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ELECTRIC SWITCHES

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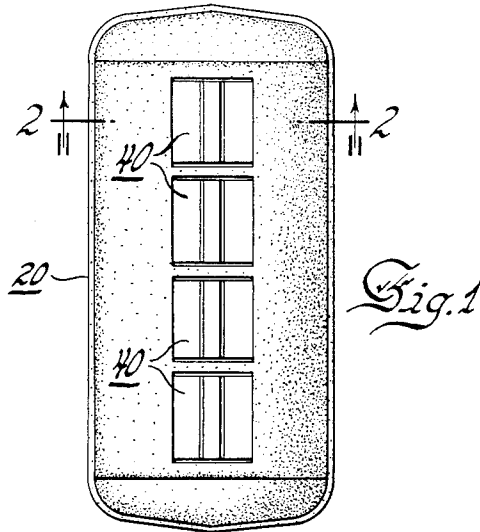


Fig. 1

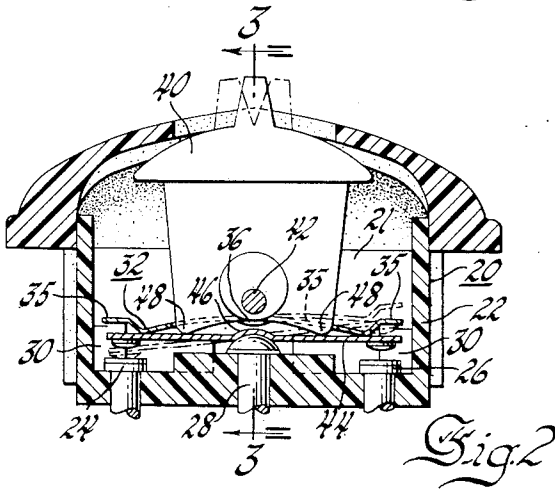


Fig. 2

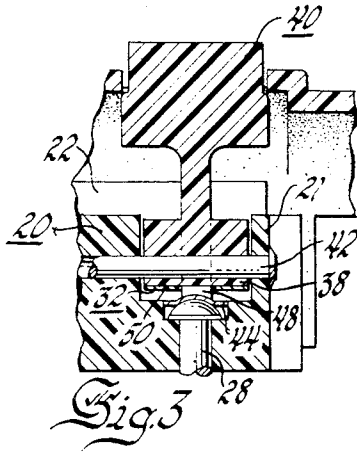


Fig. 3

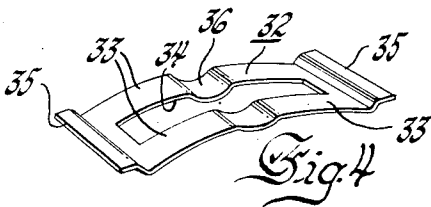


Fig. 4

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ELECTRIC SWITCHES

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6 Claims. (Cl. 200—153)

This invention relates to electric switches and more particularly to an electric switch that has its parts normally maintained in the neutral position.

It is an object of the present invention to provide an improved mechanism for an electric switch that includes a member which promptly urges a movable contact and an actuating handle to a neutral position and permits the transmission of the movement of the actuating handle to a movable contact for pivotally moving the movable contact into engagement with a stationary contact.

It is another object to provide a switch that has spaced stationary contacts arranged so that one of contacts acts as a pivot for a movable contact which is urged to a neutral position by a spring member that has the ends thereof normally resting on a portion of the switch housing and has a centrally located elongated aperture which permits portions of an operating handle, pivotal on said housing, to pass therethrough and simultaneously contact portions of the spring and the movable contact for flexing the spring and moving the contact about the pivot into engagement with one of the spaced stationary contacts when the handle is moved in the direction of the stationary contact which is engaged.

It is a further object of the present invention to provide a switch with a housing that has spaced stationary contacts and a center contact disposed intermediate the stationary contact whereby a contact plate, positioned within the housing pivot on the center contact, may selectively engage any one of the stationary contacts when a spring strip, normally carried by portions of the housing and has a central aperture therein, is flexed by an actuating handle that is pivoted on the housing. The handle by moving an end portion formed to extend through the aperture in the spring to simultaneously contact both the spring and movable contact will, when pivotally moved, flex the spring toward the plate and move the contact plate about the pivot into engagement with one of the spaced stationary contacts.

Further objects and advantages of the present invention will be apparent from the following description reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawing:

Figure 1 is a top view of a bank of switches according to the present invention.

Figure 2 is a view partly in section, of a single switch taken along line 2—2 in Figure 1.

Figure 3 is a view taken in section along line 3—3 in Figure 2.

Figure 4 is a perspective view of the spring strip as utilized in the switch according to the present invention.

In the drawings the numeral 20 designates a switch that is generally rectangular in shape so that a plurality of switches may be mounted in a banked arrangement as shown in Figure 1.

