

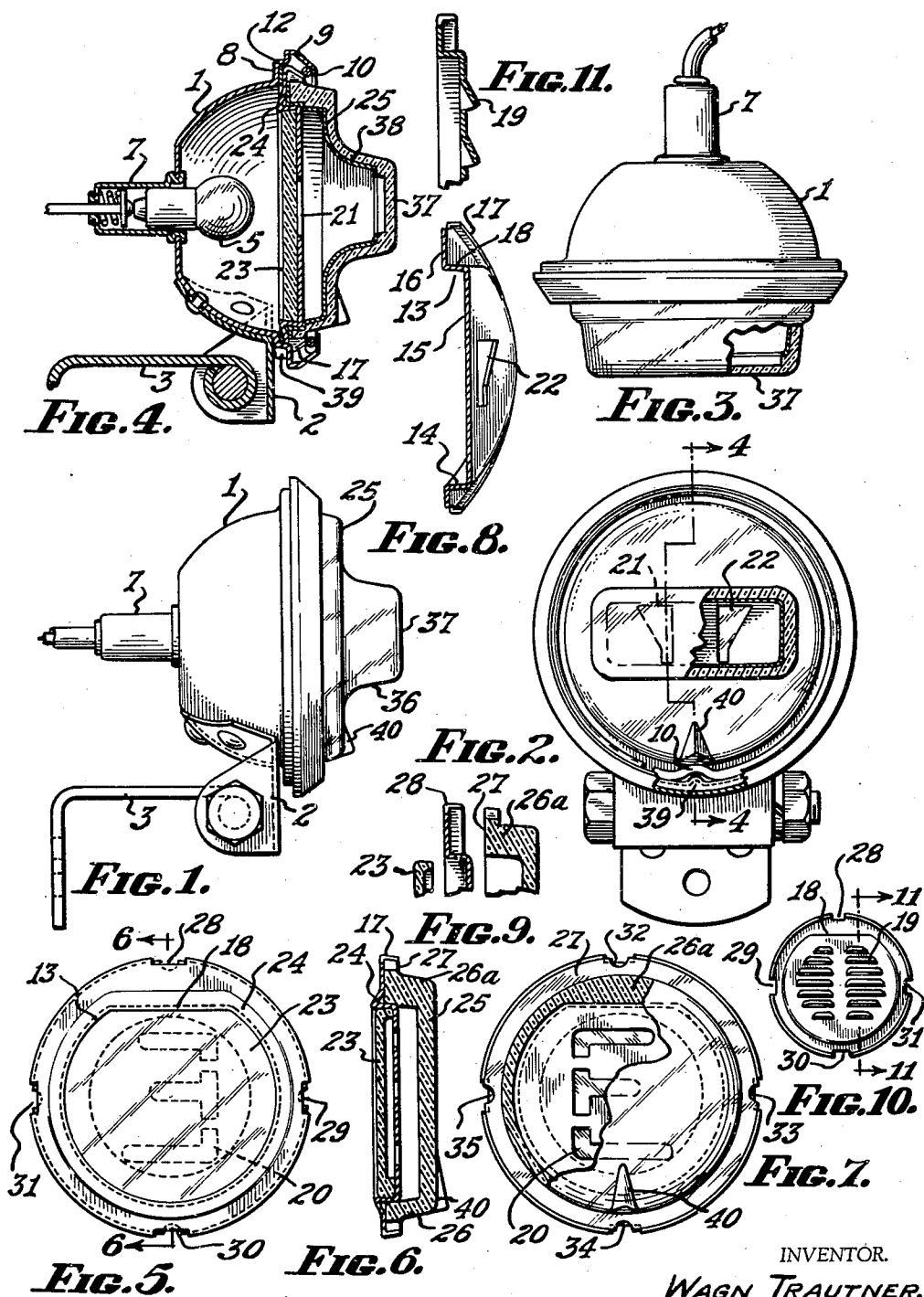
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MARKING AND SIGNALING MEANS FOR BLACKOUT PURPOSES AND THE LIKE

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MARKING AND SIGNALING MEANS FOR
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My invention relates to illuminating means of marking or signaling character for use under circumstances such as those obtaining in black-outs. Such circumstances demand restricted visibility either as to distance or direction or both. It has hitherto been understood that these demands could be met by one or a combination of expedients including the use of a filter for controlling the color value or wave length range of the light, the use of a mask to confine the emission of light to small and sometimes specially defined areas, and the use of shading or baffle means to prevent visibility in certain directions.

