

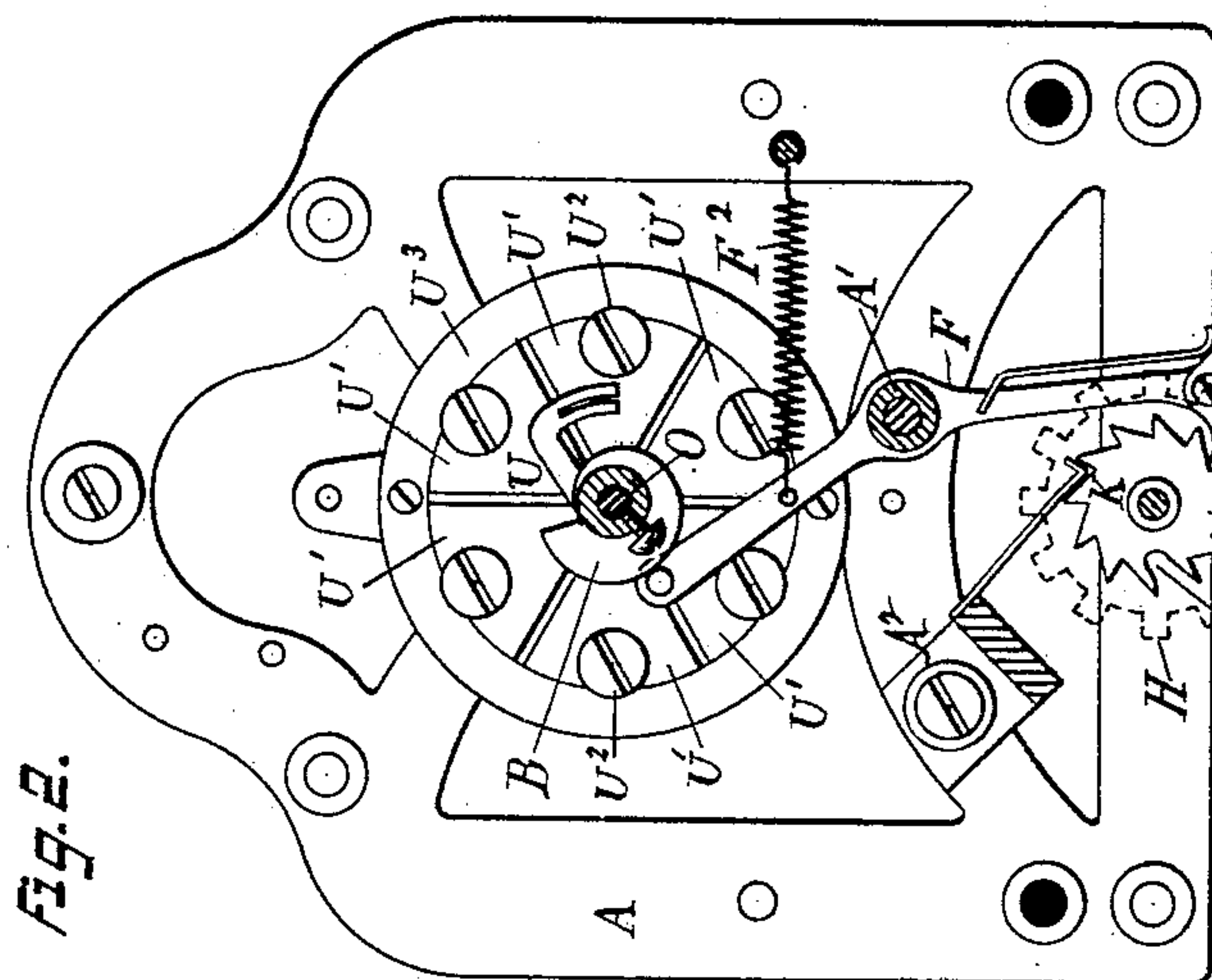
(No Model.)

3 Sheets—Sheet 1.

A. WIRSCHING.  
ELECTRIC TIME RECORDER.

No. 389,626.

Patented Sept. 18, 1888.



