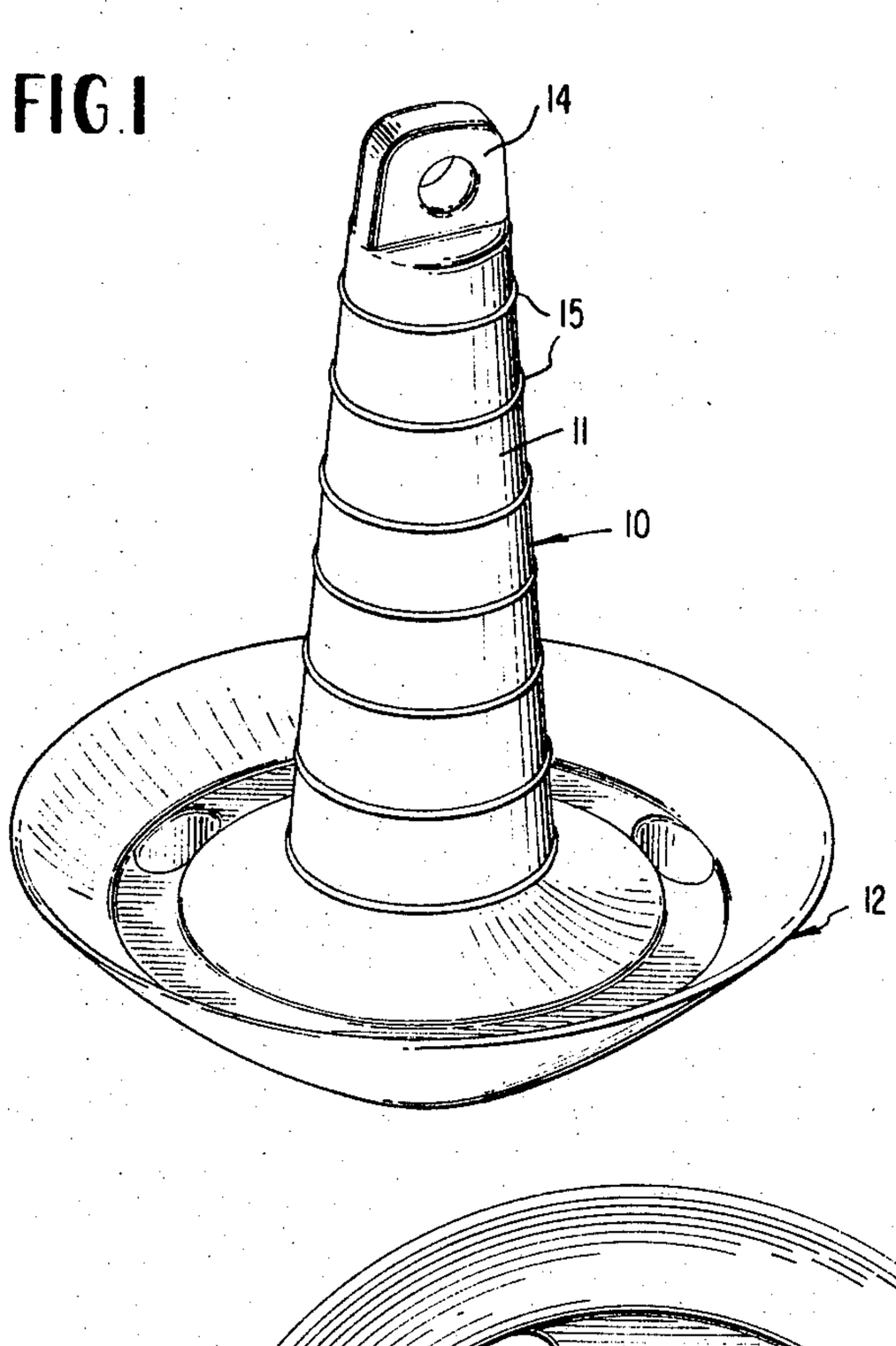
Sept. 24, 1968 F. H. JAMES, JR., ET AL 3,402,689