Some circumstances of use require that the marker or signal itself give some indication of the distance of the device from the observer, or the relative heights of the observer and the device, or both. The art has hitherto attained these objects through the use of a mask or stencil containing openings of certain particular sizes and shapes and certain particular space relationships, either alone, or in combination with baffle means having an opening of restricted area definitely located in some fashion to the openings in the mask.

My invention is adapted to the provision of structures in which any or all of these objects are attained; but is directed to the solution of mechanical and structural problems in the manufacture and use of devices of the class to which I have referred.

In such structures it is necessary that they have a sealed or semi-sealed construction such that the various effective parts cannot become fouled, plugged up, or rendered useless by accumulations of mud, dust and the like, and so that a single cleaning operation will serve to free them of whatever accumulations have occurred. It is necessary that such structures be demountable and assemblable in darkness if, for example, the incandescent bulb should burn out or the device otherwise become damaged. Under these circumstances it is necessary to provide for the automatic or semi-automatic alignment of the parts during assembly in darkness to preserve the operability of the devices. It is desirable also that the structures be simple to dismantle, repair and reassemble so that these operations may be rapid. Economy is also a desideratum in these structures.

Fundamental objects of my invention are concerned with the attainment of these advantages in a mechanically simple structure. These and other objects which will be pointed out hereinafter or will be apparent to one skilled in the art

upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe certain exemplary embodiments. Reference is made to the drawing wherein:

Figure 1 is an elevational view of one exemplary form of my completed structure.

Figure 2 is a front elevation thereof.

Figure 3 is a top plan view.

Figure 4 is a vertical section taken along the line 4—4 of Figure 2.

Figure 5 is a rear view of a lens, mask and filter assembly.

Figure 6 is a sectional view thereof taken along the line 6—6 of Figure 5.

Figure 7 is a front elevational view of the same structure with certain parts cut away.

Figure 8 is a view partly in section and partly in perspective of a mask element.

Figure 9 is an exploded view intended to illustrate an aspect of the association of a mask, a filter and a lens or baffle element.

Figure 10 is a plan view of another type of mask.

Figure 11 is a partial sectional view taken along the line 11—11 of Figure 10.

Briefly in the practice of my invention I provide a housing element adapted to contain at least the bulb portion of a suitable illuminant and adapted to be attached to the structure with which the device is to be used. This structure will ordinarily be a motor land vehicle, but it may be a boat. Also it will be understood that my marking and signaling devices are adapted for use on stationary structures to indicate their position, for traffic signaling, and the like. In connection with this housing and illuminant, I have found that it is possible to provide and employ a unitary sealed combination including a mask, a filter and a lens. The last element may also be, or may have in connection with it, suitable baffle means where these are desired. The unitary assembly to which I have referred is adapted to be engaged in the front part of the housing and removably retained therein by any suitable fastening means. I ordinarily employ a curved spring wire for this purpose, but many other means are available such as a collar engaging both the housing and the unitary assembly, or a removable cap for the housing. I provide means in connection with the unitary assembly aforesaid to insure the proper relative orientation of the unitary assembly in the housing so that the structure may be readily disassembled and reassembled in proper relation-

ship under conditions of darkness. It will be understood by those skilled in the art in the light of the teachings which I make herein that the constructional details of the housing, the bracket, the light source, and the individual elements going to make up the unitary assembly to which I have referred may be widely varied for different purposes without departing from the principles of my invention as expressed in the appended claims.

