

Oct. 15, 1963

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3,107,350

INDICATING LAMP HOUSING FOR ANNUNCIATOR UNIT

Filed Jan. 9, 1961

2 Sheets-Sheet 1

Fig. 1

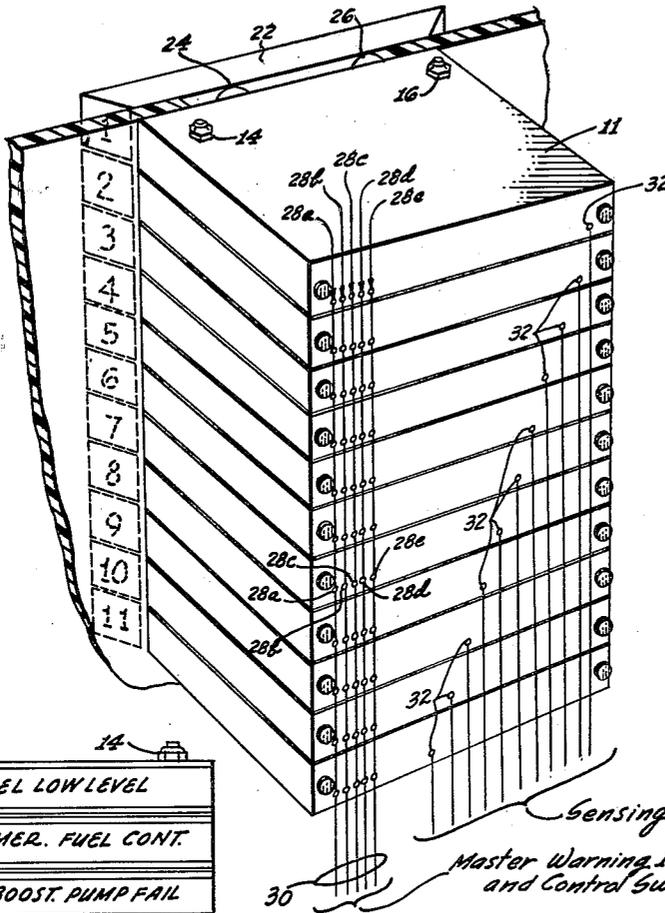
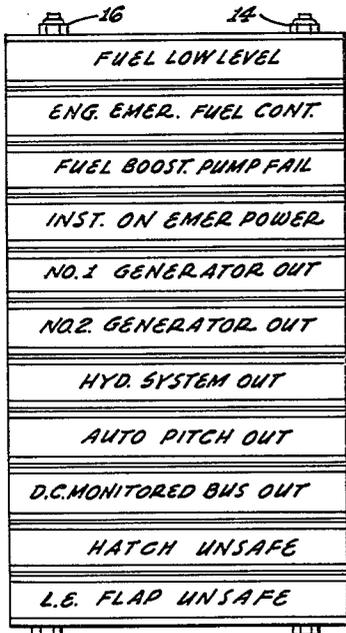
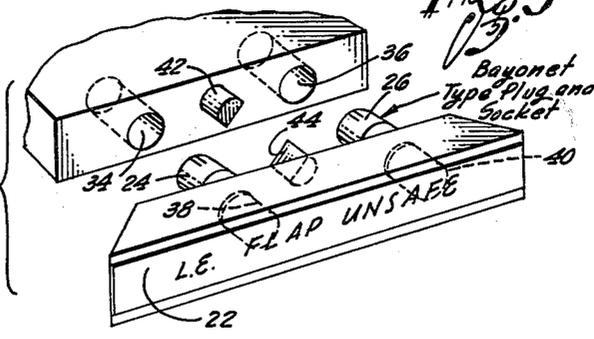