ANCHOR

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FIG. 1



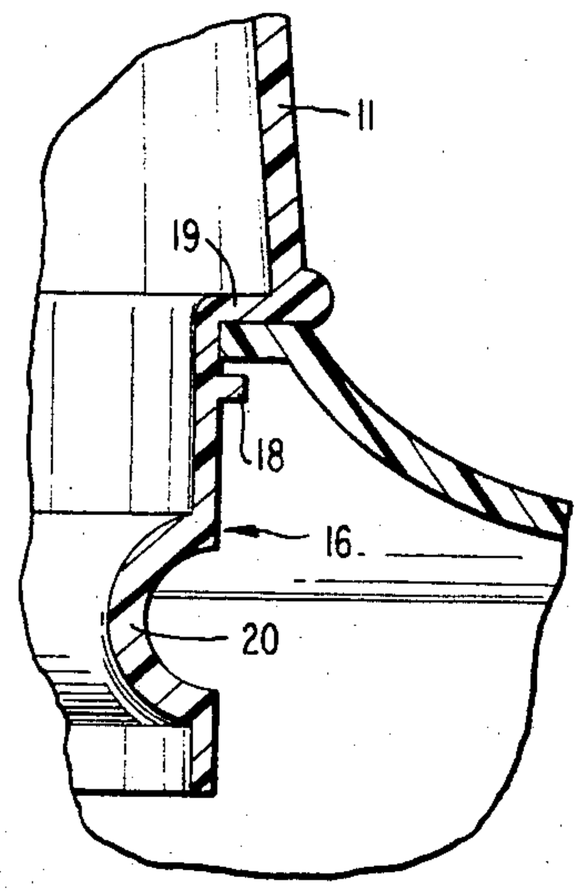


FIG. 6

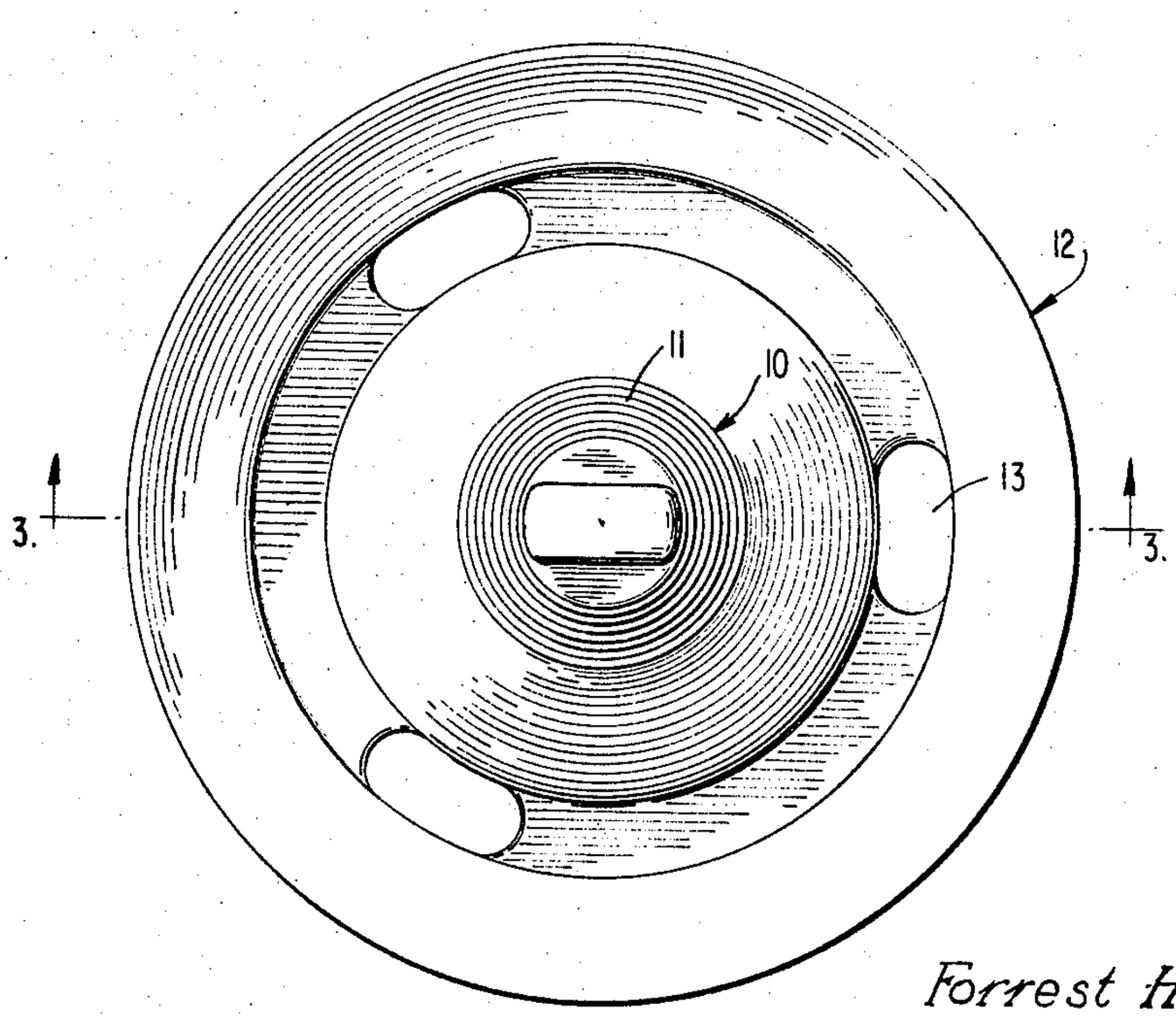


FIG. 2

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FIG. 3

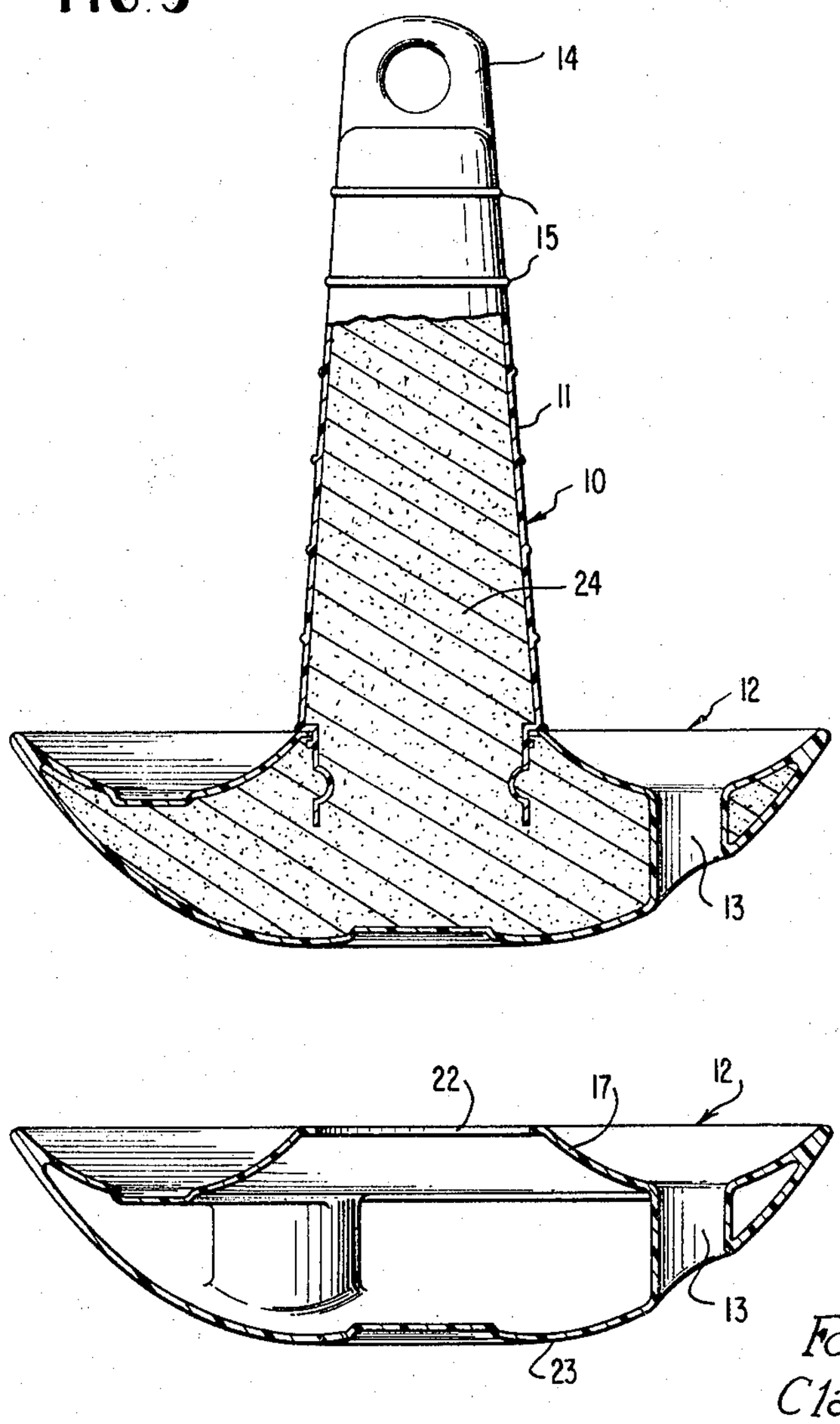


FIG. 4

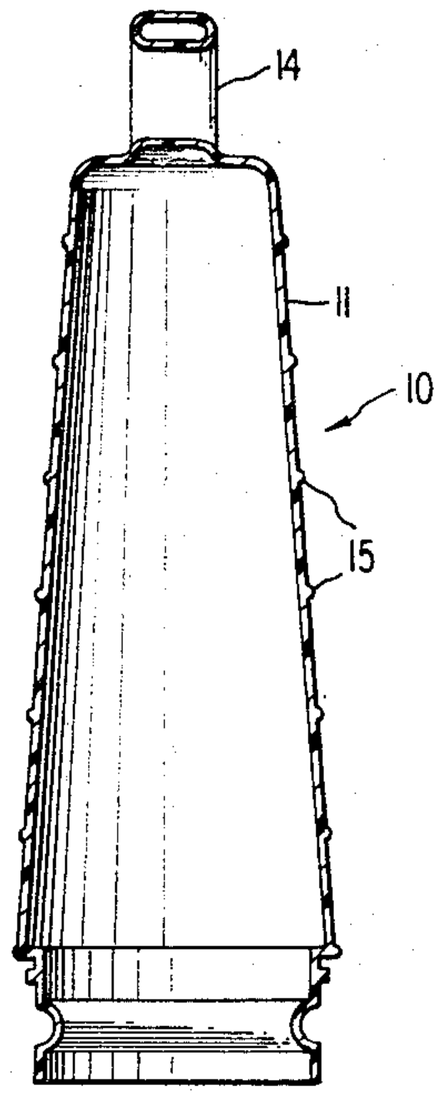


FIG. 5

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3,402,689

Patented Sept. 24, 1968

3,402,689

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Filed Nov. 18, 1965, Ser. No. 508,491

5 Claims. (Cl. 114—206)

ABSTRACT OF THE DISCLOSURE

An anchor having a two part hollow plastic shell in which the shank is inserted into the head portion and the hollow interior is filled with cement and heavy material.

This invention relates generally to an anchor and the method of manufacturing same; and more particularly to an anchor having a two-piece construction of a rigid inner core and an outer flexible plastic shell around the core and the method of manufacturing same.

Conventional anchors have, in the past, usually been made of metal or some similar material which is heavy and has sufficient strength to hold a boat in a moored position. These conventional anchors have usually been chemically attacked by the water in which they were used so that deterioration of the anchor took place. Moreover, these anchors, being of metal, usually had sharp edges which might injure the operator of the boat or scar the boat when the anchor was handled. This has required the use of gloves or the like when handling the anchors.

