2 Sheets—Sheet 1.

W. O. LEWIS.

Electro-Magnetic Watchman's Time-Check.

No. 203,747. Patented May 14, 1878.

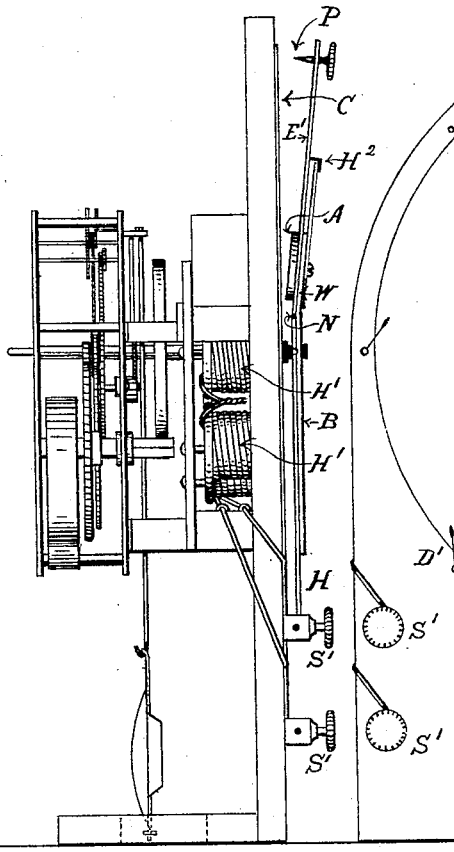

FIG. 2.

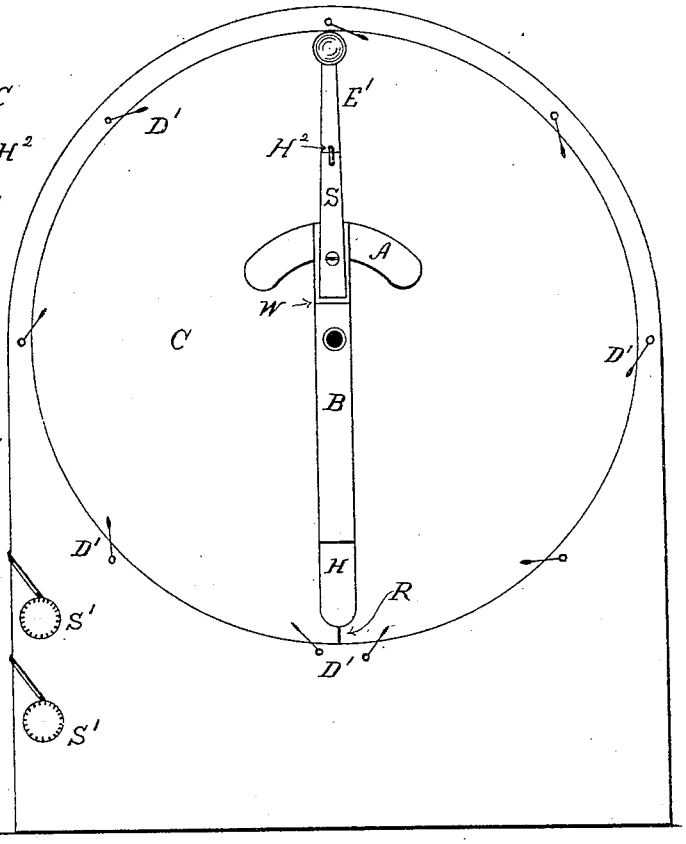

FIG. 1.

Witnesses:
Theodore R. Shear,
George A. Hammel.

Inventor:
Walter O. Lewis

W. O. LEWIS.

Electro-Magnetic Watchman's Time-Check.

No. 203,747. Patented May 14, 1878.

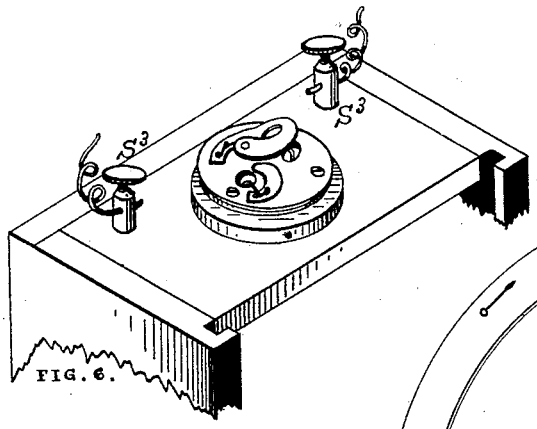

FIG. 6.

