

[54] **PORTABLE COLLAPSIBLE SIGNAL
DEVICE**

[76] Inventor: **Betty L. Taylor**, 932 E. Cone Blvd.,
Greensboro, N.C. 27405

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Primary Examiner—Louis J. Capozzi

[52] U.S. Cl. 116/114 R, 40/129 A, 340/321,
350/98

[51] Int. Cl. **G01d 21/00**

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73 R; 240/10 SD; 340/321; 16/147; 246/479,
488

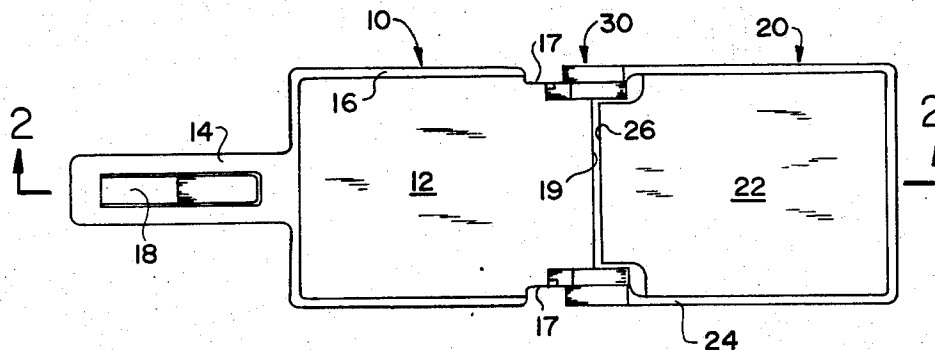
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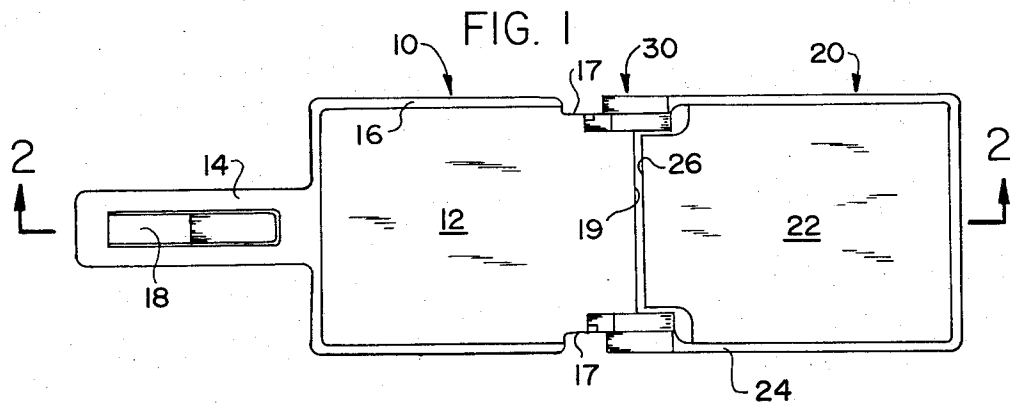
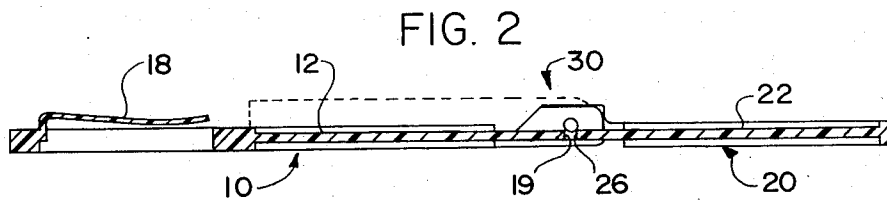
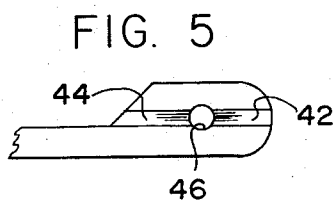
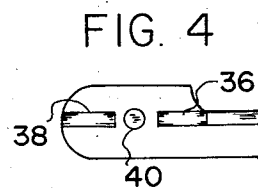
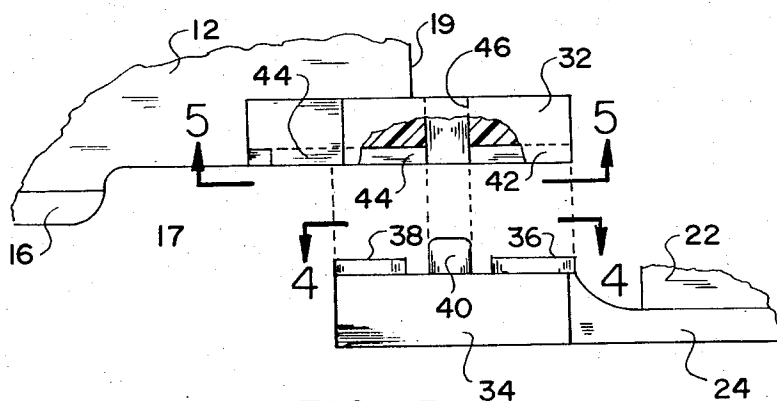
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[57] **ABSTRACT**

