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J. S. YARROW

2,659,875

LAMP SOCKET

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FIG. 1.

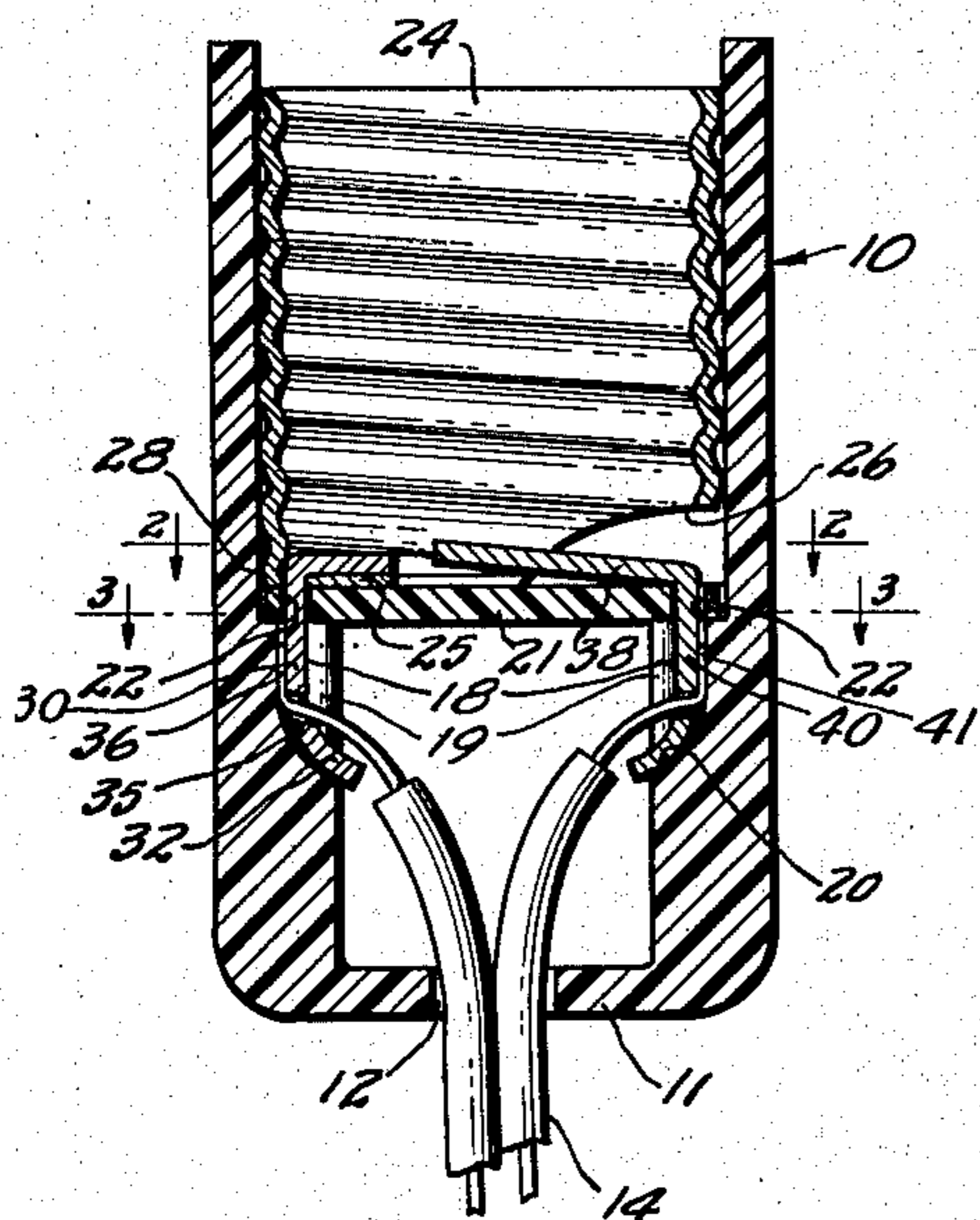


FIG. 2.