Fig. 2



Sensing Elements  
 Master Warning Instruments  
 and Control Switches

Fig. 3



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Fig. 4

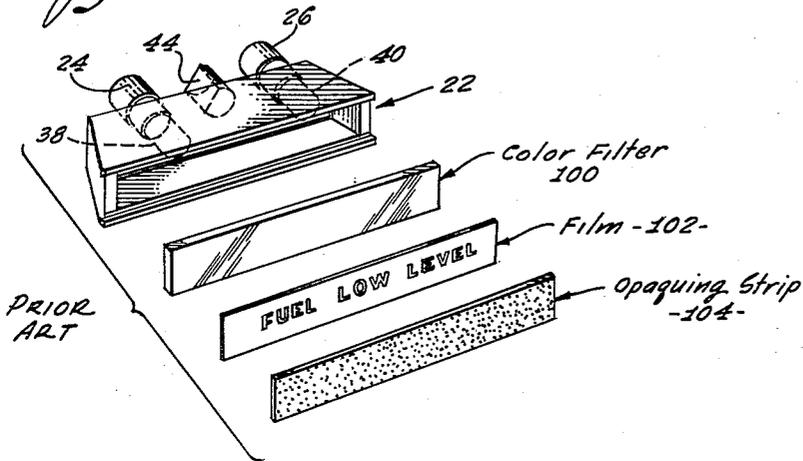


Fig. 5

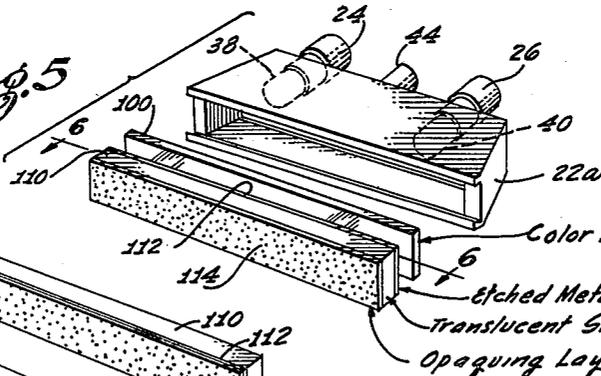


Fig. 5a

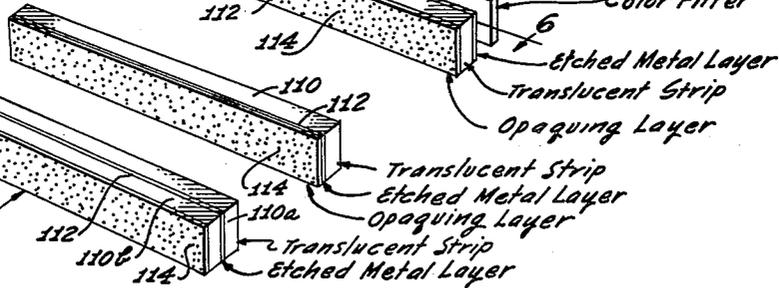


Fig. 5b

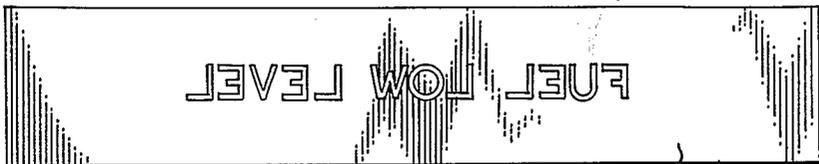
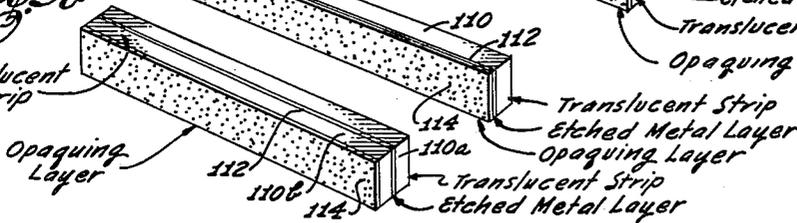


Fig. 6

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INDICATING LAMP HOUSING FOR  
ANNUNCIATOR UNIT

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5 Claims. (Cl. 340-381)

The present invention relates to annunciator alarm systems, and it relates more particularly to a new and improved indicating unit for use in such systems.

Annunciator warning systems in general are well known. A typical annunciator system of an improved type is disclosed and claimed, for example, in application Serial No. 825,461 filed in the name of William C. Arrasmith on July 7, 1959, and which issued November 8, 1960 as Patent 2,959,774. These systems usually include a plurality of indicating units which are mounted on a central control board and which are connected to respective ones of a corresponding plurality of sensing elements in the area to be monitored. Each of the sensing elements is constructed to have a pair of electric contacts, and these contacts close upon the happening of the different conditions, hazardous or otherwise, monitored by the sensing elements. As the pair of contacts in any particular one of the sensing elements closes, the corresponding indicating unit is activated in a manner fully described in the above mentioned patent.

