Nov. 2, 1965 L. E. McDANIEL 3,215,111

ANCHOR

Filed March 18, 1963 2 Sheets-Sheet 1

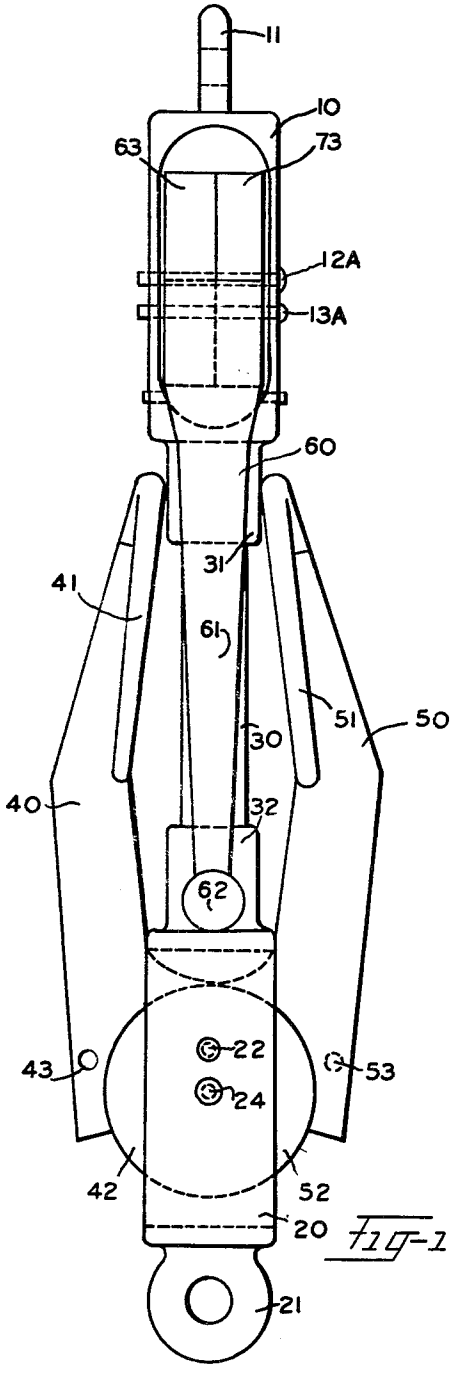


Fig-1

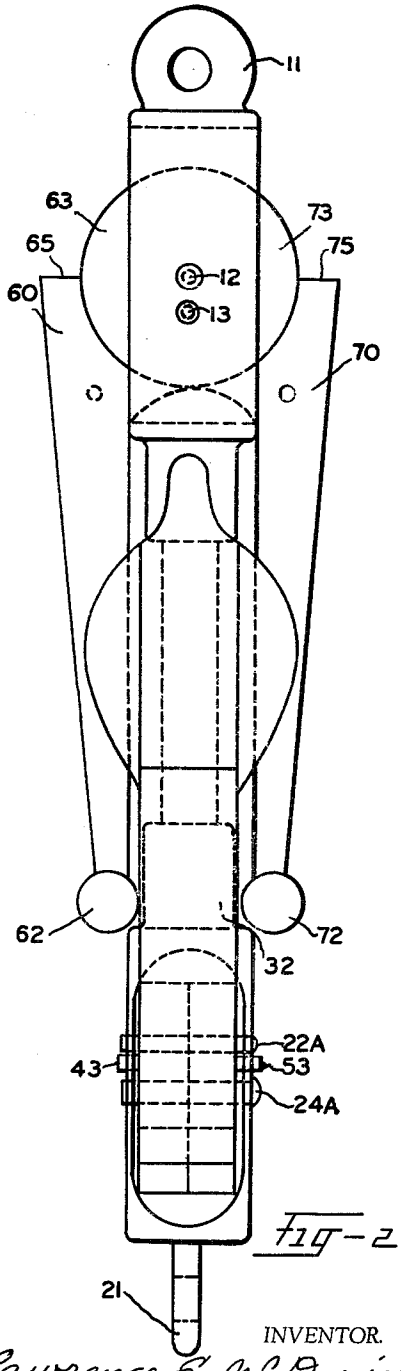


Fig-2

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Nov. 2, 1965 L. E. McDANIEL 3,215,111

