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W. C. EMERY
DETACHABLE LAMP ASSEMBLY FOR
ILLUMINATING INSTRUMENTS
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Fig. 1.

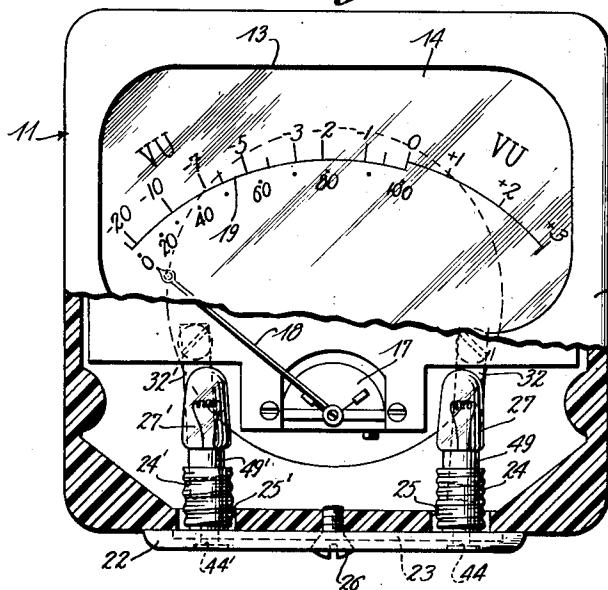


Fig. 2.

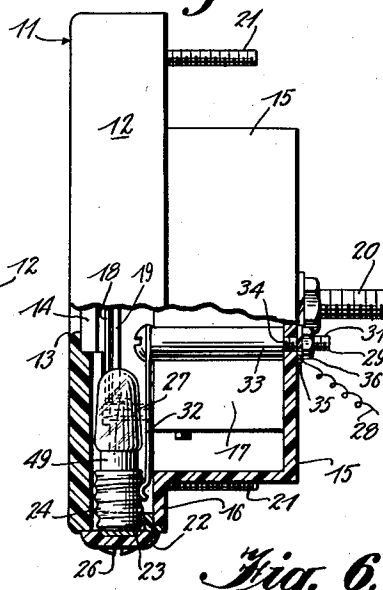


Fig. 3.

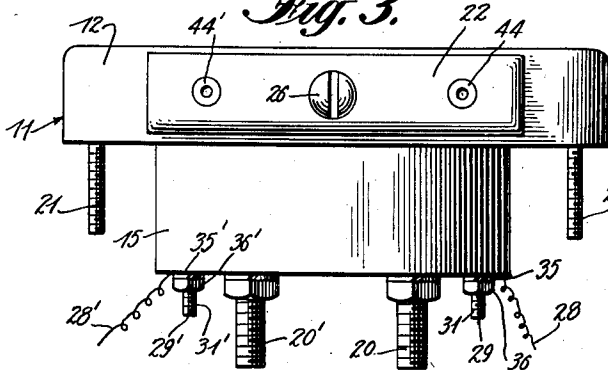


Fig. 6.

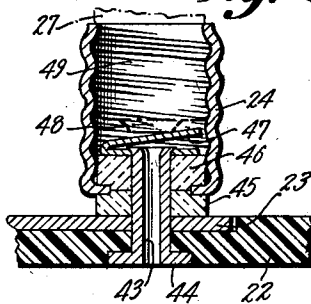


Fig. 5.

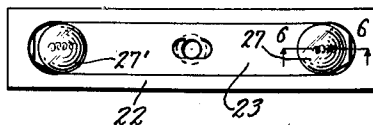
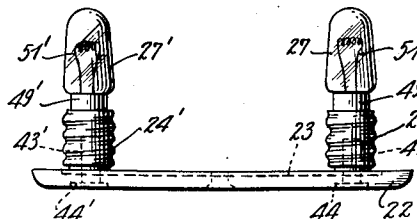


Fig. 4.



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UNITED STATES PATENT OFFICE

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DETACHABLE LAMP ASSEMBLY FOR
ILLUMINATING INSTRUMENTSWeldon C. Emery, Des Moines, Iowa, assignor to
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1 Claim. (Cl. 240—2.1)

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This invention relates to illuminated instruments and the like. More particularly, the invention relates to instrument casings and means for illuminating them. In some of its more specific aspects, the present invention pertains to novel means for assembling an illuminated instrument and supporting means for the illuminating elements of instruments and the like.