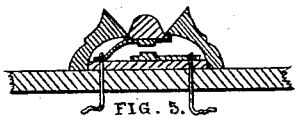

FIG. 5.

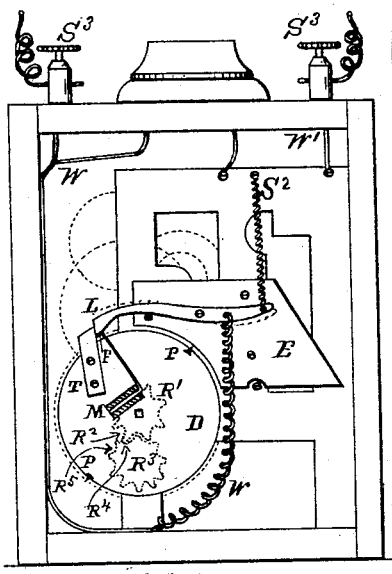

FIG. 4.

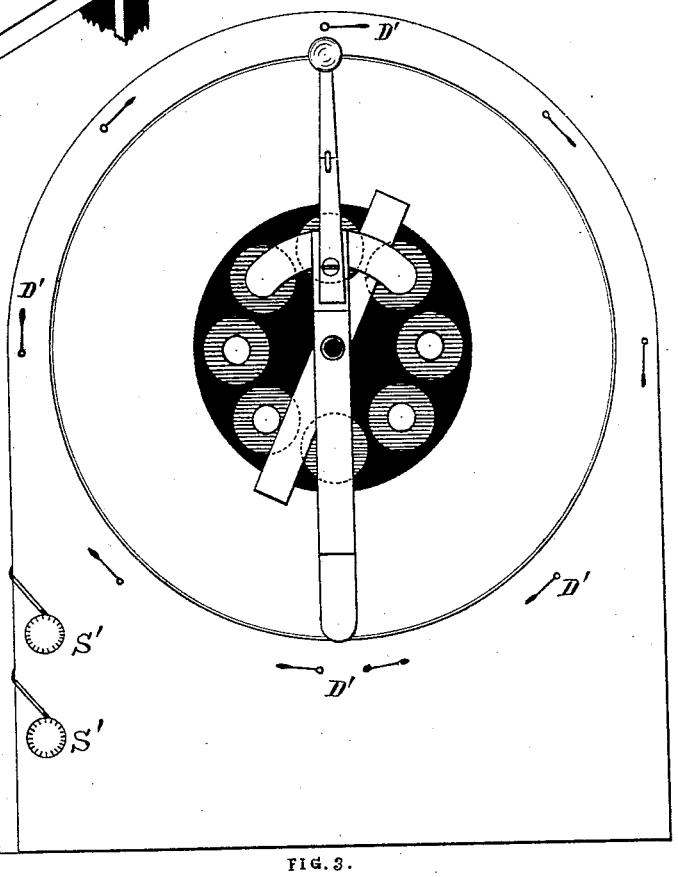

FIG. 3.

Witnesses:

Theodore R. Shear.

George A. Hammel

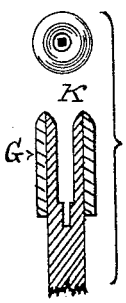

FIG. 7.

Inventor:

Walter O. Lewis

UNITED STATES PATENT OFFICE.

WALTER O. LEWIS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ELECTRO-MAGNETIC WATCHMEN'S TIME-CHECKS.

Specification forming part of Letters Patent No. **203,747**, dated May 14, 1878; application filed April 24, 1878.

To all whom it may concern:

Be it known that I, WALTER O. LEWIS, of No. 20 Pierrepont street, in the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Watchmen's Clocks, of which the following is a specification:

The invention relates to a watchman's clock or time-detecter which is operated by the watchman during his nightly rounds at stated times, so as to indicate his movements or presence at particular places at the appointed hours, and which is located at some place beyond the reach of the watchman except by the particular means provided, and the detective part of which is operated by electro-magnets and a circuit.

