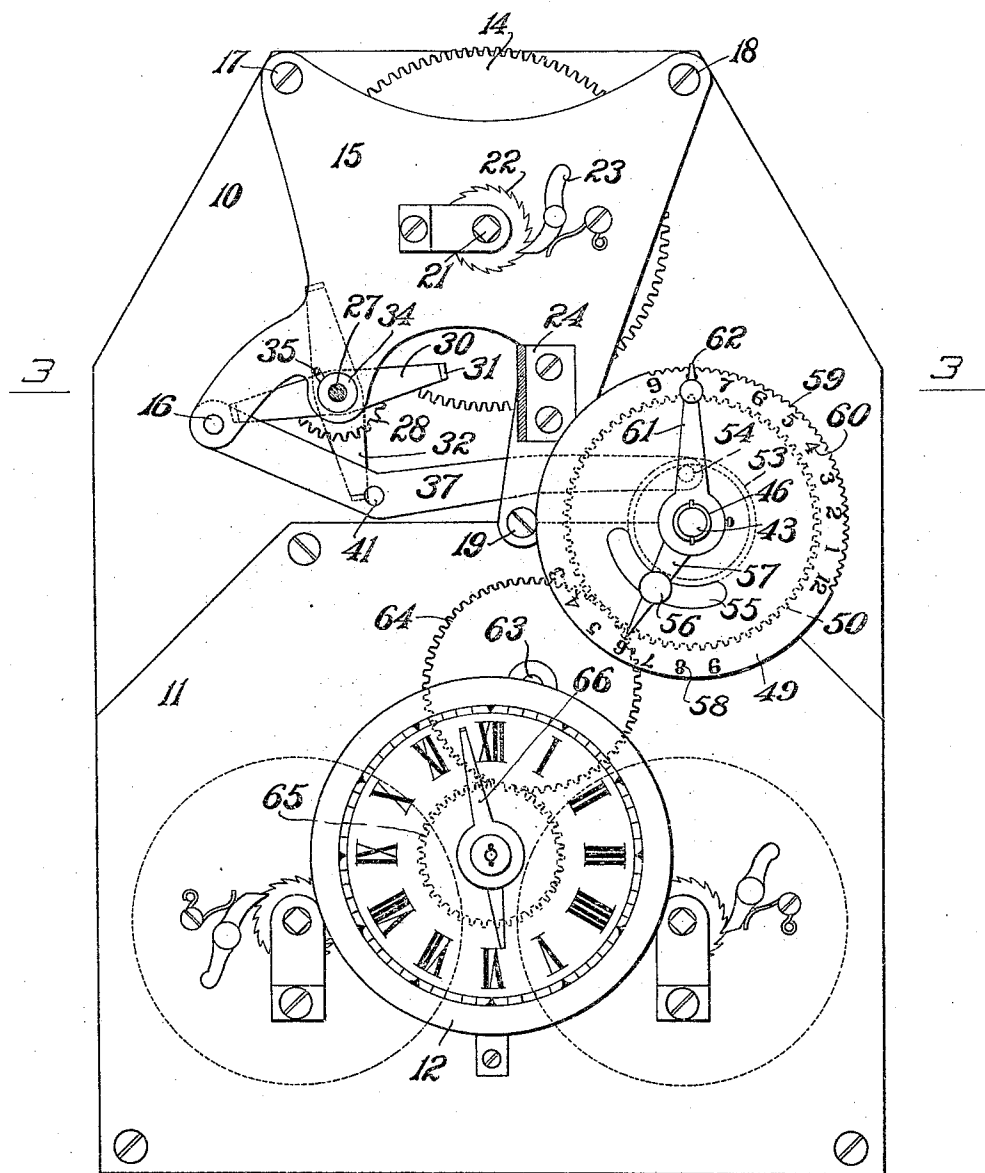


A. B. SHAW.
ELECTRIC TIME SWITCH MECHANISM.
APPLICATION FILED MAY 1, 1909.

952,953.

Patented Mar. 22, 1910.

3 SHEETS—SHEET 1.



WITNESSES
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FIG. 1.

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3 SHEETS—SHEET 2.

