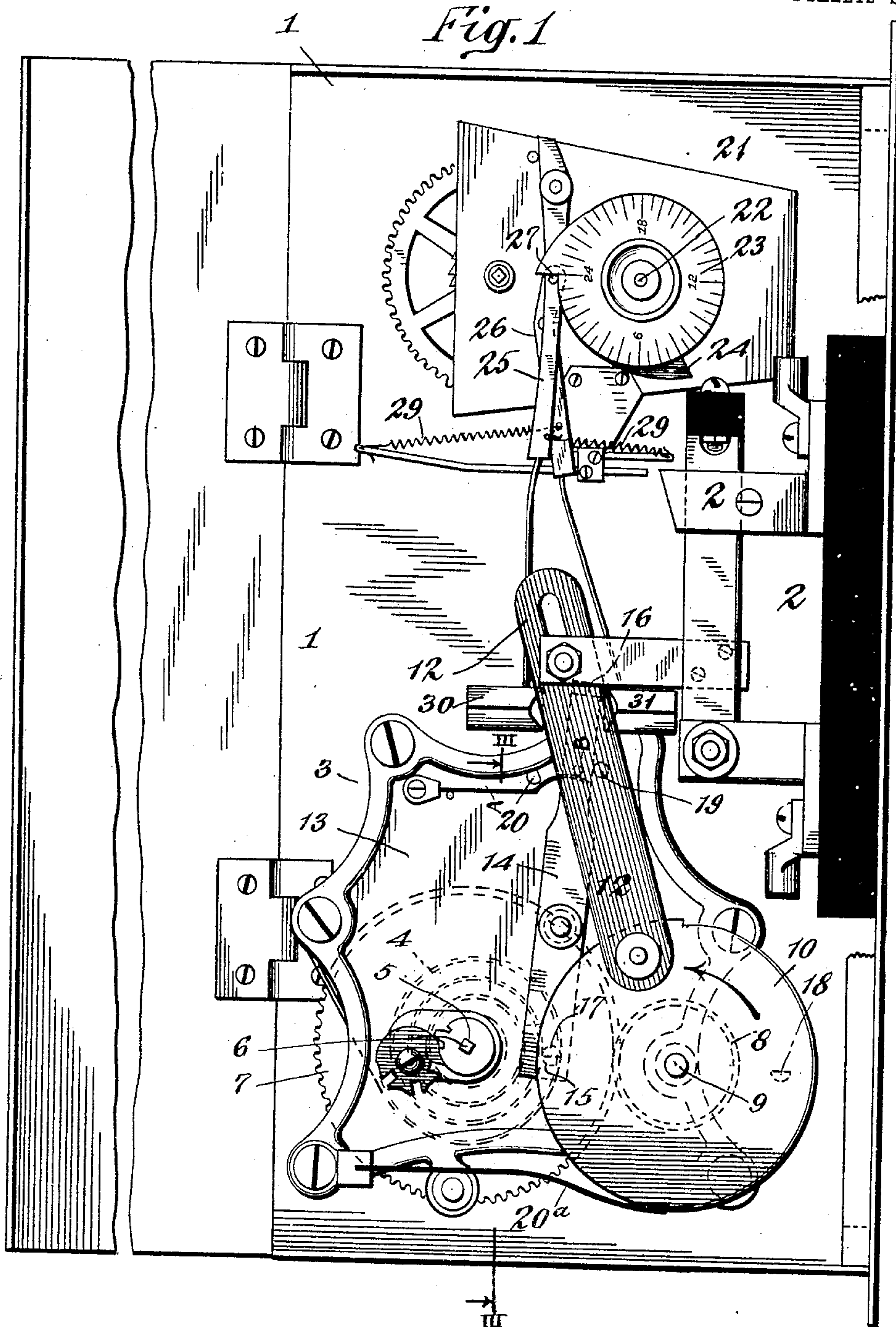


J. JONES & J. JONES, JR.  
ELECTRIC TIME SWITCH.  
APPLICATION FILED MAR. 10, 1908.

931,617.

