

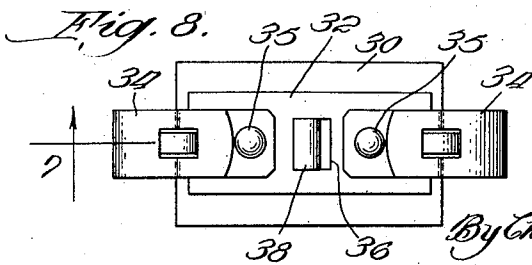
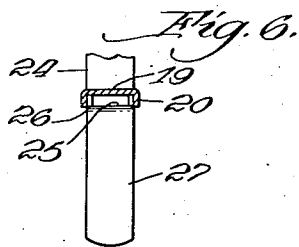
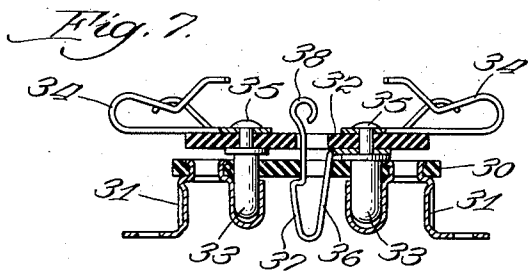
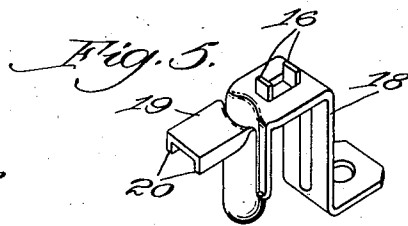
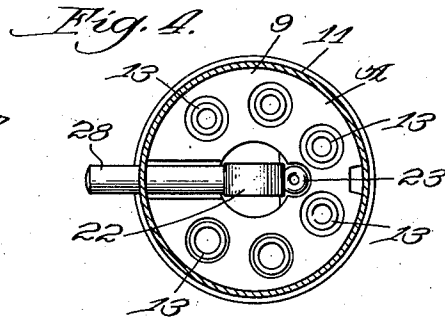
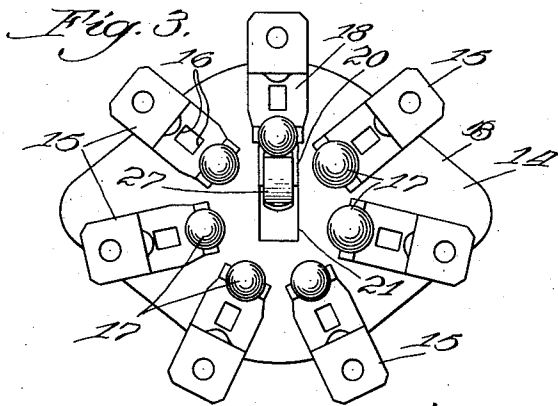
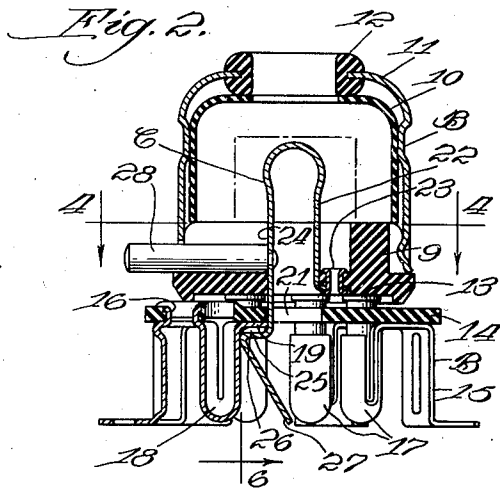
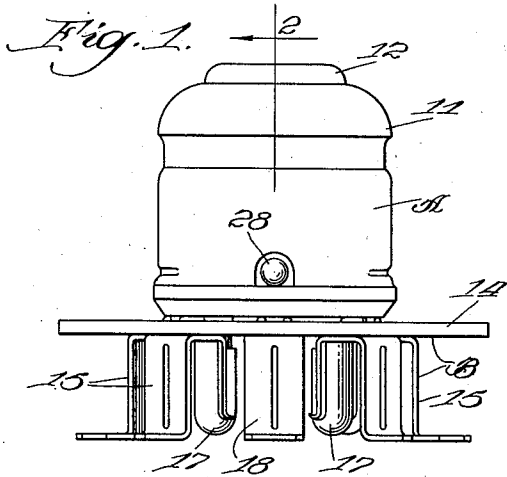
April 23, 1940.

