May 23, 1939. L. WALTER 2,159,064

ELECTRICAL CONNECTOR

Filed Oct. 27, 1937

Fig. 1.

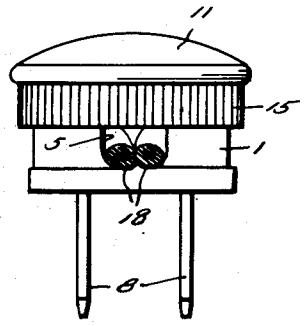



Fig. 2.

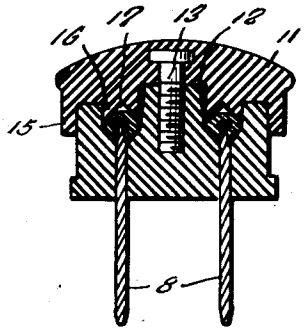



Fig. 3.

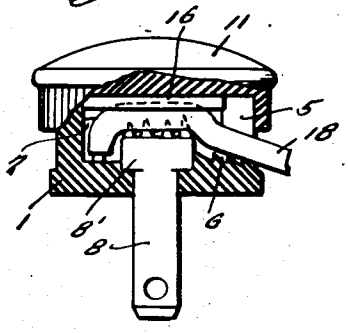



Fig. 4.

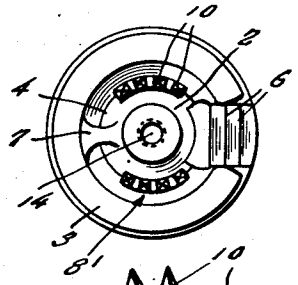



Fig. 5.

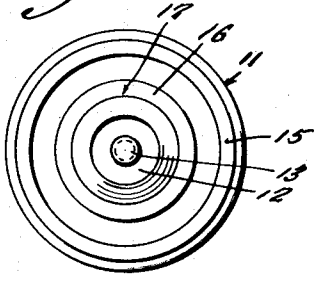
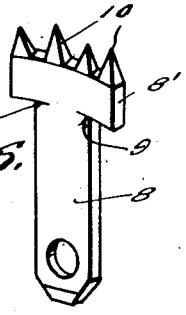



Fig. 6.




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# UNITED STATES PATENT OFFICE

2,159,064

## ELECTRICAL CONNECTOR

Lawrence Walter, Berkeley, Calif.

Application October 27, 1937, Serial No. 171,361

2 Claims. (Cl. 173—361)

This invention relates to an electrical connector or plug, the present invention being an improvement over that forming the subject matter of an application filed by me on September 11, 1934, Serial No. 743,568, and which application issued in Patent No. 2,121,063, dated June 21, 1938. The general object of the present invention is to improve the spike arrangement of the prongs of the connector or plug and the means for forcing the conductor against the spikes.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is an elevation of the improved connector or plug.

Figure 2 is a vertical sectional view through Figure 1.

Figure 3 is a view taken at right angles to Figure 1 but with parts broken away to show the engagement of the parts.

Figure 4 is a top plan view of the body of the device.

Figure 5 is a bottom plan view of the cap.

Figure 6 is a perspective view of one of the prongs.

In the drawing, the numeral 1 indicates the body of the device which is formed of non-conducting material and is provided with the centrally arranged boss or projection 2 which is of tapered shape and the body is also formed with the circular flange 3, said flange and boss or projection forming an annular groove or recess 4 of V-shape in cross-section. An opening 5 is formed in a side portion of the body and passes through the flange and forms a slightly outwardly and downwardly sloping bottom or floor part on the body which is provided with a teeth 6 which slope upwardly and inwardly, as shown in Figure 3.

A partition 7 extends across the groove 4 and is located opposite the opening 5, said partition terminating short of the top of the groove. A pair of prongs 8 have their upper portions molded in or otherwise embedded in the body part, each prong being of substantially T-shape with the heads 8' of slightly arcuate shape and these heads extend into the groove 4, one on each side of the partition 7, as shown in Figure 4. At the junction of the stem with the head 8' the metal is cut as shown at 9, at each side of the prong so as to enable the head to be curved. The upper edge of each head is formed with the points or spikes 10, alternate spikes or points being longer than the other points, as shown in Figure 6 and by having the head of arcuate shape the points are out of line, as shown in Figure 4.

