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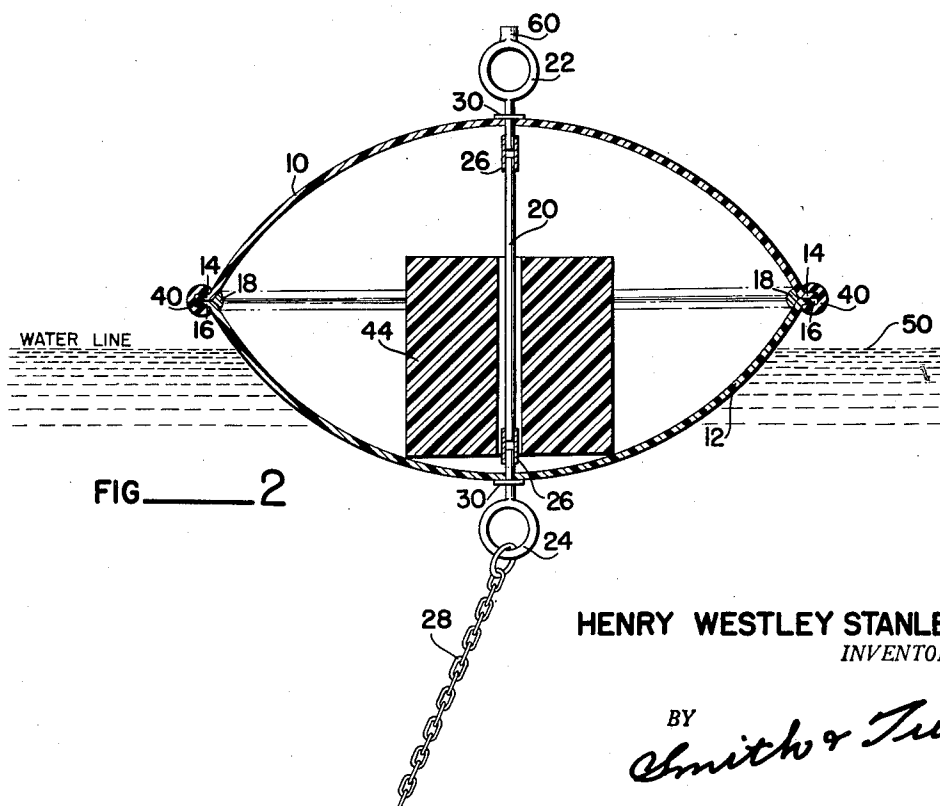
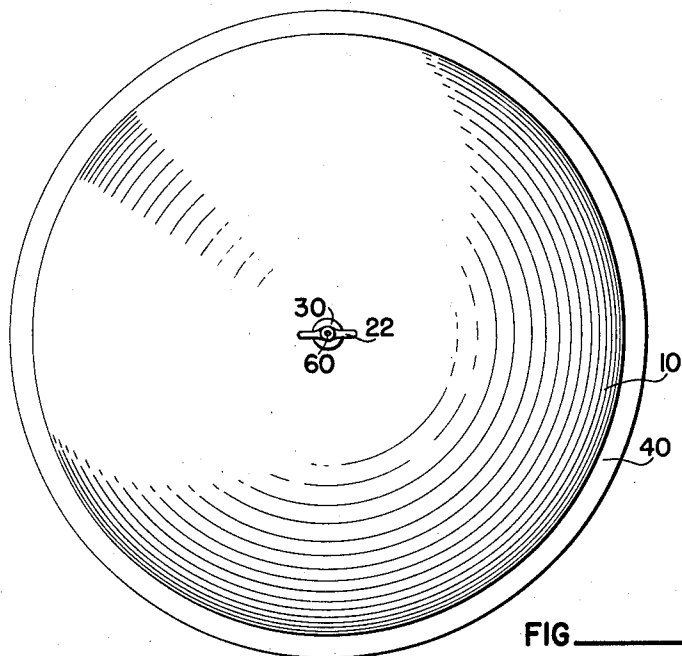
H. W. STANLEY, JR

