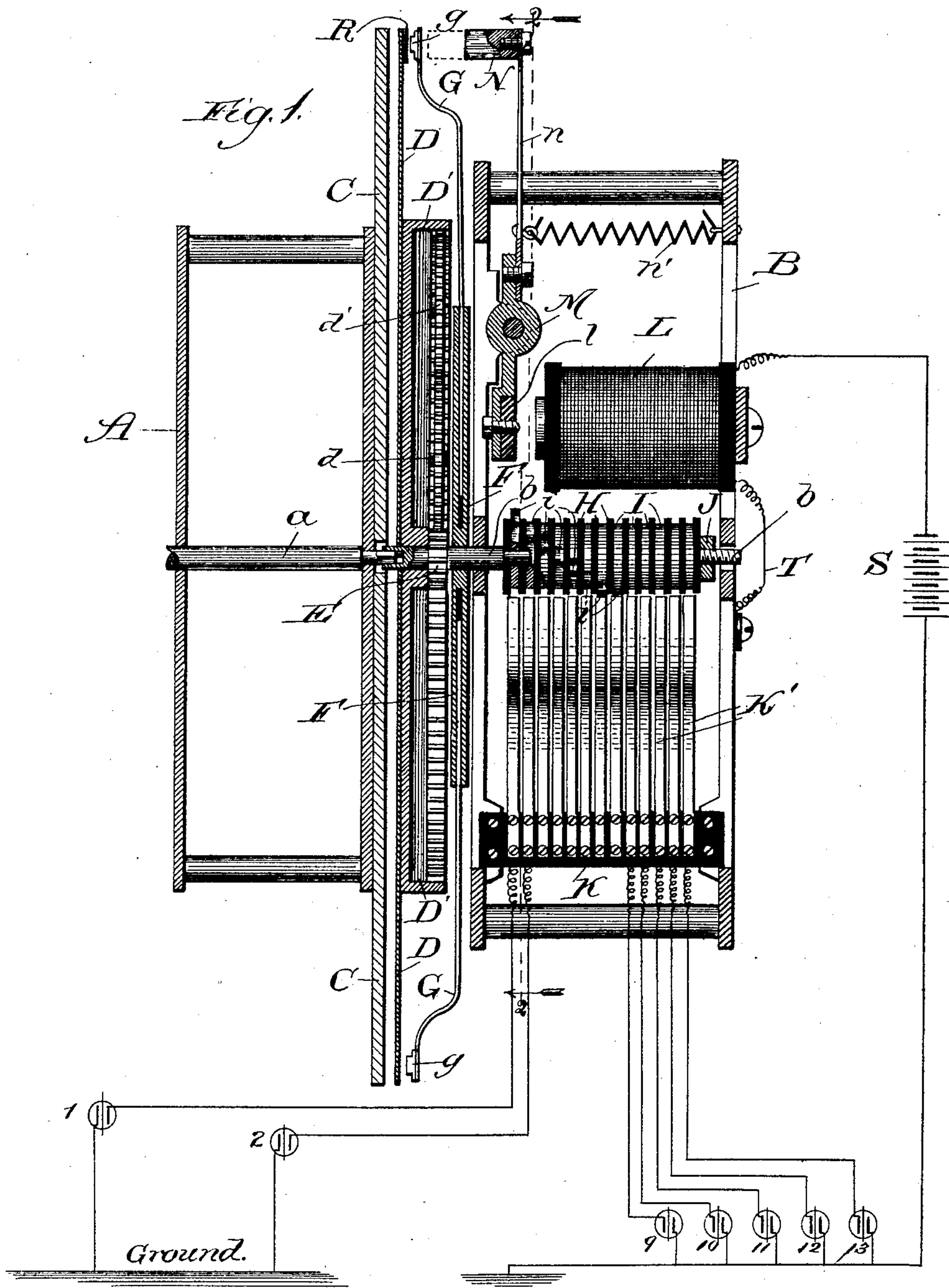


H. S. PARK.
ELECTRICAL WATCHMAN'S CLOCK.

No. 435,185.

