

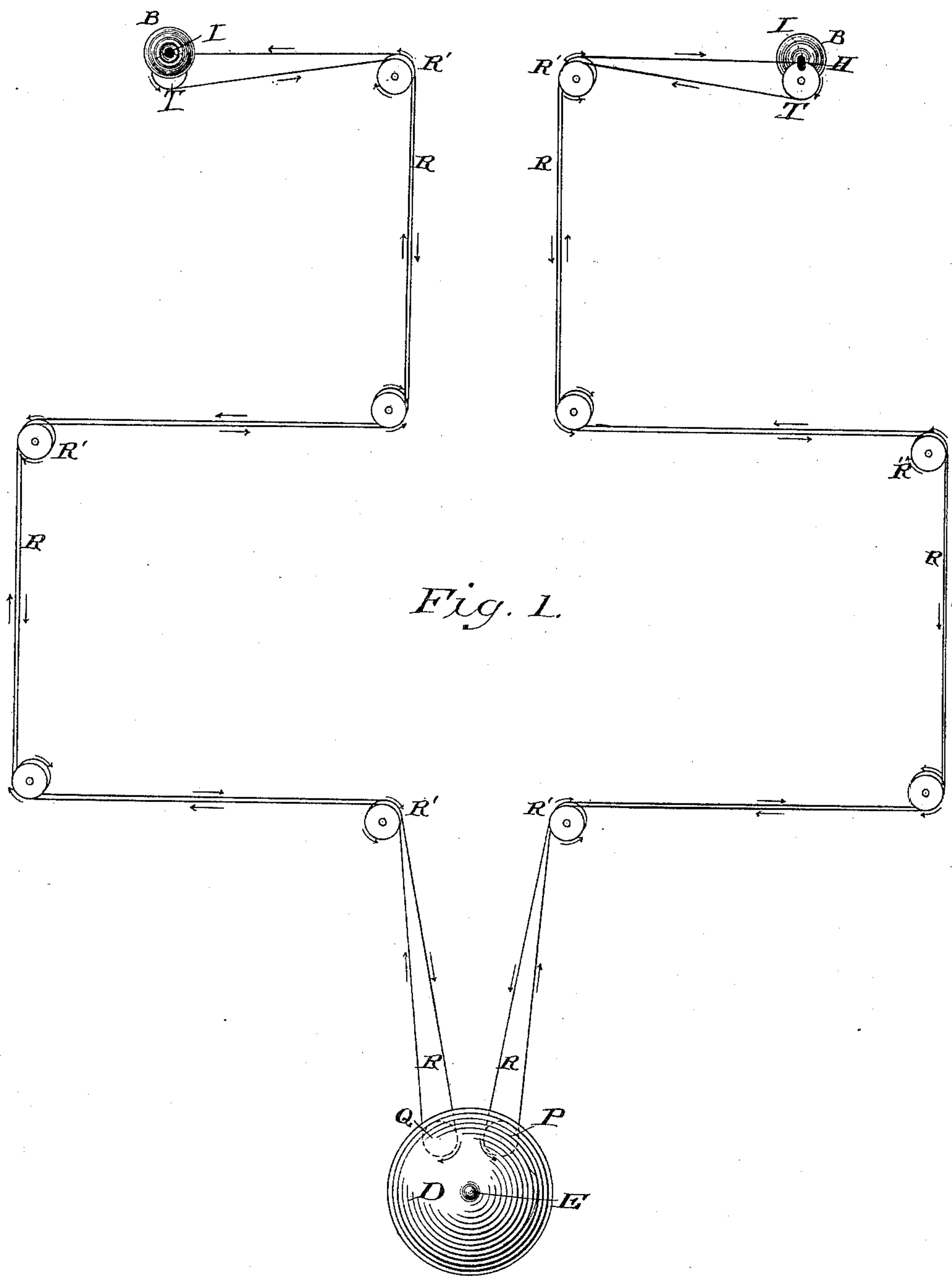
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3 Sheets—Sheet 1.

A. F. ROCKWELL.  
DOOR BELL MECHANISM.

No. 411,395.

Patented Sept. 17, 1889.



Witnesses

H. C. Newman,  
E. S. Newman.

Inventor  
Albert F. Rockwell,  
By  
Hopkins & Atkins.  
Attorney

(No Model.)

