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LIGHT SWITCH

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Fig. 1.

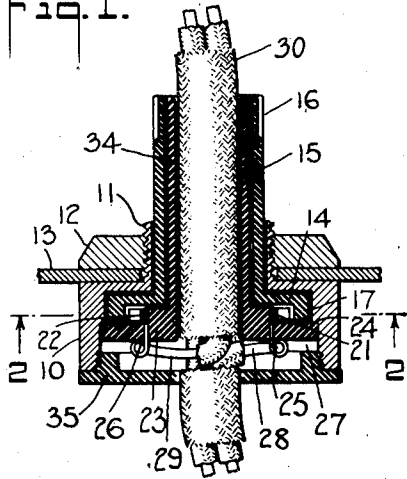


Fig. 3.

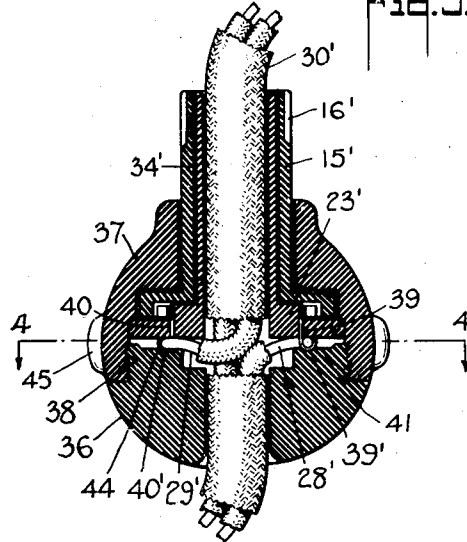


Fig. 2.

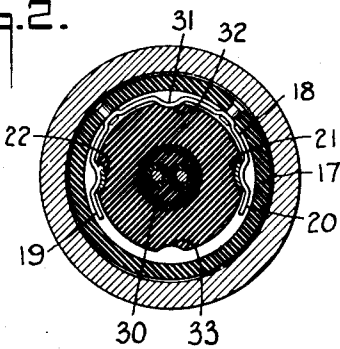
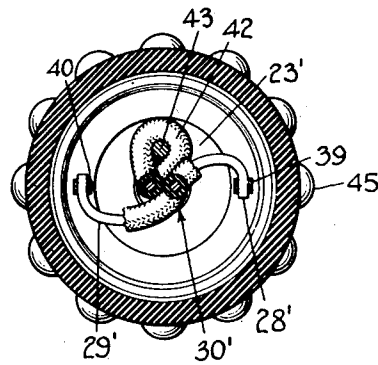


Fig. 4.



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LIGHT SWITCH

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This invention relates to switches adapted for use along electric conductors, for example, electric cord extensions to electrical apparatus of various kinds and classes to provide along the conductor a means for opening and closing the electric circuit. More particularly, the invention deals with a casing or body portion within which is a rotatable switch element, the element and body portion being tubular in form to permit passage of an electric cord or circuit wires there-through, and further to the provision of means for securing the body portion to a fixture or other support, such for example, as a lamp base to control the electric circuit. The novel features of the invention will be best understood from the following description when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed, and in which the separate parts are designated by suitable reference characters in each of the views; and in which:

Fig. 1 is a sectional view through one form of switch device which I employ, illustrating the same attached to a support.

Fig. 2 is a section on the line 2-2 of Fig. 1.

Fig. 3 is a view similar to Fig. 1, showing a modified form of device; and

Fig. 4 is a section on the line 4-4 of Fig. 3.

In Figs. 1 and 2 of the drawing I have shown one form of switch device comprising a main cup shaped switch casing 10 having a reduced externally threaded tube extension 11 at one end thereof upon which is a threaded disc nut 12 to clamp a suitable support 13 upon the casing 10. Rotatably mounted in the casing 10 is a switch element 14 having a long tubular shank 15 rotatably supported in the tube 11 and terminating at its end in a roughened finger portion 16, facilitating rotation thereof. The finger portion 16 may be a knurling or similar surface. The element 14 has a ring like base 17 upon the inner surface of which is suitably supported a yoke shaped contact 18 having spring contact ends 19 and 20 adapted to engage fixed contacts 21 and 22 embedded in a fixed disc 23 pressed, cemented or otherwise secured in the casing 10, and seating upon the shoulder 24. The contacts 21 and 22 have terminal ends 25 and 26 projecting below the lower surface of the disc and into the chamber 27 of the casing 10, facilitating attachment of ends 28 and 29 of one wire of the two circuit wires of the electric cord or conductor.

The conductor 18 also has a central bead or nub 31 which is adapted to seat in rounded

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sockets 32 and 33 of the disc 23. The contacts 21 and 22 are also rounded to receive the bead or projection 31 so as to control positioning of the switch element in the off and on position. The element 15 may be rotated in either direction.

