

G. B. FESSENDEN.  
ELECTRIC WATCHMAN'S CLOCK.  
APPLICATION FILED NOV. 9, 1908.

924,441.

Patented June 8, 1909.

Fig. 1

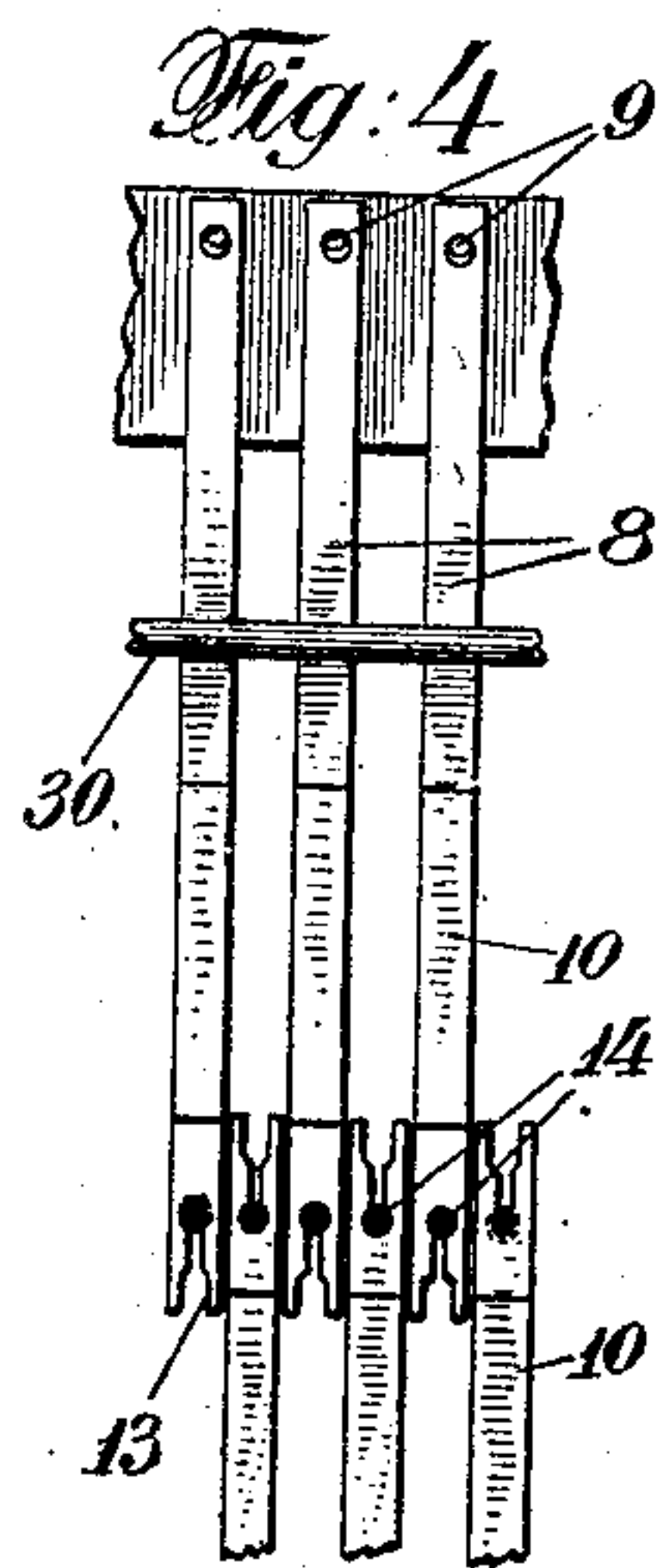
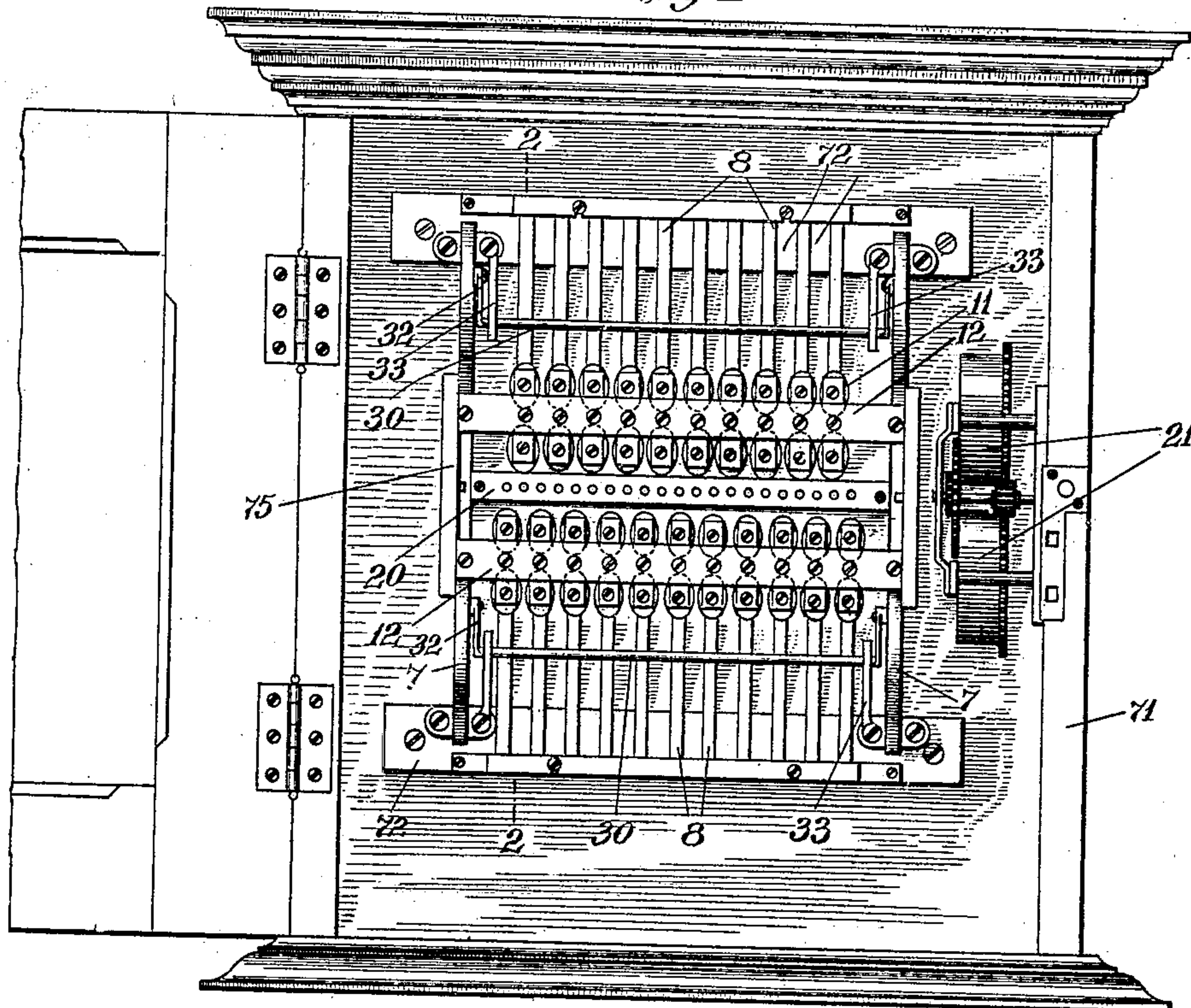


