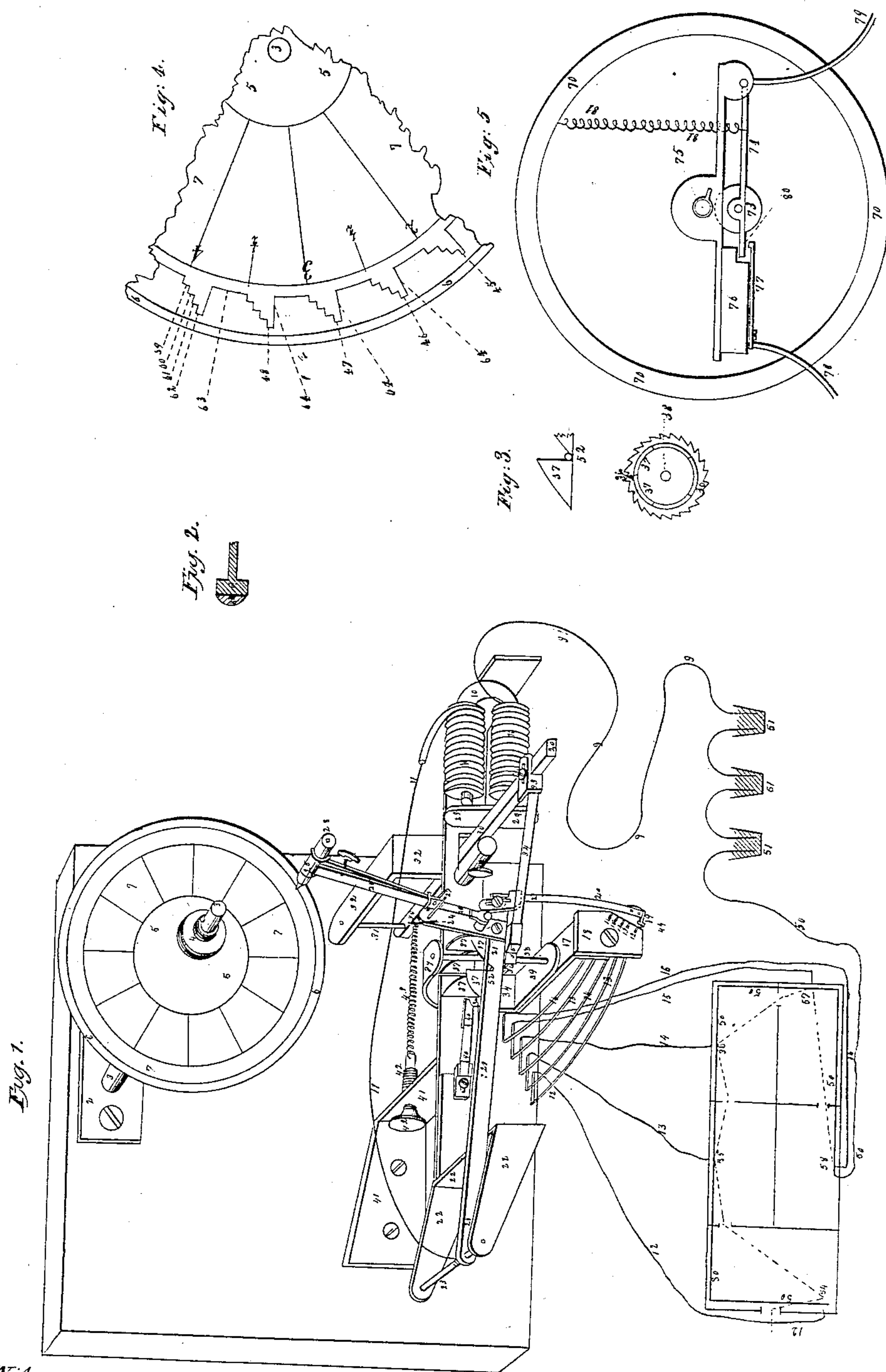


J. HAMBLET, Jr.
WATCH CLOCK.

No. 35,755.

