

May 12, 1964

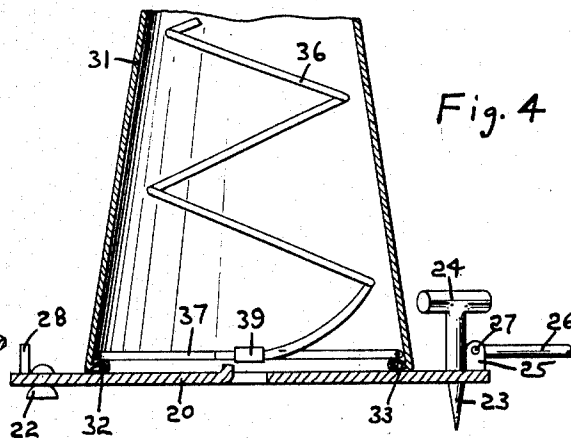
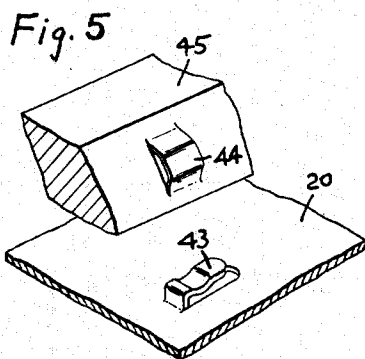
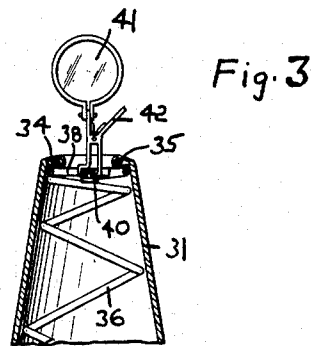
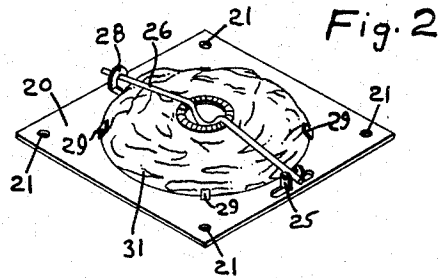
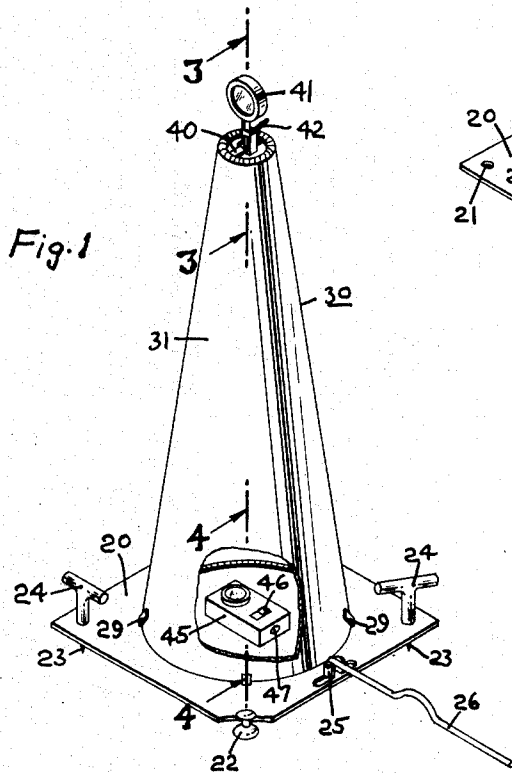
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3,132,624

