Aug. 1, 1944. W. E. ANDERSON 2,354,642

SHOCKPROOF BASE

Filed July 1, 1943

Fig. 1.

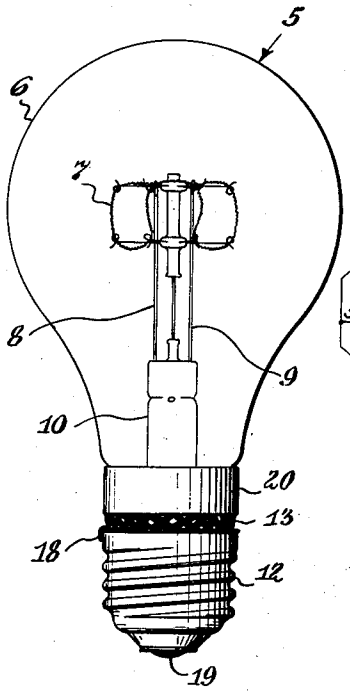



Fig. 2.

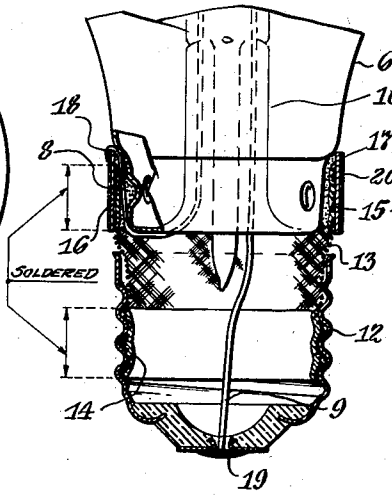



Fig. 3.

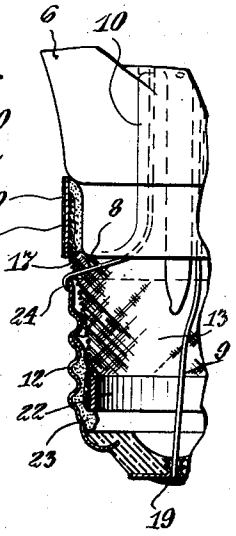



Fig. 5.

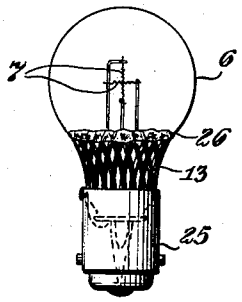



Fig. 7.

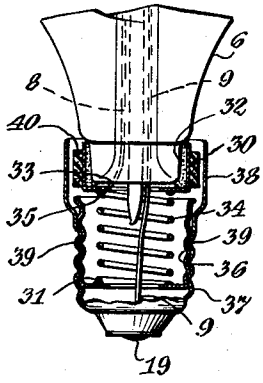



Fig. 4.

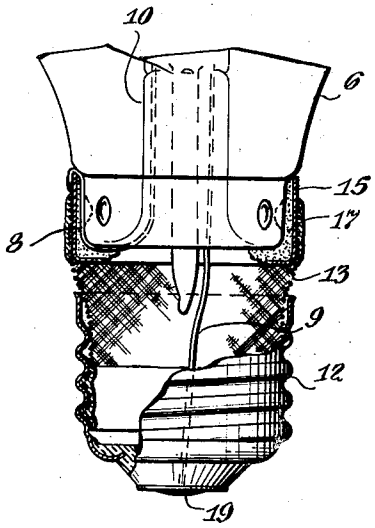
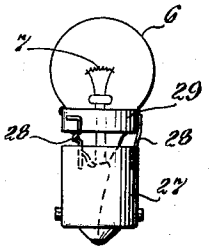



Fig. 6.




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# UNITED STATES PATENT OFFICE

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## SHOCKPROOF BASE

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Application July 1, 1943, Serial No. 493,005

4 Claims. (Cl. 176—32)

The present invention relates to shock-absorbing bases for electrical energy translation devices which must be connected to a source of electrical energy, such as incandescent electric lamps, gaseous discharge lamps and radio tubes, as well as similar devices, containing fragile elements or parts that are readily injured or destroyed if subjected to shock.

Under present conditions of modern warfare, with lamps and other electric devices subjected to concussion from improved high power explosives, present means for attaching these devices to electric circuits, such as a base rigidly secured to a lamp bulb and firmly screwed into a socket rigidly mounted on the frame of a battleship, all too readily transmits the force of the concussions to the filament and other internal delicate parts as well as to the glass or other internal or external supporting members. This all too frequently results in destruction of the lamp or other device at the very moment when it is most needed.

Various attempts have been made in the art to eliminate shock being transmitted to the vitreous envelope of the device, but in such instances the shock-absorbing means has been confined to the socket for the device. This, however, necessitates considerable expense in replacing all existing sockets which is not practical. Consequently, the present invention provides an energy translation device such as an incandescent lamp which can be readily installed in any existing socket without any additional expense other than the cost of the new device itself.

