April 15, 1941. M. ALDEN 2,238,151

SOCKET

Filed May 3, 1940

Fig. 1.

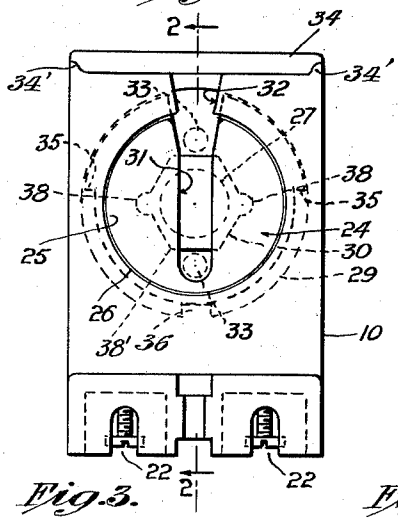


Fig. 2.

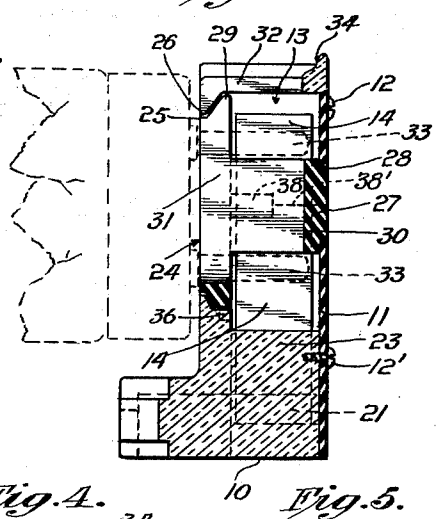


Fig. 3.

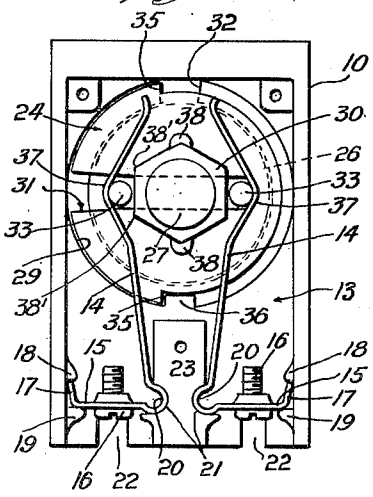


Fig. 4.

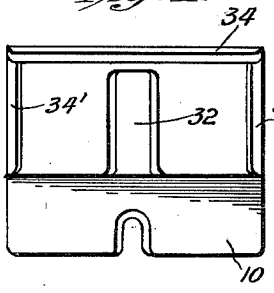


Fig. 5.

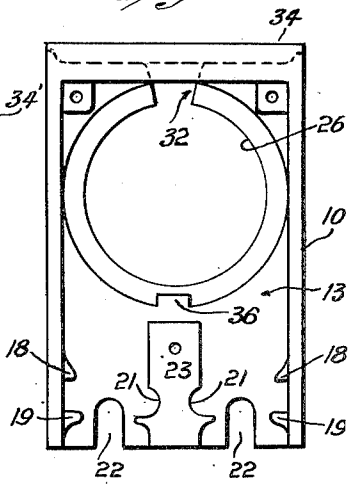


Fig. 7.

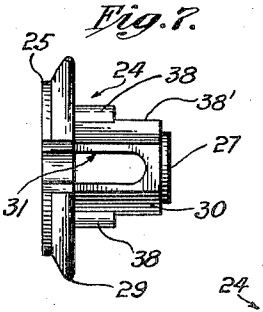


Fig. 6.

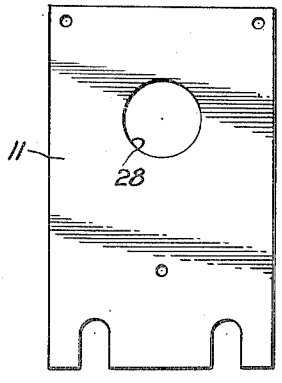


Fig. 8.

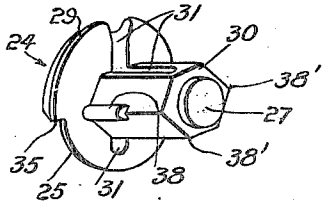
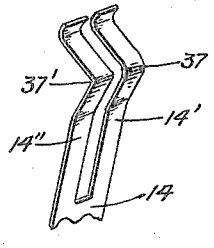


Fig. 9.



INVENTOR
Milton Alden
BY
ATTORNEY

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SOCKET

Milton Alden, Brockton, Mass.

Application May 3, 1940, Serial No. 333,086

8 Claims. (Cl. 173—328)

My invention relates particularly to sockets for holding lamp ends and the like having two spaced apart prongs on at least one end.

One object is to provide a socket construction for holding one end of a double ended lamp tube or the like.

A special object is to provide a construction of this character which is simple, easy to operate and safe.

