Aug. 26, 1958 O. L. TAYLOR 2,849,547

WIRING DEVICE

Filed July 6, 1955

Fig.1.

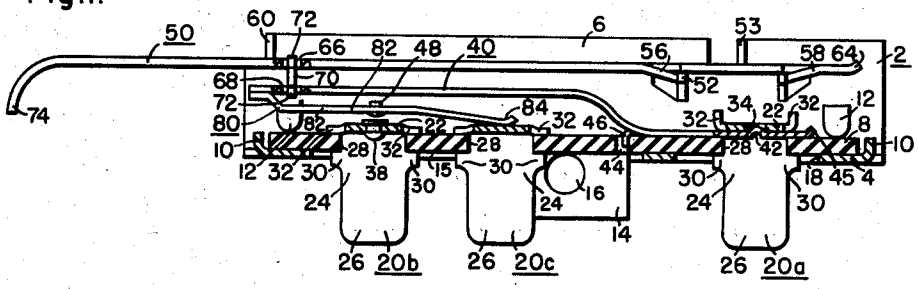


Fig.2.

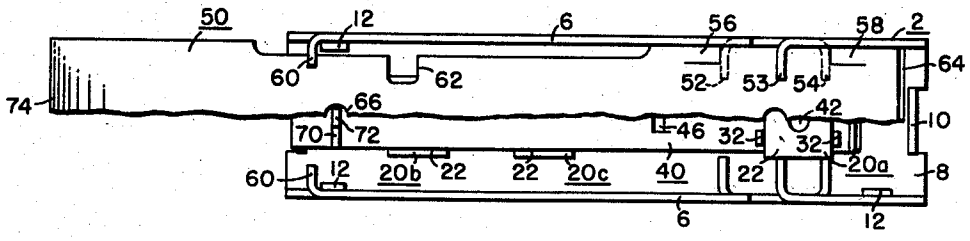


Fig.3.

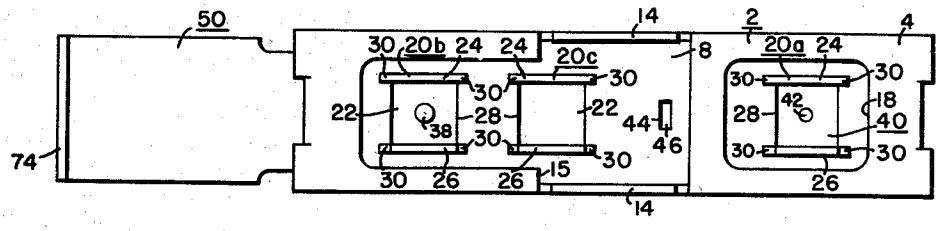
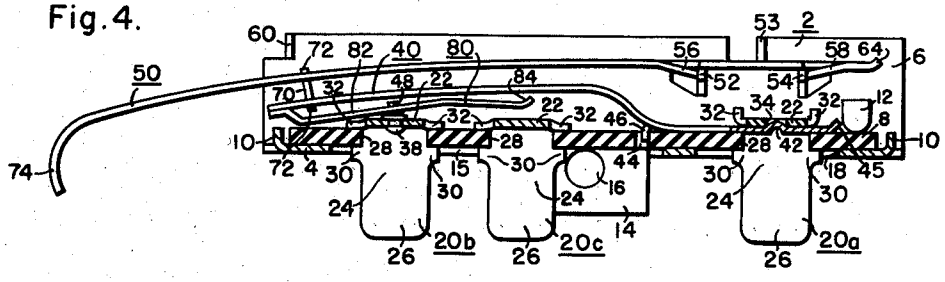


Fig.4.



WITNESSES

Edwin E. Bauler

E. Bressler

INVENTOR

Owen L. Taylor

BY Cutler T. Stratton

ATTORNEY

United States Patent Office 2,849,547 Patented Aug. 26, 1958

2,849,547

WIRING DEVICE

Owen L. Taylor, Easton, Conn., assignor to The Bryant Electric Company, Bridgeport, Conn., a corporation of Connecticut

Application July 6, 1955, Serial No. 520,210

9 Claims. (Cl. 200—1)

My invention relates to electric wiring devices and, more particularly, to lever operated switches.