2,911,658

REINFORCED PLASTIC MOORING BUOY

Filed Nov. 23, 1956

2 Sheets-Sheet 1



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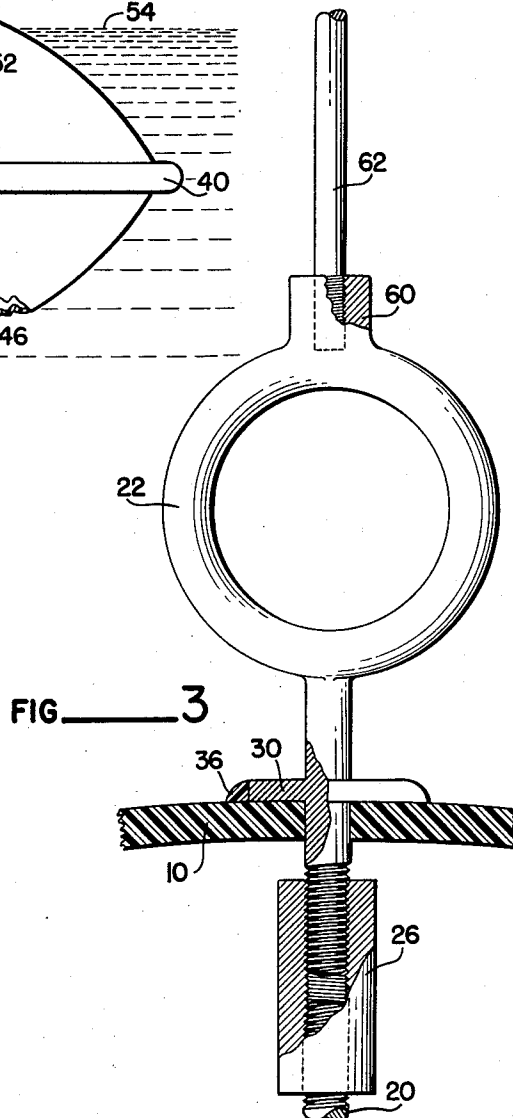
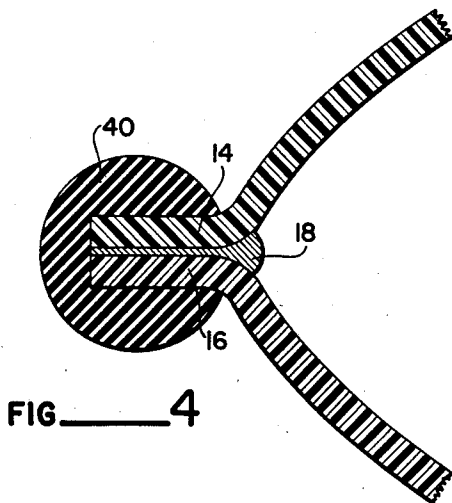
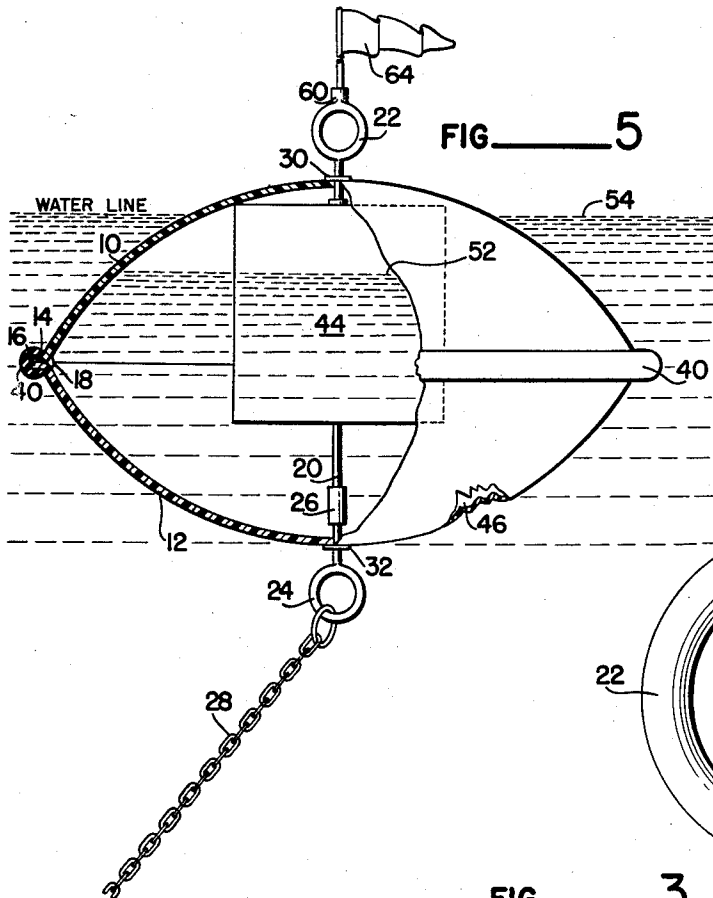
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REINFORCED PLASTIC MOORING BUOY