Each of the indicating units mentioned in the preceding paragraph usually includes a lamp housing in which a pair of electrically energized lamps are positioned. A translucent panel bearing inscriptions identifying the particular hazardous condition represented by that pair of lamps is positioned across the front face of the lamp housing. Then, when the sensing element connected to the pair of lamps in the particular lamp housing causes its pair of contacts to close, indicating the happening of the monitored condition, the lamps in the particular lamp housing are energized to light up the translucent panel and cause its inscriptions to become visible.

In the prior art indicating units of the type under consideration, the heat from the lamps in the lamp housing has proven to be extremely troublesome. The heat radiated by the lamps in the prior art indicating units causes burning and discoloration of the translucent panel associated with the lamp housing, so as to obliterate the inscriptions on the panel. This necessitates frequent servicing and replacement of the prior art units.

An important object of the present invention is to provide an improved construction for an annunciator indicator unit which is such that the heat from electrically energized lamps therein does not have any adverse effect on the front panel assembly of the indicator unit or on the inscriptions formed thereon.

A more general object of the invention is to provide a new and improved annunciator indicator unit which is capable of displaying an illuminated inscription representing a monitored condition, and upon the happening of that condition, and which does not exhibit any material deterioration even after long intervals of use.

Yet another object of the invention is to provide such a new and improved annunciator indicator unit in which the illuminated inscriptions appear brighter than in the prior art indicators of a similar type.

A feature of the invention is the provision of an improved annunciator unit which includes a lamp housing and a translucent panel on the front of the housing, which panel includes a metal backing having inscriptions extending through it and which tends to conduct and distribute the heat from the lamps in the housing to prevent any

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burning, discoloring, or other adverse effects by the heat radiated by the lamps. The metal backing on the translucent panel also serves to reflect light back into the lamp housing for greater illumination of the light passing through the inscriptions to the translucent panel.

Other features and advantages of the invention will become apparent from a consideration of the following description in conjunction with the accompanying drawings, in which:

FIGURE 1 is a rear perspective view of a plurality of stacked, like annunciator indicating unit capsules and their associated lamp housings;

FIGURE 2 is a front view of the units of FIGURE 1 showing particularly a series of translucent panels which are respectively associated with corresponding ones of the lamp housings; the panels containing different inscriptions which describe the different monitored conditions, and the panels being illuminated by pairs of lamps in respective ones of the lamp housings;

FIGURE 3 is a fragmentary perspective view of an annunciator indicator unit capsule, and also showing an associated lamp housing which may be plugged into the front face of the capsule;

FIGURE 4 is an exploded perspective view showing a typical prior art construction for the lamp housing of FIGURE 3;

FIGURE 5 is an exploded perspective view illustrating an improved construction, incorporating one embodiment of the present invention, for the lamp housing of FIGURE 3;

FIGURE 5A is a perspective view of one of the components of the construction of FIGURE 5 incorporating a second embodiment of the invention;

FIGURE 5B is a perspective view of one of the components of FIGURE 5 incorporating a third embodiment of the invention; and

FIGURE 6 is a view of a translucent strip assembly in the assembly of FIGURE 5, taken from the rear of the strip, substantially along the lines 6-6 of FIGURE 5.

The annunciator units illustrated in FIGURES 1-3 are described in detail in copending application Serial No. 707,311 which was filed June 6, 1958. A stack of annunciator indicator unit capsules 10 is indicated as 11 in FIGURE 1. The capsules 10 are mounted on the rear side of a central control panel 12 by appropriate mounting screws, not shown. The capsules are held in their stacked condition by a pair of bolts 14 and 16 which extend through the stack 11.

A suitable opening in the central control panel 12 permits the front edge of each of the capsules 10 to be exposed. A lamp housing 22, having a pair of electrically energized indicator lamps mounted in its interior is plugged into the front edge of each of the capsules 10. These lamp housings 22 are conveniently numbered, as shown in FIGURE 1, so that each may be plugged into its proper capsule.

The indicator lamps in the lamp housing 22, have appropriate plug-and-socket assemblies, as designated 24 and 26 in FIGURES 1 and 3. The electrically energized lamps are supported in the plug-and-socket assemblies in known manner, and the individual assemblies form respective bayonet type plugs. These plugs are received by appropriate apertures and by mating electrical sockets positioned on the front edge of the corresponding capsules 10. The bayonet type plug portions of the plug-and-socket assemblies 24 and 26 serve not only to establish electrical contact to the lamps supported in the socket portions, but they also serve to support the lamp housings 22 on their corresponding capsules.

