July 4, 1933. C. M. ADAMS 1,917,079

INSTRUMENT PANEL

Filed June 14, 1932 2 Sheets-Sheet 1

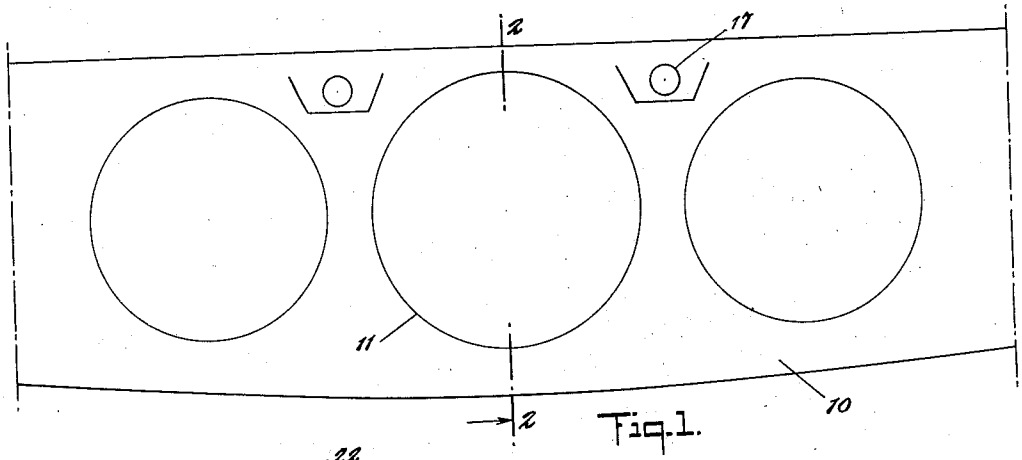


Fig. 1.

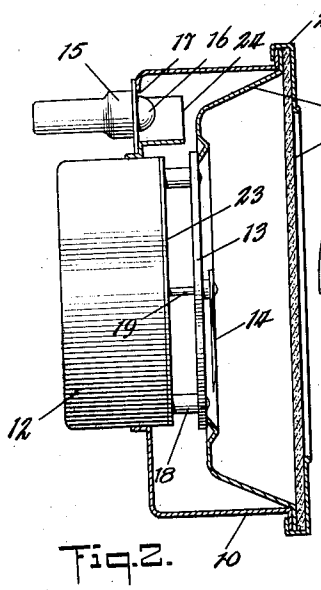


Fig. 2.

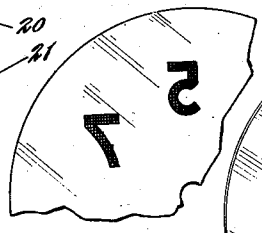


Fig. 4.

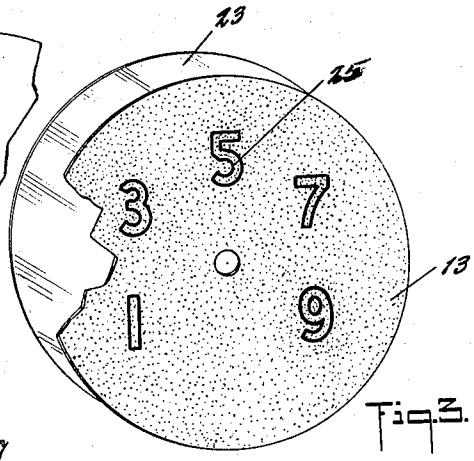
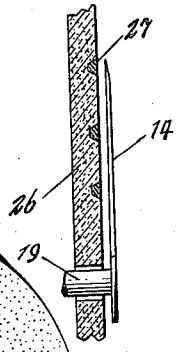


Fig. 3.

Fig. 7.



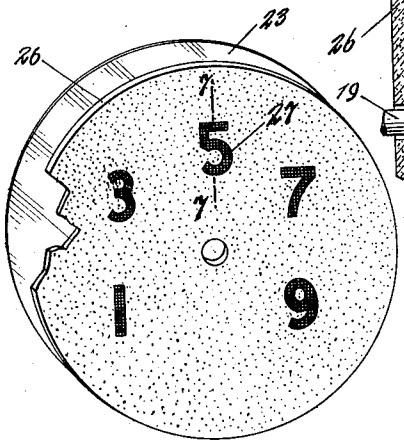


Fig. 6.