Patented Aug. 17, 1909.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

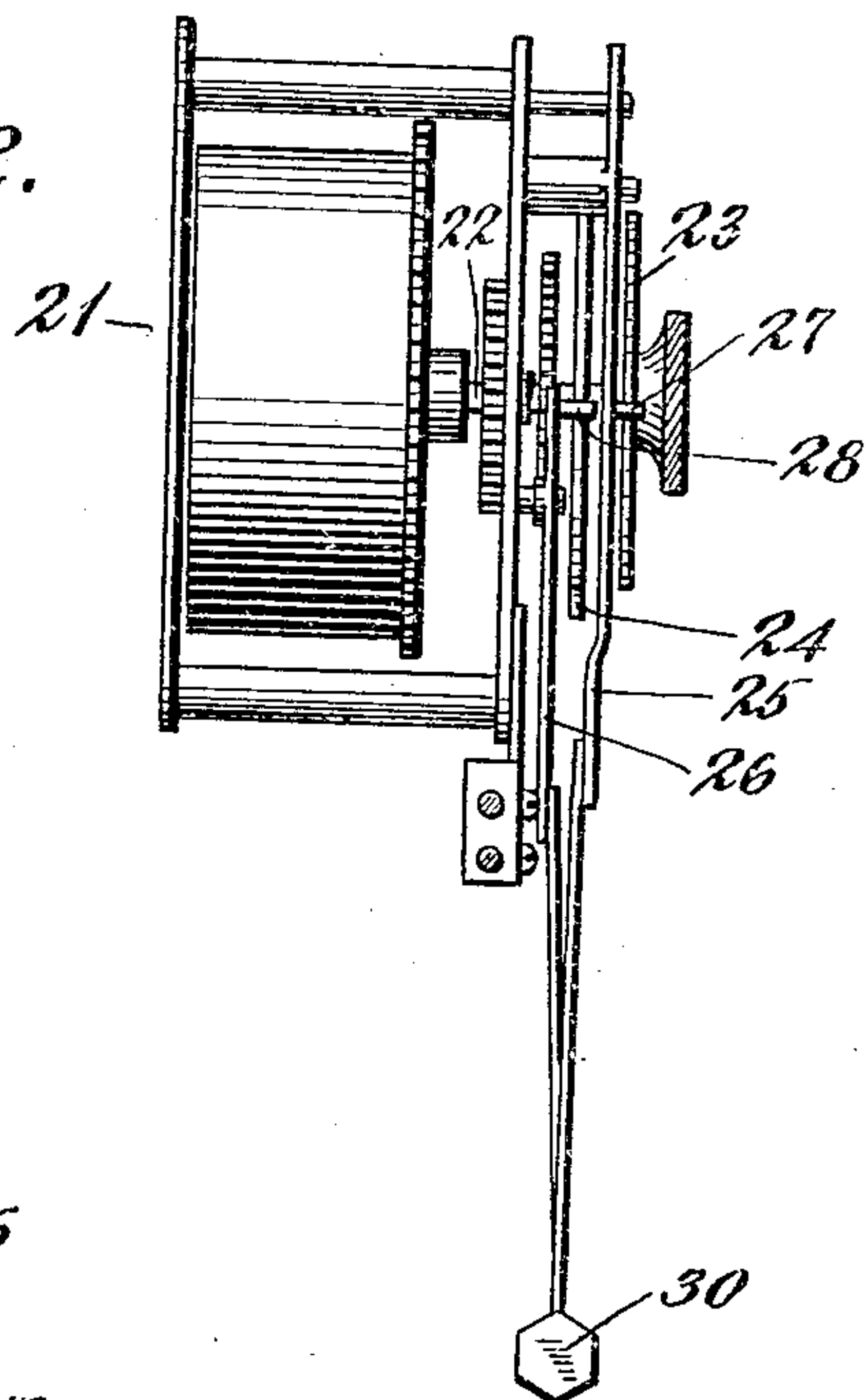


Fig. 3.

