March 18, 1952 J. R. GASTON 2,590,003

PANEL LIGHT MOUNTING TO ABSORB MECHANICAL SHOCKS

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FIG. 2

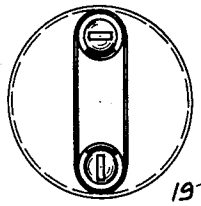


FIG. 1

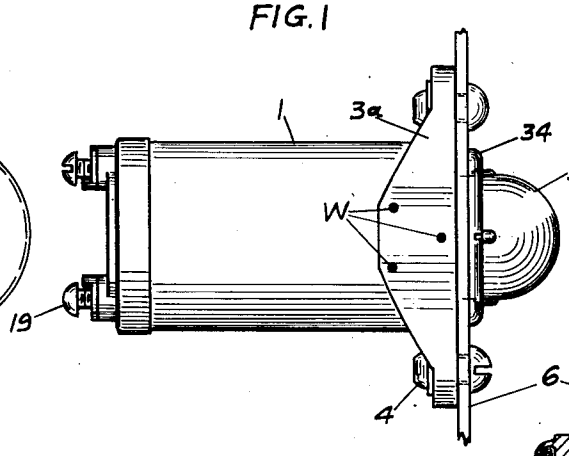


FIG. 3

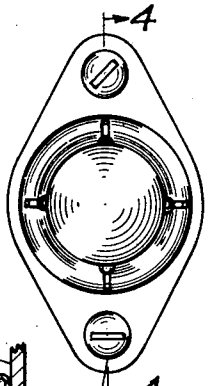


FIG. 4

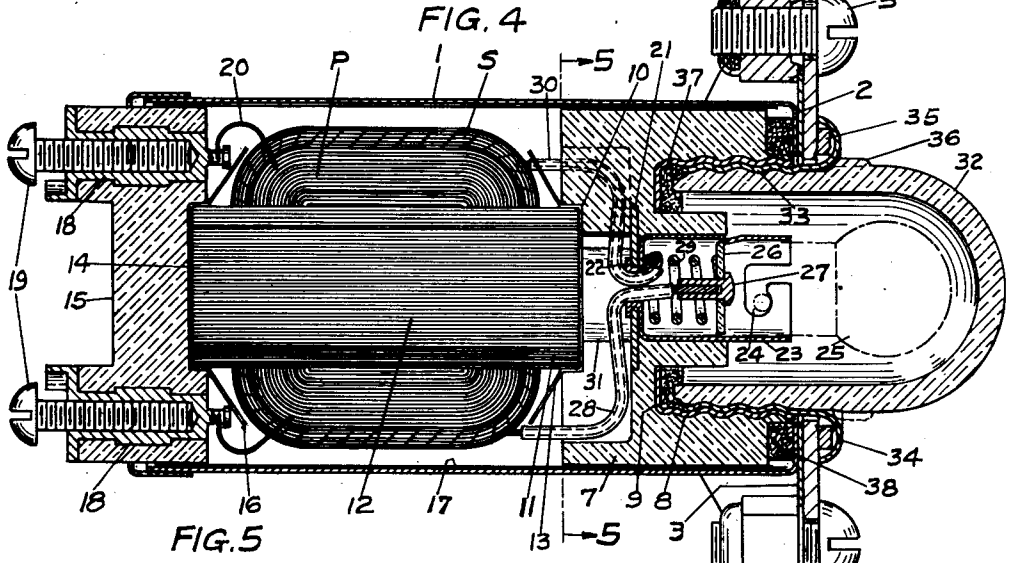
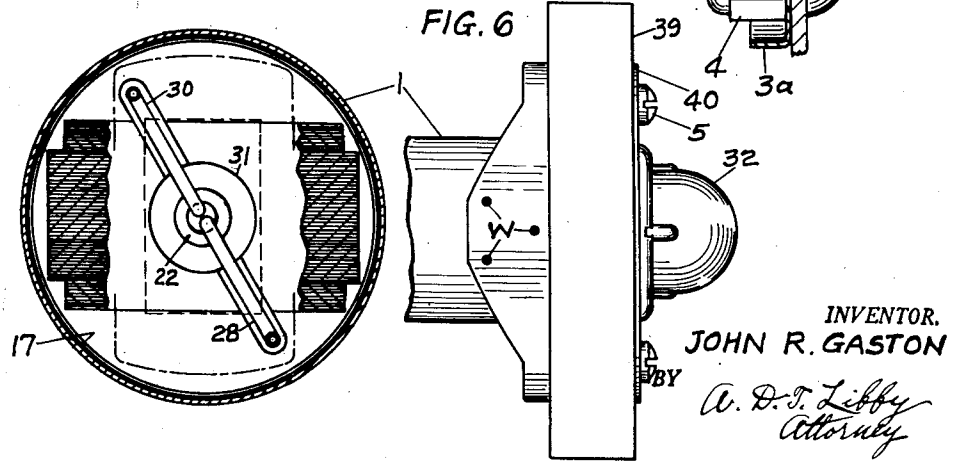


FIG. 5

FIG. 6



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PANEL LIGHT MOUNTING TO ABSORB MECHANICAL SHOCKS

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10 Claims. (Cl. 240—90)

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This specification relates to a high shock panel light which is especially adapted for use where electric lights are subject to shock, for example, on board of ships used in the Navy where such shocks are set up by the discharge of the ships' guns. It has been found that these shocks will break the filament of the ordinary lamp and even though lamp bulbs are made with special filament, these have been found to break under the shocks received. It is therefore the principal object of my invention to provide a special unit which carries the lamp bulb in such a way that high shocks are absorbed by the unit construction without breaking the film of the lamp bulb. Other objects will be discerned from the reading of the specification taken in connection with the drawing wherein,

Figure 1 is a plan view of the unit mounted on a panel support.

