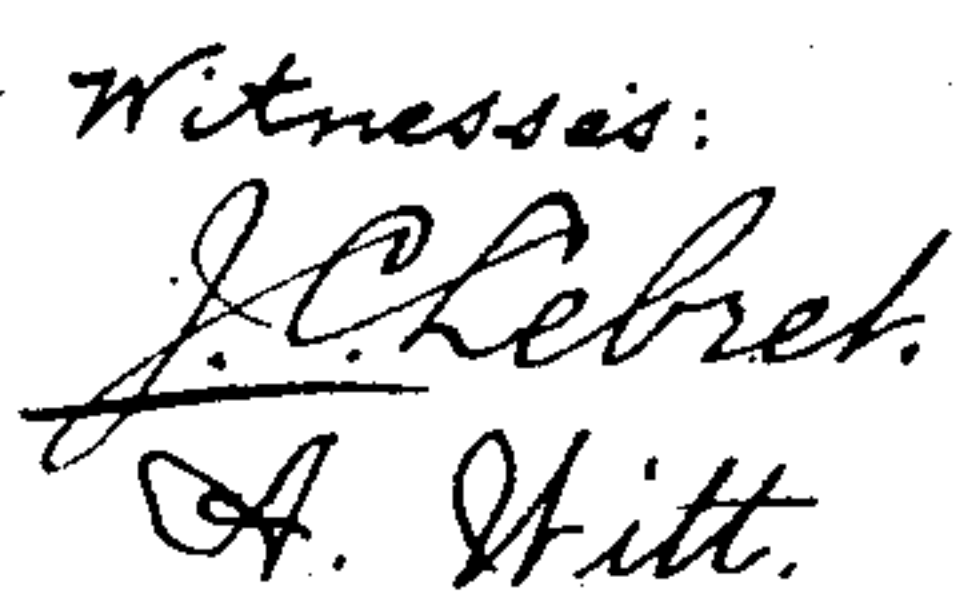


No. 768,026. PATENTED AUG. 23, 1904.
A. BOPP.
DEVICE FOR RECORDING OR CHECKING THE MOVEMENTS OF WATCHMEN
OR OTHERS.

NO MODEL.

APPLICATION FILED MAY 31, 1902.

3 SHEETS--SHEET 1.



Inventar:
Adolf Bopp.
By W. A. de Vos.
Attorney.-

No. 768,026.

PATENTED AUG. 23, 1904.

A. BOPP.
DEVICE FOR RECORDING OR CHECKING THE MOVEMENTS OF WATCHMEN
OR OTHERS.

NO MODEL.

APPLICATION FILED MAY 31, 1902.

