Dec. 20, 1949 J. P. MARTINKA 2,491,748

FOOT-OPERATED STEP-BY-STEP SWITCH

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Fig. 1.

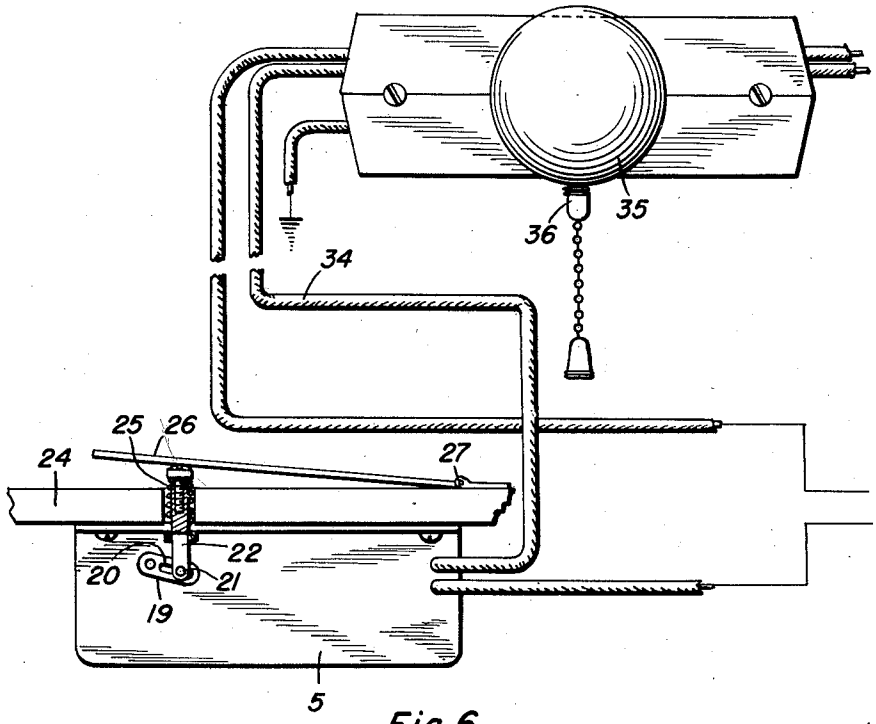
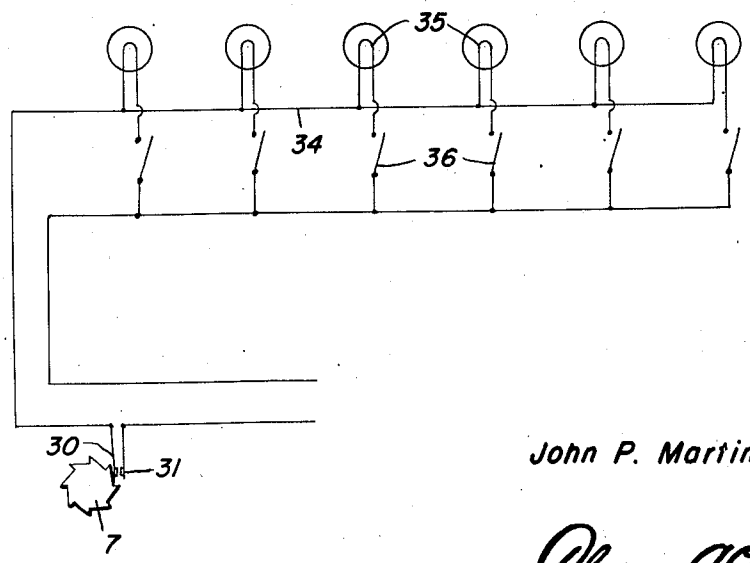


Fig. 6.



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Fig. 2.

