Sept. 22, 1959 B. STEVENS 2,905,807

INSTRUMENT DIAL ILLUMINATOR

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Fig. 1.

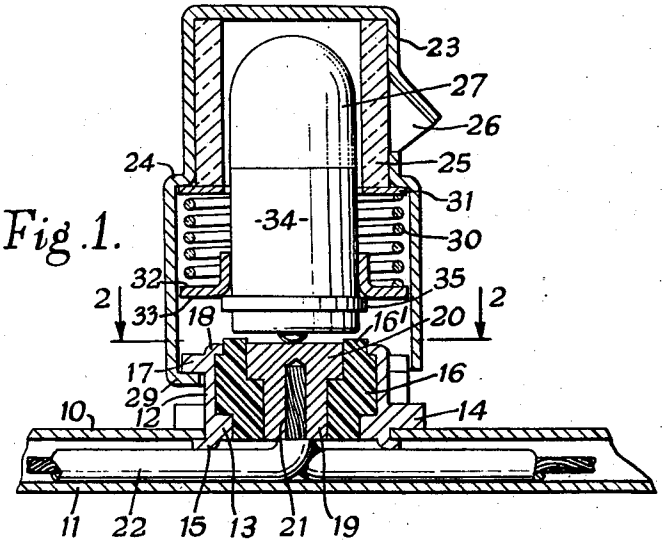


Fig. 2.

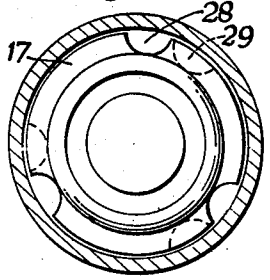
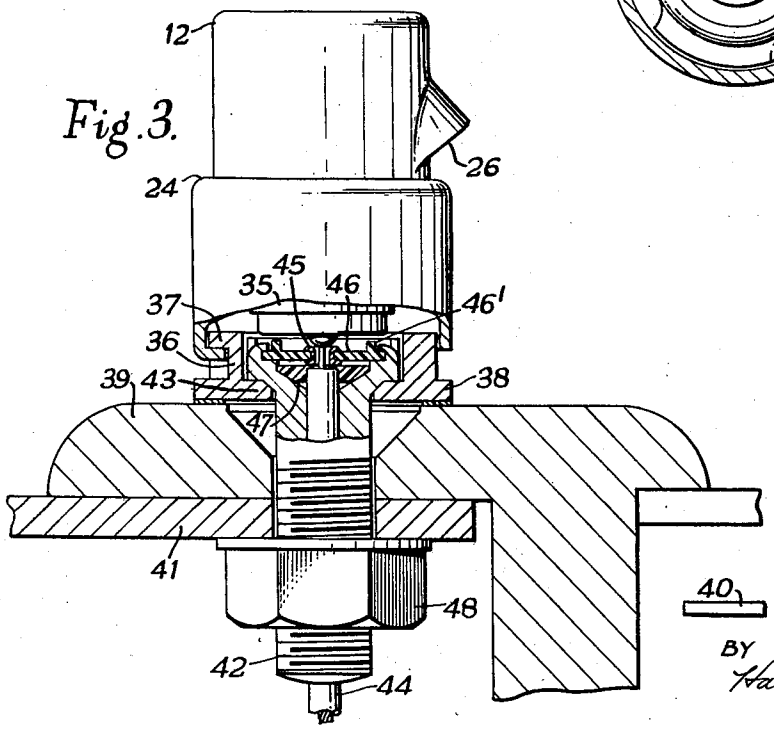


Fig. 3.



INVENTOR
Bertram Stevens,
BY
Hall & Houghton
ATTORNEY

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INSTRUMENT DIAL ILLUMINATOR

Bertram Stevens, Durham City, England, assignor to Thorn Electrical Industries Limited, London, England

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7 Claims. (Cl. 240—8.16)

The present invention relates to electric lighting fittings and is concerned with the illumination of instrument dials and the like.

The principal object of the invention is to provide a lighting fitting of improved construction which is inexpensive to manufacture and nevertheless efficient in operation.