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2 Sheets-Sheet 2



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REINFORCED PLASTIC MOORING BUOY

Henry Westley Stanley, Jr., Seattle, Wash.

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5 Claims. (Cl. 9—8)

My present invention relates generally to the art of mooring buoys, and more particularly to a mooring buoy made of reinforced plastic material which is provided with many desirable characteristics, such as the ease of providing signaling means, circumferential buffer means, and finally an auxiliary flotation element to float the buoy in case it should be punctured.

Buoys for the mooring of boats have been the subject of much research and experimentation. In the larger buoys, as used for mooring ships and the like, it is possible to create buoys which, because of their size may be designed for a specific use and to be employed at a specific location and are usually custom built for this service. Further the agency tending such buoys normally have suitable equipment for the maintenance and refurbishing of the equipment. My present invention, however, is intended for smaller craft, such as the small fishing boats, and particularly the yachts and other small boats used by their owners for pleasure. In this field maintenance is largely by the owners and without the benefit of boom-equipped craft that can pick up the moorings and conveniently service them and carry them to shore where they may be repainted and the like. To meet this need, I have created a buoy made of two symmetrical halves which can be made cheaply, can be colored permanently, using a different color for each half, if desirable, and is of a resilient character so that persons of limited experience, who are more apt to collide with the buoy, will not hurt either the buoy or the hull of their own vessel.

The principal object of my present invention, therefore, is to provide a reinforced plastic buoy which will be durable, light in weight and can be economically produced, so that the cost to the ultimate user will be at a minimum.

A further object of my present invention is to provide a buoy made preferably of two symmetrical and identical halves joined together at their margins, which is their greatest diameter and which may be flanged for greater strength, and to further provide the means for securing a resilient bumper thereto.

A further object of my invention is to provide a buoy having additional flotation in the form of a plastic foam block, which occupies sufficient of the interior chamber of the buoy so that it will provide flotation for the buoy and the chain it supports, even though it may be holed and filled with water.

A further object of my invention is to provide a buoy made of plastic material with color molded into it, so that the two halves may be of different colors and can be reversed so as to show mostly the color desired under the conditions of use.

Further objects, advantages and capabilities will be apparent from the description and disclosure in the drawings, or may be comprehended or are inherent in the device.

In the drawings:

Figure 1 is a plan view of my buoy, which might be considered either a top or a bottom plan view.

Figure 2 is a vertical sectional view through a buoy made after the teachings of my present invention and showing the same as normally positioned in the water during use.

Figure 3 is an enlarged vertical sectional view of one of the fittings to which either the mooring pennant or the mooring chain might be secured.

Figure 4 is an enlarged cross-sectional view taken through the marginal rim of my buoy and illustrating the manner in which the two halves are joined together and also the manner in which the resilient bumper is secured.

Figure 5 is a vertical view, partly in section, showing the buoy as though it were punctured and showing the change in the water line as the result of this flooding of the interior chamber.

