

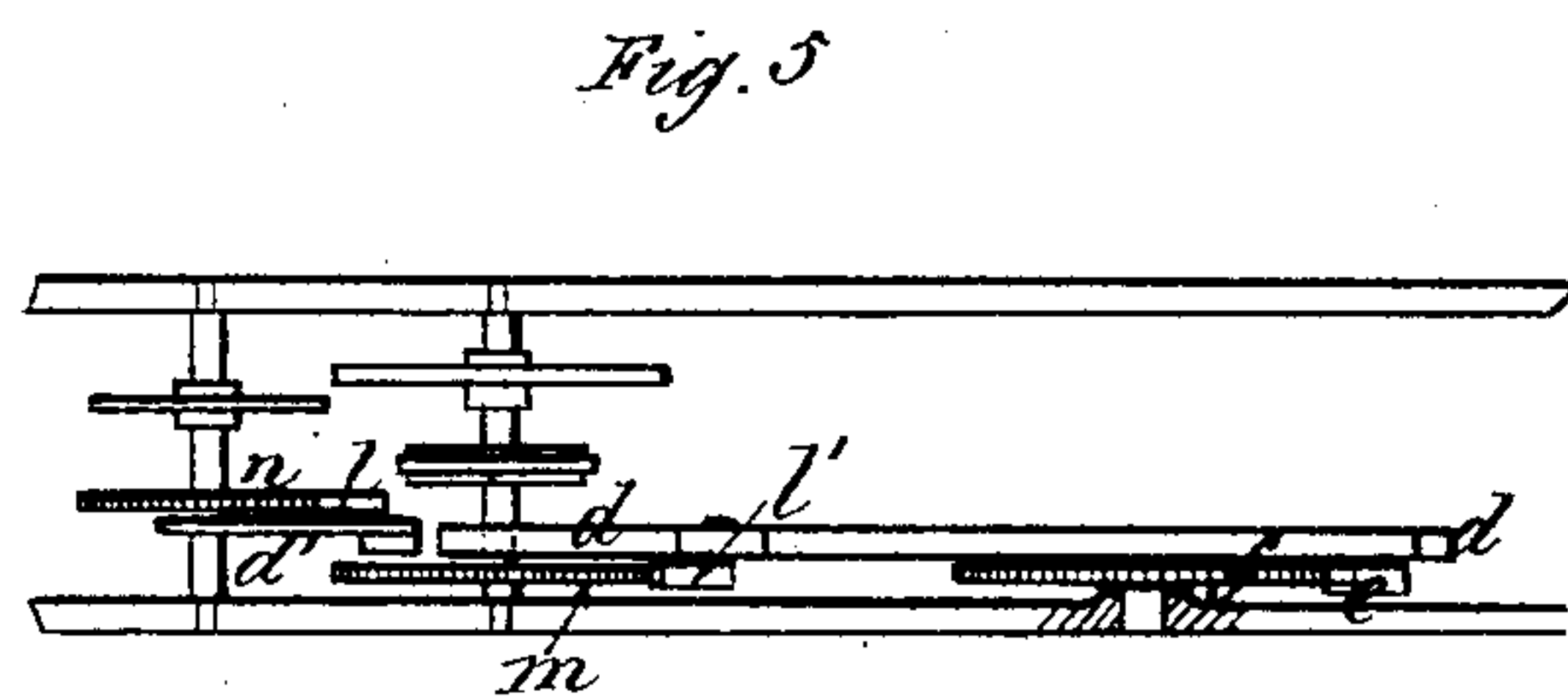