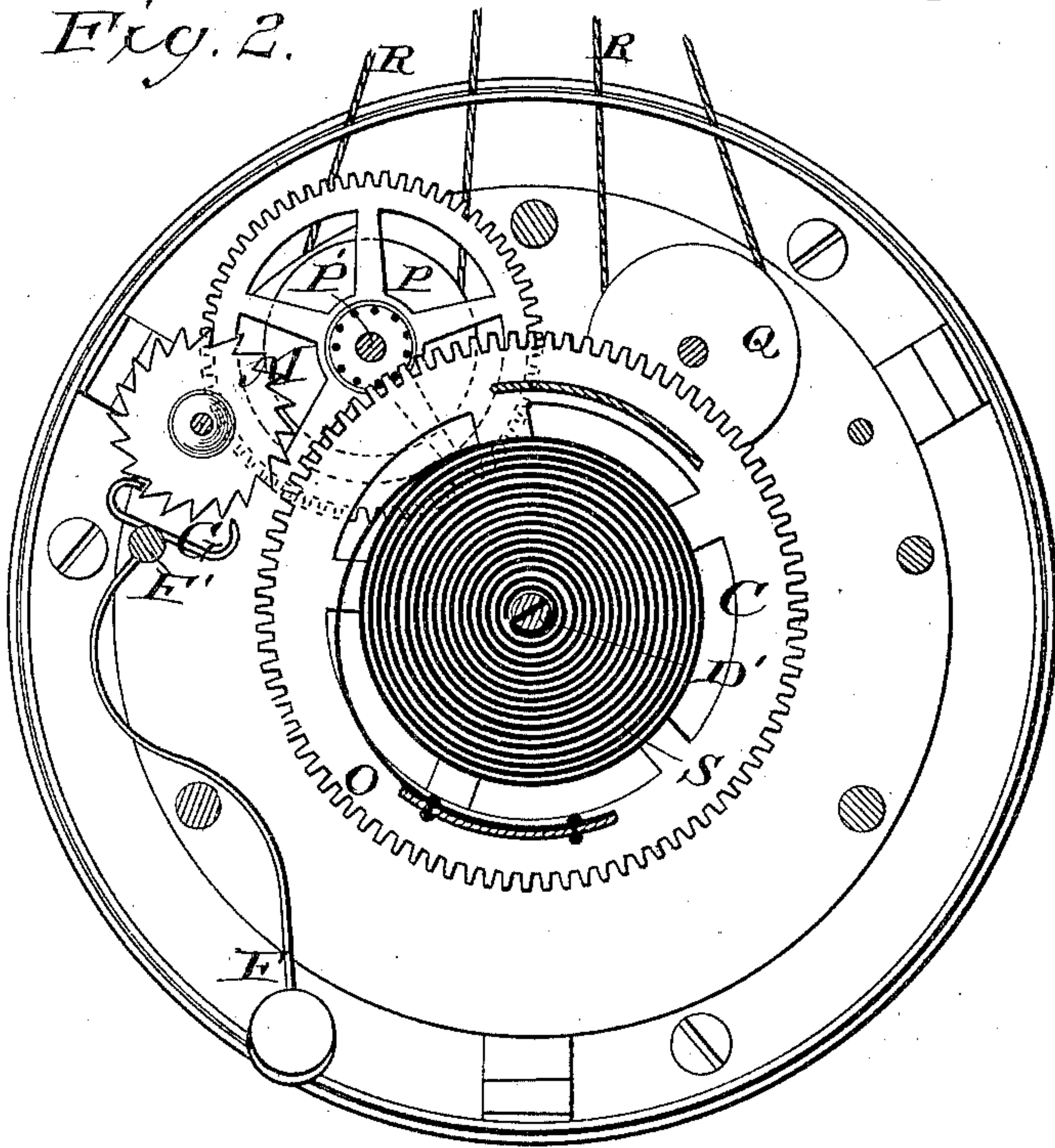
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