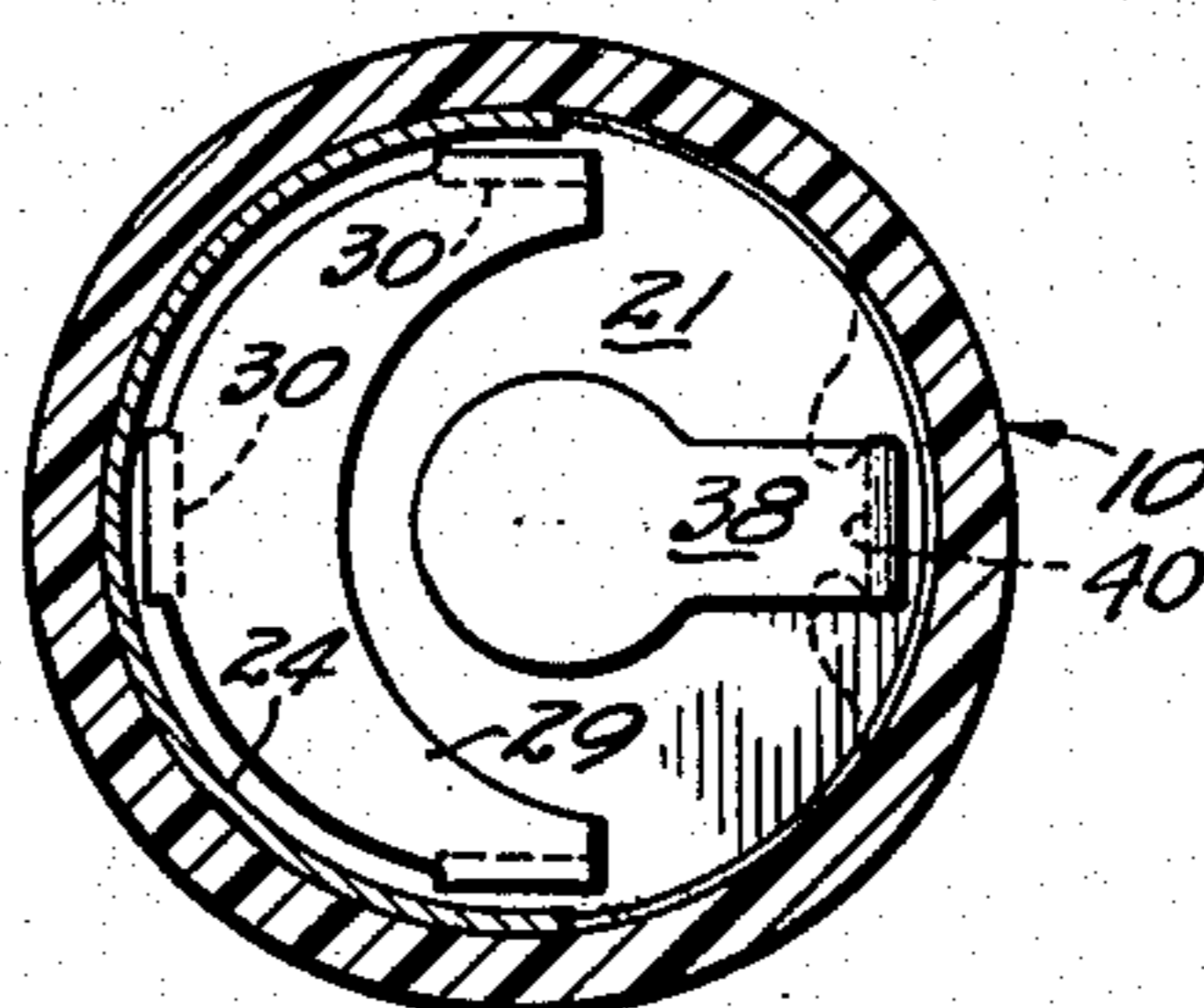


FIG. 3.