Referring more particularly to the disclosure in the drawings, the numerals 10 and 12 designate, respectively, the upper and lower halves of my buoy. These halves are preferably molded from the same mold so they will be identical, and normally it is most desirable to have coating halves colored in contrasting colors, for instance, as one red and one white or one yellow and one green. This makes the buoy more noticeable and distinctive, particularly where used in the company of many other buoys. As the two halves are the same, the buoy of course is capable of being used either side up, and this has certain advantages to the boatman who must moor in crowded waters. Each of the halves as 10 and 12 is provided with a peripheral flange which is normal to the axis of the buoy. These flanges as 14 and 16, respectively, are joined together by some suitable means. In this connection, it is desired to bring out that a preferred material available at this time, for the construction of buoys of this order, is Fiberglass reinforced resin base plastics. Materials of this order have tremendous strength even though they are molded in light section. Most anyone is familiar with the advertising novelty of permitting persons to pound small boats, when made out of this material, with a sledge hammer.

When the halves are molded from plastic materials, it is normally preferred to cement them together, as by the cement indicated at 18 in Figure 4. The cementing at 18, however, normally should be free of strain, except where the buoy is in collision, inasmuch as the two half-members 10 and 12 are normally placed under compression by the structure probably best shown in Figure 2, wherein a rod of suitable material 20 extends substantially from member to member through the center of the buoy and is connected to the ring members as 22 and 24, by means of couplings 26. Members 22 and 24 may be identical in structure, the upper one to engage a mooring line or pennant and the lower one to engage the anchor rode or chain 28, and are each provided with a bearing collar as 30 or 32. Around collars 30 or 32 are provided sealing rings 36, or the same may be treated with one of the various mastics or glues which, in effect, produce a gasket which is bonded to both the ring members and the members 10 or 12 forming the abutting surface.

Rod 20, of non-corrosive material, is threaded on each end, and the shank portions of ring members 22 and 24 are threaded. Consequently the ring members can be tightened by the threads within sleeve 26 so that they place the two halves of the buoy under some compressive stress, and this insures against leakage under plates 30 and 32 and also largely relieves the peripheral seal 18 of any stress.

Flanges 14 and 16 are covered by a resilient bumper or ring 40. The best material for this purpose appears to be rubber that is cured to a degree that it still retains considerable resilience and is made in the form of a

circle and stretched over the flange made by the two members 14 and 16. This further tends to seal the joint between the two flange members, but is primarily for the purpose of taking shock from boats and the like that may strike the buoy, and has a secondary purpose of preventing the otherwise hard material of the buoy from scratching or disfiguring the boats that are in collision with it.

Disposed within the cavity of the buoy and slidable upon rod 20 is a flotation block 44. This block may be made of any suitable buoyant material. However, the current development in plastic foam flotation material offers a very excellent solution of this problem, in that the material, being purse plastic, is not affected by age and is unusually buoyant. The normal position of block 44 will be as indicated in Figure 2, in which the block, due to its own weight, will rest on the inner surface of the lowermost buoy housing member as 12. It follows of course that if, because of the desirability of displaying a different color, the buoy is reversed, then the flotation block would slide down to contact the lowermost portion of the buoy.

Figure 5 illustrates the use of this block, in which it may be assumed that a puncture has occurred at 46 and water has flowed into the cavity of the buoy, so that the flotation block 44 is now the only buoyant member of the buoy and it naturally will float up on rod 20 after the showing of Figure 5 and come to rest on the upper inside surface of the buoy.

In Figure 2 the preferred water line is shown at 50, and this brings the bumper unit 40 well above the water line, so that it will be in a position to fend between the buoy and a boat that might be overriding the buoy. Considering that the water has flow into the buoy up to possibly the water line indicated at 52, the buoyant block should be of a size in comparison to the buoy that the buoy will still float slightly above the water line, which is now raised and is indicated at 54. By way of example, if the buoy is constructed to enclose three cubic feet of volume, it will carry fifty feet of 1/4-inch chain and still leave the bumper 40 five inches out of the water. In this example the buoy itself, because of the possibility of making a lightweight wall of the plastic and still having adequate strength, weighs only twelve pounds, so does not add very much dead weight should it be punctured.