Another object is to provide a construction capable of carrying heavy current without danger of short circuiting or grounding.

Another object is to provide a construction of this character in which the electrical contacts are so housed at all times that there is substantially no danger of anyone coming in contact with a live part.

Another object is to provide a simple form of construction into which the terminal prongs may be readily inserted and rotated smoothly and easily.

Another object is to provide a socket for a rotatable tube or the like in which there are positive stops for limiting the rotation without likelihood of damaging the parts.

In carrying out the preferred form of the invention two oppositely disposed spring contacts are mounted in an insulating housing formed of two parts. A rotatable support for the tube prongs or the like is mounted in the housing. This support is provided with a transverse groove or passage and one edge of the body is provided with an entrance groove to guide the prongs into the open circuit position.

A number of important details of construction will be more fully described hereinafter.

Fig. 1 is a front view of a socket embodying one form of my invention, the support being shown in the open circuit position.

Fig. 2 is a longitudinal sectional view of the same and showing in dotted lines the end of the tube or the like with its prongs.

Fig. 3 is a rear view of the front part of the body, the rear part being removed.

Fig. 4 is an end view of the socket.

Fig. 5 is a rear view of the body of the socket, the contacts and support for the tube being omitted.

Fig. 6 is a rear view of the back plate.

Fig. 7 is a plan view of the rotatable support.

Fig. 8 is a perspective view of the support.

Fig. 9 is a perspective view of a modified form of contact member.

The housing is formed of a main portion 10 and back plate 11 suitably connected by rivets or screws such as 12, 12'. Inside of the body is a cavity or chamber 13 in which is mounted one or two spring contact members 14, 14. Each member has a foot portion 15 carrying a binding screw 16. One side 17 of the foot is bent up and adapted to slide into a groove formed by projections 18 and 19. The other side of the foot is provided with an arched portion 20 which fits in groove 21. The edge of the housing is provided with a groove 22 for the conductor leading to the binding screw 16. Between the two springs 14, 14 is a boss 23 which separates the two springs and provides a seat for a fastening device 12'.

The supporting member 24 has a circular rim 25 rotatably mounted in an opening 26 in the front of the housing. The rear of the support may also be provided with a circular boss 27 which is supported in an opening 28 in the back plate 11. The support is provided with flanges 29 and 30 coacting with adjacent walls of the housing to position the support in the housing.

The front part of the support 24 is provided with a groove 31 adapted to receive the prongs of the tube or other device which is supported by the socket.

The body of the housing is provided with an entrance groove 32 leading to the groove 31 in the rotatable support.

The size of the support 24 with respect to the tube to be supported is such that when the two prongs 33, 33 are inserted into the groove in the support one of them will be located in the bottom of the groove with respect to Fig. 1, and the other will be located in the upper part of the slot a corresponding distance from the center of the support. The upper part of the housing is provided with a rear flange 34 and side flanges 34' on opposite sides of the entrance groove 32. The rear flange serves to guide the prongs of the tube into the entrance groove 32, and also prevents longitudinal displacement of the tube. The side flanges prevent one of the prongs sliding over to the side of the housing and being twisted off unintentionally.

The support is provided with projections 35, 35 which are adapted to engage the stop 36 in the housing so as to limit the rotation of the support.

The ends of the contact arms 14, 14 are preferably flared outwardly somewhat in the conventional manner so as not to interfere with the entrance of the prongs of the tube, and they are provided with conventional recesses or pockets 37 into which the prongs 33 are adapted to fit when the tube is in the closed circuit position.

The support is also preferably provided with

projections 38 which in a way correspond with the positions of the pins 33 when the parts are in the open circuit position so as to engage in the recess 37 and hold the support resiliently in the "off" position of Fig. 1.

Instead of the form of binding screw shown herein, it should be understood that the conductor wires may be secured to the contact arms in any other suitable manner as for instance by inserting the wire directly in the foot of the contact arm and clamping, soldering or welding same in place. Or the contact member may be provided with a tongue or tab for gripping the insulation so that the insulated lead will have strain relief to minimize the danger of disconnection of the wire. Such a construction is especially desirable to prevent movement of the wire adjacent the welded point. It is also desirable that the wire be kept straight from the point of welding so as to keep the wire from moving at this point.

To insert the tube or lamp base, it is necessary simply to slide the prongs into the grooves 32 and 31 and then rotate the tube and its support 90 degrees.

It will be seen that when the tube is in the closed circuit position the spring contact arms are completely guarded against accidental contact since there is no opening which leads directly to them.

Although I have shown the supporting button as mounted entirely within the housing, it should be understood that part of it might project somewhat beyond the adjacent face of the housing or the front flange may be mounted on the outside. So also other means might be provided for pivoting or providing a bearing for the rear end of the support.

The form shown however is simple, rugged, relatively inexpensive and substantially fool-proof.