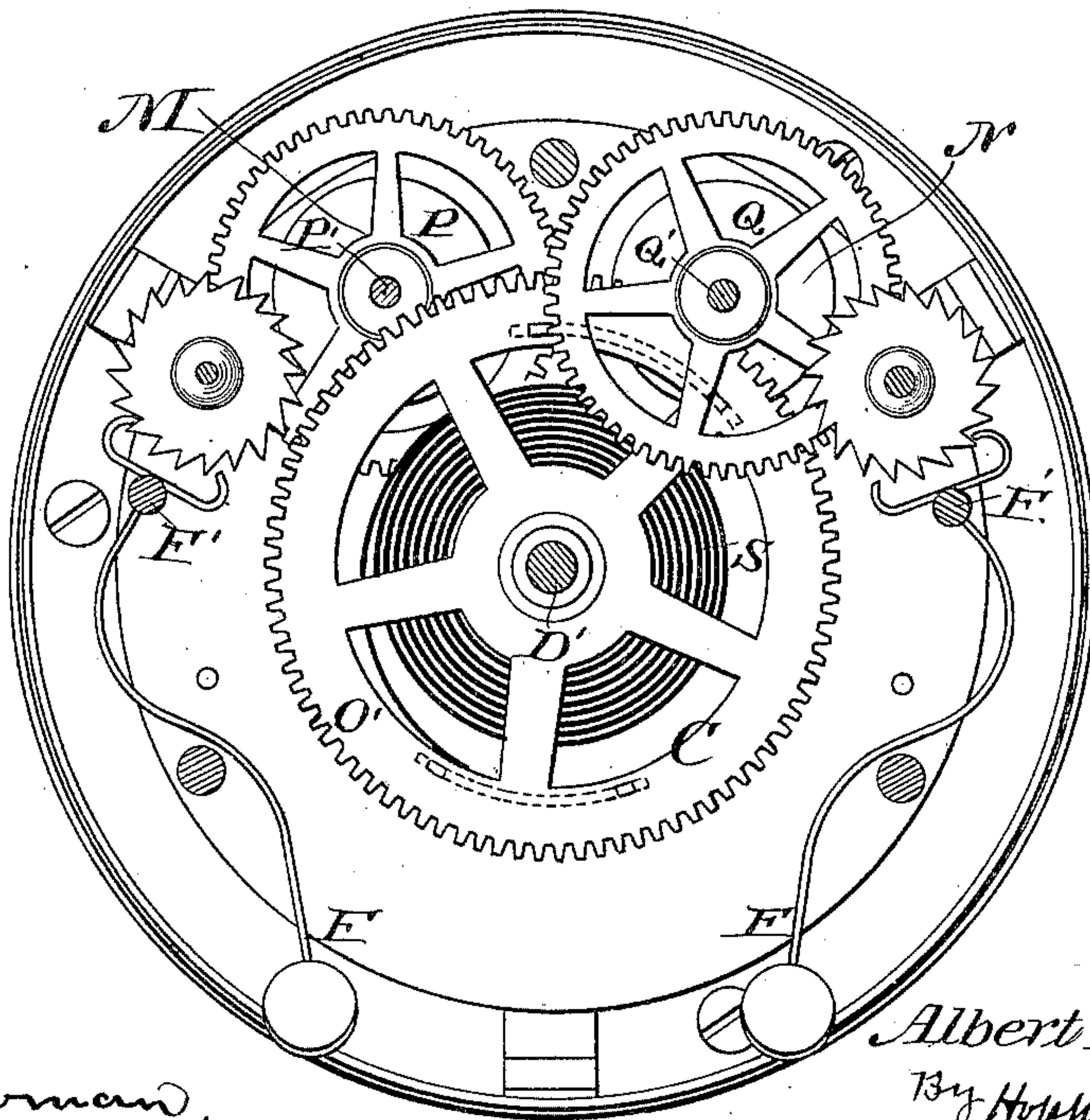
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*Fig. 2.*