1992

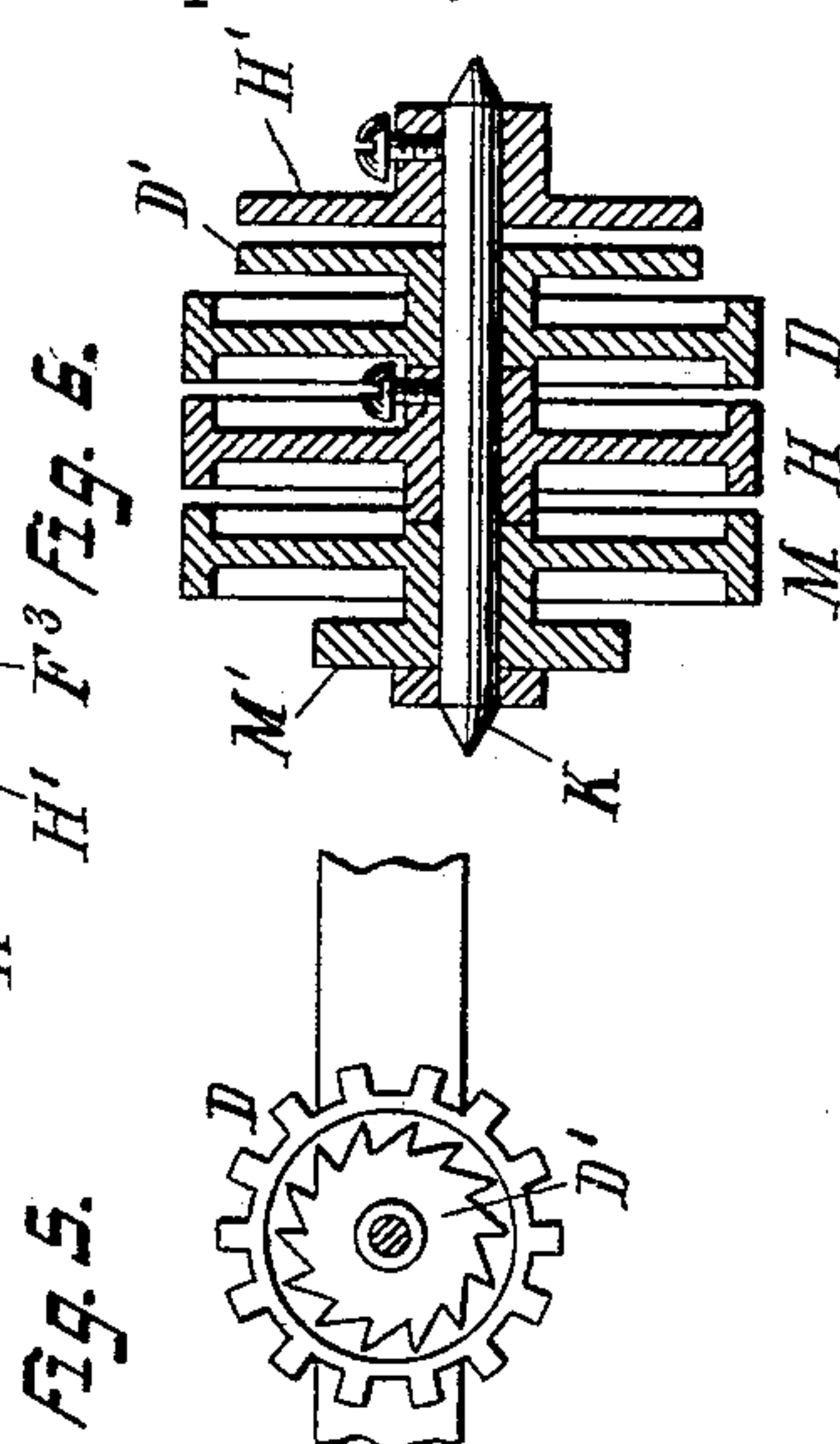


Fig. 5.  $H'$   $F^3$  Fig. 6.

