

March 3, 1942.

R. KOSTAL

2,274,798

ELECTRICAL FIXTURE

Filed Feb. 24, 1940

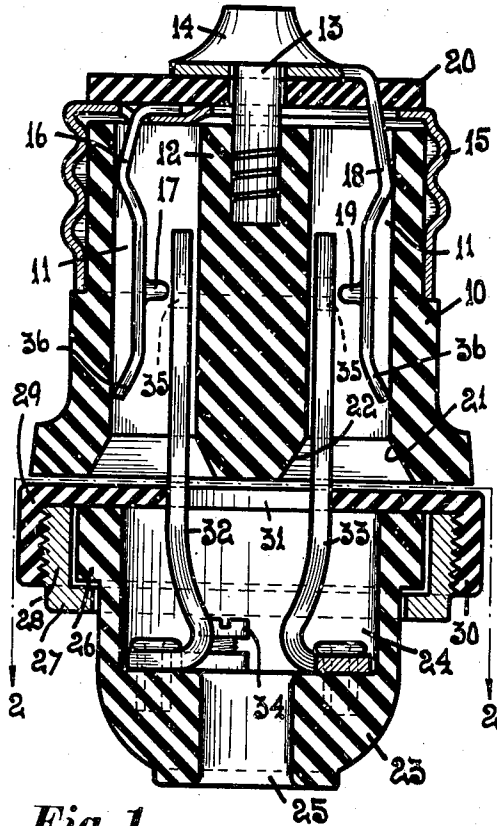


Fig. 1.

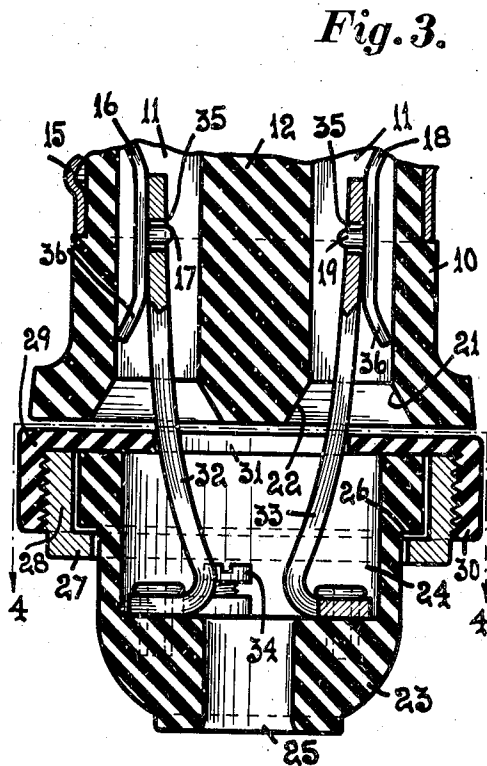


Fig. 3.

Fig. 2.

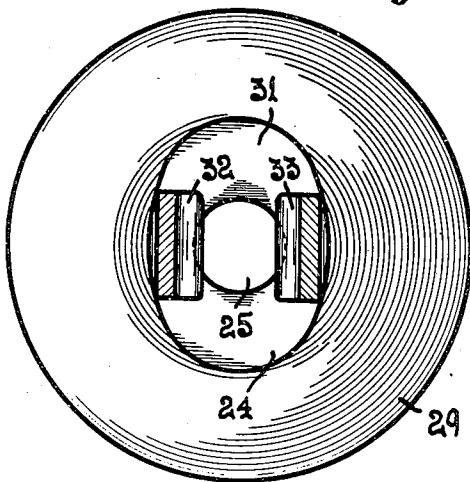
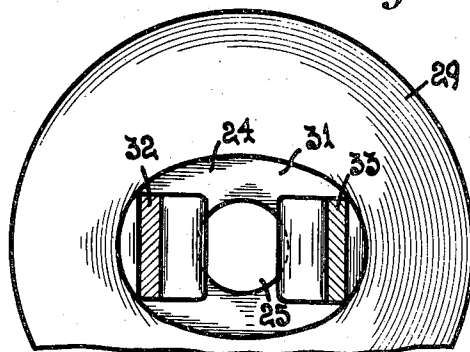


Fig. 4.