Other conventional anchors have been manufactured of a relatively rigid material, such as concrete. These anchors are also attacked by the water in which they are used and also are excessively worn away by the abrasive action of the water. Moreover, reinforcement is needed to make the anchors strong enough to withstand the forces thereon when in use and the texture of the surface of the anchor has caused scarring and scratching of the boat as well as the individual handling the anchor.

The invention disclosed herein overcomes these and other problems associated with previous anchors by providing an outer flexible, resilient, plastic shell manufactured in two interlocking pieces and a rigid core material such as concrete cast in the outer flexible plastic shell of a material. This two-piece construction allows the shell to be filled with the rigid core material and then put together so that no sharp and unsightly edges protrude from the anchor as a result of the manufacturing thereof to damage the boat or injure personnel when in use. By adding any of several types of metal to the inner core before filling the plastic shell, the weight of the anchor may be varied easily without having to change the molds in which the anchor is produced.

The outer flexible plastic shell is not chemically attacked by the water in which it is used and also prevents any chemical deterioration of the inner core material. Since the outer shell is impact resistant, it serves to retard chipping or breaking of the inner core material as is encountered with conventional anchors. Moreover, even if the inner core is broken, the effectiveness of the anchor is not affected since the outer shell still retains the material inside. The outer plastic shell presents a smooth surface provided with gripping means for easy handling without injury to the personnel handling the anchor.

Since the plastic shell allows the use of an inexpensive inner core material and since an inexpensive process of producing the outer flexible plastic shell such as blow molding can be used for producing the outer shell, a low overall cost of manufacturing of the anchor is provided.

The invention will be more fully understood upon consideration of the following specification and the accompanying drawings wherein like characters of reference designate corresponding parts thorughout and in which:

FIG. 1 is a perspective view of one embodiment of the present invention;

FIG. 2 is a top plan view of FIG. 1;

FIG. 3 is a cross-sectional view of the embodiment of the invention shown in FIG. 2, taken along the line 3—3 in FIG. 2;

FIG. 4 is a cross-sectional view of the shank portion of the outer flexible plastic shell;

FIG. 5 is a cross-sectional view of the head portion of the outer flexible plastic shell; and

FIG. 6 is an enlarged cross-sectional view of that portion of the embodiment of the invention at which the shank and head portions of the outer flexible plastic shell interlock.

These figures and the following specification disclose one specific embodiment of the present invention; however, it is to be understood that the invention is not limited to any specific details set forth herein since the invention may be embodied in other equivalent forms.

Referring more particularly to the specific embodiment disclosed herein, it is seen that the outer flexible shell **10** comprises a shank portion **11** and a head portion **12**. The specific embodiment disclosed herein shows the head portion **12** bowl shaped for a mushroom anchor but it is understood that the head portion **12** may be made in other shapes depending on the specific purpose for which the anchor is to be used.

The shank portion **11** is a thin walled member having a hollow interior and is slightly conical shaped with its upper end being the smaller of the two ends. An eyelet **14** is integral with the upper end of the shank portion **11** and serves to close this end of the shank portion **11**. The eyelet **14** is provided for receiving a rope or other attaching means by which the anchor is raised and lowered and to which a boat may be moored. A plurality of annular rings **15** are provided around the shank portion **11** in order that the shank portion **11** may be easily grasped and held by the individual when moving the anchor about.

Referring to FIGS. 2 and 4, it will be seen that the lower open end of the shank portion **11** is formed into a reduced cylindrical portion **16**. The reduced cylindrical portion **16** is formed integrally with the lower end of the sides of the shank portion **11** so as to form an annular support ring **19** therebetween. A retaining ring **18** is provided around the outer periphery of the reduced portion **16** slightly below the support ring **19** as seen in FIG. **6** so as to retain the head **12** thereon as will be explained hereinafter. In order that the reduced portion **16** be relatively rigid, a reinforcing rib **20** is formed at the inside of the reduced portion **16** below the retaining ring **18**.