I have shown in Figures 1, 4 and 3 an exemplary form of housing 1, to which is attached in any suitable fashion a holder 2 by which the housing may be attached to a bracket 3. Preferably this attachment is pivotal so that the device may be adjusted at least in a vertical plane. The housing is a hollow body which in the form shown is shaped to provide space for an incandescent bulb 5. A socket for the bulb may be located either wholly within the housing or as an appendage thereto as at 7. In the exemplary embodiment, the housing is shown as provided with a shoulder 8 against which the unitary assembly herein-after to be described may rest. Beyond the shoulder, the housing is somewhat enlarged and is provided with an inturned portion 9 behind which a fastening means such as the spring wire 10 may be engaged to hold the unitary assembly in place. There may be a gasket 12 of annular form located between the shoulder 8 and the unitary assembly if desired.

In the practice of my invention I provide a mask preferably of stamped and blackened sheet metal. The initial cross sectional shape of the mask is shown in Figure 8. It is characterized by a cup-shaped depression 13 when observed from one side. As initially formed, this cup-shaped depression has side walls 14 substantially normal to a bottom portion 15. In this bottom portion there are formed such cut-outs, louvers or the like as may be necessary to restrict the area of the illumination. About the cup-shaped depression there are peripheral flange-like walls 16. Edge portions of these walls are reversely bent as at 17 so that a channel is formed about the cup-shaped depression 13 and open in the opposite direction.

The shape of the mask stamping will normally be circular in outline though it need not necessarily be so. Where the shape is circular however, the shape of the cup-shaped depression 13 is not fully circular but is flattened on one side as at 18 for orientation purposes. This flattening of course affects the shape of the channel also. The bottom 15 of the mask plate may be perforated or treated to provide the necessary restriction of the area of illumination. The manner of this does not constitute a limitation upon my invention. Where a mere restriction of the area of illumination is desired, the bottom 15 of the mask stamping may merely be perforated with one or a series of perforations of relatively small area. Again it may be formed so as to provide louvers 19 as are shown in Figures 10 and 11. In some instances it will be desired that the shape of the perforations or louvers form an indicia of some sort. Thus in Figures 5 and 7 I have shown the mask plate formed with a series of perforations 20 making up the letter E. This particular structure may be used as a marker for so-called emergency vehicles, namely those which are permitted or required to move about during a blackout. Other indicia can obviously be used for other purposes. Yet again, where the marker or signal device is required to provide informa-

tion as to its distance from the observer, it will be the practice to provide spaced perforations so arranged that they can be seen as separate if the device is within a certain distance of the observer, but merge or blend together if this distance is substantially exceeded. Such perforations may also have special shapes and may be used in connection with baffles to give other information such as the angle of observation. A useful form of such perforations is shown at 21, 22 in Figure 2.

In the formation of my unitary assembly I place in the cup-shaped depression 13 of the mask stamping a suitable filter element 23. This element will be of translucent substance. It may be white by transmitted light or it may have such transmission characteristics as to cut down the intensity of the light without essentially changing its color. More often, however, it will be itself colored so as to confine the wave length of the light passing through it to a certain region of the spectrum, since colors have utility both in signaling and in determining the distance of visibility. The filter device 23 need not be of the same color (or lack of it) throughout but may be differently colored in different parts to coact with some predetermined arrangement of perforations in the bottom of the mask stamping. Since the shape of the filter element 23 will be the same as that of the cup-shaped depression 13, and since this depression is flattened or otherwise configured on one side, provision is thus made for the proper orientation of the filter element with respect to the mask plate and the perforations therein. I preferably form my filter elements 23 of a translucent plastic material not subject to ready breakage, but other materials, of course, may be used, including glass.

Having placed the filter element in the cup-shaped depression of the mask plate, I next crimp the edges of the cup-shaped depression about the filter element so as to hold it in place. This may be done by means of a die so shaped as to cause the walls 14 of the cup-shaped depression to engage the edges of the filter element tightly. In the course of the deformation of the mask plate in accomplishing this purpose, the flange portion 16 which forms the bottom of the channel may have a portion of its surface disposed slantwise as at 24 in Figures 4, 5 and 6. This has the effect of making the channel somewhat shallower as indicated.

Next I provide a lens element to be used in connection with the mask plate. One form of this lens element is shown in Figure 6 in cross section, and comprises a face portion 25 having a peripheral skirt 26 which terminates in an outwardly extending flange 27. The flange is adapted to enter the channel in the mask plate, and since this channel has a wider portion or specially shaped portion as hereinabove set forth, the lens element will be correspondingly shaped. In the exemplary embodiment, one side of the skirt 26 is appropriately thickened as indicated at 26a in Figures 6 and 7.