COLLAPSIBLE SIGNAL DEVICE

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2 Sheets-Sheet 1



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Fig. 6

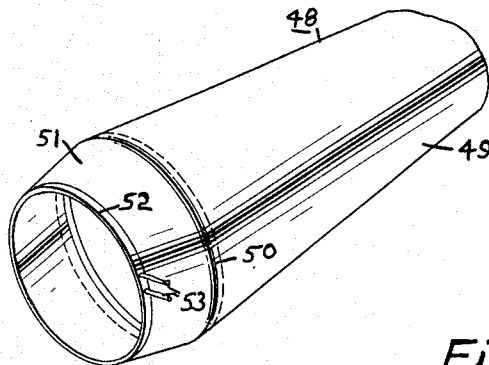


Fig. 7

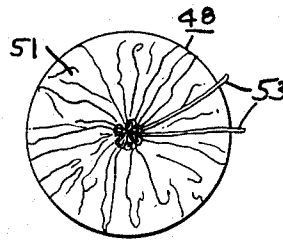


Fig. 8

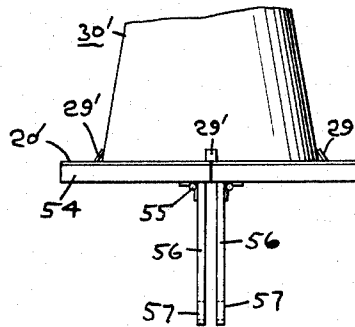
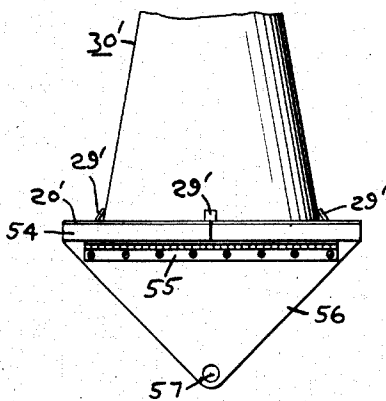


Fig. 10

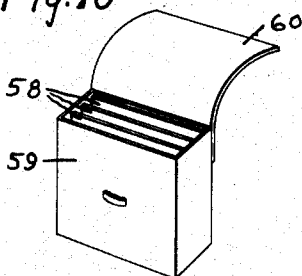


Fig. 9

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3,132,624

COLLAPSIBLE SIGNAL DEVICE

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4 Claims. (Cl. 116-63)

This invention relates generally to signal devices, and more particularly relates to signal devices which may be collapsed into a small and compact package for convenient storage when not in use.

In the past portable signal devices have been known, as for example the so-called traffic cones used for lane marking and as warning devices, but such traffic cones are not collapsible and are large and bulky. Consequently, these cones are not carried by the ordinary motorist in the trunk of his car for use as warning signals when it is necessary to pull off of the road to make repairs, as for example when changing a tire. In contrast to this the present invention provides a signal device which is collapsible into a compact substantially flat form occupying very little space but which is nevertheless expandable into opened out form of good size. Basically, my invention contemplates in one form the use of a flat base to which is detachably secured a flexible sleeve within which is disposed a coil spring manually compressible into pancake form and extensible when released to open out the sleeve into use condition. Other variations are also contemplated, some of which are illustrated in the drawings and described hereinafter in the specification. Accordingly, it is a primary object of this invention to provide a novel collapsible signal device of the type above set forth.

Another object of this invention is to provide a novel collapsible signal device as aforesaid including means for anchoring the base of the device to surfaces of various kinds to prevent the device from blowing over in strong winds.

Yet another object of this invention is to provide a novel collapsible signal device as aforesaid which is clearly visible at night as well as by day.

Still another object of this invention is to provide a novel collapsible signal device as aforesaid which may be used as a marker buoy or small boat distress signal.

The foregoing and other objects of the invention will become clear from an examination of the appended drawings in conjunction with a reading of the following specification, wherein:

FIGURE 1 illustrates in perspective view one form of the signal device according to the invention with portions being broken away to reveal certain structural details otherwise concealed;

FIGURE 2 illustrates the signal device of FIGURE 1 secured in collapsed form;

FIGURE 3 is an enlarged fragmentary vertical sectional view through the upper end of the signal device as would be seen when viewed along the line 3-3 of FIGURE 1;

FIGURE 4 is an enlarged fragmentary vertical sectional view through the base and lower end of the signal device as would be seen when viewed along the line 4-4 of FIGURE 1;

FIGURE 5 is an enlarged fragmentary view of the center of the base portion of the signal device showing a hook securement for a light unit usable with the signal as an illuminating means;

FIGURE 6 illustrates in perspective a second form of the signal device according to the invention having a drawstring closable bottom;

FIGURE 7 is a bottom plan view of the form of the signal device illustrated in FIGURE 6, the drawstring being drawn to close in the bottom;

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FIGURE 8 illustrates in side elevation, with the top section removed, a form of the invention which serves as a buoy;

FIGURE 9 shows an end view of the structure of FIGURE 8 as would be seen when viewed from either right or left thereof; and

FIGURE 10 illustrates three of the collapsed signal devices packed in a case for ready storage.

In the several figures, like elements are denoted by like reference characters.

Referring now first to FIGURES 1 to 5, there is seen a generally square shaped base plate 20 having holes 21 punched therethrough proximate each corner, two of such corner holes having disposed therethrough suction cup elements 22 while the remaining corner holes are seen to have projected downward therethrough anchor spikes 23 carried by T-shaped handles 24. The suction cups 22 are used when it is desired to temporarily secure the entire structure to a smooth surface, as for example the roof of an automobile, whereas the anchor spikes are employed for securing the base to the dirt of the road shoulder.