Inventor

Rudolph Kostal
Arthur H. Sturges
Attorney

UNITED STATES PATENT OFFICE

2,274,798

ELECTRICAL FIXTURE

Rudolph Kostal, Ajo, Ariz.

Application February 24, 1940, Serial No. 320,575

4 Claims. (Cl. 173—343)

This invention relates to electrical fixtures and more particularly to detachable push in plugs and sockets for electrical conductors or wires.

It is an object of the invention to provide mechanical means whereby a plug may be readily detachably attached to a socket in a manner whereby said member will remain in attached relation with respect to each other until intentionally released and separated by a manual manipulation, said mechanical means also providing proper and adequate electrical means for insuring proper contact between the electrodes thereof for normal electrical functions, said means being of economical construction.

Other objects and advantages of the invention will be understood from the following detailed description thereof, reference being had to the accompanying drawing wherein—

Figure 1 is a longitudinal vertical section of a two part electrical fixture containing a preferred embodiment of the present invention, the electrodes thereof being in an open detached position with respect to each other.

Figure 2 is a transverse section taken on line 2—2 of Figure 1.

Figure 3 is a view similar to Figure 1 but showing the electrodes in electrical communication or contact with each other and also releasably joined together for mechanical functions.

Figure 4 is a fragmentary transverse section taken on line 4—4 of Figure 3.

As heretofore practiced in the art plugs having push in electrodes for attachment thereto at one end thereof of energy conveying wires and a heavy fixture, lamp cord, flat iron or the like at the other ends of said wires often through inadvertence, accident or mistake become detached from their receiving sockets or receptacles through the operator accidentally jerking or pulling on the cord while operating an electrical instrumentality, flat iron or the like which is not only annoying but also consuming time and labor in replacing the plug and the present invention contemplates providing means for obviating the undesirable practices of the prior art.

Also as heretofore practiced an operator in detaching a plug from its socket often pulls on the line wires or instrumentality attached thereto instead of the plug for said purpose, whereby the ends of the wires become torn from or detached from their attaching screws or keepers within a plug and it is a further object of the invention to provide means whereby a plug cannot be detached from its socket by pulling upon the electrical wires which are attached to said plug but

which may be readily and intentionally manually adjusted for detaching purposes.

Referring now to the drawing for a more particular description the plug and socket fixture of the present invention is formed wherever necessary or desirable of insulating material such as artificial rubber, "Bakelite" or the like. The socket includes a housing 10 having an annularly disposed well or recess 11 provided between its side wall and a medially positioned core 12. The core may be attached by any suitable means to a metallic sleeve 13, the latter in turn being formed integral with a cap 14.

The exterior wall of the housing 10 is provided with a metallic annularly disposed ferrule 15 formed with screw threads whereby it may be operatively engaged with any electrical device having correspondingly shaped threads adapted to receive and cooperate with the threads of the ferrule 15 for mechanical attachment and for closing a circuit through said threads.

Disposed within the well 11 and in electrical communication with the ferrule 15 an elongated electrode 16 is provided having an inwardly disposed lug 17 for purposes later described.

A similar electrode 18 is also disposed in said well and in insulated relation with respect to the electrode 16 and is provided with a similar lug 19. The electrode 18 extends through a cover 20 for an end of the housing 10 and is in electrical communication with the cap 14. The cover 20 and the cap 14 are each provided with a centrally disposed aperture through each of which the sleeve 13 extends.

The open end of the well 11 is provided with an outwardly flared annular flange 21 and the core 12 is provided with a beveled surface 22 at its end opposite to the sleeve receiving end. The walls of the free end of the core converge towards each other, whereby the well 11 is provided with a flared mouth adapted to facilitate guiding later described resilient electrodes of the plug into said well.

