Feb. 23, 1965 A. I. APPLETON 3,170,750

LAMP RECEPTACLE

Filed June 21, 1962

Fig. 1

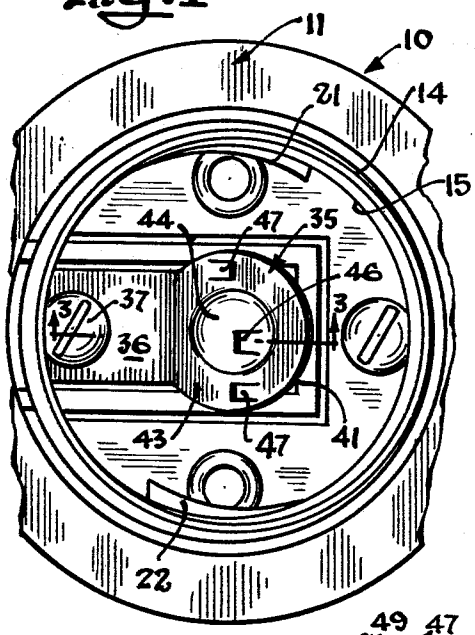


Fig. 2

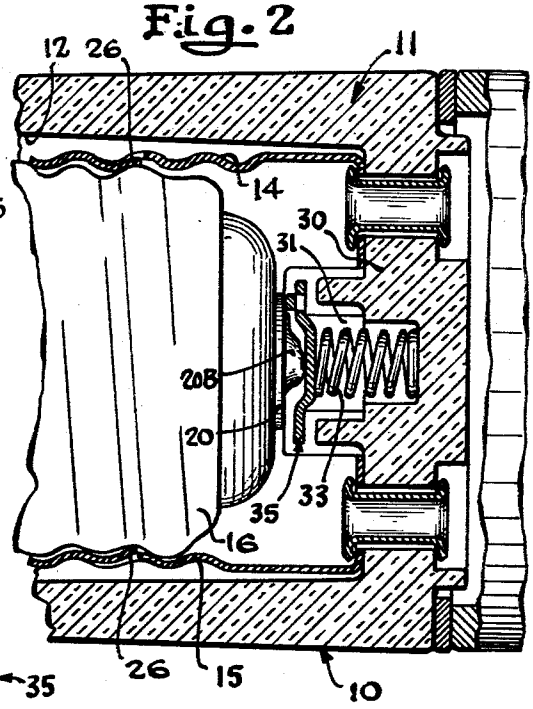
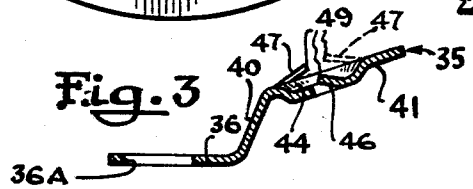


Fig. 3



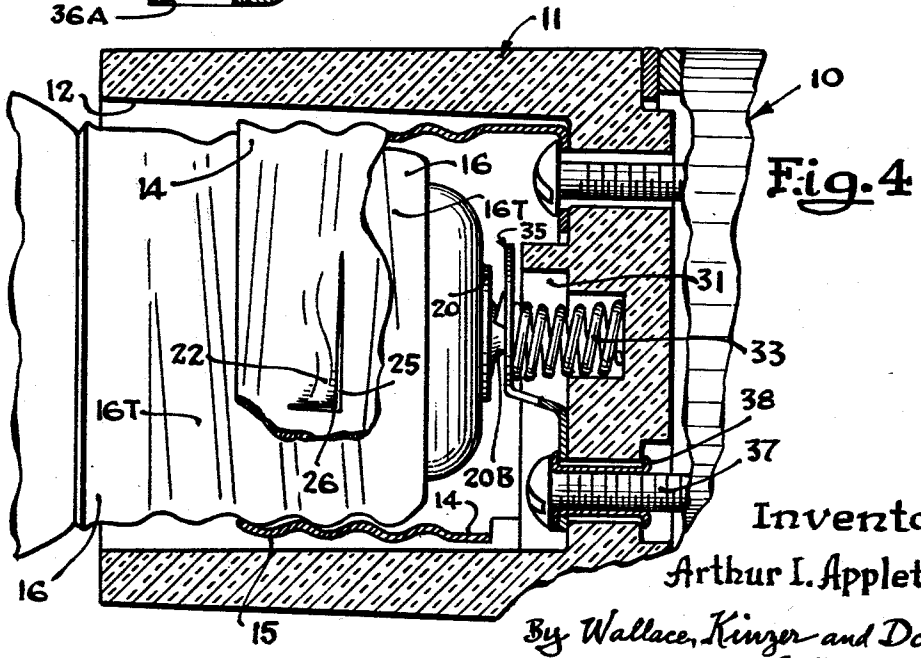


Fig. 4

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United States Patent Office 3,170,750 Patented Feb. 23, 1965

3,170,750

LAMP RECEPTACLE

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Filed June 21, 1962, Ser. No. 204,208
1 Claim. (Cl. 339—180)

This invention relates to a lamp receptacle, and in particular to one so constructed as to resist the tendency for a lamp therein to be loosened as a result of vibration.