In many industrial products, and particularly those such as household appliances, it is desirable to incorporate certain electrical control functions which operate automatically upon the moving of some particular part of the product, such as the opening of the door of a washer. Such a purpose can readily be accomplished by utilizing a lever operated switch which is directly engaged by the moving portion of the product, or by some other means activated by the moving portion. In many instances, it is desirable that several control purposes be accomplished by a single movement of the moving portion and in specific installations it may be desirable that such a switch be constructed so that one circuit is normally closed and a second circuit is normally open, which conditions are reversed upon deflection of the operating lever. It is also highly desirable that such a switch may be easily installed and that electrical connections may readily be made thereto in order to decrease the cost of installing such a switch.

Accordingly, one object of my invention is to provide a new and improved lever operated wiring device for controlling a plurality of circuits.

Another object of my invention is to provide a new and improved lever operated wiring device which when deflected actuates a pair of elongated joined electrical conductors simultaneously.

Another object of my invention is to provide a new and improved lever operated switch having a pair of joined elongated electrical conductors, one of which is selectively engageable with a pair of spaced terminals.

Another object of my invention is to provide a new and improved lever operated switch having a pair of spaced terminals with an electrical conductor normally in engagement with one of the terminals and which conductor is movable upon movement of said lever so as to engage the other terminal after breaking contact with the first terminal.

A more specific object of my invention is to provide a new and improved lever operated wiring device for controlling a plurality of circuits having all the electrical connecting terminals located in alignment on one side of the switch.

These and other objects of my invention will become more apparent upon consideration of the following detailed description of a lever operated switch constructed in accordance with the principles of my invention when taken in conjunction with the attached drawings, in which:

Figure 1 is a longitudinal sectional view of a lever operated switch for controlling two circuits constructed in accordance with the principles of my invention and showing the operating lever in its normal unengaged position;

Fig. 2 is a top plan view of the switch shown in Fig. 1 with one longitudinal half of the operating lever broken away;

Fig. 3 is a bottom plan view of the switch shown in Fig. 1; and

Fig. 4 is a view similar to Fig. 1 except that the operating lever is shown in its deflected position.

The switch shown in the drawing is similar in certain respects to the switch shown in the copending application of C. M. Smith, entitled "Wiring Device," Serial No. 502,793, filed April 21, 1955 and which has been assigned to the same assignee as the assignee of this invention. Accordingly, for a more particular description of the method of fabricating and assembling certain parts of the switch, reference is herein made to such copending application wherein such features are more completely shown, described and claimed.

Referring to the drawings, it will be noted that a switch constructed in accordance with the principles of my invention comprises an elongated generally U-shaped housing 2, having a bight portion 4 with upwardly extending arms 6 at each side thereof. Housing 2 may be formed from any suitable material having sufficient structural strength, such as light guage steel, which may be formed as hereinafter described. In order to obtain mounting lugs for the switch, each arm 6 of housing 2 is provided substantially centrally thereof with an integral downwardly extending rectangular plate portion 14 having a circular opening 16 therein, whereby the switch may be removably secured to a supporting member in any suitable manner, such as by lug screws, not shown, extending therethrough and engaging the supporting member. Openings 16 are in lateral alignment with each other and are on substantially the vertical center line of arms 6.

As shown, an elongated rectangular contact carrying plate 8, which, inasmuch as electrical contacts are located thereon, is formed of a suitable insulating material, such as a phenolic sheet material, and is located on the inner side of the bight portion 4 of housing 2. Bight portion 4 of the housing 2 at each end thereof is formed to provide a centrally located, upwardly extending projection 10 having a length substantially equal to the thickness of the material from which plate 8 is formed, so as to define in conjunction with the inner surfaces of arms 6, a rectangular area slightly larger than the plate 8 so as to closely receive the plate 8 therein. Once plate 8 has been so located, each arm 6 at each end thereof is provided with an inwardly extending integral lance 12, the lower edges of which engage the upper surface of plate 8, whereby plate 8 is securely held against the bight portion 4 of housing 2.