The main body portion 23 of the plug is provided with a centrally disposed recess 24 and a bore 25 in communication therewith, said bore extending through the plug 23. The plug is preferably provided with an annular shoulder 26 which cooperates with an inwardly extending flange 27 of an annularly disposed boss 28 in preventing an outward movement of the plug 23 with respect to said boss in one direction and is prevented from moving in an opposite direction with respect to the boss by means of a transversely disposed wall of insulation 29, having a

collar 30 disposed at a right angle with respect to the portion 29. The collar 30 and wall 29 are formed integral, said collar having inner annular screw threads which cooperate with correspondingly shaped screw threads positioned on the outer perimeter of the boss 28, whereby at times when the parts are assembled in an operating position as shown in Figures 1 and 3, the boss 28 and the body 23 of the plug are secured together.

The wall 29 is provided with a medially disposed aperture 31 which, as best shown in Figures 2 and 4, is of oval shape in plan and which together with the wall 29 and collar 30 provide a switch for later described mechanical and electrical purposes.

Oppositely disposed resilient electrodes 32 and 33 are secured at their ends by any suitable means such as tubular rivets to the main body portion of the plug, said ends are positioned within the recess 24 as shown in Figure 1. Each electrode 32 and 33 is provided with a screw similar to the screw 34 whereby the ends of electrical line wires, not shown, may be attached to the screws 34 in a well known manner, each said wire being then in electrical communication with its respective electrode 32 and 33.

The electrodes 32 and 33 are formed of suitable resilient material such as spring brass or the like and extend outwardly of the main body portion of the plug being provided, as best shown in Figure 3, each with an aperture such as the aperture or receptacle 35 which extends transversely through or is let into said electrodes adjacent their free ends.

The apertures 35 are adapted to receive respective lugs 17 and 19 of the electrodes 16 and 18 of the socket for locking the electrodes 17 and 32 together and also the electrodes 17 and 33 whereby said electrodes are adapted to perform their electrical functions in closing a circuit and in addition thereto the mechanical function of preventing a separation of said electrodes and the two main parts of the fixture except at times desired and governed by the operator.

The free ends of the electrodes 32 and 33 normally spring outwardly and divergently with respect to each other, being urged thereto by the inherent resiliency and shape thereof.

At times when the major axis of the oval shaped aperture 31 of the switch wall 29 is turned to substantially a parallel position with respect to the alignment of the electrodes 32 and 33 or more particularly the apertures 35 thereof the said electrodes are permitted to move outwardly with respect to each other as to the free ends thereof and at times when so moved said free ends may be inserted into the well 11 for positioning the apertures 35 of said ends in alignment with respective lugs 17 and 19 of the electrodes 16 and 18 of the socket or housing 10. The inner annular surface of the flange 21 functions to guide the free ends of the electrodes 32 and 33 into the well and the free ends of the electrodes 16 and 18 are each preferably provided with off-set outwardly flared end portions 36, said off-sets and flange are adapted to compress the free ends of the electrodes 32 and 33 towards each other and guide the electrodes 32 and 33 into the well whereby when released said electrodes are each adapted to spring into a position of engagement with respective lugs 17 and 19.

Preferably and at times when it is desired to attach the plug to the socket the switch member 29 is turned or rotated upon its threads or sup-

port to the position shown in Figure 2. Thus the minor axis of the oval shaped aperture 31 is substantially in parallelism with the alignment of the electrodes 32 and 33 for contracting the free ends of said electrodes towards each other and holding the same in said position as shown in Figures 1 and 2. While the electrodes 32 and 33 are being inserted into the well 11 of the housing and at times when the major axis of said oval is in said alignment as shown in Figure 4 and at times when the free ends of the electrodes 32 and 33 are at an extreme outward position with respect to each other the beveled wall or flange 21 guides said free ends inwardly of the well 11, moving said ends towards each other. When the member 29 is in abutting relation with the open end of the housing 10 the member 29 is then rotated approximately 90 degrees for permitting the free ends of the electrodes 32 and 33 to spring outwardly with respect to each other. Thus the lugs 17 and 19 of the electrodes 16 and 18 are engaged within the apertures 35 adjacent the free ends of the electrodes 32 and 33 for locking the parts together in a non-removable manner, except at times when the member 29 is rotated to permit the same by moving said electrodes towards each other and away from the lugs 17 and 19.