Patented Aug. 26, 1890.



Witnesses:
Chas. E. Gaylord,
Clifford N. White.

Inventor:
Harvey S. Park,
By Penning & Penning & Payson
Attys.

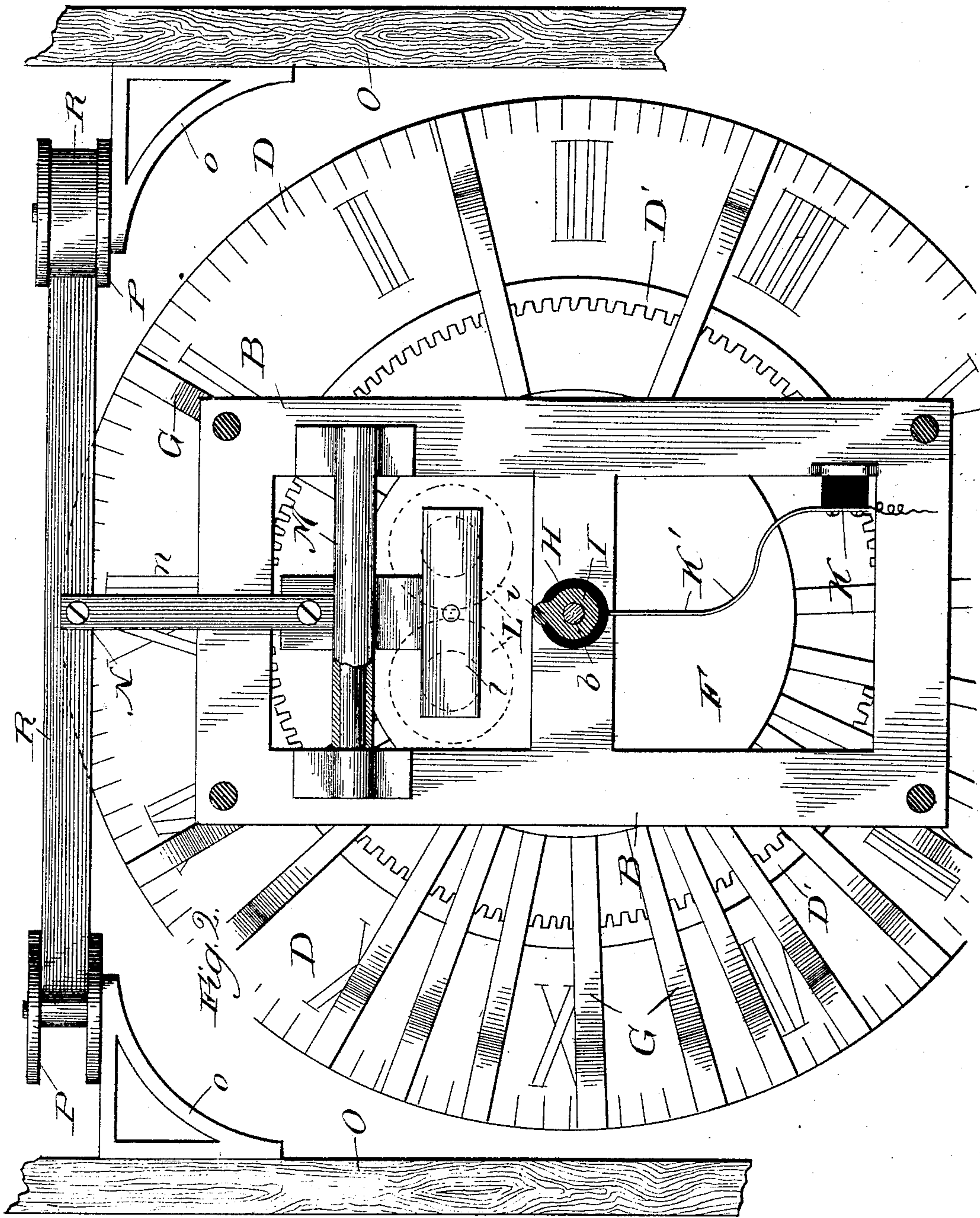
(No Model.)

