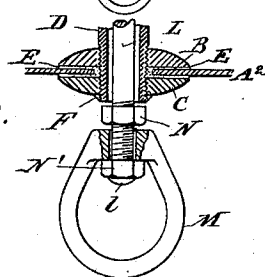
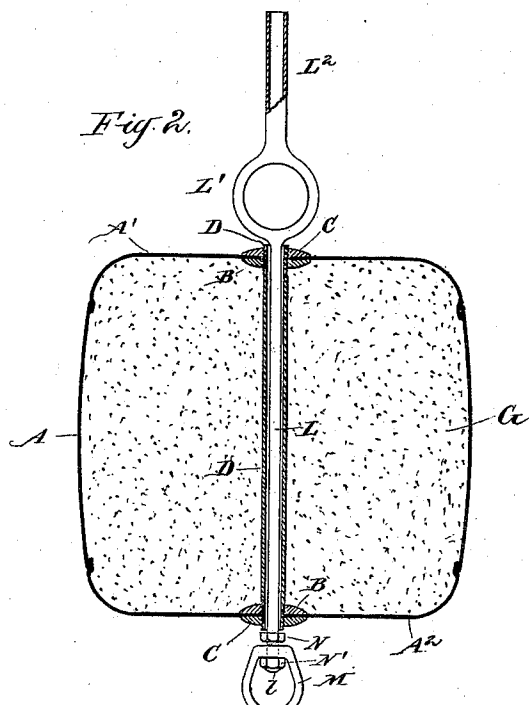
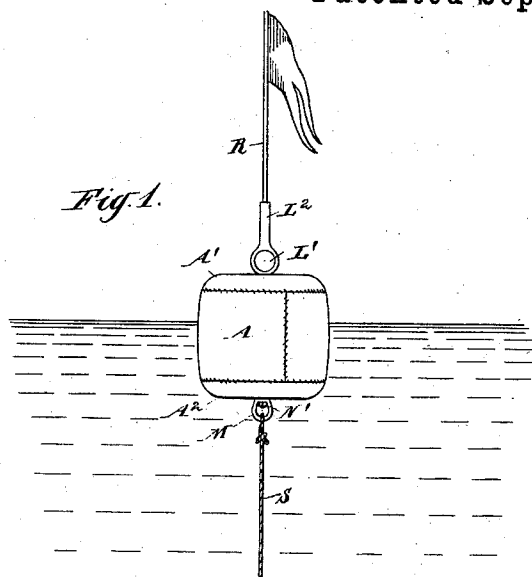


(No Model.)

F. RICHARD.
BUOY.

No. 546,057.

Patented Sept. 10, 1895.



Witnesses:

Patrick M. Incey
Herman Truechner

Inventor:

Frank Richard,
by his attorney
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UNITED STATES PATENT OFFICE.

FRANK RICHARD, OF NEW YORK, N. Y.

BUOY.

SPECIFICATION forming part of Letters Patent No. 546,057, dated September 10, 1895.

Application filed April 12, 1895. Serial No. 545,455. (No model.)

To all whom it may concern:

Be it known that I, FRANK RICHARD, a citizen of the United States, residing in New York city, in the county and State of New York, have invented a certain new and useful Improvement in Buoys, of which the following is a specification.

The invention relates particularly to mooring-buoys for locating the anchoring position of vessels. It is secured to the bottom by a suitable anchor, and carries an eye to which may be attached the hawser of the vessel to be made fast. Can-buoys and casks used for this purpose are liable to be punctured or crushed by blows received from moving vessels, floating ice, wreckage, and the like, and wooden blocks used as buoys become saturated and lose their floatative qualities. Another objection to these forms is their liability to chafe the sides of a vessel striking them.

The object of my invention is to provide a buoy which will be practically unaffected by the rough usage to which it is subjected, and avoid the objectionable features of the ordinary forms.

It consists of a flexible impervious envelope filled with a light material, as cork. It is cylindrical, with the edges rounded, and is provided with a tube extending through on the axial line to receive a rod carrying a swivel, by which it is anchored to the bottom, and an eye for the attachment of a hawser.

The accompanying drawings form a part of this specification.

Figure 1 is an elevation. Fig. 2 is a vertical section on a larger scale, and Fig. 3 is a similar view showing certain details of construction.

Similar letters of reference indicate the same parts in all the figures.

