

C. G. NYLANDER.  
ELECTRIC TIME SWITCH.  
APPLICATION FILED FEB. 15, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

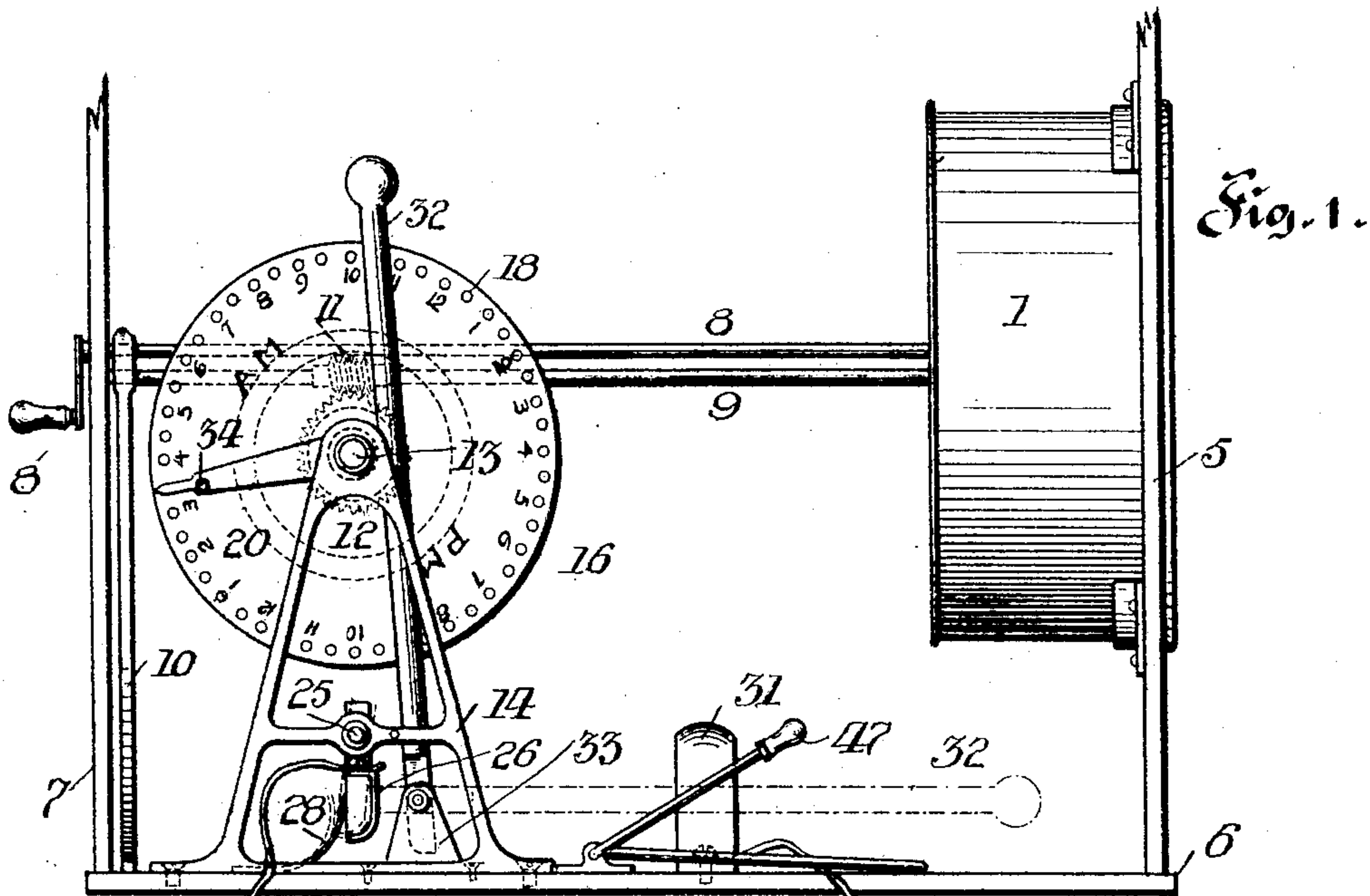
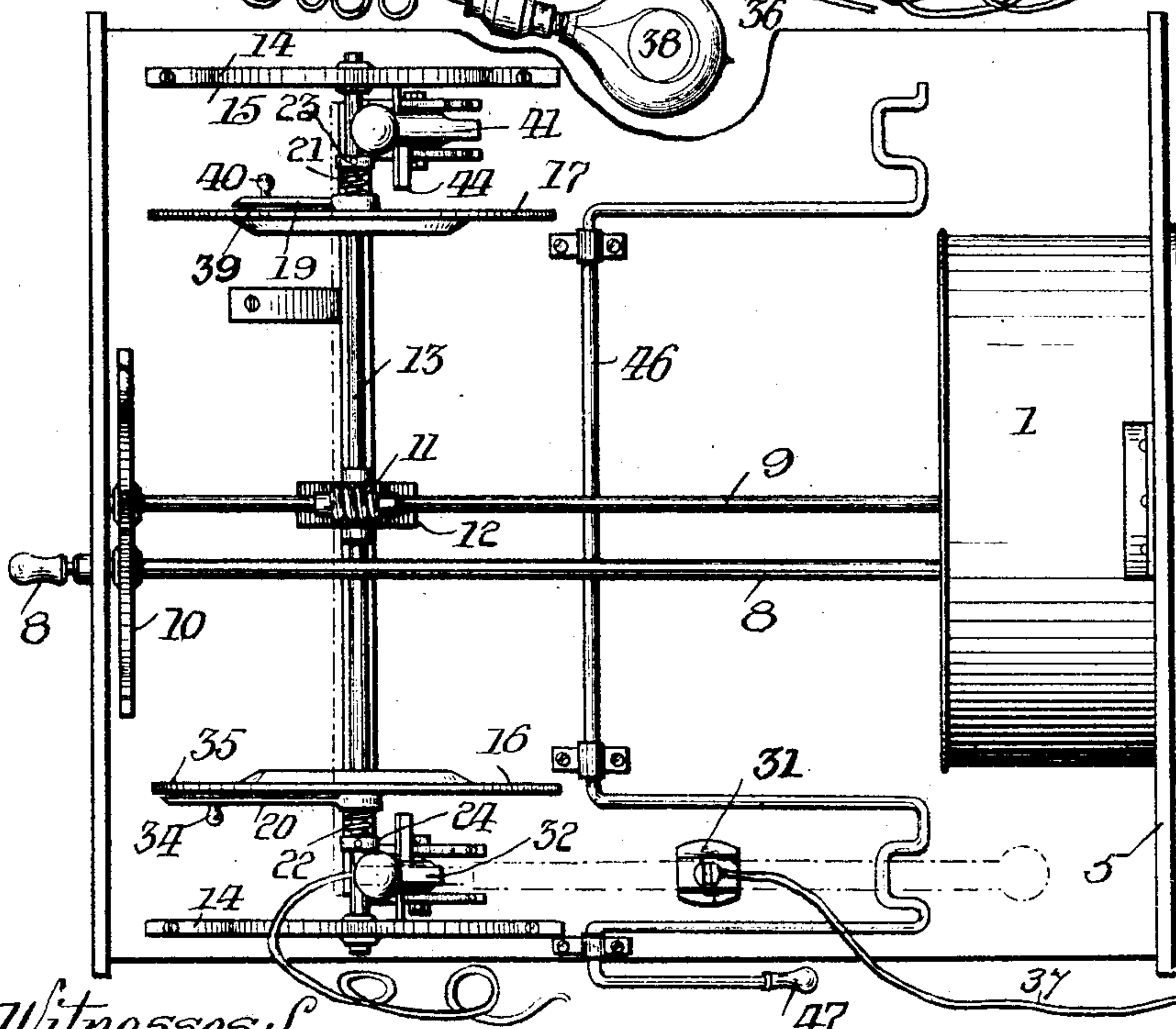