The switch 20 has a base 22, formed of any suitable insulating material, for example, a phenolic condensa-

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tion material and filler, which is provided with a rectangular recess 21 for receiving the mechanism of the switch. Stationary contacts 24 and 26 are spaced from each other and in the bottom of the recess 21 on either side of a third contact 28, located centrally in recess 21 and is spaced intermediate contacts 24 and 26. All of the contacts are preferably integrally embedded in the material forming the switch base 22 during the formation thereof as are the abutments 30 which are integrally formed with the housing base 22 and are disposed at each of the corners of the rectangular recess 21. These abutments serve to normally support the bent ends 35 of a spring strip 32 that has the portion 33 intermediate the ends 35 and center 36 preferably bowed in shape as shown in Figure 4 and has a central elongated aperture 34 formed therein. The central portion 36 of the spring strip 32 is preferably dished in a reverse concave manner relative to the bowed portions 33 to embrace a portion of the pivoted end 38 of an actuating handle 40 which is suitably pivoted relative to housing base 22 and with pin 42. A movable contact member or contacting plate 44 may have its central portion 46 dished so that it may rest or bear upon the central contact 28 and pivot into engagement with either of the stationary contacts 24 and 26. The pivoted end 38 of the actuating handle 40 is provided with projections 48 which extend beyond its end surfaces 50 so that the surface 50 will be in contact with bowed portions 33 and the projections 48 will rest against the arms of the contact plate 44 located in both sides of the central contact 28, when the parts of the switch are assembled. The surface portions 50 by engaging the surface portions of the spring strip 32 which surround the aperture 34 will flex the arm portions 33 of the spring strip 32 when the handle 40 is pivotally moved. As for an example, when the handle 40 is pivoted counterclockwise in Figure 2, projections 48 will cause the left arm 33 of contact plate 44 to move downwardly into engagement with the left contact 24 so as to cause a circuit to be made between contact 28 and contact 24. Simultaneously as the left arm of contact plate 44 is moved downwardly, the left arm 33 of the spring strip 32 is flexed downwardly tightly on the left abutments 30 and the right arm of the contact plate 44 will move upwardly and simultaneously the right arm 33 of spring strip 32 will move upwardly and out of engagement with the abutments 30 as located in the right side of the switch base 22. The left arm of the contact element 32 when pressed tightly against abutment 30 as located in the left side of the recess 21 and will cause the spring strip 32 to constantly urge the movement of the parts to a neutral position wherein the contact plate 44 is out of engagement with the stationary contacts 24 and 26 and the handle is in a central position.

From the above arrangement of parts it is manifest that the switch according to the present invention is particularly useful when either one of two circuits are to be energized as, for example, to actuate a reversible motor wherein the windows of a vehicle are raised or lowered, and further if the switch is mounted as shown in Figure 1, any of the windows of the vehicle may be controlled from a central point when the contact 28 is connected in circuits that are selectively energized and are common with the central contact 28.

While the embodiment of the present invention as herein disclosed constitutes a preferred form it is to be understood that other forms might be adopted.

I claim:

1. An electric switch including a housing of insulating material having spaced contacts and a center contact disposed intermediate said spaced contacts, a contacting plate pivoted on said center contact, a spring strip supported at its ends by said housing and having a central

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elongated aperture therein, an operating handle pivotal on said housing having an end in contact with portions of said spring and extending through said aperture into contact with said contacting plate and adapted to flex one end of the spring away from one of said spaced contacts and flex the other end of said spring toward said plate and pivot said plate on said center contact into engagement with the other of said contacts.

2. In an electric switch; a housing, spaced stationary contacts and a center contact intermediate said spaced contacts all carried by said housing, a contact plate pivoted on said center contact, a spring strip supported at its ends by said housing having a central aperture therein, an operating handle pivoted on said housing having a portion of one end extending through the aperture in said spring into contact with said contacting plate and having other portions of said end in contact with said spring, said handle being adapted when pivoted to flex portions one end of said spring toward said plate and move the other end out of engagement with said housing while rocking said plate about said pivot into engagement with one of said spaced contacts.

3. In an electric switch, a housing, spaced stationary contacts and a center contact intermediate said spaced contacts carried by said housing, a contacting plate pivoted on said center contact, a spring strip supported at its ends by said housing having a centrally located aperture therein, an operating handle pivotal on said housing having an end in contact with portions of said spring strip and extending through said aperture into contact with said plate, said handle being normally maintained in a neutral position by said spring when the ends thereof are supported by said housing and adapted when moved from the neutral position for flexing a portion of said spring toward said plate and another portion out of engagement with said housing while rocking said plate about said pivot into engagement with one of said stationary contacts.

4. In an electric switch a housing of insulating material carrying at least two stationary contacts in spaced rela-

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tion, a plate pivoted on one of said contacts adapted to engage another of said contacts, a spring strip supported at its ends by said housing having an aperture in its central portion, and an operating handle pivotally carried by said housing having an abutment portion on one end in contact with said spring strip and a bifurcated portion on said end extending through said aperture into contact with said plate adapted to rock said plate on said pivot into engagement with a stationary contact while the abutment portions simultaneously flex the spring so that one end thereof is moved from its support on said housing.

5. An electric switch including a housing of insulating material having spaced contacts and a center contact disposed intermediate the spaced contacts, a contact plate pivoted on said center contact, a spring strip having end portions resting on said housing, an operating handle pivotal on said housing and having an end in contact with said spring for flexing said spring when the handle is pivoted, and means on the end of the handle for positioning the handle in the housing and for selectively rocking the plate on the center contact into engagement with one of said spaced contacts.

6. An electric switch including a housing of insulating material having spaced contacts and a center contact disposed intermediate the spaced contacts, a contact plate pivoted on said center contact for engagement with said stationary contacts, a spring strip having an elongated opening therein and end portions resting on said housing, an operating handle pivotal in said housing and having an end in contact with the spring strip and means on the end of the handle extending into the opening in said spring for positioning the handle in the housing and for selectively rocking the plate on the center contact into engagement with one of the spaced contacts.

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