

Feb. 9, 1960

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2,924,192

SAFETY FLOATS FOR CABIN CRUISERS

Filed March 28, 1957

2 Sheets-Sheet 1

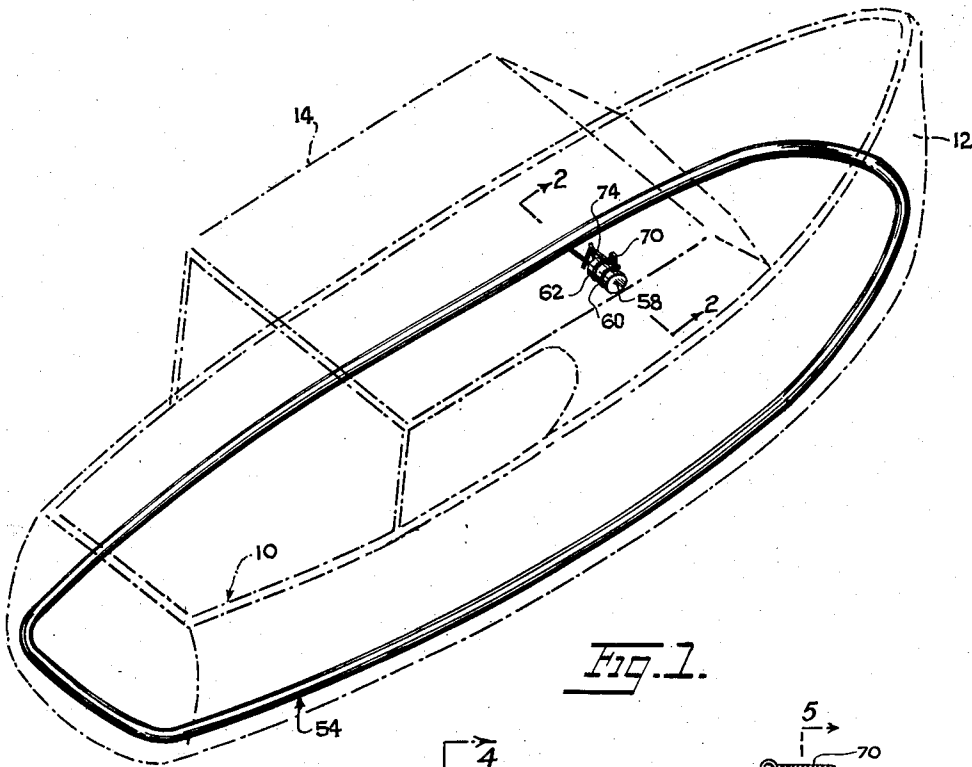


Fig. 1.

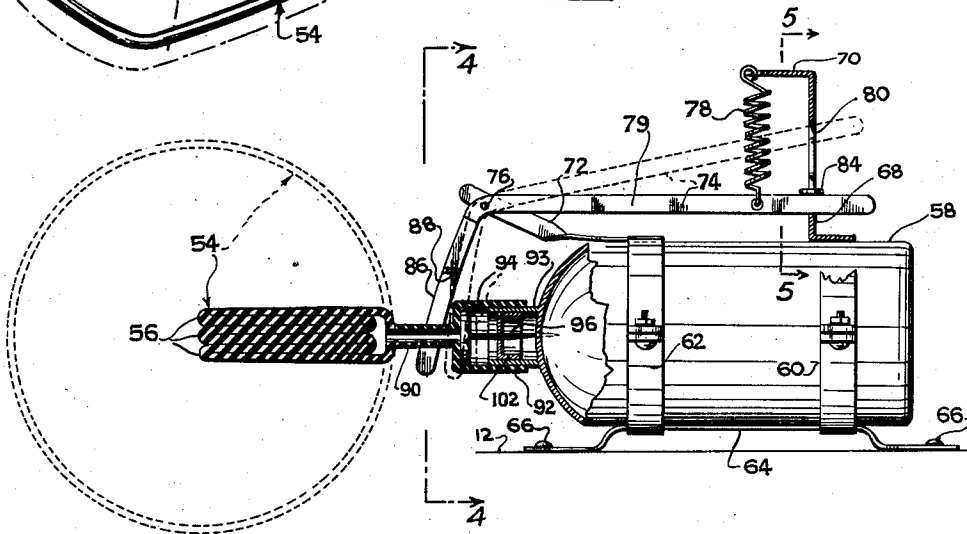


Fig. 2.