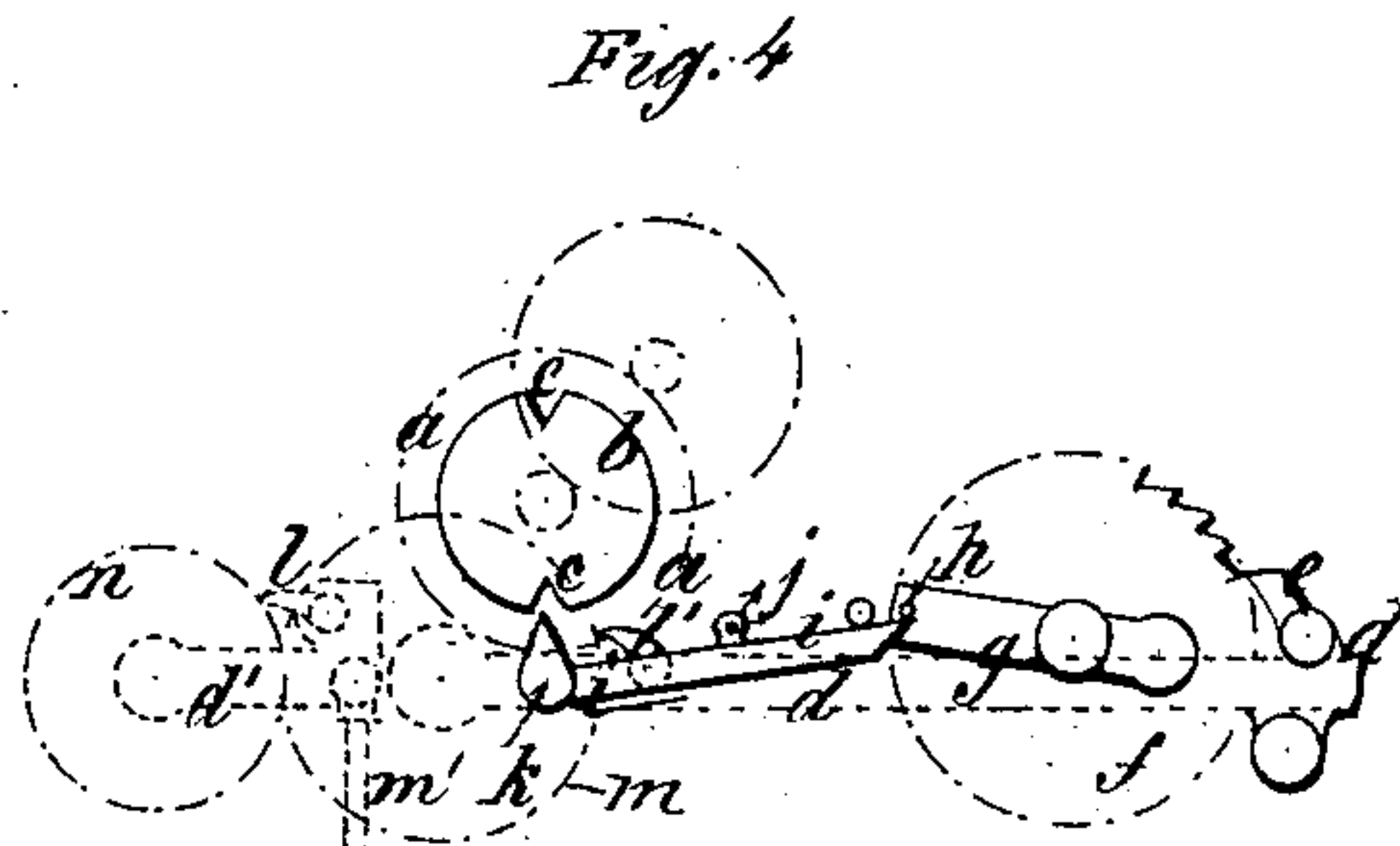
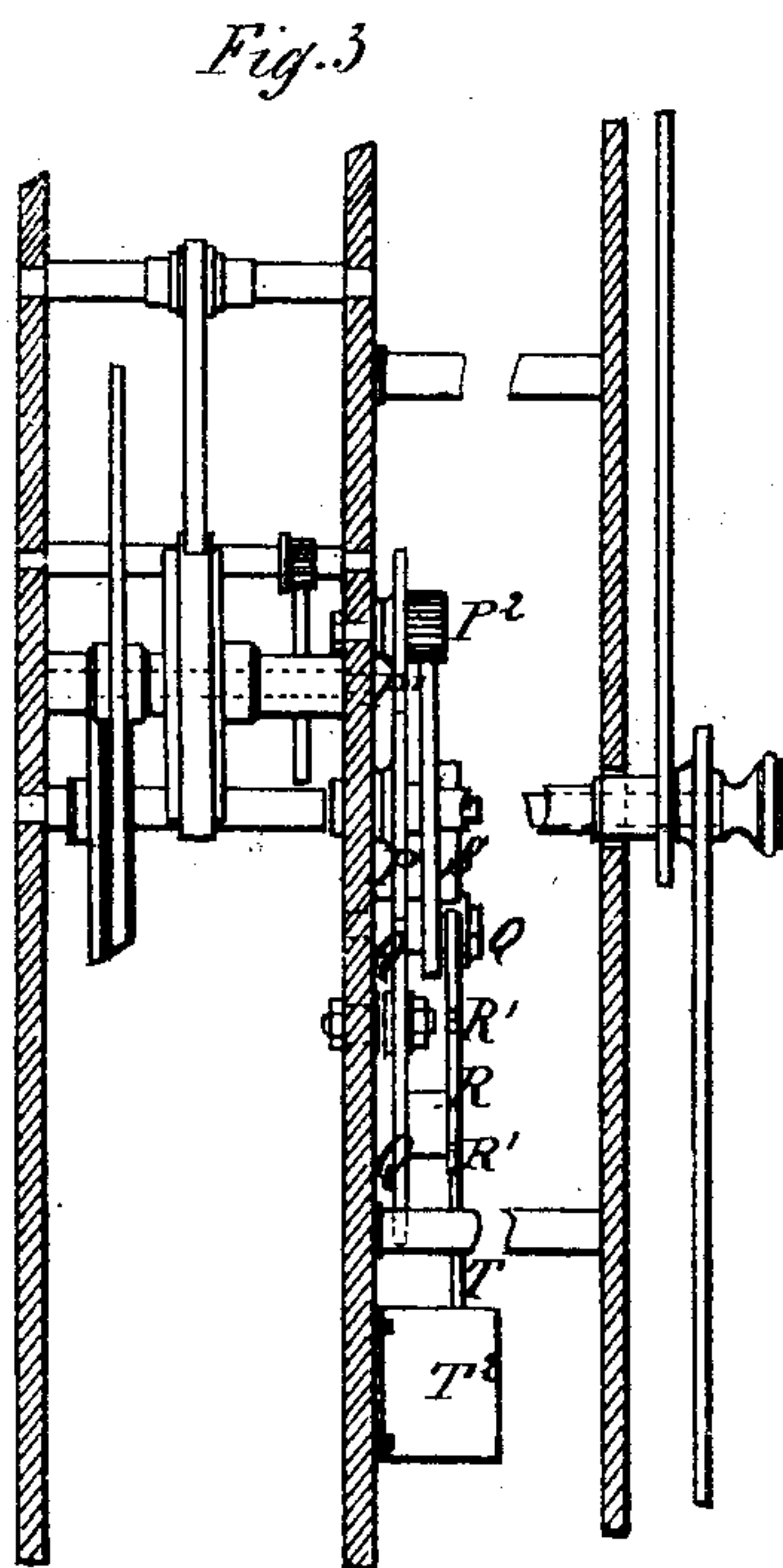