It also relates to an automatic circuit-closing device, which signals to the clock when the watchman winds it up by means of a special key, and forms a part of the entire system with the clock.

My invention consists in a circle of helices surrounding the center of motion of the clock-hand; a clock-hand provided with an armature, which swings over the helices in electrical relation thereto, and also provided with a hinged pointer and marker; such a clock-hand in combination with a false or removable clock-dial; an automatic circuit closing and opening device, operated by clock-work, arranged and guarded as shown, so as to be operated or properly set in motion only by a key special in conformation, and in being guarded by non-conducting surfaces, both in its own individual constructions and combinations, and also in its combination with the receiving and recording clock mechanism, as shown and described.

In the accompanying drawing, in which similar letters of reference indicate like parts, Figure 1 is a front view of the clock with the removable dial thereon. Fig. 2 is a sectional view of the clock and hinged hand, armature, and its helices. Fig. 3 is a front view of the clock with the removable paper dial removed and the faces of the helices exposed. Fig. 4 is a front view of the mechanism of the transmitter or automatic circuit-closer. Fig. 5 is a sectional view of the single or finger stop of same. Fig. 6 is a top view of the signal-box or transmitter and battery-connections, and Fig. 7 is the key of the same.

H is a hinged hand, secured upon the hour-hand arbor of the clock, and A the armature, which is secured to the hand and travels around with it. The index or pointer end of the hand, which carries the needle or prick point, is hinged at the angle N, just back of the armature, and is also slightly elevated by the action of the spring S, which is secured to the body B of the hour-hand at the forward part, where about an inch of the rigid part or body B is deflected slightly upward at W, and operates by its free end bearing upon a bent hook, H^2, attached to the index or pointer E^1. H^1 H^1 are helices, which are arranged around the hand-arbor at convenient distances to act upon the armature A, which has the form of a segment of a circle, and swings around over, but near to, the faces of the circle of helices.

The wheels, back of the helices, are the ordinary clock-wheels, with associated mechanism of a clock, and need not be further described.

S^1 S^1 are the screw-studs for the battery-connections.

The operation of this part of my invention is as follows: The magnets of the helices H^1 H^1 being brought into action by the closing of the circuit at the transmitter by the watchman, in a manner described hereinafter, the armature A will be acted upon by two magnets immediately under it, at whatever part of its revolution it may be. The drawing of the armature A down to the surface of the magnets will necessarily depress the movable pointer end of the hinged hour-hand E, so that the needle or sharp point P will puncture or indent the removable paper clock face or dial every time the circuit is closed and opened; and if closed and opened repeatedly, the dial will be indented or marked with a dot or dent at the time of each closing and opening of the circuit. The paper clock face or dial C being provided with the usual signs of the twelve hours, properly spaced, as the hour-hand traverses its circuit the dents or dots, made as above described, will indicate the time at which they were made, and so indicate the movements and the presence at any particular point of the

watchman when they are made. The means by which his presence at different places or points at different times may be caused to be so indicated will be explained hereinafter in the description of the transmitter. The false dial-face C has a radial slit, R, to permit it to slip into place around the hand-shaft, and is held in place by the detents D′ D′. The spring S should be graduated, so as to yield readily to the action of the magnets when the circuit is closed, and yet have sufficient strength to lift up the needle point and arm when the circuit is opened and the armature is released, and is aided in the operation by the brass face of the armature, which prevents sticking.

The armature A is not only curved and located so as to swing around the circle over the ends of the helices H^1 H^1, but it is of such length as to lap onto the third helix, and always to receive the full force of at least two of them. The faces C should be changed each day.

The transmitter consists of clock-work, operating a disk, D, which is provided on its periphery with a stop, P, composed of rubber or other like non-conducting material, and platina points P P for closing the circuit.

The disk is arranged so as to make, say, one revolution, preferably, after the key K has been inserted by the watchman, and after he has thereby wound up the clock, until it reaches a stop so located as to give one revolution only.

The stop T is made non-conducting, so as not to close the circuit and thus signal the clock when it comes in contact with the lever L, as it would do if of metal and the disk should be turned by means other than the key K and improperly; but the points P P make contact through a platina surface, F, on the forward end and edge of the lever L.

