Nov. 14, 1939. C. V. DAME 2,180,197

ELECTRIC RECEPTACLE

Filed May 28, 1937

Fig. 1

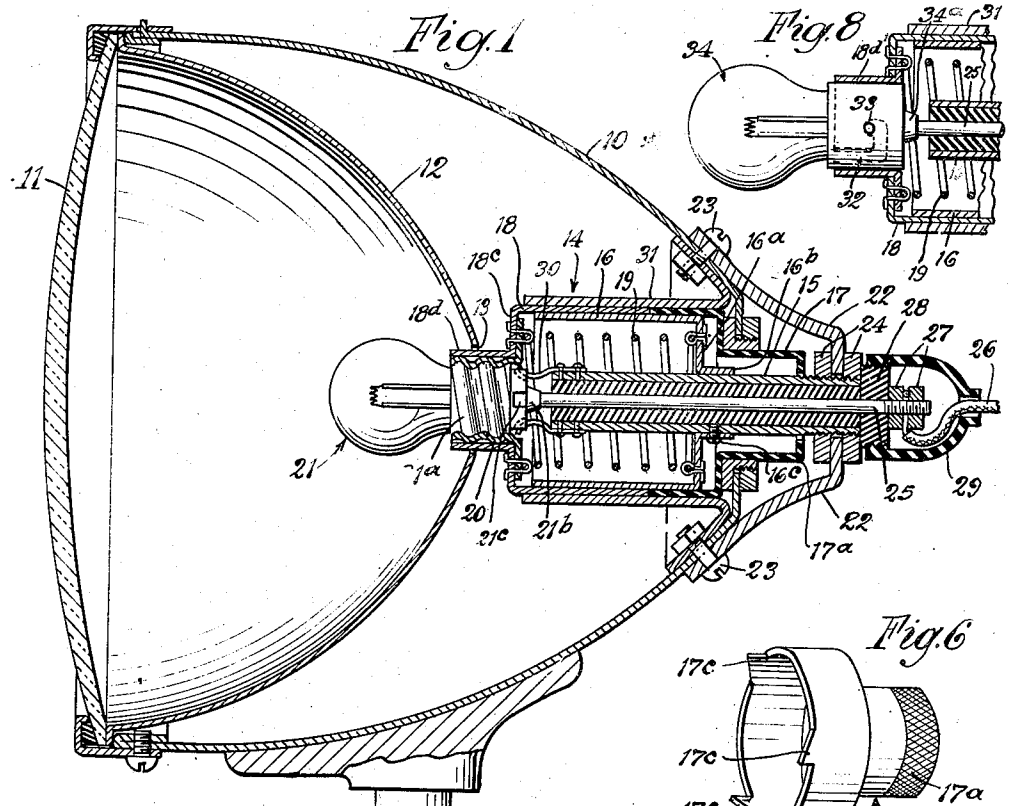



Fig. 8




Fig. 6




Fig. 2

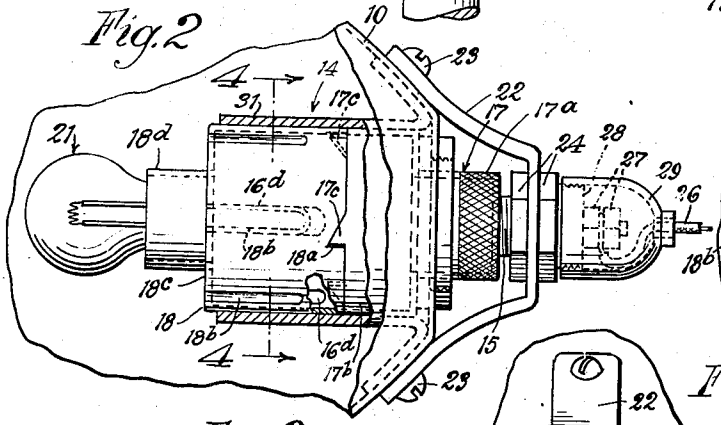



Fig. 4

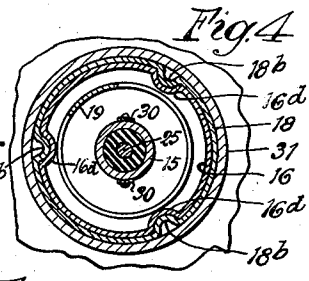



Fig. 3

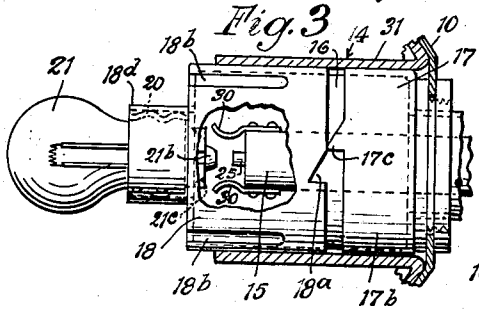



Fig. 5

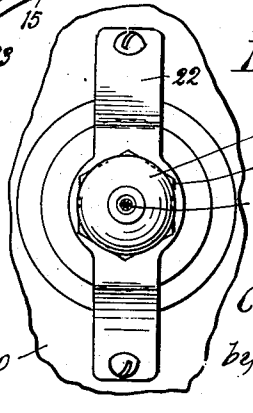
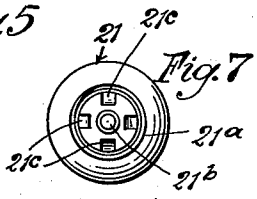



Fig. 7




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# UNITED STATES PATENT OFFICE

2,180,197

## ELECTRIC RECEPTACLE

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Application May 28, 1937, Serial No. 145,174

4 Claims. (Cl. 173—349)

This invention relates to improvements in electric receptacles. In sockets or receptacles of common construction such as for lamps or other current consuming devices or outlet plugs for such devices, vibration to which such sockets or receptacles may be subjected frequently cause interruption of a circuit with accompanying arcing and impairment both of the receptacle and the device. Thus, in motor vehicles, head lamps frequently become loose in their sockets and cause a flickering light which not only is an annoyance to approaching motorists but impairs the lamps as well. Buildings adjacent streets carrying heavy traffic are frequently caused to vibrate sufficiently to cause the lamps to become loose in their sockets.

It is an object of the invention to provide a receptacle or socket for lamps or other devices which will prevent the loosening of the same and separation or partial separation of their terminals, thus eliminating a source not only of annoyance but reduction of the period of usefulness of the lamp or other device.

Another object of the invention is to provide a socket or like outlet receptacle for a current consuming device which is provided with resilient means which so function as to hold the lamp or other device in circuit closing relation and, in conjunction with other means, against rotation in a direction tending to loosen the same but which is provided with an operating member whereby the effect of the resilient means can be removed whenever it is desired to remove a lamp or device from the receptacle.