*Fig. 3.*



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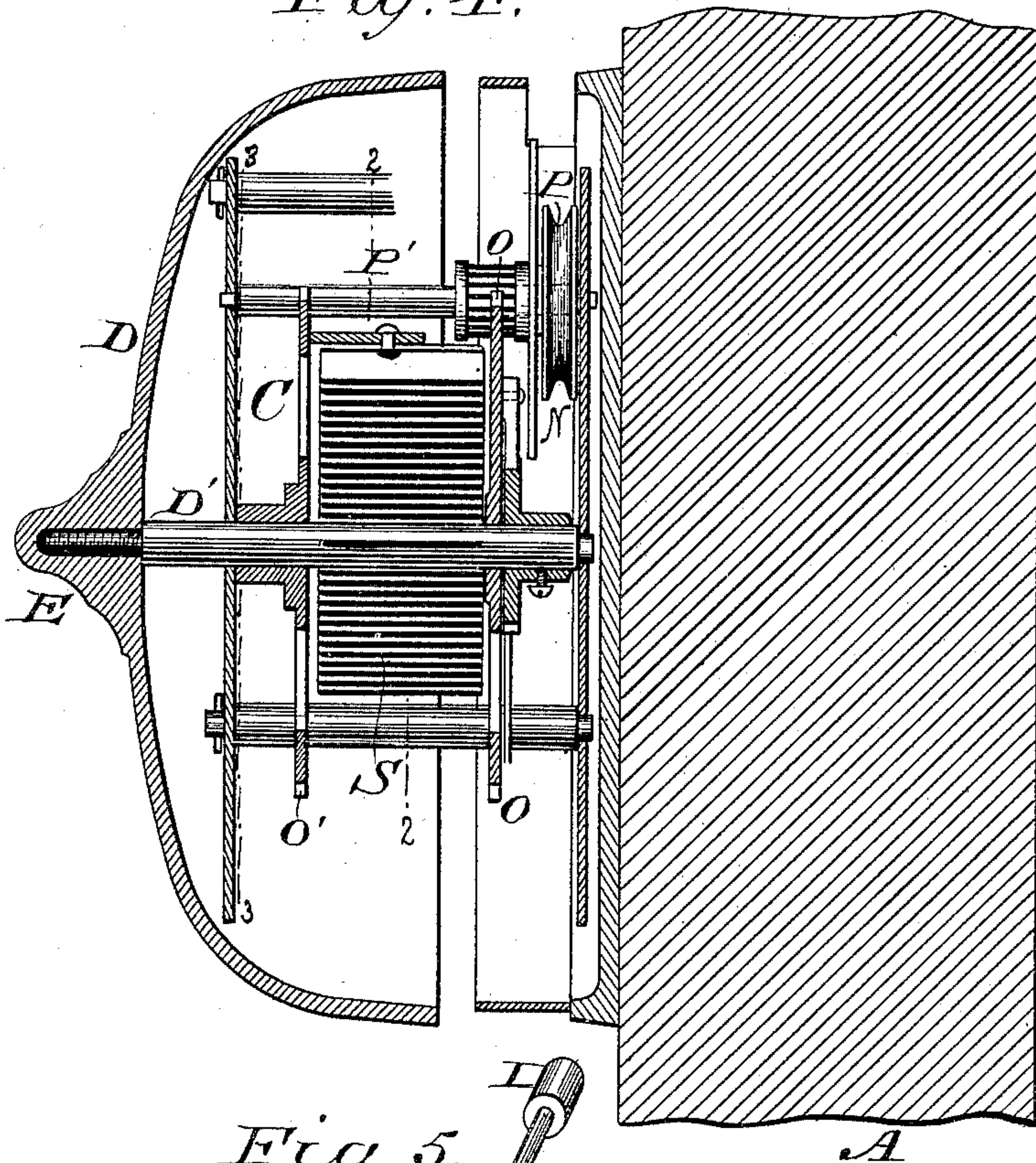
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