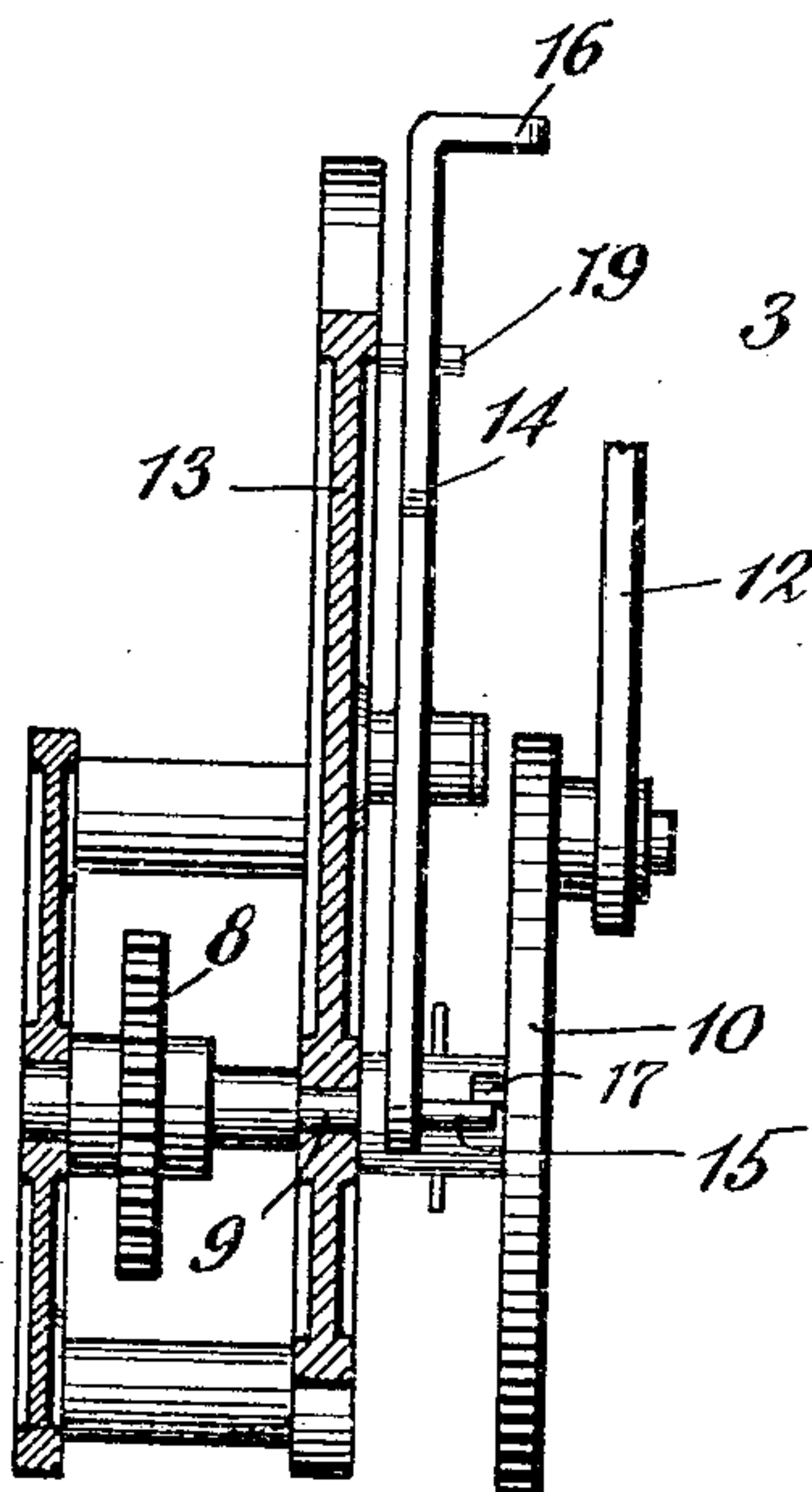
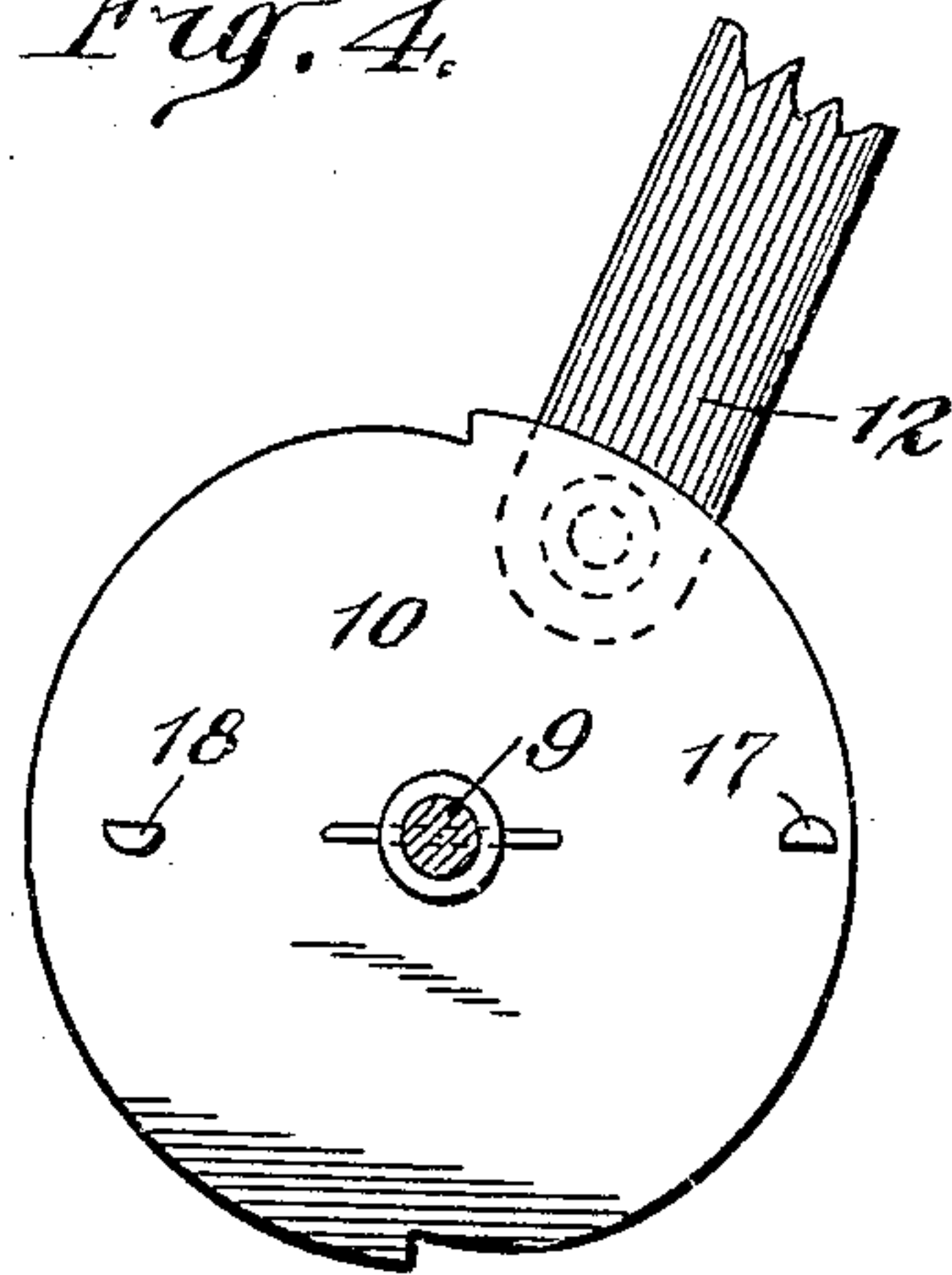