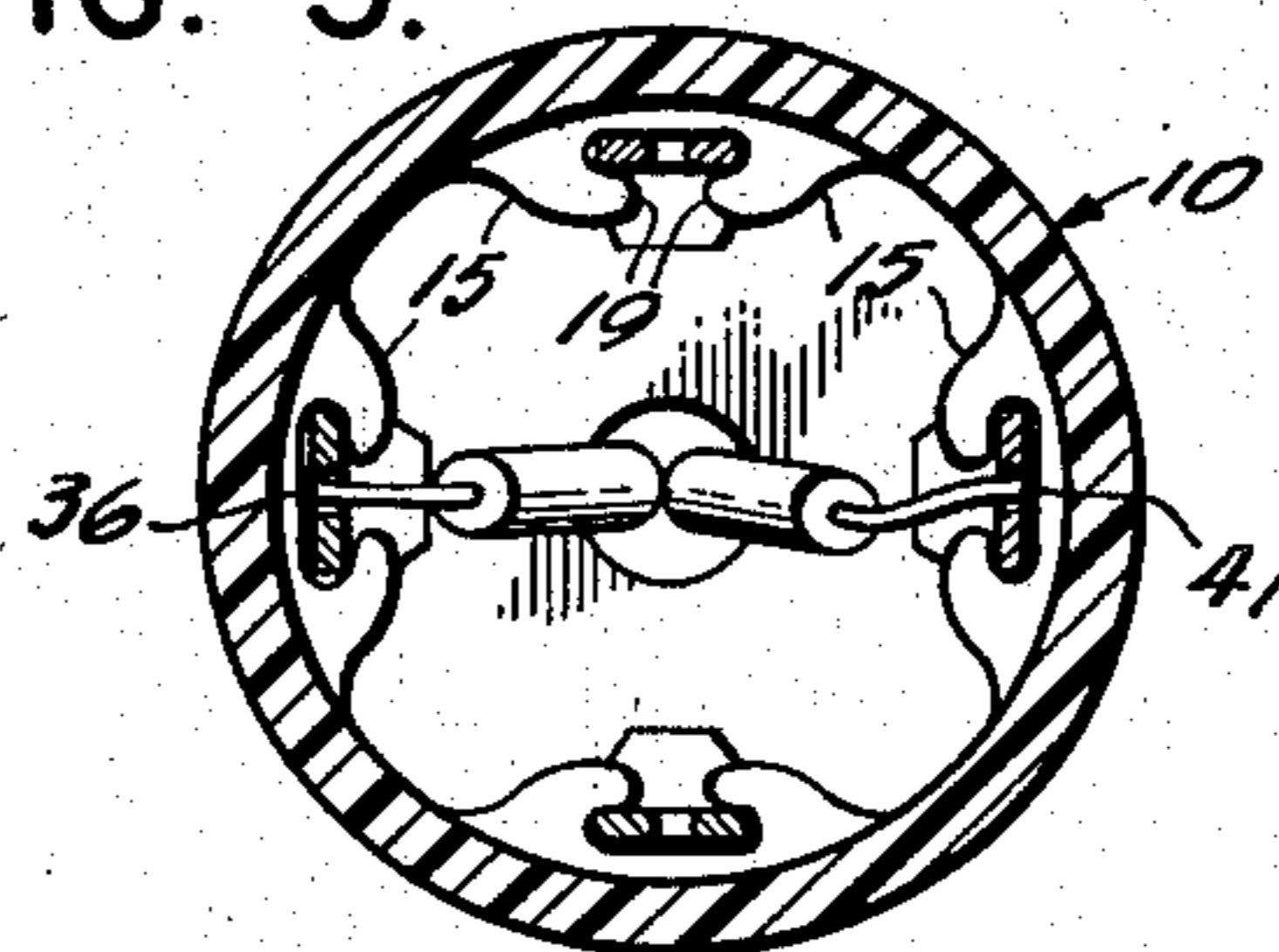


FIG. 4.

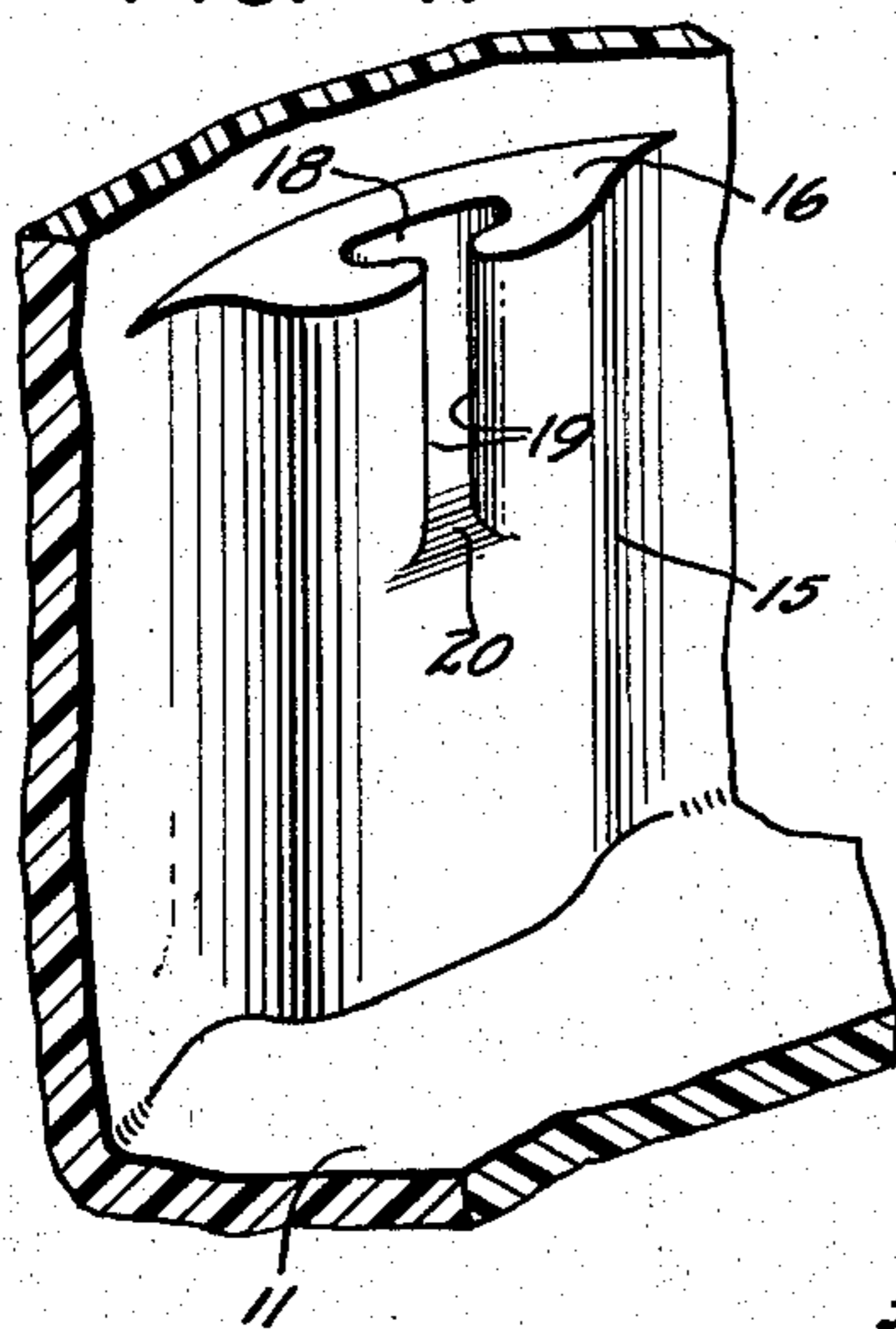


FIG. 5.