As shown in FIGURE 2, the front face of each of the lamp housings has a translucent panel mounted on it, and

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this panel is appropriately inscribed to represent the different conditions, hazardous or otherwise, monitored by the system. Whenever a pair of annunciator lamps in one of the capsules 10 is energized, indicating the happening of its monitored condition, the corresponding translucent panel on its lamp housing is illuminated by the electrically energized lamps in the lamp housing to indicate the type and location of the particular condition.

Each of the capsules 10, in the embodiment illustrated in FIGURE 1, has a set of five electrical terminals 23a, 23b, 23c, 23d and 23e, mounted on its rear edge. These terminals are preferably located so that equivalent terminals of each capsule are disposed in vertical alignment when the capsules are stacked, as shown in FIGURE 1, and as described in the copending application Serial No. 707,311. This enables the terminals of all the stacked capsules to be conveniently connected in the illustrated manner across a five wire cable 30. Each of the capsules 10 has a further electrical terminal 32 mounted on its rear edge, and this latter terminal is connected to the corresponding sensing element located in the area to be monitored. The lamp housings 22 are individually plugged into their corresponding capsules from the front of the supporting panel 12 through the opening in the supporting control panel 12. The inscribed translucent front panels of the lamp housings constitute a display which is illustrated in FIGURE 2, but the inscriptions on the individual panels are visible only when the lamps in the corresponding lamp housings are energized.

As described in the copending application, from time to time it is necessary to remove one or more of the lamp housings 22, as its lamps become burned out, and so that its lamps may be replaced. When this is done, it is important that the removed lamp housing be returned to its proper capsule. In order that this may be easily achieved, an indexing system is provided, this indexing system being described and claimed in the aforementioned copending application Serial No. 707,311.

Each of the capsules 10, as illustrated in FIGURE 3, has a pair of electric sockets 34 and 36 mounted on its front edge. These sockets receive the bayonet plug portions of the plug-and-socket assemblies 24 and 26 associated with the corresponding lamp housing 22. As pointed out, the sockets 34 and 36 serve, not only to establish electrical contact to the lamps in the lamp housing, but also to support the lamp housing on the front edge of the capsule.

As shown in FIGURE 3, a pair of electrically energized lamps 38 and 40 are supported in respective plug-and-socket assemblies 24 and 26, and these lamps extend into the interior of the lamp housing 22 to light up the inscribed translucent front panel of the lamp housing, when they are energized. Whenever it is desired to replace a lamp, the lamp housing 22 is pulled outwardly to remove the plugs 24 and 26 from the sockets 34 and 36. The defective lamps may then be replaced by new ones.

To assure that a removed lamp housing 22 will be plugged back into its proper capsule 10, an indexing member 42 is mounted on the front edge of each capsule 10, and a corresponding indexing member 44 is mounted on the rear edge of its associated lamp housing 22. The head of the indexing member 42 on a particular capsule 10 is given a selected inclination, and the head of the indexing member 44 on its corresponding lamp housing 22 is given a mating inclination, as fully described in the copending application.

In the stack of FIGURE 1, for example, each of the capsules 10 has an indexing member mounted on its front edge, such as the indexing member 42 in FIGURE 3. The head of each indexing member on the different capsules is given a slightly different inclination, and, in each instance, an indexing member on the facing edge of the corresponding lamp housing 22 is given a mating inclination.

With the described elements, the insertion of a lamp

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housing 22 into any one of the capsules 10, other than its proper capsule, is prevented because its indexing member will interfere with the indexing member on the front edge of the capsule. However, when a lamp housing 22 is inserted into its proper capsule, the heads of the indexing members 42 and 44 do not interfere with one another, and the panel may be plugged into place.

As noted above, the exploded view of FIGURE 4 shows the construction of a typical prior art lamp housing 22. As illustrated in FIGURE 4, the lamp housing has a rectangular configuration, and it defines a rectangular open front face. A rectangular strip of plastic 100 of an appropriate color is mounted on the housing 22, and this strip extends over the open front face of the housing to form a color filter. A film 102 is placed over the plastic strip, and this film has the particular inscriptions for that particular lamp housing formed in it. That is, the film 102 is generally opaque, except for transparent portions corresponding to the desired inscriptions. The color filter 100, and the film strip 102 are supported in place on the front face of the lamp housing 22 in the prior art assemblies by a further translucent strip of plastic 104. The strip 104 may be slipped into place in parallel tracks formed at the edges of the open front face of the lamp housing 22. The strip 104 appears to be opaque when the lamps 38 and 40 are de-energized. This strip serves normally to mask the inscriptions on the film 102 when the lamp 38 and 40 are de-energized, and it may conveniently be referred to as an "opaquing" strip.