In Fig. 2, the element is shown in the position completing circuit between the contacts 21 and 22. When rotated in either direction ninety degrees, the switch will be on the off position, breaking the circuit. The switch element may also assume an on position at one hundred and eighty degrees to the position shown in Fig. 2. The fixed disc 23 includes a long sleeve or bearing portion 34 fitting freely in the switch element 15, but preferably fitting snugly upon the conductor 30. The illustration of the coupling of the wire ends 28 and 29 with the contacts or terminals 25 and 26 is diagrammatically shown, connections here being preferably made by soldering to establish positive contact. The various parts of the switch device aside from the electrical contact members, and particularly with respect to the parts 15, 23 and 24 will be composed of suitable insulating material. It is also preferred that the casing 10 be composed of such materials, suitable plastic materials being preferred.

The chamber 27 is closed by a threaded or otherwise secure cover plate 35, which plate may also be made to fit snugly about the conductor 30. In assemblage, the electrical connections with the terminals 25 and 26 may be made outside of the casing and thereafter the disc 23 inserted in the casing together with the switch element 15, after which the cover 35 is inserted in position.

In Figs. 3 and 4 of the drawing, I have shown a slight modification wherein the switch device is disposed somewhere along the conductor 30' and is supported solely by the conductor. Here the casing of the device is formed of two parts 36 and 37 threaded or otherwise secured together, as at 38. In these parts are disposed a switch element 15' substantially similar to the element 15, and a disc 23' substantially similar to the disc 23, enclosing the tube extension 34'.

In Figs. 3 and 4, the contacts 39 and 40 have looped or semi-circular terminal ends 39' and 40' disposed in the chamber 41 and in which are adapted to be fitted the ends 28', 29' to one of the circuit wires of the conductor 30'. The other wire of the conductor may be looped, as seen at 42 around a pin 43 supported on the

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disc 23' to aid in retaining the conductor 30' against rotation in the tube 34'.

With the construction shown in Figs. 3 and 4, the casing part 36 has an inwardly extending annular bearing portion 44 which is adapted to compress the U-shaped terminal ends 39' and 40' in firmly and positively securing the wire ends 28' and 29' therein. In some instances, the wire ends may be soldered to the terminals to insure positive electrical connections. In any event, the bearings 44 will serve as added supports in maintaining positive gripping action upon the wire ends, preventing any possible pull apart of these ends should any friction prevail interfering with free rotation of the switch element 15' in the casing part 37. The casing part 37 has at its greatest diameter a roughened gripper surface 45 to firmly grip this part of the casing in the hand as the gripper surface 16' of the element 15' is engaged by the fingers of the other hand in rotation of the switch element. No specific reference is made to the element 18 in Figs. 3 and 4, but this element is identical in the construction shown in Figs. 1 and 2, and no repetition of description need be made in this connection.

In both forms of devices, the switch elements are mounted for free rotation in the casing parts and can be rotated in any direction in opening and closing the circuit through the conductors. Devices of this type and kind will find their usefulness in all types of conductors to control operation of electrical devices in wide spaced relationship to the switch, and further provides in conjunction with electrical appliances of various types and kinds as well as electric fixtures, such as lamps, a very practical type of control switch which may be positioned at a readily accessible point on a fixture or appliance. In all instances, the conductor passes through the switch device, the latter being made of tubular structure for this purpose.

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

1. A switch device comprising a pair of tubular members through the axis of one of which an electric cord is adapted to pass, one member being fixed on the cord and including an enlarged casing forming a chamber around one end thereof, the other member being rotatable on the first member and in said chamber, a cover detachable with said casing and having an aperture registering with the bore of the fixed tubular member, said fixed tubular member having spaced electric contacts extending into said chamber, the ends of one conductor of the cord being adapted to extend radially into said chamber for engagement with said electric contacts, the spaced contacts normally breaking the circuit through said conductor, and said rotatable member having in said chamber a spring contact adapted to bridge said spaced contacts in placing the same in electric communication in one position of said rotatable member.

2. A switch device comprising a pair of tubular members through the axis of one of which an electric cord is adapted to pass, one member being fixed on the cord and including an enlarged casing forming a chamber around one end thereof, the other member being rotatable on the first member and in said chamber, a cover detachable with said casing and having an aperture registering with the bore of the fixed tubular member, said fixed tubular mem-

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ber having spaced electric contacts extending into said chamber, the ends of one conductor of the cord being adapted to extend radially into said chamber for engagement with said electric contacts, the spaced contacts normally breaking the circuit through said conductor, said rotatable member having in said chamber a spring contact adapted to bridge said spaced contacts in placing the same in electric communication in one position of said rotatable member, and means supporting the rotatable member in closed circuit position.

