Oct. 13, 1936. V. POLIMENI 2,057,344

LOCK JOINT FRICTION ELECTRICAL CONNECTER

Filed Jan. 6, 1933

FIG. 1.

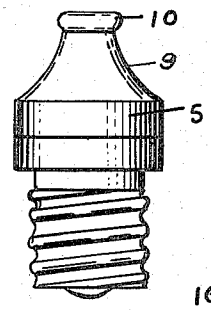


FIG. 2.

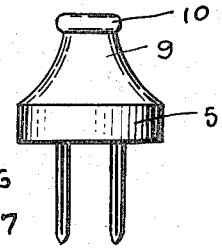


FIG. 4.

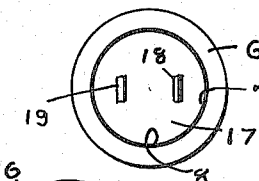


FIG. 5.

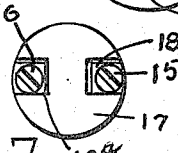


FIG. 3.

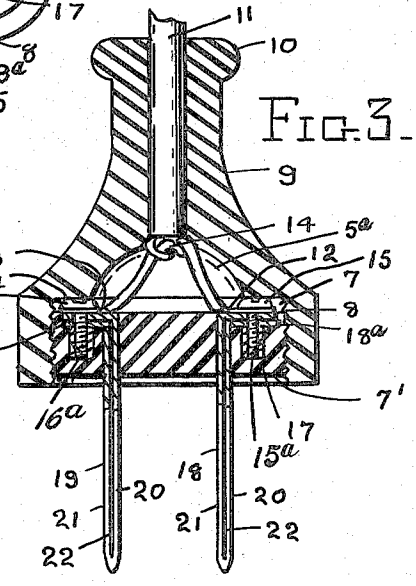
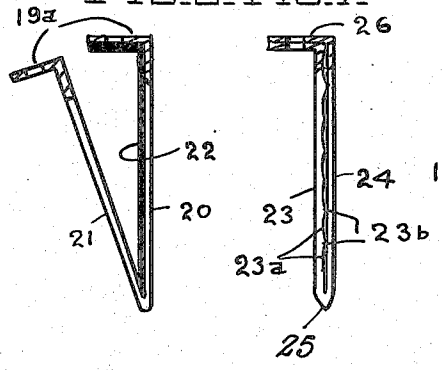


FIG. 6. FIG. 7.



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LOCK JOINT FRICTION ELECTRICAL CONNECTER

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Application January 6, 1933, Serial No. 650,490

3 Claims. (Cl. 173—361)

This invention relates to improvements in electrical connecters, and its leading object is to provide an electrical connecter which will establish an effective frictional lock joint between a service line and a supply line, by a conventional push-and-pull operation.

It is the present common practice to operate vacuum cleaners, and other electrical equipment, by the use of a service cord, on the end of which a connecter is attached. This connecter is usually provided with two metal prongs, which are spaced apart from each other, and connected with the service wires of the cord inside of the plug. The prongs are inserted in a companion connecter, which may be in the form of a female cord attachment, or a female wall attachment, or outlet. The frictional contact established between the male prongs and the female outlet device or attachment is usually sufficient to keep the service wires connected with the supply wires. But when any pulling strain is imposed on the supply cord, caused by the moving of the vacuum device or other electrical unit from one part of a room to another, the prongs frequently pull out, thus separating the supply wires from the service wires.

This pulling strain, which frequently develops upon all service cord connecters, also tends to loosen the terminals of the service wires, which are connected by short binding screws with the ends of the connecting prongs, or pull toward each other, with the result that short circuit connections between the supply wires are thereby established, and fuse plugs blown out, thus rendering the local service line dead.

The present invention relates to a connecter which includes male prongs, which have a resilient clutching action against the female outlet device, and a screw plug which carries these prongs and which is threaded in a holder so that pressure is maintained on the terminals of the supply wires, to resist separation from each other, under pulling effort upon the service cord, thereby avoiding short circuiting of the supply current wires.

With the above and other objects in view the invention relates to new and useful combinations, constructions, and arrangements of parts, clearly described in the following specification, and fully illustrated in the accompanying drawing, in which:—

Fig. 1 is a side elevation of the connecter shown united to a screw plug member adapted to engage a socket outlet device.

Fig. 2 is a side elevation of the connecter removed.

Fig. 3 is a longitudinal sectional view thereof, on an enlarged scale.

Fig. 4 is an end view of the inner end of the connecter.

Fig. 5 is an end view of the screw plug removed from the body of the connecter, showing the inner end of the screw plug.