4 Sheets—Sheet 2.

H. S. PARK.
ELECTRICAL WATCHMAN'S CLOCK.

No. 435,185.

Patented Aug. 26, 1890.



Witnesses:
Chas. E. Chyford,
Clifford W. White.

Inventor:
Harvey S. Park,
By Dunning & Dunning & Payson,
Attys.

(No Model.)

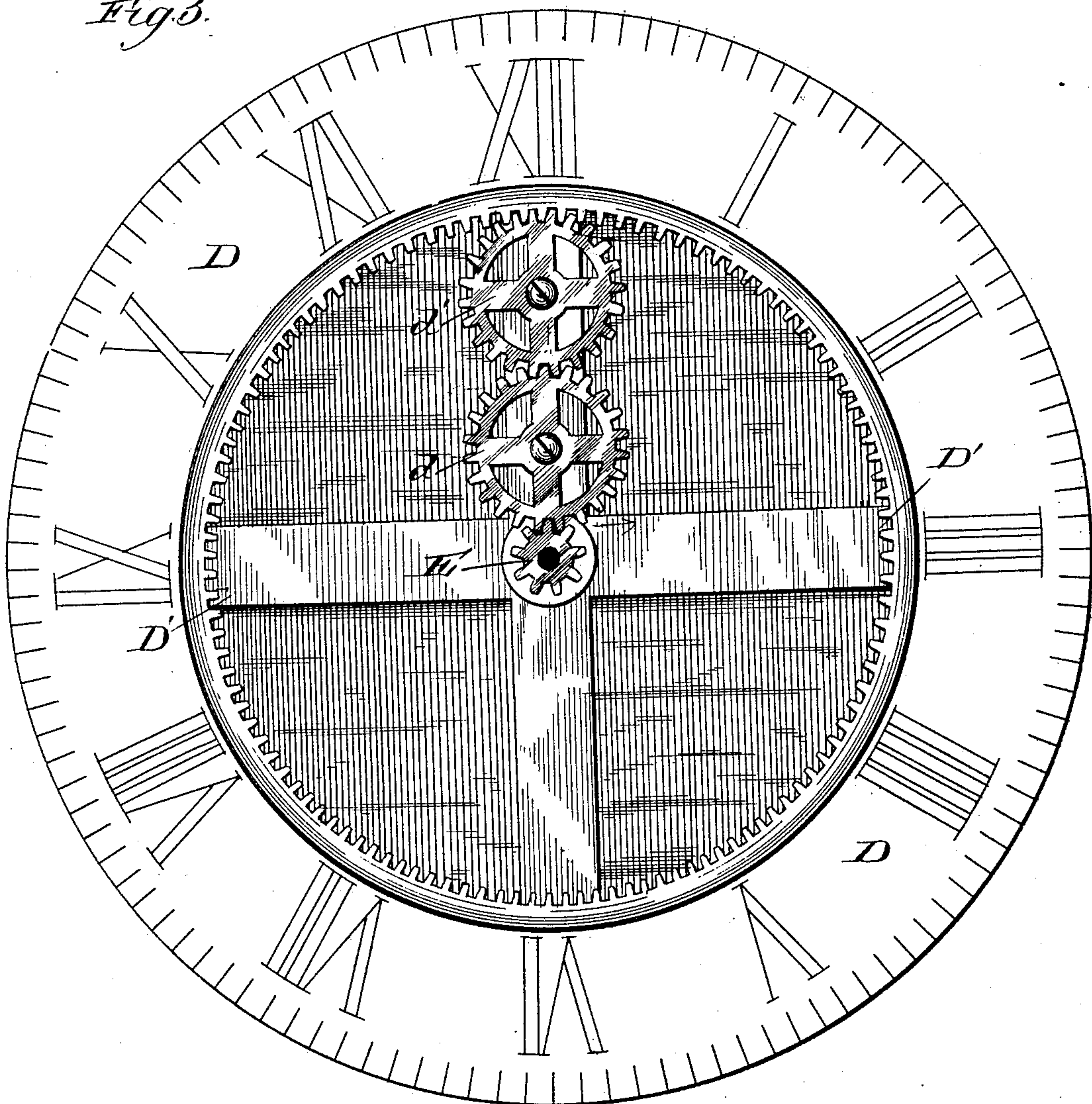
4 Sheets—Sheet 3.