3 SHEETS—SHEET 2.

Fig. 2

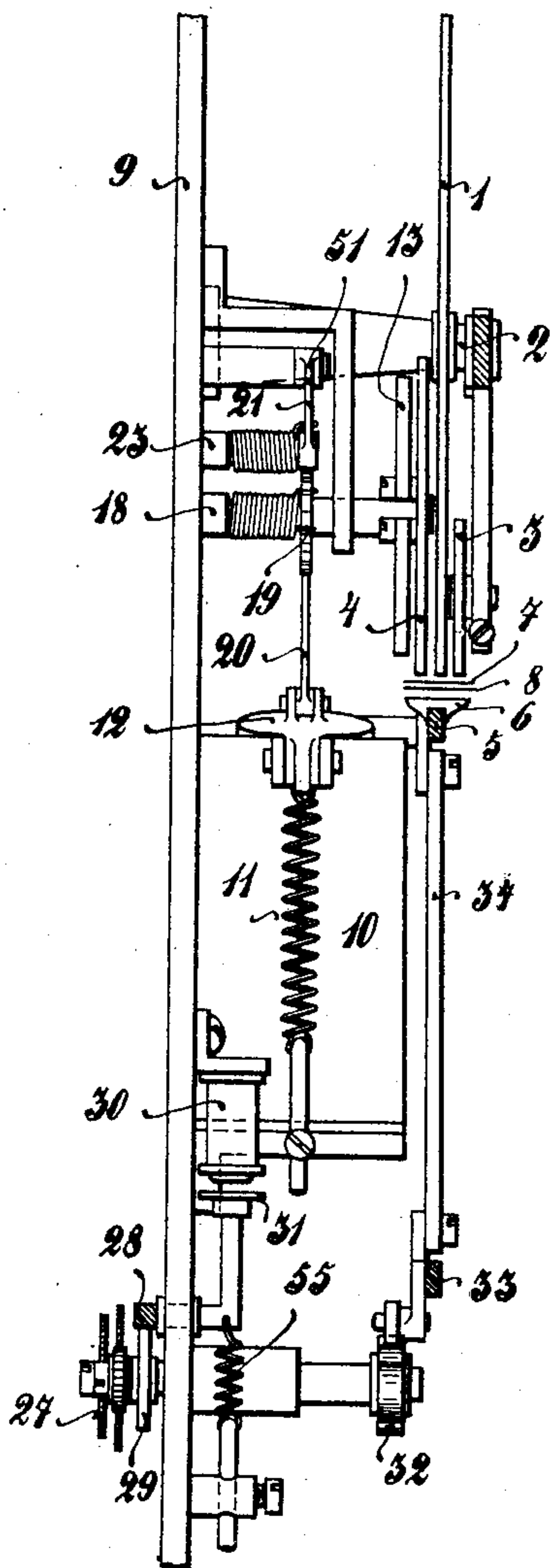