ANCHOR

Filed March 18, 1963 2 Sheets-Sheet 2

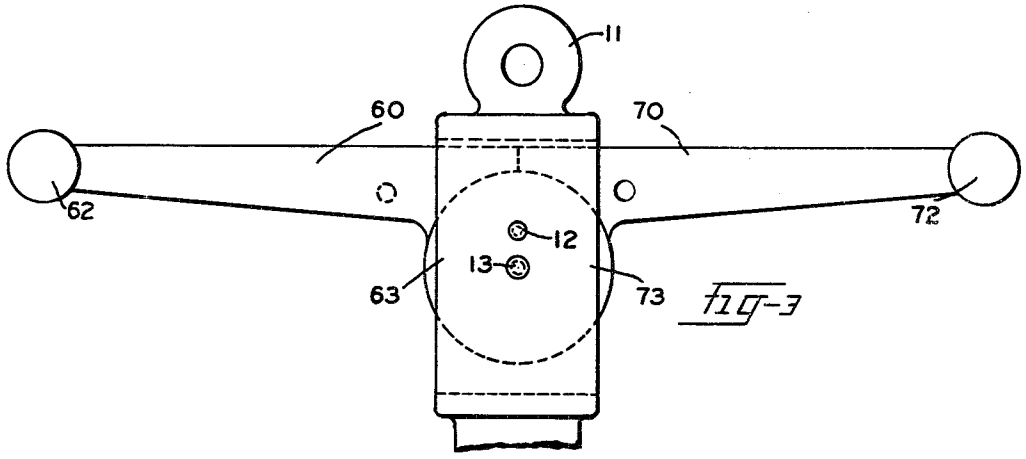


Fig-3

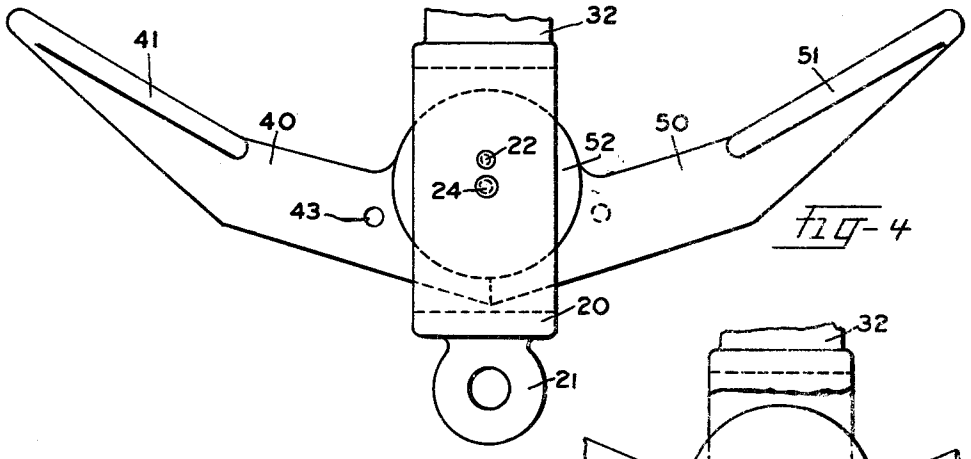


Fig-4

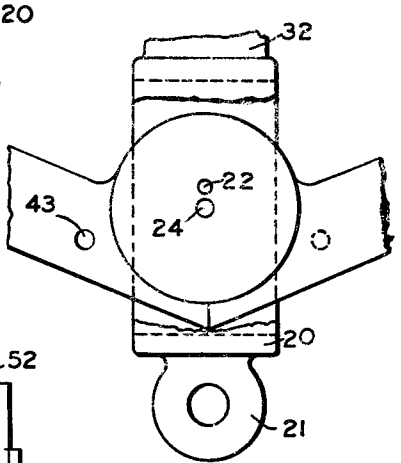


Fig-5

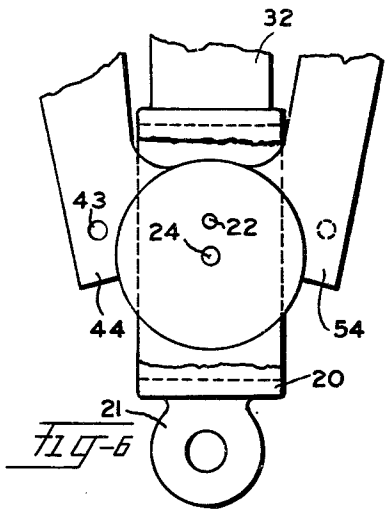


Fig-6

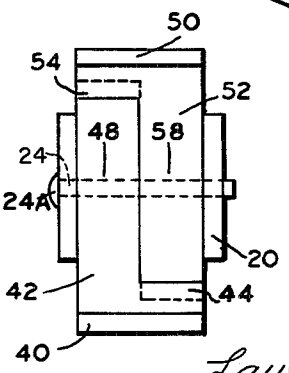


Fig-7

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3,215,111

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1 Claim. (Cl. 114—208)

The present invention relates to marine anchors having the standard Navy type of configuration and particularly to anchors having folding or collapsible flukes.

In small craft such as may be used by the pleasure fisherman and motor craft used for skiing an anchor is required. However, an anchor that would withstand the normal anchoring stresses would be extremely large and bulky in comparison to boat size.

Marine anchors with folding flukes are known in the prior art. These anchors, however, have as their primary purpose folding to free themselves when fouled or lodged. The design of these anchors has been at a sacrifice to withstand normal anchoring stresses.

The present invention is a conventional Navy type of anchor with its known ability to dig in and withstand stresses—and yet that is completely foldable into a neat package for storing on the craft when not in use.

It is a general objective of the invention to provide an anchor of the conventional Navy type with the ability to withstand normal anchoring stresses.

A further object of the invention is to provide an anchor of the conventional type that is completely foldable for storage when not in use.

Another object of the invention is to provide an anchor that is completely foldable but yet is stronger and sturdier in construction and thereby having greater holding power for its size.

Finally, it is an object of the present invention to provide a marine anchor that is relatively simple and inexpensive to construct avoiding the unhandy and complicated devices presently in use.

Other objects and features of the invention will become apparent from the following detailed description when taken in conjunction with the drawings in which:

FIG. 1 is a side view of the preferred embodiment of the present invention in its folding arrangement;

FIG. 2 is a second side view of the anchor of FIG. 1;

