April 19, 1927. 1,625,339

H. D. THOMAS

TIME SWITCH MECHANISM

Filed Dec. 10. 1923

Fig. 1.

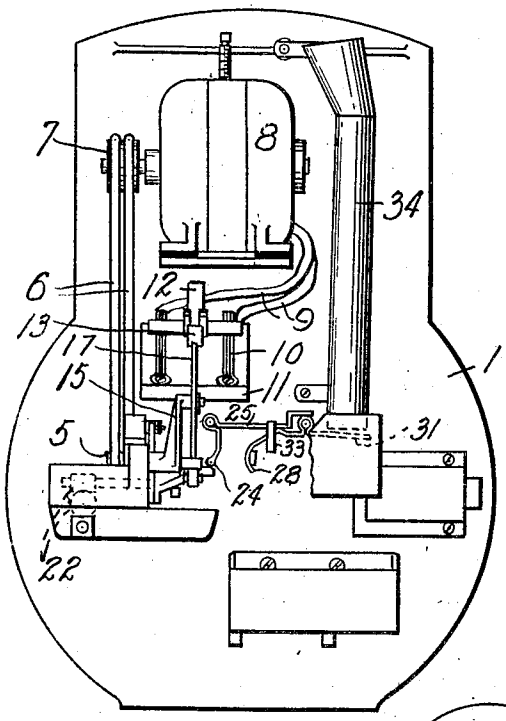


Fig. 2.

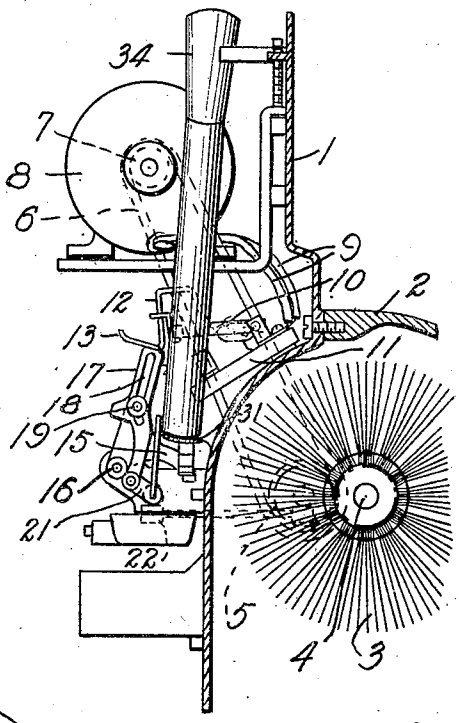


Fig. 3.

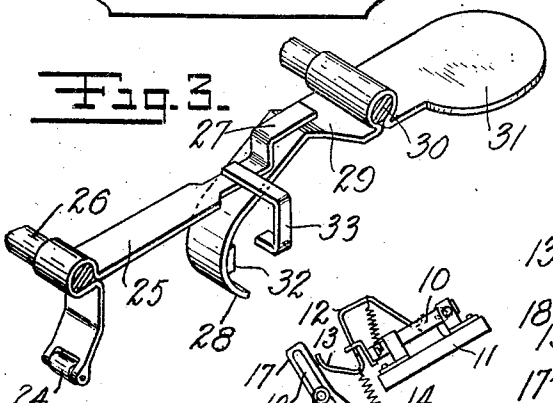


Fig. 4.

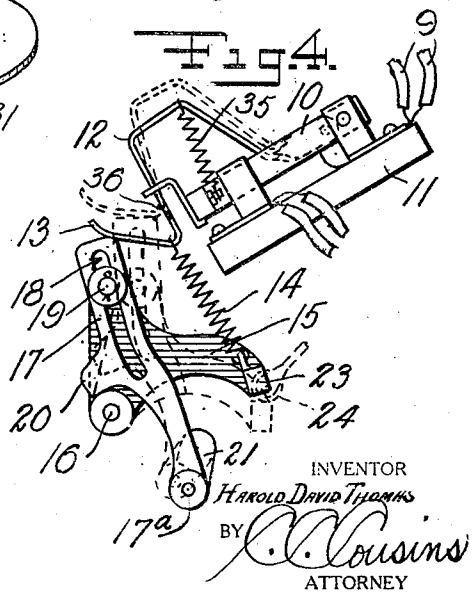


Fig. 5.