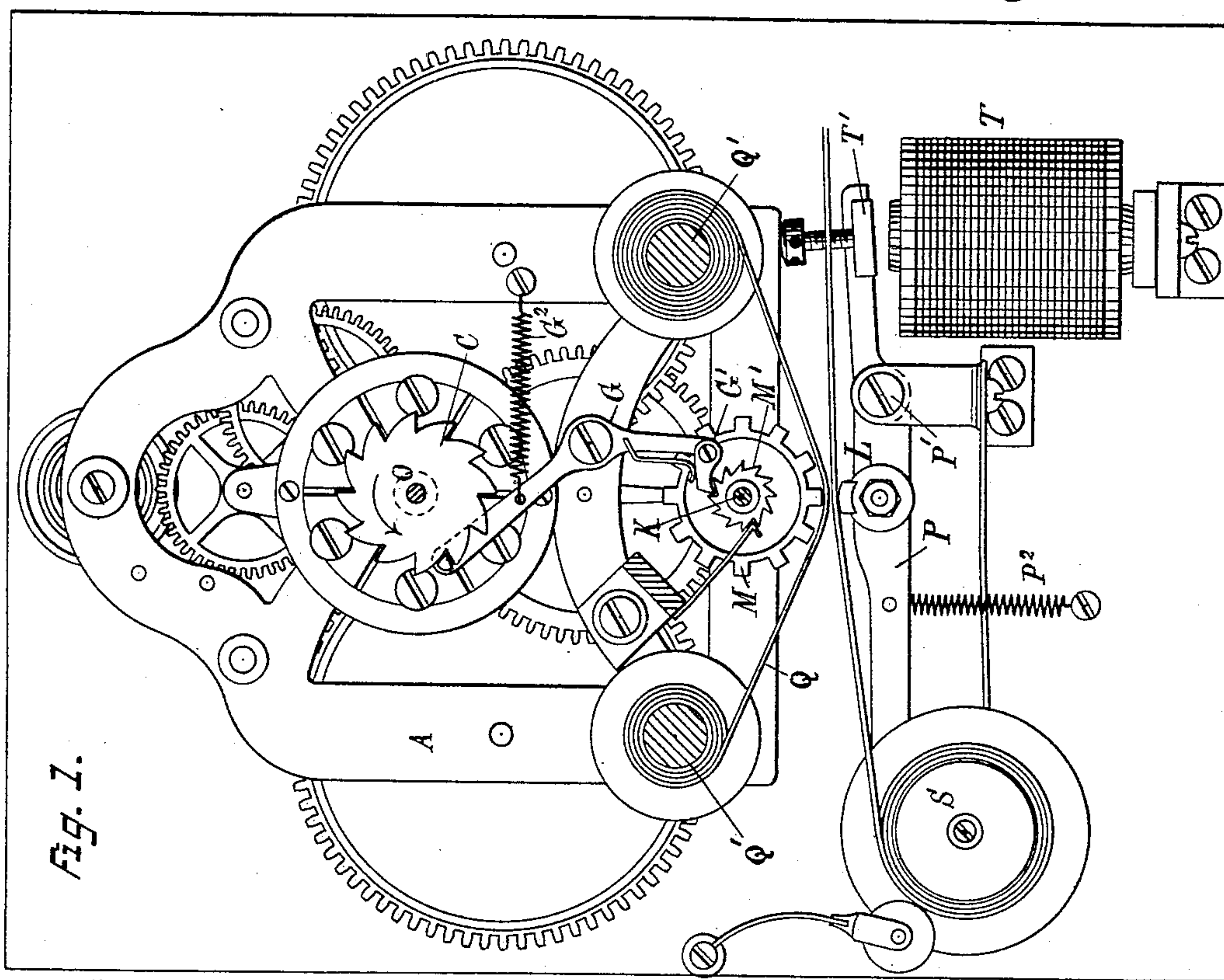


Fig. 2.

