Sept. 15, 1931. J. ZUBATY 1,823,868

INSTRUMENT PANEL ILLUMINATION

Filed Nov. 30, 1928

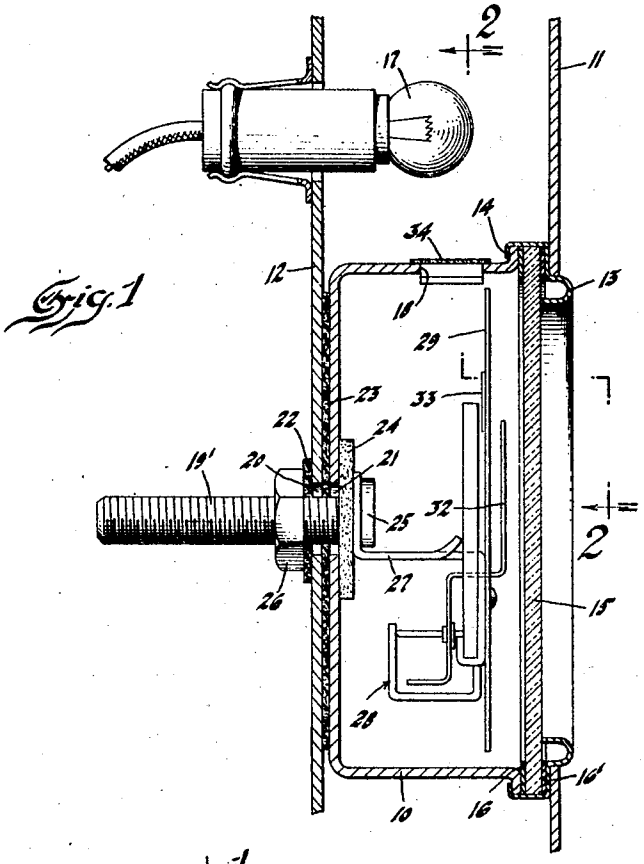

Fig. 1

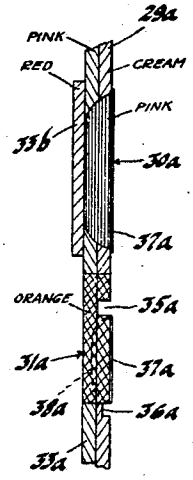

Fig. 3

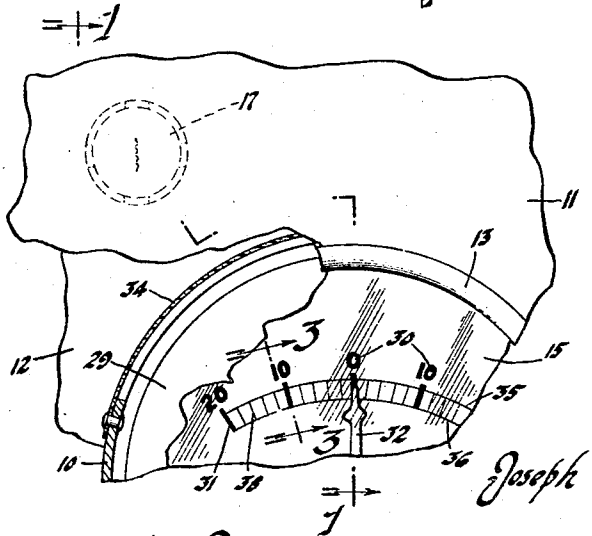

Fig. 2

Inventor
Joseph Zubaty
By Blackmore, Spencer & Flich
Attorney

Patented Sept. 15, 1931

1,823,868

UNITED STATES PATENT OFFICE

JOSEPH ZUBATY, OF FLINT, MICHIGAN, ASSIGNOR TO A C SPARK PLUG COMPANY, OF FLINT, MICHIGAN, A COMPANY OF MICHIGAN

INSTRUMENT PANEL ILLUMINATION

Application filed November 30, 1928. Serial No. 322,853.