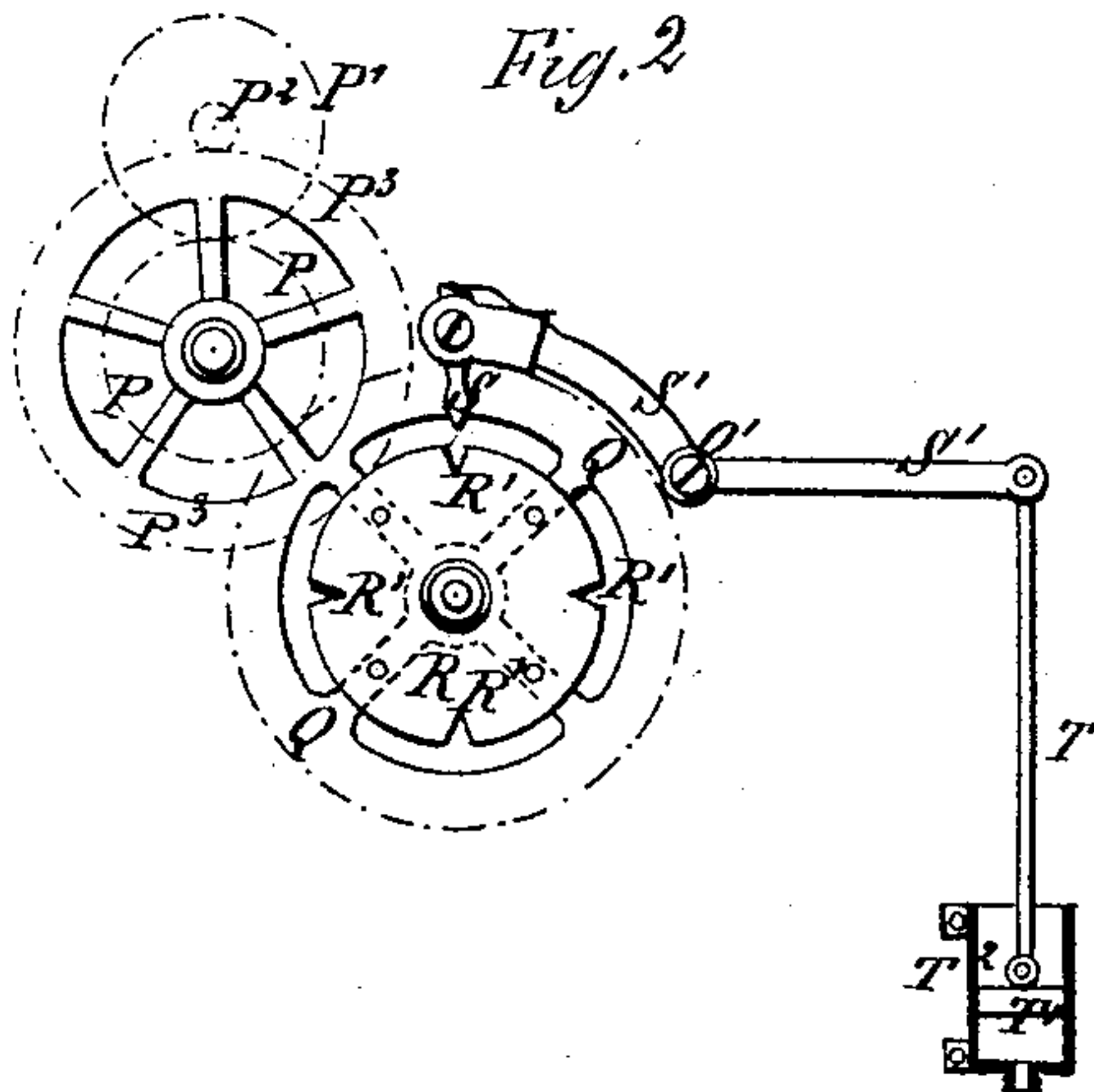