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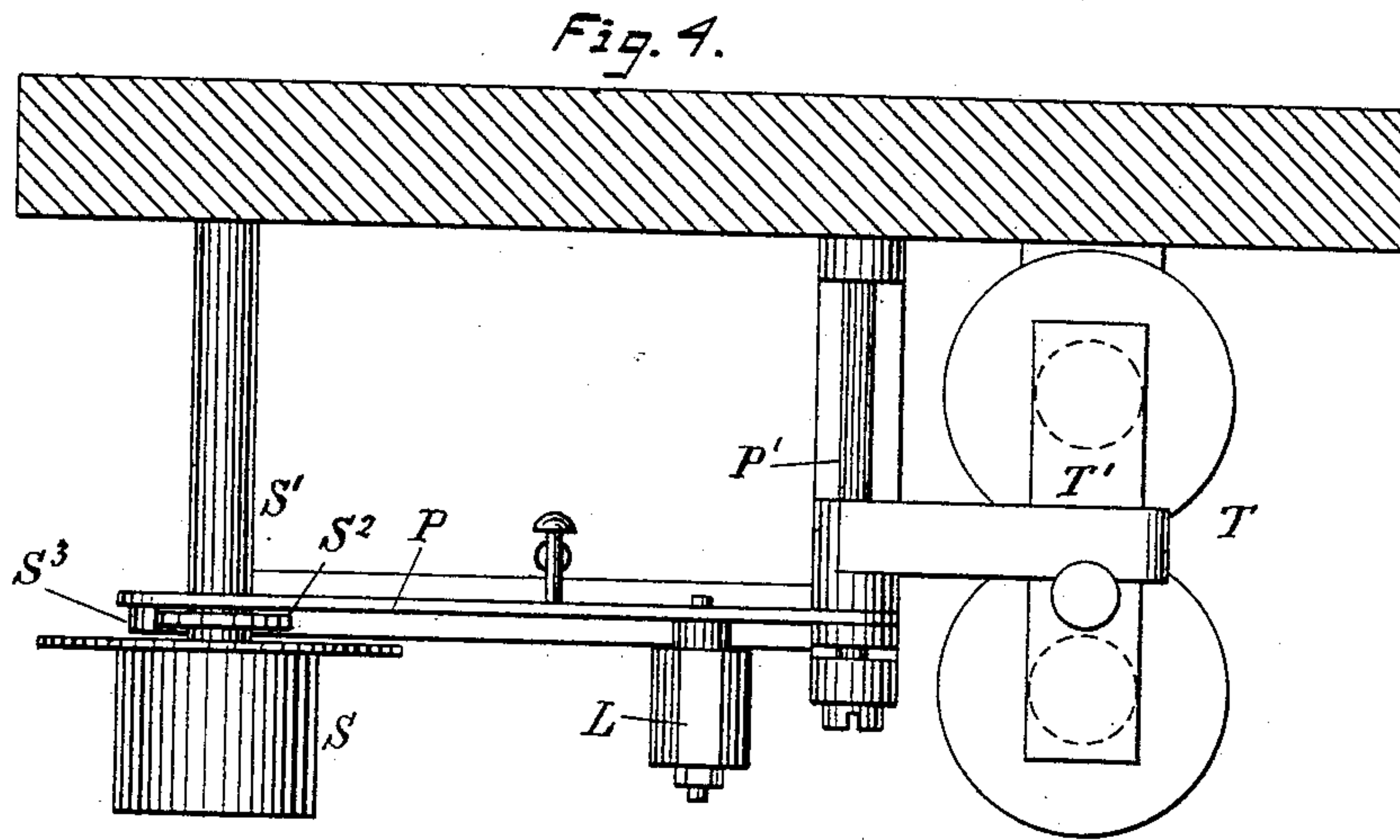
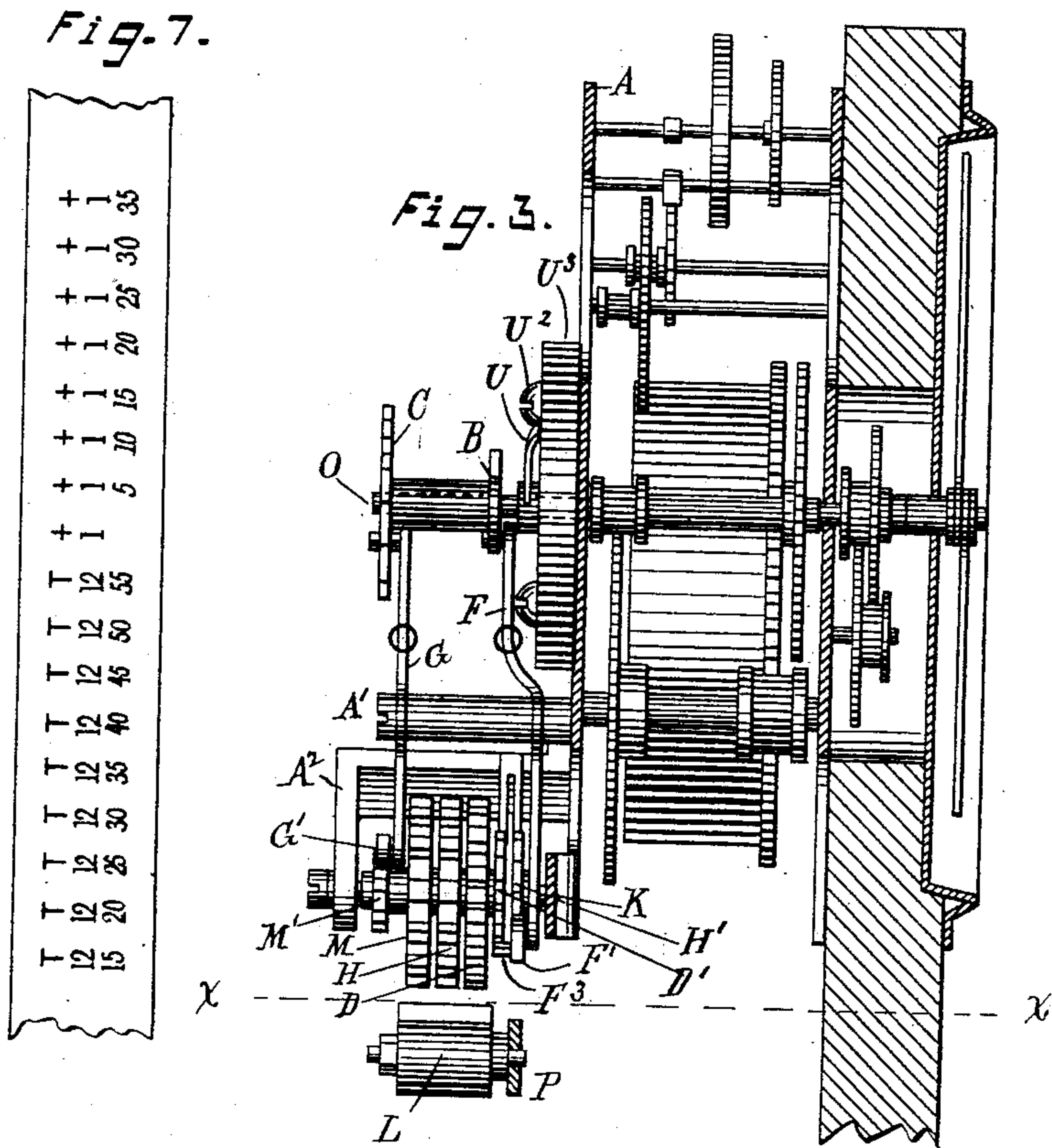
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(No Model.)

