

[54] **TWIN FLUKE ANCHOR HAVING REMOVABLE FLUKES** 2,789,526 4/1957 Gollner..... 114/208 R
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[22] Filed: **Sept. 7, 1973**

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Related U.S. Application Data

[63] Continuation of Ser. No. 178,233, Sept. 7, 1971, Pat. No. 3,780,688.

[57] **ABSTRACT**

[52] **U.S. Cl.**..... **114/208 R**
 [51] **Int. Cl.**..... **B63b 21/44**
 [58] **Field of Search**..... 114/208 R, 206 R, 206 A, 114/207, 208 A

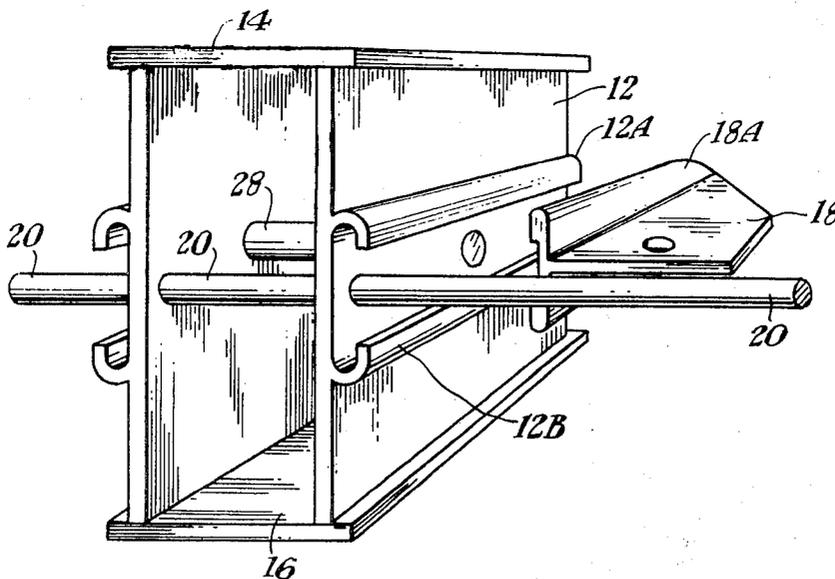
An anchor for marine vessels having an improved fluke which is removably coupled to the crown assembly by a longitudinal flange disposed along the fluke inside edge. The removable flukes allow the shank pivot shaft to be removably coupled through the crown wall adjacent the fluke flanges.