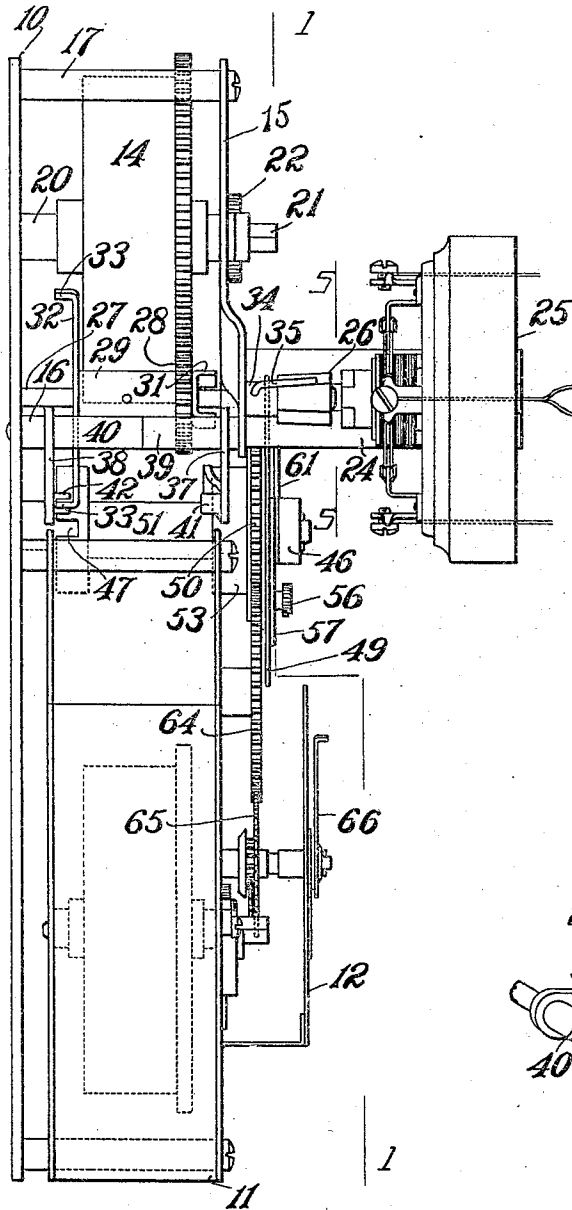


FIG. 2.

WITNESSES

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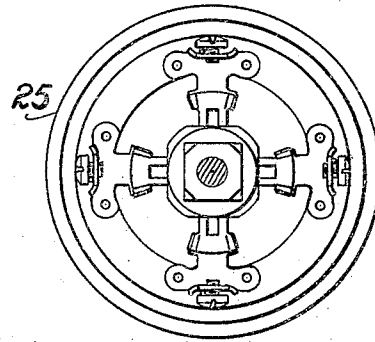


FIG. 5.

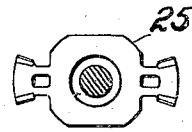


FIG. 6.

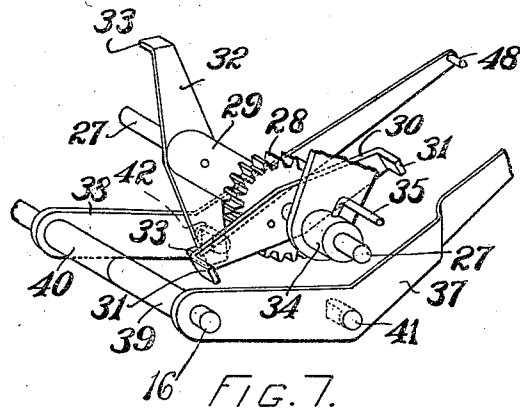


FIG. 7.

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3 SHEETS—SHEET 3.