Fig. 3

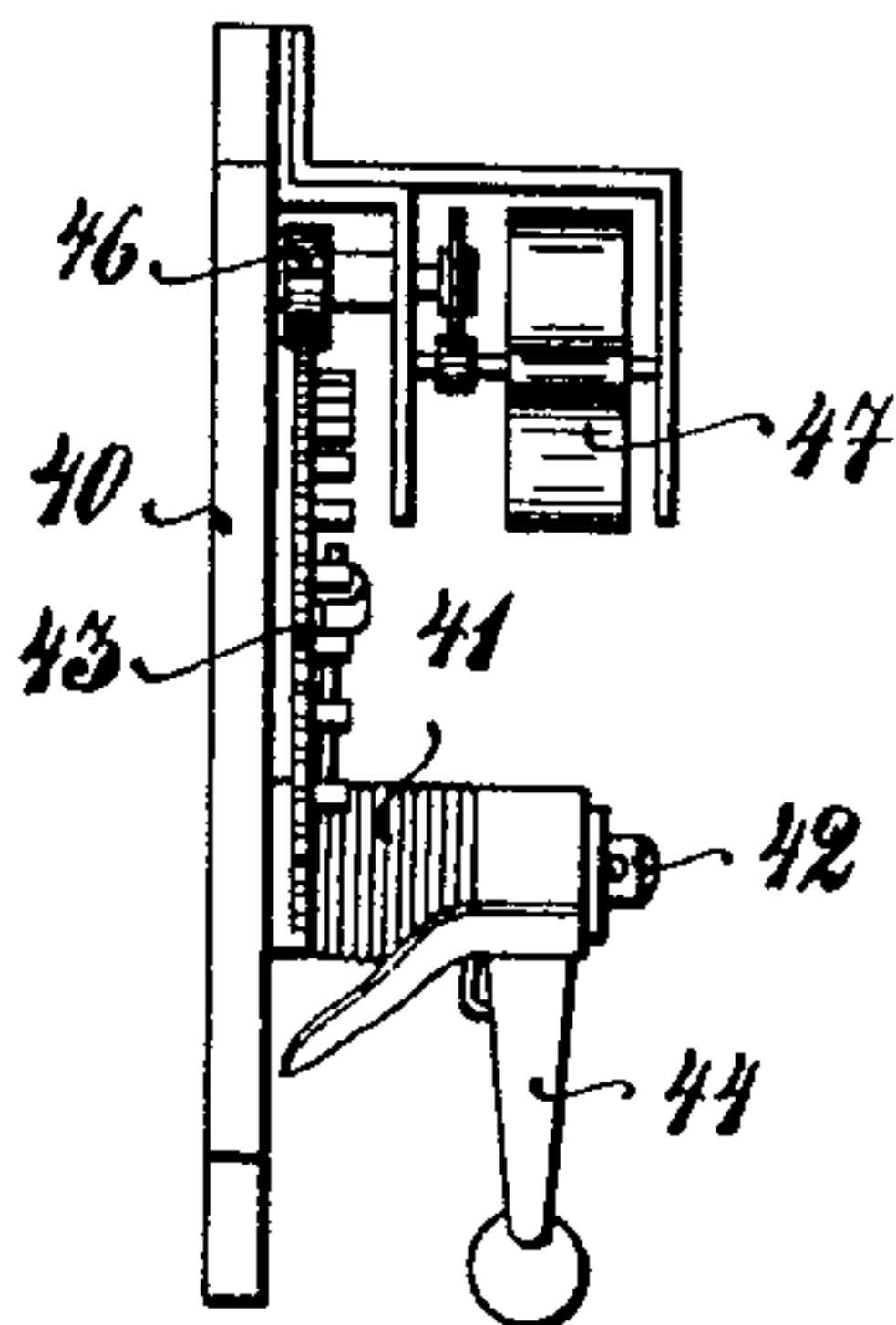


Fig. 4