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2 Sheets-Sheet 2

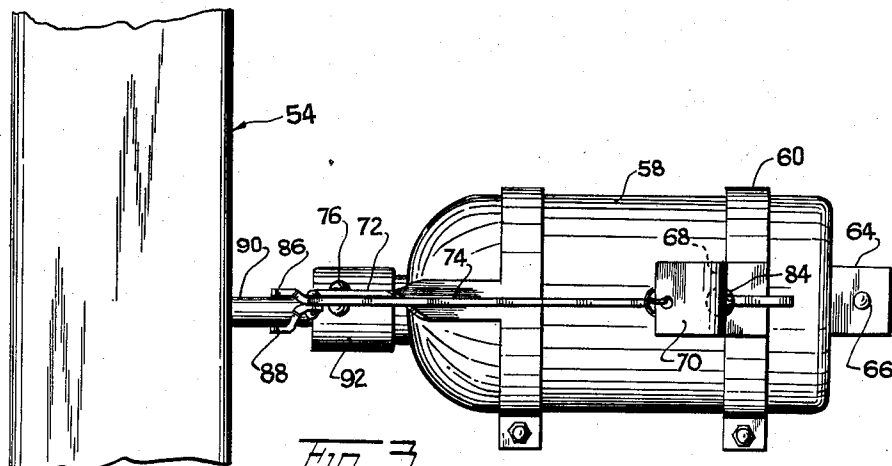


Fig. 3.

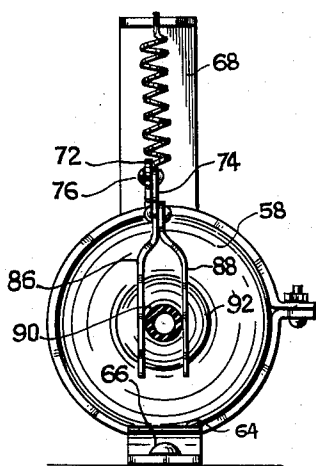


Fig. 4.

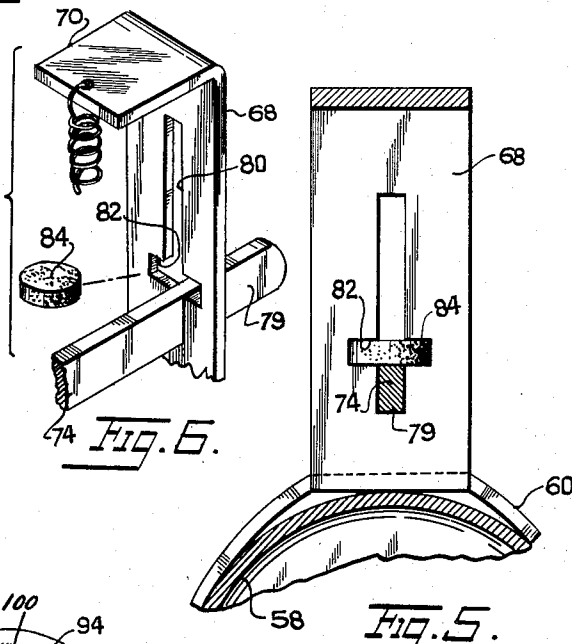


Fig. 6.

Fig. 5.

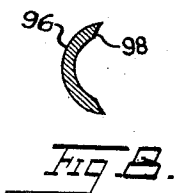
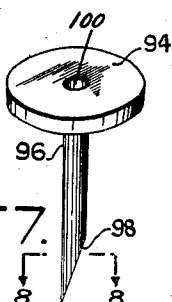


Fig. 7.



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SAFETY FLOATS FOR CABIN CRUISERS

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Application March 28, 1957, Serial No. 649,034

2 Claims. (Cl. 114—68)

This invention, adapted particularly for use in cabin cruisers and other comparatively small pleasure boats, comprises inflatable float means which is inflated in emergency conditions to keep afloat a boat otherwise in serious danger of sinking.

Loss of a valuable cabin cruiser or similar boat through sinking often occurs. In such an instance there may be present the even more serious danger of loss of life. The present invention, accordingly, has as its main object the provision of means for preventing sinking of a boat in emergency conditions so that it may be safely brought to port without possibility of sinking, capsizing, etc.

Another object is to normally dispose the float means in a relatively small, inconspicuous space, so that it will not interfere with normal use of the boat.

Another object is to permit the float means to be swiftly and easily installed in a cabin cruiser or similar small boat, without requirement of modification or redesign of the hull or of any other component of the vessel.

Another object is to permit the installation to be effected in different sizes and types of boats, without the necessity of specially designing the inflatable float equipment for installation in a particular make, size, or type of boat.

Another object is to provide means responding automatically to filling of the hull with water to a predetermined extent, to effect automatic inflation of the float means.

