

Sept. 4, 1928.

1,683,231

A. H. BAYNE

SWITCH

Filed Feb. 19, 1927

Fig. 1

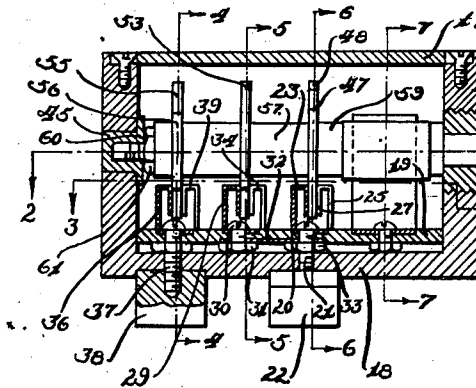


Fig. 4

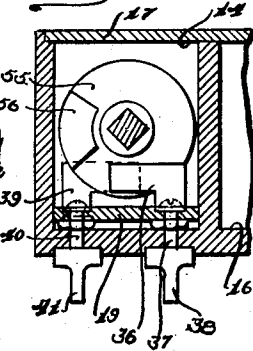


Fig. 2

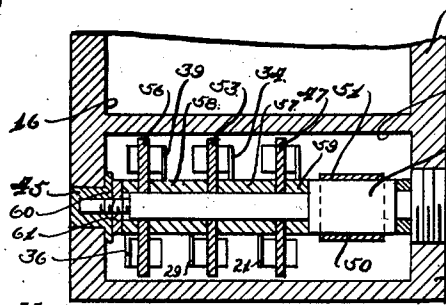


Fig. 5

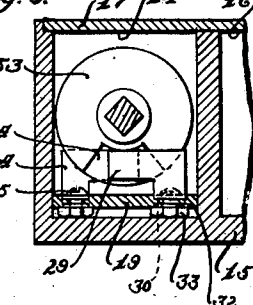


Fig. 3

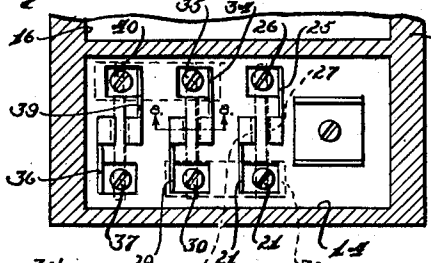


Fig. 7

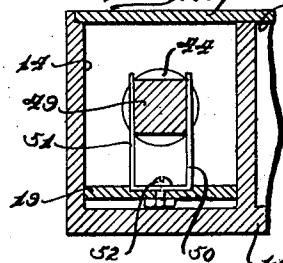


Fig. 6

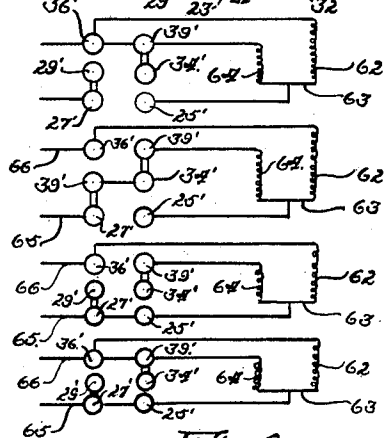
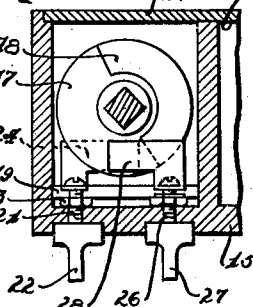
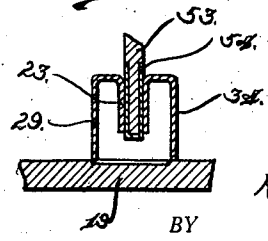


Fig. 9

Fig. 8



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SWITCH.

Application filed February 19, 1927. Serial No. 169,436.

My invention relates to a new and useful improvement in a switch which may be used for various purposes, but particularly adapted for use on electrical ranges where it is desirable that the same switch may be utilized for controlling the current to produce varying degrees of heat.

It is an object of the present invention to provide a switch which may be encased and so arranged and constructed that arcing will be prevented.

Another object of the invention is the provision of a switch of this class which may be very simple and easily manufactured, economical and durable in its structure, and requiring a minimum number of parts.