There are many instances where wall and ceiling vibrations are severe enough to cause loosening of electric lamps in their sockets or receptacles. This frequently occurs in connection with overhead lights in steel mills, foundries, fabricating plants where heavy duty stamping or forging equipment is used, and in numerous other kinds of industrial sites. It will be realized that lamps of the screw-in type may be loosened in a back-off direction to such an extent as to separate the electrical contacts, extinguishing the light. Eventually the lamp may be turned by vibration completely out of its receptacle, which is a dangerous situation. This condition may be approached gradually over a period of several days, and it is common practice to have maintenance crews assigned to the task of checking extinguished lamps and retightening those which have merely loosened.

It has heretofore been proposed to include in the lamp receptacle means for resisting the tendency for the lamp to be loosened by vibrations. Specifically, such means has been in the form of prongs struck inward from the thin-walled side wall of the receptacle shell or socket. Such prongs are therefore inherently resilient, and present sharp edges so oriented as to resist escape of the lamp in a back-off direction due to vibrating of the receptacle.

Escape of the lamp is not completely avoided by such an arrangement, and the primary object of the present invention is to approach this ideal condition more nearly and to do this other than by merely multiplying the prongs aforesaid. Specifically, this object is achieved by forming the center contact of the receptacle with a plurality of spaced, upwardly struck extensions presenting sharp edges which will bite into the contact at the base of the lamp, and yet more specifically, the soft conductor metal at the base of the lamp, thereby affording unusually strong resistance to turning of the lamp in a back-off direction.

There is another distinct advantage to having extensions formed on the contact of the receptacle as aforesaid. Thus, it was mentioned above that maintenance crews are responsible for tightening the loosened lamps. This condition is observable because, as noted, a loose lamp is extinguished. A considerable maintenance problem is sometimes entailed depending upon the extent of the lighted area. It is human nature to procrastinate a precaution, or, as here, to overlook an extinguished lamp for a more pressing problem on the expectation that the lamp still has considerable travel left before it will actually drop from the socket.

However, under the present invention, the extensions on the center contact, being struck upward therefrom, will maintain electrical contact with the base of the lamp throughout a considerable extent of the back-off movement of the lamp, and the lamp will eventually break contact with the aforesaid center contact extensions sometime before the resilient prongs on the receptacle shell lose their grip, so to speak.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment of the present invention and the principles thereof and what is now considered to be the best mode contemplated for applying these principles. Other embodiments

of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claim.

In the drawings:

FIG. 1 is a fragmentary plan view of a lamp receptacle constructed under and in accordance with the present invention;

FIG. 2 is a sectional view of the structure shown in FIG. 1 but also showing the base of the lamp in association therewith;

FIG 3 is a detail sectional view substantially on the line 3—3 of FIG. 1; and

FIG. 4 is a view partly in elevation and partly in section showing a different side of the structure of FIG. 2.

The receptacle of the present invention in its entirety is identified by reference character **10** in the drawing and includes the usual porcelain cup **11** provided with a relatively deep circular cavity **12**. A thin-walled metallic shell **14**, formed with a thread **15**, is secured in the usual fashion in the receptacle recess **12**. The receptacle **10** as thus far described is of conventional or known construction.

The base of the lamp, **16**, includes the usual thread **16T** complemental to the thread **15** of the receptacle shell **14**. The lamp is provided with a center contact **20** in the form of a copper disc and the usual lead bead **20B**, which is ordinarily of indeterminate extent, in the center area of the copper disc portion of the lamp contact.

The thin-walled metallic shell **14** is formed with a pair of inwardly struck out prongs **21** and **22** which, as best shown in FIG. 4, are manifest in L-shaped slits **25** in the wall of the receptacle shell. The resultant sharp corners **26** of the prongs extend inwardly of the socket afforded by the shell for several thirty-seconds of an inch.

The prongs **21** and **22** are inherently resilient in nature, and are oriented so that the corners **26** are in a leading position insofar as concerns thread movement of the lamp base during tightening of the latter in the shell. Resultantly, the prongs or resilient fingers **21** and **22** not only clasp the threaded side wall of the lamp base, but also the sharp corners **26** thereof take a bite on the side wall of the lamp base at spaced points thereon and tend to prevent turning of the lamp induced by vibration of the receptacle.

The prongs **21** and **22** do not provide one hundred percent assurance against backing off of the lamp, but do afford appreciable resistance to this movement, and in the last or final fraction of an inch of possible extent of back off movement the prongs afford a slight clasp on the lamp base tending to grip the same against dropping.