FIG. 3 illustrates in greater detail the cross-member of a preferred embodiment of the anchor in their extended position;

FIG. 4 illustrates in greater detail the flukes of a preferred embodiment of the anchor in their extended position;

FIG. 5 is a partial cutaway view of the interlocking members of the flukes of the anchor in an extended position;

FIG. 6 is a partial cutaway view of the interlocking members of the flukes of the anchor in a folded position; and

FIG. 7 is an end view illustrating the coaxial alignment of the pivotal points of the flukes and cross-members.

Referring now to the figures in general, there is shown a preferred embodiment of the anchor of the invention. Shank **30** has fixed thereon on its upper portion an upper crown **10** having an eyelet **11** at the extreme end. Similarly, a lower crown **20** is positioned at the lower end of shank **30**, also having an eyelet **21** at its extreme end. A pair of flukes **40** and **50** are pivotally positioned about a single cross-axis within the lower crown **20**. A cross-member having extending arms **60** and **70** are pivotly positioned about a single cross-axis within the upper crown **10**.

The anchor when the flukes and cross-members are in their extended position as shown in FIGURES 3 and 4 is of conventional Navy design. The ruggedness and ability of this anchor has been fully appreciated for centuries. In operation, when the anchor is lowered in the water, the cross-members **60** and **70** force one or the other of the flukes **40** or **50** to bite into the sea or the river bed.

The primary feature of the anchor of the present invention is that it can be neatly folded into a compact assembly for storage. In this way a small craft can afford, space-wise, to carry a much larger and sturdier anchor. Referring now specifically to FIGURES 1 and 2, the anchor is shown in a folded position. The flukes **40** and **50** are folded up almost 90° along the shank **30** and the cross members **60** and **70** are folded down almost 90° along the shank **30**. The cross-members **60** and **70** and flukes **40** and **50** are displaced cross-axis with respect to each other. The cross-members **60** and **70** and the flukes **40** and **50** are firmly held in this folded position as described hereinafter.