Instruments such as meters, gauges or indicators employed in industrial establishments often require some form of auxiliary illumination inasmuch as the design or location of the instrument may be such that the face cannot be clearly seen nor can the indications thereon be easily observed with only the ordinary illumination available in the vicinity of the instrument. Therefore, many different illuminating means have been designed to provide auxiliary illumination for the face of said instruments by installing small electrically operated lamps either at the outside of the instrument casing or frequently in the interior of the casing. Principally, it has been found to be more desirable to locate the lamps within the instrument casing, whereby the lamps are protected from damage and, at the same time, so that the glare thereof is shielded by the casing within which they are disposed.

It has been difficult to provide satisfactory illuminating means and lamp supporting assemblies which are readily accessible for the purpose of replacing burned-out lamps, yet which are simple enough in construction and assembly that they may be quickly and easily replaced. This is particularly true of instruments having a "semi-flush" mounting on a wall or panel. As will appear in detail hereinafter, the present invention provides a structure which has overcome the objectionable features of illuminated instruments known heretofore.

One of the objects of the present invention, therefore, is to provide illuminated instruments and the like having simple, readily accessible and easily replaceable illuminating means.

It is a further object of the invention to provide a new and novel support for the illuminating means whereby it may be placed within or removed from an instrument casing without interfering with the mechanisms operating therein.

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It is a further object to provide an assembly which may be installed and replaced without necessity for making or disconnecting cumbersome wire connections.

Other objects will be apparent from the following description and in the accompanying drawings, wherein:

Figure 1 is a front elevation, partly in section, showing an instrument embodying the present invention;

Figure 2 is a side elevation of the instrument shown in Figure 1;

Figure 3 is a bottom view of the instrument shown in Figure 1;

Figure 4 is a front view of one form of the support for the illuminating means of the present invention as the assembly appears when removed, as a unit, from the instrument shown in Figures 1 to 3, inclusive;

Figure 5 is a plan view of the assembly shown in Figure 4; and

Figure 6 is a sectional elevation of one of the illuminating element sockets and supporting means of the present invention, taken through line 6—6 of Figure 5.

In the embodiment of the present invention as illustrated in Figures 1 to 3, inclusive, a hollow instrument casing 11 made of a suitable dielectric material is provided with a rectangular cover plate 12 which includes a sight window 13 provided with a transparent closure such as glass plate 14. Casing 11 also includes a semi-flush instrument case 15 having a flange portion 16 which is substantially flush with the rear wall of casing 11, the case serving to support a suitable electric testing mechanism 17, indicator needle 18 actuated by said testing mechanism and a scale plate 19 which is calibrated for reading the measurements taken by the instrument. Case 15 also carries electrical input terminals 20 and 20' through which the electrical energy or other impulse to be measured is conducted to the measuring instrument. The case 15 and its associated parts are held in assembled relationship with respect to rectangular cover plate 12 by means of screws in such manner that the rear face of the instrument may be mounted flush with a wall panel or the like, thus providing the so-called "semi-flush" mounting.

The instrument as a whole is so designed that

it may be easily attached to a wall or panel by means of threaded mounting studs 21.

In apparatus of the type illustrated in the drawings it is usually desirable to provide suitable means for illuminating the calibrated scale plate 19 upon which the measurement of electrical energy passing through the instrument may be registered. The instrument of the present invention is so designed as to permit easy withdrawal and replacement of suitable illuminating lamps without the necessity for connecting or disconnecting wires or the like and yet without disturbing the indicating mechanism in any way.

It will be noted that the respective elements of the instrument are arranged in such manner that a number of the elements to the right of the center of the instrument are interchangeable with and correspond to like elements to the left of the center of the instrument. This bilateral symmetry of the instrument facilitates maintenance and repair.

For this purpose a lamp mounting strip 22 which serves as a bottom closure plate and is made of a suitable dielectric material is provided with a terminal lug 23 of metallic or other electrical conducting material inlaid in the uppermost face of the lamp mounting strip and a pair of internally threaded lamp supporting sockets 24 and 24' which extend into the interior of casing 11 through apertures 25 and 25', respectively, in the bottom wall thereof. The lamp mounting strip 22 is fitted snugly against the bottom wall of casing 11 and is held in place by a single screw 26 seated in a countersunk bore in closure plate 22 in the manner shown in Figures 1 and 2 of the drawings.

Incandescent lamps 27 and 27' are mounted in sockets 24 and 24', respectively, and are illuminated by means of an electrical circuit described in detail hereinafter.