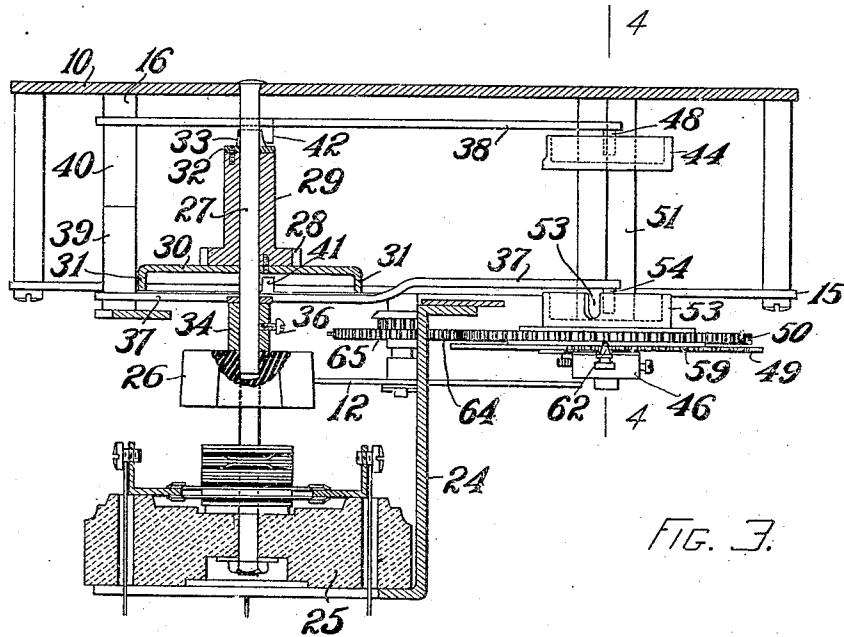


FIG. 3.

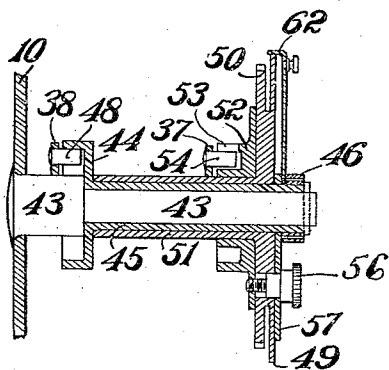


FIG. 4.

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UNITED STATES PATENT OFFICE.

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ELECTRIC-TIME-SWITCH MECHANISM.

952,953.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed May 1, 1909. Serial No. 493,419.

To all whom it may concern:

Be it known that I, AI B. SHAW, a citizen of the United States, residing at West Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electric-Time-Switch Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in electric time switch mechanism, designed especially to be used for switching on and off electric current and in which the switch mechanism is controlled by a suitable time mechanism, which time mechanism is placed in close proximity to the switch mechanism, and the switch will be operated at predetermined times by the operation of such time mechanism.

The invention consists in the novel construction, arrangement and combinations of parts, substantially as described and particularly set forth in the claims annexed hereto, and it is carried out substantially as illustrated on the accompanying drawings, which form an essential part of this specification, and whereon like characters of reference refer to like parts wherever they occur thereon.

In the drawings, Figure 1 represents a front elevation of my improved device on the line 1—1 of Fig. 2. Fig. 2 is a left end elevation of the invention. Fig. 3 is a sectional view on the plane of the line 3—3 of Fig. 1. Fig. 4 is a sectional view on the line 4—4 of Fig. 3. Fig. 5 is a sectional view of the switch on the line 4—4 of Fig. 3. Fig. 6 is a detail of the same. Fig. 7 is a perspective view of a portion of my invention.

A back plate 10 supports on its lower half the box or frame work 11 of any suitable clock or time mechanism 12, and on its upper half the upper frame work which carries the larger part of my invention. This upper frame work consists of a front plate 15 supported from the back plate by the four studs 16, 17, 18, and 19. An arbor 20 which is carried about mid-way of the front plate 15 extends rearward to the back plate and the spring or other motor 14 is mounted on this arbor; the forward portion of which is squared, as at 21, to receive a winding key by which the motor is wound. The spring motor is prevented from backward motion by the ratchet 22 and its spring pawl 23.

Extending forward from the front plate 15

is a bracket 24 supporting the switch mechanism 25, preferably being as shown in the drawings as a four part switch which is controlled by the turning of the thumb piece 26. A shaft 27 extending from the back plate forward and through the front plate carries a gear 28 provided with a sleeve 29 pinned to said shaft. An arm 30, provided with projections 31 at each end, is mounted on the shaft 27 between the back and front plates, being attached to the gear 28, and a similar arm 32 provided with similar projections 33 is mounted on the shaft 27 and is attached to the opposite end of the sleeve 29. The thumb piece 26 is recessed, as shown in Fig. 3, to receive the forward end of the shaft 27 and a collar 34 secured on the shaft 27 by the screw 36, carries the bent pin 35, which controls the movement of the thumb piece 26.