It is accordingly an object of the present invention to provide an electrical energy translation device wherein a shock-absorbing base is attached thereto to prevent injury to the delicate parts.

Another object of the present invention is the provision of an electrical energy translation device wherein a shock-absorbing connection is provided between the base of the device and the enclosing envelope.

Another object of the present invention is the provision of an electrical energy translation device having a shock-absorbing base which is not subject to deterioration due to heat generated by the device during its operation.

A further object of the present invention is the provision of an electrical energy translation device wherein a shock-absorbing connection forms an integral part of the lamp itself and is in no way subject to deterioration or loss of its absorbing characteristic during the entire life of the device.

Still further objects of the present invention will become obvious to those skilled in the art by reference to the accompanying drawing wherein:

Fig. 1 is an elevational view of an electrical energy translation device in the form of an incandescent lamp provided with a shock-absorbing base in accordance with the present invention;

Fig. 2 is a fragmentary view partly in section and on a slightly enlarged scale of the preferred embodiment of the shock-absorbing base as shown in Fig. 1;

Fig. 3 is a view similar to Fig. 2 but showing a slightly different construction which the present invention may take.

Fig. 4 is a view similar to that of Figs. 2 and 3 but showing still another slight modification which the shock-absorbing base of the present invention may take;

Fig. 5 is an elevational view showing still another form which the present invention may take as applied to what is known in the art as a miniature lamp;

Fig. 6 is an elevational view of a modification which the present invention may take as applied to a miniature lamp, and

Fig. 7 is a fragmentary sectional view of still another modification of a shock-proof base in accordance with the present invention applied to an electrical energy translation device.

Referring now to the drawing in detail, an electrical energy translation device is shown in Fig. 1 in the form of an incandescent electric lamp 5 which is provided in the customary manner with a vitreous envelope 6 having suitably mounted therein the usual filament 7 supplied with electrical energy through leading-in conductors 8 and 9 passing through the vitreous envelope by forming an hermetic seal with a vitreous stem portion 10 of the envelope 6. Once the lamp 5 is completely fabricated, it is then provided with a suitable base 12 so that the lamp can be readily screwed into the usual lamp socket.

The customary procedure in lamp manufacture is to cement the brass base 12 directly to the vitreous envelope. Although this construction is quite satisfactory under ordinary conditions, a different problem exists where the lamp is subject to shock since a rigid cementing of the base to the lamp transmits the shock to the glass envelope and to the filaments 7, causing disruption of the latter. To obviate this, the present invention provides a shock-absorbing base which, while absorbing shock, at the same time may be utilized with existing basing machinery.

By reference now more particularly to Figs. 1 and 2, the customary threaded brass base is

shown at 12. It is, however, spaced from the vitreous envelope 6, as shown, by a cylindrical metallic sleeve of woven wire braid 13 which is welded or soldered at 14 to the inside of the brass base. The upper end of this braided sleeve 13 is provided with a metallic collar 15 which may be of brass or similar metal surrounding the braided sleeve and also welded or soldered thereto at 16 to prevent fraying of the braid and to stiffen the end thereof. Thus in effect the customary brass base is provided with a braided sleeve in the form of a shock-absorbing extension.

The upper end of this sleeve carrying the surrounding collar 15 is then cemented at 17 in the customary manner and on the usual basing machine to the vitreous envelope 6. Since the braided sleeve 13 is of metal and is welded or soldered to the base 12, an electrical and mechanical connection is thus established so that during the basing operation of the usual machine the leading-in conductors 8 and 9 are readily soldered to the collar 15 as at 18 and to the contact terminal 19 following the cementing operation. Upon completion of the lamp the collar 15 may be coated with an insulating paint 20 to improve the appearance of the finished lamp and prevent inadvertent electrical shock by the user grasping the collar during insertion or removal of the lamp.

In Fig. 3 a slight modification is shown which differs from that of the preferred modification of Figs. 1 and 2 by the provision of a metallic collar 22 similar to the upper collar 15 but soldered or welded to the inside of the braided sleeve 13. This provides a stiffening at the lower portion of the sleeve 13 which latter is then secured to the base 12 by cement 23 at the same time the upper end of the sleeve carrying the collar 15 is cemented to the vitreous envelope 6 at 17. The disadvantage of this particular modification resides in the fact that it requires insertion of the leading-in conductor 8 through an opening in the braided sleeve 13 so that it can be soldered at 24 directly to the base 12 as the latter is electrically insulated from the braided sleeve due to the cement 17 and 23. Consequently, this particular embodiment does not lend itself as readily to the usual type automatic basing machines as used for basing standard lamps.

The structure shown in Fig. 4 is substantially identical to that of the preferred embodiment of Figs. 1 and 2 but differs therefrom only in that the collar 15 is disposed interiorly of the braided sleeve 13 with the latter being soldered to the outer surface of the collar 15. Although the modification of Fig. 4 lends itself just as readily as the form of Figs. 1 and 2 to automatic basing machines, it does not present as pleasing an appearance unless coated with insulating paint or enamel of sufficient thickness as to fill the interstices of the braid.