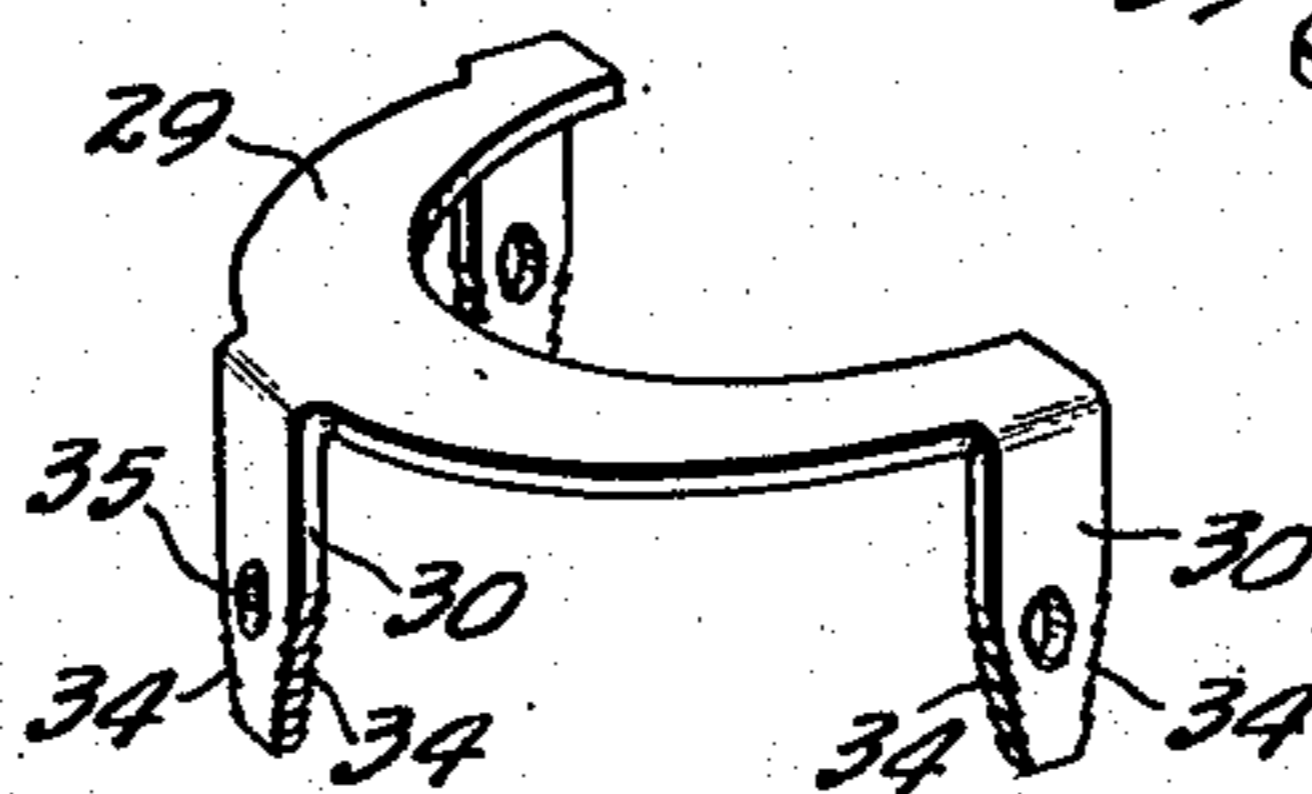


FIG. 6.

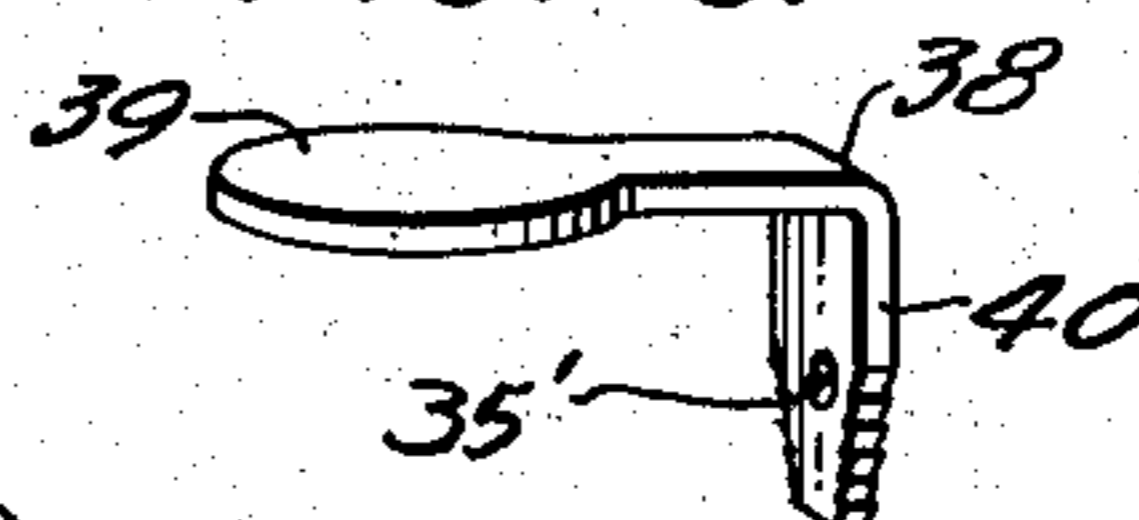


FIG. 8. FIG. 7.