The lamp receptacle at what constitutes the bottom thereof is formed with a mounting boss **30** presenting a recess **31** in which is mounted a coil spring **33**. The coil spring **33** bears against the underside of the center contact **35** of the lamp receptacle, and imparts a spring bias thereto, urging the contact into positive engagement with the center contact **20** of the lamp. The center contact **35**, FIG. 3, includes an attaching flange **36** having an aperture **36A** therein adapted to receive an attaching screw **37**, FIGS. 1 and 4, threadedly retained in the usual way within the receptacle base.

The contact **35** includes an upwardly directed offset **40** which terminates in a disc shaped portion **41** which is directly engageable with the center contact of the lamp base. The disc portion **41** of the receptacle center contact includes an annular rim **43** surrounding a depressed or concave portion **44**. Thus, the center contact of the receptacle includes a concavity and a rim thereabout respectively complemental to the protruding lead bead **20B** and the peripheral portion of the disc **20** that surrounds the

lead bead as part of the center contact of the lamp.

Under and in accordance with the present invention the center contact of the receptacle includes a plurality of toothed extensions or sharp edge protuberances formed in the concavity 44 and in the rim 43. Thus, an extension 46 of rectangular form, FIG. 1, is struck upwardly from the concave portion 44 of the receptacle center contact as an integral part thereof, and a pair of extensions 47 of rectangular form are struck upward from the rim 43 as an integral part thereof, each such extension presenting sharp edges 49, FIG. 3, of which the sharp edge on the extension 46 will definitely bite into the soft lead bead 20B.

Depending on the area extent of the bead 20B, one or both of the edges 49 presented by the prongs 47 will bite into peripheral portions of the bead 20B when the lamp is tightened in the socket presented by the shell 14. As a consequence, the prongs 46 and 47 assist the prongs 21 and 22 in resisting turning of the lamp in a loosening or back-off direction.

What is more, the extensions 46 and 47 in effect are extensions of the center contact of the receptacle, and hence one or more of these extensions will continue to bear against the lead bead 20B beyond that position of the lamp, undergoing loosening movement, which would ordinarily characterize a break between the contacts 20 and 35. Thus, a lamp associated with a lamp receptacle constructed under and in accordance with the present invention will not extinguish until after partaking of an appreciable extent of back-off movement, due to vibration of the receptacle, and hence when this condition prevails, it is then known by the maintenance crew that the lamp has loosened and should therefore be tightened lest it drop from an overhead fixture.

While the present invention has been described from the standpoint of the receptacle having a center contact with a separate spring bias, it will be appreciated that this aspect of the present invention is subject to considerable variation so far as concern a resiliently biased center contact and by the same token the receptacle can vary from the standpoint of the type of lamp retained therein. In any event, the sharp edge protuberances formed in the center contact of the receptacle are so located as to gouge or bite into the soft metal conductor bead as 20B included as a part of the center contact of the lamp, and because this bead is readily deformable there will be a considerable amount of surface area in frictional contact, and actual impalement of the lead bead, supplementing the action of the prongs 21 and 22 beyond a mere multiplication of these parts. This is especially so in view of the fact that the extensions 46 and 47 are rectangular in nature, whereby each presents at least two sharp-edged right-angled corners and a connecting edge to the lamp contact. Additionally, the center contact extensions as 46 and 47 will maintain electrical contact with the base of the lamp throughout an appreciable portion of its back-off movement, and when

contact is lost with the last of the extensions, the lamp will be extinguished thereby signalling an immediate need for retightening.

Hence, while I have illustrated and described a preferred embodiment of the present invention, it is to be understood that this is capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claim.

I claim:

In a lamp receptacle, a thin-walled retaining shell presenting a threaded socket member for retaining a lamp having a base with a complementally threaded side wall, and a circular center contact at the bottom of the base presenting at the medial part thereof a bead of soft conductor metal, a circular center contact at the bottom of the receptacle having a rim surface adapted to be engaged by the base of the lamp and said center contact of the receptacle also including a concave contact surface engageable with said bead associated with the center contact of the lamp, spaced prong elements struck inward from the receptacle shell and presenting sharp corners engageable with the side wall of the lamp base for resisting the tendency for the lamp to loosen in a back-off direction due to vibration of the lamp base receptacle, spaced sharp edge projections of rectangular form struck upwardly in cantilever fashion from portions of the rim each presenting a pair of sharp corners for engagement and electrical contact with the circular center contact at the base of the lamp as said lamp is threaded in said socket member, and a sharp edge extension of rectangular form struck upwardly in cantilever fashion from said concave contact surface and presenting a pair of sharp corners each adapted to gouge into and maintain electrical contact of the lamp whereby said projections and extension assist said spaced prong elements in resisting the tendency of the lamp to loosen in a back-off direction due to vibration of the lamp receptacle, and whereby the last of said projections and said extension of the receptacle to lose electrical contact with the base of the lamp, in the event of back-off vibration of the lamp, results in extinguishment of the lamp thereby giving an indication of the extent of back-off vibration.

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