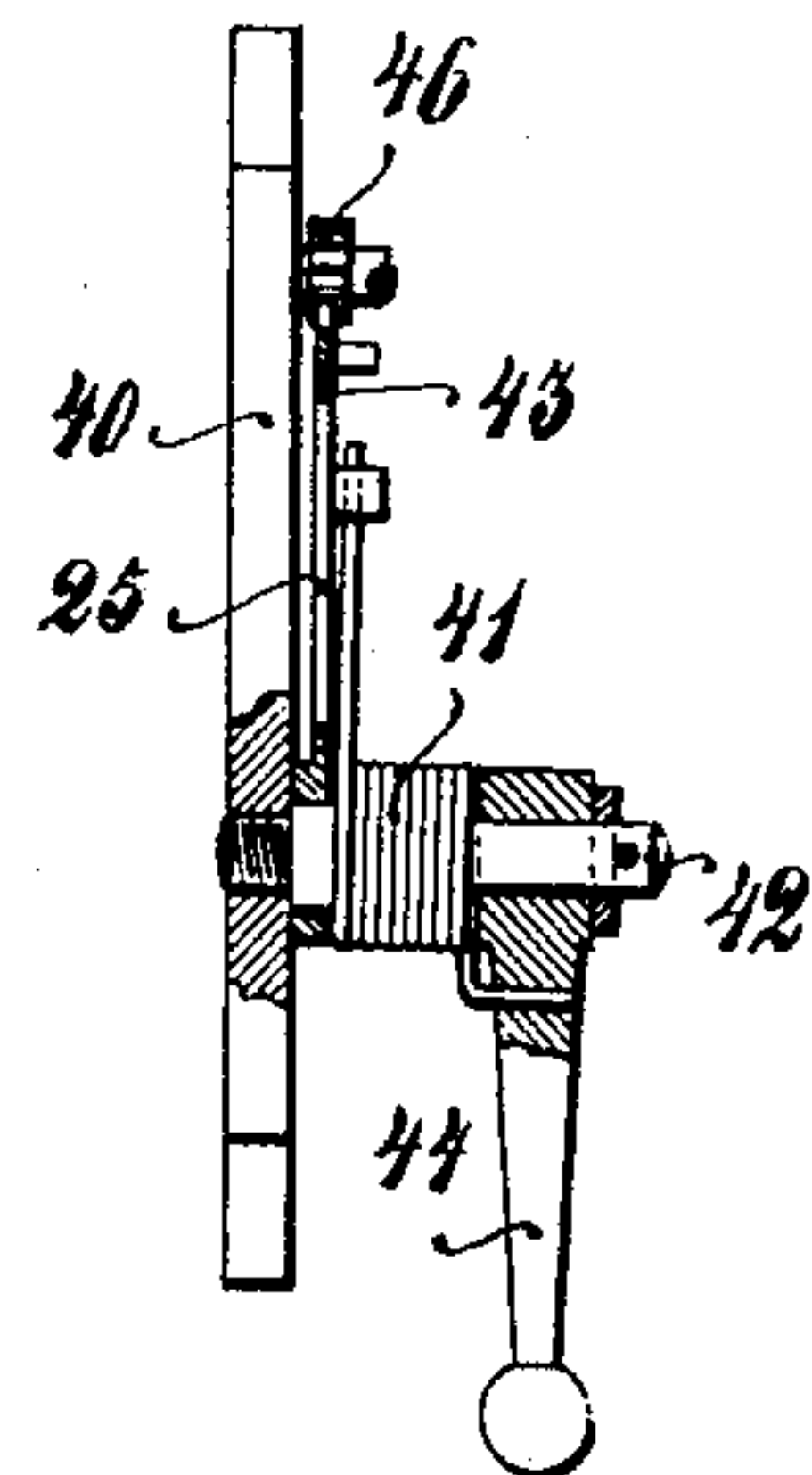
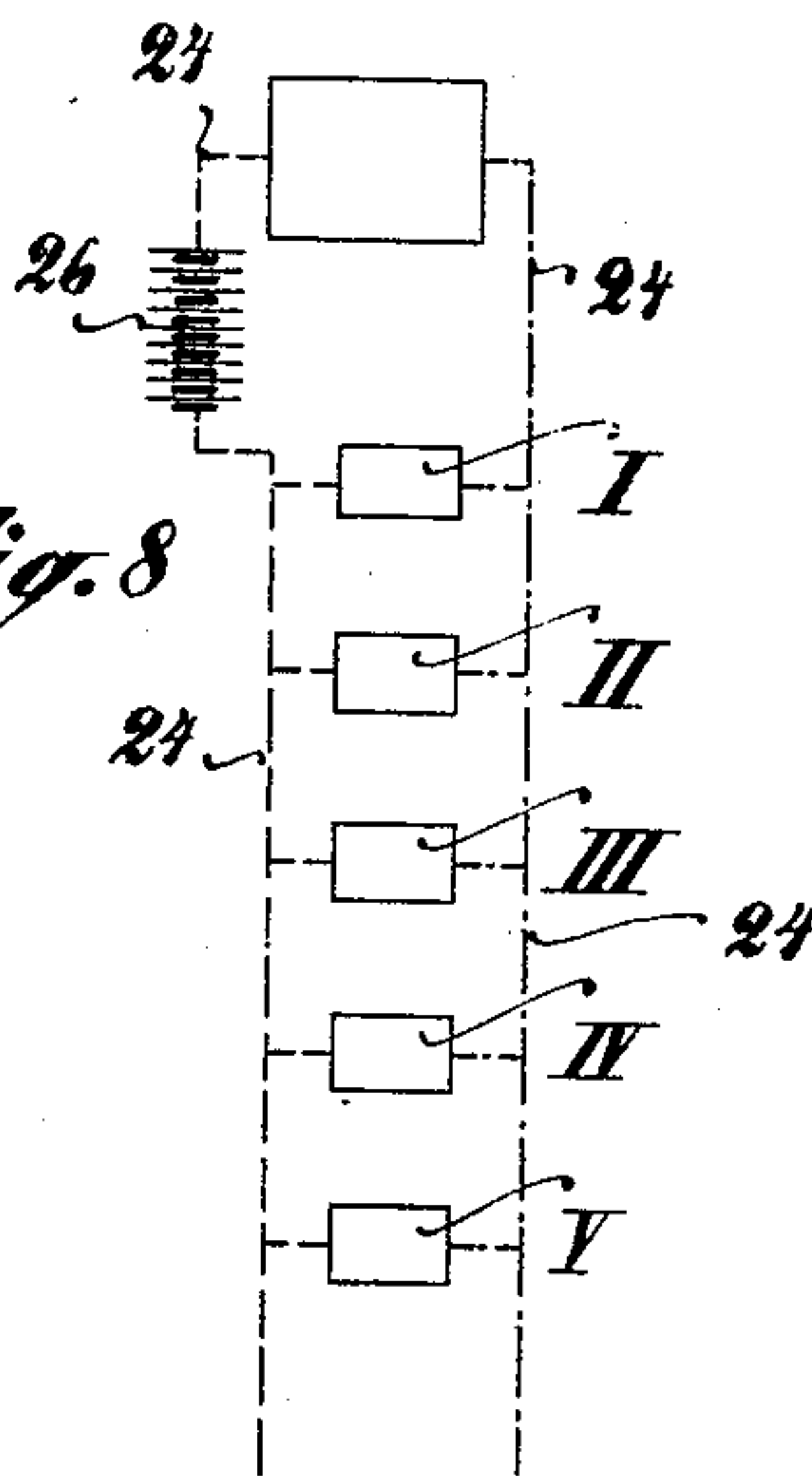