Fig. 2

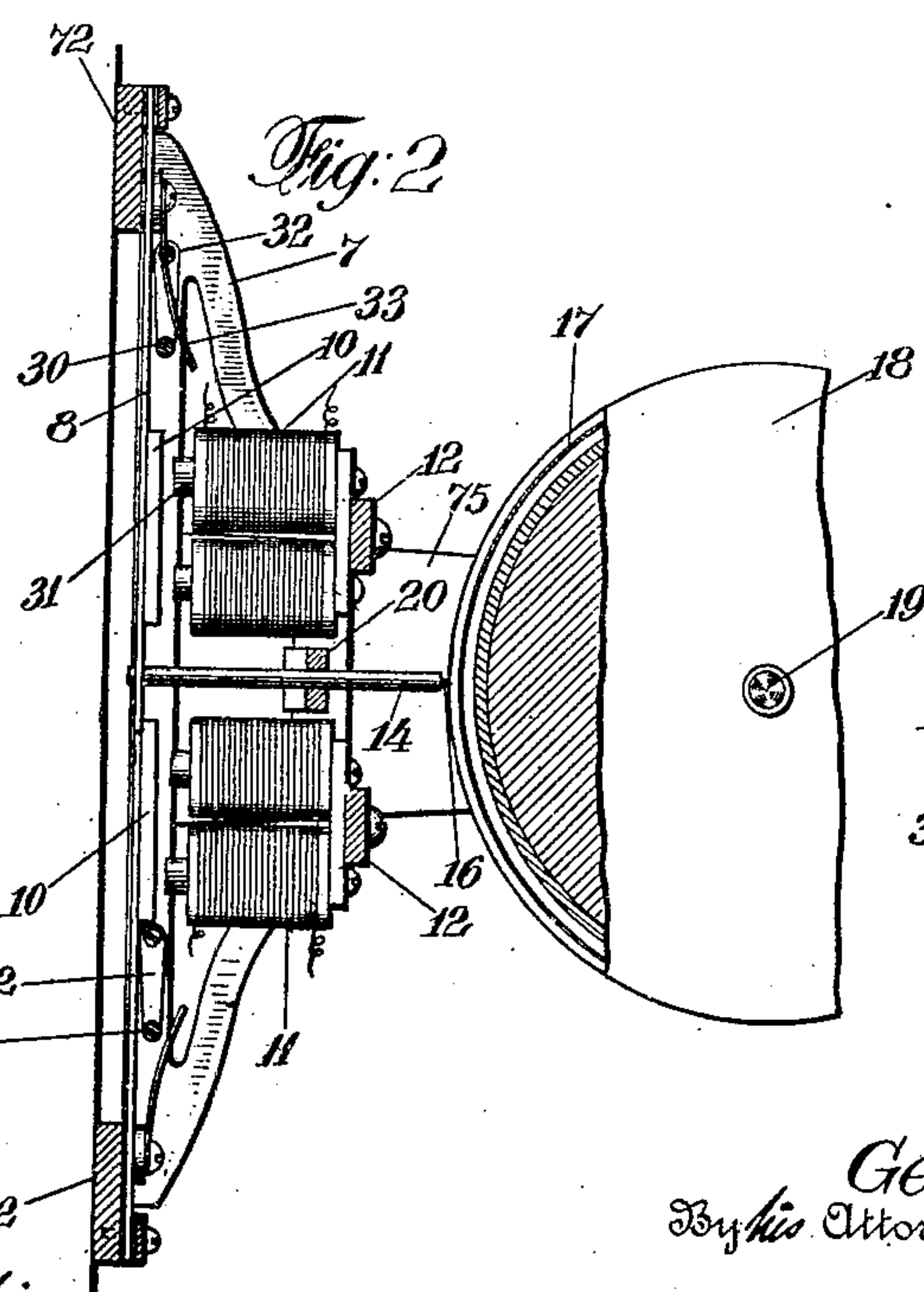