Upon the stud 16 are rotatably mounted the two long levers 37 and 38 at opposite ends of the stud and between the front and back plates. The long lever 37 being provided with the collar 39 which extends rearward to meet the collar 40 of the lever 38. These levers are provided about one-third of their distance from their pivoted ends respectively with stops or lugs 41, 42. The lug 41 on the lever 37 is adapted to be met by the projections 31 of the arm 30 and the lug 42 on the lever 38 is adapted to be met by the projections 33 of the arm 32, so that, when the spring motor 14 is wound up the motor is limited in its movement first by one of the projections 31 of the arm 30 striking against the lug 41, being held by it until the opposite end of the lever 37, which is held by any suitable means as hereinafter explained, is released, when the force of the motor causes the arm 30 to turn, causing the thumb piece 26 to be turned one-quarter distance; the shaft 27 also being turned and carrying one of the projections 33 on the opposite arm 32 against the lug 42 of the lever 38 by which the motor is controlled or held until the outer end of this lever 38 is released, when the shaft 27 is again allowed to take one-quarter turn turning the thumb piece 26 so that the switch is operated by one-quarter turn of the shaft 27 and the thumb piece 26.

From the back plate 10 there extends forward a spindle 43 and a ring 44 having a sleeve 45, which sleeve extends nearly the whole length of the spindle being rotatably mounted upon the spindle at a suitable dis-

tance from the back plate 10. This ring 44 has a slot 47 and the lever 38 is provided with a bent tip 48 on its outer end which extends within the inner circle of the ring so that when the lug 42 on the lever 38 is pressed by one of the projections 33 of the arm 32, the bent tip is pressed up against the inner side of the rim of the ring until the ring has been turned a sufficient distance to allow the bent tip 48 to be forced suddenly upward through the slot 47 by action of the spring motor and the shaft 27 turned one-quarter of the distance. The movement of this shaft is then stopped by one of the projections 31 of the arm 30 coming in contact with the lug 41 when the power is removed from the lever 38 and it drops downward by gravity so that the bent tip 48 passes through the slot 47 into the inner side of the ring 44. The force of the spring motor is so great that the upward and downward movement of the lever 38 is instantaneous in that its movement can hardly be seen by the eye, but the pressure from the lever is removed as soon as the lever 38 has moved upward a sufficient distance to allow the projection 33 to pass the end of the lug 42.

Near the outer end of the spindle 43 upon the sleeve 45 is rotatably mounted a dial or disk 49 and gear 50, the disk and gear being made integral, and upon a sleeve 51, which sleeve extends rearward until it meets the outer surface of the ring 44. Upon this sleeve 51 is mounted a ring 52 similar to the ring 44 and provided with a slot 53, through which the bent tip 54 on the outer end of the lever 37 is allowed to pass when pressure is brought against its lug 41 by one of the projections 31 of the arm 30 being placed against it by force of the spring motor.

Upon the spindle 43 is loosely mounted a hand 57; and the disk 49 and gear 50 are provided with a semi-circular recess 55 through which the set screw 56 extends after first passing through the hand 57. The ring 52 can be moved independent of the disk and gear, and is moved until the hand is turned to the proper position on the disk, when the set screw would be screwed tight so as to tighten the hand, disk, gear and ring 52 together to move them as one part.

The disk is provided on one side thereof with a series of numbers 58, which I have shown in the drawings as running from three to nine, and the hand 57 can be placed at any one of these numbers, or between any one of these numbers, so that the mechanism would be operated to allow the switching on or off of the electric current to be made by turning of the thumb piece 26 at any time between the hours of three and nine o'clock p. m. The recess 55 is shown in the drawings as being sufficiently long to allow the

hand 57, with its set screw, to be moved to any one of the positions between three and nine o'clock. The opposite side of the disk is preferably toothed as at 59, forming a segmental toothed disk, and is provided with a series of numbers 60 which I have shown in the drawings as running from twelve to nine by which the hand 61, which controls the time of shutting off the electric current, is regulated. This hand 61 is fixedly secured upon the sleeve 45 of the ring 44 so that when this hand 61 is turned around the face of the disk, the ring 44 is also turned. This hand is provided with a detent 62 on its end and its detent can be inserted and held between any two of the teeth 59 on the periphery of the disk, so that the time of shutting off the electric current is definitely determined upon. A locking collar 46 is provided on the spindle 43.

