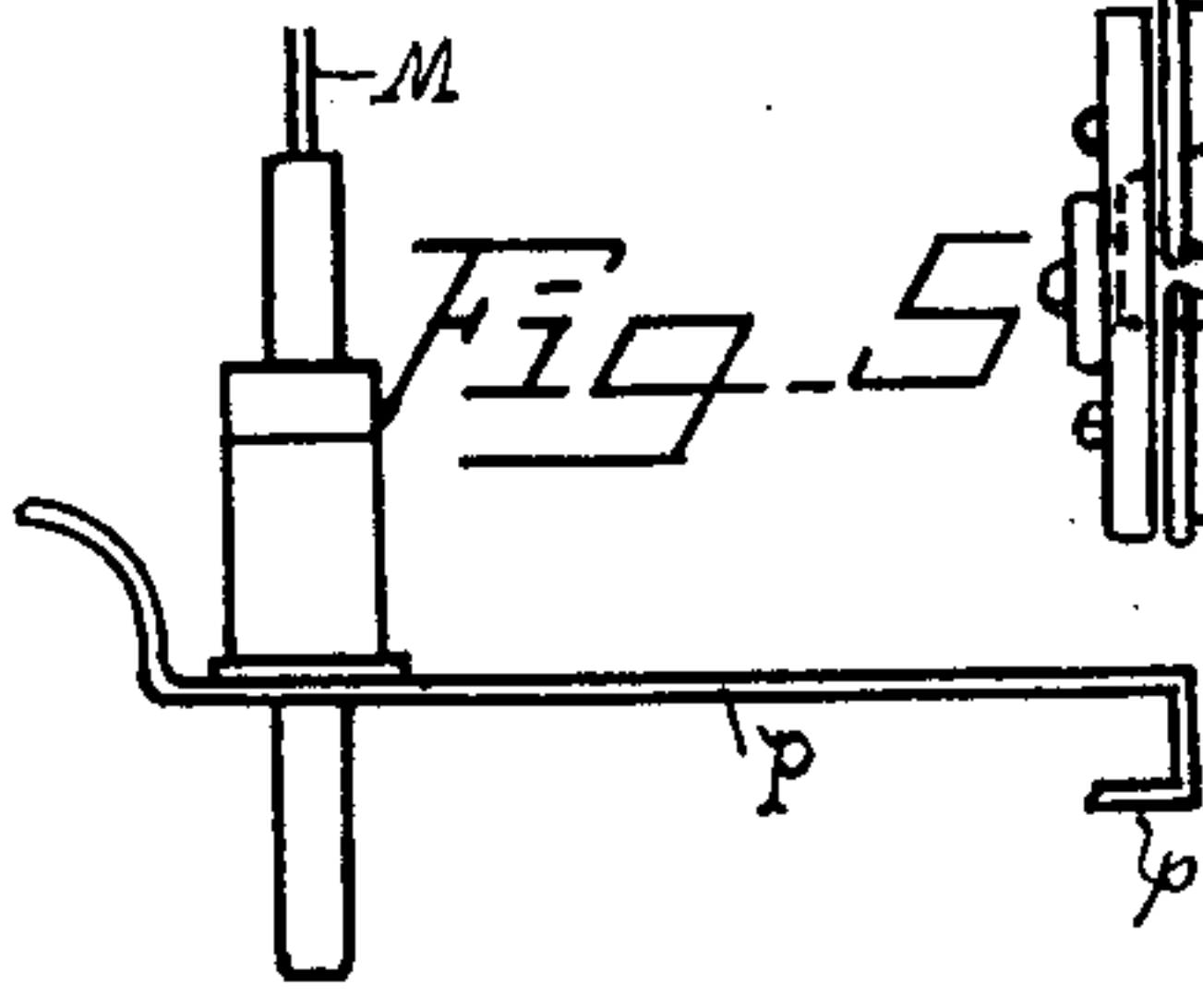


Fig. 5



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No. 657,678.