In the outer wall 17 of the mask plate stamping I prefer to form notches or cut-outs indicated most clearly at 28, 29, 30 and 31 in Figures 5 and 10. The flange 27 of the lens element may have corresponding cut-outs or notches formed in it as shown at 32, 33, 34 and 35. When the lens and the mask plate are assembled, these notches and cut-outs will be in alignment; but as aforesaid, the enlarged skirt area 26a insures the proper orientation of the mask plate and the lens element. In assembly, the flange 27 is placed

in the channel of the mask plate and the peripheral wall 17 is crimped thereabout as indicated in Figures 4 and 6. This provides a unitary assembly of sealed character and including the mask, the filter and the lens. It can be inexpensively made and it can be handled, installed and removed as such. By reason of its unitary and sealed character, the inner faces of the lens and the filter together with the masking portion 15 and its perforations, louvres or the like are protected from dust, dirt and mud. Moreover, when the lamp is put together as in Figure 4 or in some equivalent fashion, my unitary assembly seals the lamp housing so that dust, dirt and mud cannot accumulate therein. These substances can accumulate on the outer surfaces of the housing and on the outer surfaces of the lens 25; but a simple wiping operation will remove them.

The lens may be made of glass or any other translucent substance, but I prefer to make it, like the filter, of a transparent or translucent plastic which is non-brittle and not subject to fracture.

My lens may be specially shaped for special purposes. In Figures 1 to 4 inclusive I have shown a type of lens in which the face 25 in its central portion extends outwardly as at 36 to provide a protuberance of substantially rectangular cross section. The front face of this protuberance 37 parallels the portion 15 of the mask plate and is clear or translucent. The remainder of the lens element, however, may be coated with some opaque masking substance as at 38. When this is done, the lens structure additionally forms a baffle element having a fixed space relationship to the perforations 21, 22 in the mask plate. These perforations can be seen fully only throughout a comparatively narrow vertical angle directly in front of the device. A visual position close to but outside this angle will permit the observer to see a portion only of the perforations 21, 22, and since these perforations change their shape vertically, an indication of the vertical direction of view will thus be given. At the same time, any great departure from the angle of view first mentioned will result in a cutting-off of the light passing through perforations 21 and 22, so far as the observer is concerned. Other lens

shapes and treatments may be adopted for special purposes.

To provide for the proper orientation of my unitary assembly in the housing, I preferably provide the housing at a portion adjacent the shoulder 8 with an indentation indicated at 39 in Figures 2 and 4. This indentation is adapted to enter one of the reliefs formed in my unitary assembly by the notches 28—30 in the mask plate and the cut-outs 32—25 in the lens elements. Further, the fac of the lens element may be provided with a hump 40 or some other configuration which can readily be detected in darkness by feeling, and which will indicate to the operator the orientation of the unitary assembly. In the embodiment shown, the hump 40 indicates the bottom of the unitary assembly. Thus it becomes simple in darkness to reinsert the unitary assembly in the housing with the indentation 39 entering the proper relief on the unitary assembly.

Having thus described my invention in certain exemplary embodiments, what I claim as new and desire to secure by Letters Patent is:

1. In a structure of the class described, a unitary assembly comprising a mask plate having an opening therein for the passage of light, a translucent filter element on one side of the mask plate and a translucent lens element on the other, said assembly including means integral with said mask plate for retaining said elements in fixed relationship whereby they can be handled as a unit, said last mentioned means acting to prevent the access of foreign materials to the spaces between the several elements, and comprising means on said mask plate for engaging the edges both of said filter element and said lens element.

2. In a device of the character described, a unitary assembly comprising a filter, a mask plate and a lens element in the order described, the said mask plate having a shape providing a depression open to one side and a peripheral channel open to the other, the said filter being located in said depression, the said lens having a flange element located in the said channel, and the said mask plate being crimped against the edges of said filter and said lens whereby to provide a unitary sealed structure.

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