This invention is directed to improvements in internally lighted instruments, such as instruments for use upon the dash or instrument boards or panels of automotive vehicles,—said instruments being commonly provided with internal lights or with lateral windows for admission of beams from external light sources; and said invention relates specifically to the use of translucent dial members provided with special characters and/or indicia,—said dial members being optionally supported by means such as interior and conductive brackets and said indicia being preferably formed in such manner as renders the same not only attractive in appearance but clearly legible either by day or by night.

It is a specific object of this invention to provide, for use in, for example, an electrical instrument wherein moving parts are supported by means of an electrically conductive bracket, a dial which may be formed of a non-magnetic material, spaced from the walls of the instrument casing, and carried by said bracket which is provided with characters or indicia some or all of which are cut partially or entirely therethrough,—strips of colored translucent material being optionally employed at an opening through which light is admitted to the instrument casing and/or directly at the rear of said dial, and opaque characters or character outlines being ordinarily employed only in case said dial is also cut through or is not opaque. By a suitable superimposition of translucent dial elements and/or cutting, etching, or intaglio-stamping the same to predetermined depths, with or without local additions of opaque or other coloring matter outlining or otherwise designing the desired characters or indicia, various special "cameo" effects, and other unusual effects, may be obtained.

Other objects of this invention may be best appreciated from the following description of an illustrative embodiment thereof, taken in connection with the appended claims and the accompanying drawings.

Figure 1 may be referred to as, for the most part, a vertical section,—taken substantially as indicated by the line 1—1 of Figure 2,—interior parts being shown in elevation.

Figure 2 is, for the most part, a forward-looking elevational view, parts being broken away substantially as indicated by the line 2—2 of Figure 1.

Figure 3 is an enlarged detail view, which may be regarded as taken in a plane such as that suggested by the line 3—3 of Figure 2, but showing an extreme form.

Referring to the details of that specific embodiment of the present invention which has been chosen for purposes of illustration, an ammeter casing 10 is shown as disposed between an outer instrument panel or plate 11 and a parallel inner plate 12,—the former being apertured to receive a bezel or assembling and centering frame element 13, which may engage said casing by means of a flange 14 in such manner as to retain a glass closure plate 15 between suitable gaskets or cushioning backing elements 16, 16′.

A light source 17 is shown as supported by the inner plate 12 in such a manner as to project a suitable beam of light through a lateral aperture 18, provided in the casing 10; and a conductive bolt 19′ is shown as extending through coincident apertures 20 and 21, provided respectively in the plate 12 and the casing 10,—insulation being interposed at 22, 23 and 24 and held under compression between a head 25 and a nut 26. The head 25 may retain a conductive bracket 27, adapted to support the moving and/or the stationary parts 28 of the instrument,—an ammeter being shown.

Mentioned parts being of any usual or preferred design, the illustrated embodiment of the present invention proposes to support a dial 29, which may be formed of a translucent and non-magnetic material such as pyralin, entirely from the bracket 27 or its equivalent,—the periphery of the dial being shown as spaced away from the casing 10. A translucent and suitably colored material being deemed preferable to an entirely transparent material for use in the dial 29, numerals 30 and/or other characters or legends and/or graduations 31, ordinarily to be read with the aid of an indicating element 32, may

be provided upon said dial by the use of an opaque or differently colored ink and/or by partially or completely perforating the dial,—as suggested in connection with the numerals 30 and certain longer lines included in the arcuate series of graduations 31; and, if desired, a sheet of colored or translucent material may be applied, in arcuate or other form and somewhat as suggested at 33, rearwardly of the dial 29 and in such manner as to impart a distinctive color to the characters 30 and/or lines 31, when seen by transmitted light, as compared with the effects of reflected day light.