The envelope is of canvas or other strong and flexible material, rendered waterproof by saturation in a rubber solution and subsequently allowing the solvent to evaporate. It is in three pieces $A A' A^2$, properly joined by lines of stitches. The middle portion A is a rectangular strip of a length equal to the circumference of the buoy to be made. Its short sides are stitched together to form a belt. The cap-pieces $A' A^2$ are circular, the

diameter being the same as that of the belt A , to which they are joined at the upper and lower edges, respectively. Each cap-piece has a small circular opening at the center through which protrudes the ends of a tube D , of brass, extending axially through the buoy. The ends of the tubes are screw-threaded, each receiving a pair of correspondingly-threaded washers or grommets $B C$ of the same material. The inner grommets $B B$ are screwed in place with the required space between and are thickly coated with white lead E on their outer faces. The tube is then passed into the envelope through an unsewed portion of one of the seams, and the ends engaged in the central openings in the cap-pieces $A' A^2$. The grommets $C C$, each having its inner face previously coated with white lead, are then screwed firmly home on the tube ends, securely clamping the interior edge of each cap-piece between a pair of the grommets $B C$. The joints so formed are insured against leakage by the white lead, and the entrance of water following the screw-threads on the tube D is prevented by soldering that joint, as indicated at F . The solder also serves to prevent the unscrewing of the grommet. Finely-granulated cork G is introduced through the same open seam and packed tightly, completely filling the envelope, which is then closed by sewing up the open portion of the seam. The whole is then coated with white lead or other paint adapted to withstand the action of the water.

L is a rod, of a diameter somewhat less than that of the tube D , extending through the latter and provided at the upper end with a standing circular eye L' , having a vertical tubular socket L^2 welded or otherwise secured to its upper surface. The lower end of the rod is screw-threaded to receive a pair of threaded collars or nuts $N N'$, confining between them the neck of a swivel M . The extreme lower end of the rod L is then headed below the nut N' , as indicated at I , to prevent accidental displacement. The socket L^2 supports a staff R set therein, to which is attached a flag or other signal to aid in distinguishing the position of the buoy.

S is a rope attached at one end to the swivel

M, and secured at the other end to any suitable anchor. (Not shown.)

Modifications may be made in the details without departing from or sacrificing the invention.

Other material may be used for the envelope instead of canvas, and it may be made impervious to water by other means than the rubber solution. It may be cut in a greater or less number of pieces than here shown.

Various forms of cement may be substituted for the white lead used in sealing the joint between the grommets and the inclosed portion of the envelope.

Any suitable light and resilient material may be employed for the filling.

The advantages of my buoy are obvious, but may be briefly stated. It is not liable to permanent distortion by being crushed between vessels or masses of floating ice because of the resilience of the cork filling and the flexibility of the envelope, and by reason of those qualities and the absence of sharp angles it will not injure or mar the surface of a boat coming in contact with it. The buoy will resist puncture for the same reasons, and if so injured will continue to float for a long period until the cork has become saturated. The rod L passes loosely through, and therefore does not subject the buoy to the severe strains of the vessel transmitted through the hawser to the eye and from the swivel to the chain and anchor. Liability of the rod to become bound is avoided by the stiffness of the tube D, which incloses it.

I claim as my invention—

1. In a buoy, a flexible envelope, a filling of light resilient material as granulated cork,

and a stiff tube extending axially through the envelope and filling, in combination with the pairs of grommets engaging the edges of the envelope at each end of the tube, the latter adapted to loosely inclose a rod extending therethrough carrying a swivel and eye to which the anchoring rope and hawser may be attached, all substantially as herein specified.

2. In a buoy, a flexible envelope, a filling of light material, as granulated cork, a tube D extending through the envelope and filling, grommets B, C, carried on each end of the tube in pairs, engaging the envelope between each pair, and the rod L extending loosely through said tube and carrying an eye L' and swivel M, all combined and arranged to serve substantially as herein specified.

3. The belt A, and cap pieces A', A², forming an envelope, the filling G of granulated cork, the tube D extending through the filling and cap pieces, grommets B carried on the screw-threaded ends of the tube within the envelope, grommets C applied to the said ends from the exterior, the cement E between the grommets and envelope, and the solder F securing the grommet C to the tube, in combination with each other, and with the rod L extending loosely through said tube, the eye L' formed on one end of the rod and the swivel M carried on the other end, all arranged to serve substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

FRANK RICHARD.

Witnesses:

ROBERT J. VICTOR,
CHS. SCHROEDER.