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PATENTED APR. 21, 1908.

C. G. NYLANDER & F. J. REGENSBURGER.

ELECTRIC TIME SWITCH.

APPLICATION FILED OCT. 31, 1905.

2 SHEETS—SHEET 1.

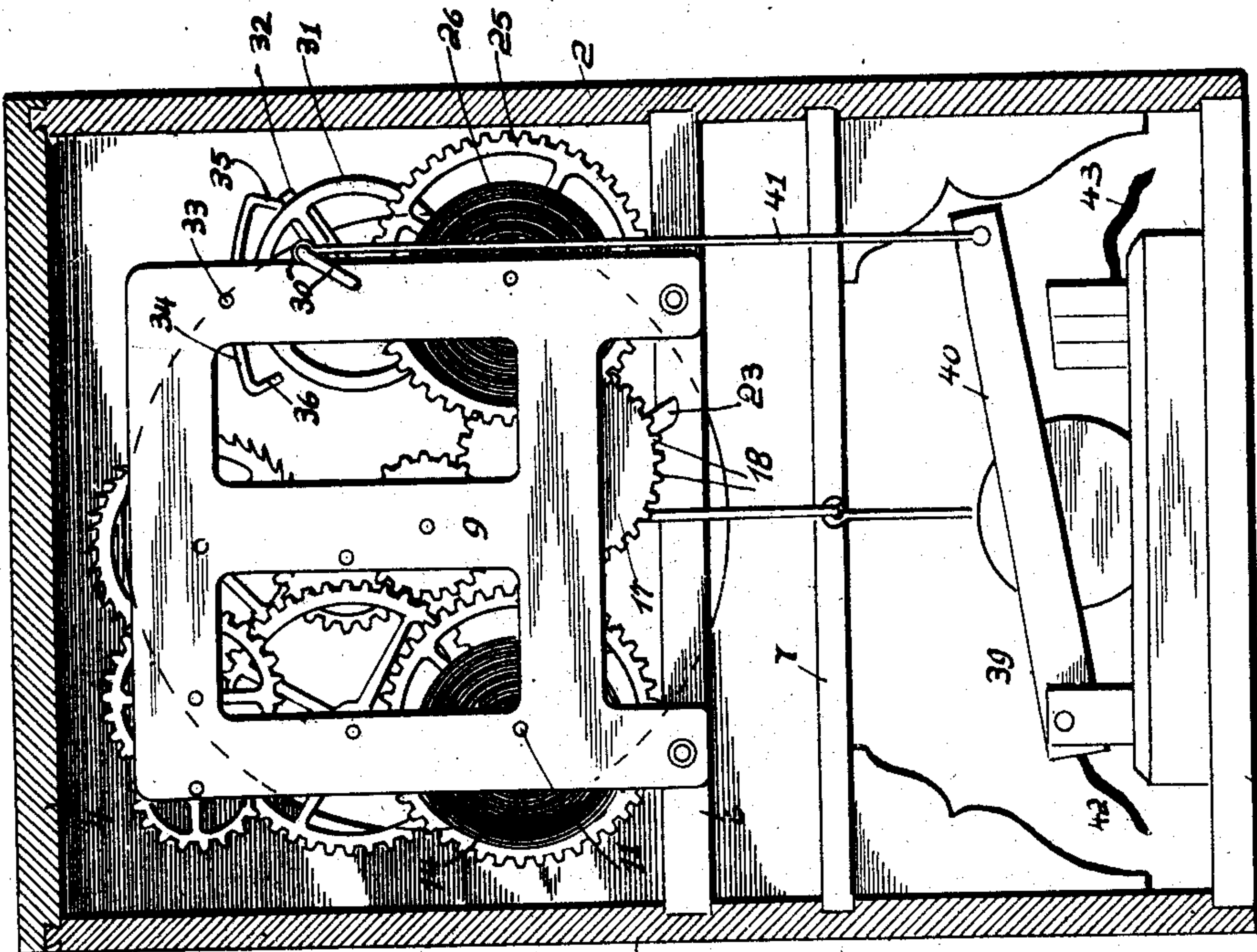


Fig. 2.

