April 8, 1958 H. M. WEBBER 2,830,280

CONNECTOR RECEPTACLE FOR PORTABLE ELECTRIC LAMPS

Filed May 31, 1955

FIG. 1

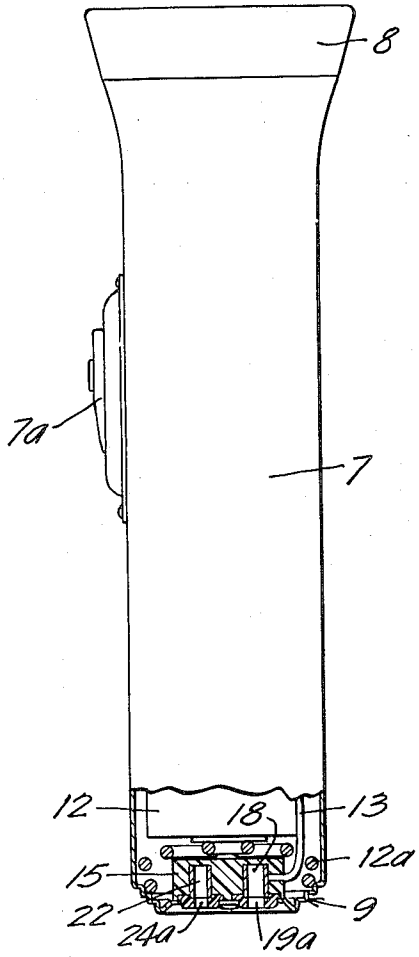


FIG. 3

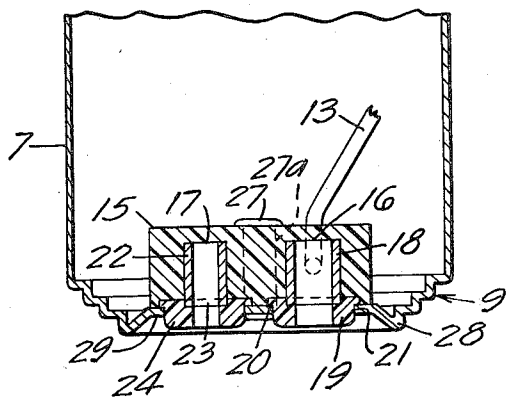


FIG. 4

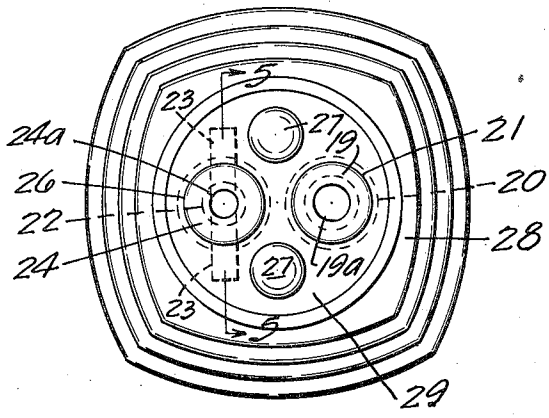


FIG. 2

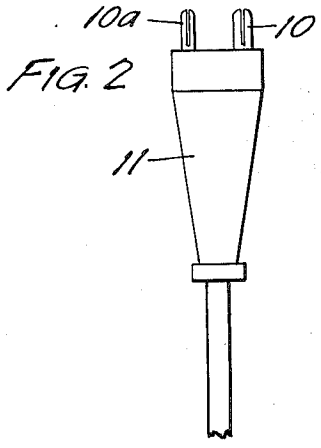


FIG. 5

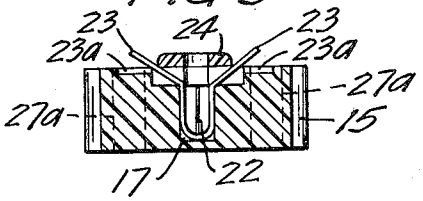
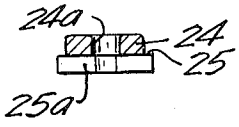


FIG. 6



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CONNECTOR RECEPTACLE FOR PORTABLE ELECTRIC LAMPS

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1 Claim. (Cl. 339—191)

This invention relates to a portable electric lamp or flashlight containing storage batteries requiring recharging from an external source of power, and particularly to an improved receptacle carried by the lamp casing for use in making the recharging circuit connections.

It is an object of my invention to provide a novel receptacle of the class described which is particularly adapted for a flashlight or other portable lamp subject to rough handling, being unusually compact, durable and reliable in insuring good charging circuit connections.

The invention also includes certain novel features of construction which will be more fully pointed out in the following specification and claim.

The accompanying drawing illustrates, by way of example and not for the purpose of limitation, a preferred embodiment of my invention.

In the drawing:

Figure 1 is a part side elevational view and part sectional view showing one of my improved receptacles mounted within the casing of a flashlight containing rechargeable batteries;

Fig. 2 is a side elevational view showing a suitable electric charging circuit cord and terminal connectors adapted to coact with my improved receptacle in supplying charging current to the batteries contained in the flashlight;

Fig. 3 is an enlarged, longitudinal sectional view showing an end portion of the flashlight casing containing my improved receptacle;

Fig. 4 is an enlarged end view of the receptacle and flashlight casing;

Fig. 5 is an enlarged sectional view showing details of one of the receptacle sockets and connector separate from the battery casing, the section being taken approximately on the line 5—5 of Fig. 4, and

Fig. 6 is a cross sectional view showing details of one of the collars which project to the exterior of the casing.