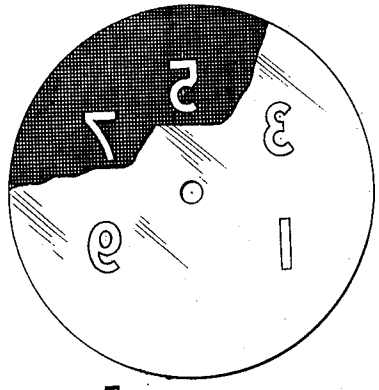


Fig. 5.

INVENTOR
CLARK M. ADAMS
BY HIS ATTORNEYS

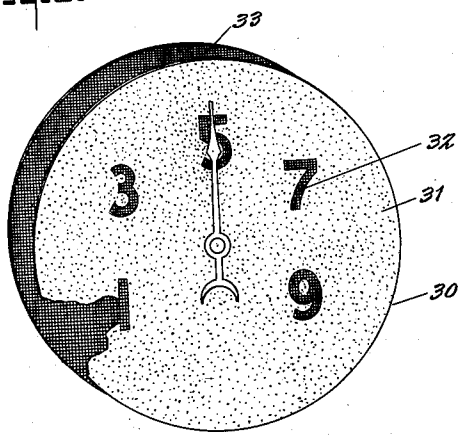
Howson and Howson

July 4, 1933. C. M. ADAMS 1,917,079

INSTRUMENT PANEL

Filed June 14, 1932 2 Sheets-Sheet 2

Fig. 8.



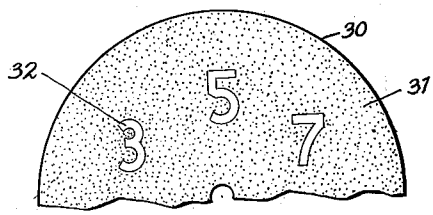


Fig. 9.

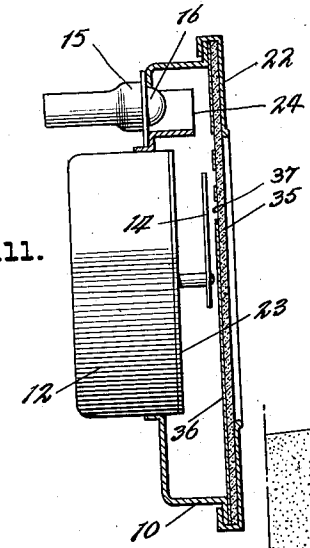


Fig. 11.

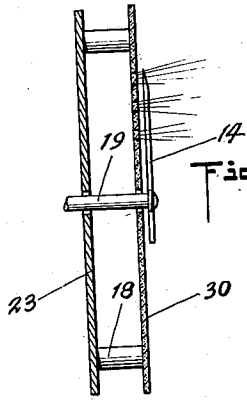


Fig. 10.

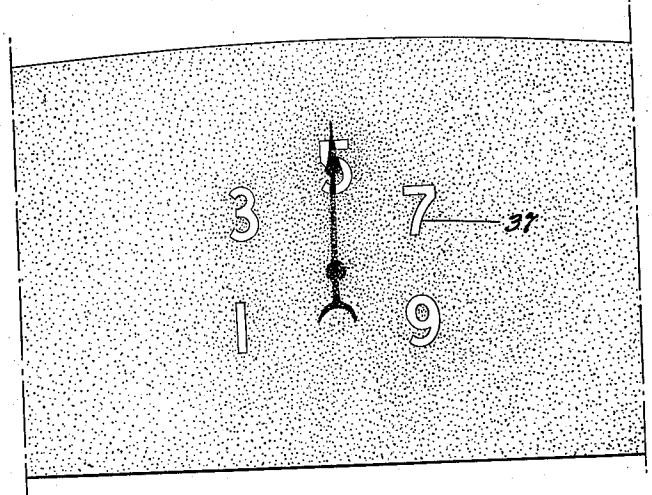


Fig. 12.

INVENTOR
CLARK M. ADAMS
BY HIS ATTORNEYS

Howson and Howson

Patented July 4, 1933 1,917,079

UNITED STATES PATENT OFFICE

CLARK M. ADAMS, OF TOLEDO, OHIO, ASSIGNOR TO MOTO METER GAUGE & EQUIPMENT CORPORATION, OF TOLEDO, OHIO, A CORPORATION OF DELAWARE

INSTRUMENT PANEL

Application filed June 14, 1932. Serial No. 617,232.

This invention relates to instrument panels, and more particularly to the type having one or more dials illuminated by light transmitted therethrough.

The main object of the invention is to provide a panel of this character with the dial close to the instrument, and to permit illumination of the dial by transmitted light without undesirable shadow from the instrument appearing on the dial.

