

June 28, 1949.

R. L. AVERY

2,474,454

ELECTRICAL PLUG

Filed Feb. 1, 1947

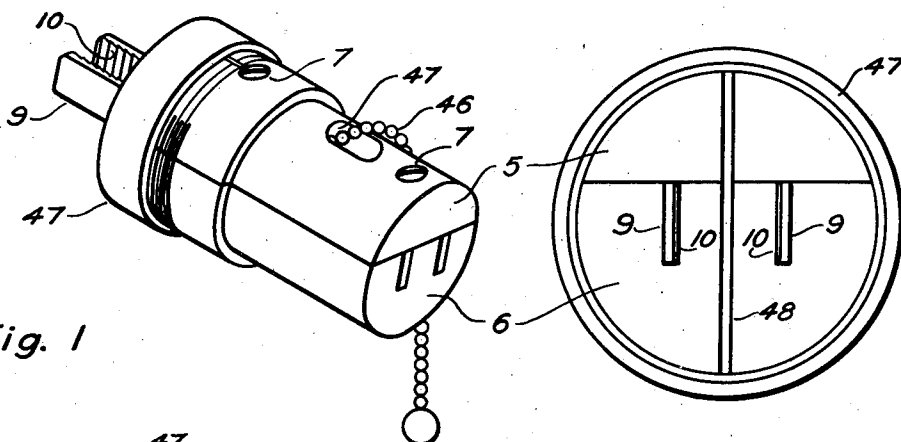


Fig. 1

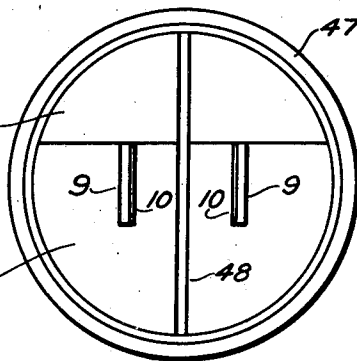


Fig. 4

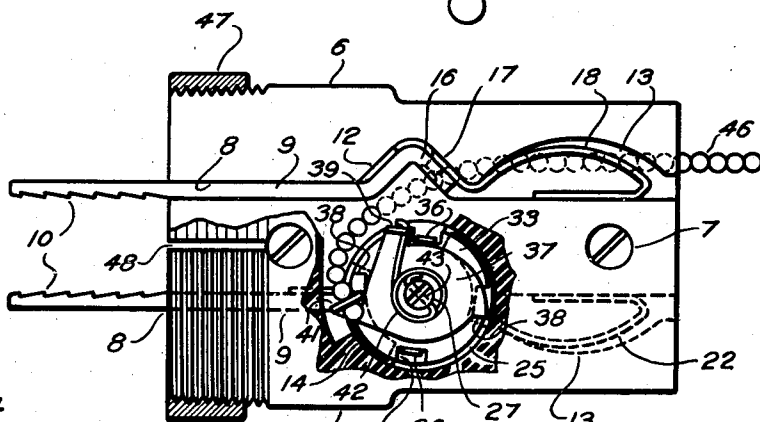


Fig. 2

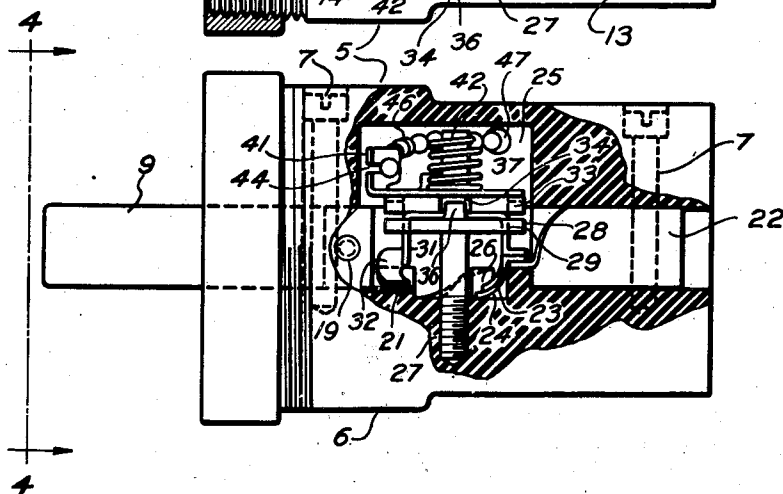


Fig. 3

INVENTOR

Ralph L. Avery

BY

Harry Q. Schroeder
ATTORNEY

ATTORNEY

UNITED STATES PATENT OFFICE

2,474,454

ELECTRICAL PLUG

Ralph L. Avery, Oakland, Calif.