A further object of the invention is to provide a lamp receptacle for use in conjunction with a reflector whereby the lamp is relatively movable axially with respect to the reflector for releasing the lamp engaging means which normally prevent rotation of the lamp in a direction to loosen it in its socket.

The invention is therefore of particular importance in conjunction with lamps used on vehicles such as motor cars, railroads, aeroplanes, or the like, although the invention is not limited to such use.

In the accompanying drawing wherein certain embodiments of the invention are shown for the purpose of illustrating the invention:

Fig. 1 is a sectional view through a conventional head light reflector of the type used in automobiles, the improved receptacle being shown in position in the head lamp;

Fig. 2 is a broken view of a head lamp showing the improved receptacle in elevation in position therein;

Fig. 3 is a broken sectional view illustrating the receptacle and the lamp in inoperative position for the convenient removal or replacement of a lamp;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is a fragmentary rear end elevation of the structure shown in Fig. 1;

Fig. 6 is a detached perspective view of a manually operable cam member by means of which the lamp can be moved to inoperative position;

Fig. 7 is a bottom end elevation of a conventional screw type lamp having a modified base; and

Fig. 8 is a sectional view of a modified form of receptacle for accommodating a bayonet type lamp base.

In Fig. 1 of the drawing, 10 is the exterior shell of a conventional head lamp of the type used on motor vehicles having a lens 11. Within the shell 10 is a conventional reflector 12 provided with an opening 13 therein for receiving a lamp socket whereby the lamp held in the socket may be positioned at the focal point of the reflector. The improved receptacle indicated generally by the numeral 14 comprises a central tube 15 to which is secured a tubular member 16, the member being open at its forward end and being provided with a rear end wall 16*a* which terminates in a tubular extension 16*b* which is secured to the tube 15 by any improved means, such as by a set screw 16*c*. The member 16 is of conducting material.