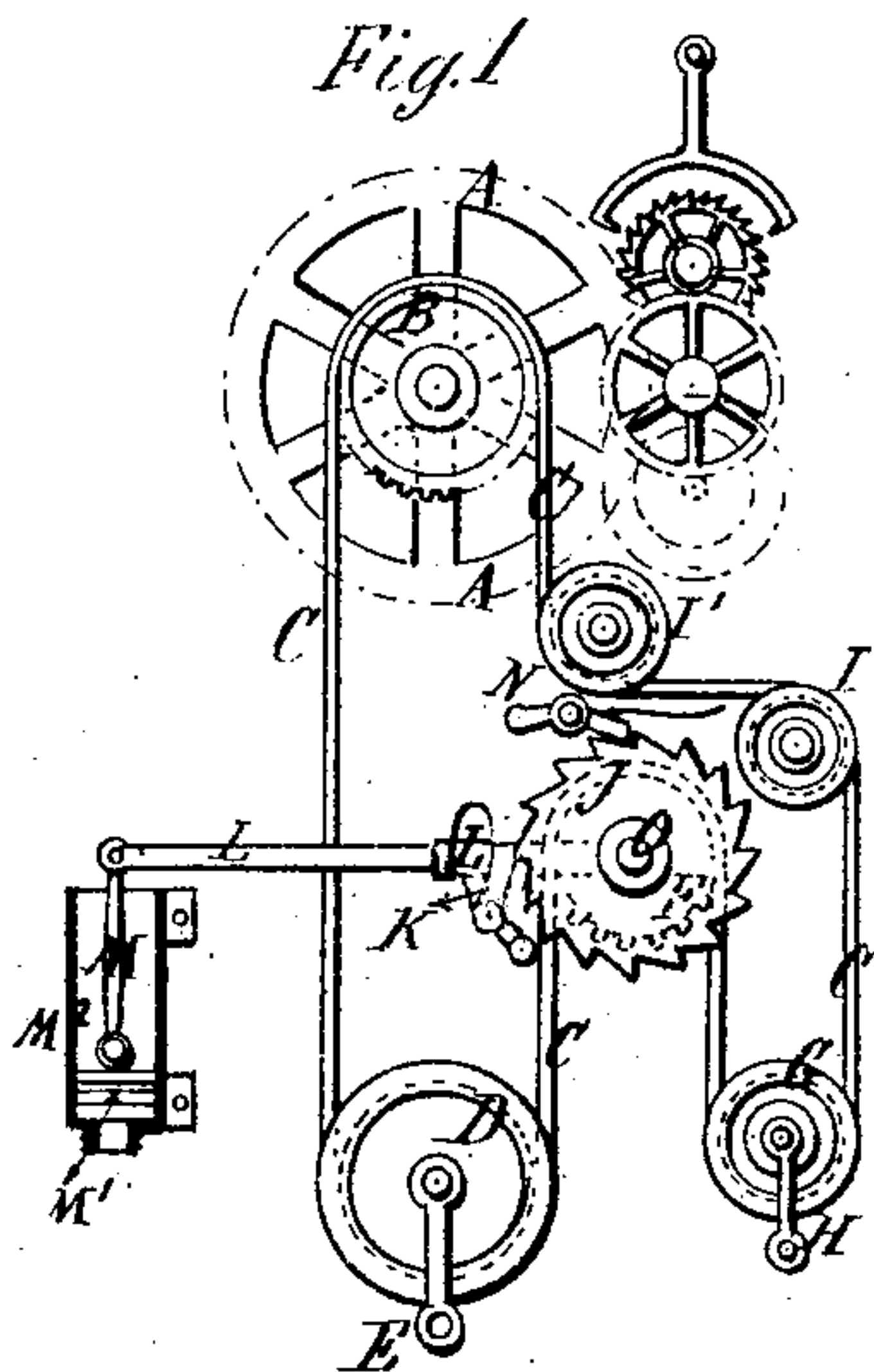
(No Model.)