The same construction can be made to accommodate prongs with heads or enlarged tips by suitably shaping the cross section of the grooves 32 and 31 in which event when the prongs are inserted into the support and the support is rotated the prongs can not be withdrawn except by rotating the support back to "off" position.

In Fig. 9 is shown a modified form of contact slitted to form two parts 14' and 14''. The corner portion 37 of part 14' is adapted to engage the projection 38 while the portion 37' of part 14'' is adapted to engage the corner 38' of flange 30 of the support whereby the support is firmly but yieldingly held in position. Part 14'' tends to shift the support until the shoulder 38' engages the portion 37'.

I claim:

1. A socket of the character described comprising an insulating housing having a groove at one edge and a tube supporting member rotatably mounted in the housing and provided with a transverse groove and a spring contact member mounted in said housing alongside of said support and adapted to be engaged by a prong when inserted into the groove in said support and said support is rotated, said transverse groove being of a width not substantially in excess of the diameter of a prong, whereby said transverse groove guides said prong until it seats at the bottom of the groove, and said tube supporting member when rotated carrying said prong in an arc about the axis of rotation of said supporting member so as to cause electrical engagement between said prong and said spring contact member.

2. A socket having a housing with a cavity therein, spaced spring contacts in said cavity having pocket portions, a support for a two-pronged tube or the like rotatably mounted in the cavity so as to be movable between an "on" and an "off" position, oppositely disposed projections on the support adapted to be moved into said pocket portions for holding said support resiliently in "off" position while at the same time holding said spring contacts out of engagement with the prongs of said tube, said support being formed with a groove for receiving and supporting the prongs of the tube on a plane intersecting the plane of the projections whereby rotation of the support is adapted to bring either the prongs or projections into direct mechanical engagement with said pocket portions.

3. In a socket having stationary contact members, a support for a two-pronged tube including a body portion having a shank and an end flange, said shank and flange being formed with a continuous groove opening on opposite sides of the shank for receiving and holding the prongs of the tube in a position so that portions of said prongs project through said groove exteriorly of the shank at opposite sides thereof for direct mechanical engagement with said contact members to close the circuit and oppositely disposed projections on the shank positioned on a plane intersecting the plane of the prongs when in the groove for engagement with the contact members to hold the support and contact members resiliently in engagement in open-circuit position, said support rotating and carrying therewith the tube prongs held thereby, so that after said projections leave said stationary contact members, said tube prongs will directly and mechanically engage said contacts in closed-circuit position.

4. In a socket, a housing, a spring contact member at each side of said housing and formed with a pocket portion, a support for a two-pronged tube including a body portion having a shank and an end flange, said shank and flange being formed with a continuous groove opening on opposite sides of the shank for receiving and holding the prongs of the tube in a position so that portions of said prongs project through said groove exteriorly of the shank at opposite sides thereof for insertion into and engagement with the pocket portions of the spring contacts to close the circuit and oppositely disposed projections on the shank positioned on a plane intersecting the plane of the prongs for insertion into and direct mechanical engagement with the inner surfaces of the pocket portions of the spring contacts to hold the support and contacts in engagement in open-circuit position.

5. In a socket, a housing with a cavity therein, a spring contact member at each side of the cavity, a rotatable support for a two-pronged tube in said cavity, said prongs being supported for rotary movement into direct mechanical engagement with the contact members upon rotation of the support and a slot and stud connection between the housing and support for limiting the rotation of the latter.

6. A socket of the character described having a housing with a cavity therein, spaced spring contacts in said cavity, means for supporting the contacts in the cavity, a removable support for a two-pronged tube rotatably mounted in said cavity, means for guiding the support into proper position in the cavity, means for holding the support in the cavity in open-circuit position, means for holding the support in the cavity in the closed-circuit position, means for guiding the prongs of

the tube into position in the support and means for preventing accidental turning of the tube relative to the support or housing when only one prong is in the support, said rotatable support carrying said prongs into direct mechanical engagement with said contacts, when in the closed-circuit position.

7. A socket for a tube end having spaced prongs, comprising a housing having a cavity with a groove leading into one side thereof, a pair of spring contact arms with a space between them in line with said groove, a tube support rotatably mounted in said housing and having a transverse groove which at one angular position of the support is in alinement with said first mentioned groove to receive the prongs of a tube and which groove upon rotation serves to carry said prongs therewith in a rotational movement until said prongs are brought into direct mechanical engagement with the contact arms in the housing, both of said grooves having a width not materially in excess of the diameter of a tube prong.

8. A socket for a tube end having spaced prongs, comprising a housing having a cavity, spaced contacts in the housing, said housing having a groove opening into one end of the cavity in line with the space between the contacts and an opening in the face of the housing in which the tube end prongs may be rotated when inserted through said groove, said housing having projecting portions on opposite sides of the entrance to said groove extending farther away from the entrance to the groove than the space between the prongs of the tube so as to prevent the rotation of the tube unless both prongs are inserted into the groove.

MILTON ALDEN.