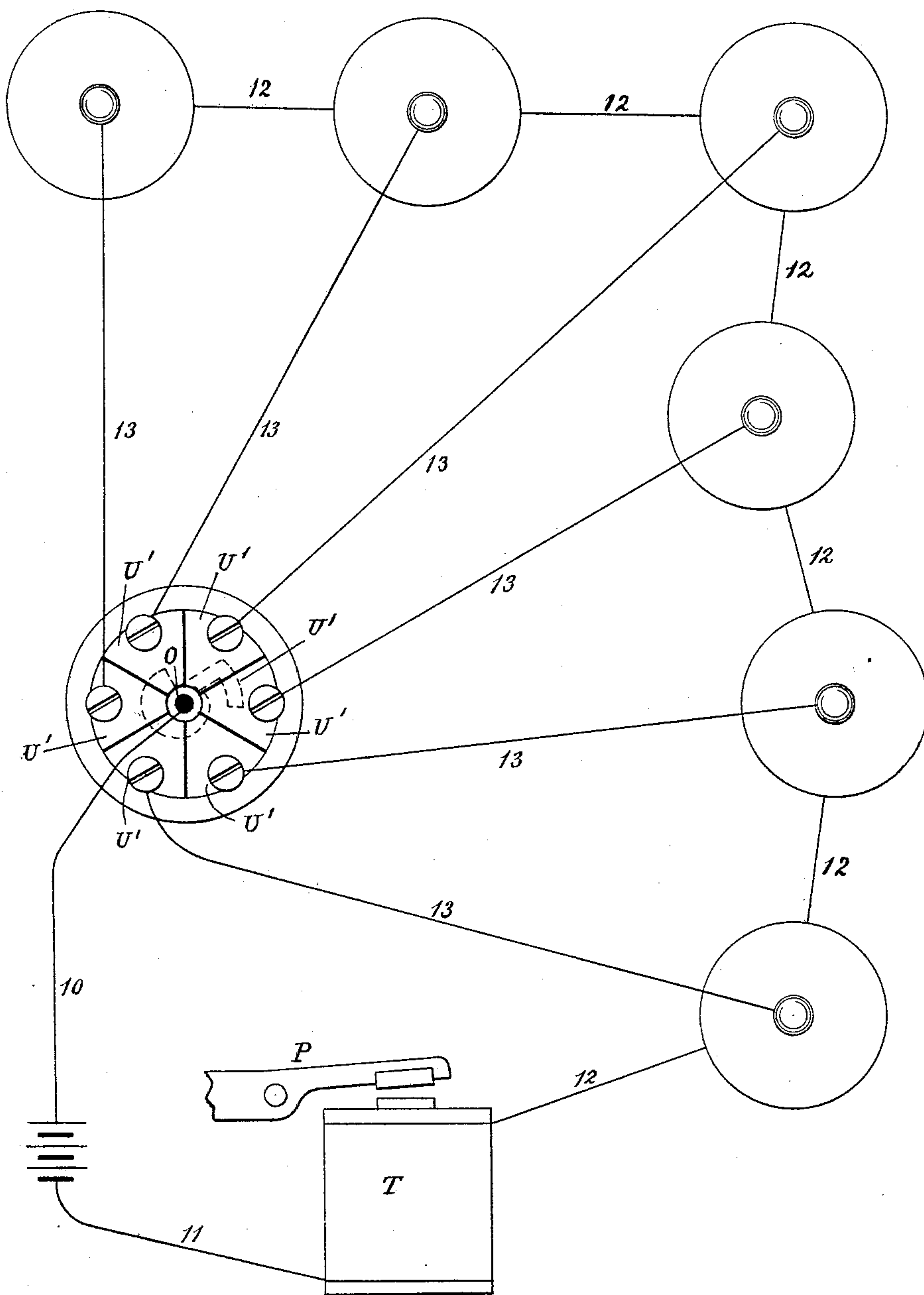
3 Sheets—Sheet 3.