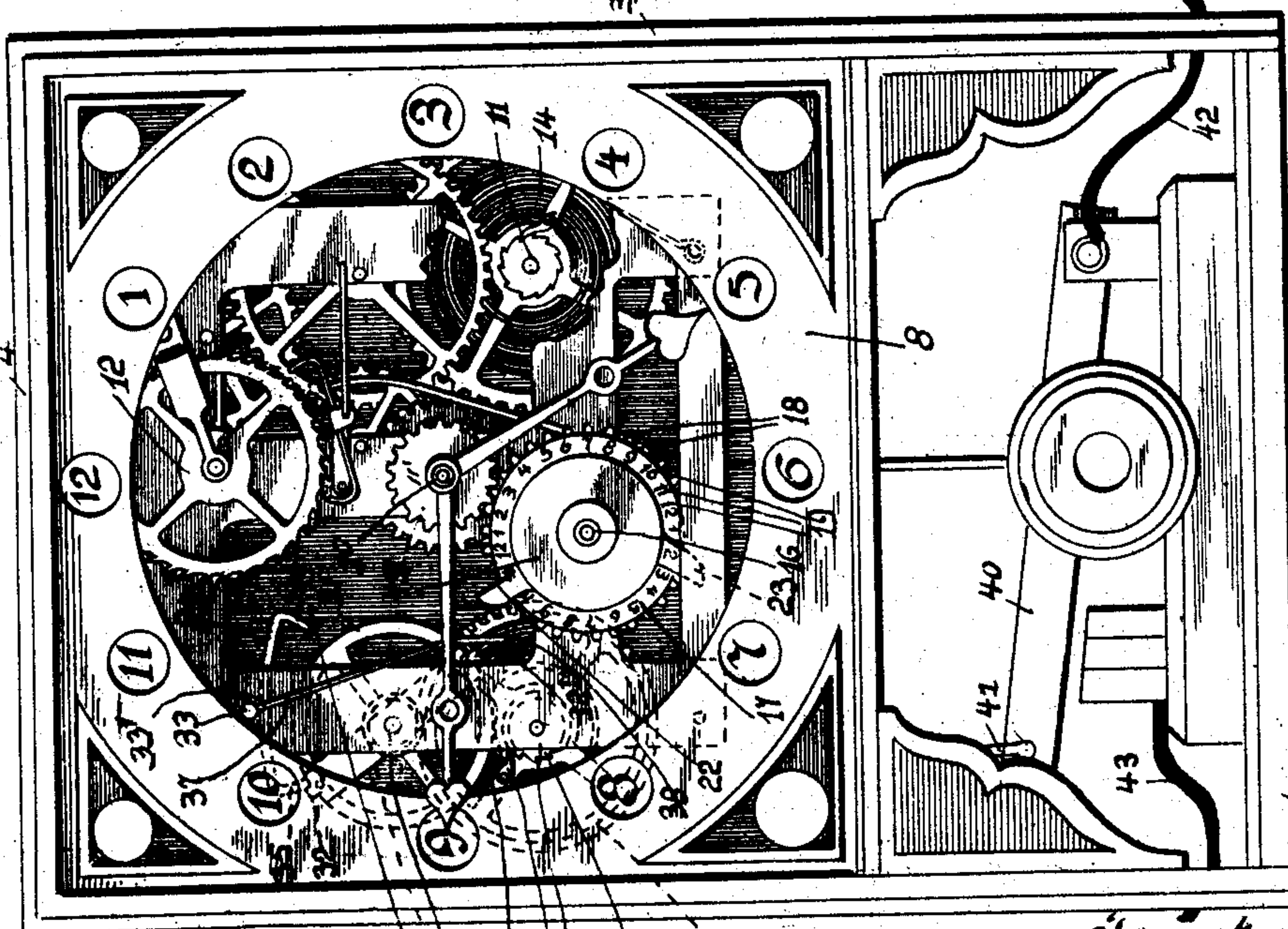


Fig. 1.