Patented July 1, 1862.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES HAMBLET, JR., OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN WATCH-CLOCKS.

Specification forming part of Letters Patent No. 35,755, dated July 1, 1862.

To all whom it may concern:

Be it known that I, JAMES HAMBLET, Jr., of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Watch-Clocks; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Watch-clocks, or tell-tales, are used in manufactories or other places to show whether a watchman or sentinel is faithful and makes his rounds at the required place and time. Those now in use are of two kinds, one being a portable time-piece carried by the watchman, the mechanism making the record being operated by a series of keys, which are to be found only in the rooms or places that are to be visited. The other system consists of a fixed clock, placed in the building that is to be guarded, having wires extending to the different rooms, which are pulled by the watchman, and give motion to a lever, which moves pins placed in the dial of the clock. It is difficult to keep clocks of this kind properly adjusted, as a slight difference in the length of the wire caused by changes of temperature will prevent proper effect upon the pins. The watchman can in many cases tell by the action of the wires when the clock is out of order, and if he is dishonest will make no more rounds for the night; he can also put the clock out of order by sudden pulls of a wire, or by pulling the last wire of a series at the wrong hour. By my electro-magnetic system these difficulties are obviated. The clock, the registering apparatus, and batteries are all placed in the counting-house or office, to which the watchman has no access, and conducting-wires are carried to each apartment or place that is to be visited, at each of which there is a suitable knob or key for closing the circuit at the time and in the order required.

In the drawings making a part of this specification, Figure I is a perspective view of the apparatus. Fig. II is a section of the platina point, enlarged; Fig. III, plan and elevation (in part) of crown-wheel; Fig. IV, clock-face and form of the record; Fig. V, section of the make-circuit and key.

The apparatus may be attached to any pend-

ulum or spring-clock that has a movement strong enough to carry the revolving dial-plate 6, Fig. I, which is secured to the hour-shaft 3 by the nut 4. The same nut also bears upon the spring-washer 5 and holds the circular sheet of record-paper 7 in contact with the dial-plate 6.

The apparatus is attached to the frame of the clock or to the case, in such a position as will allow the pencil 28 to be vertical to the record-paper, and near its outer edge. All of the motions, with the exception of that of the dial-face, are produced by the action of the electro-magnet 10. Its armature 29 is attached to the horizontal lever 30, which has its center or fulcrum at 31 in the stand 32. This armature-lever is held back from the magnet by the spiral spring 43, the tension of which is regulated by the screw 42, held in the stand 41, the tension being proportional to the strength of the magnet and to the power required to be exerted by the spring-pawl 34 35, that is attached to the armature-lever by the screw and clamp 33. At every motion of the armature and its lever 29 30 toward the magnet the pawl 35 takes up one tooth of the horizontal ratchet-wheel 36, which forms the base of the crown-wheel 37, the teeth or leaves of which are vertical and form a series of inclined planes or cams, having one vertical side. The number of leaves or cams in this wheel and the number of teeth in the ratchet-wheel 36 is governed by the number of places to be visited by the watchman.

In the drawings five places are represented. The wheel 36 has twenty-five teeth, and the number of leaves or cams is five, one of which makes a full movement by the successive action of the pawl 35 upon five of the teeth.

A stud or pin, 52, projects from the horizontal arm 21, which has its center at 23, and rests upon one of the inclined planes or leaves, 37. These have their center at the axis 38. As they revolve, the pin with the arm 21 is elevated a short distance. To the free end of this arm a pencil-holder, 24 25, is attached, nearly in a vertical position, and carries at its upper end a pencil, 28, the point of which rests upon the record-paper 7. By this elevation of the arm 21 and the pencil-holder a short mark is made nearly in the direction of the radius of

the circular record-paper. The detent 40 drops into the teeth of wheel 36 and prevents it from turning backward.

The pencil-holder is supported by two pins, 27, and a flexible piece of steel, 26, near its base, allows the pencil to be turned away from the paper when it is to be changed, or when the pencil requires sharpening.