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UNITED STATES PATENT OFFICE.

HAROLD DAVID THOMAS, OF NEW YORK, N. Y., ASSIGNOR TO AUTOMATIC SHOE SHINER CORPORATION, OF NEW YORK, N Y., A CORPORATION OF NEW YORK.

TIME-SWITCH MECHANISM.

Application filed December 10, 1923. Serial No. 679,652.

This invention relates to time switch mechanism.

The object of the invention is to provide a simple mechanism which is rendered operable by a coin or token which will close a switch to permit the electrical operation of a driven part for a predetermined time and then open the switch to stop the operation of such part,—in this instance shown as a rotary brush.

The more specific object of the invention is to provide a properly balanced coin-actuated lever so that certain action is assured. The specific form of lever shown in this case comprises two parts co-acting with each other, one part weighted and balanced and provided with a rounded finger and the other part being disposed in the path of movement of the first-named part. A further object is to provide means on both these parts adapted to limit movement of the other part.

In the accompanying drawings, forming part of this application, is illustrated a form of embodiment of the invention, and in which drawings similar reference characters designate corresponding parts and in which:

Figure 1 is an elevation looking at the inside of a casing cover, arranged to support the parts;

Figure 2 is an elevation of the right hand side of the parts shown in Figure 1, the casing cover being shown in section;

Figure 3 is a perspective of a coin-actuated two-part lever;

Figure 4 is a side elevation of the switch opening mechanism just after said mechanism commences to operate; and

Figure 5 is an elevation of the switch-actuating mechanism just after the coin-actuated lever has been operated.

Referring to the drawings, 1 designates a suitable support, usually the hinged door to a vertically arranged casing of a common or ordinary form. The outer portion of the casing 1 is provided with a hood 2 in which is housed a cylindrical rotary brush 3 mounted upon a shaft 4 and arranged to be rotated by a geared pulley 5 driven by a double belt 6 and an upper pulley 7 on a motor 8, the latter being carried by the casing door 1.

Suitable electrical conductors 9 extend from the motor to a knife switch 10, the latter being mounted on an insulated block support 11 carried by the door 1.

Carried by the upper side of the knife switch 10 is a bent arm 12, one end of which is fixed to the knife switch and the other free end of which terminates in a finger 13. The finger 13 has an upturned end so as to present an inclined face to another moving part hereinafter described and has secured thereto one end of a spring 14, the other end of which is secured adjacent one end of a rocker arm 15. The rocker arm is pivoted to a support at 16, to permit a rocking movement of the arm 15 under the action of the spring 14 and of a crank hereinafter described. A lever 17 is provided with a slot 18 in its upper end through which projects a stud 19, the stud being secured on the upper end of the rocker arm 15, and the lever 17 is provided with a shoulder 20 arranged to ride against the pivot 16 which forms a fulcrum therefor.

The crank 21 has its free end pivoted to the lower end of the lever 17, as at 17^a and is arranged to be operated by suitable gears 22 driven from the brush shaft 4 in any suitable and common way.

The rocker arm 15 is provided with a shoulder or boss 23 arranged so that when the rocker arm is actuated upward the shoulder contacts with a roller 24 disposed on the free end of a bent lever 25 which is pivoted as at 26 and is provided with an oppositely bent free end 27.

The free end 27 of the lever 25 is disposed over and in the path of movement of the curved face 28 of a lever 29 which is pivoted as at 30 and which is provided with a spatulate extension 31.