The points P P, in making contact with the platina surface F, close the circuit through the wire W, attached to the lever, which is held up at its rear end by the spring S^2, so that the platina surface F always lies in the track of the points P P, except when the spring is overcome by the non-conducting stop T or by the beveled key-guard G. The circuit is completed through the clock-work and the wire W′, leading to the studs S^3 S^3.

The lever L is secured to the plate E, which is also made of rubber or like non-conducting material, to prevent the flow of the electric current through the lever and the clock-work at all times, except when the platina points and surface are in contact. The lever L is also provided with an arm, M, which extends down nearly to a point in line with the outward-projecting part of the shaft or arbor of the disk D, where it is bent nearly at right angles, and extended across the arbor at right angles to that part of it which receives the key K for winding up the disk and operating clock-work, and so that the beveled non-conducting guard G on the key K, in passing to its place, will inevitably raise the arm M, and with it the lever L and its platina connecting-surface, so that, in winding up the clock-work and the signal-disk D, the circuit will remain open until, the key being withdrawn and the lever thereby allowed to drop under the control of the spring S^2, the platina-points on the disk and the surface F will come in contact as the disk revolves. That part of the arm M which is touched by the non-conducting sleeve or guard G of the key is also provided with a non-conducting sleeve, M′, the object of which is to prevent surreptitious signaling by means of any ordinary key or piece of metal introduced in the key-hole, so as to make circuit-closing contact between the arm M and the shaft of the disk D. The disk D is only permitted to make substantially one revolution. Upon the disk and key-arbor, beneath the disk, is placed a star-wheel, R^1, one of the rays of which, R^2, is longer than the others, and meshes into a similar star-wheel, R^3, which has a shallow cut, R^4, so placed as to receive R^2, and thereby limit or stop the further rotation of the disk; and the adjoining cut R^5 in the wheel R^3 being also shallow, on winding up the disk by turning to the right R^2 will strike, and the winding will be stopped in that direction as well, so that only one revolution of the disk can be made. Of course, the disk may be arranged so as to have more than one revolution, and so make more than one set of signals by such changes, as will be evident; but one set of signals at a time is sufficient, and if more are required they may be had at will by repeatedly rewinding the transmitter with the key K.

The disk D may have one, two, or more platina points, according, say, to the floor, upon which the transmitter may be placed, as floors 1, 2, 3, &c. The space between these points on each disk and the time element found practically in this organization between the contacts is to permit the hour-hand of the receiving-clock to move for an appreciable space, so as to make the dots or dents distinguishable one from another. These dots are made by the action of the helices H^1 H^1, armature A, hand H, and needle whenever the circuit is closed by the contact of the platina points and surface.

The stop T on the disk D is not absolutely essential; but in case of the introduction and attempt to use an ordinary key, reversing the movement of the disk D, any contacts made with the non-conducting stop T would not close the circuit nor signal the clock.

The disk D may have more than one revolution, although I have not so shown it. In that case, with only one platina point thereon, the number of marks or signals would correspond with the number of revolutions given to the disk, and the variations required to indicate the signal-stations may be made in that way.

The ordinary single stop-closer (shown at Figs. 5 and 6) may be used at will, instead of the automatic closer; but I prefer the latter,

for the reason that it requires a special key, which may also be guarded by any of the usual key-guards, as in a lock-plate, if desired.

I claim as my invention—

1. A series of helices, H^1 H^1, arranged around the arbor or shaft of a clock-hand.

2. A clock-hand provided with an armature, A, swinging around, over, and within control of electro-magnets during its movement as a clock-hand.

3. A hinged clock-hand, H, provided with an armature, A, for the purpose of operating a marker-point, as shown and described.

4. A clock-hand provided with an armature, within control of electro-magnets as it revolves, and a marker-point, in combination with a removable clock-face with the hours indicated thereon in any usual manner.

5. The key K for winding up the disk and its operating clock-work, and also at the same time opening the circuit by lifting the lever L free from the platina points, provided with the non-conducting guard G, for the purpose set forth.

6. The circuit-closing disk D, in combination with the stop-wheels R^1 R^3 or their equivalents.

WALTER O. LEWIS.

Witnesses:

THEODORE R. SHEAR,

GEORGE A. HAMMEL.