V. POPP.

APPARATUS FOR WINDING AND SETTING CLOCKS.

No. 275,700.

Patented Apr. 10, 1883.



Witnesses:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR WINDING AND SETTING CLOCKS.

SPECIFICATION forming part of Letters Patent No. 275,700, dated April 10, 1883.

Application filed August 24, 1880. (No model.) Patented in France April 14, 1880, No. 136,123; in Belgium April 29, 1880, No. 51,320; in England May 3, 1880, No. 1,808; in Germany May 5, 1880, No. 13,618; in Italy June 10, 1880, and in Spain October 5, 1880.

To all whom it may concern:

Be it known that I, VICTOR POPP, of Paris, France, have invented certain new and useful Improvements in Apparatus for Setting and Winding Clocks by Pneumatic or other Trans-

mission, of which the following is a specification.
The system of pneumatic transmission which has been heretofore invented for the distribution of time, and which is made the subject of sundry patents, requires the use of special time-pieces. These time-pieces, inasmuch as they possess no motive power independent of the mechanism operated by the compressed air, stop running when for any reason the pneumatic transmission fails. On the other hand, ordinary time-pieces or clocks have irregular movement, and consequently very rarely give the exact time. Attempts have been made to regulate these clocks by means of electricity; but notwithstanding such attempts the desired results have not as yet been obtained.

The present invention has reference to the application of a pneumatic or similar system to the setting and winding of ordinary time-pieces. The mechanism which is adapted to this end is operated by a bar which receives movement from a piston or bellows put in motion by compressed air or other agent of transmission. It is composed of a series of levers acting the one upon the train, the others on the winding wheels or barrel.

In order that the invention may be fully understood, it will now be described in connection with the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a clock operated by a weight provided with pneumatic winding apparatus; Figs. 2 and 3, a front and side view, respectively, of a clock-movement with pneumatic setting attachment; and Figs. 4 and 5, respectively front and plan views of mechanism for simultaneously rewinding and setting a clock. The apparatus shown in the last two figures (4 and 5) embodies the invention in its most perfect and complete form, the setting mechanism being operated by the same cylin-

der and piston which operate the rewinding mechanism, instead of requiring a separate piston and cylinder, as shown in Figs. 2 and 3.

Referring to Fig. 1, the motor-wheel A, which acts on the train of the clock, carries on its axis a pulley, B, over which passes the endless chain C. This chain passes under a second pulley, D, carrying a sling, E, to which is jointed the operating-weight of the clock. The chain C then passes over the pulley F, under the pulley G, from which is suspended a weight for stretching said chain, and finally returns to pulley B by passing over the pulleys I I'. I use in preference an endless or band chain, and provide the pulleys F and B with teeth in order to permit the chain C to act more easily. On the axis of the pulley F is fixed the ratchet J, on the teeth of which the pawl K, carried by the lever L, acts. This lever turns upon a fulcrum coincident with the axis O of ratchet J, and at its outer end is jointed to the connecting-rod M, through which movement is communicated to it from piston M', inclosed in the cylinder M². This cylinder is at its lower end in communication with the pneumatic system—that is, by one of the pipes by which compressed air is distributed from a central source. At every minute, or at other suitable intervals, the air sent through a conduit enters the cylinder M², raises the piston M', and by means of connecting-rod M acts on lever L. By means of the pawl the lever L engages the ratchet J and advances it one tooth, so that the toothed wheel F, mounted on the axis of the ratchet J, turns a certain distance, and consequently moves the chain C and raises the motor-weight. The stop-pawl N maintains the ratchet J in the position in which it is placed by the lever L. In consequence of this intermittent movement the clock is continually rewound, and the motor-weight is sustained at the upper part of its course, so that if the communication of the clock with the pneumatic system is interrupted it will continue to run a certain time until the communication can be re-established.