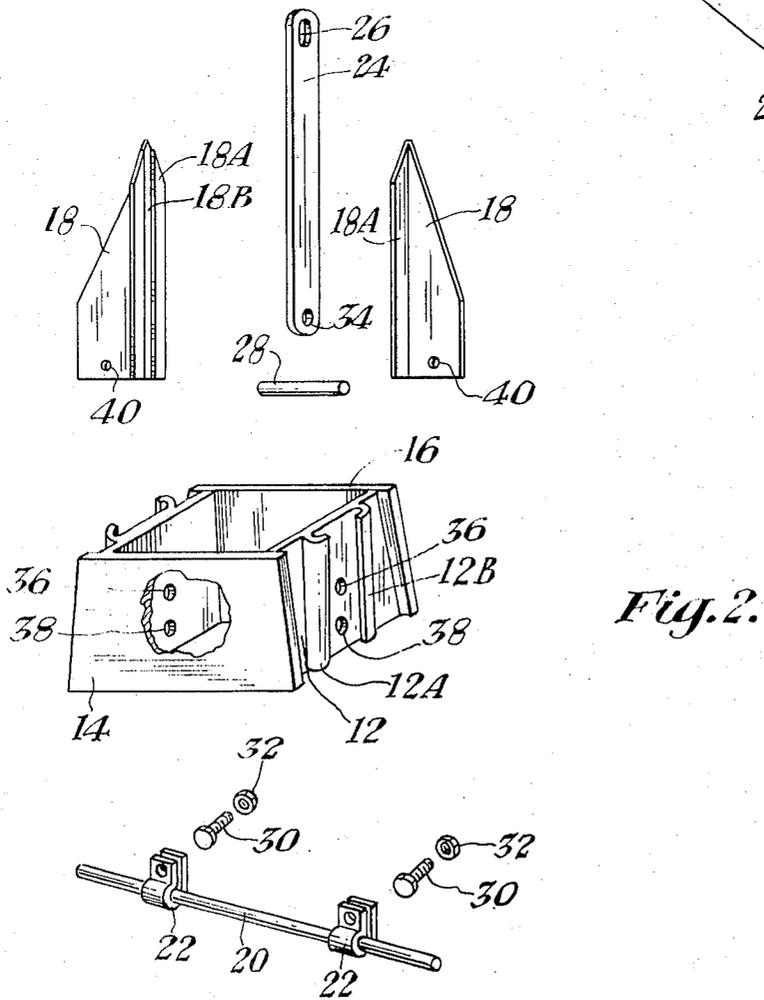
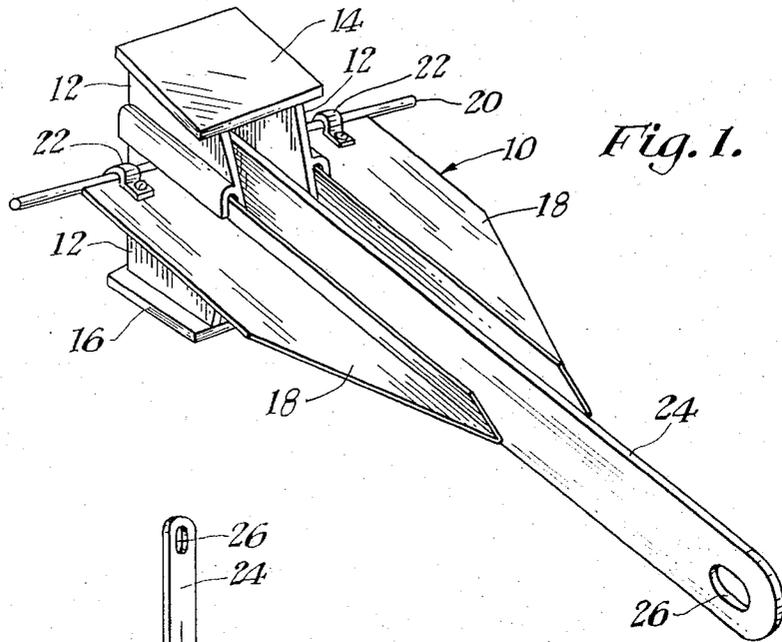
[56] **References Cited**

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4 Claims, 6 Drawing Figures





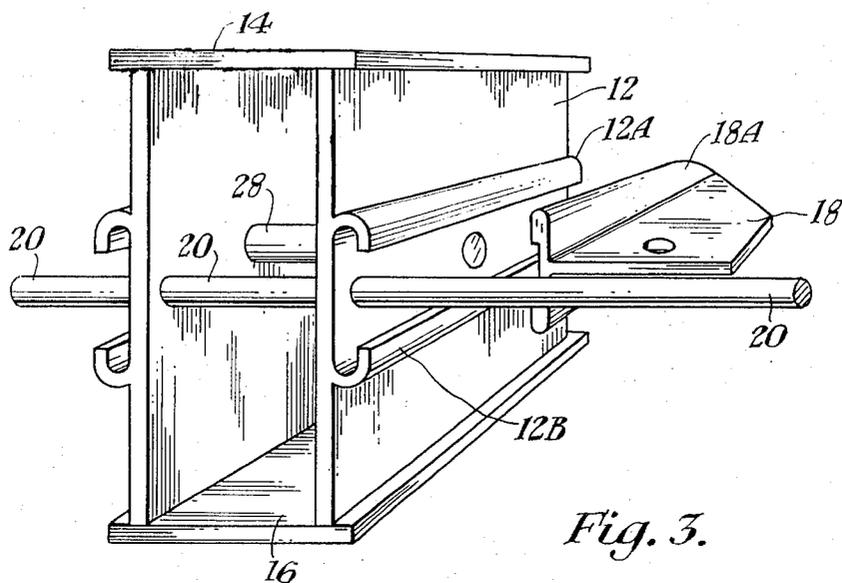


Fig. 3.

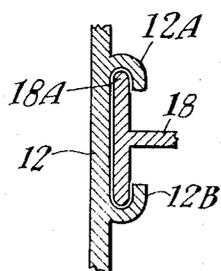


Fig. 4.

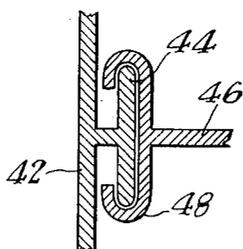


Fig. 5.

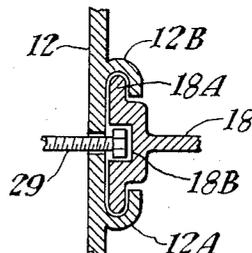


Fig. 6.