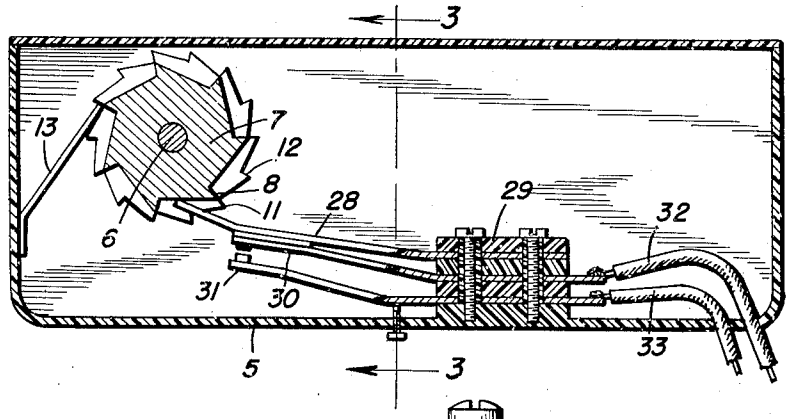
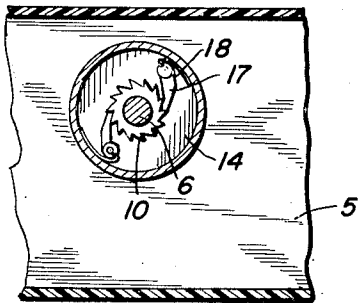


Fig. 4.



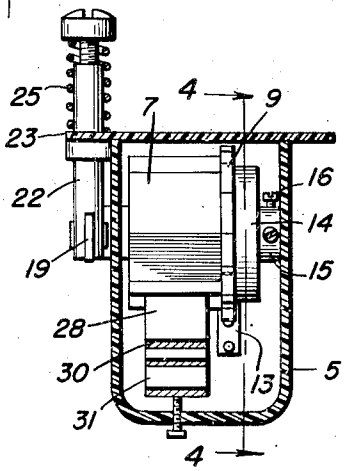


Fig. 5.

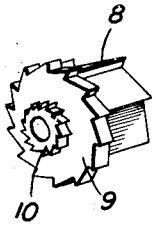


Fig. 3.

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UNITED STATES PATENT OFFICE

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FOOT-OPERATED STEP-BY-STEP SWITCH

John P. Martinka, El Campo, Tex., assignor of twenty per cent to Charlie Martinka, twenty per cent to Edrin Martinka, twenty per cent to George Martinka, twenty per cent to Martha Martinka and twenty per cent to John R. Martinka, all of El Campo, Tex.

Application November 24, 1947, Serial No. 787,833

2 Claims. (Cl. 200—153)

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The present invention relates to new and useful improvements in electric switches and more particularly to a master switch for a house circuit whereby a group of lamps may be controlled by a single switch and without interfering with the normal use of the individual controls for the lamps.

An important object of the present invention is to provide a ratcheting switch operated by a plunger which may be installed in a floor for operation by the foot of a person and including a rotatable toothed wheel for actuating a movable contact of the switch to alternately open and close the switch by a step-by-step movement of the toothed member and embodying a construction whereby the switch is held in either its open or closed position.

A further object of the invention is to provide a device of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary vertical sectional view of a floor showing the switch mounted in position beneath the floor.

Figure 2 is an enlarged longitudinal sectional view of the switch housing.

Figure 3 is a transverse sectional view taken on a line 3—3 of Figure 2.

Figure 4 is a longitudinal sectional view taken on a line 4—4 of Figure 3.

Figure 5 is a perspective view of the rotatable toothed wheel for actuating the movable contact of the switch and embodying double ratchet wheels, and

Figure 6 is a diagram of the electric circuit controlled by the master switch.

Referring now to the drawings in detail wherein for the purpose of illustration, I have disclosed a preferred embodiment of the invention, the numeral 5 designates a switch housing which is preferably constructed of suitable insulation material and in which a shaft 6 is journalled transversely thereof, one end of the shaft projecting outwardly at one side of the housing.