Referring to FIG. 5, it will be seen that the head portion **12** is bowl shaped and is a thin wall member having an upper wall **17** and a lower wall **23** defining a hollow interior therebetween. The head portion **12** has a plurality of flow-through ports **13** formed therethrough so that water may flow through the ports when the anchor is in use. The upper wall **17** of the head **12** has an aperture **22** through the center thereof just large enough to receive therethrough the reduced portion **16** of the shank **11**. The wall **17** around the hole **22** serves to snap into the space formed between the rings **18** and **19** on the reduced portion **16** of the shank member **11** and retain the head portion **12** onto the shank portion **11**.

Both the shank portion **11** and the head portion **12** may be blow molded in the conventional manner from a plastic material such as polyethylene. It will be noted, however, that the shell may be made from any of a plurality of molding or casting processes.

The inner core **24** is cast within the combined hollow interiors of the shank portion **11** and the head portion

12 and is of a cementitious material that can be cast in a semi-solid condition and which will set or harden into a rigid monolithic member. In order that the weight of the inner core may be varied, an aggregate materials such as mill scale, hematite, magnetite, ilmenite, or a mixture of the same, may be added to the cementitious core material. An example of a mixture of cementitious material that will be suitable for use in the shell **10** is a mixture of 100 pounds of aggregate to 94 pounds of Portland cement and 4 gallons of water. Other examples of mixtures of materials that may be used are disclosed in my co-pending application, Serial No. 307,964, filed September 10, 1963.

ASSEMBLY

After the shank portion **11** and a head portion **12** have been formed, they are filled with the cementitious material mixture; the filled shank portion **11** is then inserted into the aperture **22** of the filled head portion **12**; and the wall **17** is snapped onto the shank portion **11** so that the head portion **12** is retained on the shank portion **11** by the retaining ring **18**. To facilitate the filling of the shank portion **11** and the head portion **12**, they may be vibrated in a manner such as that disclosed in my co-pending applications, Ser. No. 308,975, filed Sept. 16, 1963, and Ser. No. 395,693, filed Sept. 11, 1964.

The consistency of the cementitious material mixture that is to be cast within the outer shell **10** must be in such a semi-solid or plastic condition that it will not easily flow out of the shank portion **11** and the head portion **12** during their assembly but may flow into the hollow interiors of the shank portion **11** and head portion **12** in order to fill them prior to assembly.

After the cementitious material mixture of the inner core **24** has been allowed to set or otherwise dry, the anchor may be used in the conventional manner in mooring a boat or the like.

What we claim as invention is:

1. An anchor comprising a two part resilient plastic shell, one part being a hollow shank portion closed at its upper end and open at its lower end and an eyelet integral with said shank portion and connected to said upper end, the second part being a hollow head portion having an upper wall and a lower wall integrally joined

to define a hollow interior, said upper wall extending inwardly from said lower wall towards said shank portion and having an aperture in its central portion, the lower end of said shank projecting through said aperture, and a monolithic core of hardened cementitious material throughout said hollow shank portion and said hollow interior.

2. An anchor as set forth in claim **1** wherein the shank portion is a thin walled member slightly conical in shape, and gripping means on the outer surface thereof.

3. An anchor as set forth in claim **2** wherein said head portion is bowl shaped and has flow through portions therein outwardly of said shank.

4. An anchor comprising a shank portion, a head portion, said shank portion and said head portion defining a hollow interior; a relatively rigid core substantially filling said hollow interior, the head portion being interlocked into said shank portion, the shank portion being a thin walled member slightly conical in shape and having its upper end closed, its lower end open, and gripping means on the outer surface thereof, said head portion being bowl shaped and having an upper wall and a lower wall, said upper wall defining an aperture through the center thereof just sufficient for receiving the lower end of said shank portion therethrough, the lower end of said portion being formed into a reduced reinforced portion having a support ring and a retaining ring therearound spaced from each other sufficiently to resiliently receive that portion of the upper wall adjacent the aperture therebetween.

5. An anchor as set forth in claim **4** wherein said core material comprises a mixture of Portland cement and an aggregate selected from the group comprised of mill scale, hematite, magnetite and ilmenite.

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