Fig. 4.



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# UNITED STATES PATENT OFFICE.

JAMES JONES AND JAMES JONES, JR., OF NEW YORK, N. Y.

## ELECTRIC TIME-SWITCH.

No. 931,617.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed March 10, 1908. Serial No. 420,168.

*To all whom it may concern:*

Be it known that we, JAMES JONES and JAMES JONES, Jr., of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Time-Switches; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that type of electric time switches in which an electric current is both established and cut off automatically by devices actuated by clock mechanism.

The primary object of the invention is to provide improved means for positively actuating the switch moving parts whereby it will not be necessary to employ heavy springs of high tension in order to effect the throw of the switches.

In the accompanying drawing Figure 1 is a front elevation of an electric time switch governed by clock mechanism and constructed in accordance with our invention. Fig. 2 is a detail view of part of the clock mechanism. Fig. 3 is a sectional view on line 3—3, Fig. 1, and Fig. 4 is a detail view of the drum.

Referring to the drawing 1 designates an inclosing housing or casing in which all of the parts may be contained. They may, however, be secured upon a switch board, the switch and its operating devices being exposed and the clock mechanism inclosed within a suitable housing. The form illustrated furnishes an appropriate means of mounting the parts in the desired relative arrangement.

The switch is indicated at 2 mounted on the rear wall of the housing and is shown as of the "jack-knife" pattern, that is, having pivoted blades engaged by jaws, the blade supports and the jaws constituting terminals of an electric conductor.

We have shown the switch actuating device 3 mounted upon one side wall of the housing or at right angles to the switch, that relative arrangement being well adapted to effect the opening and closing movement of the switch blades in a vertical plane. This actuating device comprises in its organization a coiled spring 4 wound by a key at 5. The shaft 6 on which the spring is coiled carries a gear wheel 7 meshing with a pinion

8, the latter being mounted upon a shaft 9. This shaft carries a drum 10 connected with one of the switch blades by a toggle arm 12. On a plate 13 forming part of the switch actuating device is fulcrumed a lever 14 having a pin or stud 15 at its lower end, the upper end of the lever terminating in an enlarged or angular portion 16.