In order to provide means for receiving electrical terminals within the housing 2, the contact carrying plate 8 is provided with spaced rectangular openings 28 in each of which the upper portion of a terminal is located. As hereinafter described, each of the terminals differs slightly and accordingly, the designations 20*a*, 20*b* and 20*c* have been utilized to distinguish the terminals. Each of the terminals 20*a*, 20*b* and 20*c* extends downwardly below plate 8, and accordingly the bight portion 4 of housing 2 has been provided with openings to receive the lower ends of the terminals 20*a*, 20*b* and 20*c*. As shown in Fig. 3, three longitudinally aligned and spaced openings 28 are provided on the longitudinal center line of plate 8. One opening 28 is located inwardly adjacent each end of housing 2 with the third opening 28 therebetween being displaced from the center of plate 8 towards the left opening 28 as viewed on the drawing. In order to prevent accidental electrical contact between housing 2 and terminals 20*a*, 20*b* and 20*c*, the bight portion 4 of housing 2 is provided with a rectangular opening 18 around the right opening 28 and a longitudinally elongated slot 15 around the two leftwardly located openings 28. Slot 15 is also enlarged transverse-

ly of housing 2 to extend between the plates 14 at the center thereof. Terminals 20*a*, 20*b* and 20*c* are formed from any suitable electrical conducting material which may readily be formed as described herein, such as copper or brass and each comprises a generally U-shaped upper body having a bight portion 22 and a downwardly extending identically formed arm 24 at each side thereof. One arm 24 of each of the terminals is longer than the other to provide a downwardly extending rectangular blade extension 26 whereby the terminals may be electrically energized in any well known suitable manner.

Openings 28 in plate 8 are formed so as to closely receive the upper part of the arms 24 of terminals 20 therein, so that the arms 24 are located substantially parallel to the arms 6 of the housing 2. It will be noted that each arm 24 at each side thereof is provided with an outwardly extending projection 30 which engages the under surface of plate 8 adjacent openings 28 thereof, to limit the distance that the upper portion of the terminals may be inserted therein. As will become apparent hereinafter, projections 30 on arms 24 are located with respect to the undersurface of the bight portion 22 so that such undersurface is located a distance above the upper surface of plate 8 which is somewhat less than the thickness of the material from which a hereinafter described conductor 40 is fabricated. Further, the bight portion 22 of each of the terminals 20 is provided at each side thereof with a pair of spaced projections 32 extending upwardly therefrom. Terminals 20*a* and 20*b* are each provided with a central circular opening 34 in their bight portion 22. An electrical contact 38, which may be formed of any suitable arc-resistant electrical conducting material suitable for electrical contact purposes, such as silver or an alloy thereof, is secured to the terminal 20*b* in any suitable manner, such as by having an integral portion thereof extending through opening 34 so it may be riveted thereto.

As shown, the upper portion of terminal 20*b* is placed within the left opening 28, and the upper portion of terminal 20*c* is placed within the middle opening 28 in plate 8. In assembling the switch, such subassembly comprising terminals 20*b*, 20*c* and plate 8 may be placed in a suitable fixture whereby contact 38 is riveted to the bight portion 22 of the terminal 20*b* and the projections 32 of terminals 20*b* and 20*c* are bent longitudinally outwardly over the upper surface of plate 8 to clamp the terminals 20*b* and 20*c* to plate 8 between the projections 32 and the projections 30. Thereafter, plate 8 with the terminals 20*b* and 20*c* secured thereto is placed, as indicated, in housing 2 with the blade portions 26 thereof extending through the slot 15 in bight portion 4 of housing 2. Terminal 20*a* may then be located in the opening 28 adjacent the right end of plate 8 in the same manner as terminals 20*b* and 20*c*; however, projections 32 are not utilized for securing it thereto and accordingly, are left to extend upwardly between the arms 6 of housing 2.