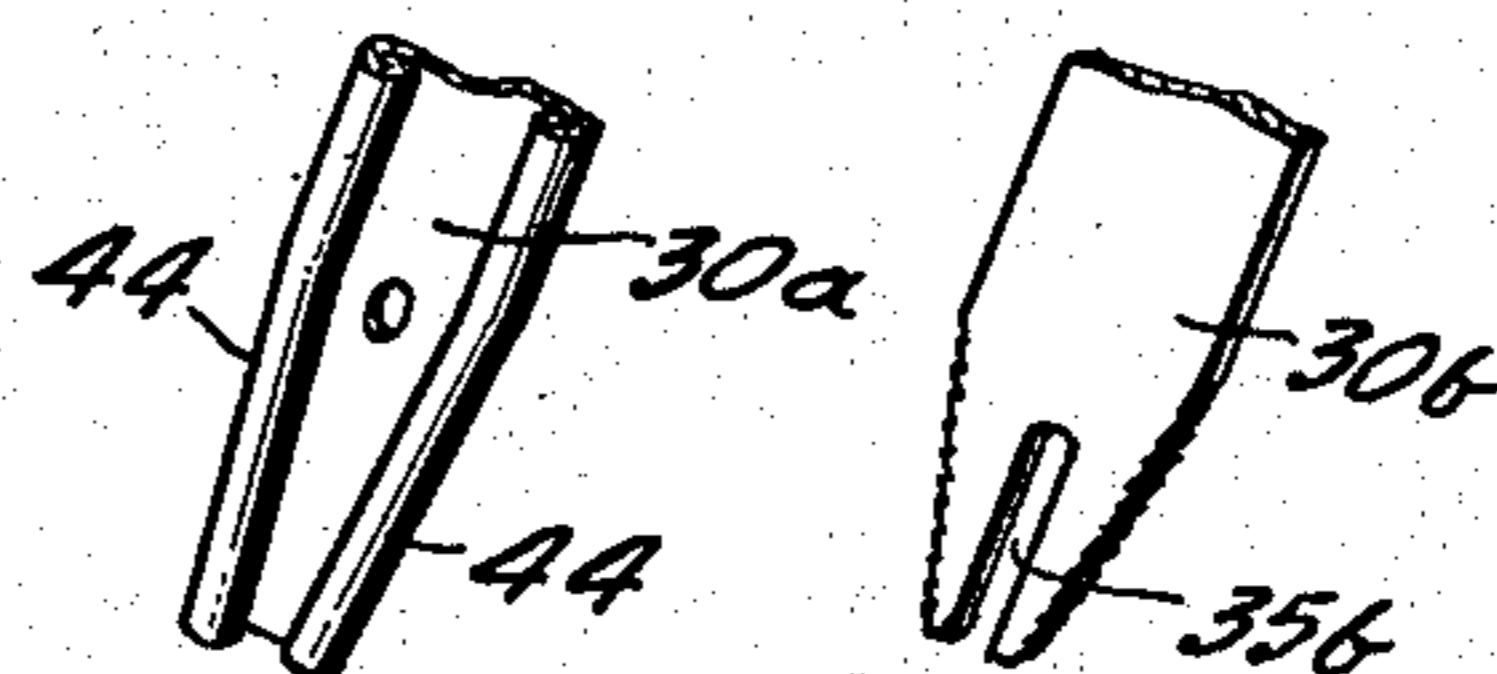
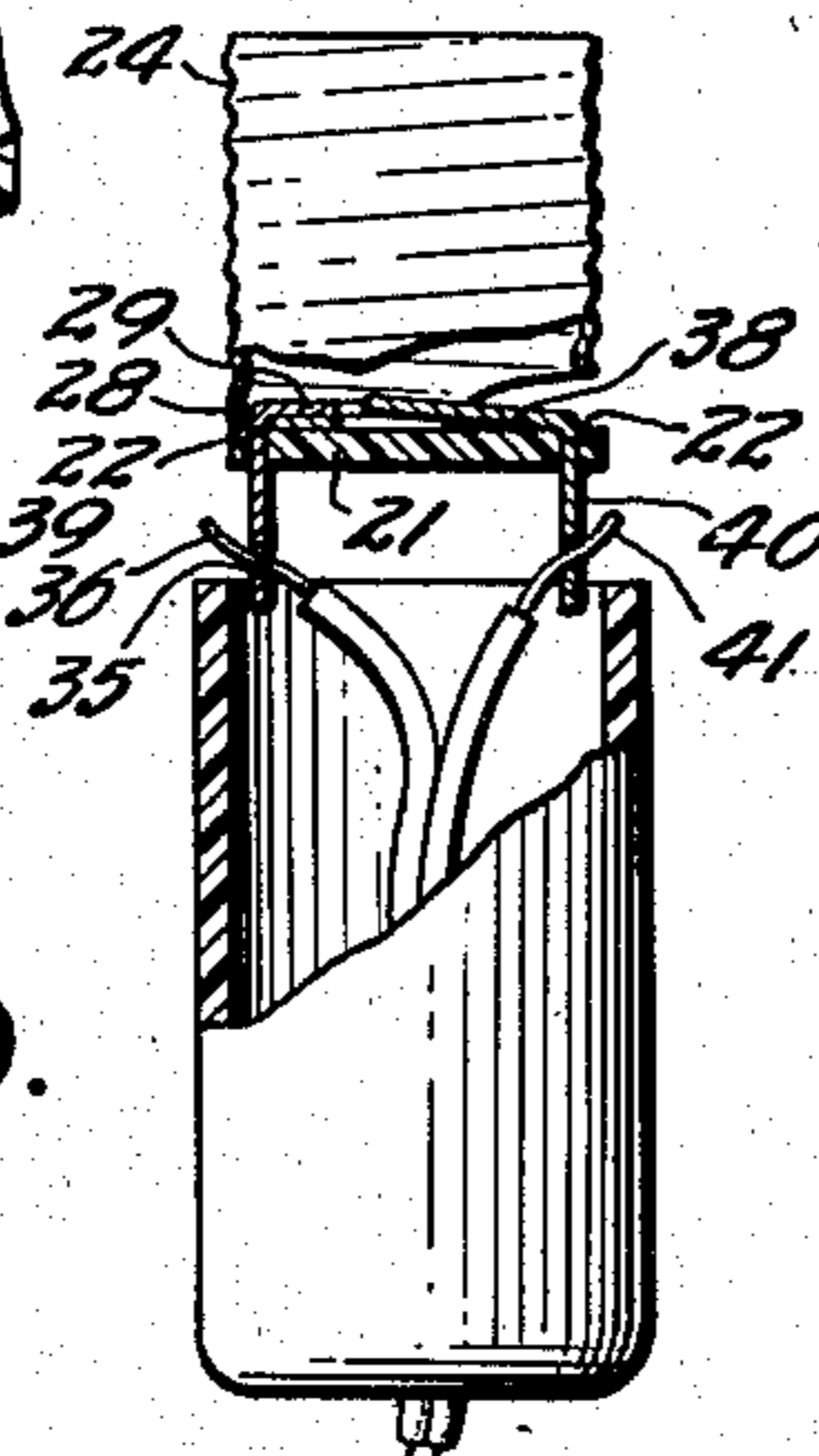