As shown in Fig. 4, the inner face of the drum is provided with lugs or stops 17 and 18. The lug 17 is shown adjacent the periphery of the drum and the lug 18 is shown nearer its center. The swing of lever 14 is limited by two stops 19, 20, on plate 13 so that when the lever is against one of these stops, as 19, its pin or stud 15 is in the path of lug 17 of the drum and when it is resting against the other stop 20 the stud 15 is in the path of inner lug 18. A leaf spring A is secured to plate 13 and its free end is curved upwardly and lies beneath the stops 19 and 20. This spring bears against a stud B on lever 14, the stud riding over the curved portion of the spring as the lever shifts. By this means the lever is yieldingly held in contact with the stops 19 and 20. A plate spring 20<sup>a</sup> has its free end bearing against the periphery of drum 10, the latter being notched at intervals so that the spring may operate as a pawl preventing the reverse rotation of the drum.

From what has thus far been said it will be seen that upon winding the spring 4 its tension is exerted to rotate drum 10 in the direction of the dart, and that this rotation of the drum closes and opens the switches through the medium of the toggle arm 12. Owing to the described arrangement of lugs and stops on the drum and lever, however, only a partial rotation of the drum occurs consequent upon shifting the lever, this partial rotation being sufficient to open or close the switch as the case may be.

The clock mechanism is indicated at 21 and is shown mounted on the side walls of the housing above the switch actuating device. The shaft 22 movable at a regulated speed and preferably rotating once in twenty-four hours, carries two cam disks 23, 24 each of which may be so set upon the shaft that its cam surface will reach a given point at the expiration of a predetermined interval of time. We have shown a pair of hammer levers 25, 26 each having studs 27, 28 lying in the path of movement of its respective cam disk and each lever being movable as against



the tension of a spring 29 and carrying a hammer 30, 31 at its free end designed to contact with lever 14. Thus when the mechanism is being used to regulate an electric current which is needed only during certain hours after which it is desired to suspend its use for a given period it is only necessary to set the disks so that at the desired time one of them will exert the force of its hammer upon lever 14 to open or close the switch, the other disk being so set that the desired interval will elapse before its hammer is brought into action.

We claim as our invention:—

1. In an electric time switch, a switch, a rotary drum, spring actuated means for rotating said drum, connections between said switch and said drum, a lever controlling the rotation of said drum, clock mechanism, and two hammer levers operated thereby and designed to contact with and shift said lever in opposite directions to release said drum.
2. In an electric time switch, a switch, a rotary drum, a toggle connecting said drum to said switch, spring actuated means for rotating said drum, a lever controlling the rotation of said drum, clock mechanism, two cam disks movable therewith and relatively adjustable, and a pair of hammer levers actuated by said cam disks and designed to contact with and shift said lever to release and permit the rotation of said drum.
3. In an electric time switch, a switch having jaws, pivoted blades engaged by said jaws, a rotary drum, a toggle connecting said drum with said blades, two lugs on said drum at varying distances from its periphery, spring-actuated means for rotating said drum, a lever having a pin normally in engagement with one of said lugs, clock mechanism, means operated thereby for shifting said lever to release and permit the partial rotation of said drum, and the opening or

closing of said blades, and means for holding said lever so that its pin will engage the other of said lugs and arrest the rotation of said drum, and thereby lock said blades in the position to which they were moved by the rotation of said drum.

4. In an electric time switch, a switch having jaws and pivoted blades engaged by said jaws, a spring actuated rotary drum, a toggle connecting said drum with said blades, a shiftable lever normally holding said drum as against rotation, said lever having a stud, stops limiting the shift of said lever, a leaf spring bearing against said stud and tending to hold said lever in contact with one or the other of said stops, a clock mechanism, and means operated thereby for shifting said lever and effecting a partial release of said drum.

5. In an electric time switch, a spring actuated rotary drum, a connection between said drum and said switch, means for normally holding said drum as against rotation and permitting its partial release to open or close said switch, clock mechanism, two cam disks movable therewith and relatively adjustable, two hammer levers each engaged by one of said disks and designed by its impact to actuate said holding and releasing means, and springs tending to draw said hammers toward said holding and releasing means, the cam surfaces of said disks being adapted to swing said levers against the tensions of said spring and free said levers, for the purpose stated.

In testimony whereof, we have signed this specification in the presence of two subscribing witnesses.

JAMES JONES.  
JAS. JONES, JR.

Witnesses:  
W. F. NISBET,  
J. F. HEANEY.