It has been found with the assembly of FIGURE 4, that after an interval of use, the heat from the lamps 38 and 40, concentrated as this heat is on two areas of the front panel assembly aligned with the lamps, causes the color filter 100 of the prior art unit to burn and become opaque. Likewise, the film strip 102 of the prior art unit has a tendency to burn and shrink, and the opaquing strip 104 of the prior art unit has a tendency to become discolored.

In the improved construction of the present invention, as shown in FIGURE 5, the lamp housing is designated 22a, and other elements, similar to those of FIGURE 4, are similarly numbered.

In the assembly of FIGURE 5, the film 102 and opaquing strip 104 of the prior art arrangement are replaced by a translucent rectangular strip 110 which may be formed, for example, of fiberglass with an epoxy base. The translucent plastic strip 110 has a metal layer 112 (such as copper) formed on its rear surface in accordance with the usual printed circuit techniques. The inscriptions for the particular unit are etched through the metal layer, or otherwise formed therein, as shown in FIGURE 6. The metal layer, therefore, permits the light from the lamps in the lamp housing to pass through the translucent layer, only at the area corresponding to the inscriptions formed in the metal layer. The metal layer 112 also serves to conduct the heat from the lamps in the lamp housing, and to distribute the heat evenly over the surface of the plastic strip 110. In addition, the metal layer 112 serves to reflect light back into the lamp housing for greater illumination of the inscriptions than in the prior art arrangements. The plastic strip 110, in the embodiment of FIGURE 5, has an opaquing layer 114 formed on its front surface. This opaquing layer may, for example, be a black epoxy lacquer, of the type which is presently readily available on the commercial market.

In the embodiment of FIGURE 5A, the translucent strip 110 has the etched metal layer 112 formed on its front surface; and the opaquing layer 114 is formed over the front of the metal layer, rather than on the translucent strip 110, as in the previous embodiment.

In the embodiment of FIGURE 5B, the metal layer 112 is sandwiched between two translucent strips 110a and 110b; and the opaquing layer 114 is formed on the front of the strip 110b.

It has been found that with the assemblies of FIGURES

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5, 5A and 5B, there is no tendency for the heat from the lamps 38 and 40 to produce burning, or to cause discoloration or deterioration of the assemblies. Also, the reflective qualities of the metallic layer 112 cause the indicators to glow more brightly than the prior art units of the same general type, such as shown in FIGURE 4.

The invention provides, therefore, a new and improved annunciator indicator assembly and unit, which is constructed in a simple and improved manner to be capable of long intervals of use without discoloration or obliteration of its inscriptions; and which is capable of producing bright and easily discernable readings upon the energization of its indicator lamps.

I claim:

1. An annunciator assembly including: a housing, means positioned in said housing for receiving at least one electric lamp, said housing having side walls and having an open front face through which the light rays from the lamp radiate, a first strip of translucent plastic material having first and second surfaces and mounted on said housing and positioned across said front face thereof, a colored second strip of translucent plastic material mounted on said housing and positioned across said front face between said first strip and the interior of said housing, and a layer of metallic material formed on said first surface of said first strip of plastic material having inscriptions formed therein and extending therethrough for causing said first strip of plastic material to be illuminated in accordance with said inscriptions and for conducting heat from the lamp in said housing and for distributing such heat across said first surface of said first strip of plastic material.

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2. The assembly defined in claim 1 and which includes a translucent layer formed on said second surface of said first strip of plastic material.

3. An annunciator assembly including: a rectangular elongated housing, socket means positioned in said housing for receiving at least one electric lamp, said housing having side walls and an open front face through which the light rays from the lamp radiate, a rectangular strip of translucent plastic material having first and second surfaces and mounted on said housing and positioned across said front face thereof, and a rectangular layer of metallic material having an outer surface and formed on said first surface of said strip of plastic material and having inscriptions formed thereon and extending therethrough for causing said strip of plastic material to be illuminated in accordance with said inscriptions and for conducting heat from the lamp in said housing and for distributing such heat across said first surface of said strip of plastic material.

4. The assembly defined in claim 3 and which includes a translucent layer formed on said second surface of said strip of plastic material.

5. The annunciator assembly defined in claim 3 and in which said metallic material is formed on the outer surface of said strip of translucent plastic material and which includes a second strip of translucent plastic material positioned over the outer surface of said layer of metallic material.

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