Fig. 8



Witnesses:

J. C. Lebeck.
A. Witt.

Inventor:

Adolf Bopp,
By J. H. de Vries,
Attorney.

No. 768,026.

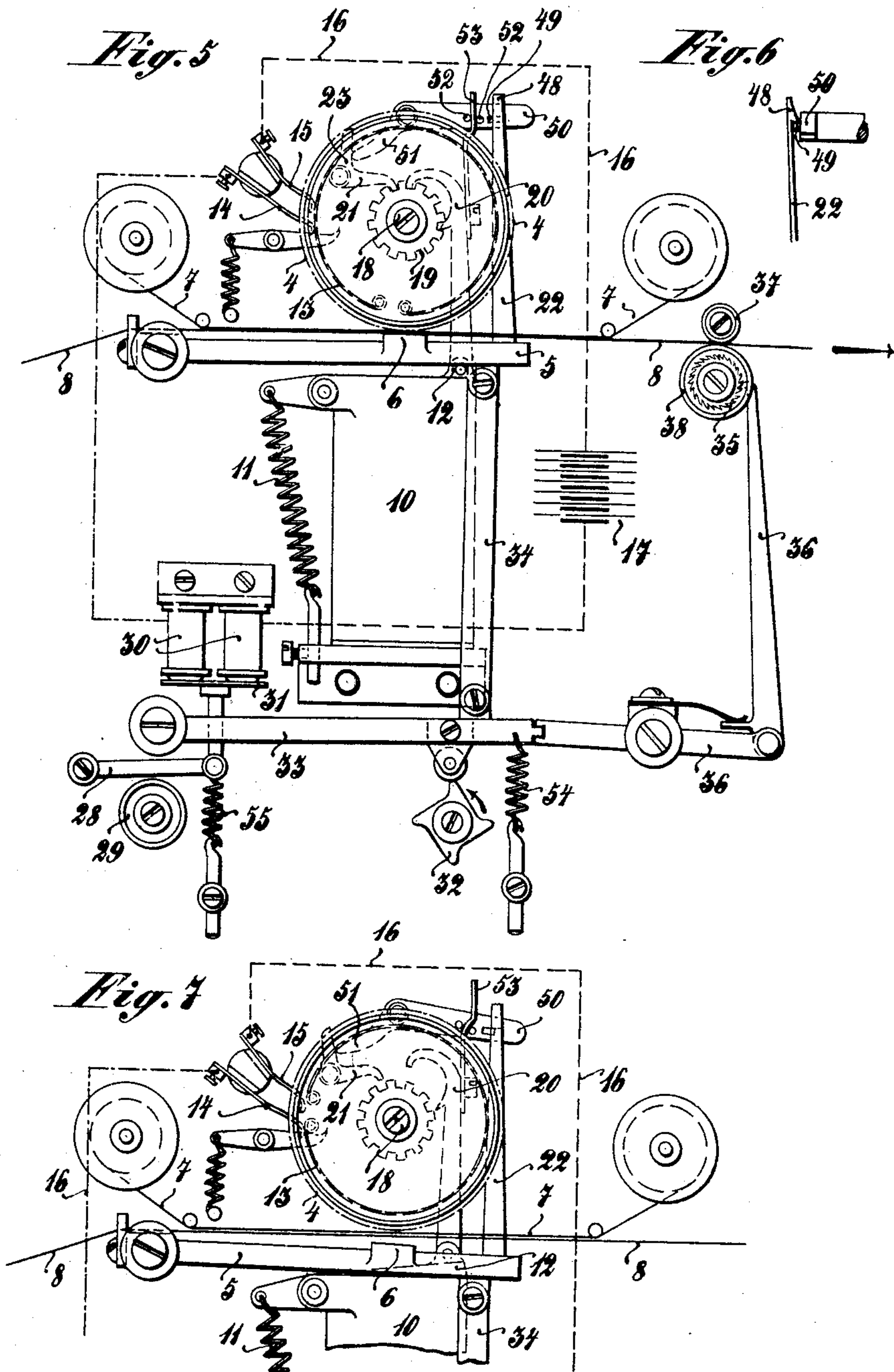
PATENTED AUG. 23, 1904.