H. S. PARK.
ELECTRICAL WATCHMAN'S CLOCK.

No. 435,185.

Patented Aug. 26, 1890.

Fig. 3.



Witnesses:

*Charles Gaylord
Clifford M. White.*

Inventor:

*Harvey S. Park,
By Ranning & Ranning Payson,
Attys.*

(No Model.)

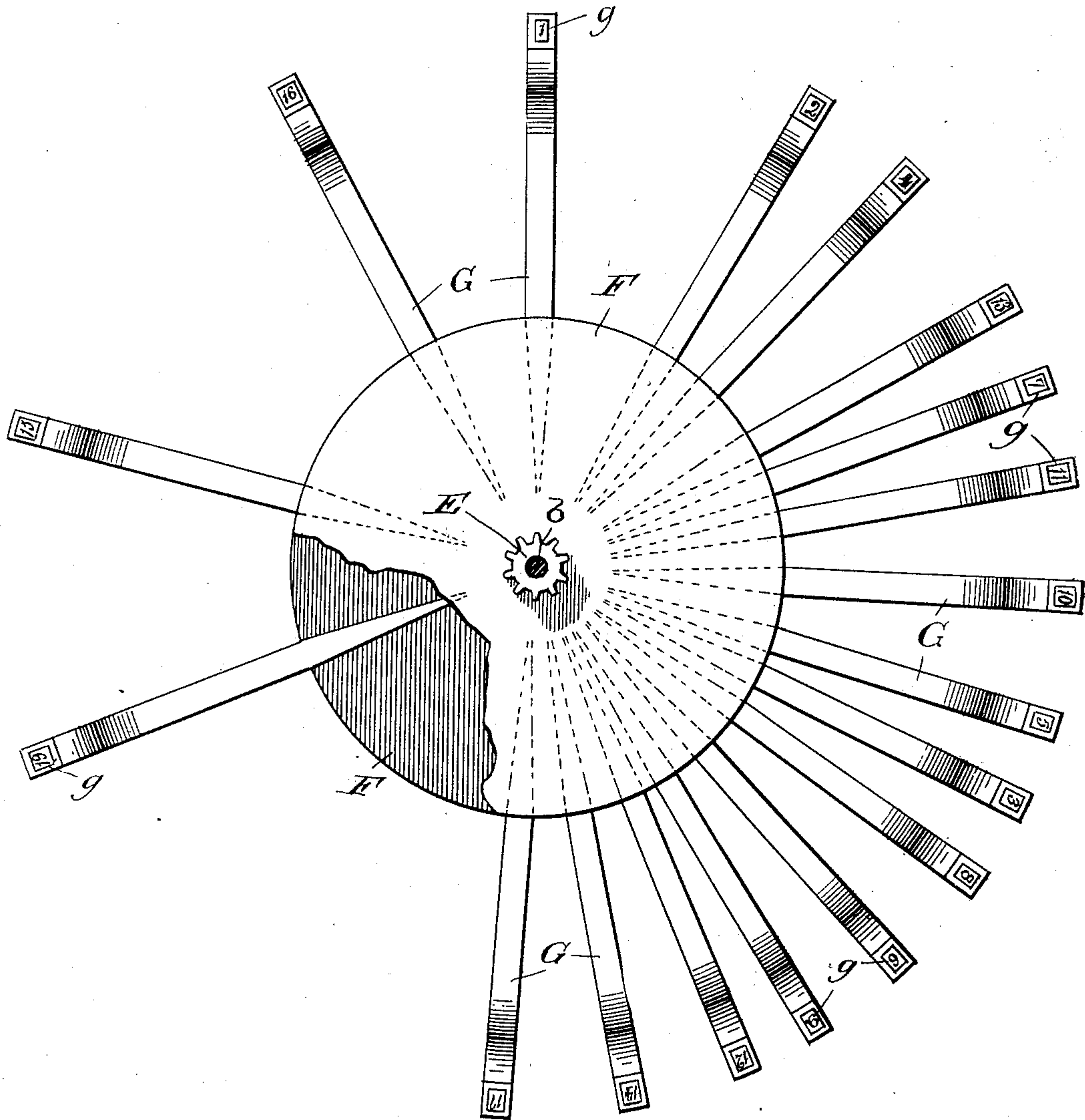
4 Sheets—Sheet 4.