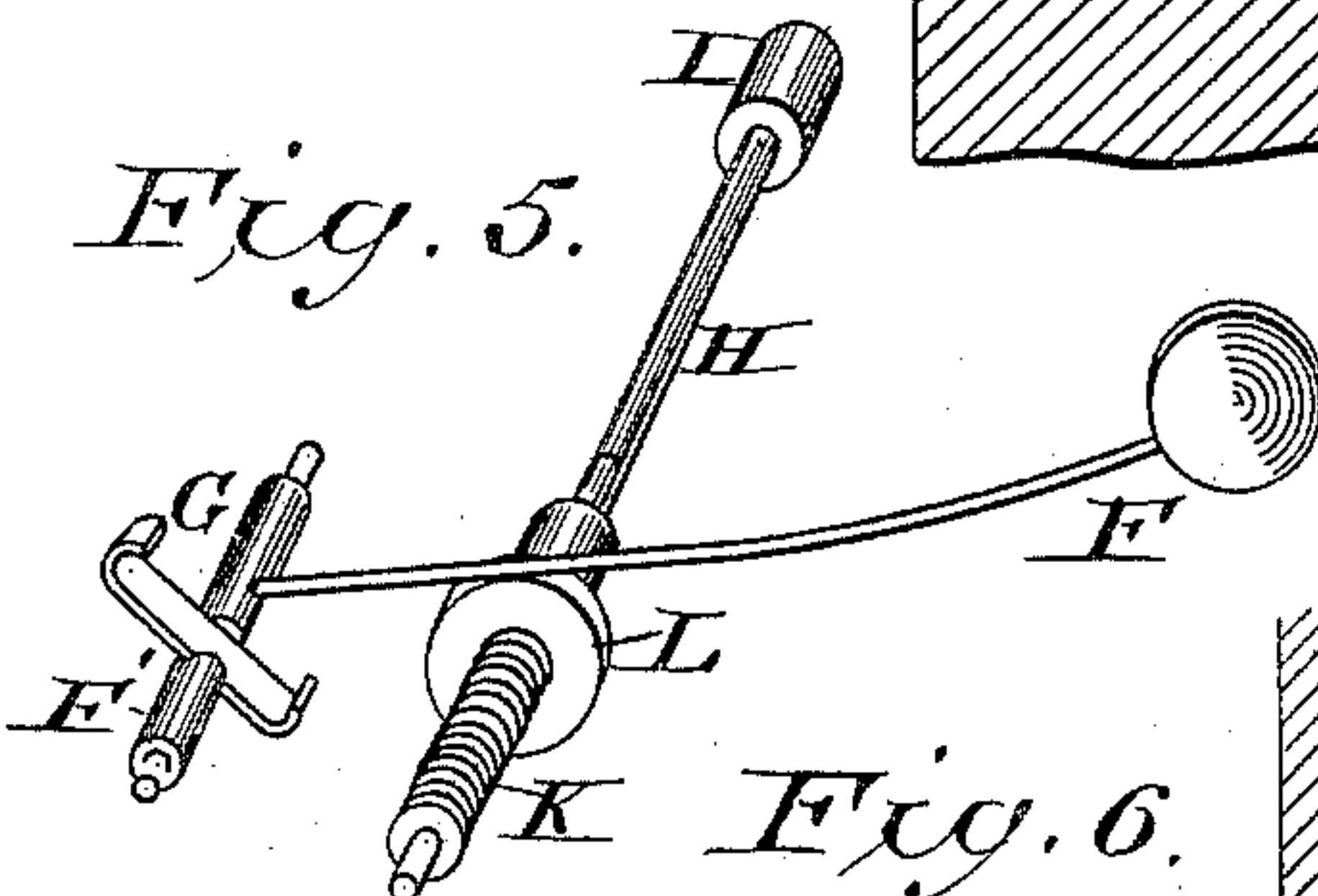
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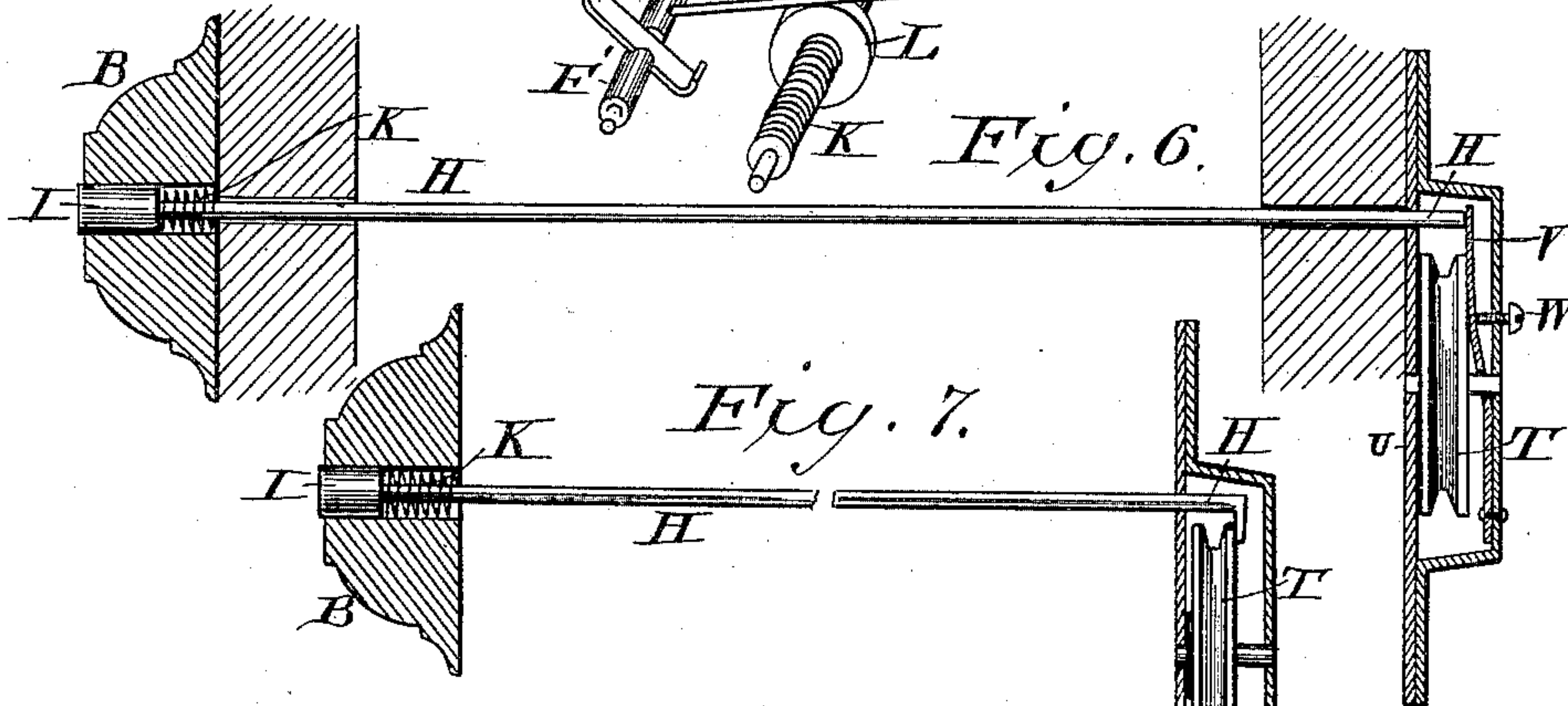
*Fig. 4.*