Application February 1, 1947, Serial No. 725,918

2 Claims. (Cl. 173-361)

1

This invention relates to electrical switches and has for its principal object the provision of a switch that can be inserted into a base-board or wall receptacle, and is adapted to receive the plug that otherwise would be directly connected into the receptacle.

A further object of the invention is the provision of a locking means whereby the switch cannot be unintentionally disconnected.

A still further object of the invention is the provision of a simple mechanism which will facilitate assembly of the device as a whole, and one which will not require any special skill to assemble.

The methods of attaining the foregoing will become apparent during the course of the following description and appended claims, taken in connection with the accompanying drawing forming a part hereof.

In the drawing:

Figure 1 is a perspective view of the switch plug of my invention.

Figure 2 is an enlarged top plan view of the plug with parts broken away, and other parts in section in order to more clearly disclose the interior construction.

Figure 3 is a side elevation of the structure shown in Figure 2, a portion being shown in vertical section to more clearly illustrate the interior mechanism.

Figure 4 is an end elevation as viewed from line 4-4 of Figure 3.

Referring to the drawing in detail, a plug comprising upper and lower sections 5 and 6, respectively, is secured together by screws 7, to form a substantially cylindrical plug body. The plug body is preferably molded from a resilient form of insulating material.

The larger section 6, has, extending along the plane surface which in assembly is contiguous with the plane surface of the section 5, a pair of parallel grooves 8, adapted to receive the inner portions of the prongs 9. The prongs 9, extend from the plug body for insertion into a standard receptacle, the extending portions being formed on their inner faces with a series of teeth 10, adapted to grip the contacting elements in a receptacle.

One of the grooves 8, is provided with a V-shaped offset 12, and both are provided, near the female end of the device, with a transversely enlarged elongated recess 13. The other groove 8, is provided, intermediate its ends, with a cylindrical recess 14. One of the prongs 9, has its

2

end bent to a V shape to fit into the offset portion 12, of the groove and to provide a lug 16, to which is secured by a rivet 17, the extending end of a spring contact 18, housed in one of the recesses 13.

The other prong 9, has attached thereto, by a rivet 19, a switch contact 21, which lies within the recess 14.

A second spring contact 22, lying within the other recess 13, is provided with a switch contact 23, positioned within the recess 14. The switch contacts 21, and 23, are diametrically opposed within the recess 14, and rest upon inclined steps 24, formed at the bottom thereof.

There are four of these steps 24, within the recess, formed integral with the body section 6, and each step connects with the adjoining step by a wall 26, which is perpendicular to the plane surface of the body section and is also radial to the center of the recess 14.

Extending upwardly through the center of the recess 14, is a post 27, which is secured in the body portion 6, and continues upwardly into a recess 25, formed in the body section 5, and concentric with the recess 14. Journaled on the post 27, is a fiber disc 28, which carries a metallic switch arm 29, provided with downwardly directed lugs 31, each having at its lower end a contact shoe 32, which is angularly inclined and complementary with the switch contacts 21, and the steps 24.

It will be seen that when the disc 28, is rotated, the contact shoes 32, will rise along the steps 24, upon which they may be resting, until they pass beyond the walls 26, whereupon they will fall on to the surfaces of the next succeeding steps. Thus the shoes 32, while resting on the contacts 21, and 23, will provide a current path between the prong 9, and the spring contact 22, and when moved to occupy the steps between the contacts 21, and 23, will break the circuit so that no current may flow between the prong 9, and the spring contact 22. The switch will then be in the "off" position.