A simple construction for applying a shock-absorbing base to a miniature lamp in accordance with the present invention is shown in Fig. 5. In this modification the usual bayonet type base 25 surrounds one end of the braided metallic sleeve 13 to which it is secured in the same manner as previously described relative to the embodiments of Figs. 1, 2 and 4. However, the upper end of this braided sleeve is flared outwardly so as to surround the lower portion of the vitreous envelope 6 being fastened thereto such as by a suitable silicate cement 26.

In Fig. 6 a modification of a shock-absorbing base for a miniature lamp is shown which differs from that of Fig. 5 in that the bayonet type base 27 is suspended by a plurality of corrugated strips 28 welded or soldered to the inside of the base 27 with the upper end of these strips similarly secured to a metallic collar 29, the latter of which is cemented to the vitreous envelope or bulb 6. Thus again the base is suspended by a metallic shock-absorbing connection which prevents the transmission of shocks to the envelope and hence to the delicate filament 7 supported therein.

The modification shown in Fig. 7 comprises a metallic collar or cap 30 cemented at 32 to the end of the vitreous envelope 6 with the leading-in conductor 8 being soldered or welded at 33 to this cap 30. A helical metallic coil 34 is secured at one end 35, as by soldering or welding, to this cap 30, and the other end supports a threaded shell 36 to which it is mechanically and electrically secured at 31 in the same manner as to the cap 30. Threadedly engaging this shell 36 is an outer shell 37 having an expanded skirt portion 38 extending upwardly so as to surround the cap 30 in spaced relation thereto. In order to secure these two threaded shells 36 and 37 together, the outer shell 37 is provided with a plurality of openings 39 through which solder is flowed into contact with the inner shell 36, thus filling the openings and binding the two shells together. A cushioning or decelerator ring 40, such as heat-resistant resilient rubber or a spring, is secured to the outer surface of the cap 30 with appreciable clearance between the ring 40 and the skirt portion 38. Since the bottom of cap 30 and of inner shell 36 are open, the leading in conductor 9 passes readily therethrough to the contact terminal 19 of the base.

From the foregoing it should become obvious to those skilled in the art that a shock-absorbing base for an electric energy translation device is herein provided which prevents shocks being transmitted to the vitreous envelope and hence to the internal delicate elements of the device. Moreover, since the base proper is suspended in spaced relation to the vitreous envelope and any part rigidly secured to the latter, by a shock-absorbing connecting element, actual tests made with structures as herein shown and described have resulted in the device withstanding eight or more two thousand foot pound blows delivered to the supporting frame on which the sockets for the devices were mounted. On the other hand, devices of the conventional type having bases rigidly secured thereto would not withstand one such blow or even blows of lesser magnitude ranging from 100 to 500 foot pounds. It is also to be noted that the structures herein described are not resilient in the sense that the envelope is flexible with respect to the socket to allow displacement of the envelope from its longitudinal axis and concentric with the base. On the contrary, the entire device for all intents and purposes is a substantially rigid unit under ordinary handling conditions which allows the ready insertion and removal thereof from the socket, with the shock-absorbing connecting element being resilient sufficiently to serve the sole purpose of a supporting shock dampener.

Since the device is self-contained and thus shock-absorbing in itself, it can be readily installed in any existing socket no matter how severe the shock to which such socket may be subjected.

Although several embodiments of the present invention have been shown and described, it is to be understood that still further modifications

may be made without departing from the spirit and scope of the appended claims.

I claim:

1. An electric energy translation device comprising an envelope having elements therein subject to damage when submitted to shock, a base for engaging a socket to connect said device to a source of electrical energy, and a metallic sleeve of woven wire braid connected to said envelope and to said base for dependedly supporting the latter in spaced relation to said envelope and to prevent shock applied to said base from being transmitted to said envelope.

2. An electric energy translation device comprising an envelope having elements therein subject to damage when submitted to shock, a base for engaging a socket to connect said device to a source of electrical energy, a collar rigidly secured to said envelope, and a dampening sleeve of woven metallic braid connected to said collar and dependedly supporting said base in spaced relation to said envelope to prevent shock applied to said base from being transmitted to said envelope.

3. An electric energy translation device comprising an envelope having elements therein subject to damage when submitted to shock, a base for engaging a socket to connect said device to a source of electrical energy, and a metallic dampening sleeve of woven wire braid cemented to said envelope and connected to said base for suspending the latter in spaced relation to said envelope and for absorbing shock applied to said base to prevent transmittal of the shock to the envelope and damage to the elements therein.

4. An electric energy translation device comprising an envelope having elements therein subject to damage when submitted to shock, a base for engaging a socket to connect said device to a source of electrical energy, and a woven wire collar connected to said envelope and to said base and dependedly supporting the latter in spaced relation to said envelope and to prevent shock applied to said base from being transmitted to said envelope.

WALDEMAR E. ANDERSON.