According to the present invention a lighting fitting for the illumination of an instrument dial or the like comprises a metal shell adapted to accommodate an electric lamp and having an aperture through which light from the lamp can pass, a floating annular member adapted to pass the upper part of the lamp but to be engaged by a rim on the lamp cap, a supporting member adapted to be mounted upon a panel or upon the frame of the instrument dial to be illuminated, means whereby the metal shell can be detachably mounted upon the supporting member, and a spring adapted to surround at least part of the lamp cap and to exert pressure between the metal shell and the floating member.

A light filter of annular shape may be arranged within the metal shell in order to impart a desired colour, say red, to the light emerging through the aperture.

The fitting preferably comprises a contact member adapted to make electric contact with the center of the lamp, this member passing through and being insulated from the supporting member.

The means for detachably mounting the metal shell upon the supporting member may comprise a flange on one of these parts provided with a plurality of slots and on the other of the parts lugs adapted to pass through the slots and, upon relative rotation of the parts, to engage behind the flange. There may be three slots (and three co-operating lugs) unevenly spaced in order to ensure proper location of the light-passing aperture relatively to the supporting member. The said spring may be arranged to exert pressure between the slots and the lugs in order to assist in the secure retention of the metal shell.

The invention will be described by way of example with reference to the accompanying drawing in which

Fig. 1 is a view in longitudinal section of one embodiment,

Fig. 2 is a view in cross-section on the line 2—2 of Fig. 1, and

Fig. 3 is a view in longitudinal section of another embodiment of the invention.

Referring to Figs. 1 and 2, this embodiment is adapted to be mounted upon a sheet **10** which is one of two sheets **10** and **11**, for example of metal, fixed together with a space between them which serves as a cable duct. For convenience in description the sheets will be assumed to be horizontal and that upon which the electric fitting is mounted will be assumed to be the upper sheet.

The supporting member is a metal annulus **12** having an inwardly directed flange **13** and outwardly-directed

lugs **14** near its base and a number of downwardly-projecting lugs **15**. The annular base of the member is inserted in an aperture in the sheet **10** and the lugs **15** are bent over outwardly to clasp the sheet between the lugs and the outwardly-directed flange **14**.

An insulating sleeve **16** shaped to fit snugly within the supporting member has a shoulder bearing upon the inwardly-directed flange **13**. At the upper end of the supporting member **12** are an outwardly-directed flange **17** and a number of upwardly-extending lugs **18** which can be bent over inwardly upon the insulating sleeve **16** to hold this sleeve firmly within the supporting member **12**. Instead of using lugs the upper edge as a whole may be spun or otherwise turned over on to the sleeve.

A contact button **19** having a shank portion and a head **20** of larger diameter than the shank portion is arranged with the shank portion fitted snugly within the insulating sleeve **16** which is counter-bored at its upper end to admit a part of the head. The insulating sleeve **16** has an upwardly-extending ridge **16'** projecting beyond the upper surface of the head **20** in order to reduce the risk of short-circuit between the button **19** and supporting member **12**. The button has a hole **21** in its lower end in which the conductor of an insulated cable **22** is soldered. The cable passes through the space between the two sheets **10** and **11**.

A metal shell **23** of cylindrical shape with its upper end closed has a shoulder **24** about half way along its length, this shoulder separating the upper portion from the lower portion which has the larger diameter. Within the upper portion is an annular filter **25** and this portion is suitably apertured at **26** to allow light from a pea lamp **27** within the shell to fall at the desired angle upon a dial to be illuminated.

The outwardly-directed flange **17** at the top of the supporting member is provided with three unequally-spaced slots **28** (Fig. 2) and three inwardly-turned lugs **29** on the bottom edge of the metal shell **23** are adapted to engage in these slots.

Within the metal shell **23** is a helical spring **30** bearing at its upper end upon a washer **31** which in turn bears upon the shoulder **24** in the shell and upon the lower end of the filter **25**. The lower end of the spring **30** bears upon a floating annular sleeve **32** having an outwardly-turned flange **33**. This sleeve is adapted to pass the upper part of the pea lamp **27** and cap **34** but to be engaged by the outwardly extending rim **35** of the lamp.