The general shape illustrated in the drawings has proven to be a very satisfactory one for buoys of this type, in that it is very stable even when under strain and will not lie on its side, due to the broad beam presented to the water. This makes it possible to employ signaling means or a mooring pennant supporting means raised above the buoy. This is achieved by having a boss as 60, which is preferably threaded so that a tube or rod 62 may be employed. This rod or tube may support a signal flag as 64, or it may support a hook arrangement to hold a mooring pennant of offset ring well up within reach of a person aboard a boat, or many types of the compact fixed or blinking lights may be employed so that the buoy can have a characteristic lighting at night and be readily picked up by the boat to which it belongs.

It is believed that it will be clearly apparent from the above description and the disclosure in the drawings that the invention comprehends a novel construction of mooring buoy.

Having thus disclosed the invention, I claim:

1. A mooring buoy, comprising: two dished half housing members; a peripheral flange on each housing member adapted to be cemented together and to coact to form a water-tight joint for said housing members; a resilient bumper enclosing said joined flanges and encircling the buoy; two attachment means, axially aligned and exteriorly positioned on opposite faces of the buoy and tension means therebetween; means for securing visual signal

means from the uppermost attachment means; and an emergency flotation block slidably disposed on said tension means within the cavity of the buoy.

2. A mooring buoy, comprising: two dished half housing members formed of reinforced plastic; a peripheral flange on each housing member adapted to coact with a sealing means, disposed between the same, to form a water-tight joint for said housing members; a resilient bumper enclosing said joined flanges and encircling the buoy; two attachment means, axially aligned and exteriorly positioned on opposite faces of the buoy and tension means therebetween; means for securing visual signal means from the uppermost attachment means; and a flotation block slidably disposed on said tension means within the cavity of the buoy.

3. A mooring buoy, comprising: two dished half housing members; a peripheral flange on each housing member adapted to coact, with a sealing means between them, to form a water-tight joint for said housing members; a resilient bumper enclosing said joined flanges encircling the buoy and providing additional sealing means for said joint; an axially positioned tension means, disposed to press the two housing members together, consisting of two exteriorly positioned attachment means disposed on opposite faces of the buoy and adjustable tension means therebetween; means for securing a visual signal from the uppermost attachment means and an anchor rode or chain from the lower attachment means; and a flotation block, of less volume than the interior volume of said buoy, disposed on said tension means within the cavity of the buoy.

4. A mooring buoy, comprising: two dished half housing members formed of molded plastic material; a peripheral flange, disposed in the plane of the open face of the members, on each housing member adapted to coact, with a sealing agent, to form a water-tight joint for said housing members; a resilient bumper enclosing said joined flanges, in a manner to retain the sealing agent, and encircling the buoy; an axially positioned tension means, disposed to press the two housing members together, consisting of two exteriorly positioned rings each having an integral flange adapted to seat on the exterior of each of said housing members and a threaded stem passing through an opening into the buoy cavity; a rigid tension member disposed between said threaded stems and threaded couplings adjustably joining said stems to said tension member; and a flotation block slidably disposed on said tension means within the cavity of the buoy.

5. A mooring buoy, comprising: two dished half housing members formed of fiberglass reinforced plastic; a horizontal peripheral flange on each housing adapted to coact with sealing means therebetween to form a water-tight joint for said housing members; a resilient bumper encircling the buoy and enclosing said joined flanges in a manner to seal them against the entry of water; two attachment means, axially aligned and exteriorly positioned on opposite faces of the buoy and rigid, adjustable tension means therebetween; means for securing visual signal means from the uppermost attachment means; means for securing an anchor rode or chain to the lower attachment means; and a flotation block slidably disposed on said tension means within the cavity of the buoy.

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