Fig. 1 shows my improved receptacle mounted within a flashlight having a casing indicated generally by the numeral 7, one end of which carries a removable closure 8 allowing access to the lamp bulb, reflector and battery. The other end of the casing is closed by an integral end wall 9 formed with only small openings to receive prongs 10 and 10*a* constituting the charging circuit connectors shown in Fig. 2. The prongs project from the insulated terminal 11 of a circuit cord adapted to be supplied with direct current of suitable voltage. The flashlight is also provided with a manually operable switch 7*a* of conventional type, a storage battery 12, and an electric bulb, lens and reflector confined by the closure 8. Since these internal elements of the flashlight, per se, form no part of the present invention they are not shown in the drawing. There is also a charging circuit which includes an electric conductor 13 extending to the positive terminal of the battery. The casing 7 may be constructed from metal and electrically connected to the negative terminal of the battery by a coiled spring 12*a* (Fig. 1).

My improved receptacle has a body 15 of dielectric material, e. g., hard rubber or suitable plastic composition. As shown, this body is of cylindrical shape and is formed with cylindrical recesses 16 and 17 respectively of different diameters extending to one face only of the body. The recess 16 contains a contact member 18 of tubular form which is electrically connected to an end of the conductor 13 by suitable means such as solder. A separate collar 19 of dielectric material confines the contact member 18 in the recess 16 and is formed with an annular flange 20 fitting in an annular enlargement of the recess 16. The collar 19 projects to the exterior of the wall 9 through a circular opening 21 formed therein and has a central opening 19*a* to receive the prong 10. Thus the wall 9 overlies and confines the flange 20 of the collar 19 within the casing.

The second and smaller recess 17 in the body 15 contains a contact member 22 and the latter is formed with projecting fingers 23 (Figs. 4 and 5) which make electrical contact with the inner surface of the casing wall 9. A collar 24 confines the contact member 22 and fingers 23 within the casing wall 9. This collar 24 is formed with a flange 25 projecting at opposite sides in an annular enlargement of the recess 17. As best shown in Fig. 6, a groove 25*a* extends diametrically across the inner portion of the collar 24 to receive the fingers 23 and allow them to project for contact with the wall 9. The collar 24 projects to the exterior of the casing wall 9 through a circular opening 26 formed in the latter and a central opening 24*a* is formed in the collar 24 to receive the smaller terminal prong 10*a* of the charging circuit. A pair of rivets 27 are employed to rigidly secure my improved receptacle within the casing 7. These rivets are extended through openings 27*a* (Fig. 3) in the body 15 and casing wall 9 and have heads engaging the outer surface of the wall and the inner surface of the body 15.

My improved receptacle is easy to assemble and fasten securely within the closed end of the casing 7. The installation is made with the closure cap 8 removed and before the electric bulb, reflector and batteries 12 are assembled in the casing. After the casing has been formed with the closed end wall 9, the circular openings 21 and 26 and holes for the rivets 27 are punched in this end wall. The body 15 is assembled with the contact members 18 and 22, collars 19 and 24 and conductor 13, and the latter is connected to the contact member 18, leaving the spring fingers 23 projecting, as indicated in Fig. 5. This assembly is then inserted through the open end of the casing 7 and the collars 19 and 24 are placed in the openings 21 and 26 respectively. Thereupon, the rivets 27 are inserted and by the use of a suitable die extending in contact with the inner side of the body 15 the heads of the rivets are upset to securely and rigidly fasten the receptacle within the casing. Thereafter the batteries 12 and other elements of the flashlight are assembled and connected in circuit in the usual or suitable manner.

It will be evident that the charging circuit within the flashlight includes the contact 18 and conductor 13 extending to the positive battery terminal and that the contact member 22 is electrically connected to the negative terminal of the battery by the fingers 23, casing 7 and spring 12*a*, the fingers 23 being held under compression in recesses 23*a* in the body 15 by the overlying casing wall 9.

As indicated in Figs. 3 and 4, the end wall 9 of the casing 7 has a projecting corrugated periphery 28 and a reentrant flat central portion 29 from which the collars 19 and 24 project to a lesser extent than the corrugated periphery. Thus the periphery of the wall 9 protects the receptacle collars against breakage.

When the battery 12 requires recharging, the charging circuit is merely connected by means of the terminal 11

having the prongs **10**, **10***a*, by inserting the latter in the recesses containing the members **18** and **22**. Correct polarity is insured by providing a prong and socket for the positive side of the circuit of a different size from the corresponding connectors for the negative side. It will be evident that the receptacle occupies a minimum of space within the flashlight casing and is effectively protected against damage from rough handling.

I claim:

In a portable lamp having a casing, a receptacle for an external charging circuit connector comprising, a body of dielectric material overlying the inner surface of said casing and formed with a pair of recesses of respectively different widths, contact members contained in said recesses, a spring finger projecting laterally from one of said contact members, said casing being formed with openings in registry with said recesses, collars of dielectric material confining said contact members in the respective recesses and projecting to the exterior of said casing through said openings therein, one of said collars being formed with a slot to receive and allow said finger to project laterally from said collar for contact with the inner surface of the casing, and fastening means engaging said casing and body for rigidly securing said body in place in the casing.

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