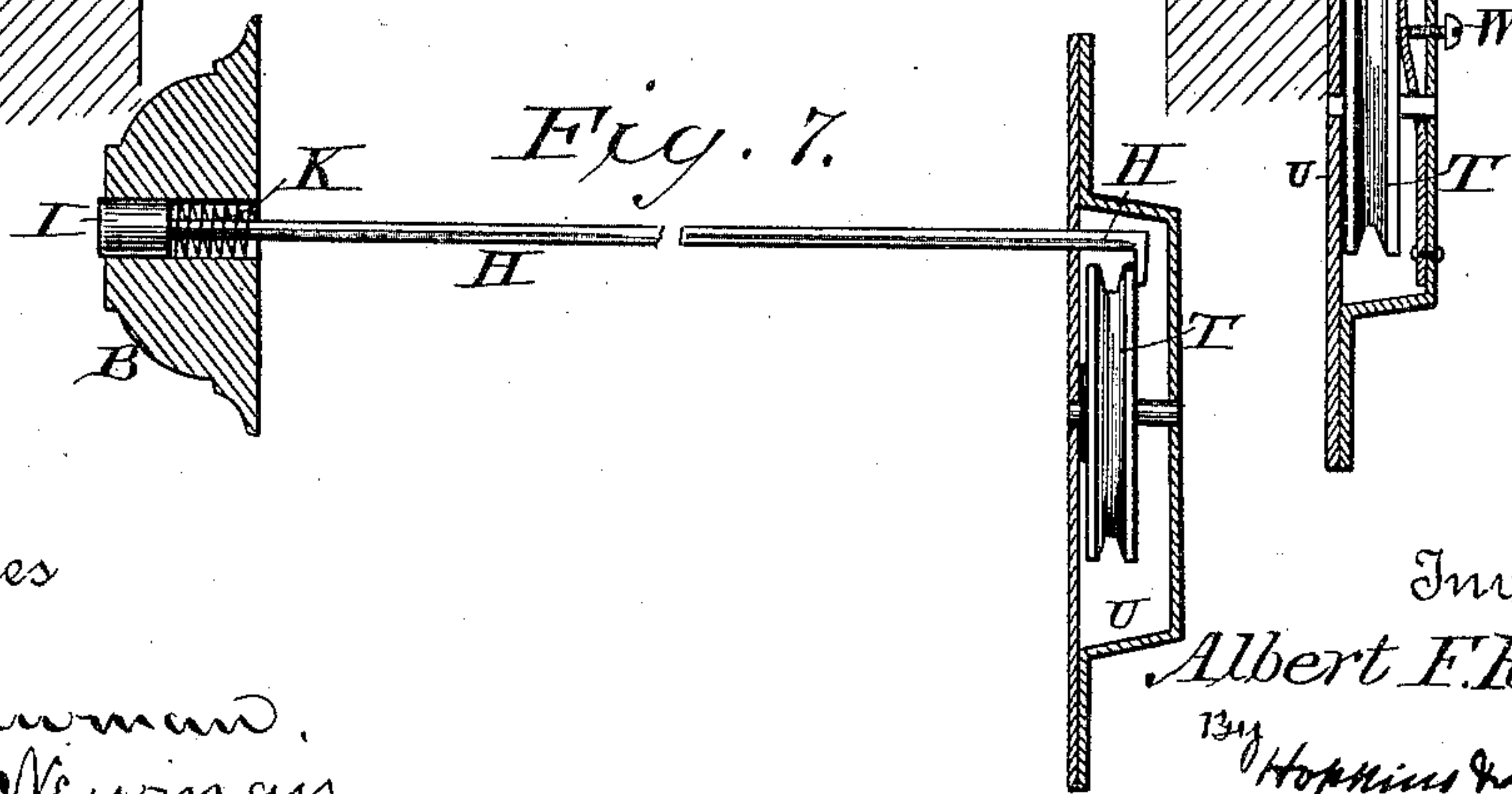
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