Fig. 6 is a side elevation of one of the clutch prongs, on an enlarged scale, showing the same open before being mounted in place.

Fig. 7 is a similar side elevation, partly in section, of a modified form.

Referring to the accompanying drawing illustrating the practical embodiment of my invention 5 designates the body of the connecter, which consists of an inner end 6 having a circular socket 7, the wall of which is formed with an internal screw thread 8. The body 5 also provides a conical shank 9, having a terminal integral bead 10, so that the device may be readily pulled when in place.

The service cord 11 extends through the shank 9 and the wires 12 and 13 thereof are knotted at 14 and thence diverge outwardly to engage the binding screws 15 and 16, which are threaded into the female screws 15*a* and 16*a*, embedded in the detachable screw plug 17, which is externally screw threaded to engage the female screw threads 8, of the body 5.

The screw plug 17 carries the metal clutch prongs 18 and 19, which are spaced apart and insulated from each other by the material of which the screw plug is composed. The inner end of the clutch prong 18 is formed with a lateral holding arm 18*a*, and the inner end of the clutch prong 19 is formed with a lateral holding arm 19*a*. The holding arms 18*a* and 19*a* are provided with holes to receive the binding screws 15 and 16.

Each clutch prong consists of a strip of spring metal, which is folded upon itself to provide resilient sides 20 and 21, between which a strip of resilient rubber 22, or other tension creating material, is placed. This material is placed under compression when the prong is forced into the female slot of the outlet connecting plug or device. The intermediate strip or layer of rubber or other compressible material is extended to the upper end of the prong, so that each prong is provided with a lateral holding arm consisting of relatively yieldable parts, between which a layer of thin resilient rubber or other material is disposed. This provides a binding post clamping action which insures spring tension on the terminals of the service wires which are clamped to the clutch prongs.

The screw plug 17 is threaded into the socket 7

so that the heads of the binding screws are pressed tightly against the end wall 7a of the socket, thereby holding the terminals of the service wires against accidental detachment from the binding screws.

The body 5 is formed with a knot pocket 5a, so that any pulling strain imposed on the service cord will not be directly transmitted to the terminals of the service wires.

In Fig. 7, I show a modified form of the clutch prong, wherein the intermediate layer of rubber is eliminated. This prong consists of a single strip of spring metal which is folded upon itself to provide companion legs 23 and 24, united at the bend 25. The leg 23 is formed with a series of recesses 23a, which form a plurality of spaced contacting points 23b to engage the opposing side of the leg 24, so that the leg 23 can be forced under pressure to yield relative to the companion leg 24. The upper ends of the legs 23 and 24 form the two part holding arm 26, which is pierced by holes to receive the binding screw. The action of this clutch prong is similar to that of the rubber equipped clutch prong.

In practice I have found that my improved service connecting plug will hold connection with an outlet, even though the adjacent portion of the service cord is subject to a bending action of approximately sixty degrees.

But in the event it is desired to separate the service connection the clutch prongs will pull out when a proper pulling effort is applied on them.

Having described my invention I claim:—

1. An electrical connecter consisting of a plug having a socket formed in one end thereof, said socket providing an annular wall having an internal screw thread and a knot receiving recess, a circular disc screw threaded in said wall and provided with transverse openings spaced laterally from each other, a pair of prongs extending through said openings, each prong consisting of a strip of resilient metal folded upon itself to provide relatively movable spring legs, means between the legs adapted to be compressed to produce a clutch-like action of the prong in a receiving socket plug, each prong also having out-turned ends disposed against the inner side of said plug, and screws extending through said out-turned ends into the disc to hold said prongs against relative movement in said disc, the disc when threaded into the plug serving to retain the screws against displacement therein to hold any connected wires in place.

2. The construction set forth in claim 1, the means between the legs of the prongs consisting of resilient rubber strips.

3. An electrical connecter consisting of a plug having a cylindrical socket in one end thereof providing an annular wall having an internal screw thread and a shoulder at the inner end of the socket, said plug having a central pull handle integral with the socket and provided with an electrical cord opening registering with the socket and with a knot receiving recess between said socket and said opening, a circular disc threaded on said wall into said socket, said disc having a pair of transversely spaced openings and electrical conductor prongs extending through said openings in spaced relation to each other, each prong having a lateral inner end disposed against the inner surface of the disc and a screw extending through each of said lateral ends and having threaded engagement with the disc to positively clamp its prong thereto, the disc being adapted to be threaded in said socket whereby the inner ends of said screws will be forced against the shoulder of said plug to lock the screws against accidental turning movement in said disc.

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