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Fig. 8.



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# UNITED STATES PATENT OFFICE.

ALOYS WIRSCHING, OF BROOKLYN, NEW YORK.

## ELECTRIC TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 389,626, dated September 18, 1888.

Application filed January 5, 1888. Serial No. 259,848. (No model.)

*To all whom it may concern:*

Be it known that I, ALOYS WIRSCHING, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Watchmen's Time-Detectors, of which the following is a specification.

My invention relates to time-detectors for electrical or mechanical operation; and it consists in a certain novel combination of type-wheels and of a switch and switch-dial with a clock-movement controlling the adjustment of both the type-wheels and the switch, whereby a record of the watchman's time may be printed on a traveling tape for insuring accuracy of such record, and whereby the stations to be visited by the watchman may be alternately brought into and out of an electric circuit controlling the printing operation for permitting such operation from certain stations only within certain intervals of time.

In the accompanying drawings, Figure 1 represents a rear view, partly in section, of a time-piece embodying my invention. Fig. 2 represents a like view thereof with some of the parts omitted. Fig. 3 represents a vertical central section thereof. Fig. 4 represents a horizontal section thereof. Figs. 5 and 6 represent detail views of parts. Fig. 7 represents a face view of a portion of the printed tape. Fig. 8 is a diagram showing the switch-connections.

Similar letters of reference indicate similar parts.