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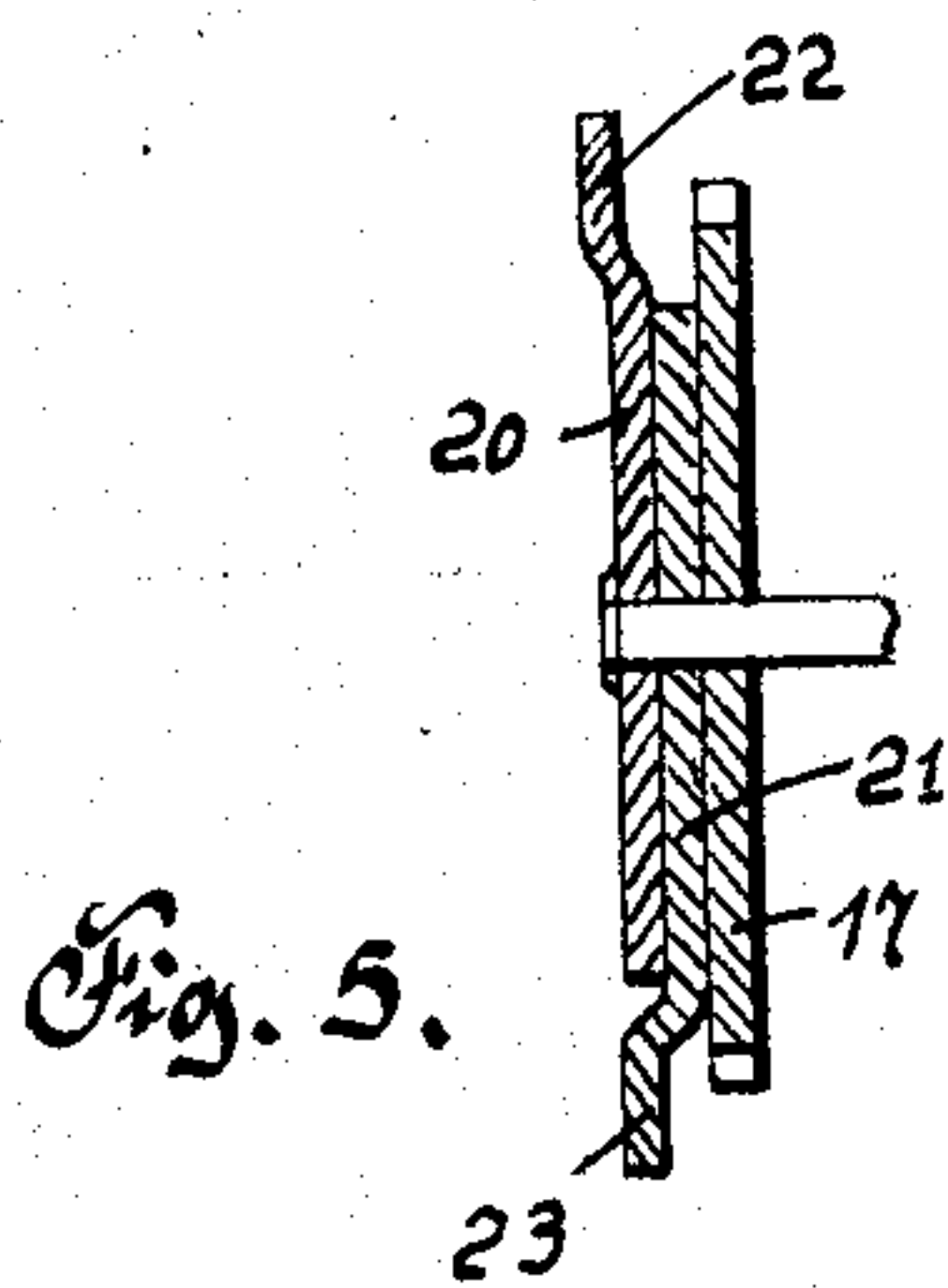
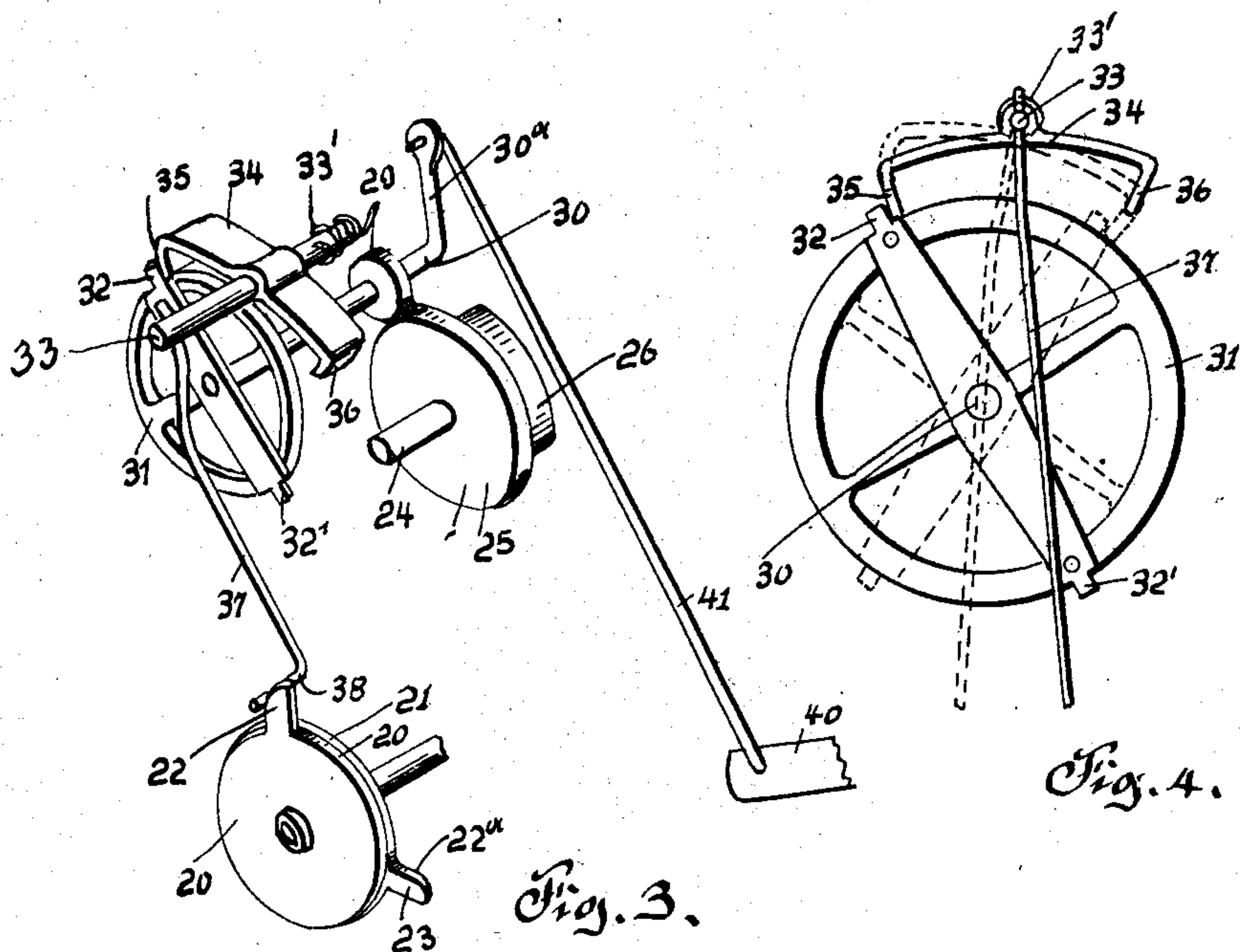
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CARL G. NYLANDER AND FRANK J. REGENSBURGER, OF McKEESPORT, PENNSYLVANIA,
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ELECTRIC TIME-SWITCH.