H. R. C. ANTHONY

2,197,780

INTERLOCKING ELECTRICAL COUPLER

Filed Dec. 11, 1937



Inventor:
Herman R. C. Anthony.
By *Chilton, Wild, Davis, Hirsch & Dawson.*
Attys.

UNITED STATES PATENT OFFICE

2,197,780

INTERLOCKING ELECTRICAL COUPLER

Herman R. C. Anthony, Madison, Wis., assignor
to Ray-O-Vac Company, a corporation of Wisconsin

Application December 11, 1937, Serial No. 179,372

3 Claims. (Cl. 173—328)

This invention relates to interlocking couplers, and more particularly to a coupler for making a plurality of electrical contacts simultaneously as between a radio cable and battery.

The primary object of the invention is to provide an improved coupling for use in radios, and the like, wherein a single cable connection to a battery will take care of the "A", "B", and "C" circuits and the connection will be locked so as not to be disengaged by vibration or rough usage.

A further object of the invention is to provide an improved socket portion of the coupler which may be permanently mounted on the battery and is adapted to receive the improved interlocking plug but may be used in connection with the common type of plugs heretofore used.

Another object of the invention is to provide an improved prong in the plug member which performs a three fold purpose of a contactor, a latch, and a switch. In cables of this kind there is generally one lead known as "common" and until the connection is closed with the common wire, all the other electrical circuits of the battery are open. Thus there is no danger of short circuiting the battery while making the proper connection, and after all the rigid prongs of the plug member are thrust into their proper position, the latch member is snapped into position and serves as a switch closing the various circuits.

Another object of the invention is to provide electrical line contact between the latch and the laterally extending portion of the contact in the socket member.

The invention is illustrated in a preferred embodiment in the accompanying drawing, in which:

Figure 1 is an elevational view of an interlocking coupler; Fig. 2 is a vertical sectional view, taken as indicated at line 2 of Fig. 1; Fig. 3 is a bottom plan view of the same; Fig. 4, a sectional view through the plug member, taken as indicated at line 4—4 of Fig. 2; Fig. 5, a perspective view of one of the metallic contact members; Fig. 6, a broken sectional view of the electrical connection with the latch member, taken as indicated at line 6 of Fig. 2; Fig. 7, a vertical sectional view showing a modified form of coupler, taken as indicated at line 7—7 of Fig. 8; and Fig. 8, a plan view of the device shown in Fig. 7.

In the embodiment illustrated in Figs. 1—6, A designates a plug member; B, a socket member; and C, a latching device.

The plug A is shown with a molded insulating

base 9 provided with a paper cap 10 and enclosed by a metal shell 11 provided at its upper end with a rubber ring 12 through which a cable may be inserted. A plurality of hollow contact prongs 13 are fixedly mounted on the base 9 and are adapted to receive wires from a cable (not shown) and have the wires soldered therein.

The socket portion of the coupler B is shown with an insulating base or disc 14 which is perforated to receive the prongs 13. A number of metallic spring contacts 15 are secured to the panel by means of upwardly extending teeth 16. The contact members have socket portions 17 adapted to receive the prongs 13 and make good electrical contact therewith. One of the contact members 18, see Fig. 5, is provided with a laterally extending contact portion 19 whose edge portions 20 are turned downwardly to provide an inverted U. This lateral contact portion extends towards a special latching aperture 21 in the panel 14. The U-shaped arrangement is to provide improved electrical line contact with the latching member, as will be explained below.