A. BOPP.
DEVICE FOR RECORDING OR CHECKING THE MOVEMENTS OF WATCHMEN
OR OTHERS.

NO MODEL.

APPLICATION FILED MAY 31, 1902.

3 SHEETS—SHEET 3.



Witnesses:
J. Chebet.
A. Witt.

Inventor:
Adolf Bopp.
By *J. H. Lee* *Attorney.*

UNITED STATES PATENT OFFICE.

ADOLF BOPP, OF BERLIN, GERMANY.

DEVICE FOR RECORDING OR CHECKING THE MOVEMENTS OF WATCHMEN OR OTHERS.

SPECIFICATION forming part of Letters Patent No. 768,026, dated August 23, 1904.

Application filed May 31, 1902. Serial No. 109 632. (No model.)

To all whom it may concern:

Be it known that I, ADOLF BOPP, engineer, residing at Berlin, in the Kingdom of Prussia, Germany, have invented some new and useful Improvements in Devices for Recording or Checking the Movements of Watchmen or Others, of which the following is a specification.

This invention has for its object a recording or checking and constant apparatus which is mainly intended for checking the movements of night watchmen, but may also be employed for various other purposes in which it is a question of connecting an unaltered number of contact-places with only one wire.

The check consists in the watchman having to transmit the current by means of a switch-lever at a given time from a specified place to the central station where the apparatus is, whereupon by the operation of one or more armatures a band is moved forward, and a punch is depressed onto type-wheels, which indicates the time.

In the accompanying drawings, Figures 1 and 2 show, respectively, the apparatus in front and side view in a position of repose. Figs. 3 and 4 are a side view and section, respectively, of the switch-lever. Fig. 5 is a side view of the apparatus with the armatures excited or attracted. Fig. 6 is a detail view of a portion of Fig. 5. Fig. 7 shows the upper part of the main magnets with the locking devices released, and Fig. 8 is a diagrammatic representation of an installation with different switch devices or connections.