H. S. PARK.
ELECTRICAL WATCHMAN'S CLOCK.

No. 435,185.

Patented Aug. 26, 1890.

Fig. 4.



Witnesses:

Edw. E. Gaylord
Clifford W. White.

Inventor.

Harvey S. Park,
By Banning & Banning & Payson,
Attys.

UNITED STATES PATENT OFFICE.

HARVEY S. PARK, OF CHICAGO, ILLINOIS.

ELECTRICAL WATCHMAN'S CLOCK.

SPECIFICATION forming part of Letters Patent No. 435,185, dated August 26, 1890.

Application filed December 7, 1889. Serial No. 332,954. (No model.)

To all whom it may concern:

Be it known that I, HARVEY S. PARK, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented a new and useful Improvement in Electrical Watchmen's Clocks, of which the following is a specification.

The chief objection to all time detectors heretofore in use has been that they are subject to manipulation by the watchmen in various ways. Among others, the button or other means of forming the connection has been fastened down by the watchman, or other means have been used for closing the electric circuit. I overcome this difficulty by having each station out of circuit at all times, excepting for a brief period of time, within which it is the duty of the watchman to register his appearance at such station; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a vertical section of the complete apparatus; Fig. 2, a vertical section on line X Y of Fig. 1, looking in the direction of the arrows; Fig. 3, a front elevation of the paper dial on which the record is made, together with the disk to which it is attached and the mechanism for revolving the same; and Fig. 4, a rear elevation of the recording or registering part of the apparatus.

A is a frame or case containing ordinary clock-works constructed on the balance-wheel system, and which, being well known, need not be further shown or described; *a*, the arbor or shaft that carries the minute-hand of the clock. (It should be understood that I use the works of a clock without either its dial or hands.)

B is the frame or case of the electrical part of the apparatus; *b*, a shaft or arbor supported in such case, engaging with and rotated by the arbor *a*; C, a door or gate to which the frame A is attached, and which closes the box in which the electrical devices are kept; D, a paper dial, on which are printed the twelve hours in the same order as they appear upon an ordinary clock-dial; D', a disk or wheel loosely mounted upon the arbor *b*; E, a cog-wheel rigidly mounted upon the same arbor; *d d'*, idler-wheels mounted upon the rearward side of the wheel D; F, a slotted