The letter A indicates the frame of a clock-movement, which may be of any usual or suitable construction, and of which O is the center shaft, carrying the minute-hand. On the rear end or portion of said shaft O are two cams, B C, which are in fixed position, so as to revolve with the shaft, and one of which, B, has a single lobe or elevation representing one hour, while the other, C, has a series of twelve lobes, each representing five minutes—that is to say, the number of lobes of said last-named cam is in fixed relation to the minutes of time and may be varied according to circumstances. Each of said revolving cams B C engages with one end a lever, F or G, which may be termed an "hour-lever" or "minute-lever," and on the other end of which is piv-

oted a spring-pawl, F' or G', engaging with a ratchet-wheel, hereinafter described, both levers having their fulera in a post, A', on the clock-frame and being provided with a return-spring, F<sup>2</sup> or G<sup>2</sup>.

The letters D H M denote type-wheels, which are arranged side by side on a shaft, K, having its bearings in the clock-frame, together with a bracket, A<sup>2</sup>, on said frame, and one of which, D, is a day-wheel, it being in practice marked with letters or other characters indicating the days of the week, and, if necessary, also divisions thereof, while H is an hour-wheel, it being marked with figures indicating twelve hours of time, and M is a minute-wheel, it being marked with figures indicating minutes of time. The number of letters or other characters on said day-wheel D is in this example fourteen, (see Fig. 5,) seven representing one half and the remaining seven the other half of each day of the week, while the number of figures on said minute-wheel M corresponds with the number of lobes of the minute-cam C, and hence is twelve, (see Fig. 1,) representing intervals of five minutes.

Each of the type-wheels D H M is firmly connected to a ratchet, D', H', or M', as more clearly shown in the sectional view, Fig. 6, the hour-wheel H with its ratchet being fixed to the wheel-shaft K, while both the day-wheel D and minute-wheel M with their ratchets are left loose. The pawl F' of the hour-lever engages with said ratchet H' of the hour-wheel, as shown in Fig. 2, and the pawl G' of the minute-lever engages with said ratchet M' of the minute-wheel, so that when said levers are actuated by the cams B C the proper ratchets are in turn actuated by the pawls.

The number of teeth of either ratchet D' H' M' corresponds with the number of type on the wheel to which it is connected—that is to say, the ratchet D' of the day-wheel has fourteen teeth, the ratchet H' of the hour-wheel twelve teeth, and the ratchet M' of the minute-wheel also twelve teeth—and one of the teeth of said hour-wheel ratchet is sunken to a greater depth than the remaining teeth thereof, as at H<sup>2</sup>, Fig. 2, causing the pawl F' of the hour-lever to take a lower or deeper position in relation to the axis of said ratchet once in every revolution thereof. Said pawl F' of the hour-



lever has a spur,  $F^3$ , Figs. 2 and 3, which projects laterally therefrom in the direction of the adjacent day-wheel ratchet  $D'$ , and is of sufficient length to overlap the same, so that when the pawl enters the sunken tooth  $H^2$  of said hour-wheel ratchet its spur engages with the day-wheel ratchet and advances the latter to the extent of one tooth in the next ensuing motion of the pawl. By this construction the type-wheels are adapted to record upon a tape traveling in the plane of said wheels the day and hour and intervals of five minutes, as shown in Fig. 7, in which the initial T indicates one half of a day and the mark \* the other half of the same day, the fourteen teeth of the day-wheel ratchet  $D'$  permitting it to be shifted twice in each day of a week, while the twelve teeth of the hour and minute wheel ratchets permit the same to be shifted once every hour and five minutes, respectively.

The letter L indicates a bed or platen arranged beneath the type-wheels D H M upon a lever, P, whereby it may be reciprocated toward and from said wheels for the purpose of striking a tape to be drawn over the platen in the plane of the type-wheels against the faces thereof, thus producing the desired impression. Between the faces of the platen L and type-wheels is interposed an inking-ribbon, Q, Fig. 1, having its ends connected to spools  $Q'$ , on which it is alternately wound and unwound, and which may be arranged to revolve automatically for shifting the ribbon after each impression. Adjacent to the impression-lever P is a reel, S, for receiving the printed tape, the shaft  $S'$  of which carries a ratchet,  $S^2$ , Fig. 4, to which an intermittingly-revolving motion is imparted by a pawl,  $S^3$ , of the impression-lever, causing the tape to be automatically wound on the reel and thereby advanced after each impression.