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

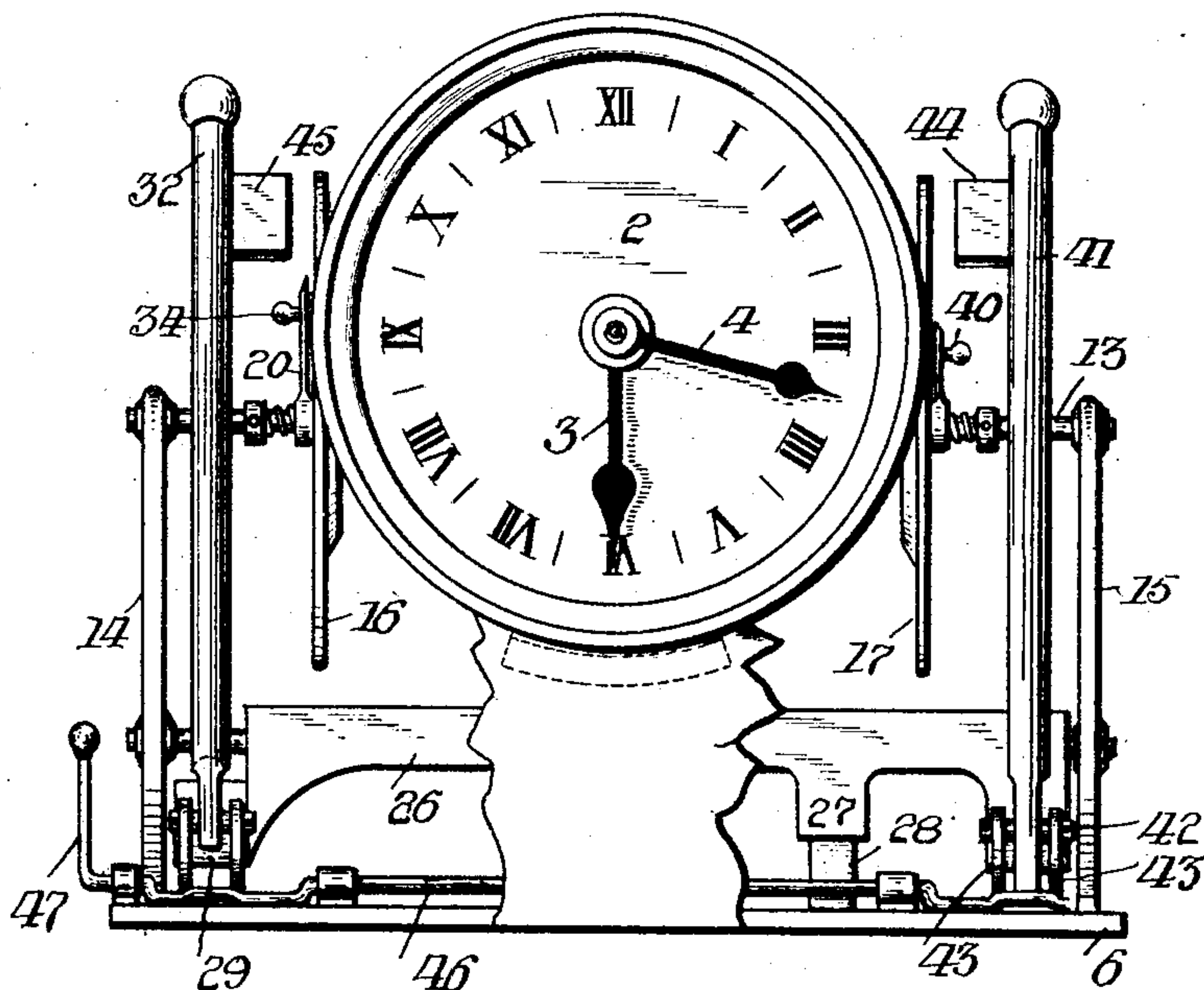


Fig. 4.