Journaled on the post 27, and positioned above the switch arm 29, is a fiber ratchet disc 33, having four circumferentially spaced notches 34, therein. An opposed pair of the notches are adapted to engage lugs 36, rising from the switch arm 29, so as to secure the latter and the ratchet disc for rotary motion together. A sheet metal rotary pawl 37, journaled on the post 27, and mounted above the ratchet disc 33, is provided with a pair of downwardly bent individual pawls 38, adapted to coact with the notches 34, of the

3

disc 33. A pair of lever arms 39, and 41, rise upwardly from the member 37.

A combined compression and torsion spring 42, mounted on post 27, has one end thereof secured in a hole 43, drilled through the top of the post, and the other end thereof resting in a notch formed in the side of the arm 39. The other arm 41, is provided with a notch 44, in which is secured one end of a pull chain 46, which passes out of the recess 25, to a position exterior of the plug body, through an opening 47, formed therein.

It will be seen that when the chain 46 is pulled, the rotary pawl 37, will be revolved, carrying with it the disc 33, and the switch arm 29, thus causing the contact shoes 32, to pass into engagement with succeeding steps 24. Release of the pull chain will allow the torsion spring 42, to return the rotary pawl to its normal position. During this retractive movement, the pawls 38, will rise out of the notches 34, in which they are engaged, and move into engagement with the next succeeding notches. The switch mechanism is revolved a quarter of a revolution with each pull of the chain.

The male end of the plug is provided with a tapered threaded portion adapted to receive an internally threaded ring 47. This end of the plug is also provided with a slot 48, which allows the sections, parted by the slot, to come together slightly upon tightening of the ring 47. This slight compression of the threaded end of the plug causes a corresponding movement of the extending ends of the prongs 9, which, together with the action of the teeth 10, locks the unit firmly in place in its receptacle.

From the foregoing it will be apparent that I have devised a general utility switch which may be inserted in circuit with appliances such as waffle irons, soldering irons, heaters or the like which are not usually equipped with switches. I have also provided a device that cannot be inadvertently disconnected, and one, which due to its simple construction, contributes to rapid assembly and consequent economical production.

I claim:

1. A socket plug comprising a body having a pair of socket engaging prongs extending therefrom, said body having a longitudinal slot therein

4

located between said prongs dividing the prong end of the body into two parts, said prongs having gripping teeth formed on the inner faces of said prongs, said teeth being directed downwardly and toward the central axis of said body so as to facilitate the insertion of the prongs into a socket and to impede the withdrawal of the same therefrom, and an element on the prong end of the body for drawing the divided parts of the prong end together, thereby adjusting the distance between the prongs.

2. A switch plug comprising a body having a pair of socket engaging prongs extending therefrom, said prongs having gripping teeth formed on the inner faces of said prongs, said teeth being directed downwardly and toward the central axis of said body so as to facilitate the insertion of the prongs into a socket and to impede the withdrawal of the same therefrom and means for adjusting the distance between said prongs, said means comprising a tapered threaded portion on said prong end of the body, an internally threaded ring engaging said portion, said prong end having a longitudinal slot therein spaced between the prongs, said ring being adapted to draw the prongs toward each other when the ring is tightened on the threaded portion.

RALPH L. AVERY.

REFERENCES CITED

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

UNITED STATES PATENTS

35 Number	Name	Date
1,652,398	Everett	Dec. 13, 1927
1,652,927	Buchanan	Dec. 13, 1927
1,941,374	Weisberg	Dec. 26, 1933
1,957,778	Hopkins, Jr.	May 8, 1934
40 1,961,484	Grant	June 5, 1934
2,049,093	Thorin	July 28, 1936
2,058,321	Kellner	Oct. 20, 1936
2,075,674	Te Pas	Mar. 30, 1937
2,126,494	Means	Aug. 9, 1938
45 2,148,875	Perkins	Feb. 28, 1939
2,217,138	Simpson	Oct. 8, 1940
2,259,359	Thompson	Oct. 14, 1941
2,380,588	Frank	July 31, 1945