Another object of the invention is an improved spring method of locking the switch in its various positions of movement, and resisting its movement to other positions.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawings which form a part of this specification and in which,

Fig. 1 is a central longitudinal vertical sectional view of the invention.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 1.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 1.

Fig. 8 is a fragmentary sectional view of one of the discs showing the contact in section.

Fig. 9 is a diagrammatic view of the wiring of the invention.

As shown in the drawings I provide each of the switches a compartment 14, separate housings being provided for each of the switches, if desired. However, I have shown a housing 15 which may be elongated to extend across the front of an electrical range and provided with the compartment 14 and the compartment 16, and as many compartments as may be desired, dependent upon the

number of switches used with the range. A cover 17 is mounted upon the housing so as to seal each of these compartments from each other, and seal from leaking so that, if desired, each of the compartments may be filled with oil, thus immersing the mechanism of the invention in oil so as to positively prevent arcing under all conditions.

Mounted in the compartment 14 and spaced from the bottom 18 is an insulating plate 19. Secured to this plate 19 and projecting upwardly therefrom is a spring contact 20 which is held in position by the screw 21 upon which, exterior of the housing, is mounted the contact block 22. If desired, this screw 21 may be used simply as a terminal with a suitable binding nut mounted thereon. The upper end of this contact member is doubled upon itself as at 23, the upper end being rearwardly extended to form the rearwardly extended portion 24, as shown in Fig. 6. Co-operating with the contact 19 is a metal resilient contact 25 which is secured in position by the screw 26, the upper edge of which is doubled upon itself as at 27 and extended laterally as at 28, as shown in Fig. 6. The screw 26 also carries the contact 27, but this screw may also be used as a simple terminal, if desired.

Projecting upwardly from the insulating plate 19 is a contact 29, and in this connection it may be stated that these contacts are similarly formed in each case, so that a further description of the specific formation of them need not be given. This contact 29 is held in position on the insulating block 19 by means of the screw 30 upon which is threaded the nut 31 which engages the metal plate 32 which is clamped by the nut 33 threaded on the screw 21. A co-operating contact 34 is positioned adjacent the contact 29 and held in position by the screw 35, as shown in Fig. 5. A contact 36 is projected upwardly from the insulating plate 19 and held in position by the screw 37 which carries the contact plug 38. A co-operating contact 39 is mounted on the screw 40 which carries the contact plug 41.

Threaded into the front wall 42 of the housing is a bearing 43, through which is projected the shaft 44, the rear end of the shaft being journaled in a bearing 45. Fixedly mounted upon the shaft 44 at its forward end is an operating button 46. Fixedly mounted upon the shaft 44 within the housing is a disc 47 carrying the contact

plate 48 which embraces the periphery of the disc throughout a portion of its length, so that when the shaft 44 is rotated, connection between the contacts 25 and the contact 20 will be made, thus closing a circuit.

The shaft 44 is provided with the enlarged rectangular block 49 which is adapted to engage between the arms 50 and 51 of the U-shaped resilient locking member which is mounted by the screw 52 on the insulating block 19. The size of the block 49 is such that it fits snugly between the arms 50 and 51, so that when the shaft is rotated to bring the corner of this block into engagement with the arms 50 and 51, the resiliency of the arms will force a quick rotation of the shaft 44 after passing center. A disc 53 is mounted on the shaft 44 fixedly and provided on its periphery with a contact 54 which embraces the periphery for a portion of its distance so that when the shaft 44 is rotated to a predetermined distance, electrical connection will be established between the contacts 34 and 29. A disc 55 is fixedly mounted upon the shaft 44 and provided at its periphery with a contact member 56 which embraces its periphery for a portion of its length and serves to close electrical connection between the contacts 36 and 39 upon a rotation of the shaft 44 to a predetermined position. Insulating sleeves 57 and 58 are used to space the discs apart, and a sleeve 59 spaces the disc 47 from the block 49, while a collar 60 is used to engage the nut 61.

The location of these contact members on the periphery of the different discs is determined by the use to which the switch is to be put, and in the present illustration is adapted for use with electrical ranges where various degrees of heat may be desired.