TWIN FLUKE ANCHOR HAVING REMOVABLE FLUKES

This is a continuation of Application Ser. No. 178,233, now U.S. Pat. No. 3,780,688, filed Sept. 7, 1971 and entitled "Anchor Having Improved Fluke Crown Coupling."

BACKGROUND OF THE INVENTION

This invention relates generally to twin-fluke anchors, and more specifically to an improved fluke and crown assemblage for providing removeable flukes with no reduction in the anchor holding strength.

In the past on twin fluke anchors, the flukes have generally been secured to the crown side walls by welding. Welding is expensive and time consuming and provides a permanent fluke mounting. Structural failures along the weld seams are common. Welding also restricts the use of light-weight materials such as aluminum for anchor construction because of the loss in strength at the welded area without subsequent and costly heat treatment.

Applicant's invention provides a fluke and crown assemblage having increased strength which requires no welding and permits the use of light weight materials in construction and allows disassembling of the anchor elements for storage, shipping, or repair.

Brief Description of the Invention

An anchor for marine vessels having an improved fluke and crown coupling comprising a crown having a pair of flanged receiving side wall portions, a shank, a shank pivot shaft coupled to said crown and said shank, a pair of flukes each having a flanged inside edge interlocked to said crown flange receiving portions and a stock coupled to the bottom edges of said flukes. The flukes are removeable from the crown side walls. The shank pivot shaft may be coupled to the crown through the crown side walls.

It is an object of this invention to provide an anchor having removeably coupled flukes.

It is another object of this invention to provide an anchor constructed from lightweight materials such as aluminum.

It is yet another object of this invention to provide an anchor having no welded portions between the flukes and the crown.

Yet still another object of this invention is to provide an anchor that may be disassembled for shipping, storage, or repairs.

And still yet another object of this invention is to provide an anchor having an improved shank pivot axis position.

In accordance with these and other objects which will be apparent hereinafter, the instant invention will now be described with particular reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of Applicant's invention.
FIG. 2 is an exploded view of Applicant's invention.
FIG. 3 is a close-up perspective view of the crown-fluke coupling of Applicant's invention.

FIG. 4 is a cross-section elevation of the crown-fluke coupling of Applicant's invention.

FIG. 5 is a cross-section elevation of an alternate crown fluke coupling of Applicant's invention

FIG. 6 is a cross-section elevation of another alternate crown-fluke coupling in accordance with Applicant's invention.

PREFERRED EMBODIMENT OF THE INVENTION

Referring now to the drawings and in particular to FIG. 1, Applicant's anchor 10 is comprised of a crown having a pair of supporting members 12 rigidly attached at their ends to angularly disposed crown plates 14 and 16, a stock 20 disposed through apertures in the crown supporting members 12, a shank 24 pivotably coupled between the crown supporting members 12 on shank axis 28 (FIG. 2). Symetrically disposed on each side of shank 24 is a pair of flukes 18, each fluke having a T-shaped flange along the edge adjacent the shank 24. On the outer side of each crown supporting member 12 is a C-shaped female flange removeably coupled about a portion of the T-shaped flange of each fluke 18. The flukes 18 are connected to the stock by C-clamps bolted through the fluke surfaces.

Referring now to FIG. 2, crown supporting members 12 are shown coupled to crown plates 14 and 16. The stock 20 is connected through apertures 38 while the shank pivot pin 28 is connected between apertures 36. With the exception of the crown plates 14 and 16 which are permanently coupled to crown supporting members 12, the entire anchor may be disassembled as shown in FIG. 2. This is possible because the crown supporting members have an outside facing C-shaped female flange with projecting arms 12A and 12B which are sized to receive the T-shaped flanged edge 18A of each fluke 18. The fluke flange 18A slides down into the crown flange arms 12A and 12B, where it fits snugly. The fluke is secured to the stock 20 by C-clamps 22 (FIG. 1).

With removeable flukes 18, the shank pivot axis 28 (FIG. 3) may be separated from the stock and moved forward closer to the front of the crown support 12. This reduces the length of the moment arm whenever the shank is rotated into contact with the front edges of crown plate 14 or 16 which define the limits of angular travel of the shank 24. The shank pivot shaft 28 is positioned in apertures 36 (FIG. 2), the ends of which are adjacent the fluke flange surfaces 18A when the flukes 18 are coupled to the crown support member 12.