As shown in Figs. 1 and 4, a flexible resilient conductor 40, which may be formed of any suitable electrical conducting material having sufficient resiliency, such as a copper alloy, is secured to terminal 20*a* and it has an upwardly offset portion which extends longitudinally above terminals 20*b* and 20*c*. The right end portion of conductor 40 is formed so as to be provided with a circular upwardly extending detent portion 42 adjacent its right end. In assembling terminal 20*a* to plate 8, terminal 20*a* is inserted through the right opening 28 so as to be located therein in the same manner as terminals 20*b* and 20*c*. Thereafter, conductor 40 is held at an angle to plate 8 and its extreme right end is inserted in the space between the undersurface of the bight portion 22 of terminal 20*a* and plate 8 so that it enters opening 28 through which terminal 20*a* extends. Conductor 40 is then slightly rotated counterclockwise into the housing 2 so that its extreme right end is located adjacent the inner surface of plate 8. Conductor 40 is then forced rightwardly below the bight portion 22 of terminal 20*a* so that its extreme right end slips upwardly past the right edge of opening 28 and engages the upper surface of plate 8 on the other side of terminal 20*a*. In order to facilitate locating the conductor 40 below the bight portion 22 of terminal 20*a*, the extreme right end of conductor 40 may be formed with an upwardly extending flange 45 which prior to such rightwardly forcing of the conductor 40 engages the right edge of opening 28 in plate 8, and thereby functions so as to cam the right end of conductor 40 upwardly when such rightwardly force is applied thereto. As the undersurface of the bight portion 22 of terminal 20*a* is located above the upper surface of plate 8 a distance slightly less than the thickness of conductor 40, the portion of conductor 40 under the bight portion 22 of terminal 20*a* is stressed during such forcing of the right end portion of the conductor 40 below the bight portion 22 of terminal 20*a*, and accordingly, when the detent 42 is in alignment with the opening 34 therein, it snaps upwardly into opening 34 and partially releases the stress upon the right end of conductor 40. When conductor 40 is so secured in housing 2, the left end thereof, when free, extends upwardly above plate 8 so as to be located in approximately the same plane as the operating lever 50 hereinafter described. Although terminals 20*a*, 20*b* and 20*c* may be inserted with either of their arms 24 being adjacent either of the arms 6 of housing 2, they are preferably inserted so that the blade portions 26 are in longitudinal alignment to facilitate making electrical connections thereto.

The plate 8 is also provided with a rectangular opening 44 on its longitudinal center line which is spaced longitudinally inwardly of terminal 20*a* so as to be located in the portion of plate 8 which is exposed at its underside by slot 15. Conductor 40 is provided with a downwardly extending integral projection 46 which is preferably formed by being pierced therefrom and has a lateral width so as to be closely received in opening 44. Projection 46 is centrally located on the conductor 40 and is longitudinally spaced inwardly from detent 42 so that when the conductor 40 is assembled to terminal 20*a*, as previously described, the projection 46 engages the opening 44 simultaneously with the engagement of the detent 42 in opening 34. By so locating projection 46 and detent 42, the conductor 40 may easily be located centrally between the arms 6 of housing 2. As shown, conductor 40 is bent at a point inwardly of terminal 20*a* so that it extends angularly upwardly from plate 8 between arms 6 of housing 2 and so that a portion thereof is located above terminals 20*b* and 20*c* and approximately parallel to plate 8.

In order to obtain a switch wherein terminal 20*c* is normally energized, a second conductor 80, which is of similar material to conductor 40, is provided which has one of its ends permanently secured to conductor 40, and which is formed so that its other end normally engages the terminal 20*c*. As shown in Fig. 1, the left end of conductor 80 is offset upwardly, which offset portion is secured to conductor 40 in any suitable manner, such as by being welded or brazed thereto. By so providing conductor 80 with such an offset end a contact carrying portion 82 is formed inwardly thereof which is spaced between the conductor 40 and plate 8, and is approximately parallel thereto. In order to provide a movable contact for electrically engaging the stationary contact 38, a contact 48 which may be of a similar material to that of contact 38 is secured to portion 82 of conductor 80 in a manner similar to that in which contact 38 is secured to terminal 20*b*. It is, of course, obvious that contact 48 must be located on the contact carrying portion 82 of conductor 80, so that upon the depression of conductor 80, contact 48 engages contact 38 in order to have a properly functioning switch. The free or right end of conductor 80 extends angularly downward from portion 82 so as to be engageable with the upper surface

of the bight portion 22 of terminal 20c and make electrical contact therewith. If desired, in order to facilitate such contact the free end of conductor 80 may be provided with a curved segment 84, the center of which is approximately in alignment with the center of terminal 20c. In the particular embodiment of my switch shown, terminal 20c is utilized in a circuit requiring a small amount of current, and accordingly, contacts such as contacts 38 and 48 previously described, need not be provided. Thus, no central opening 34 need be provided in the bight portion 22 of terminal 20c; if desired, however, such a switch could be constructed to provide contacts of high current capacity in both of the controlled circuits.