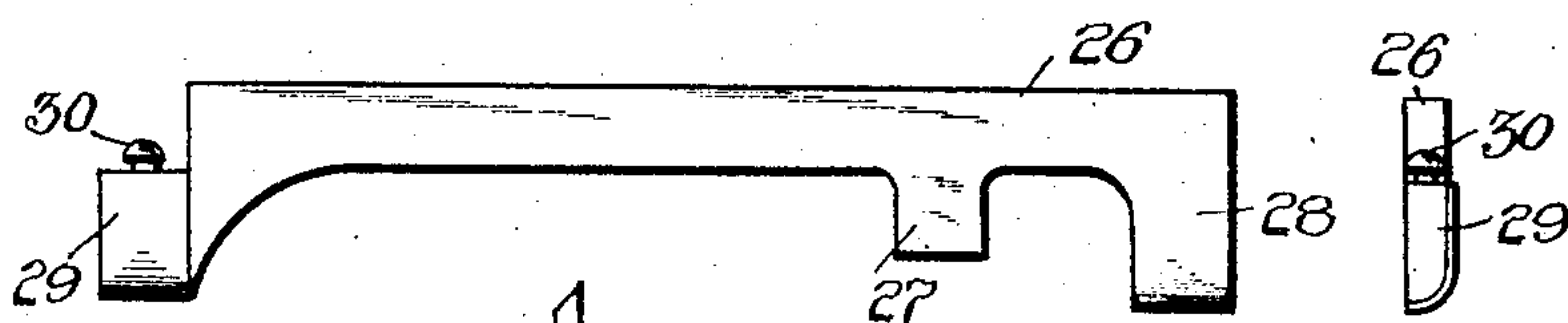
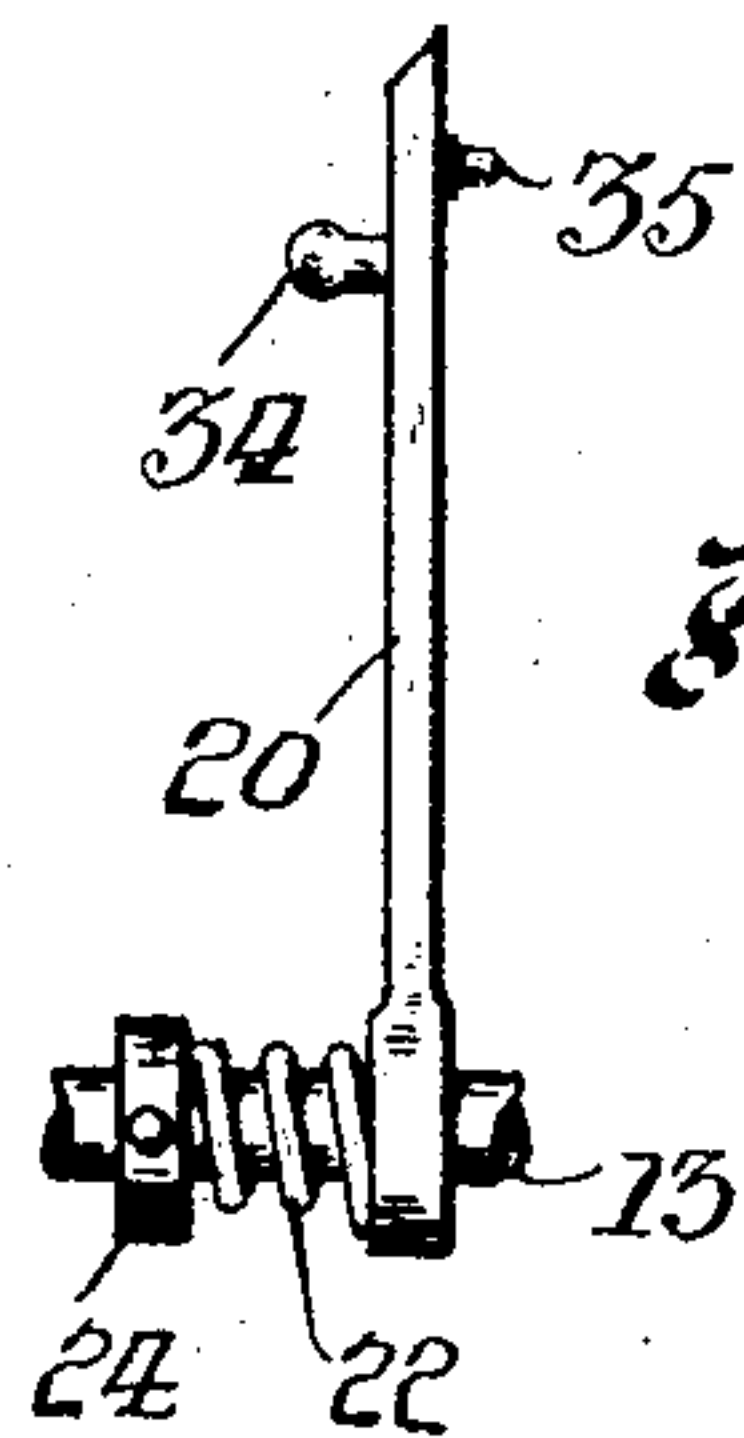


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## ELECTRIC TIME-SWITCH.