It will be understood that line wires, not shown, extend to the cap 14 and are in electrical communication therewith and also the member 15 together with the electrodes 16 and 18, respectively, said line wires may be incorporated into any suitable electrical fixture that is provided with threads for engaging the threads of the member 15 whereby there is provided an electrical circuit closed through said line wires, the cap 14, the ferrule 15, electrodes 16 and 18, lugs 17 and 19, electrodes 32 and 33, the screws 34 of the latter and the wires attached to said screws and the said circuit may be opened by rotating the switch member 29 or closed by said rotation.

By this means the housing 10 may be screwed into a ceiling pocket and a comparatively heavy fixture or lamp adequately suspended by the insulated wires which extend through the bore 25 of the plug, accidental detachment of the plug of this invention from the socket thereof being prevented.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the invention as herein claimed.

What is claimed is:

1. A plug for an electrical socket provided with two electrodes each having a detent element insulated with respect to each other, said plug comprising a body member provided with two electrodes each having a means adapted to cooperate with a detent element of said socket for locking each electrode of said socket with one of the electrodes of the plug for providing locked electrical communication between contacting electrodes, the electrodes of the plug arranged in insulated relation with respect to each other, and rotatable means carried by the plug for releasing said locked communication, said rotatable means including a rotatable plate provided with an oval shaped opening having a major and a minor axis, said opening receiving the electrodes of the plug therethrough and in one position

of the plate the walls adjacent the minor axis of the opening engaging the electrodes of the plug to disengage them from the detent elements while in another position of the plate the electrodes of the plug engage the detent elements.

2. In an electrical fixture having a socket with locking means on the electrodes, a plug having resilient electrodes insulated with respect to each other, said plug electrodes having free ends normally urged away from each other, said free ends provided with means engageable with the locking means of the socket to establish electrical communication therewith, rotatable means carried by the plug to contract the resilient electrodes for releasing same from locked position, said means comprising a plate having an opening of variable diameter, and means carried by the socket so constructed and arranged as to guide the plug electrodes into locking engagement with the locking means of the socket electrodes when the plug electrodes are engaged by the walls of the opening adjacent the larger diameter of the plate opening.

3. In an electrical fixture having a socket with electrodes disposed therein, a plug having normally urged apart electrodes in locking engagement with the socket electrodes, and a plate rotatably carried by said plug, said plate having an oval shaped opening provided with a major axis and a minor axis, the walls adjacent the

minor axis of the opening having direct contact with the plug electrodes in one position of the plate to urge them towards each other and out of locking engagement with the socket electrodes.

4. A plug having resilient electrodes adapted to be removably locked to the electrodes of a socket comprising a main body portion having an annular shoulder, an annular boss encircling the main body portion and having an inwardly extending flange cooperating with said shoulder to prevent movement of the main body portion in one direction, a plate disposed across one end of said main body portion adjacent said shoulder to prevent movement of the main body portion in the opposite direction, said plate being rotatable on said plug and having an annular skirt encircling said boss, cooperating threads on said boss and the flange of said plate, said plate having an opening through which the plug electrodes pass, the opening in said plate being of variable diameter, said plate in one of its positions having the walls of its opening bearing against said plug electrodes to contract them out of locking engagement with the socket electrodes and in another position to permit the resiliency of the plug electrodes to come into play so that the plug electrodes have locking engagement with the socket electrodes.

RUDOLPH KOSTAL.