A portable, hinged signal device formed of two plates, one plate having a handle extending therefrom and both plates having a fluorescent paint treatment which substantially increases the visibility of the signal device during both daytime and nighttime use. A specially adapted hinge with a locking means joins the two plates along contiguous edges to positively hold the tool in either a closed or fully open position.

3 Claims, 5 Drawing Figures





PORTABLE COLLAPSIBLE SIGNAL DEVICE

BACKGROUND OF THE INVENTION

Previously known hand-carried signals are generally one of the following types: a signal device of the type shown by the Fukushima U.S. Pat. No. 3,580,659 which shows a device generally in the shape of a hand mirror which includes a reflecting plate thereon to give positive nighttime warnings; a pedestrian signal of the type shown by the Wood U.S. Pat. No. 2,038,699 which shows a folding frame carrying a plurality of small light reflecting prisms arranged to diffuse reflected and refracted rays of light over a comparatively large field area to warn drivers of the dangerous proximity of a pedestrian; or a road signal of the type disclosed in the Transue U.S. Pat. No. 2,613,463 which shows a relatively complex portable device which may be positioned beside the road and includes a foldable board section carrying phosphoric or reflecting paint to be visible at night.

All of such devices include one or more of the following disadvantages: No increase in the visibility characteristics during daytime use and therefore are generally limited to nighttime use; they are bulky, cumbersome and cannot be carried in one's pocket or used with only one hand; and if hinged, there is no means for retaining the device in either the closed or fully open position by means of a quick release locking means therefore requiring the use of both hands to manipulate.

There is, therefore, a need for a collapsible-type, portable hand signalling device which includes features of increased visibility in all kinds of weather including daytime and nighttime as well as inclement weather, which is hinged to open to a substantially large surface area, and which includes a quick release locking means so that the device may be carried and manipulated by one hand, the other hand being left free to carry either another signal device, or other hand-held items.

SUMMARY OF THE INVENTION

The present invention, therefore, is directed to such a small, compact, hand-held, collapsible signal device that includes features of increased visibility on the order of three times that of an ordinary signal flag in daylight, and in addition is useful for nighttime or inclement weather. The device is hinged to provide the relatively small device with a large surface area when unfolded, and which includes a quick release locking means associated with the hinge whereby the tool may be manipulated with one hand.

The aforementioned hinge includes a specially adapted locking means for locking two plate portions which form the signal device in one of two positions, fully open or fully closed. The locking means includes at least one projection and two recesses on adjacent edges of the two plates in the area of said hinge which are normally biased to the locked position, however upon pressure may be released and biased outwardly from each other to release the lock.

The plates have a fluorescent paint treatment incorporated thereinto or thereonto which increases the visibility of the signal device during both daytime and nighttime, and inclement weather use. Such a treatment known as "Day Glow" has the unique characteristic of increasing visibility sharply in either daytime or nighttime, as well as in inclement weather.

The signal device of the present invention is particularly useful for railroad personnel whose duties constantly require hand signals in performing their movements. It should be noted, however, that the invention has utility for other situations such as policemen, highway patrolmen, firemen, school guards, utility crews, drivers and anyone who has need of a hand signal device, and thus is not limited to the railroad industry.

It is therefore an object of the present invention to provide a signal device including features of increased visibility in both daytime and nighttime use.

It is a further object of the present invention to provide a signal tool which is small, compact, and can be carried and manipulated with one hand.

It is yet a further object of the present invention to provide a signal device of the type described, wherein two plates are hinged together, and are maintained in either a fully closed or fully opened position, and manipulated from one position to the other by one hand.

Further objects and advantages of the present invention will be apparent from the following detailed description taken in conjunction with the attached drawings, in which:

FIG. 1 is a plan view of a preferred embodiment of the device according to the present invention in the open position;

FIG. 2 is a sectional view taken substantially along line 2—2 of FIG. 1;

FIG. 3 is an enlarged plan view, with portions broken away, illustrating one embodiment of the hinge means and locking means which pivotally joins the two folding plate sections of the device.

FIG. 4 is a sectional view taken substantially along lines 4—4 of FIG. 3; and

FIG. 5 is a sectional view taken substantially along lines 5—5 of FIG. 3.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Turning now to the drawings, as illustrated in FIG. 1, the device according to the present invention comprises generally a first plate means 10, a second plate means 20, and a hinge means 30 which connects plate means 10, 20 in such a manner that the signal device is maintained in either a fully closed or fully open position as hereinafter described.