The entire assembly within the housing 2 is adapted to be covered by an elongated rectangular operating lever 50 which extends between the arms 6 of housing 2 substantially the entire length thereof, and outwardly therebeyond at the end at which terminal 20b is located. As herein described, lever 50 is utilized to force conductors 40 and 80 downwardly so that contact 48 on conductor 80 engages contact 38, and in order that lever 50 may be operable in response to a wide range of operating pressures, it is preferably constructed from a highly flexible and resilient material, which has sufficient rigidity so as to be operable substantially as a cantilever beam, such as light gauge spring steel. In order to provide an inexpensive means for rapidly assembling lever 50 to housing 2, the end of each arm 6 of housing 2 approximately above terminal 20a is provided with three laterally inwardly extending projections 52, 53 and 54 which are longitudinally spaced from each other and which are preferably formed by punching the material of side walls 6 laterally inwardly thereof. As shown, projections 53 are laterally opposed from each other between the respective projections 52 and 54 and are substantially in alignment with the inner edge of terminal 20a. Projections 53 may have any suitable configuration so that their undersurface is engageable with the upper surface of lever 50 and are preferably provided with a lower surface which is perpendicular to arms 6. Projections 52 and 54 are in lateral alignment with each other, respectively, and may also have a suitable configuration so that their upper surfaces may engage the lower surface of lever 50 and are preferably perpendicular to the arms 6. In order to permit the lever 50 to pass therebetween, the upper surfaces of projections 52 and 54 are spaced vertically below the lower surface of projections 53 a distance approximately equal to the thickness of the material from which lever 50 is fabricated. It will also be noted that the right end of lever 50 has a lateral width so as to be closely received between the arms 6 of housing 2, with each side thereof being provided with a pair of oppositely facing longitudinally extending inwardly projecting lances 56 and 58 with their opposed free ends being longitudinally spaced apart a distance substantially equal to the longitudinal distance between the outer sides of projections 52 and 54, so as to be in engagement therewith. Lever 50 is reduced in its lateral width beyond the innermost lance 56 in order to permit its sides to move freely between the arms 6 of housing 2. Each arm 6 of housing 2 is also provided with another projection 60 at its extreme left end which extends over the upper surface of lever 50 and prevents the left end of lever 50 from being deflected upwardly beyond the arms 6 of housing 2.

In assembling lever 50 to housing 2, the right end is inserted between the side walls 6 of housing 2 so that it is located below the opposed projections 53 and above the opposed projections 52. Lever 50 is then rotated into the housing 2 so that its undersurface to the left of its right end engages the upper surface of opposed projections 60. Thereafter, lever 50 is manually forced rightwardly so that the lances 58 ride over the upper surface of projections 52. Lever 50 is also provided with a notch 62 at each of its sides so as to form a pair of laterally aligned opposed notches, so that when lever 50 is located with notches 62 opposite lugs 60, lever 50 may be further rotated into housing 2 by permitting projections 60 to pass through notches 62 so that its upper surface is located below the lower surface of projections 60. Lever 50 is then pushed further rightwardly so that lances 58 ride over the opposed projections 54, until the free ends of lances 56 engage the leftwardly facing surfaces of projections 52, whereby further leftward movement of lever 50 is prevented. At the same time, notches 62 pass rightwardly between side walls 6 of housing 2 inwardly beyond projections 60 so that the undersurfaces of projections 60 engage the upper surface of lever 50 to the right of notches 62. If desired, in order to facilitate such longitudinal movement of lever 50, the extreme right end of lever 50 may be provided with an angularly upwardly extending flange 64 which will engage the projections 54 to initially cam the right end of lever 50 over projections 54. Thus, the right end of lever 50 is securely held between the arms 6 of housing 2 by the triumvirate supports 52, 53 and 54 at opposite sides thereof, and by lances 56 and 58, so that lever 50 will function substantially as a cantilever beam by deflecting the left end of lever 50 relative to such triumvirate support. If desired, the extreme left end of lever 50 may be enlarged to the same lateral size as the extreme right end in order to increase the area which may be engaged by an activating member.