FIG. 9.



Inventor

JOSEPH S. YARROW

J. R. Jenkins

Attorney

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LAMP SOCKET

Joseph S. Yarrow, Litchfield County, Conn.

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10 Claims. (Cl. 339—180)

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This invention relates to electrical devices and more particularly to anchored contact parts for wire connections.

One object of the invention is to provide such a device in the form of a lamp socket whose component parts and lead wires may be completely and securely assembled by one operation of a plunger.

Another object is to eliminate the need for rivets in the assembly of such devices and yet obtain secure and close contact of the various conductive parts with the lead wires.

The attainment of these and other objects which will appear from the description and drawing are shown in connection with a device for illustration, a lamp socket which briefly described includes, a housing having beads therein provided with undercut grooves the walls of which are curved and conductors each having a part forced into one of said grooves and bent along the wall and having a side portion wedged against a flange of the undercut groove.

In the accompanying drawing showing, by way of example, several of many possible embodiments of the invention,

Fig. 1 is a vertical sectional view of the completed socket;

Fig. 2 is a transverse horizontal sectional view of the socket, the section being taken along the line 2—2 of Fig. 1 looking in the direction of the arrows of said line;

Fig. 3 is a transverse horizontal sectional view of the socket, the section being taken along the line 3—3 of Fig. 1 looking in the direction of the arrows of said line;

Fig. 4 is a fragmental perspective of the housing showing the bead;

Figs. 5 and 6 are perspectives of the conductors before assembly;

Figs. 7 and 8 show modifications of parts of the conductors of Figs. 5 and 6; and

Fig. 9 shows a step in the assembly of parts to form the socket of Fig. 1.

The completed socket comprises a tubular housing 10 of hard plastic such as the phenol-formaldehyde, urea formaldehyde, or phenolic furfural types partially closed at the lower end 11, the latter being provided with a hole 12 to admit wires 14.

A plurality of beads 15 are provided in the lower portion of the housing. These beads 15 are all longitudinal of the housing and terminate in a common plane transverse of and in the mid-portion of the housing to form ledges 16.

The beads, or at least two of them, have sub-

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stantially vertical undercut grooves 18 open at the top, or ledge, forming vertical opposed flanges 19. The ends of the grooves toward the bottom of the housing are curved inwardly toward the axis of the housing as at 20.