First plate means 10, as illustrated in FIGS. 1 and 2, more specifically includes a rectangular plate portion 12 having a handle portion 14 extending from one end thereof, the other end terminating in an edge 19. A marginal frame portion 16 surrounds plate 12 to provide strength and rigidity thereto. A clip 18 is provided on handle 14 to permit the signal device to be clipped onto the user's belt, a sun visor, or the like. A shoulder portion 17 of frame 16 depends inwardly to provide a proper width dimension leading into the hinge means 30 which allows frame 16 to properly mate with frame 24 of plate means 20.

The second plate means 20 comprises a generally rectangular plate portion 22 having a marginal frame 24 therearound similar to frame 16. The edge 26 of plate 22 which is adjacent and confronts edge 19 of plate 12 is closely spaced from edge 19 such a distance as to provide clearance for the two plates during the pivotal movement of the two plates as hereinafter described.

Plate portions 12 and 22 are formed from any suitable material such as polypropylene which has been treated by a fluorescent paint either by a surface coating or by incorporation into the plate material during the molding thereof, whereby the plate is made considerably more visible in daytime and inclement weather, as well as visible at night.

Turning now to FIG. 3, there is shown one embodiment of the invention wherein an extension 32 of shoulder portion 17 extends longitudinally beyond edge 19 of plate 12 to provide an area cooperating with and immediately adjacent a similar extension 34 extending longitudinally from frame 24. Extension 32 includes a passageway 46 therethrough and longitudinal grooves 42, 44 in the edge of extension 46 extending on either side of passageway 46 for a suitable distance to provide one half of the hinge means 30. A cylindrical projection 40 extends inwardly from extension 34 and is received by passageway 46 to provide the hinging action necessary for utilization of the device as hereinbefore described. a pair of ribs 36, 38, similar in shape to grooves 42, 44 are provided on either side of projection 40 to provide a locking means. The edges of ribs 36, 38 are round or bevelled to facilitate removal from grooves 42, 44 upon the application of slight pressure tending to rotate plate means 20 toward or away from plate means 10.

In the closed position, ridge 36 is received in groove 44 while ridge 38 is received in groove 42. Upon pressure exerted by the user tending to separate plates 12 and 22, ridges 36, 38 are removed from their respective grooves, and upon rotation of the plate 22 180° to the open position, ridge 36 snaps into groove 42 while ridge 38 is likewise received in groove 44. It is thereby seen that by means of the ridges 36, 38 and grooves 42, 44 a quick release locking means is provided whereby the signal device is maintained either in the fully closed or fully open position. The device may be manipulated by one hand of the user from the closed position to rotate the plate 22 180° and maintain the device in the fully open position.

Although one specific embodiment of the locking means has been disclosed, it is obvious that other projection/recess combinations might also be utilized which obtain the objective of holding the device relatively securely in either a closed or fully open position.

Therefore, there is provided an improved signal device which may be folded to half its maximum size for

compact handling and storage. When in use the device can be readily unfolded by easily rotating plate means 20 180° which is permitted by the unique hinge means 30 with its quick release locking means. The size and shape of plate means 10, 20 may be increased or decreased by the intended use, and the material could be of any composition, such as tin, aluminum, plastic, ceramics, or any other material without substantially changing the basic concept of the present invention.

While a specific embodiment of the invention has been described and illustrated herein, it is to be understood that the embodiment could be varied without departing from the scope of the invention, which is set forth in the following claims.

What is claimed:

1. A portable signal device comprising a generally flat first plate means having a handle extending outwardly from one end thereof, a generally flat second plate means, a hinge means connecting the other end of said first plate means with one end of said second plate means, said hinge means including locking means for maintaining said signal device in one of a fully closed first position with said second plate means superimposed on said first plate means and a fully open extended coplanar second position, and a fluorescent paint material incorporated into said first and second plate means whereby said device exhibits increased visibility characteristics in daytime as well as at nighttime.

2. The signal device according to claim 1 wherein each of said first and second plate means includes a generally rectangular plate and a marginal frame substantially surrounding and connected to three sides of said plate, the remaining side being adjacent the other of said first and second plate means.

3. The signal device according to claim 2 wherein said hinge means includes an extension of the frame associated with each plate, the extension of one frame being arranged in contiguous relationship to the corresponding extension of the other frame, a connecting means on said first and second extensions for pivotally joining said plate means, and said locking means including a pair of recesses in one of said extensions spaced apart by 180°, at least one projection in the other of said extension which is received in one of said recesses in the closed position and is movable to and received in the other of said recesses in the open position.

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