SPECIFICATION forming part of Letters Patent No. 765,632, dated July 19, 1904.

Application filed February 15, 1904. Serial No. 193,688. (No model.)

*To all whom it may concern:*

Be it known that I, CARL GUSTAF NYLANDER, a citizen of the United States of America, residing at McKeesport, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to electric switches, and has for its object the provision of an automatically-operated electric switch adapted to close an electric circuit at a pre-determined time.

In carrying the invention into effect the switch is connected to and operated by means of a clock, and provision is made whereby the clock will operate the switch at any pre-determined period of time so as to complete an electric circuit.

The invention is particularly designed for completing an electric circuit containing lamps which illuminate a sign or transparency; but it is to be understood that it is applicable for the purpose of completing an electric circuit at a certain predetermined time whatever may be the work which the electricity flowing through said circuit is intended to perform.

The invention consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of the complete apparatus. Fig. 2 is a top plan view of the same. Fig. 3 is a front elevation. Figs. 4 and 5 are detail views in elevation of parts of the apparatus.

In the drawings like reference-numerals designate corresponding parts in the several figures, and 1 designates a clock of the ordinary or any desired form and construction, which clock is provided with the usual face 2 and the hour-hand 3 and minute-hand 4. The clock 1 is mounted in a suitable frame 5, sustained upon a base 6, and at the opposite end of said base is arranged a frame 7, the said frames 5 and 7, if desired, constituting two sides of a casing which will inclose the working parts of the apparatus.

8 designates the winding-arbor of the clock,

which extends from the clock 1 to and through the frame 7 and is provided with a handle 8', by means of which the clock may be wound.

9 designates the minute-hand shaft of the clock, which is extended so as to project through the back of the clock and extends to and is journaled in a standard 10, supported on the base 6, said shaft carrying a worm 11, which meshes with a worm-wheel 12, fixed on a horizontal shaft 13, disposed at right angles to the shaft 9, and journaled in brackets 14 and 15, which are secured upon the base 6 at the opposite sides of the same. Two disks 16 and 17 are fixed upon the shaft 13, one on each side of the worm-wheel 12, each of said disks being formed with a circular row of perforations 18, forty-eight in number, the alternate perforations being divided into two series, each series numbered consecutively from 1 to 12.

Upon the shaft 13 and outside of the disks 16 and 17 are arranged movable arms 19 and 20, which are pressed against the disks by spiral springs 21 and 22, said springs bearing at their outer ends against collars 23 and 24 on shaft 13. A horizontal shaft 25 is journaled in cross-bars near the bottoms of the brackets 14 and 15, and said shaft carries a swinging contact-piece 26, which has a downward-extending lug 27, against which bears a flat spring 28, that tends to force the contact-piece 26 outwardly. The said contact-piece 26 has depending legs 28 and 29 at its ends, and the latter is provided with a screw 30 for the attachment of the terminal wire of the circuit which is to be closed by the apparatus. The other terminal of said circuit is connected to a spring-clip 31, mounted on the base 6, and a weighted bar 32 is journaled in the brackets 33 on the base 6 and in alinement with said spring-clip. The weighted bar 32 when the apparatus is set for action stands, as shown in Fig. 1, in a position slightly inclined from a vertical line and rests against the shaft 13. The arm 20 carries a pin 34, which as the arm revolves contacts with the weighted bar 32 and forces it beyond the vertical line, so as to allow it to drop and fall between the arms of the spring-clip 31, the arm 20 being provided with a pin