The lever 50 is provided with a centrally located opening 66 which when lever 50 is finally located between arms 6 of housing 2, as described, is in vertical alignment with a similar opening 68 in conductor 40. A flat rectangular connector 70 having a pair of centrally and vertically aligned projections 72 is located between the conductor 40 and the lever 50 so that the upper projection 72 enters the opening 66 of lever 50, and the lower projection 72 enters the opening 68 in conductor 40, so that the connector 70 is spring biased by the upward force of conductor 40 into engagement with the lever 50. In order to electrically isolate the conductor 40 from the lever 50, the connector 70 is preferably fabricated from any suitable insulating material, such as a phenolic insulating material, which may readily be formed as described. As connector 70 preferably has a rectangular body, the extreme left end of conductor 40 will be substantially parallel to both the lever 50 and the plate 8 when the connector 70 is located between the conductor 40 and lever 50 when no external force is applied to lever 50, whereby a direct force may be transmitted from the lever 50 to the conductor 40 by the shoulders upon connector 70 adjacent the projections 72 engaging the undersurface of lever 50 and the upper surface of conductor 40, respectively. The connector 70 may be easily inserted as described by manually depressing conductor 40 and placing one of the projections 72 in opening 68 therein, and permitting connector 70 to be supported upon conductor 40 by the engagement of its shoulders adjacent the projection 72 engaging the upper surface of conductor 40. Thereafter, conductor 40 may be released and the upper projection 72 on connector 70 will enter the opening 66 in lever 50. Another method of assembling connector 70 is to initially insert one of the projections 72 in opening 68 of conductor 40 before lever 50 is assembled, as previously described. During the period lever 50 is moved rightwardly the upper projection 72 on connector 70 engages the lower surface of lever 50 so as to depress conductor 40 until the upper projection 72 of connector 70 is in alignment with the opening 66 in lever 50, at which time conductor 40 will spring bias the connector 70 upwardly to its final position described above.

In operation, the switch is located as described so that some mechanical means, not shown, such as a simple linear displacement plunger, is capable of engaging the

free end of lever 50 which extends beyond housing 2 and depresses it a sufficient distance to cause contact 48 to engage contact 38. When such mechanical means engages the free end of lever 50, it will cause lever 50 to deflect downwardly substantially around the opposed projections 52 in arms 6 as a cantilever beam. As lever 50 is depressed, connector 70 is also depressed proportionately with reference to displacement of a point on a cantilever beam so as to cause conductor 40 to be depressed around its flat right end portion in engagement with plate 8. Such depression of conductor 40 will obviously cause conductor 40 to be stressed. As conductor 40 is depressed, the left end of conductor 80 connected thereto will also be depressed toward plate 8 which causes the right free end thereof to be forced into firmer engagement with terminal 20*c* until contact 48 engages contact 38 on terminal 20*b*. When contacts 48 and 38 are engaged, contact 48 will function as a pivot point for conductor 80 so that upon further depression of the left end of conductor 80 of lever 50, segment 84 of conductor 80 is elevated above the bight portion 22 of terminal 20*c*, so as to break electrical contact therebetween. Upon release, lever 50 will spring upwardly away from plate 8 until its upward travel is limited by the engagement of the upper surface of lever 50 with the lower surface of projections 60. Such upward movement of lever 50 will partially release the stress in conductor 40 so that conductor 40 will move upwardly. As the left end of conductor 80 is connected to conductor 40 it too will move upwardly causing contact 48 to disengage contact 38 and thereby eliminating the pivot point on conductor 80 so that segment 84 of conductor 80 reengages terminal 20*c* as shown in Fig. 1. Thus it will be noted that when no force is applied to lever 50 an electrical circuit is established from terminal 20*a* through conductor 40, through conductor 80, to terminal 20*c*. Upon deflection of lever 50 as described, the circuit between terminals 20*a* and 20*c* is broken and terminal 20*a* is connected to terminal 20*b* by conductor 40, conductor 80, and contact 48 engaging contact 38.