Turned up out of the base 20 midway along one side edge are a pair of ears 25 between which is pivotally secured one end of a latching bail 26, as by means of pin 27. Turned up out of the base 20 midway along the opposite side edge is a hook element 28 under which the opposite end of the latching bail is projectable to secure the structure in flat compacted form as shown in FIGURE 2. For purposes of detachably securing the sleeve assembly 30 to the base there are also turned up out of the base 20 a plurality of angled tabs 29 whose upper free ends project inward toward the base center above the plane of the base to overlie the bottom edge of the flexible conical sleeve 31 and the circular forming ring 32 secured within a peripherally extending hem loop 33 formed at the bottom edge of the sleeve 31. The base tabs 29 are spaced on a circle since the sleeve 31 is illustrated as conical, thus having a circular base. Other shapes of sleeve may just as readily be used provided that the sleeve base shape controlling forming ring 32 be appropriately formed to provide the proper shape, and that the base tabs 29 be accordingly properly located.

The upper end of conical sleeve 31 is similarly provided with a hem loop 34 within which is secured the circular forming ring 35, the upper ring 35 being necessarily of smaller diameter than the lower ring 32. As in the case of the lower forming ring 32, the upper forming ring 35 is not necessarily circular but takes the shape dictated by the desired shape of the upper end of sleeve 31.

As best seen in FIGURES 3 and 4, disposed within the sleeve 31 and extending from top to bottom therethrough is a conical compression spring 36, the spring terminating at the bottom in a closed loop 37 of somewhat larger diameter than that of sleeve lower forming ring 32 and terminating at the top in a closed loop 38 of somewhat larger diameter than that of sleeve upper forming ring 35, the top and bottom spring loops being secured as by means of clips 39. The larger diameters of the spring loops 37 and 38 relative to the sleeve forming rings 32 and 35 insures that the spring 36 is held within the sleeve 31 and positively drives the sleeve into opened out condition without becoming disengaged therefrom when the bail 26 is released from engagement under hook 28.

The spring 36 is of the conical type so that it may be axially compressed into a pancake with successive turns of the spring nesting within one another. The signal device is collapsed by pressing axially downward to move the top of the sleeve down to the base 20, and is then secured by pivoting the bail 26 over the collapsed sleeve and spring and securing it under hook 28. It should, moreover, be observed that the spring 36 does not engage the inside of the sleeve 31 except at the very top and

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bottom by the spring loops 37 and 38, so that the shape of the sleeve 31 is in no way distorted by the spring convolutions. Thus, the shape of the sleeve 31 is seen to be controlled completely by the bottom and top sleeve forming rings 32 and 35 which may be of any desired shape and in accordance with the shape of the sleeve 31.

Optionally securable across the spring top loop 38 is a flat cross bar 40 to which may be detachably secured a reflector 41, as by means of the attached clothes pin type spring clamp 42. Additionally, as best seen in FIGURE 5, the base plate 20 may also have turned up centrally therefrom a clip 43 adapted to pass behind a strap 44 pressed out of or secured to the back of a light unit 45. The light unit may be operated by a switch 46 from batteries held within the case thereof, or may be operated from the battery of an automobile by an adapter cord having one end pluggable into the automobile cigar lighter and the other end pluggable into a socket 47 of the light unit. Such a light unit has obvious application at night and causes the entire sleeve 31 to be illuminated and thus visible for a considerable distance.

The sleeve 31 is readily removable from the spring 36 when desired and may be replaced from time to time if necessary. The sleeve may be made of natural fibre fabric or of synthetics, and may be treated with dyes to be fluorescent or phosphorescent or both. Moreover, the exterior of the sleeve may be beaded if desired to enhance its reflectivity. Also, as previously pointed out, the shape of the sleeve may be whatever is desired since it is independent of the spring 36.

FIGURES 6 and 7 illustrate a modified form of the invention in that the sleeve structure 48 shown therein may be utilized either with or without the base 20 shown in connection with the embodiment of FIGURES 1 to 5. The sleeve structure 48 includes a sleeve having an upper portion 49 terminating in a bottom hem loop 50 within which is disposed a forming ring like the ring 32 previously described. Extending downward from the hem loop 50 is a sleeve lower portion 51 which itself terminates in a hem loop 52 within which is disposed a drawstring 53. The sleeve structure 48 also includes a spring equivalent to the previously described conical spring 36. This form of the invention can be used without a base plate 20 by merely throwing dirt or rocks into the sleeve, pulling the drawstring and turning the unit upright, whereupon the ballast will hold the sleeve in upright position.