Figure 2 is a view of the left hand end of Figure 1.

Figure 3 is a view of the right hand end of Figure 1.

Figure 4 is a sectional view of the unit on the line 4—4 of Figure 3.

Figure 5 is a view substantially on the line 5—5 of Figure 4.

Figure 6 is a partial view similar to Figure 1 but showing a different form of plate mounting.

In the different views wherein like numbers refer to corresponding parts, 1 is a casing preferably of suitable metallic material, the forward end of the casing preferably terminates in an annular flange 2 to which is fastened in any suitable manner as by spot welding, a mounting plate 3 to the opposite ends of which are preferaly fastened threaded members 4 to receive mounting screws 5 for mounting the unit into a plate or support 6. The plate 3 preferably has a flanged rim 3a spot welded on opposite sides at W to the casing 1. Positioned within the casing 1 adjacent the center of the mounting member 3 is member 7 of preferably strong insulating material, although it may be made of metal as will be later referred to. The member 7 has a recess within which is located a female screw shell 8 having a flange 9 seated in the bottom of said recess. The outer end of the shell 8 terminates adjacent the flange 2. The inner end of the member 7 has a recess 10 therein to receive one end 11 of the core 12 of the transformer having a primary winding P and a secondary winding S. Seated in the recess 10 across the end 11 of the transformer is preferably an insulator 13 of flexible material. The opposite end of the transformer core 12 is similarly mounted in a recess 14 of an insulator 15, an insulator 16 similar to 13 being utilized for the same purpose as 13. The insulator 15 carries metal inserts 18 to receive screws 19 for making attachments of the primary source of current to the primary of the transformer through the medium of connectors 20. The core 12 is made cruciform in shape so as to be held by the casing 1 without much compression, while permitting end motion during shocks.

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The member 7 if made of insulating material has moulded therein a metal plate 21 to which is fastened, as by welding, the inner end 22 of a lamp bulb socket 23 that is provided with the usual bayonet lock arrangement 24 to receive a lamp bulb 25. Within the socket is positioned an insulator 26 of suitable material and this insulator carries a contact pin 27 to engage the center contact of the lamp bulb 25. Connected to the pin 27 is an insulated conductor 28 joined to one end of the secondary winding S. Between the bottom of the socket 23 and insulator 26 there is positioned a spring 29 one end of which is connected to an insulated conductor 30 that goes to the secondary winding S. Normally when the lamp 25 is in position in the socket 23, the spring 29 is somewhat compressed. It will be noted that a recess 31 is provided in the member 7 between the end of the transformed core 12 and the plate 21 that is carried by the said member 7, the function of which will be directly referred to.

A globe or cover 32 is provided to protect the bulb 25. The globe 32 is held in place by means of a male screw shell 33 which is adapted to cooperate with the shell 8. The outer end of the shell 33 is outwardly and then inwardly bent to form a recess 34 within which is mounted a lock washer 35. Also the globe 32 is provided with an annular projection 36 to engage the curved end of the shell 33 so as to apply pressure thereto and lock it securely in place. It is also to be noted that the inner end of the globe 32 engages a resilient gasket 37 that is located against flange 9 of the shell 8 thereby producing a water tight joint. A gasket 38 is provided between the member 7 and the flange 2 of the shell 1 for the purpose to be later pointed out.

The transformer provided for this unit is designed to operate on a range of frequencies from 50–400 cycles and to give a maximum efficiency throughout this range of frequencies. The transformer laminations are not compressed as they usually are in ordinary power transformers and

because of this, the transformer will operate on 400 cycles without becoming excessively hot. The transformer in addition to providing for a suitable source of current for the bulb **25** also performs another and very important function of absorbing the shock coming against the plate or support **6**. While some of the shock coming against the plate or support **6** is taken up by the gasket **38**, the major part of it is transmitted to the member **7**, and from it to the core **12** of the transformer seated in the recess **10**. While the transformer can move somewhat within the recesses **10** and **14** in doing so, it absorbs the greater part of the shock and on the rebound the airspace **31** takes up the most of what little is left so that practically little or no shock is transmitted from the plate **21** to the lamp socket **23** and this small amount of shock, if any, is absorbed by the spring **29** so that substantially no shock is transmitted to the filament of the bulb **25**, it being understood that the gaskets **37** and **38** also assist in absorbing the shock. It may be mentioned in passing that I prefer to place a liner **17** of flexible insulating material around the transformer and other parts before inserting them within the casing **1**, and this material besides acting as an insulator also acts to some extent to dissipate shocks coming laterally against the casing.