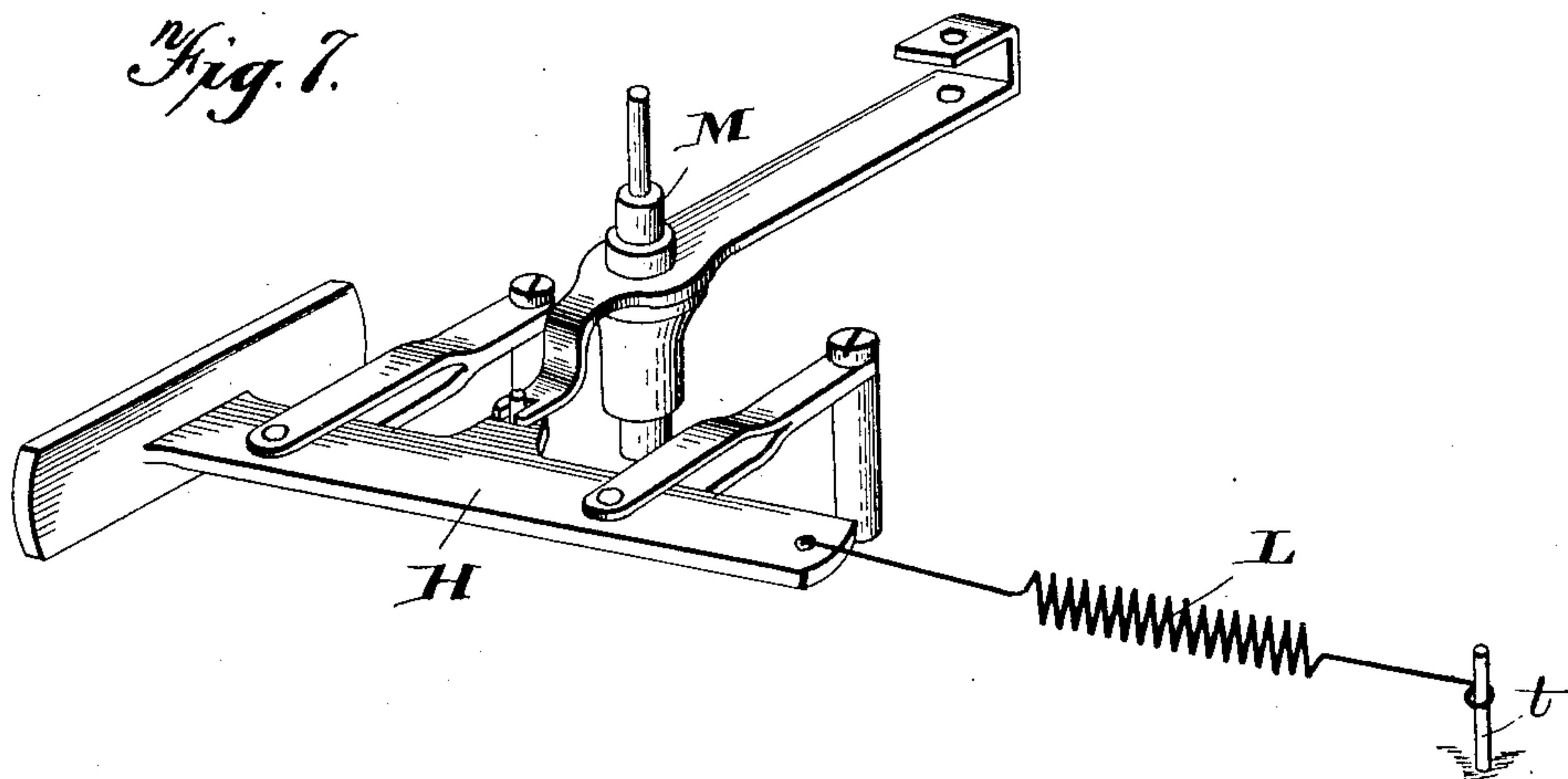
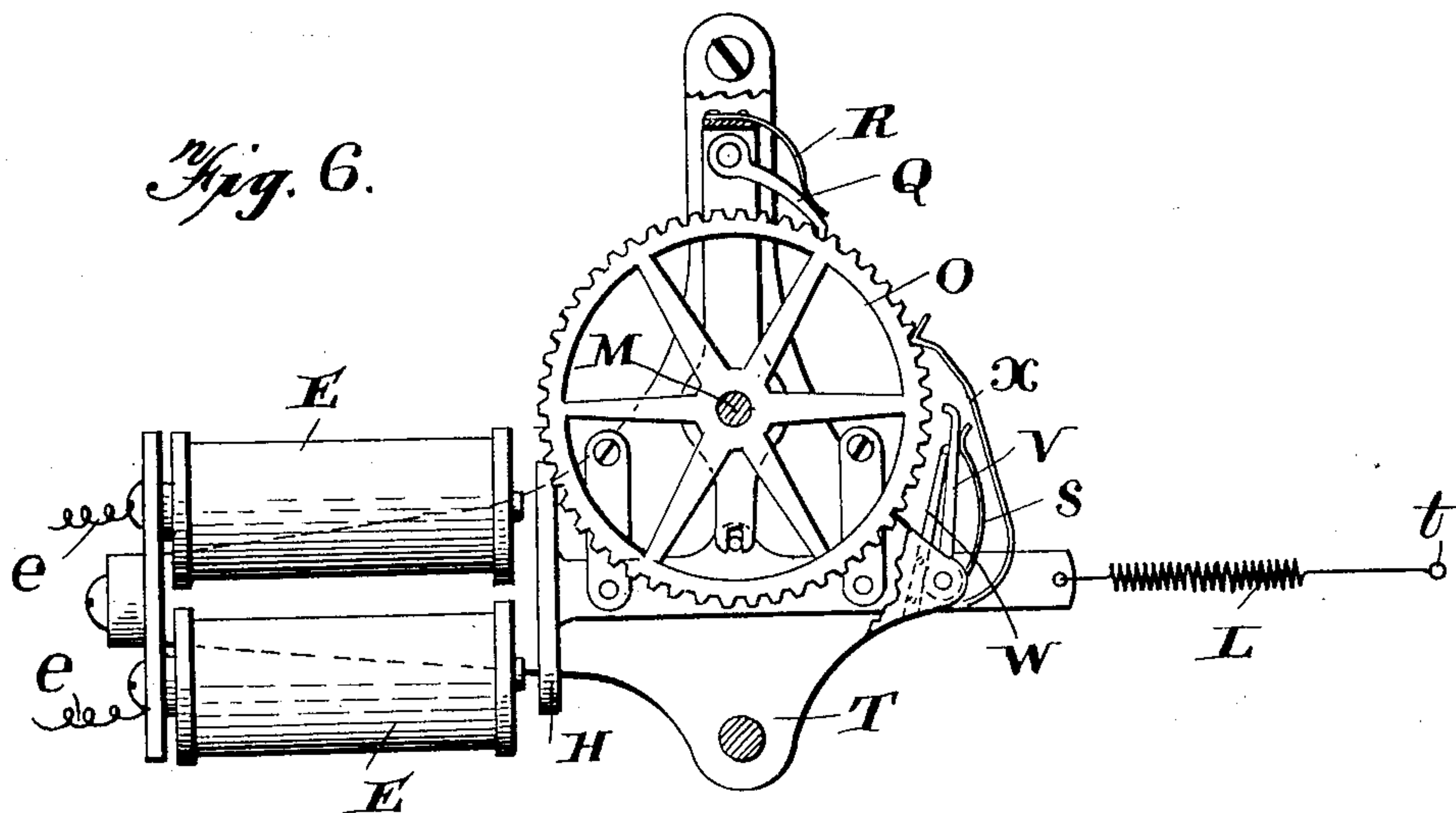
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(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE P. ROSE, JR., OF DUBUQUE, IOWA, ASSIGNOR TO BARNIM L. BEHRENDT, OF NEW YORK, N. Y.