FIGURES 8 and 9 illustrate another modification of the invention in that they show a structure similar to that of FIGURES 1 to 5, including a base 20' having turned up tabs 29' holding a sleeve structure 30' in position thereon, secured in suitable manner upon a float base 54 to the underside of which is secured by hinges 55 a pair of triangular plate stabilizing weights 56. Each of the weights 56 is apertured as at 57 so that an anchor cable may be passed therethrough. The float base 54 may be wood, foamed plastic or any other suitable material, whereas the stabilizing weights 56 are preferably of a heavy material such as metal. The triangular shape of the weights permits the same to be flat folded upward into substantial congruency with the base 20' and float 54 to effect a flat package. The collapsible cone may be secured in any suitable way, as for example in the same manner as has already been described, namely, by means of a bail and hook structure although the latter is not repeated in FIGURES 8 and 9.

FIGURE 10 shows three collapsible signal devices 58 according to the invention in collapsed and secured form packed into a storage case 59 about to have its cover flap 60 closed thereover and secured. The storage case 59, which may be of fabric, is then ready for convenient storage.

Having now described my invention in connection with particularly illustrated embodiments thereof, it will be appreciated that variations and modifications of the same may now occur from time to time to those persons nor-

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mally skilled in the art without departing from the essential scope or spirit of my invention, and accordingly it is intended to claim the same broadly as well as specifically as indicated by the appended claims.

What is claimed as new and useful is:

1. A signal device expandible for use and collapsible into a small flat package for storage, comprising in combination, a signal sleeve of fluorescent flexible material, sleeve shape-forming elements disposed within hem loops formed at opposite ends of said sleeve, a conical compression spring removably disposed within said sleeve axially between the sleeve shape-forming elements and terminating at opposite ends in spring end formations of larger transverse dimension than and being engageable with said sleeve shape-forming elements effective to expand the sleeve to desired shape for use by driving said sleeve shape-forming elements axially away from one another, said spring being axially compressible substantially into pancake form with successive turns of the spring nesting radially within one another to compact the sleeve into a relatively small flat package, substantially flat and heavy sheet metal base means detachably securable to said sleeve by ears turned upward out of said base into overlying relationship with a least a part of said sleeve and one of said spring end formations, said base means being provided with a plurality of apertures there-through through which may be projected anchor means for securing said signal device to an underlying surface, and means for releasably securing the pancaked spring and compacted sleeve flatwise against said base means for storage.

2. A signal device expandible for use and collapsible into a small flat package for storage, comprising in combination, a signal sleeve of flexible material, sleeve shape-forming elements at opposite ends of said sleeve, a conical compression spring removably disposed within said sleeve axially between the sleeve shape-forming elements and terminating at opposite ends in spring end formations of larger transverse dimension than and being engageable with said sleeve shape-forming elements effective to expand the sleeve to desired shape for use by driving said sleeve shape-forming elements axially away from one another, said spring being axially compressible substantially into pancake form with successive turns of the spring nesting radially within one another to compact the sleeve into a relatively small flat package, substantially flat base means detachably securable to said sleeve by means extending upward from said base into overlying relationship with at least a part of said sleeve and one of said spring end formations, and means for releasably securing the pancaked spring and compacted sleeve flatwise against said base means for storage.

3. A signal device expandible for use and collapsible into a small flat package for storage, comprising in combination, a signal sleeve of flexible material, sleeve shape-forming elements at opposite ends of said sleeve, a conical compression spring removably disposed within said sleeve axially between the sleeve shape-forming elements and terminating at opposite ends in spring end formations of larger transverse dimension than and being engageable with said sleeve shape-forming elements effective to expand the sleeve to desired shape for use by driving said sleeve shape-forming elements axially away from one another, said spring being axially compressible substantially into pancake form with successive turns of the spring nesting radially within one another to compact the sleeve into a relatively small flat package, substantially flat metal base means detachably securable to said sleeve by ears turned upward out of said base into overlying relationship with at least a part of said sleeve and one of said spring end formations, and means for releasably securing the pancaked spring and compacted sleeve flatwise against said base means for storage.

4. A signal device expandible for use and collapsible into a small flat package for storage, comprising in com-

5 bination, a signal sleeve of flexible material, sleeve shape-forming elements carried by said sleeve at opposite ends thereof, a conical compression spring removably disposed within said sleeve axially between the sleeve shape-forming elements and terminating at opposite ends in spring end formations of larger transverse dimension than and being engageable with said sleeve shape-forming elements effective to expand the sleeve to desired shape for use by driving said sleeve shape-forming elements axially away from one another, said spring being axially compressible substantially into pancake form with successive turns of the spring nesting radially within one another to compact the sleeve into a relatively small flat package, substantially flat and heavy sheet metal base means detachably securable to said sleeve by ears turned upward out of said base into overlying relationship with at least a part of said sleeve and one of said spring end formations, and means for releasably securing the pancaked spring and compacted sleeve flatwise against said base means for storage.

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