disk firmly fixed to arbor B and rotating with the same; G, arms secured in the disk F, in which they may be adjusted in various positions; *g g*, type attached to the front side of these arms; H H, washers or collars mounted upon the arbor *b*; I, contact-plates mounted upon the arbor *b*, alternating with the washers H; *i*, contact-points on such plates; J, a nut for adjusting the tension of the plates and washers; K, a bar of hard rubber or other suitable insulating material; K', a number of spring-arms attached to the bar K; L, one of the pair of electric magnets; *l*, an armature; M, a rock-shaft, to one end of which such armature is attached; N, a hammer; *n*, the handle thereof attached to the other end of the rock-shaft; *n'*, a spring for withdrawing the hammer; O O, the sides of the case or cabinet in which the device is contained; *o o*, brackets attached to such sides; P P', spools mounted upon such brackets; R, an inked ribbon passing from one spool to the other; S, an electric battery to actuate the magnets, and 1, 2, 9, 10, 11, 12, and 13 stations to be visited by the watchman.

In constructing my improved clock the frames or cases A and B are made of any suitable material and dimensions, and preferably in the form shown in the drawings. The frame A is attached to the door C of the box in which the electrical mechanism is contained. In the frame A, I place the ordinary mechanism of a clock, omitting the shaft that should drive the hour-hand. The arbor *a* is the minute-hand arbor, and revolves, therefore, once every hour. In the frame B is journaled the arbor *b*, and the two arbors *a* and *b* are so arranged that when the door C is closed they shall interlock, so that the arbor *b* is driven by, in the same direction, and with the same speed as the arbor *a*.

I next construct out of any suitable material a disk D'. This disk is provided with a flat face on its rearward side. (By "rearward" I mean the side toward the left of Fig. 1, and by "forward" the side toward the right of such figure.)

I then construct a paper dial D. (Shown more particularly in Fig. 3.) This dial is provided with the numbers usually found upon a clock-face, is mounted loosely upon the arbor *b*, and

attached in any suitable manner to the rearward face of the disk D' , with its figures facing toward the right-hand side of the sheet. (See Fig. 1.) The forward side of the disk D' is hollowed out, as shown in Figs. 1 and 3, and the idler-wheels $d d'$ are mounted on one of its arms. The idler-wheel d meshes with the cog E , and also with the cog d' , and this latter cog in turn meshes with teeth formed on the inner circumference of the wheel D . The number of teeth on the interior of the wheel D' should be twelve times the number of teeth on the cog E , so that twelve revolutions of this latter cog would be required to revolve the wheel D' once, whereby, as the cog E revolves once an hour, the wheel D' will revolve once in twelve hours.

I next construct out of any suitable material the disk F , Figs. 1 and 3. This disk is mounted upon the arbor b , and is revolved by means of the cog E , to which it is firmly attached, and which is itself rigidly fastened to the arbor b . Then I make the arms G , preferably in the form shown in the drawings, Figs. 1 and 3. The disk F is slit throughout its circumference, as shown in Fig. 1, and the arms G may be inserted in this slit and held therein by any suitable means. These arms may be adjusted in any position around the circumference of the disk F , and should be of a sufficient length to extend when fastened in place about to the outer circumference of the dial D . Each of these arms is provided, as shown in Fig. 4, at a point near its outer end and on its rearward side with a type g , numbered in accordance with the numbers of stations which the watchman is to visit. The disk F , and consequently the arms G , revolve once an hour.

I next construct out of any suitable non-conducting material the washers H and mount them on the arbor b . Alternating with these washers, and also mounted upon the arbor, are a number of what I term "contact-plates" I , the form of which is more particularly shown in Fig. 2. A bar of hard rubber or other suitable insulating material K is fastened to the frame-work of the apparatus, Figs. 1 and 2, and to this bar I attach a number of spring-arms K' , made of German silver or other suitable conductor. The contact-plates I are provided with cam-shaped projections i , and the parts are so adjusted that these projections are brought during the revolution of the plates I into contact with the springs K' , for the purpose hereinafter set forth.

To the frame B , I attach a pair of magnets L , which are connected with the battery S , and the operation thereof, being well known, requires no description.