3. A switch device comprising a pair of tubular members through the axis of one of which an electric cord is adapted to pass, one member being fixed on the cord and including an enlarged casing forming a chamber around one end thereof, the other member being rotatable on the first member and in said chamber, a cover detachable with said casing and having an aperture registering with the bore of the fixed tubular member, said fixed tubular member having spaced electric contacts extending into said chamber, the ends of one conductor of the cord being adapted to extend radially into said chamber for engagement with said electric contacts, the spaced contacts normally breaking the circuit through said conductor, said rotatable member having in said chamber a spring contact adapted to bridge said spaced contacts in placing the same in electric communication in one position of said rotatable member, means supporting the rotatable member in closed circuit position, means supporting the rotatable member in closed circuit position, and means including said last named means for supporting the rotatable member with the spring contact thereof in open circuit position.

4. A switch device comprising a pair of tubular members through the axis of one of which an electric cord is adapted to pass, one member being fixed on the cord and including an enlarged casing forming a chamber around one end thereof, the other member being rotatable on the first member and in said chamber, a cover detachable with said casing and having an aperture registering with the bore of the fixed tubular member, said fixed tubular member having spaced electric contacts extending into said chamber, the ends of one conductor of the cord being adapted to extend radially into said chamber for engagement with said electric contacts, the spaced contacts normally breaking the circuit through said conductor, said rotatable member having in said chamber a spring contact adapted to bridge said spaced contacts in placing the same in electric communication in one position of said rotatable member, means supporting the rotatable member in closed circuit position, means supporting the rotatable member in closed circuit position, means including said last named means for supporting the rotatable member with the spring contact thereof in open circuit position, said casing having a reduced threaded portion encircling part of said rotatable member, and means coupled with said threaded portion for mounting the casing on a support.

5. A switch device comprising a pair of tubular members through the axis of one of which an electric cord is adapted to pass, one member being fixed on the cord and including an enlarged casing forming a chamber around one end thereof, the other member being rotatable on the first member and in said chamber, a cover detachable with said casing and having

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an aperture registering with the bore of the fixed tubular member, said fixed tubular member having spaced electric contacts extending into said chamber, the ends of one conductor of the cord being adapted to extend radially into said chamber for engagement with said electric contacts, the spaced contacts normally breaking the circuit through said conductor, said rotatable member having in said chamber a spring contact adapted to bridge said spaced contacts in placing the same in electric communication in one position of said rotatable member, means supporting the rotatable member in closed circuit position, means including said last named means for supporting the rotatable member with the spring contact thereof in open circuit position, and said cover firmly retaining the conductor ends in engagement with said contacts.

6. A switch device comprising a pair of tubular members through the axis of one of which an electric cord is adapted to pass, one member being fixed on the cord and including an enlarged casing forming a chamber around one end thereof, the other member being rotatable on the first member and in said chamber, a cover detachable with said casing and having an aperture registering with the bore of the fixed tubular member, said fixed tubular member having spaced electric contacts extending into said chamber, the ends of one conductor of the cord being adapted to extend radially into said chamber for engagement with said electric contacts, the spaced contacts normally breaking the circuit through said conductor, said rotatable member having in said chamber a spring contact adapted to bridge said spaced contacts in placing the same in electric communication in one position of said rotatable member, and said rotatable member having a finger grip portion beyond the limits on the casing.

7. A switch device comprising a pair of tubular members through the axis of one of which

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an electric cord is adapted to pass, one member being fixed on the cord and including an enlarged casing forming a chamber around one end thereof, the other member being rotatable on the first member and in said chamber, a cover detachable with said casing and having an aperture registering with the bore of the fixed tubular member, said fixed tubular member having spaced electric contacts extending into said chamber, the ends of one conductor of the cord being adapted to extend radially into said chamber for engagement with said electric contacts, the spaced contacts normally breaking the circuit through said conductor, said rotatable member having in said chamber a spring contact adapted to bridge said spaced contacts in placing the same in electric communication in one position of said rotatable member, and means on said fixed member adapted to engage a looped portion of a companion conductor passed through said member to aid in retaining the fixed member against rotation on said conductors.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
264,919	Barnes	Sept. 26, 1882
985,234	Wagner	Feb. 28, 1911
1,701,476	Miller	Feb. 5, 1929
1,728,549	Huppert	Sept. 17, 1929
2,014,054	Rood et al.	Sept. 10, 1935
2,071,099	Zuckerman	Feb. 16, 1937
2,136,369	Belcher	Nov. 15, 1938

FOREIGN PATENTS

Number	Country	Date
454,121	Germany	Jan. 1928