Attached upon a stud pin 63 extending outward from the frame work 11 is a gear 64 which meshes with and connects the hour wheel 65 and gear 50 and the turning of the minute hand 66 of the time mechanism 12 will turn the hour wheel 65, gear 64, gear 50 and rings 44 and 52 so that the rings will be turned around the arbor 43 to allow the arms 30 and 32 to be released at the proper times according to the positions of the hands 57 and 61 on the surface of the disk. If desired, a two-part switch may be used, in which case, it is necessary to have the arbor 20 and front piece 26 make a one-half turn instead of making a one-quarter turn, to throw on the electric current or to shut it off.

It is to be understood that my invention is not limited to the specific details of the construction shown in the accompanying drawings, but that said details may be varied in the practical carrying out of my invention. It is also to be understood that the combinations specifically set forth in the several claims are intended to be separately claimed without limitation to the use in connection therewith of other features and details of construction illustrated.

Having thus fully described the nature, construction and the operation of my invention, I wish to secure by Letters Patent and to claim:—

1. In an electric time switch mechanism, a time mechanism, a motor, an electric switch, a shaft connected with the switch, gearing connecting the shaft and motor, arms carried by the shaft and a pair of parallel levers pivoted at one end operated alternately by the motor when released by the time mechanism for limiting the movement of the arms.

2. In an electric time switch mechanism, a time mechanism, a spring motor, an electric switch, means connecting the spring motor and electric switch, a pair of levers pivoted

at one end for preventing the movement of said means and the unwinding of the motor, and a pair of revoluble retaining rings within and by which the free ends of the levers are normally held and the rings operated by the time mechanism for controlling the movement of the levers.

3. In an electric time switch mechanism, a time mechanism, a spring motor, an electric switch, means connecting the spring motor and electric switch, a pair of parallel levers pivoted at one end for preventing the movement of said means and the unwinding of the motor, and a pair of parallel revoluble retaining rings their interior surfaces engaging the parallel levers and operated by the time mechanism for controlling the movement of the levers.

4. In an electric time switch mechanism, a time mechanism, a spring motor, an electric switch, means connecting the spring motor and electric switch, a pair of parallel retaining and releasing levers for limiting the movement of said means, a shaft, gearing connecting the shaft and time mechanism, a pair of retaining rings the said levers being pivoted at one end and their free end being normally held by the interior surface of the rings and a pair of indicating hands for placing the rings in proper position.

5. In an electric time switch mechanism, a time mechanism, a shaft, gearing connecting the shaft and time mechanism, a disk integral with the gear on the shaft, a pair of parallel slotted retaining rings carried

by the shaft, hands on the face of the disk for revolving the rings to a predetermined position but the rings adapted to be revolved through said gearing by the time mechanism, a pair of parallel levers having bent tips normally retained within said retaining rings, a motor, an electric switch, means connecting the motor and electric switch, and a pair of arms carried by said means for limiting the movement of said means and controlled in their movement by said levers.

6. In an electric time switch mechanism, a time mechanism, a spring motor, an electric switch, a shaft connected with said electric switch, gearing connecting the shaft and spring motor, a pair of arms fixedly mounted on said shaft provided with projections at their outer ends, a pair of parallel levers provided with stops for limiting the movement of the arms and the revolving of the motor and provided with bent tips at their outer ends, a shaft, gearing connecting the shaft and time mechanism, a dial mounted on said shaft and provided with indicator hands, and rings carried by said shaft normally retaining said tips provided with slots through which said tips pass at such times as may be predetermined by the placing of said hands upon said dial, substantially as shown and described.

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

AI B. SHAW.

Witnesses:

CHARLES F. A. SMITH,
ETHEL M. POTTER.