Other objects are to improve instrument panels of this character, to render the same economical to manufacture, convenient to install, and otherwise well adapted for the purposes set forth, as will be apparent from the following description in conjunction with the accompanying drawings, in which

Figure 1 is a front elevation of a portion of the casing for the instrument panel;

Figure 2 is a section taken along the line 2—2 of Figure 1, showing the casing assembled into a completed panel;

Figure 3 is a detail of the preferred form of light transmitting dial and the opaque light shield employed therewith;

Figure 4 is a fragmentary rear view of the dial shown in Figure 3;

Figure 5 is a modified rear view of the dial shown in Figure 3;

Figure 6 is a view similar to Figure 3, showing a further modified dial;

Figure 7 is a partial section taken along the line 7—7 of Figure 6;

Figure 8 is a detail of a further modified dial and light shield therefor;

Figure 9 is a fragmentary view showing the daylight appearance of the dial shown in Figure 8;

Figure 10 is a section through the dial shown in Figure 8;

Figure 11 is a view similar to Figure 2, but showing a modified arrangement of the panel; and

Figure 12 is a partial front elevation of a modified dial and front cover plate for the panel shown in Figure 11.

The instrument panel comprises a casing 10 which is preferably a dished sheet metal stamping as shown in Figure 1, having one or more apertures 11 adapted to receive the instruments which are to be mounted on the instrument board.

As shown in Figure 2 an instrument 12 is supported by the casing 10 and extends through the aperture 11 into the casing. A light transmitting dial 13 is provided for the instrument, and a pointer 14 actuated by the instrument 12 cooperates with the dial 13 to indicate a reading of the instrument. A lamp socket 15 is secured to the casing 10 and carries a lamp bulb 16 which extends through an aperture 17 in the casing so as to project into the interior thereof.

In this form the dial 13 is supported by the instrument, preferably by bolts 18 extending out from the instrument and holding the dial spaced therefrom. The instrument also has a shaft 19 which extends through a suitable aperture in the dial for actuating the pointer 14. A face plate 20 which is preferably a dished sheet metal stamping having an aperture registering with the dial 13, is fitted inside the casing 10 and extends over the dial 13 to prevent light from the lamp 16 from escaping except through the dial. If desired a glass cover plate 21 may be fitted over the face plate 20, and the casing 10, face plate 20 and glass cover 21 may be suitably secured together as by a sheet metal band 22 crimped over the rim of the casing.

To prevent the structure of the instrument 12 from appearing as an undesirable shadow on the dial 13, a light obstructing shield 23 is mounted between the instrument 12 and the dial 13. In the form shown the shield 23 is an opaque disk held in place by the bolts 18, and the shaft 19 passes through an aperture in the shield.

A deflector 24 is mounted inside the casing adjacent the aperture 17 so as to prevent direct rays from the lamp 16 from passing through the dial 13. The inside of the casing 10 and also the deflector 24 are painted white or otherwise provided with a light diffusing surface. The diffused light thus finds its way into space between the dial 13 and the shield 23 so that the dial 13 is illuminated by diffused light transmitted therethrough, with no undesirable shadow from the instrument

12, and the dial may readily be read by means of the opaque pointer 14.

The preferred embodiment of the dial 13 is shown in Figure 3 in which the indicia 25 shown as numbers are provided with an opaque outline preferably black, the dial 13 being entirely of translucent material such as pyralin which may be any desired color, but preferably having the appearance of ivory. The shield 23 is an opaque disk which has a white surface toward the dial 13, so that this element not only prevents light from illuminating the instrument 12, but also increases the illumination for transmission through the dial 13. As shown in Figure 4 the back of the dial is provided with a solid opaque coating within the outline of the indicia 25 on the face thereof. Thus when the lamp 16 is energized, the field of the dial 13 appears white or any desired color, while the indicia 25 inside the outline thereof appears dark. When the dial is illuminated by daylight, instead of the lamp, the front of the dial appears all the same shade, except the black outline of the indicia 25.

This dial may be modified as shown in Figure 5 in which the back of the dial is covered with an opaque coating, except the area registering with that confined by the outline of the indicia 25. When this dial is illuminated by light transmitted therethrough the indicia is illuminated while the field remains dark.

In the form shown in Figures 6 and 7, the dial 13 comprises a heavy pyralin disk 26 which is translucent and has a gray tint in daylight. The indicia are formed by grooves 27 cut into the heavy pyralin dial and filled with opaque material. This dial is also provided with an opaque disk 23 which also has a light diffusing surface toward the dial 26.