In order to perfectly balance the lever 29, a weight 32 is disposed under the curved face 28 and in order to limit the movement thereof a bent guard 33 is secured on the lever 25 and projects beneath the curved portion of the lever 29.

A suitable coin chute 34 is disposed adjacent the mechanism already described so that its lower end terminates above the normal position of the spatulate end 31 of the lever 29.

A small spring 35 has one end connected to the knife switch and its opposite end secured to the bent arm 12 which is slightly resilient and which is provided with the shoulder 36

arranged to contact with the under surface of the free end of the knife switch 10.

The operation of the mechanism, starting from the position shown in Figure 2, with the switch 10 open, is as follows: A coin dropped into the chute 34 contacts the spatulate portion 31 of the lever 29 and overcomes the balance thereof and throws the rounded end 28 upward so that it contacts with the under surface of the bent portion 27 of the lever 25, rocking the same on its pivot 26 and removing the roller 24 from the shoulder 23.

The rocker arm 15 being thus released by the removal of the roller 24 from the shoulder 23 is carried upward by the action of the spring 14 and the upper end of the lever 17 is removed from beneath the bent finger 13 of the arm 12, permitting the downward pull of the tension of the spring 14 to pull the knife switch in closed position. As soon as the knife switch 10 is closed and the current turned on, the motor 8 commences to rotate, driving the brush 3 and its shaft so that the gears 22 are driven and the shaft of the crank 21 is rotated. The rotation of the crank 21 carries with it the lower end of the lever 17, the shoulder 20 of which riding around the pivot 16 rocks the arm 15 back to the dotted line position shown in Figure 4, in the course of which operation the upper end of the lever 17 again rides under the finger 13 and overcomes the tension of the spring 14. This movement of the lever 17 also forces the bent member 12 upward to the dotted line position of Figure 4 and further upward so that the shoulder 36 strikes the projecting free end of the switch 10 and forces it nearly clear. This action produces a tension on the spring 35 and the member 12 is held from downward movement so that the tension of the spring 35 snaps the switch entirely clear quickly so as to avoid sparking. In the meantime the rocker arm 15 being brought downward the roller 24 again seats itself over the shoulder 23, being rocked to this position by the weight of its bent end 27, and when in this position maintaining the rocker arm in its downward position.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a device of the character described, the combination comprising a knife switch, a motor in circuit with the switch, means for operating the switch and a coin-actuated means for starting the operating means comprising a two part element having its parts mounted on separate pivots, one part being adapted to be engaged by a coin and the other part engaging and controlling the switch operating means and means for limiting the movement of the two parts with relation to each other.

2. In a device of the character described, the combination comprising a knife switch, a motor in circuit with the switch, means for operating the switch, and coin-actuated controlling means for the operating means comprising a pair of pivoted levers adapted respectively to engage the switch operating means and to be engaged by a coin, one of which levers is provided with a projecting part adapted to interlock with the other part to limit its movement.

3. In a device of the character described, the control element comprising a pivoted lever having a bent end and adapted to engage switch operating means, a roller carried by the bent end, and a second pivoted lever disposed in the path of movement of one end of the first lever and adapted to be engaged by a coin.

4. In a device of the character described, the control element comprising a pair of pivoted levers, one being adapted to engage and control switch operating means placed in the path of movement of the other and one of the levers being balanced and adapted to be engaged by a coin and provided with a curved end.

5. In a device of the character described, the control element comprising a pair of pivoted levers, one being adapted to be engaged by a coin and placed in the path of movement of the other, the latter being adapted to engage and control switch operating means, a weight disposed on one of the levers, and means for limiting the movement of the levers with relation to each other.

6. In a device of the character described, a control element comprising a pair of pivoted levers having their adjacent ends disposed in identical vertical planes and a projecting member on one of the levers arranged to extend under the other lever, one of the levers being adapted to engage switch operating means and the other being adapted to be engaged by a coin.

Signed at New York, New York, U. S. A., December, 1923.

HAROLD DAVID THOMAS.