35, which projects into one or the other of the perforations 18 in the disks 16. The shorter end of the pivoted bar 32 is adapted when the bar is in contact with the spring-clip 31 to contact with the swinging contact-piece 26, this disposition of the parts being shown by the dotted lines shown in Fig. 1 of the drawings, and hence when the bar is in its horizontal position a contact is established between the contact-piece 26 and the spring-clip 31, and the electric circuit is thereby established between the terminals 36 and 37 of the electric circuit, which I have shown as including an electric lamp 38. The arm 19 has a pin 39, that projects through the perforations in the disk 17, and the said arm carries a pin 40, which at one position of the arm as the latter is carried around by the disk 17 contacts with a bar 41, which is pivoted at 42 in brackets 43 on the base 6. The bar 41 has an ear 44, against which said pin 40 contacts, and the bar 32 has a similar ear 45 to contact with the pin 34 on arm 20. The end of the bar 41 below its pivotal pin 42 is somewhat longer than the lower end of the bar 32, and when the bar 41, which when the apparatus is set stands in the same position as the bar 32, is pushed forward by the pin 40 and drops into horizontal position the shorter end of the same bears against the lug 28 of contact-piece 26 and presses the contact-piece back, so as to throw it out of contact with the shorter end of bar 32.

A bent wire 46 is pivotally attached to the bottom 6 and is swung on its pivots by a handle 47, the purpose of this wire being to restore the bars 32 and 41 to their upright position when the apparatus is being set.

The numbers on the disks 16 17 are divided into two groups corresponding to the ante-meridian and postmeridian hours, and the apparatus being constructed as above described operates in the following manner: The clock is wound by means of the handle 8' and indicates the hours on the face 2, and the bars 32 and 41 being in their upright position the two arms 19 20 are moved, respectively, to the numbered perforations on the disks 16 17 corresponding to the time at which the switch is to establish and break the electric circuit. If, for instance, the arm 20 is set at the point on the disk 16 corresponding to half-past three a. m. and the arm 19 is set in a position on the disk 17 corresponding to seven p. m., the revolution of the disks produced by the movement of the minute-hand of the clock will cause the pin 34 on the arm 20 to contact with the pin 45 on the bar 32 at half-past three a. m. The bar 32 will then fall over and contacting with the spring-clip 31 and the contact-piece 26 establish the circuit through the lamp 38, and the said circuit will be maintained until the pin 40 on disk 17 coming into contact with the ear 44 on bar 41 at seven p. m. will cause the said bar 41 to fall over, and its shorter end pressing against the contact-piece 26 will move

the same backwardly and break the circuit between the contact-piece and the shorter end of the bar 32.

Having described my invention, I claim—

1. In an electric switch, the combination of a clock and shaft driven thereby, disks carried by said shaft, arms mounted on said shaft and adapted to be adjusted relatively to the disks, pivoted bars adapted to be engaged by said arms, a contact-piece and a clip adapted to be engaged by one of said bars, the other of said bars being adapted to engage the said contact-piece and force it out of contact with the first-named bar.

2. In an electric switch, the combination of a clock and shaft driven thereby, perforated disks carried by said shaft, arms mounted on said shaft and adapted to be engaged at different points with said disks, two pivoted bars arranged to stand normally in vertical positions, said bars being pivoted near their lower ends, and one of the said bars projecting a greater distance below its pivotal point than the other, a swinging contact-piece adapted to be successively engaged by the shorter arms of said bars, and an electric contact adapted to be engaged by one of said bars, when the same is in contact with said contact-piece.

3. In an electric switch, a clockwork, mechanism adapted to be driven by said clockwork, a pair of vertical bars adapted to be moved so as to fall by gravity, rotary disks having adjustable pins carried by said mechanism for causing said bars to fall successively at predetermined intervals of time, and means whereby the falling of one bar will establish an electric circuit, and the falling of the other bar will disestablish the same.

4. In an electric switch, the combination of two pivoted bars adapted to be set in a substantially vertical position and sustained in such position by gravity, means for causing one of said bars to fall and establish an electric circuit, means for causing the other of said bars to fall and disestablish said circuit, and manually-operable means for simultaneously restoring said bars to their normal vertical positions.

5. In an electric time-switch the combination of two pivoted and unrestrained bars adapted to be set in substantially vertical positions and sustained therein by a suitable support, rotary disks, mechanism for rotating said disks, means carried by one of said disks for causing one of said bars to fall and be interposed in an electric circuit, means carried by the other of said disks for causing the other of said bars to fall and break said circuit.

In testimony whereof I affix my signature in the presence of two witnesses.

CARL GUSTAF NYLANDER.

Witnesses:

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