In the form shown in Figure 8, the dial 30 is a transparent disk of pyralin. The field of the dial 30 has a matte surface 31 leaving the indicia 32 transparent. This form is provided with a light shield 33 having a black or colored light absorbing surface on the side thereof toward the rear of the dial 30. When the light 16 is energized the matte surface 31 is illuminated, giving a white appearance, while the black or colored shield 33 shows through the transparent indicia 32 as black or colored figures sharply contrasted to the white field.

A modified arrangement of the panel assembly is shown in Figure 11. In this form the dial 13 and the glass cover plate 21 are constituted by a single element 35, the opaque pointer 14 in this instance being between the dial and the opaque light shield 23. The inner side of the glass 35 is covered with a translucent coating 36 except for the indicia 37 (Figure 12) which are left transparent. With this arrangement when the light 16 is lit, the pointer 14 is visible through the transparent indicia 37 and the remaining portions of the pointer 14 not in regster with the indicia appear as a heavy shadow on the translucent coating 36.

While several embodiments of the invention having been disclosed in detail, the invention is not limited thereto, but instead includes such embodiments of the broad idea as fall within the scope of the appended claims.

I claim:

1. In an instrument panel, a casing, an instrument associated with said casing, a light transmitting dial for said instrument, having a continuous periphery an indicator actuated by said instrument and cooperating with said dial, and an imperforate opaque light shield between said instrument and said dial and concealing said instrument from said dial.

2. In an instrument panel, a casing, an instrument associated with said casing, a dial for said instrument, comprising a single piece of light transmitting material, an indicator actuated by said instrument and cooperating with said dial, and an opaque light shield between said instrument and said dial completely concealing said instrument therefrom, the inside of said casing and the side of said shield toward said dial both having light diffusing surfaces.

3. In an instrument panel, a casing, an instrument supported by said casing, a light transmitting dial for said instrument, an indicator actuated by said instrument and cooperating with said dial, said casing being adapted to support a second instrument, a source of light within said casing adapted to illuminate both instruments, and an opaque light shield between said first mentioned instrument and dial.

4. In an instrument panel, a casing, an instrument associated with said casing, a unitary light transmitting dial for said instrument comprising a translucent plate having opaque indicia, an indicator actuated by said instrument and cooperating with said dial, and an uninterrupted opaque light shield between said instrument and dial, said casing having a light reflecting inner surface.

5. In an instrument panel, a casing, an instrument supported by said casing, a light transmitting dial in front of said instrument, said dial having opaque indicia embedded therein, and opaque light shield between said instrument and said embedded opaque indicia, a pointer cooperating with said embedded opaque indicia to indicate a reading of the instrument, and an electric lamp bulb inside of said casing for illuminating the space between said shield and said dial.

6. In an instrument panel, a casing, an instrument associated with said casing, a dial for said instrument having a portion more resistant and portions less resistant to light transmission, said less resistant portions forming indicia, and said more resistant por-

tions forming a field therefor, and an opaque pointer actuated by said instrument in a plane parallel to said dial, and adapted to cooperate with the illuminated indicia to indicate a reading of said dial.

7. In an instrument panel, a casing having an aperture, an instrument mounted on said casing and extending through said aperture, a translucent dial supported by said instrument and having opaque portions forming indicia thereon, a face plate having an aperture aligned with said dial, and an opaque light shield supported by said instrument in back of said dial.

8. In an instrument panel, a casing having an aperture, an instrument mounted on said casing and extending through said aperture, a translucent dial for said instrument having portions of resistance to light transmission different from that of the main portion of said dial and forming indicia therefor, a face plate having an aperture registering with said dial, an opaque light shield supported by said instrument in back of said dial, said instrument having a shaft passing through said shield and dial, and a pointer actuated by said shaft in the plane of said face plate aperture for cooperating with said indicia to indicate a reading of said instrument.

9. In an instrument panel, a casing, an instrument associated with said casing, a light transmitting dial for said instrument comprising a transparent portion and a portion more resistant to light transmission, one of said portions forming indicia and the other forming a field therefor, a pointer actuated by said instrument and cooperating with said indicia to indicate a reading of said instrument, and an opaque light shield between said instrument and said dial visible through said transparent portion but concealing said instrument therefrom.

10. In an instrument panel, a casing, an instrument associated with said casing, a dial for said instrument comprising a transparent portion and a portion more resistant to light transmission, one of said portions forming indicia and the other forming a field therefor, an opaque pointer actuated by said instrument in a plane back of said dial whereby a part of said pointer is visible through said transparent portions of said dial, and an opaque light shield between said instrument and said pointer.