A disk 21 of insulating material is disposed on the ledges of the respective beads and the peripheral portion of the disk is provided with slits 22 which register with the respective top ends of the grooves 18. A socket screw shell 24 is snugly disposed in the upper part of the housing and is provided with an inwardly turned flange 25 around its lower end for a part of its circumference, a portion of the shell being cut away as at 26. The flange 25 rests on the disk 21 and is provided with slits 28, which register with the slits of the disk and the groove 18.

The shell is secured in place by a retaining piece or "horse shoe" 29 of metal such as brass on the flange and in electrical contact therewith. The retaining piece is provided with prongs 30 passing downwardly through the slits 22, 28 and into the grooves 18. The prongs, during or after assembly, are bent as at 32 along the curved bottom 20 of the groove 18 and become tightly wedged against the opposed flanges 19 of the groove. The prongs are more securely anchored if they are provided with barbs or teeth 34 which cut into the flange 19. Thus the prongs are bent to secure the shell in place and at the same time the barbs cut into the material of the housing.

At least one of the prongs 30 is provided with an opening 35 through which an exposed end portion 36 of one of the wires 14 passes, the end portion 36 is wedged tightly between the prong and the back wall of the groove 18.

A contact member 38 having button portion 39 upon the disk is provided with an angular end member 40 similar to the described prong 30. This end member is retained in one of the beads 15 in a manner described of prong 30 to hold the end portion 41 of the other of the wire pair. Of course the member 38 is out of electrical contact with the socket shell 24 and horse shoe 29.

During assembly, as best understood by reference to Fig. 9, the shell is disposed with its flange 25 upon the disk 21 and the horse shoe and contact member 38 are put in place with the respective prongs 30 and end member 40 passing through appropriate slits 22. Next the wire pair 14 is passed up through the hole 12 in the housing 10, and their terminal ends threaded through the openings 35 and 35' in a prong and end member. Preferably the wire ends 36 and 41 should

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fit snugly in the openings so they will not accidentally be freed therefrom.

Finally a suitable plunger or tool (not shown) is inserted into the socket shell to force the prongs 30 and end member 38 into their respective groove pairs 18 until the prongs and end member have cut into flanges 19 and they themselves have been bent and partially clinched as shown in Fig. 1. All the while the wire pair 14 is drawn downwardly to prevent kinking and the wire ends have, at the appropriate time, passed between the flanges 19.

Thus it is that with a simple downward motion of a plunger the socket is assembled in final form and the electrical connections firmly established.

In another form of the prong or end-piece 30b as shown in Fig. 7 an open ended slot 35 may be provided instead of the opening 35 or 35'. In this connection the jaws on either side of the slot also grip the wire ends.

In yet another form of the prong or end piece 30 as shown in Fig. 8 the part may be of thin material, the edges of which are rolled inwardly as at 44 to provide the necessary stiffness to prevent haphazard buckling of the piece. Of course such a form may be provided with a hole or slot as previously described and the edges may be roughened.

It is obvious that for a simple socket only one prong to the "horse shoe" is necessary and parts of the horse shoe may be secured to the housing by conventional means. A plurality of prongs may be provided on the contact member 38 as are shown provided on the horse shoe 29. Such an arrangement would be desirable where a number of sockets are to be connected in parallel.

The invention claimed is:

1. A tubular lamp socket housing partially closed at the lower end, the latter being provided with a hole to admit wires; an inwardly developed bead in the lower portion of the housing and longitudinal thereof terminating in a plane transverse to and in the mid-portion of the housing to form a ledge; the bead having a substantially vertical under cut groove open at the top of the ledge and forming vertical opposed flanges, the walls at the end of the groove toward the bottom of the housing being curved toward the axis of the housing, and electrical conductors in said undercut groove and bent to conform substantially to the curve of said walls.

2. A lamp socket comprising a tubular housing partially closed at the lower end, the latter being provided with a hole to admit wires; a plurality of beads in the lower portion of the housing, at least two beads having substantially vertical undercut grooves, open at the top and forming vertical opposed flanges, the walls at the ends of the grooves toward the bottom of the housing being curved toward the axis of the housing; an insulating disk disposed on the beads; a socket screw shell and center button mounted over said disk; a pair of conductor prongs, for and in electrical contact with said shell and button respectively, passing downwardly past said disk and into said grooves and bent along the curve of said walls and engaging a part of said flanges, and wire terminal portions passing between said flanges and through said prongs and wedged between the back faces of the prongs and the housing.

3. In combination, a tubular housing partially closed at the lower end, the latter being provided with a hole to admit wires; a plurality of

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beads in the lower portion of the housing, at least two beads having substantially vertical undercut grooves, open at the top and forming vertical opposed flanges, the walls at the ends of the grooves toward the bottom of the housing being curved toward the axis of the housing; an insulating disk disposed on the beads; a socket screw shell and center button mounted on said disk; a pair of flat barbed conductor prongs for and in electrical contact with said shell and button respectively and passing downwardly past said disk and into said grooves and along the curve thereof and the barbs thereof engaging said flanges, and wire terminal portions passing between said flanges and through said prongs and wedged between the back faces of the prongs and the housing.