No. 885,513.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed October 31, 1905. Serial No. 285,302.

To all whom it may concern:

Be it known that we, CARL G. NYLANDER and FRANK J. REGENSBURGER, citizens of the United States of America, residing at Mc-
5 Keesport, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Electric Time-Switches, of which the following is a specification, reference being had therein to
10 the accompanying drawing.

This invention relates to certain new and useful improvements in electric time switches, and the invention has for its primary object the provision of novel means for automat-
15 ically breaking and making a circuit at pre-determined times.

Our invention aims to provide an electric time switch of a novel construction, wherein a conventional form of clock mechanism is
20 employed for actuating the blade of a switch to make and break an electric circuit. In this connection, we have devised an electric time switch particularly intended to be used by merchants who illuminate their windows
25 in the evening, and to dispense with a watchman or attendant to operate an electric switch to turn out the lights.

Our device comprises a clock which when wound up and set at a predetermined hour
30 will make and break an electric circuit, thus permitting a window to be illuminated a pre-determined number of hours.

While the invention is particularly adapted for controlling the lights of show windows,
35 it can be used for numerous other purposes not herein specified, but our improved electric time switch is constructed to insure a positive making and breaking of an electric circuit, and to meet all the requirements of a
40 device of this character.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts to be hereinafter more fully described and
45 claimed.

Referring to the drawing accompanying this application, like numerals of reference designate corresponding parts throughout the several views, in which:—

50 Figure 1 is a front elevation of our improved electric time switch, Fig. 2 is a vertical sectional view looking at the rear of the clock mechanism thereof, Fig. 3 is a detail perspective view of a portion of the time

switch illustrating our principal mechanism, 55 Fig. 4 is an elevation of an escapement used in connection with the time switch, Fig. 5 is a detail sectional view of an auxiliary or supplementary dial.

To put our invention into practice, we 60 construct our improved time switch of a rectangular casing which principally consists of a base 1, side walls 2 and 3, a top 4 and a rear wall 5. The casing may be provided with a front glass plate, but for the 65 clearness of illustration, we have omitted this plate. Between the walls 2 and 3 are mounted two transverse bars 6 and 7, the bar 7 being located adjacent to the front edge of the casing in order to support a dial 8. 70 Upon the bar 6 is mounted a conventional form of a clock mechanism, which consists of a frame 9, a hand arbor 10, a winding arbor 11, an escapement 12 and various pinions adapted to actuate the hand arbor 10 from the 75 main spring 14 of the winding arbor 11. These parts are of a conventional form, and we employ the same in connection with our improved electric time switch to deter-
80 mine the time at which the switch is to be operated.

Our invention resides in employing an auxiliary or supplementary dial 15 which is
85 revolubly mounted upon a stub shaft 16 carried by the frame 9 of the clock mechanism.

The dial 15 is formed with a graduated margin 17, the graduations being numerals as at 19 and divided into two sections from 1 to 12, each section occupying one-half the
90 disk. The numerals upon one of the halves of the disk are designed to denote the hours from 12 o'clock noon to 12 o'clock midnight, and those on the other half, to denote the hours from 12 o'clock midnight to 12 o'clock
95 noon.

Revolubly mounted upon the shafts 16 of disk 15 are two plates 20 and 21, said plates carrying pointers 22 and 23 respectively. The hand arbor 10 is provided with a cog
100 wheel 11' adapted to mesh with the teeth 18 of the disk 15 and impart a rotary movement to said disk.

In the frame 9 of the clock mechanism is mounted another winding arbor 24 upon which is mounted a main wheel 25 carrying a 105 spring 26, the main wheel 25 and said spring corresponding to the "strike" spring of a clock, which is employed to sound an alarm

for each hour or half hour as the case may be. The "strike" spring 26, as it will be hereinafter termed, is controlled by a ratchet wheel 27 and a dog 28.

6 The main wheel 25 meshes with a pinion 29 mounted upon a crank shaft 30 journaled in the frame 9 of the clock mechanism. Mounted upon the shaft 30 is an escapement wheel 31 carrying diametrically opposed lugs 32, 32'. Directly above the shaft 30 is mounted an escapement shaft 33 carrying a verge 34 having depending ends 35 and 36, one of these ends being adapted to normally engage one of the lugs 32, 32', the shaft 33 having a spring indicated at 33' and operating to maintain the verge 34 with its lug 35 normally in engagement yieldably with the stop lugs 32 or 32' as the case may be. The outer end of the escapement shaft 33 is provided with an angularly disposed arm 37, the end of which is bent outwardly as at 38 in the path of the pointers 22 and 23.

Upon the base 1 of the casing is mounted a conventional form of knife switch 39 and the crank shaft 30 is connected to the blade 40 of said switch by a rod 41. The blade 40 of said switch is adapted to make and break an electric current that passes through wires 42 and 43 connected to the switch 39.