FIG. 4 shows the male fluke flange 18A snugly coupled within the female crown flange arms 12A and 12B engaged in the working position. However the crown wall 42 in FIG. 5 has the T-shaped male flange 44 engaged to the female C-shaped arms 48 protruding from a fluke 46, as an alternate embodiment of the flange coupling of FIG. 4.

FIG. 6 shows a fluke flange 18A having a groove 18B disposed along the surface adjacent the crown supporting member surface. The groove 18B allows the shank pivot shaft to extend through and/or be bolted through the crown housing thus permitting the fluke to slide over the ends of the protruding shaft and/or the bolt head or nut attached to shank shaft 28.

The anchor may be disassembled for shipping, storage or repair as shown in FIG. 2. Broken flukes may be replaced individually. When ready for use the shank 24 is attached to the fluke by the pivot shaft 28. Flukes 18 are positioned in and slid within the crown support flange arms 12A and 12B, the fluke ends being stopped adjacent the stock apertures 38. The stock 20 is in-

serted into the crown housing apertures 38 and bolted to the flukes. The anchor is then ready for use.

Large forces are experienced along the crown-fluke coupling boundary which have caused welding seams to fail in the past. However the flange boundary will take large amounts of stress and shear without break-down, thus allowing for the use of light-weight materials such as aluminum which are difficult to weld and when welded are not very strong. The crown housing may be welded or riveted together (supporting members 12 to crown plates 14 and 16 in a trapezoidal shape) or may be cast by means of a sand mold, permanent mold or die into one monolithic structure. The top and base of the crown are open to permit flow through. The angular disposition of the crown plates with respect to the fluke plane is selected to aid fluke penetration into the mooring bottom.

Thus Applicant's anchor, having an improved crown-fluke coupling provides a lightweight, dependable anchor that may be disassembled.

The instant invention has been shown and described herein in what is considered to be the most practical and preferred embodiment. It is recognized, however, that departures may be made therefrom within the scope of the invention and that obvious modifications will occur to a person skilled in the art.

What I claim is:

1. A twin fluke anchor capable of being disassembled into its component elements comprising:

- a crown, said crown having an upper crown wall and a lower crown wall, and a pair of substantially parallel sidewalls connecting said upper crown wall to said lower crown wall;
- a stock removably coupled through said parallel crown sidewalls;
- a shank pivot means connected to and between said parallel crown walls forward of said stock;
- a shank pivotally coupled to said shank pivot means;
- a fluke interlocking means connected on the outside wall of each of said crown sidewalls;
- a pair of flukes, each fluke having an inside edge flange slidably engageable into said interlocking means on said crown outside wall; and
- a removeable connector means coupling said stock to said fluke.

2. In a twin fluke anchor having a crown including a pair of crown sidewalls joined to upper and lower crown plates, a stock, a shank, and a pair of flukes, the improvement comprising:

- a shank pivot means connected between said crown sidewalls forward of said stock; and

interlocking means on said crown outside walls for slideably connecting said flukes to the outside of said crown sidewalls.

3. A twin fluke anchor which may be readily disassembled into its components comprising:

- a crown, said crown having an upper plate and a lower plate, a pair of sidewalls connecting said upper plate to said lower plate;
- a stock, said crown sidewalls each having an aperture, said stock connected through each of said sidewall apertures;
- a shank;
- shank pivot means connected to and between said crown sidewalls and displaced from said sidewall apertures housing said stock, said shank pivotally connected to said shank pivot means;
- a pair of flukes;
- a means disposed on the outside of said crown sidewalls for interlocking said flukes for preventing movement of said flukes in a direction away from the outside face of said crown sidewalls, said means allowing slideable connecting movement of said flukes toward and away from said stock whereby the bottom edge portions of said flukes are engageable with said stock;
- a means removeably attaching said stock to said flukes, whereby individual flukes may be removed from said crown without removing said stock.

4. A twin fluke anchor in which individual flukes may be removed from said crown without removing the stock comprising:

- a crown, said crown having a pair of sidewalls;
- a stock coupled through a first portion of said crown sidewalls;
- a shank;
- shank pivot means connected to and between a second portion of said sidewalls within said crown and pivotally coupled to said shank;
- a fluke flange receiving channel protruding from the outside face of each of said crown sidewalls, each of said flukes having a flanged portion along their inner edge and interlockable into said fluke flange receiving channel to prevent movement of said fluke away from the outer face of said crown sidewall; and

means for removeably connecting said fluke lower edges to said stock, whereby said flukes may be individually removed from said crown sidewalls without removing said stock from said crown.

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