A further object is to provide safety float equipment that can be installed in or removed from a boat at any time, will be readily portable so as to be capable of transfer from boat to boat, will be capable of reuse for an indefinite number of times, and will be highly inexpensive, despite the benefits to be obtained through the use thereof.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view of a cabin cruiser equipped with safety float equipment made in accordance with the present invention, the cruiser being shown in dot-dash lines.

Fig. 2 is an enlarged, longitudinal sectional view through the float inflating means in which the float is illustrated in transverse section, taken substantially on

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line 2—2 of Fig. 1, the inflating means being shown in normal and in gas-releasing position in full and dotted lines respectively.

Fig. 3 is a top plan view of the equipment shown in Fig. 2.

Fig. 4 is a sectional view substantially on line 4—4 of Fig. 2.

Fig. 5 is a detail sectional view on line 5—5 of Fig. 2.

Fig. 6 is a fragmentary, partially exploded perspective view of the actuating lever, guide bracket, and the lever stop.

Fig. 7 is an enlarged perspective view of the puncturing pin or plunger.

Fig. 8 is a transverse sectional view, still further enlarged, on line 8—8 of Fig. 7.

In Fig. 1, a conventional cabin cruiser or boat 10 has a hull 12 and a canopy 14. Within the hull 12 there is a float means 54. This float means is inflated automatically, responsive to filling of the hull with a predetermined quantity of water. In other words, should a leak develop or should the hull be stove in, water would tend to move rapidly into the same, and the hull would ordinarily tend to rapidly fill. In these circumstances, as soon as the hull fills with water to a predetermined level, the equipment will automatically operate to inflate the float means, to insure that the hull will not sink and will be kept in a stabilized condition.

In this arrangement, the float 54 constitutes an elongated, endless tube which would extend along the wall of the hull, for substantially the full length of the boat, along both sides thereof. Again, the float would preferably be made of rubber or other gas and waterproof, highly flexible material capable of being fully collapsed. The float 54, as shown in Fig. 2, may be collapsed in a flat condition, so as to be completely out of the way during normal use of the boat. It could be secured by suitable resiliently elastic straps to the hull at selected locations.

In any event, when the tube 54 is inflated, it assumes the generally circular cross section shown in dotted lines in Fig. 2. Normally, however, the tube is collapsed into a plurality of superposed folds 56 to cause the same to occupy a complete minimum of space. In a preferred embodiment, the tube might occupy no more than four or six square inches in respect to its cross-sectional area, although being capable of expansion to a diameter of perhaps twelve inches.

In any event, a single cartridge 58, containing carbon dioxide under pressure or any other suitable gaseous fluid capable of inflating the tube 54, is engaged within resilient, split ring clamps 60, 62 spaced axially of the container 58. Secured to the underside of the container by the ring clamps is a mounting bracket 64 in the form of an elongated, rigidly constituted strap member having downwardly offset ends secured by screws 66 or equivalent fastening elements to a selected portion of the hull.

Integral with the upper portion of clamp 60 is an upwardly projecting bracket 68 of inverted L-shape having at its upper end a forwardly, horizontally projecting short leg 70. Integral with the upper portion of the front ring clamp 62 is a forwardly, upwardly inclined pivot bracket 72 axially twisted upon itself intermediate its ends (Fig. 2). An elongated bell-crank lever 74 is pivoted upon the outer end of bracket or arm 72 by a

pin 76, at the juncture of the legs of said lever. The elongated leg of the lever extends horizontally, longitudinally of the container above the same as shown in Fig. 2, and a strong, contractile spring 78 is connected between the long leg 79 of lever 74 and the horizontal leg 70 of bracket 68. Spring 78 is under heavy tension, so as to exert a strong pull on the lever tending to bias the same from its normal full line position in Fig. 2 in a counterclockwise direction, to its dotted line position in the same figure of the drawing.

The free end of the long leg 79 of bell-crank lever 74 extends through a vertical guide slot 80 formed in bracket 68. Referring to Figs. 5 and 6, slot 80, adjacent its lower end, is intersected by a transverse slot 82 and removably engageable in the transverse slot 82 is a water-soluble disc 84. When inserted in slot 82 the soluble disc 84 extends as a stop above and in contact with the leg 79 of bell-crank lever 74. Leg 79 is thus maintained in its normal, full line position of Fig. 2, by the stop or abutment 84 (see Fig. 2).

The short leg 86 of lever 74 (see Figs. 3 and 4) is formed with a laterally offset lower end, and oppositely offset in respect to leg 86 is a member 88 which is secured to the leg 86 to cooperate therewith in defining a fork straddling the flexible connecting tube 90, that is connected at one end in communication with the inflatable float 54 (see Fig. 2). At its other end, tube 90 has a flared portion 92 which receives and is sealably engaged about a neck 93 projecting from the normally sealed forward end wall of container 58.