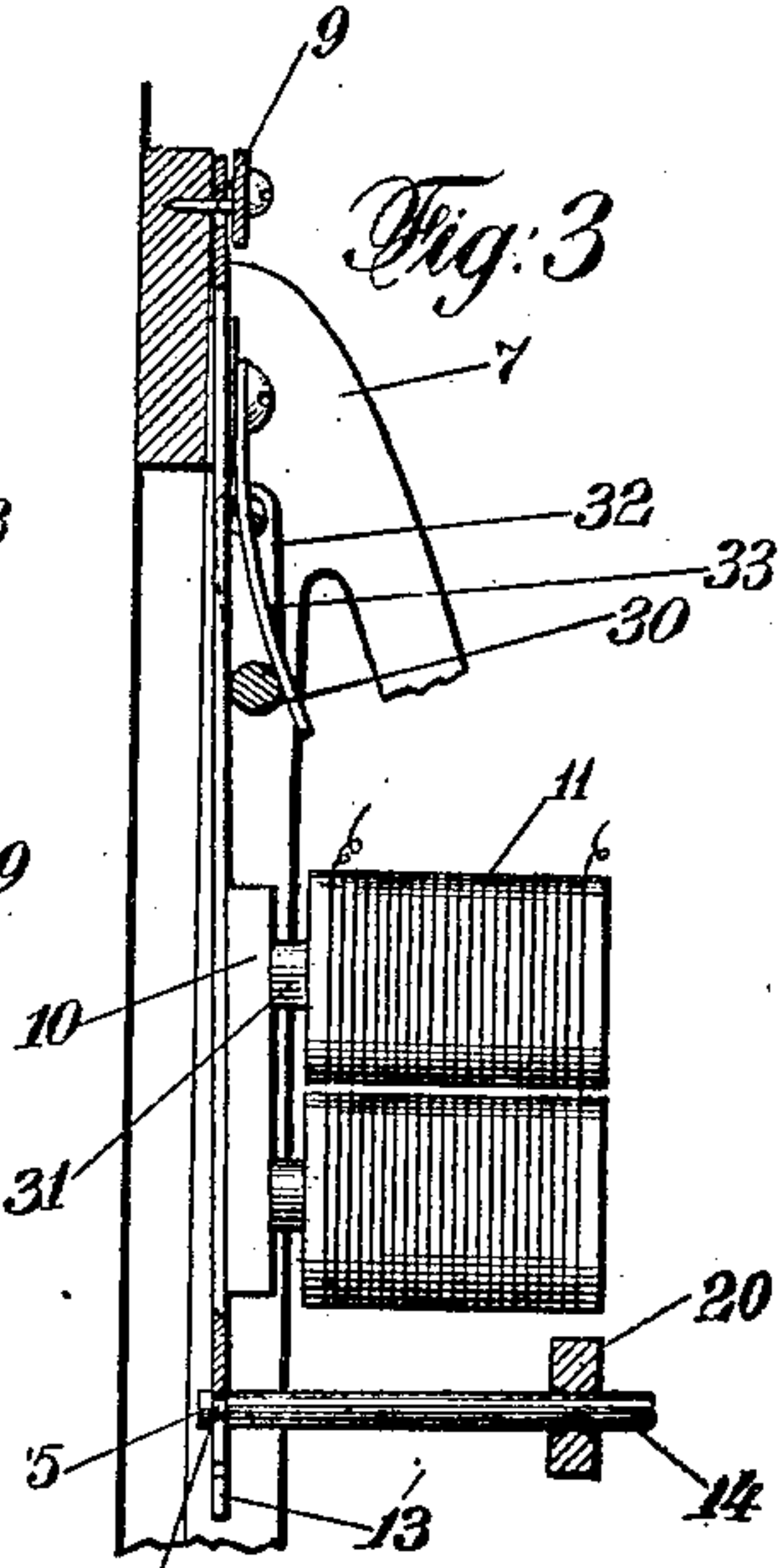