The latching device C, as explained above, performs a three fold function of acting as a switch, a contactor, and a latch. It is shown in the form of a U-shaped spring 22 having one end secured to the insulating base 9 by means of a rivet 23 which is hollow to make a soldered connection with a lead-in wire from the cable, not shown. The other leg 24 of the device projects downwardly through the insulating base and is notched or bent laterally to provide a shoulder portion 25 which is adapted to snap under the contact portion 19 on the socket member. The edge portions 26 are turned upwardly so that their sharpened edge portions will scratch into the lower side of the contact portion 19 of the socket member and insure a good electrical connection and a tight joint between the plug and socket members. The lower end of the leg 24 is biased, as indicated at 27, and serves to guide the latch into the socket 21 when the members are brought together. A finger operable plunger 28 is provided on the leg 24 of the latching device and extends laterally through a perforation in the shell 11. Thus it will be understood that all of the circuits may be opened and the coupler unlatched for disconnection by merely depressing the plunger 28.

It will be noted that the prong members are shown having different diameters and are arranged in a pattern conforming with that of the apertures in the socket member so that the members can only be brought together in one circum-

ferential position. As the circuit is finally completed by the latching device, there is no danger of a short circuit during the matching up of the two members.

5 The modification shown in Figs. 7 and 8 is quite similar but the latching device does not operate as a contactor or switch. The socket member has an insulating disc 30 on which is mounted metallic contact members 31 of the same type described above. The plate or disc 30 may be formed integral with a dry cell, for example. 10 The plug member has an insulating disc or base 32 on which is mounted prongs 33 which are adapted to extend through apertures in the disc 30 and make electrical connection with the contact members 31. The top of the plate 32 is provided with conventional spring terminal posts 34 which are secured in position by riveting the upper shank portions 35 of the prongs 33. The latch 36 has one end secured to the plate 32 by one of the shanks 35 and has a notched resilient arm 37 which is adapted to be projected through a perforation in the plate 30 and hold the members together. The upper end of the arm 37 forms a handle portion 38 which may be pressed laterally to unlock the parts. 25

The locking couplers illustrated are of sufficient strength that a heavy battery may be carried around by the lead-in cable relying on the latch to hold the coupler parts together. The socket portion of the coupler may be permanently connected to the battery and discarded with the battery when the battery is worn out, as its cost is comparatively low. When the batteries run 30 down, it is only necessary to release the latch and plug in a new battery without fear of short circuits or any other improper connection. 35

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art. 40

I claim:

45 1. In apparatus of the character set forth, an interlocking coupler for a plurality of electrical contacts, comprising: a socket member having a disc of insulating material provided with apertures, metal contact members mounted on said

disc beneath said apertures to make electrical contact with the prongs of a plug member inserted through said apertures; and a plug member having a base of insulating material, at least three metallic prongs mounted on said base in a pattern to enable them to enter the apertures in the socket member, one of said prongs being laterally movable with respect to the other prongs and having a contacting elbow portion which is adapted to lock the plug and socket members together, the aperture for said laterally movable prong having means for preventing its underlying contact from engaging said prong until the other prongs have been inserted sufficiently to close their corresponding electrical circuits. 5 10 15

2. In apparatus of the character set forth, an interlocking coupler for a plurality of electrical contacts, comprising: a socket member having a disc of insulating material provided with prong apertures and a special latch aperture, metal contact members mounted on said disc beneath said apertures to make electrical contact with the prongs of a plug member inserted through said apertures, one of said metal contact members having a lateral contact portion beneath the disc extending towards said special latch aperture; and a plug member having a base of insulating material, a plurality of rigid metal prongs mounted on said base in a pattern to enable them to enter the apertures in the socket member, and a combined electrical contact and laterally movable latch member adapted to extend deeply into said special aperture to make a locking electrical connection with said lateral contact portion, said special aperture and lateral contact in the socket member being disposed so that electrical contact with the latch can only be made after electrical connections have been established between the other contact members and the corresponding prongs. 20 25 30 35 40

3. A device as specified in claim 2, in which the lateral contacting portions of both the latch member and the companion lateral socket contact member are U-shaped in vertical cross-section so as to insure electrical line contact between the members when they are in latched position. 45

HERMAN R. C. ANTHONY.