Witnesses

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# UNITED STATES PATENT OFFICE.

ALBERT F. ROCKWELL, OF BRISTOL, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NEW DEPARTURE BELL COMPANY, OF SAME PLACE.

## DOOR-BELL MECHANISM.

SPECIFICATION forming part of Letters Patent No. 411,395, dated September 17, 1889.

Application filed February 7, 1889. Serial No. 298,999. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT F. ROCKWELL, of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Door-Bell Mechanisms, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce a door-bell operated by mechanical means that shall be an exact imitation of an electric bell in appearance and sound.

I am aware that an attempt has heretofore been made to produce such a device, but on account of the fact that it has been contemplated to apply the power necessary to ring the bell directly to the push-rod and continue it in action, and continue the motion of the rod as long as it is desired to ring the bell, it has been necessary to provide for very considerable motion in the push-rod, and its operation also involves the exertion of considerable force, so that it is practically inconvenient. Besides this, it fails as an imitation of an electric bell on account of the depth of the cup or recess and the length of the projecting rod necessary. I am also aware that a mechanism has been devised to cause the ringing of a door-bell by mechanical means upon the pushing of a button; but in such case the ringing of the bell has not been made to coincide in duration with the depression of the button. On the contrary, the mechanism has been such as to cause the bell when set to ringing to continue for a predetermined time without reference to the continuation of pressure on the button. Thus these devices have signally failed to imitate an electric bell, which only requires a slight depression of the button by the exertion of slight force, and which always causes a bell to ring coincident with the duration of the push upon the button. To overcome these objections I have contrived to connect a push-rod with an ordinary alarm-bell mechanism in such a way as to require only a slight movement of the push-rod, similar to that ordinarily necessary with an electric bell, by which I disengage the alarm mechanism and cause the bell to ring only as long as the push upon the button is

continued, when the push-rod and the alarm mechanism instantly become automatically connected by the retraction of the push-rod, so as to discontinue the action of the alarm mechanism and stop the sound.

In the accompanying drawings, illustrating an embodiment of my improvements, Figure 1 is a diagrammatical view illustrating the door-bell applied at some distance within the house from the push-button. Fig. 2 is a section on line 2 2 of Fig. 4. Fig. 3 is a section on line 3 3 of Fig. 4. Fig. 4 is a vertical central section of my door-bell apparatus. Fig. 5 is a perspective view of a tappet, striker, and push-rod detached. Fig. 6 is a vertical section of a part of my apparatus, showing a push-rod and its relation to a brake-wheel. Fig. 7 is a similar view showing a formal modification.

Referring to the letters upon the drawings, A indicates, for example, a section of a door-frame upon which my improvements are applied.

B indicates an escutcheon of an ordinary kind, secured to the outside of the frame.

C indicates a clock-alarm mechanism, which may be of any ordinary or suitable kind, not necessary to describe in detail.

D indicates a bell, which is secured to an extension D' of the mainspring-arbor of the alarm mechanism, so that the mainspring S may be wound by turning the bell.

E indicates an internal screw-threaded projection upon the bell, by means of which it can be screwed to place upon the threaded extension of the mainspring-arbor.

F indicates the bell-strike, which is of ordinary character, pivoted, as shown, to the same pivot F' to which the tappet G is secured.

H indicates the push-rod, provided with an ordinary button I and with a retracting coiled spring K, all of usual construction. It is necessary that the push-rod be connected either mediately or immediately with the alarm mechanism in such a manner that a push upon the bottom sufficient to overcome the resistance of the spring K and force the push-rod inward will result in releasing the alarm mechanism and setting in operation



its train of gears and strike by the force of the mainspring S. It is obvious that the push-rod in some cases where the alarm mechanism is placed close to the push-button on the inside of a partition or doorway may be connected itself directly with some part of the alarm mechanism—for example, the tappet, the strike, or one of the gear-wheels—so that normally it will constitute a stop, brake, or checking device to prevent the operation of the alarm mechanism, and that when pushed inward it will be disconnected and will cease the checking or stopping function, so that the alarm mechanism will operate and the bell will ring as long as the rod thus continues pushed inward and disconnected from some moving part of the alarm mechanism; but in cases where it is desirable to have the door-bell located at some distance from the push-button—as, for example, in the back end of a hall—it would be better to connect the push-rod with the alarm mechanism mediately by means of bell-cranks and wires, (which is one form of device I have used and shown in another application, Serial No. 298,999, dated February 7, 1889, I have filed for certain improvements in door-bell mechanism,) or by means of an endless band and pulleys, such as illustrated in the accompanying drawings, or some other suitable intermediate connecting device.