1 is a minute-wheel constantly revolving on an arbor 2, 3 an hour-wheel, and 4 a wheel for the central or control station. All three wheels are provided with types on their periphery. In order at a suitable moment—that is to say, as soon as a lever 5 with a block 6, arranged thereon, is lifted—the time and check figures are imprinted by means of an inking-ribbon 7 on the figured or numbered paper strip 8, which moves forward at the same moment. Behind the lever 5 and beneath the type-wheels an electromagnet 10 is arranged, mounted on the same frame 9 as the arbors of the wheel, and said magnet has an armature 12, lifted by a spring 11. A

contact-ring 13 is connected with the check-wheel 4, which ring is interrupted at one point and on which ring contact-springs, or rather brushes 14 and 15, rub, which are connected or switched into the circuit 16 of a battery 17. On the arbor 18 of the check-wheel 4 a toothed wheel 19 is mounted and connected elastically by means of a spiral spring, as shown in Fig. 2, with the contact-ring 13 and disk 4. In this wheel 19 two pawls engage, one, 20, being pivotally connected with the armature 12 of the electromagnet 10, while the second pawl, 21, is formed as an elbow-pawl and revolves with a spring action on an arbor 23, fixed in the frame-plate 9. The electromagnets 10 are operated after the circuit 24 has been switched on by means of a switch-lever 25 from a battery 26. Beneath the electromagnet 10 a second clockwork 27 is arranged in the apparatus, which in a normal condition is stopped by means of a brake-lever 28 and a brake-disk 29. Only when the armature 31 is attracted by the operation of the circuit 16 and the electromagnet 30 and the brake-lever 28 is lifted off does this clockwork 27 come into action, whereupon a cam-shaft 32 lifts the lever 33 and push-rod 34 in order to press the lever 5 and block 6 against the strip of paper and the type-wheels in order thereby to effect the instantaneous printing of the hour and minute. A ratchet-wheel 35 and pawl 36 serve for simultaneously moving forward the strip of paper between guide-rollers 37 and 38, drawn off a drum 39.

In the stretch to be checked or controlled there are a given number of contact-switches I II III IV V, provided at certain distances apart, Fig. 8, and arranged in boxes 40, Fig. 1, and which are to be operated at given times by the watchman. The contact-switches, Figs. 1, 3, and 4, each consist of two parts, which are movable, mounted on a spindle 42, and connected by a spring 41. The upper part 25 carries a contact-arc 43, while the lower part 44 forms the turning-lever.

The contact-arcs 43 are provided in the various switches I II III IV V with a constantly-increasing number of contact-pins, over which a contact-spring 45 rubs. Thus the apparatus

I has one contact-pin, II two contact-pins, III three contact-pins, &c. The arc 43 has a toothing on its outer edge, which gears with teeth of a pinion 46, on the spindle of which a fly 47 is mounted.

The apparatus works in the following manner: In order to check the watchman traveling over a given circuit, he has to operate first the contact or rather switch apparatus—for instance, I. By turning the handle 44 in the direction indicated by the arrow in Fig. 1 the spring 41 is first put under tension and then transmits the turning movement to the upper lever 25 with the contact-arc 43 until the spring 45 is drawn, for instance, over the first contact-pin. By this means the circuit 24, however, is momentarily closed, and the electromagnet 10 attracts its armature 12, Fig. 5, which by means of the pawl 20 turns the wheel 19 one tooth forward, whereupon the pawl 21 secures it in position. As already mentioned, however, the check-disk 4 and contact-ring 13 are elastically connected with the wheel 19, so that both parts are turned forward with the wheel 19. By this means the contact-spring 14 drops out of the opening of the ring 13, Fig. 1, on the periphery of which the spring 15 is already rubbing. The circuit 16 is thus closed and the electromagnet 30 operated, which by attracting the armature 31 lifts the brake-lever 28 from off the brake-wheel 29, so that the clockwork 27, Figs. 1 and 2, is operated. The cam-shaft 32 then lifts the horizontal lever 33, Fig. 5, and the push-rod 34 conveys the movement to the lever 5 and block 6, which effect the imprinting of the band against the type-wheels, and simultaneously by means of lever 36 and ratchet 35 the guide-rollers 37 and 38 are turned and draw off the roller 39 a suitable length of the paper strip 8, which at the same time carries with it the inking-ribbon 7. On the lever 5 being lifted the hock-shaped upper end 48 of a spring-rod 22, connected with said lever 5, snaps behind a projection 49 of an elbow-lever 50, the shorter end 51 of which bears against the elbow-lever 21, Figs. 5 and 6. The lever-arm 50 also carries two guide-pins 52 for a bent arm 53 of the pawl 20. When the impression of the type-wheels has taken place, the cam-shaft 32 liberates the lever 33, which latter is immediately drawn down by a spring 54 and draws after it the rod and the lever 5. Simultaneously, however, the lever-arm 50 is pressed down by the hock 45, Fig. 6, and the arm 51 disengages the pawl 21, while at the same time the guide-pins 52, Fig. 7, lift the pawl 20 clear from the wheel by means of the arm 53. The wheel 19 then thus released under the influence of the spring 18, Fig. 2, again springs back into its original position and carries with it the check-disk 4 and contact-ring 13. The contact-spring 14 then again returns into the opening of the ring 13, and the circuit is again inter-