In view of the large area of the free end of lever 50, and as lever 50 is a simple cantilever beam, the activating force can be applied at any point leftwardly beyond the projections 52. If desired, the extreme left end of lever 50 may be curved downwardly at 74 in order to obtain an area which may be engaged by an activating force which is operating at an angle to the longitudinal center line of housing 2. It will also be noted that with such construction the force applied to lever 50 may vary over a range, as once the junction point of the offset end portion of conductor 80 and the portion 82 thereof engages the upper surface of plate 8 leftward of terminal 20*b* (Fig. 4), lever 50 will no longer be rotated around its right end but will be rotated around the connector 70. Further depression of lever 50 will merely cause the extreme left end of lever 50 beyond connector 70 to be deflected downwardly. Such activating force is limited only by the material from which lever 50 is fabricated, inasmuch as lever 50 should not be depressed so as to cause a permanent set to occur therein.

Thus it will be noted that the switch as described is inexpensive to produce and may easily be installed and electrical connections made thereto. Further, such a switch is adapted to control a plurality of electrical circuits by means of a single movement of the operating lever. As described, such a switch is more particularly suited for controlling two separate circuits so that when one is energized the other is deenergized and so that such conditions are reversed upon deflection of the operating lever.

Although I have shown and described a particular embodiment of my invention in accordance with the patent statutes, I am aware that modifications thereof are possible without departing from the broad spirit and scope of my invention. Accordingly, it is desired that my invention be not restricted except insofar as is necessitated by the prior art.

I claim as my invention:

1. An electric switch comprising, spaced stationary contacts, a movable contact arm mounted at one end at a point spaced from said stationary contacts so that it is movable toward and away from said stationary contacts, said movable contact arm having a relatively movable contact portion normally biased relative to said contact arm toward said stationary contacts and into engagement with the more remote one of said stationary contacts and with an intermediate portion spaced from the other of said stationary contacts, said contact portion being mounted solely at one point in said movable contact so that when said movable contact arm is moved toward said stationary contacts its said contact portion is first moved to engage the other of said stationary contacts and thereafter it is moved out of engagement with said more remote one of said stationary contacts.

2. An electric switch comprising, three spaced stationary contacts, a movable contact arm mounted at one end on one of said contacts for movement toward and away from the others of said stationary contacts, said movable contact arm being normally biased away from said other stationary contacts and having a relatively movable contact portion normally biased relative to said contact arm toward said stationary contacts and into engagement with the one of said other stationary contacts but spaced from the other of said other stationary contacts, said contact portion being mounted solely at one point in said movable contact so that when said movable contact arm is moved toward said other stationary contacts said contact portion is first moved to engage the other of said other stationary contacts and thereafter it is moved out of engagement with said more remote one of said other stationary contacts.

3. A wiring device comprising a pair of spaced terminals, a conductor having an elongated portion located at one side of each of said terminals and having at least a portion thereof extending at an acute angle with reference thereto, one end of said elongated portion normally being normally in engagement with one of said terminals with a portion intermediate the ends of said elongated portion being spaced outwardly from the other of said terminals, said conductor being solely supported at one point by movable means adjacent its other end and being biased relative to said movable means in a direction to cause the aforesaid engagement of one end with said one terminal, said movable means being movable to cause said elongated portion to move toward said other terminal about said one end as a pivot point, and said intermediate portion of said elongated portion being formed to engage said other terminal after a part of such movement of said elongated portion has been accomplished so that said intermediate portion then becomes the pivot point for further movement of said conductor about said last-mentioned pivot point and said one end disengages said one terminal.

4. A wiring device comprising, an insulating support having a pair of spaced terminals mounted thereon, an elongated resilient conductor located at one side of each of said terminals, said conductor normally having one end in engagement with one of said terminals and the remainder being spaced both outwardly from the other of said terminals and located therebeyond, movable means for supporting said conductor at one point which is located beyond said other terminal, said conductor being biased relative to said movable means into engagement with said one terminal, said movable means being movable in a direction toward said contacts to cause said conductor to move toward said support about said one end as a pivot point, and said intermediate portion of said conductor being formed to engage said other terminal after a part of such movement of said conductor

has been accomplished so that said intermediate portion then becomes the pivot point for further movement of said conductor toward said support and said one end disengages said one terminal.