The cap is shown at 11 and is formed with a central recess 12 to receive the boss or projection 2 and a screw or bolt 13 has its head part embedded in the cap with the threaded part projecting into the recess and the boss or projection 2 is formed with a threaded hole 14 for receiving the screw or bolt so that by turning the cap on the body the screw or bolt will enter the hole 14 and thus connect the parts together and, of course, during the turning movement of the cap the bolt will force the cap upon the body. The cap is also provided with an annular flange 15 to engage the exterior wall of the flange 3 of the body and between the flange 15 and the recess 12 an annular rib 16 is formed on the cap for fitting in the groove 4 of the body, the lower edge of this rib having a V-shaped recess therein as shown at 17.

The conductors 18 are passed through the opening 5 and turned in opposite directions to enter the two parts of the groove 4 formed by the partition 7 and to engage the heads of the two prongs 8. The ends of the conductors are preferably turned downwardly as shown in Figure 3 with parts spaced from said end placed over the spikes or projections 10. Then the cap is placed in position with the screw or bolt 13 engaging the hole 14 and the cap turned to thread the screw or bolt into the hole. This will cause the cap to move toward the body and as this is taking place the walls of the V-shaped grooves 4 and 17 will force the conductors down upon the spikes or projections so as to cause the spikes to enter the covering material of the conductors and then engage the wires of such conductors.

By having these spikes of different length the long spikes will first engage and penetrate the conductors and then the short spikes will penetrate the conductors. This enables the parts to be placed in position with less effort than if all the spikes were made of the same height and the ends of the spikes engage different parts of the wires which tends to make better electrical connection between the wires and the prongs and acts to lessen the generation of heat. Also the prongs are placed an appreciable distance apart so that the covering material forced aside by the

spikes enter the spaces between the spikes and thus not interfere with the penetration of the spikes.

The teeth 6 on the bottom wall of the opening 5 tend to prevent the conductors slipping outwardly and thus lessen the strain on those portions of the conductors engaged by the spikes and as will be seen from Figures 1 and 3 the opening 5 is partly covered by a portion of the flange 15 of the cap 11.

Thus it will be seen that I have provided a simple form of plug or connector which includes the body part and cap part, with means whereby the parts can be easily connected together by a simple turning movement of one part or the other to cause the screw 13 to engage the threaded hole 14 and this movement will cause the prongs to be firmly engaged with the conductors by the spikes of the prongs penetrating the conductors. The conductors can be easily put in place by simply passing them through the opening 5 and bending their ends in opposite directions into the groove 4 to engage the spikes of the two prongs after which the cap can be put in place to force the spikes into the conductors and, as before stated, the spikes being of different height and out of alignment will engage the wire of the conductor over comparatively large areas which lessen the generation of heat.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. An electric plug of the class described comprising a body part having a pair of substantially arcuate recesses therein, each of V-shape in cross section, a pair of substantially T-shaped prongs carried by the body part and having their heads extending into the recesses through the apexes of said recesses, each head being of arcuate shape and having spikes at its upper edge, said body part having an opening therein for conductors to enter the recesses and be placed over the spikes, a cap having parts for entering the recesses to force the spikes to penetrate the conductors said parts of the cap having arcuate grooves in their lower edges of V-shape in cross section and means for fastening the cap to the body part.

2. An electric plug of the class described comprising a body part having a centrally arranged boss provided with a threaded hole, and said body part having a pair of arcuate recesses therein, a pair of prongs carried by the body part and having arcuate ends extending into the recesses, spikes on the upper edges of said ends, said spikes being of different height, said body part having an opening for the entrance of conductors, the ends of which are placed in the recesses over the spikes, a cap for fitting over the body part, a screw carried by the cap for engaging the threaded hole in the body part and a projecting part carried by the cap for engaging the recesses and having a V-shaped groove therein for engaging the conductors for forcing the same over the spikes.

LAWRENCE WALTER.