I then make the rock-shaft M , journaled in the frame B , as shown in Fig. 2. To one end of this rock-shaft, opposite the magnets L , I attach an armature l , and to the other end a hammer N , supported on a spring-arm n . To

assist this arm in withdrawing the hammer, I prefer to provide a spring n' , Fig. 1.

I then construct the two spools $P P'$ and the inked ribbon R , adapted to be wound from one to the other of these spools in any suitable way. This ribbon is to be interposed between the dial C and the type upon the arms G .

Each of the arms K is to be connected with its corresponding station by means of a suitable wire.

Stations 1 and 2 are connected with a direct current running as follows: from the ground to the battery S , from the battery through the magnets, the frame B , which is connected with the magnets by means of a short wire T , thence to the arbor b , and by means of the contact-plates I and spring-arms K' to the station 1, and thence to the ground. Stations 9 to 13, inclusive, run from the wire at any of the stations to the battery, and thence by the route already traced back to the station, so that either the direct-current or the multiple-arc system, or both together, may be used, as desired.

The dial D revolves, as has been stated, once in twelve hours, and the disk F , with its arms G , once every hour. Each of these arms corresponds to a station, and should be inserted into the disk F at such a point that the rotation of this disk shall bring each of the arms under the hammer at a little before the time at which the watchman ought to visit the station corresponding to such arm, and at the same time the dial D will have revolved so as to bring the proper hour for visiting such station opposite the arm and hammer.

It should be understood that with the mechanism arranged as shown in the drawings the dial D and the disk F , with its arms, revolve in the same direction.

The contact-plates I should be so adjusted that just before the arm G and dial D reach the proper position for recording the watchman's visit the contact-point i and the spring-arm K' , which are connected with the proper station, should come together to enable the circuit to be made. Inasmuch as it is impossible for the watchman to reach his stations on the very instant, the contact-points i are made of sufficient size to maintain the circuit for five minutes, or any other predetermined time, so that if no registry is made from any station it will be known that the watchman either failed to reach this station or arrived there too late.

The operation is as follows: If the watchman is required to register from station 1 at one o'clock in the morning, the dial D should be attached to the disk F in such a way as to bring the figure "1" opposite the hammer at or just before one o'clock. At the same time the arm G , bearing the numeral "1," should, by the revolution of the arbor b , be brought underneath the hammer and oppo-

site the figure "1" upon the dial. Just before these parts come into this position the arm K', which is connected with the station 1, contacts, through the revolution of the arbor b, with the contact-point i upon the corresponding plate I. When the watchman arrives at the station, he presses a push-button, or in any other suitable manner closes the circuit. The armature l is sharply attracted toward the magnet, and the hammer N strikes against the arm G, and by means of the interposed ribbon R imprints the number borne by such arm upon the dial. The rock-shaft and hammer are so constructed that when the armature is first attracted the hammer will be thrown forward with sufficient force to make the necessary impression; but, the armature still continuing in contact with the magnet, the hammer will gradually come to a state of rest at a short distance from the arm. In other words, the travel of the armature toward the magnet is not sufficient to cause the hammer to strike against the arm G, so that the hammer is provided with a spring-handle, which bends and allows the hammer to reach and strike against the arm G, forcing it against the dial. Precisely the same method is followed in visiting all the stations. The parts are so adjusted that in every instance the proper hour and the proper arm come together under the hammer just after the proper spring K' has come into contact with its corresponding plate I. The watchman, however, may seek to evade his duties by fastening down any or all of the push-buttons. Suppose, for illustration, he fastens down the push-button at station 1. Now, as above stated, the contact-point and spring corresponding to this station come together a little ahead of the time that the arm G comes under the hammer, or, in other words, a little before the proper hour for registering from such station. Now the button being constantly fastened down, the minute the contact-point and spring come together the armature will be attracted and the hammer thrown forward against the dial; but since no arm is under the hammer no record will be made, and the armature remaining in contact with the magnet the hammer will gradually, as above stated, settle back to a position in which it will not touch the arm, so that when the latter comes around it will simply pass under the hammer and no record will be made. This advantage is derived from the fact that, as above stated, each station is out of circuit, excepting for a brief period of time, during which the watchman is expected to arrive at such station.