A toothed wheel 7 is rotatably supported on the shaft 6 and is constructed with ratcheting teeth 8. Integrally formed with one end of the

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wheel 7 is a large ratchet wheel 9 and a small ratchet wheel 10, the ratchet wheel 9 including teeth 11 which are in radial alignment with the teeth 8 and teeth 12 which are spaced equidistantly between the teeth 8 of the toothed wheel 7, as indicated more clearly in Figure 2 of the drawings. The ratio of the small ratchet wheel 10 is equal to the ratio of the larger ratchet wheel 9.

A resilient pawl 13 is secured at one end to one end of the housing 5 and has its free end positioned in engagement with the teeth 11 and 12 of the larger ratchet wheel 9 to prevent reverse movement of the wheel.

An annular pawl carrier 14 encloses a small ratchet wheel 10 and is provided with a hub 15 which is secured to the shaft 6 by a set screw 16. A pair of pivoted pawls 17 are secured within the pawl carrier 14 at diametrically opposite sides of the ratchet wheel 10 for engagement therewith, the pawls 17 being yieldingly held in engagement with the small ratchet wheel by a spring 18.

The shaft 6 is rotated by means of an arm 19 secured at one end to the outer end of the shaft and provided adjacent its free end with a longitudinal slot 20 in which a pin 21 is loosely positioned and carried at the lower end of a plunger 22 which reciprocates vertically through an attaching flange 23 at the top of the housing 5.

The switch housing 5 is secured to the underside of a floor 24 and through which the upper end of the plunger 22 projects, the plunger being provided with a coil spring 25 to return the plunger upwardly after being depressed by the foot of a person. A foot treadle 26 may be provided in an overlying position on the top of the plunger to facilitate actuation thereof by the foot of a person, one end of the treadle being pivoted as at 27 to the floor.

A resilient movable contact actuating arm 28 is secured at one end in the housing 5 to a lug 29 and with its free end in engagement with the teeth of the toothed wheel 8.

The arm 28 bears against a resilient contact 30 which is also secured at one end to the lug 29 and with its free end movable into and out of engagement with an adjustable stationary contact 31 also secured to lug 29. Circuit wires 32 and 33 are attached to the contacts and are included in a house circuit 34 in which a group of lamps 35 are connected having individual switches 36 of conventional construction for individually controlling the lamps.

Either the wheel 7 or arm 28 may be constructed of insulation material.

In the operation of the device, a depressing movement of the plunger **22** will rotate the wheel **7** in a step by step movement in one direction, the movement of the plunger rotating the shaft **6** and pawl carrier **14**, and the pawls **17** carried by the carrier **14** in turn rotating the ratchet **10**. Each movement of ratchet wheels **9** and **10** will rotate the wheel **7** a like distance, the decreased number of teeth **8** alternately releasing and actuating arm **28** to open and close the circuit, the arm **28** constantly engaging contact arm **30** and pawl **13** holding the ratchet **9** and wheel **7** against reverse movement with the circuit in open or closed position.

Accordingly, one depressing movement of plunger **22** will open the circuit and the next depressing movement will close the circuit to thus control the entire group of lamps.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention what is claimed as new is:

1. A double-acting intermittently operated switch comprising a toothed member, a ratchet fixed to said member and including teeth radially aligned with the teeth of said member and teeth spaced between the teeth of said member, means for rotating said member in a step-by-step movement, means engaging successive teeth of said ratchet during rotation thereof, a pair of normally spaced contacts, and means engaging the teeth of said toothed member for urging said contacts into engagement, said means for rotating said member including a shaft rotatably supporting said member, a pawl carrier mounted on said shaft for rotation therewith, a further ratchet fixed to said member, a pawl carried by said carrier engaging said further ratchet for rotating said member during rotation of said shaft, and resilient means normally urging said pawl into engagement with said further ratchet.

2. The combination of claim 1, wherein said shaft includes a lateral projection, and a foot-operated plunger pivoted to said lateral projection.

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