In passing it may be mentioned that when the panel light is operated under special conditions where considerable heat is generated, then this heat should be conducted away from the device, and to assist in this conduction, the member **7** is made of metal. Also it may be noted that in some cases the bulb socket side of the secondary winding may be grounded.

In Figure 6 I have shown a slightly different method of mounting the device. In this form the flanged plate **3** is slid backward on the casing **1** and spot welded at W while the end of the casing forward of the plate **3** passes into a hole in a relatively thick mounting plate **39** which may be of any desired material. Then a clamping plate **40** is applied to the outer face of plate **39** and held in place by screws **5** and nuts **4** as in Figure 1 and the globe **32** is applied as in Figures 1, 3 and 4.

I have found from many tests made on this device that it will stand high shocks of 2000 ft. pounds or greater in all directions without breaking the filament of the bulb **25**, which is approximately ten times greater than the bulb filament will stand by itself. This figure of 2000 ft. pounds is considerably beyond the calculated shock which such lamp bulbs are apt to receive in practice.

I claim:

1. A panel light mounting comprising, a unit having a casing with a mounting plate therefor for attaching the unit to a support, a member fitting within the casing adjacent said mounted plate a socket and an electric light bulb carried by said member, a transformer having a core with primary and secondary windings thereon carried within the casing with one end of the core terminating closely adjacent the inner end of said member with its secondary winding connected to the bulb contacts of the socket, an insulator located at the opposite end of the casing and having a portion positioned closely adjacent the opposite end of said core, this insulator having terminal contacts connected to the primary of the transformer.

2. A panel light mounting as set forth in claim 1 further characterized in that said member and insulator both have recesses therein to moveably receive their respective transformer core ends.

3. A panel light mounting as set forth in claim 1 further characterized in that when said member is of insulating material the insulator carrying the socket and bulb has an annular recess therein diametrically outside of the socket within which is positioned a female screw shell which is adapted to receive a male screw shell that carries a threaded globe for covering the bulb.

4. A panel light mounting as set forth in claim 1 further characterized in that when said member is of insulating material the insulator carrying the socket and bulb has an annular recess therein diametrically outside of the socket within which is positioned a female screw shell which is adapted to receive a male screw shell that carries a threaded globe for covering the bulb, and further defined in that the outer end of the male screw shell is curved outwardly and then inwardly forming a recess and locking means carried within said recess for engaging the panel, the globe having an outer annular shoulder to lock against said outwardly curved part of the male screw shell.

5. A panel light mounting as set forth in claim 1 further characterized in that the said insulator acts as a closure for this end of the casing.

6. A panel light mounting as set forth in claim 1 further characterized in that the light bulb socket is attached at its bottom to a metal plate which is moulded into said member when the same is of insulating material, while the central contact of the socket is carried by a disc shaped insulator positioned on a spring located between the disc and the bottom of the socket.

7. A panel light mounting as set forth in claim 1 further characterized in that the member carrying the socket and bulb has an annular recess therein diametrically outside of the socket within which is positioned a female threaded part which is adapted to receive a male screw shell that carries a threaded globe for covering the bulb, and further defined in that the female threaded part has an inwardly extending flange set into said member with a sealing gasket of resilient material positioned against said flange to receive the inner ends of the male screw shell and the cover globe, while a gasket of resilient material is located between the mounting plate and the end of said member.

8. A panel light mounting as set forth in claim 1 further characterized in that the light bulb socket is attached at its bottom to a metal plate which is moulded into said member when made of insulating material while the central contact of the socket is carried by a disc shaped insulator positioned on a spring located between the disc and the bottom of the socket, and further defined in that the plate that carries the bulb socket is located in said member so as to leave an air chamber between the plate and the end of the transformer core.

9. A panel light mounting comprising a unit having a casing with means for directly mounting it on a panel or support, a pair of members mounted one at each end of the casing, one member being housed entirely within the casing, means for resiliently mounting a lamp bulb socket and bulb with cover therefor at one end of the casing and in said member that is housed entirely within the casing, a transformer having a core with primary and secondary windings

thereon mounted within the casing and having only its core ends movably set into recesses in said members against flexible material positioned in the recesses so when a shock strikes the panel and lamp bulb socket and bulb, the transformer through its body inertia and flexible material at its core ends acts to absorb the greater part of the shock so the bulb will not be injured, means for connecting a source of current to the primary winding and means for connecting the secondary winding to the lamp bulb socket.

10. A panel light mounting comprising, a unit having a casing with means for directly mounting it on a support, a pair of members each having a recess at its inner end and mounted one at each end of the casing, one of said members being completely housed within the casing and supporting a lamp bulb socket and bulb with cover therefor, while the other member partially extends from the other end of the casing, and

has electrical connectors carried thereby, a transformer having a core with primary and secondary windings thereon carried within the casing with the core directly resiliently and wholly supported within said recesses in said members, said bulb socket having contacts connected to the secondary winding while the primary winding is attached to said connectors on said partially extending member.

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