It will be understood that, to assure distinctive optical effects by day and by night, in case the mentioned connections and/or indicia are cut substantially through the dial 29 said dial may be formed of a relatively opaque material and the borders of any characters or other indicia so provided may, if desired, be edged with opaque or other coloring matter; but, to adapt the dial to illumination from its rear, it is desirable to form said characters or other indicia entirely by the use of opaque ink only in case the dial 29 is translucent. For the exclusion of dust or for a color effect, the opening 18 in the casing 10 may be provided with a translucent sheet of suitable material in a known manner, as at 34.

Affording a somewhat extreme illustration of what may be done within the scope of the present invention it is assumed in exaggerated-scale Figure 3 that a dial is built up (whether locally or throughout its entire area) by the addition of an intermediate "pink" sheet 33*a* and an inner "red" sheet 33*b* to an outer "cream" sheet 29*a*,—all of these sheets being translucent and both the characters 30*a* and the longer graduations 31*a* being cut through sheets 29*a* and 33*a*. In this figure, the sheet 33*b* is reserved uncut in order to produce something of a cameo effect by comparison with a one-ply cut or depression at 35*a* and a ½ ply depression at 36*a* (corresponding to arcuate lines 35 and 36, Fig. 2). The inwardly-extending edges of characters 30*a* and those of the main graduations 31*a* are respectively shown as stained pink (or red) and orange, and as bordered by opaque ink lines 37*a*; and, to emphasize the mentioned cameo effect, the short graduations 38 may be cut or stamped to an intermediate depth, as suggested by the dotted line 38*a*. Alternatively the outer or main dial element may be opaque, even though any or all of the remaining suggested elements be employed therewith.

Although the foregoing description has included details in regard to but one complete embodiment of the present invention, various alternative possibilities being suggested by way of illustration, it will be understood not only that some features of this invention might be separately employed but also that numerous modifications, in addition to those referred to therein, might easily be devised,—all without involving the slightest departure from the spirit and scope of the present invention.

I claim:

1. For use in an instrument of the general character described: a translucent dial provided with indicia cut therein and producing a distinctive optical effect by transmitted light, as compared with daylight effects due to reflection of light therefrom,—some of said indicia being outlined in a material more opaque than that of said dial.

2. In combination with an indicating instrument, a dial of translucent material, characters carried by said dial, said characters being of a color different from the color of the dial so that one color contrast between the characters and the dial will be observed when the dial is illuminated by reflected light, and illuminating means located behind said dial and adapted to cause light rays to be transmitted through said dial, the material of the dial being of such a color that a different color contrast between the characters and the dial will be observed when the latter is illuminated by transmitted light from said illuminating means.

3. In combination with an indicating instrument, a dial of translucent material, characters carried by said dial, said characters being of a color different from the color of said dial so that one color contrast between the characters and the dial will be observed when the dial is illuminated with reflected light, illuminating means located behind said dial and adapted to cause light rays to be transmitted through the latter, and colored means located between the dial and said illuminating means so that a different color contrast between the characters and the dial will be observed when the latter is illuminated by transmitted light from said illuminating means.

4. In combination with an indicating instrument, a dial of translucent material, characters carried by said dial, said characters being of a color different from the color of said dial and of a different degree of opaqueness than the material of said dial so that one color contrast between the characters and the dial will be observed when the latter is illuminated by reflected light, and illuminating means located behind said dial and adapted to cause light rays to be transmitted through the latter so that a different color contrast between the characters and the dial will be observed when the latter is illuminated by transmitted light from said illuminating means.

5. In combination with an indicating instrument, a dial of translucent material, characters carried by said dial, said charac-

ters being of a color different from the color of said dial and of a different degree of opaqueness than the material of said dial so that one color contrast between the characters and the dial will be observed when the latter is illuminated by reflected light, illuminating means located behind said dial, and colored means located between the characters and said illuminating means so that a different color contrast between the characters and the dial will be observed when the latter is illuminated by transmitted light from said illuminating means.

In testimony whereof I affix my signature.

JOSEPH ZUBATY.