5. A wiring device comprising, an insulating support having a pair of spaced terminals mounted thereon, said terminals each having a contact surface thereon lying in substantially the same plane, an elongated resilient conductor located at one side of said surfaces and having at least a portion thereof extending at an acute angle with reference thereto, said conductor normally having one end in engagement with one of said contact surfaces with a portion intermediate its ends spaced outwardly from the other of said contact surfaces, said conductor being solely supported at one point by movable means adjacent its other end, said conductor being biased relative to said movable means into engagement with said one terminal, said movable means being movable to cause said conductor to move toward said support about said one end as a pivot point, and said intermediate portion of said conductor being formed to engage said other surface after a part of such movement of said conductor has been accomplished so that said intermediate portion then becomes the pivot point for further movement of said conductor toward said support to cause said one end thereof to disengage said one surface.

6. A wiring device comprising, an elongated insulating support having a pair of spaced terminals mounted thereon spaced from a third terminal also mounted thereon, an elongated resilient conductor having one end secured to said third terminal and a portion adjacent its other end normally spaced outwardly from said pair of terminals, another elongated resilient conductor having one end secured solely to said first-mentioned conductor at a point spaced from said one end of said first-mentioned conductor and with its other end normally biased relative to first-mentioned conductor into engagement with one terminal of said pair of terminals, said other conductor having a portion intermediate its ends spaced outwardly from the other of said pair of terminals, movable means engageable with said first-mentioned conductor to cause said other conductor to move towards said support about said other end of said other conductor as a pivot point, and said intermediate portion of said other conductor being formed to engage the other of said pair of terminals upon such movement so that said intermediate portion becomes the pivot point for further movement of said other conductor toward said support and said one end of said other conductor disengages said one of said pair of terminals.

7. A wiring device comprising, an elongated insulating support having a pair of spaced terminals mounted thereon longitudinally spaced from a third terminal also mounted thereon, each of said pair of terminals having contact surfaces located substantially in one plane, an elongated resilient conductor having one end secured to said third terminal and a portion adjacent its other end normally spaced outwardly from said contact surfaces of said pair of terminals, another elongated resilient conductor having one end secured solely to said first-mentioned conductor at a point spaced from said one end thereof and its other end normally biased relative to the first-mentioned conductor into engagement with one of said pair of terminals, said other conductor being located between said first-mentioned conductor and said

support and having a portion intermediate its ends spaced outwardly from the other of said pair of terminals, movable means engageable with said first-mentioned conductor to cause said other conductor to move towards said support about said other end of said other conductor as a pivot point, and said intermediate portion of said other conductor being formed to engage the other of said pair of terminals upon a part of such movement so that said intermediate portion becomes the pivot point for further movement of said other conductor toward said support and said one end of said other conductor disengages said one of said pair of terminals.

8. A wiring device comprising an insulating support, a first elongated resilient conductor having one end secured to said support and its other end normally spaced outwardly therefrom, a pair of spaced electrical terminals secured to said support having at least a part thereof located so as to be engageable from the side of said support facing said first conductor, said part of each of said terminals being located between the ends of said first conductor, a second elongated resilient conductor having one end engaging said part of one of said terminals and its other end secured solely at one point to the other end of said first conductor, said part of the other of said terminals being located between said one terminal part and said other end of both said first and second conductors, movable means mounted in said support and engageable with said first conductor for moving the other end of said second conductor directly toward said support about said one end as a pivot point, and said second conductor having a part intermediate its ends engageable with said part of the other of said terminals upon a part of such movement of said second conductor to cause said one end of said second conductor to disengage said part of said one terminal.

9. A wiring device comprising a flat insulating support, a first elongated resilient conductor having one end secured to said support and its other end and a substantial portion adjacent thereto normally spaced outwardly from said support so as to be approximately parallel thereto, a pair of electrical terminals secured to said support having at least a part thereof located between said support and said first conductor, said part of each of said terminals being spaced from said substantial portion of said first conductor and inwardly of said other end of said first conductor, a second elongated resilient conductor having one end normally engaging said part of one of said terminals which is adjacent said one end of said first conductor and its other end secured solely at one point to the other end of said first conductor, movable means mounted on said support and engageable with said first conductor adjacent its other end for moving said other end of said second conductor directly toward said support about said one end as a pivot point, and said second conductor having a part intermediate its ends engageable with said part of said other terminal upon a part of such movement thereof to cause said one end of said second conductor to disengage said part of said one terminal.

References Cited in the file of this patent

UNITED STATES PATENTS

2,341,931	Lloyd	Feb. 15, 1944
2,429,069	Murray	Oct. 14, 1947