The impression-lever P has its fulcrum in a shaft,  $P'$ , and it is provided with a return-spring,  $P^2$ , while to a proper portion thereof is attached the armature T of an electro-magnet, T, so that when the latter is vitalized said lever is actuated by the attraction of the armature. The impression-lever may, however, be actuated by mechanical means—as, for example, by a key to be rotated on a suitable spindle in proper relation to said lever—and in that event the electro-magnet may be omitted.

The letter U, Figs. 2 and 3, indicates a strip of metal forming an electric switch, one end of which is connected to the center shaft, O, of the clock-movement, as by a collar fitted thereon, in such a manner that the switch shares the motion of said shaft, causing its outer or free end to travel in a circular plane. Surrounding the center shaft, O, is a series of insulated contact-pieces,  $U'$ , forming a switch-dial, each of which pieces is adapted to connect with an electric wire, as by means of a screw,  $U^2$ , the whole being inclosed in an insulated casing,  $U^3$ , which is suitably attached to the clock-frame. The free end of the traveling switch U impinges against the contact-pieces  $U'$ , and the

number of said pieces is in fixed relation to the minutes of time, there being in this example six pieces, each representing ten minutes.

When the apparatus is to be applied to use, the switch U, together with the center shaft, O, is electrically connected with one pole of a battery, as by a wire, 10, Fig. 8, the other pole of which battery is connected with the magnet T, as by a wire, 11, and the magnet is connected with the several stations to be visited by the watchman, as by a wire, 12, while each of said stations is also connected with one of the contact-pieces  $U'$  of the switch-dial, as by a wire, 13, so that an electric circuit may be closed by the watchman from the proper station to any one of said contact-pieces through one of the wires, 13, and thence to the magnet T through the switch U, the center shaft, O and the wires 10 11, whereby the magnet is vitalized, causing the impression-lever P to be actuated for printing the tape. The electric circuit, however, can be closed only during the time that the switch U is in contact with the piece  $U'$  connected with the station at which the watchman is present, and hence the apparatus is operative to the watchman from that station only within a certain interval of time.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a time-detector, the combination of a clock-movement, an hour-cam and minute-cam, both fixed to the center shaft of said movement, an hour type-wheel and minute type-wheel, each having a ratchet, an hour-lever engaging said hour-cam, a minute-lever engaging said minute-cam, and spring-pawls on said levers engaging the hour-wheel ratchet and minute-wheel ratchet, respectively, substantially as and for the purpose described.

2. In a time-detector, the combination of a clock-movement, an hour-cam and minute-cam, both fixed to the center shaft of said movement, a day type-wheel, an hour type-wheel, and a minute type-wheel, each having a ratchet, an hour-lever engaging said hour-cam, a minute-lever engaging said minute-cam, spring-pawls on said levers engaging the hour-wheel ratchet and minute-wheel ratchet, respectively, and a means for actuating the day-wheel ratchet from the hour-wheel ratchet, substantially as and for the purpose described.

3. In a time-detector, the combination of type-wheels, a reciprocating bed or platen, an impression-lever carrying said platen, an electro-magnet for operating said lever, an electric switch and switch-dial for arrangement in the circuit of said magnet, and a clock-movement for controlling the adjustment of both the type-wheels and the switch, substantially as herein described.

4. In a time-detector, the combination of a day type-wheel, an hour type-wheel, and a minute-type wheel having ratchets of which the hour-wheel ratchet is provided with a sunken tooth, an hour-lever having a pawl to engage with said hour-wheel ratchet, pro-



vided with a laterally-projecting spur to engage with the day-wheel ratchet, a minute-lever having a pawl to engage with the minute-wheel ratchet, and a clock-movement having a means for operating both of said levers, substantially as herein described.

5  
10 5. In a time-detector, the combination of type-wheels, a clock-movement for controlling the adjustment of said wheels, a switch-dial having insulated contact-pieces surrounding the center shaft of said movement, and an

electric switch mounted on said shaft to impinge against said contact-pieces, substantially as herein described.

Signed at New York, in the county of New York and State of New York, this 27th day of December, A. D. 1887. 15

ALOYS WIRSCHING.

Witnesses:

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CHAS. WAHLERS.