Fig. 3



Witnesses:  
M. H. Avidon  
H. J. Suberter.

Inventor  
George B. Fessenden  
By his Attorneys  
Mull & Lavel



# UNITED STATES PATENT OFFICE.

GEORGE B. FESSENDEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO ECO MAGNETO CLOCK COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

## ELECTRIC WATCHMAN'S CLOCK.

No. 924,441.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed November 9, 1902. Serial No. 461,727.

*To all whom it may concern:*

Be it known that I, GEORGE B. FESSENDEN, a citizen of the United States, and a resident of Boston, county of Suffolk, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Electric Watchmen's Clocks, of which the following is a specification.

This invention relates to watchmen's clocks, and more particularly to certain novel improvements in electrically-operated watchmen's clocks, and has for its object to provide means to return to their initial position the individual armatures, which after having been actuated, are usually held in position in contact with the core of the electromagnetic coils by the residual magnetism remaining after the energization is interrupted. For this purpose means are provided which are actuated by the moving individual armature-bars, which means thus actuated in turn tension a spring which seeking to return to its normal position, causes the return movement of the armature-bars to their normal or initial position, so as to be ready for the next actuation.

For this purpose the invention consists of an electric watchman's clock, having plurality of electrically-operated armature-bars, means not in contact with the bars, adapted to be set in motion by the movement of the bars and to return them to their original position after actuation; and the invention consists further of certain novel features and combinations of parts which will be more fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a face-view of the operating mechanism of an electrically-operated watchman's clock arranged in a central station cabinet showing the arrangement of the armature-bars and as acted upon by the return-bar, Fig. 2 is a vertical transverse section of the mechanism shown in Fig. 1, taken on line 2—2 of Fig. 1, and showing part of the recording cylinder, arranged in respect to the marking needle, Fig. 3 is a part of Fig. 2, showing the parts in operative position; and Fig. 4 is a detail view of the armature-bars and return-bar.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings, the cabinet 71 has secured thereto the frame 7 supporting a plurality of armature-bars 8 loosely piv-