## SECONDARY ELECTRIC CLOCK.

SPECIFICATION forming part of Letters Patent No. 657,678, dated September 11, 1900.

Application filed October 30, 1899. Serial No. 735,177. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE P. ROSE, Jr., a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Electric Secondary Dials; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to means for operating dials in different rooms of the same or different buildings.

The object is to establish and maintain throughout the building having a number of apartments a system of dials upon which will be shown a uniform time. This, as is well known, has been tried by the use of individual clocks, but without any substantial success. It is proposed by my system to use a master-clock having an attachment by which an electric current is closed once each minute, a series of dials, and a battery supplying the current to operate said dials in connection with the master-clock. By the means now in use the force of the electrical current generated by a battery is variable. Great difficulty is experienced in controlling this current, which if not controlled will render the dials unreliable.

My invention consists more especially in providing means for controlling the electrical power whereby the hands on all of the dials will be advanced at the same time the distance represented by one minute and stopped after each of such movements. A full statement of the manner in which I accomplish this is set out in the following specification when taken in connection with the accompanying drawings.

Figure 1 is a plan view with part of the dial cut away. Fig. 2 is a plan view of the magnet, armature, and attachments. Fig. 3 is a plan view of the under side of the minute-wheel and attachments. Fig. 4 is a perspective of the arm of the armature. Fig. 5 is a side view of the post to which the pointers are attached, showing also the lever. Fig. 6 is also a side elevation showing the pawl V out of contact with the wheel, and Fig. 7 is a

perspective of the armature and its attachments.

Like letters of reference denote corresponding parts in all of the drawings.

Referring to the drawings, A designates the shell or case of one of the dials, and consists of the back or base board *a* and the dial-plate B. Against the board *a*, near the center, is secured a plate D by the screws *d*. To one end of the plate D is secured an electromagnet E, which is connected to the electric generating-jars (not shown) by the wires *e*, through the master-clock. Upon the plate D are set two pivot-pins G. To these pins G are pivoted the armature H by the bifurcated hangers K. It will be seen by this mode of hanging the armature that it will always swing in a plane parallel with the two poles of the magnet and there will be the same attraction to every part of the face of the armature by the magnet. A coil-spring L is attached to the outer arm of the armature and to a post *t*, set in the case, and holds it away from the magnet when the electrical current is not connected with the magnet, and a stop *h* is attached to one of the pivot-pins G for the purpose of limiting the movement of the armature by the spring L.

A post M (shown in Fig. 3) is set in the center casing A, to which the pointers *m* and *n* are attached. Upon this same post is rigidly attached the minute-wheel O. The periphery of this wheel is divided into sixty equal parts or notches by the cogs *o* and is turned by the means hereinafter described just one notch each minute. A lever P (shown in side view in Fig. 3) is pivoted upon the same shaft M, with the hook portion *p* at one end, in which is pivoted a pawl Q. At the outer end of this is also attached a spring R, which engages with the upper side of the pawl Q and holds it in engagement with the cogs or notches on the wheel O. For the purpose of operating this plate or lever P the outer end is bent downward and slotted in its outer end at *r*. Upon the arm of the armature H is a pin S, which engages with the slot *r* in the lever P, and as the armature moves in one direction this pin S engages with the slot *r* and causes the pawl Q to compass one cog on the wheel O. Then as the armature moves in the op-