From the arm 21, just below the pencil-holder, a connecting-arm, 20, formed of thin steel, projects downward, and has at its lower end a short arm projecting outward, as at 19, so that it may come in contact with the ivory or hard-rubber insulator 18, which holds the wires 12, 13, &c. The point of contact 44 is made of platina, in the rounded form shown (enlarged) in Fig. II, so that it may slide readily over the ends of the conducting-wires 12, 13, 14, &c., that lead from the clock to the rooms or places that are to be visited by the watchman.

It will be observed that at the same time that the pencil makes a mark the platina point rises and rests upon the wire above it, both being operated by the same lever 21.

A wire extends around the apartments to be visited, as at 50, and connects with one pole of the battery 51. The wire 9 from the other pole leads to the magnet 10, the terminal wire 11 being soldered to some part of the instrument, as at 23, thus giving direct connection through the arms 21 and 20 with the platina point 44.

I will now describe the practical operation of the system.

The path followed by the watchman is shown by the dotted lines, Fig. I. He first closes the circuit at the wire 12 by turning the key at 54, this wire at the insulator 18 being in contact with the platinum 44. The armature and lever 29 30 move to the magnet, giving increased tension to the spiral spring 43, and moving the click 35 over one tooth of the wheel 36. As the key is released, and contact broken at 54, the armature-lever is drawn back to its first position by the spiral spring. The click 35 moves the wheel 36 forward one tooth. One of the leaves or cams 37, acting on the pin 52, raises the lever 21 and its attachments—viz., the holder and pencil 25 28 and the connecting-arm 20 19 44. While the lever 21 is rising the pencil makes its radial mark, and the platinum 44 moves from the wire 12 to the wire 13 on the insulator 18, where it remains until the second contact is made in the next apartment by the watchman at the point 55. At no other place can the circuit be closed, and this insures the visit of the watchman to each apartment in regular order, no effect being produced by making a contact at 56 with the wire 14 while the platinum is resting upon the wire 13.

As the clock-face is in constant motion, and the pencil always in contact with it, circular marks are made upon the paper, as at 59, 60, 61, &c., whenever the pencil is not moving in the radial direction before named. The result of the two motions is a series of steps, as shown in Fig. IV at 46 47 48.

The action of the mechanism at each successive contact is the same as above described, with the exception of the last contact of the series. When this impulse is given the pin 52 passes over the apex of the cam 37 and drops down to the position shown in Fig. III, the pencil returns at the same time on the line 64, Fig. IV, and the platinum 44 drops back to the first wire 12 of the series. The pin 52 is now in readiness to rise again upon the inclined plane 37 whenever contact is made at the point 54.

A record of the form represented at 45, Fig. IV, where the lines are of unequal length, shows that the watchman moved rapidly at one part of his beat and slowly at another part.

Electrical connection may be made in the respective rooms by means of the common telegraph-key, or, more conveniently, by the instrument shown in Fig. V. This consists of a small circular box, 70, which is attached to the wall of the room and receives the ends of the wires 78 and 79, which are connected respectively to the lever 74 and the spring 77, which are brought in contact at the point 80 by the action of the key 75 upon the friction-truck 73.

By the tension of the spiral spring 81 the lever 74 is held in contact with the insulating-block 76, thus keeping the wires 78 and 79 disconnected, except when they are intentionally brought in contact by turning the key 75.

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

1. The successive electrical connection of each wire of a series or group of wires in such manner that but one conducting-wire leading to one apartment or place can be used at one time, while the action of the whole series makes one full or complete record of the entire rounds of the watchman, as herein set forth.

2. The combined action of the traversing connecting-arm 20 and the pencil or marker, by which a record is produced that shows the time when the electrical connection was made and the interval between each successive connection, as herein set forth.

3. The series of revolving cams or their equivalents, when their motion is controlled or regulated by the combined action of an electromagnet and the connecting-arm 20, substantially as herein described.

JAMES HAMBLET, Jr. [L. S.]

In presence of—

SAML. BATCHELDER, Jr.,
JOHN M. BATCHELDER.