oted on the upper and lower cross-bars 72 of the frame, as shown at 9, and these armature-bars 8 have suitably secured thereto armatures 10, which are in line with electromagnetic coils 11 supported by cross-bars 12 secured to the frame 7. The lower ends of the armature-bars 8 are provided with recesses 13 for the passage of one end of the marking needles 14 each of which are provided with recesses 74 so as to permit the engagement of the bar 8 at its recess 13 with the needle 14 at its recess 74. The needles 14 are suitably guided by bars 20 supported by the frame 7 and are provided with piercing pins 16 for the marking of a dial or recording-disk 17 suitably secured to a cylinder 18 having its shaft 19 rotatably supported in extensions 75. The cylinder 18 is rotated, as is well known, by a suitable clock-mechanism 21, a detail drawing or description not being given, since such operation is well known and forms no part of the present invention.

The parts so far described are well known. Heretofore, the armature 10 was covered with a paper layer in order to prevent the residual magnetism in the core after an actuation of an electromagnet coil to retain the armature in a position to contact with the core 31 of the coil. These means, however, are far from being satisfactory in operation and when the armatures were so held against the cores, had the great disadvantage that the next energization of the coil failed to sufficiently actuate the armature, and hence bring about the proper movement of the piercing needle. In order to insure the return of each and all of the armature-bars after their actuation, my improvement consists in providing a return-bar, which is composed of a main portion 30, supported by members 32 suitably pivoted to the frame 7, forming substantially a U-shaped bar and commonly termed a "flip-flap."

The return-bar 30 in its normal position hangs by virtue of the action of gravity in substantially a vertical plane as shown in Fig. 2. The upper and lower parts of the frame 7 support springs 33, preferably of the flat or plate-form, and these are so arranged as to be in the path of movement of the return-bar. With the parts in their normal position, as shown in Fig. 2, the armature-bar 8, return-bar 30 and springs 33 do not touch each other. But when an armature-



bar is moved by being drawn against the core of a coil by the energization of it, then, as shown in Fig. 3, it moves the return-bar and the momentum of this moves the springs 33, and thus tensions them. The energization of the coils having been in the meantime interrupted, the springs will expand and acting on the return-bar, will move it so as to return the armature-bar automatically to its initial position.

It will be noted by the operation described that the armature-bar itself simply moves the return-bar from its position; the force required to do this being negligible, while the impelling force of this return-bar sets the spring to tension, which tensioning together with the action of gravity as described, returns the parts to their initial position. In other words, no expenditure of energy is necessary excepting the almost negligible one of moving the return-bar. The construction of the return-bar or flip-flap is simple and it may be readily applied.

By my improved device a very efficient penetration of the record is secured, and the rotation of the dial is not interrupted by the sticking of the needle in its penetrating position. Furthermore, the lining of the armature with paper layers to prevent the action of the residual magnetism is done away with, thus facilitating the manufacture and decreasing the cost of the same. The paramount advantage, however, is the securing of the parts in their normal position after their actuation so as to be always ready for their proper manipulation.

I do not wish to be limited to the precise form shown in the practical embodiment described, since changes may be made without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent.

1. In an electric watchman's clock, a plurality of electrically-operated armature-bars, and a return-bar passing over all of said armature-bars and adapted to return the

armature-bars automatically to their original position after their actuation.

2. In an electric watchman's clock, having a plurality of electrically-operated armature-bars, a return-bar arranged some distance from the armature-bars so as not to be in contact therewith but in the path of movement of the armature-bars, and a spring some distance away from the return-bar not in contact with it but in the path of movement of it, so as to be tensioned by the return-bar.

3. In an electric watchman's clock, having a plurality of electrically-operated armature-bars, means normally not in contact with the bars adapted to return the bars automatically to their original position after their actuation.

4. In an electric watchman's clock having a series of electrically-operated armature-bars, a pivoted return-bar suspended freely and crossing all of the armature-bars.

5. In an electric watchman's clock having a plurality of electrically-operated armature-bars, a gravity controlled return-bar extending across all of said armature-bars, means normally out of contact with the return-bar acting on said return-bar when brought in contact therewith to press said return-bar in the direction of the armature-bars.

6. In an electric watchman's clock, the combination with the armature-bars, of a return-bar comprising an elongated main portion having end members extending laterally therefrom, said members being freely suspended whereby the main portion is adapted to return to its original position after being moved away from it, and in returning to its original position to cause the armature-bars to be moved therewith.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GEORGE B. FESSENDEN.

Witnesses:

HENRY J. SUHRBIER,  
C. P. GOEPEL.