rupted. The armature 31 is released from the electromagnet 30, and the spring 55 presses the lever 28 again down on the brake-disk 29, this again locking the mechanism 27. When the lever 5 has again returned completely to its original position, Fig. 1, the rod 22 is released by the tooth 48 slipping off the projection 49, and this elbow-lever again causes the pawls 20 and 21 to engage, so that the marking action can commence afresh. In the second switch apparatus, for instance, which has to be passed by the watchman, the arc 43 is provided with two contact-pins, so that on turning the same the circuit is established and broken twice by the spring 45. Thereby the armature 12 of the magnet is twice excited and the wheel 19 turned two teeth before the mechanism 27, which in the meantime is set in action, operates the lever mechanism for impressing the types on the paper strip 8. In connection with the third switch the wheel 18 is turned three teeth, and so forth. In order to prevent too rapid a turning of the switch, a check-fly 47, Fig. 1, is employed which is operated by the toothing 43, and pinion 46 acts as a check on the turning of the switch. These switch devices, with the respective pins I II III IV V, are, however, not unalterably fixed, but may be suitably changed and interchanged, so that, for instance, the switch device 5 may be made at any suitable time into any other switch-number outside the series—for instance, to No. 17—so that the watchman never knows what check place or point he has marked. By this arrangement it will be seen that the station-indicating apparatus is actuated before the time-indicating apparatus and has fully ceased to act before the time-indicating mechanism begins to operate. By this arrangement a narrower tape may be used, the station is always first thereon, and there is no likelihood of blurring of the record or disarrangement of the device by interference of the mechanism, as is the case in devices in which such mechanisms act simultaneously.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In a device of the class described, the combination with the circuit of electrical conductors, of a central station having an electromagnet included in such circuit, a source of electrical energy also included therein, a plurality of signal-boxes each adapted to automatically make and break the circuit a distinct and separate number of times when actuated, a station-indicating wheel adapted to be actuated one tooth upon each making and breaking of the circuit, a horologe adjacent to the wheel, time-indicating mechanism actuated by the horologe adjacent to the station-indicating wheel, a second local circuit of conductors adjacent to the horologe, an

electromagnet included in such local circuit,
a source of electric energy also included in
such local circuit, a wheel adapted to be au-
tographically rotated as the first magnet is en-
5 ergized from signal-stations, means carried
by the wheel for making and breaking the
local circuit, printing mechanism, mechanism
for intermittently feeding a recording tape or
sheet by the printing mechanism, power mech-
10 anism for automatically actuating the print-

ing mechanism, and mechanism actuated by
the electromagnet of the local circuit for
putting the power mechanism into and out of
action, substantially as shown and described.

In witness whereof I have hereunto set my 15
hand in presence of two witnesses.

ADOLF BOPP.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.