Rotatably mounted on the member 16 is a manually operable member 17 of insulating material which is shown in perspective in Fig. 6. This member comprises a knob portion 17*a* and an annular cylindrical portion 17*b* provided with cam-like formations 17*c* on its forward edge. Also mounted on the member 16 is a tubular member 18 having formations 18*a* which are complementary to the cam-like formations 17*c* of the member 17. The member 18 is provided with longitudinal ribs 18*b* in its inner surface which seat within channel formations 16*d* in the outer surface of member 16 whereby the member 18 is held against rotative movement with reference to member 16 but is slidable axially thereof by means of the cam members 17*c* when the member 17 is rotated from the position shown in Fig. 2 to the position shown in Fig. 3. The member 18 is provided with a forward end wall 18*c* which terminates in a cylindrical for-

ward portion 18d which forms the outer shell of a lamp socket.

A spring 19 is attached to wall 16a and to wall 18c and tends to move the wall 18c to the right as viewed in Fig. 1 although it permits the member 18 to move to the left under the camming action of the members 17c when the member 17 is rotated as above described. The socket 18d may be internally threaded or may have a threaded insert 20 positioned therein which receives a threaded base 21a of a lamp 21.

The tube 15 is secured in position by any suitable means such as by a bracket 22 through which the tube extends and the ends of which are secured at 23 to the shell 10 of the head light. As shown in Fig. 1, the outer end of the tube 15 is threaded for receiving clamping nuts 24 which hold the tube rigidly in position. Extending axially through the tube 15 is a conducting terminal 25, to the rear end of which a current conductor 26 is adapted to be attached by means of nuts 27, or the like. The nuts 27 may secure an insulating member 28 in the position shown in Fig. 1, the outer surface of which may be threaded for supporting an insulating member 29 which encloses the rear end of the terminal 25 and the bare end of the conductor 26 as shown.

The forward end of the terminal 25 is disposed coaxially with respect to the socket 18d and with respect to a lamp 21 positioned therein and is adapted to make contact with the central terminal 21b of the lamp when the latter is in normal position in the receptacle. The current flows through conductor 26, contact 25 and terminal 21b of the lamp and may be grounded through the member 20 which contacts and may be soldered to the spring 19, member 16, tube 15 to the bracket 22 and shell 10 if desired. Where a screw base lamp is employed, however, I prefer to provide a number of spring engaging members 30 which are secured to the forward end of the tube 16. These members are of such length that they engage the base of the lamp when the lamp is in operative position shown in Fig. 1, that is, with its terminal 21b in contact with the forward end of the conducting terminal 25. These engaging fingers 30 exert pressure on the lamp base and prevent rotation thereof when the lamp is subjected to vibration in use, thereby preventing the lamp from becoming loose in its socket.

In Fig. 7, the base of the lamp is shown as being provided with a number of indentations 21c for receiving the ends of the fingers 30 to provide a positive lock against rotation of the lamp while the same is in operative position. This feature is not essential, however, since the fingers 30 will exert sufficient friction on the lamp base to prevent loosening. Where the engaging fingers 30 are employed, the lamp may be grounded through the fingers and the tube 15, in which event, the members 16, 17, 18 and 18d may be of insulating material if desired.

Surrounding the enlarged cylindrical portions of the members 17 and 18, I have illustrated a cylindrical shell 31 which is secured to the shell 10 by the fastening means 23. The member 31, the use of which is optional, provides further support for the receptacle.

When it is desired to remove a lamp from the socket, the knob 17a is rotated to cause the cams 17c to force the member 18 forwardly against the action of the spring 19. The forward movement of the member 18 causes the socket 18d and the lamp carried thereby to move to the left as viewed in Fig. 1, thus freeing the lamp base from the engagement of members 30 and separating the lamp terminal 21b from the terminal 25. The lamp may then be removed from the socket without danger of breaking the lamp as will be seen. A new lamp may then be inserted, whereupon by rotating the member 17 by means of the accessible knob portion 17a, the lamp and the socket may be moved to the right under the action of the spring 19 to effect contact of the lamp terminal with the terminal 25 and engagement of the fingers 30 with the base of the lamp.