The setting attachment will now be described in connection with Figs. 2 and 3.

Wheel P, which carries the minute-hand, and

which, by means of wheels $P^1 P^2 P^3$, moves the hour-hand, engages with the wheel Q , carrying the plate R , in which are a series of notches, R' . When the minute-hand is fast or slow the corresponding notch R' which occupies the most elevated position on the plate R presents itself more or less obliquely under the finger S , carried by the lever S' . The latter turns upon the axis O' , and is moved by the connecting-rod T , jointed to the piston T' , which moves in the cylinder T^2 . At the proper time the compressed air is let into the cylinder T^2 , raises piston T' , which by means of connecting-rod T acts upon lever S' and depresses the finger S into the notch R' which at the time is below it. On account of the obliquity of the faces of the notches, it is forced to follow the movement of the finger S , so that the wheel Q places itself in the proper position, and brings the wheel P , and consequently the minute-hand, to the position corresponding to the exact hour. In the clock shown in the drawings, the diameter of the wheel Q being double that of wheel P , and the plate R carrying four notches R' , the clock will be regulated every half-hour. It will be seen that by varying the proportion of the wheels P and Q , and the number of the notches R' in the plate R as well, the clock or time-piece can be regulated at any determined interval.

Referring to Figs. 4 and 5, the mechanism embodying both the rewinding and setting attachments will now be described. Upon the axis of the wheel a , which carries the minute-hand, is fixed the plate b , carrying two notches, c , diametrically opposite. The compressed air enters the cylinder apparatus and acts upon the lever d , carrying the pawl e , which acts on the wheel f , having thirty teeth. The axis of wheel f carries the lever g , on which is fixed the pin h . The latter at each revolution of said wheel—that is to say, at each half-hour—strikes the outer end of lever i , having its fulcrum at j . This lever i carries at its opposite end a finger, k , that enters the notch c which at the time is above it, and, sliding on the faces of the notch, brings the plate b , and consequently the minute-hand, into the position corresponding to the exact hour. The lever d carries, moreover, a second pawl, l' , which acts on a ratchet, m , which latter, by means of a pinion and toothed wheel, acts upon the barrel and winds the motor-spring of the clock. A second lever, d' , provided with a pawl, l , and moved by a bar, m' , attached to a second piston, could

be adapted to act on a ratchet, n , and rewind the striking mechanism.

In all the apparatus heretofore described pistons have been shown as means for producing the necessary movements; but it is evident that bellows acting upon levers could also be used, these acting by means of bars, connecting-rods, or through other suitable means.

Having thus fully explained the invention and the manner of carrying the same into effect, what I claim is—

1. The combination, with a clock mechanism operated by a spring, weight, or other suitable power, of rewinding mechanism comprising a pneumatic cylinder and piston, and devices, as indicated, for communicating motion from said piston to rewind the said weight or spring, so that said spring or weight operates continuously to drive said clock mechanism, substantially as described.

2. The combination, substantially as set forth, with a clock driven by weight or similar power, of a pneumatic cylinder and piston, and hand-setting mechanism operated by the said piston through devices as indicated.

3. A clock mechanism driven by a weight or similar power, in combination with rewinding and hand-setting devices operated by impulses transmitted at determined intervals, the same impulses serving to operate both the rewinding and hand-setting devices, substantially as described.

4. The combination of a weight or spring, ratchet-disk, pawl, lever, piston, and connecting-rod, for raising said weight or rewinding said spring, substantially as described.

5. The combination, with a plate connected with the clock mechanism and provided with notches, of a setting-finger, and means, as indicated, for forcing at determined intervals the said finger to enter said notches, and thus insure the correct position of the plate, substantially as described.

6. In a clock, the combination, with a ratchet-disk, pawl, and lever, for rewinding the motor weight or spring, of setting mechanism operated by a pin or projection on said disk, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

VICTOR POPP.

Witnesses:

GEO. H. SCIDMORE,
CH. MARDELET.