For the purpose of supplying an electrical current of the proper voltage to illuminate lamps 27 and 27', lead wire 28 is connected at one end to a suitable battery or other electrical source (not shown) and at the opposite end is connected to contact clip assembly 29 as shown in Figures 2 and 3 of the drawings.

Contact clip assembly 29 is made up of a threaded bolt 31 which extends rearwardly of the casing from the interior thereof through a bolt opening in contact clip 32, spacer sleeve 33 and bolt hole 34 in the rear wall of case 15. The assembly is retained in place by a lock washer 35 which is urged against the inside of the housing by means of nut 36 threaded on the free end of bolt 31.

On the left side of the center of the instrument, there is a corresponding contact clip assembly 29' including threaded bolt 31', contact clip 32', spacer sleeve 33' and nut 36' as shown in Figures 1 and 3 of the drawings.

When the lamp supporting assembly is properly positioned in the bottom of the casing, it will be observed that the outer wall of lamp socket 24 is in contact with contact clip 32 in such manner that electrical current may pass between the contact arm and the lamp socket.

A detailed showing of the lamp socket assembly is seen in Figures 4, 5 and 6 of the drawings. The lamp socket 24, as shown in Figure 6, is supported by lamp mounting strip 22 in such manner that it is insulated from terminal lug 23. It will be understood that both lamp supporting sockets 24 and 24' are mounted in this fashion, otherwise a short circuit would result.

A hollow rivet 43 of metallic or other electrical conducting material having a flange 44 imbedded in the outer face of lamp supporting strip 22 passes through and in contact with terminal lug 23, insulating washers 45 and 46 and is engageably secured to socket spring contact 47 against which center contact point 48 of the base of illuminating lamp 27 is urged.

From the foregoing description it will be seen that electrical current introduced through contact clip assembly 29 at the right side of the instrument as seen in Figure 1 passes through the corresponding contact clip 32 and the lamp supporting socket 24 to the threaded conductor base 49 and lamp 27 from whence the current is conducted through the filament 51 of the right hand lamp, thence downwardly through center contact point 48, socket spring contact 47, conductor rivet 43, and terminal lug 23, to the lamp 27' at the left of the instrument as seen in Figure 1.

The current having been conducted from the right hand lamp 27 through terminal lug 23, it can be seen that the current passes horizontally to the left through terminal lug 23, upwardly through rivet 43', socket spring contact 47', center contact point 48' of left hand lamp 27' and through the filament 51' to threaded conductor base 49' which is in threaded connection with lamp supporting socket 24'. The return circuit to the electrical source outside the instrument is completed through contact clip 32' at the left side of the instrument, thence through contact clip assembly 29' through lead wire 28' to the source of electrical energy.

When it is desired to replace a burned out lamp, it is only necessary that screw 26 be withdrawn and the lamp supporting assembly be removed from the casing 11 whereupon a new lamp or lamps may be substituted for those which have burned out. The lamp supporting assembly may then be replaced in the housing by inserting the lamps through apertures 25 and 25' in the bottom wall of the casing and held securely in place by screw 26.

By suitable modification it is possible to arrange the illuminating lamp circuit so that the lamps may be disposed in parallel rather than in series as shown in the illustrated embodiment.

It is also contemplated that other minor modifications may be made in the arrangement of the elements illustrated and described herein without departing from the scope of the invention.

The invention is not limited to an assembly including two lamps as shown in the drawing inasmuch as a greater or smaller number of lamps may be employed if desired.

It is intended that the patent shall cover by suitable expression in the appended claim whatever features of patentable novelty reside in the invention.

I claim:

Means for illuminating the interior of an instrument housing comprising, in combination: a housing having an outer wall of dielectric material provided with spaced openings, an assembly including, bolts mounted on an outer wall of said housing projecting into the interior thereof, sleeves carried by said bolts, and contact clips carried by said bolts positioned by said sleeves adjacent said spaced openings; and a detachable lamp assembly including a mounting strip of dielectric material detachably fastened to the external face of said housing, a terminal lug inlaid in said dielectric strip, a pair of lamp sockets

mounted in spaced relation on said strip, the shells of said lamp sockets being insulated from said lug and projecting through said openings to engage said contact clips, incandescent lamps in said sockets, the center contact points of said lamps electrically connected to said lug by means of rivets engaged with said lug, and spring contacts in said sockets secured to said rivets, whereby upon connection of said bolts to a source of electricity said incandescent lamps are energized.

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