It is obvious that there are a great variety of mechanical means by the use of levers, gearing, links, wires, &c., by which the push-rod can be connected, without departing from the substance of my invention, operatively with the alarm mechanism in such a way that when it is pushed inward it will cause the release of the alarm mechanism and the ringing of the bell for a time coincident with the continuation of the push upon the button; and my invention in its broad aspect is not limited either to connecting the push-rod mediately or immediately with the alarm mechanism or to any specific means of connecting the push-rod with the alarm mechanism, so as to release it and set it in operation by pressing upon the button, and continue it in operation as long as and no longer than the button is pressed inward, because such things are mere matters of mechanical detail, which require in practice to be varied extensively in almost every different application of my invention on account of the different situations that are found for placing the door-bell in different houses. By means, however, of a lug or stop L, as shown in Fig. 5, which normally stands in the way of the action of the bell-strike F, but may be pushed inward with the push-rod out of the way of the strike, so that the alarm mechanism will operate, all cases are substantially provided for in which there needs to be a direct connection between the push-rod and some moving part of the alarm mechanism. Of course it is only necessary to release some moving part, not especially the strike, in order to unfasten it and

let the alarm mechanism run, and in my application referred to I have shown a lug or stop normally standing in the way of the action of the tappet instead of the bell-strike. My invention, it will be seen, therefore in its broadest aspect comprehends the production of a particular class of mechanically-operating door-bell mechanisms in which there is a complete reproduction of the neatness and convenience of an electric door-bell mechanism, and in which the continuation of the ringing of the bell is coincident in duration with the pressure upon the push-button without the expense and inconvenience of electric batteries that require renewal from time to time, and occasionally also the attention of experts. I avoid the use of electrical conductors as well as batteries, which are more or less objectionable for various reasons in dwellings and other buildings. I thus secure very great economy, not only in the first cost, but in the continuation of the service of first-class door-bell mechanism.

Referring now to Figs. 1, 2, and 3, which illustrate means for applying my improved door-bell mechanism at a distance from a push-button and push-rod, M designates one train of gearing of an alarm mechanism and N another. One of the main gear-wheels O is connected by a ratchet and pawl to the mainspring-arbor, to which one end of the mainspring is also fixed. The other main gear-wheel O' is loose upon the arbor, and is fastened to the opposite or free end of the mainspring. The result is that the mainspring serves to drive the trains of gearing in opposite directions.

P indicates a pulley secured to one of the shafts P' of one alarm mechanism. Q indicates another similar pulley secured to one of the shafts Q' of the other alarm mechanism. Passing around each of these pulleys is an endless band R, each band extending over suitable guide-pulleys R' to another pulley T, which I may call a "brake-pulley." This brake-pulley is to be located in practice in immediate proximity to the push-rod upon a suitable support or frame U, and is provided with a brake-spring V, (or other braking device,) adjusted by means of a screw W to press with more or less force against the side of the brake-pulley to operate as a stop or brake. The free end of this spring is placed in the path of the push-rod as it is pressed inward, so that the spring will be pushed out of contact with the brake-pulley. This will release the brake-pulley and permit the alarm mechanism to run and the bell to strike as long as the inward push upon the button and push-rod continues. As soon as the push is discontinued, the spring V will recoil and bear upon the surface of the brake-pulley and stop the alarm mechanism.

Instead of this brake device any other suitable one may be employed—for example, the end of the push-rod might be bent down, as shown in Fig. 7, so as to bear upon one side



of the brake-pulley under tension of the spring K.

I prefer the use of an endless band instead of bell-cranks and wires, and various other connecting mechanism between the push-rod and the alarm mechanism in most instances, where it is necessary or desirable to have the alarm mechanism placed at some distance from the push-button, for the reason that it is more convenient to adjust the endless band so as to secure proper tension and uniformly satisfactory working than it is to adjust bell cranks and wires. Expansion and contraction of the wires under changes of temperature affect the operation of bell-cranks and wires injuriously, whereas they do not so affect the endless bands, because they will work over pulleys equally well under varying degrees of tension within the ordinary limits of changes effected by expansion and contraction. I use one of these endless bands, and only one alarm mechanism whenever it is desired to ring the bell from only one push-button; but it is sometimes desirable to provide for ringing a door-bell from two points—as, for example, from a basement door and from a front door—and in such a case the double mechanism shown and the two endless bands are very convenient.

I find in practice that a single winding of the mainspring will conserve force enough to ring the bell, as a rule, for a period of about

six months. At most it need be wound but two or three times a year.

What I claim is—

1. In a door-bell mechanism, the combination of a push-button, a push-rod to which the button is attached, a brake connected with the inner end of the push-rod and adapted to be operated by it, a brake-pulley upon which the brake acts, an alarm mechanism provided with a pulley, and an endless band working on the said pulley and on the brake-pulley, whereby a push upon the push-button will cause the ringing of a bell as long as it is continued and no longer, substantially as set forth.

2. In a door-bell mechanism, the combination of a single bell, two alarm mechanisms adapted to independently ring the bell, and a mainspring having one end connected to and adapted to operate one alarm mechanism, and the other end connected to and adapted to operate the other alarm mechanism, whereby the same bell may be rung by different movements operated by the same power, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

ALBERT F. ROCKWELL.

Witnesses:

MARCUS S. HOPKINS,  
JOSEPH L. ATKINS.