In the diagrammatic view I have illustrated the wiring commonly used with electrical ranges, and in which the employment of a multiple switch such as I have shown may be very efficiently utilized. In the electrical heating elements as now used on ranges, there is commonly employed a pair of elements which form separate resistances but are connected, and in the drawing I have shown the element 62 connected by the wire 63 with the element 64. When the shaft is rotated so as to electrically connect the contacts 25 and 26, the contact 56 of the disc 55 will also electrically connect the contacts 36 and 39, this position being illustrated at the lowermost diagram of Fig. 9, in which the contact 27' is connected to the contact 25', the feed wire 65 being connected to the contact 27'. This will permit the delivery of the current to the wire 63 to be uniformly distributed to each of the elements 62 and 64, the current passing from these elements to the ground wire 66.

When the shaft 44 is further rotated, the

connection between the contacts 25 and 27' will be maintained on account of the additional length of the contact 48, thus through the wire 65 delivering the current to the wire 63, but only the element 62 will be connected to the ground wire 66. A further rotation of the shaft 44 will electrically connect the contacts 34 and 39, these contacts being indicated in the diagrammatic view as 34' and 39', thus delivering the current through the feed wire 65 to the element 64, whence it passes through the wire 63 through the resistance or element 62 to the ground wire 66. A further rotation of the shaft 44 will break the connection between the contacts 34' and 39' and bring about the situation illustrated in the uppermost view of Fig. 9.

In this manner I have provided a multiple switch whereby a continuous rotation of the switch will effect the various degrees of heat as desired, by establishing the various connections illustrated.

On account of the method of snapping the switch into its various positions, a quick make and break is provided, and a rotation of the switch in either direction may be effected.

It is believed that the simplicity and durability of the structure described is apparent, and its efficiency has already been proven.

While I have illustrated and described the preferred form of structure I do not wish to limit myself to the precise form of details of structure shown, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A switch comprising a plurality of stationary contacts; a rotatable shaft; a plurality of discs fixedly mounted on said shaft in spaced relation to each other; a contact mounted on opposite sides of each of said discs and embracing around its periphery for a portion of its length and adapted upon rotation of said shaft to a predetermined position for engaging one of said stationary contacts.

2. A switch comprising a rotatable shaft; a plurality of stationary contacts; a plurality of discs mounted on said shaft and rotatable therewith; a metallic contact member carried by each of said discs and engaging opposite faces thereof and extending in embracing relation around the periphery thereof a portion of its distance, said discs upon rotation of said shaft engaging between parts of said stationary contacts, the contacts on said discs engaging said stationary contacts and closing a circuit therebetween.

3. A switch comprising: a rotatable shaft; a plurality of pairs of stationary contacts, each contact being doubled upon itself, the doubled over portion being spaced from the

main body and faced inwardly toward the cooperating contact which is spaced therefrom; a plurality of discs mounted on and rotatable with said shaft; and a contact mounted on opposite sides of each of said discs and extending around its periphery for a portion of its length, and adapted, upon rotation of said shaft to a predetermined position, for engaging, at its opposite faces, the doubled over portion of each of a pair of said contacts and closing the circuit therebetween.

4. A switch comprising: a rotatable shaft; a plurality of pairs of spaced contacts, each being secured at one end and doubled upon itself at its free end, the doubled over portion being spaced from its main body and faced inwardly toward the doubled over portion of the cooperating contact; a plurality of discs mounted on and rotatable with said shaft, each of said discs corresponding to one of said pairs of contacts and adapted for engaging between the same; and a contact mounted on opposite faces of each of said discs and extending around the peripheral edge thereof for a portion of its length,

and adapted upon rotation of said shaft a predetermined distance for closing a circuit between the doubled over portions of the contacts engaged.

5. A switch comprising: a rotatable shaft; a plurality of pairs of stationary contacts, each contact being doubled upon itself, the doubled over portion being spaced from the main body and faced inwardly toward the cooperating contact which is spaced therefrom; a plurality of discs mounted on and rotatable with said shaft; and a contact mounted on opposite sides of each of said discs and extending around its periphery for a portion of its length, and adapted, upon rotation of said shaft to a predetermined position, for engaging, at its opposite faces, the doubled over portion of each of a pair of said contacts and closing the circuit therebetween, the contacts on the faces of said discs being varisized and staggered in circumferential relation.

In testimony whereof I have signed the foregoing specification.

ALEXANDER H. BAYNE.