11. In an instrument panel, a casing, an instrument associated with said casing, a light transmitting dial for said instrument, an opaque light shield in back of said dial, said instrument having a shaft extending through said shield, and an opaque pointer mounted on said shaft and actuated thereby in a plane between said shield and said dial, said dial comprising a transparent portion and a translucent portion, one of said portions forming indicia and the other forming a field therefor, whereby part of said pointer is visible through said transparent portion, and the remainder appears as a shadow on said translucent portion.

12. In an instrument panel, a casing having apertures, an instrument and an electric lamp each mounted on said casing and extending respectively thereinto through said apertures, a light transmitting dial for said instrument comprising a portion more resistant and a portion less resistant to passage of light therethrough, one of said portions forming indicia, and the other forming a field therefor, said instrument having a shaft and an opaque pointer actuated by said shaft in a plane parallel to said dial and cooperating with said indicia to indicate a reading of said instrument, an opaque light shield between said instrument and said pointer and having an aperture through which said shaft may actuate said pointer, the inner side of said casing having a light diffusing surface, and means for preventing direct rays from said lamp from striking the less light resistant portion of said dial.

13. In an instrument panel, a casing, an instrument associated with said casing, a dial for said instrument comprising a continuous annular band of translucent material having opaque indicia, means for causing light within said casing to pass outwardly through said continuous annular band of translucent material, and a pointer actuated by said instrument in a plane parallel to said dial and cooperating with said indicia to indicate a reading thereof, said pointer being mounted on a short shaft and close to said instrument, whereby no shadow from said shaft may fall on said continuous annular band.

14. In an instrument panel, a casing, an instrument associated with said casing, a dial for said instrument comprising a translucent portion and an opaque portion, one of said portions forming indicia, a pointer cooperating with said indicia to indicate a reading of said dial, an opaque light shield between said instrument and said pointer, means actuated by said instrument and passing through said opaque light shield for moving said pointer, a light source within said casing, and means within said casing for causing light from said source to diffuse out through said translucent material.

15. In an instrument panel, a casing, a lamp and a plurality of instruments supported by and projecting into said casing, dial means comprising a plate of light transmitting material having a light resistant coating applied to the rear surface of a portion thereof, with apertures in said coating forming indicia illuminated by said lamp, said coating forming a field therefor, said dial means extending over said instruments to the rim of said casing and constituting

therewith an enclosure for said instruments, and a pointer actuated by at least one of said instruments in a plane parallel to said dial and adapted to cooperate with the illuminated indicia to indicate a reading of said dial, there being a light surface in back of said pointer against which the latter is clearly visible.

16. In an instrument panel, a casing, an instrument mounted in said casing, an electric lamp mounted in said casing, a dial having a portion more resistant and a portion less resistant to light transmission, one of said portions forming indicia and the other forming a field therefor, said instrument having a short shaft, and said indicia being arranged in an arc about said shaft and a pointer on said shaft actuated thereby in a plane parallel to said dial and close to said dial, whereby no shadow may be cast by said shaft, in the light from said lamp passing out through said less resistant portion, adjacent to said arcuately arranged indicia.

17. In an instrument panel, a casing, an instrument associated with said casing, a dial for said instrument having a portion more resistant and portions less resistant to light transmission, said less resistant portions forming indicia and said more resistant portions forming a field therefor, and an opaque pointer actuated by said instrument in a plane parallel to said dial and adapted to cooperate with the illuminated indicia to indicate a reading of said dial, said portion more resistant to light transmission comprising an opaque mask having apertures therein defining said indicia.

18. In an instrument panel, a casing, an instrument associated with said casing, a dial for said instrument comprising a translucent portion and an opaque portion, one of said portions forming indicia, a pointer cooperating with said indicia to indicate a reading of said dial, an opaque light shield between said instrument and pointer, means actuated by said instrument and passing through said opaque light shield for moving said pointer, a light source within said casing, and means within said casing for causing light from said source to diffuse out through said translucent material, said opaque light shield being formed by part of said opaque portion of said dial.

19. In an instrument panel, a casing, a lamp and a plurality of instruments in said casing, dial means comprising a light resistant mask extending over said instruments to the rim of said casing and constituting therewith an inclosure for said instruments, said mask having apertures therein arcuately arranged and forming indicia through which light generated by said lamp passes outwardly, and a pointer actuated by at least one of said instruments in a plane parallel to said dial and adapted to cooperate with the illuminated indicia to indicate a reading of said dial, there being a light surface in front of said mask and in back of said pointer against which the latter is clearly visible, said instrument having a short shaft for said pointer concentric with said arcuately arranged indicia, and said plane of actuation being close to said mask, whereby no shadow may be cast by said shaft in the light generated by said lamp passing out through said indicia.

In testimony whereof I have signed my name to this specification.

CLARK M. ADAMS.