posite direction it pushes the wheel O over the space of one cog. For the purpose of locking this wheel O immediately after it has been moved by the pawl Q by its connection with the armature and prevent the wheel from advancing more than one cog there is attached to the plate T a pawl V, which also engages with the cogs on the minute-wheel O immediately upon the advancement of the minute-wheel O by the pawl Q. This pawl V has a spring s, which is set in the rear of the pawl V and forces the pawl toward the wheel O. In order to operate this pawl in the opposite direction and keep it out of engagement with the wheel O at all times except immediately after the wheel O has been advanced by the pawl Q, there is attached to the arm of the armature H a bent pin W, which engages with the front side of the pawl V, and whenever the armature is drawn out from the magnet by the spring L the bent pin W will force back the pawl V against the spring s and hold it out of engagement with the cogs or notches upon the wheel O, and when the electric current draws the armature to the magnet the bent pin will be drawn away from the front side of the pawl V and allow the spring s to force the pawl V into engagement with the notches upon the wheel O. It will be seen by this mode of setting the two pawls that when the pawl Q advances the wheel O immediately upon such advancement the pawl V will strike the top of one of the cogs on the wheel O, and when it has passed the width of the cog will drop into the first notch and securely lock the wheel O from any further advancement by means of the push of the pawl Q. Then as soon as the current is removed the pawl V will be drawn out of engagement with the wheel O by the spring L and held out by its engagement with the bent pin W for the space of one minute and until the next advancement of the wheel O by the pawl Q. A spring-break X is attached to the plate T and bears against the edge of the wheel O and serves to prevent any jar or other influence from moving the wheel O in the advancing direction. Upon the upper plate T are placed the usual wheels for operating the hour-hand.

The mode of operating my device is as follows: A master-clock is set in some room in the building and one of the dials above described is placed in each of the remaining rooms in said building. Connection with the electric generating-jars is made through the master-clock with each of the dials by the wires e. The master-clock is then started at a given time and all of the dials set with their pointers designating a given time, and then as the clock finishes the first minute of time it turns on the electric current, which passes through the magnet E in each of the dials and causes the armature to approach the magnet. This movement draws the lever P toward the magnet by the engagement of the pin S upon

the arm of the armature with the slot r in the lever P. As the end of the lever P is turned toward the armature the pawl Q, being in engagement with a notch on the wheel O, will push the wheel O one notch, and at the same time the pawl V will come into engagement with one of the notches upon the wheel O and prevent the pawl Q from driving the wheel O more than the distance of one cog. It will be seen that there is no possibility, however irregular the power may be, to drive or push the wheel O more than one notch at a time, for the pawl V will always come into engagement with the notch on the wheel O and prevent any further movement. After the current has been shut off by the master-clock the spring L will draw the armature H away from the magnet, and at the same time the bent pin W will engage with the front side of the pawl V and pull it out of engagement with the wheel O. At the same time this is done the lever P will be thrown in the opposite direction by its engagement with the pin S and draw the pawl Q back over one notch on the wheel O ready for the next electric current. It will be seen that at all times except when the electric current is on the wheel O may be turned by the pointers in a forward direction. In this manner the pointers may be set any time without taking off the dial.

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

1. A device of the character described consisting of a minute-wheel, a pawl in engagement with said wheel, a lever for operating said pawl, means for operating said lever, a second pawl with spring acting thereon to engage with the minute-wheel, an armature, a pin attached to the armature and engaging said second pawl to hold said pawl out of engagement with the minute-wheel, when the electric current is off, all combined to operate as and for the purpose shown.

2. A device of the character described consisting of a dial, hour and minute hands, a minute-wheel, a pawl with spring acting thereon to hold said pawl in engagement with said minute-wheel, a lever for operating said pawl, means for operating said lever, a second pawl with spring acting thereon to engage with the minute-wheel and stop its advance, an armature adapted to be moved in substantially a horizontal plane, a pin attached to the armature and engaging said second pawl to hold said pawl out of engagement with the minute-wheel when the electric current is off, all combined as and for the purposes shown.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORGE P. ROSE, JR.

Witnesses:

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J. B. LANE.