To accommodate the relative movement of the lamp and its socket with reference to the reflector 12, the space between the reflector and the wall 18c is such as to accommodate the movement to the left caused by the cam 17c.

The modification of the invention shown in Fig. 8 consists only in making the socket 18d' of conducting material and providing therein a bayonet slot 32 for accommodating the pin 33 of a conventional bayonet base lamp 34. Since with a lamp of this construction, the pin 33 when seated in the slot 32 as shown in Fig. 8 precludes any possibility of rotation of the lamp, the fingers 30 of the form shown in Fig. 1 are omitted. It will be seen that the spring 19 tends to move the socket and the lamp therein to the right as viewed in Fig. 8, thus causing the lamp terminal 34a to bear firmly against the end of the terminal 25, thus not only placing the lamp in circuit closing relation with respect to the terminal but preventing loosening of the lamp due to vibration to which it may be subjected. In other respects, the construction shown in Fig. 8 is the same as that above described and operates in like manner.

While I have shown and described certain embodiments of the improvements for the purpose of illustration, it will be apparent that various detailed changes may be made therein without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A receptacle comprising a tubular member, a socket member slidable longitudinally of said tubular member, cooperating means on said members preventing relative rotation thereof, a fixed conducting terminal in said tubular member arranged for contact with the terminal of a lamp in said socket member, a spring secured to said socket member and to said tubular member for moving the former axially in a direction to cause the terminal of a lamp therein to engage said fixed terminal, means for engaging the lamp for preventing rotation of the same in the socket when said terminals are in contact, and a sleeve rotatably mounted on said tubular member and provided with formations engaging said socket for moving said socket axially in a direction against the action of said spring to effect separation of said terminals and release of said engaging means.

2. A receptacle comprising a tubular member, a socket member slidable longitudinally of said tubular member, means preventing relative rotation of said members, a fixed conductor terminal in said tubular member arranged for contact with a terminal of a lamp in said socket member, a spring secured to said socket member and to said tubular member for moving the former in an axial direction to cause the terminal of a lamp in said socket to engage said fixed terminal, one or more resilient lamp-base engaging mem-

bers in said receptacle for preventing rotation of the lamp in said socket member when said terminals are in contact, and rotative means for moving said socket axially in a direction against the action of said spring to separate said terminals and release said engaging members.

3. A lamp socket comprising a central conductor supporting member, a terminal at the inner end of said supporting member, a cylindrical guiding member secured to said supporting member and having a radially disposed end wall and a portion of increased diameter spaced from said supporting member to provide a spring chamber, said radial wall constituting the rear end wall of said chamber, a second cylindrical member reciprocal on and guided by said cylindrical member and having a radially disposed wall constituting the forward end wall of said chamber, a lamp socket carried by said last mentioned radial wall in axial alignment with said terminal, a spring in said chamber arranged to act on said reciprocal member for moving the latter in a direction to effect electrical contact of a terminal of a lamp in said socket with said first mentioned terminal, and a rotary member on said guide member provided with means for moving said reciprocal member against the action of said spring for effecting separation of the lamp and socket terminals.

4. A lamp socket comprising a central conductor supporting member, one or more lamp base engaging members carried by said supporting member, a terminal at the inner end of said supporting member, a cylindrical guide member secured to said supporting member and having a radially disposed end wall and a portion of increased diameter spaced from said supporting member to provide a spring chamber, said radial wall constituting the rear end wall of said chamber, a second cylindrical member reciprocal on and guided by said first cylindrical member and having a radially disposed wall constituting the forward end wall of said chamber, a threaded lamp socket carried by said last mentioned radial wall in axial alignment with said terminal, a spring in said chamber secured to said end walls thereof and arranged to act on said reciprocal member for moving the latter in a direction to effect electrical contact of a terminal of a lamp in said socket with said first mentioned terminal and engagement of said base engaging member or members with the base of said lamp for preventing rotation of the latter while said terminals are in contact, and a rotary member on said guide member provided with means for moving said reciprocal member axially to effect separation of said terminals and disengagement of the lamp base from said engaging member or members.

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