A disc-shaped head 94 is disposed within the flared end 92 of tube 90 and is rigidly connected to an elongated, hollow puncturing stem or prong 96 (Figs. 2, 7 and 8), having a sharpened, beveled puncturing tube 98 adapted to penetrate the end wall of container 58 when the plunger is biased from its full line position of Fig. 2 to its dotted line position in the same figure of the drawing. When the stem punctures the end wall, the gas may enter the stem, and pass directly through the head 94, through an opening 100 formed in the head. The gas thus passes through the tube 90 into the float 54, inflating the same.

In use, the device would be mounted wherever desired in the boat. The flexibility of the endless float 54 permits the same to be adapted to any conformation of hull, or to any size or make of boat. The container 58 is mounted at a selected level within the hull, such that the soluble abutment 84 will be disposed at that level to which it is desired that the hull fill with water before operating the equipment.

Thus, assuming that an emergency develops, and that the hull begins to take in water, the water will fill the hull up to the level of the soluble abutment 84. The abutment will immediately dissolve, freeing spring 78 for contraction. The spring, contracting, snaps the lever 74 from its full to its dotted line position of Fig. 2. This in turn causes the short leg of the lever to be shifted forcibly against the plunger, driving stem 96 through the end wall of container 58 to release the gas, thus to inflate the float 54.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A safety float apparatus for boats, comprising an inflatable float formed of a flexible material and normally collapsed in a deflated condition so as to be conformable to the shape of a portion of a boat hull with which it is in contact, and means for inflating said float, said means comprising a container holding a gaseous fluid under pressure, said container being normally sealed and

including an end wall, said means further including a puncturing prong disposed adjacent said end wall and adapted to penetrate the same to release said fluid, the container including a neck into which the prong extends, the prong including a guide slidably engaged in the neck for guiding the prong during its movement toward and through the end wall, said means further including a connecting tube fitted onto said neck and extending into communication with the float, for communicating the container with the float, the prong being wholly enclosed by the tube and neck, said prong including a head extending adjacent the wall of the tube, for depression of the prong into an end wall penetrating position responsive to pressure exerted on the wall of the tube, said means further including a bracket adjacent the container, a bell-crank lever pivotally mounted on said bracket, a second bracket stationarily mounted adjacent the container, a contractile spring connected between the second bracket and the lever tending to bias the lever in one direction, and abutment means carried by the second bracket and normally extending in the path of the lever to hold the lever against movement in said direction, the second bracket being formed with a guide slot receiving one leg of the lever for guiding the lever during the pivotal movement thereof, said abutment means being carried by the second bracket in position extending across the guide slot, the abutment means comprising a water-soluble member, adapted to dissolve on filling of the hull to an extent sufficient to immerse said member, whereby to free the spring for swinging the lever from its normal position, the lever at its other end being disposed for movement against the prong when swung by contraction of the spring, thereby to cause penetration of the end wall responsive to dissolving of the water-soluble member.

2. A safety float apparatus for boats, comprising an inflatable float formed of a flexible material and normally collapsed in a deflated condition so as to be conformable to the shape of a portion of a boat hull with which it is in contact, and means for inflating said float, said means comprising a container holding a gaseous fluid under pressure, said container being normally sealed and including an end wall, said means further including a puncturing prong disposed adjacent said end wall and adapted to penetrate the same to release said fluid, the container including a neck into which the prong extends, the prong including a guide slidably engaged in the neck for guiding the prong during its movement toward and through the end wall, said means further including a connecting tube fitted onto said neck and extending into communication with the float, for communicating the container with the float, the prong being wholly enclosed by the tube and neck, said prong including a head extending adjacent the wall of the tube, for depression of the prong into an end wall penetrating position responsive to pressure exerted on the wall of the tube, said means further including a bracket adjacent the container, a bell-crank lever pivotally mounted on said bracket, a second bracket stationarily mounted adjacent the container, a contractile spring connected between the second bracket and the lever tending to bias the lever in one direction, and abutment means carried by the second bracket and normally extending in the path of the lever to hold the lever against movement in said direction, the second bracket being formed with a guide slot receiving one leg of the lever for guiding the lever during the pivotal movement thereof, said abutment means being carried by the second bracket in position extending across the guide slot, the abutment means comprising a water-soluble member, adapted to dissolve on filling of the hull to an extent sufficient to immerse said member, whereby to free the spring for swinging the lever from its normal position, the lever at its other end being disposed for movement against the prong when swung by contraction of the spring, thereby to cause penetration of the end wall responsive to dissolving of the water-soluble member, the

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second bracket being formed with a transverse slot intersecting the guide slot and adapted to snugly receive said water-soluble member.

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