The systems formerly in use made use of a sharp point to pierce the dial instead of printing upon it, so that if the button is fastened down the point, having been forced through the paper, tears the same and renders it useless. This defect will be obviated by my invention, as above set forth.

The paper dials may be replaced each day,

if desired, and will present a complete record from the various stations during the twelve hours the dial has been in place; but if, through forgetfulness or for any other reason, the dial be left in for more than twenty-four hours, even for several days, it will still preserve the records distinctly, since it will be impossible for the watchman to arrive at the same station at precisely the same instant every night, so that the impressions made by the types will not exactly coincide.

While I prefer to have as many springs K' and contact-plates I as there are stations, it is obvious that this is not essential, since one spring might be connected with several stations, in which case, however, its contact-plate would have to be provided with as many points i as there were stations connected with the spring. Moreover, the mechanism for driving the wheel D' and the disk F may be altered and similar changes made in the form and details of the device without departing from the spirit of my invention.

I claim—

1. An electrical watchman's clock normally disconnected from all of its stations, but provided with means whereby a temporary electric connection is made with each of such stations in succession, substantially as described.

2. An electrical watchman's clock normally disconnected from all of its stations, the electrical connection with a station being made just before the registering apparatus is in a position to record a signal from such station, substantially as described.

3. An electrical watchman's clock normally out of circuit with the stations connected therewith, the electrical mechanism connecting with each successive station reaching the position to transmit a signal therefrom before the register reaches the position to record such signal, substantially as described.

4. An electrical watchman's clock normally disconnected from its stations and provided with suitable mechanism to complete the electrical connection with any station prior to the time when the register is in position to record a signal therefrom, whereby if a signal is sent from such station before the proper hour no record thereof will be made, substantially as described.

5. An electrical watchman's clock normally disconnected from its stations, the electrical connection with any station being made before the register is in position to record a signal from such station and lasting for a short period of time after the register reaches such position, substantially as described.

6. In an electrical watchman's clock, the combination of the arbor b, means for revolving the same, slotted disk F, and adjustable type-bearing arms G, substantially as described.

7. In a watchman's clock, the combination of the arbor b, a contact-plate I, mounted on the arbor, an arm K', electrically connected with one of the stations, disk F, carrying an

arm G, and the plate I, contacting with the arm K', to establish a connection with the station before the arm G is in position to record a signal from such station, substantially as described.

8. In an electrical watchman's clock, the combination of the arbor *b*, means for revolving the same, disk D', carrying dial D, disk F, carrying arm G, magnet L, and armature *l*, carrying hammer N, plate I, and arm K', connected with one of the stations, the plate I and arm K' contacting just before the arm G comes opposite the hammer N, substantially as described.

9. An electrical watchman's clock comprising a registering apparatus, an electrical transmitting apparatus, and mechanism for operating the same, the transmitting and registering apparatus being so relatively adjusted that the former is in condition to trans-

mit a signal from any station before the latter is in position to record such signal, substantially as described.

10. In an electrical watchman's clock, a registering apparatus comprising the arbor *b*, means for revolving the same, cog E, disks D' and F, dial D, arms G, ribbon R, magnet L, armature *l*, and hammer N, substantially as described.

11. In an electrical watchman's clock, an apparatus for receiving signals from the stations with which the clock is connected, comprising arbor *b*, means for revolving the same, plates I, arms K', magnet L, and battery S, substantially as described.

HARVEY S. PARK.

Witnesses:

GEORGE S. PAYSON,
SAMUEL E. HIBBEN.