30 Operation. In the accompanying drawings, the blade 40 is illustrated in open position, which necessarily breaks the connection between the wires 42, 43 and cuts out the lights. The pointer 22 is shown set for half past ten on the left hand graduations and the pointer 23 is shown set for two o'clock upon the right hand graduations of the auxiliary dial 15, and we will assume that the connection between the wires 42 and 43 is to be established at half past ten and broken at two o'clock. As the hand arbor 10 revolves, the dial 15 is actuated through the medium of the teeth 18 of the disk 16 and the cog wheel 11' mounted upon the winding arbor 10. When the pointer 23 engages the end 38 of the arm 37, this arm is moved to rock the escapement shaft 33 and by observing the pointers 22, 23 it will be seen that each pointer is provided with a beveled face 22^a. As the beveled face of the pointer 23 engages the arm 38 a preliminary movement of the escapement 34 is accomplished, the partial rocking of the escapement shaft 33 causing the depending end 35 of the escapement to release the lug 32, the spring 26 carrying said lug around until it is engaged by the depending end 36 of the escapement. The quarter revolution of the crank shaft 30 just performed moves the crank arm 30^a of the crank shaft 30 a quarter of a revolution, the quarter of the revolution being described because the crank arm 30^a is above the crank shaft 30. This preliminary movement is essential owing to the fact that the quarter revolution revolved by the crank arm is an

inactive movement, the active movements of the crank arm being upon the sides of the crank shaft 30. A further movement of the pointer 23 eventually releases the arm 37, and the depending end 36 of the escapement 34, being forced upwardly by the lug 32, thereby returning the arm 37 to its original position, the depending end 35 of the escapement engages the lug 32'. The crank 30 having again been actuated by the spring 26 through the medium of the main wheel 25 and shaft 24, the link 41 is carried downwardly which closes the switch blade 40 and establishes a connection between the wires 42 and 43.

The same operation is performed when the pointer 22 strikes the arm 37, with the exception that the crank arm 30^a of the crank shaft 30 travels upwardly, the preliminary movement of the crank shaft carrying the crank arm a quarter of a revolution below the shaft, similar to the preliminary movement heretofore described above the shaft. When the crank arm travels upwardly, carrying with it the link 41, the connection established between the wires 42 and 43 will be broken.

The verge 34 is positioned relative to the escapement wheel 31 to permit of the preliminary movement which is necessary owing to the two inactive movements of the crank arm 30^a, these two inactive movements neither tending to raise or lower the link 41.

It has been necessary to practically embody two dials in one owing to the fact that it may be desired to establish a connection between the wires 42 and 43 at two o'clock in the afternoon and break the connection at two o'clock in the morning, and by adjustably mounting the plates 20 and 21 upon the dial, it is possible to adjust the pointers to any desired hours or fraction thereof upon the dial 15.

It will of course be understood that where clock mechanisms are employed having striking springs and their appurtenant parts, it will be only necessary to employ a switch, crank shaft 30, dial 15, verge 34 and their appurtenant parts.

It is thought from the foregoing that the construction, operation and advantages of the herein described electric time switch will be apparent without further description, and various changes in the form, proportion and minor details of construction may be resorted to within the scope of the appended claims without departing from the spirit of the invention or sacrificing any of the advantages thereof.

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

In a time switch mechanism for clocks in combination, a hand arbor, operating means therefor, a pinion on said arbor, a time setting means comprising a rotatable dial having

teeth meshing with said pinion and having
an exposed face provided with two series of
numbers, each series having its numbers
ranging clockwise from one to twelve, and
5 two plates each having a projecting finger
overlying said numbered face, said plates
being each rotatable with said dial and also
each having rotary adjustment independent
of one another with relation to said dial; an
10 electric switch including a pivoted switch
arm; switch operating means comprising a
shaft having a crank at one end, means for
rotating said shaft, a link connecting said
shaft with said switch arm to move the latter
15 from the former and a wheel on said shaft
formed with diametrically opposite project-
ing arms, and an escapement mechanism for
said switch operating means comprising a

spring held rock shaft, an escapement body
on said shaft having oppositely projecting 20
arms each formed at their ends with angular
portions on corresponding sides thereof to
impinge said lugs as stops during the rotation
of said wheel, and an arm, rigidly secured to
the end of said rock shaft and projecting an- 25
gularly therefrom, said arm terminating in
an angular finger projecting into the path of
the fingers of said plates to be engaged
thereby during the rotation of said plates.

In testimony whereof we affix our signa- 30
tures in the presence of two witnesses.

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