4. In a lamp socket, a tubular housing partially closed at the lower end, the latter being provided with a hole to admit wires; ledge members in the lower portion of the housing thereof all terminating in a common plane transverse to and in the mid-portion of the housing, at least one of the members being in the form of beads having a substantially vertical undercut groove open at the top of the ledge and forming vertical opposed flanges, the ends of the groove toward the bottom of the housing being curved toward the axis of the housing; an insulating disk disposed on the ledges of the members and provided with a slit in the intra peripheral portions of the disk and registering with the open end of the groove; a socket screw shell snugly disposed in the upper part of the housing and having an inwardly turned flange on the lower end and resting on said disk, the flange having a slit registering with the groove; and an arcuate retaining piece on the shell flange and making electrical contact therewith, said retaining piece having a prong passing downwardly through the slits of the disk and shell flange and into the groove the lower ends of the prongs being bent along the curve of the groove.

5. In a lamp socket as in claim 4, said prong being transversely flat and having serrated marginal portions engaged into said opposed flanges.

6. In combination, a tubular housing partially closed at the lower end, the latter being provided with holes to admit wires; a plurality of ledge members in the lower portion of the housing and longitudinal thereof all terminating in a common plane transverse to and in the mid-portion of the housing to form ledges; at least one of the members being in the form of a bead having a substantially vertical undercut groove open at the top of the ledge and forming vertical opposed flanges, the ends of the groove toward the bottom of the housing being curved toward the axis of the housing; an insulating disk disposed on the ledges; a center contact member adjacent the upper face of the disk and passing through said disk and having a curved prong in said groove and having its side portions wedged against the opposed flanges of the groove; and a wire terminal portion passing between said opposed flanges and through said prong and wedged against the back face of the groove.

7. A combination as in claim 6, side marginal portions of said prong having inwardly turned portions to provide longitudinal stiffness.

8. A lamp socket comprising a tubular housing of plastic insulating material partially closed at the lower end, the latter being provided with a hole to admit wires; a plurality of beads in the lower portion of the housing and longitudinal thereof all terminating in a common plane trans-

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verse to and in the mid-portion of the housing to form ledges; at least two of the beads having substantially vertical undercut grooves open at the top of the ledge and forming vertical opposed flanges, the ends of the grooves toward the bottom of the housing being curved toward the axis of the housing; an insulating disk disposed on the ledges and provided with slits in the intra peripheral portions of the disk and registering with the respective open ends of the grooves; a socket screw shell snugly disposed in the upper part of the housing and having an inwardly turned flange around the lower end for a part of its circumferential distance and resting on said disk, a portion of the lower end of the shell being cut away, the flange having slits at least one of which registers with a groove; an arcuate retaining piece on the shell flange and making electrical contact therewith, said retaining piece having at least one prong passing downwardly through the slits of the disk and shell flange and into the grooves, the lower ends of the prongs being bent along the curved bottom of the groove and tightly wedged against the opposed flanges of the groove; a center contact member adjacent the upper face of the disk and passing through one of said slits and having a prong in one of said grooves and having its side portions wedged against the opposed flanges of the groove, and wire terminal portions passing between said opposed flanges and through said prongs and wedged against the back face of the respective grooves.

9. In an electrical device, a housing having an interior abutment therein providing a ledge, said housing having a perpendicular wall at said ledge; said abutment being provided with an undercut vertical groove open at the top of the ledge and forming vertical opposed flanges and a substantially continuous outer groove-wall vertical at its upper part and smoothly curved toward the interior of the housing at its lower part, and a conductor in the housing having a prong passing down into said groove and extending along and

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against the curved lower portion of the outer groove-wall, the prong projecting tight between the curved portion of the groove-wall and the lower ends of the flanges toward the interior of the housing, the prong being engaged tightly against the groove-wall and the flanges.

10. A lamp socket comprising a tubular housing closed at the lower end, the latter being provided with a hole to admit wires; the lower end portion of the housing having a radially inwardly developed ledge member fast with respect to the housing and terminating in a plane transverse to, and in the mid-portion of, the housing to form a ledge within the housing, the ledge member being provided with a substantially vertical undercut groove open at the top of the ledge and forming vertical opposed flanges, the walls at the lower end of the groove being curved toward the axis of the housing; an insulating piece disposed on the ledge; a socket screw shell and center button mounted over said piece; a pair of conductor prongs for and in electrical contact with said shell and button respectively and passing downwardly past the piece, one of said prongs passing down into said groove and bent along the curve of said walls, and engaged against said walls and flanges, the lower end of the prong projecting past said flanges and in a direction toward the axis of the housing, and means for securing the other prong to the housing.

JOSEPH S. YARROW.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,869,451	Wells	Aug. 2, 1932
2,115,642	Martin	Apr. 26, 1938
2,283,934	Jorgensen	May 26, 1942
2,309,311	Grohsgal	Jan. 26, 1943
2,422,393	Bryant	June 17, 1947
2,553,371	Huppert	May 15, 1951