Electric connection is made with the lamp cap **34** through the floating member **32**, the spring **30**, the metal shell **23** and the supporting member **12** either to the upper metal sheet **10** or to a separate conductor. Connection with the center contact of the lamp is made through the button **19**.

The spring **30** performs several functions. Before the lamp is inserted and when the metal shell **23** has been removed from the supporting member **12**, the spring presses the floating member **32** against the top of the lugs **29**. The lamp can then readily be inserted and is held upright by the filter **25** and the floating member **32**. The spring holds the filter in place and also exerts force at the joint between the flanges **17** and lugs **29** when the metal shell is in position and thus tends to make this joint secure. The spring also exerts suitable contact pressures to ensure good electric contacts.

In the second embodiment to be described with reference to Fig. 3, the supporting member is a metal ring **36** having outwardly-extending flanges **37** and **38** at its top and bottom and an inwardly-extending flange **43** at its bottom. This supporting member is adapted to be mounted upon the frame **39** of an instrument whose

dial 40 is to be illuminated. One of the screws normally provided for securing this frame to a panel 41 is replaced by a screw 42 whose head seats upon the inwardly-extending flange 43 of the supporting member. The screw has an axial hole through which an insulated cable 44 is passed, the conductor of the cable being connected to a metal eyelet 45 fixed in the centre of an insulating disc 46. The disc seats in a shallow recess in the head of the screw. The rim of the recess is turned inward to retain the disc in position. Beneath the disc the head is hollowed to accommodate insulating material 47 which surrounds the end of the cable 44. The disc 46 is provided with a ridge 46' for the same purpose as the ridge 16' on Fig. 1.

The screw described passes through the frame 39 and panel 41 and is secured by a nut 48 on the back of the panel. In this way the supporting member is fixed to the instrument frame. The eyelet 45 makes electric contact with the centre contact on the lamp 27.

The remainder of this embodiment is constructed as described with reference to Figs. 1 and 2.

The embodiments above described are illustrative but not restrictive of the invention, which is defined in the following claims.

I claim:

1. A lighting fitting for illuminating an instrument dial comprising a hollow metal shell member for accommodating an electric lamp having a lamp cap provided with a projecting rim, a floating annulus having a central portion for engaging the lamp cap and a flange portion projecting outwardly from said central portion and positioned to be engaged by said rim, a supporting member, electrical contact-making means in said supporting member, means at one end of said shell member for detachably securing said shell member on said supporting member, and a compression spring engaging at one end thereof the side of the flange portion of said floating annulus remote from said one end of said shell member, and engaging at the other end thereof upon said metal shell member.

2. A lighting fitting according to claim 1, comprising a colored light filter within said metal shell member, said metal shell member having a closed end and said light filter being retained at one end by said closed end and at the opposite end by said spring.

3. A lighting fitting according to claim 1, said securing means comprising a slotted flange on one of said members and on the other of said members lugs located to pass through the slots in said flange and upon relative rotation of said members to engage behind said flange.

4. A lighting fitting according to claim 1, said securing means comprising outwardly projecting means on said supporting member and inwardly projecting means on said shell member engaging the side of said outwardly projecting means remote from said compression spring, and said spring thereby exerting pressure between said outwardly and inwardly projecting means.

5. A lighting fitting according to claim 1 comprising a projection within said metal shell member, said other end of said spring engaging said projection.

6. A lighting fitting for illuminating an instrument dial comprising a hollow metal shell member for accommodating an electric lamp having a lamp cap provided with a central contact and a projecting rim, a floating annulus positioned to be engaged by said rim, a supporting member, means at one end of said shell member for detachably securing said metal shell on said supporting member, a compression spring positioned to surround at least a part of said lamp and engaging at one end thereof the side of said floating annulus remote from said one end of said shell member aand engaging at the other end thereof upon said metal shell member, the spring thereby exerting pressure between said metal shell and said floating annulus, and electrical contacting means for making electrical connection with said central contact, said supporting means comprising a hollow fixing bolt having said electrical contacting means insulatingly mounted in the head thereof.

7. A lighting fitting according to claim 6, further comprising an insulated electrical conductor passing through said hollow bolt and connected to said electrical contacting means.

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