With particular reference to the figures, the details of structure are shown that permit the folding or unfolding of the flukes **40** and **50**, as well as cross-members **60** and **70**, without a loss of rigidity. At the pivot end of the fluke arms, a disc-like pivot plate **42** is integrally formed with the fluke **40** and a similar disc-like pivot plate **52** is integrally formed with the fluke **50**. These two disc-like pivot plates **42** and **52** are placed adjacent each other so that apertures **48** and **58** (FIG. 7), through each of the centers of their cross-axis, is in alignment with each other, and with the aperture **24** in the lower crown **20**. A pivot pin **24***a* is loosely inserted therethrough and thereby permits free up-and-down motion of the flukes **40** and **50**.

To fixedly retain the flukes **40** and **50** in either the operation position or the folded position, there is further provided a pair of apertures **43** and **45** in fluke **40** and apertures **53** and **55** is fluke **50**. When the flukes **40** and **50** are in the folded or upright position, the apertures **45** and **55** will be in alignment with an aperture **22** in the lower crown **20** of the anchor. When the flukes **40** and **50** are in their operation position, apertures **43** and **53** will be in alignment with the aperture **22** in the crown **20**. To fixedly retain the flukes in either position, a retaining pin **22***a* may be inserted therein.

Referring specifically to FIGURES 5, 6, and 7, there is shown another feature of the invention. In order that the longitudinal axes of the flukes **40** and **50** be coextensive, each of the disc-like pivot plates **42** and **52** are reduced in their cross-sectional diameter to slightly less than one-half of the diameter of the arms of the flukes. The reduction in cross-section is accomplished on either side of the flukes and then the two reduced sections are oppositely placed adjacent each other, as shown in FIGURE 7. In this way, the two sections again have the cross-sectional size of either fluke.

It was stated above that a pin **22***a*, through apertures in the disc plates, retain the flukes in their respective positions. It is to be understood that the stresses, when the anchor is in use, is not on this pin **22***a*. As a matter of fact, the pin **22***a* can well be omitted when the anchor is in use. To provide a stress region, the ends **44** and **54** of the flukes form a pair of noses. These noses are in spaced relationship when the flukes are folded (FIGURE 6); however, when the flukes are down for operation, these noses abut each other (FIGURE 7), thereby forming a continuous stress region extended from the end of one fluke across the pivot to the end of the other fluke.

A line fastened to the eyelet **21** will relieve the flukes from engagement and thereby permit retrieval. To further facilitate retrieval, the pin **22***a* may be omitted and then when the line fastened to the eyelet **21** is

pulled, the flukes will fold up and thereby relieve themselves.

At the opposite end of the shank **30**—at the upper end, and within the crown **10**—the cross-members **60** and **70** are pivotly constructed and positioned therein in a substantially identical manner to the flukes **40** and **50**. FIGURES 2 and 3 illustrate the cross-members **60** and **70** in their folded and operable positions. Specifically, cross-member **60** has at its lower end a disc-like pivot plate **63**; and cross-member **70** has, at its lower end, a disc-like pivot plate **73**. These two pivot plates **63** and **73** have their center axis in alignment to permit pin **12***a* to be inserted through an aperture therethrough for pivoting. Also, in a similar manner, the disc-like pivot plates **63** and **73** are each reduced in cross-section and oppositely placed adjacent each other. In this way they are of a total cross-sectional diameter equal to either one of the pivot members. Again, to withstand the proper stresses, the plates **63** and **73** have noses **65** and **75** that abut each other when the cross-members are in their extended position.

It is to be observed that the noses **65** and **75** are 90° with respect to the cross-members **60** and **70**. This permits the cross-members to be extended straight across. On the other hand, noses **44** and **54** on the flukes **40** and **50** are less than 90°, thereby when the flukes are extended, they will not be straight across but will be bent upwards in a conventional Navy anchor manner.

It is now apparent that when the cross-members **60** and **70** and the flukes **40** and **50** are extended, the anchor is of the conventional Navy type. However, to permit storage of the anchor, especially in a small craft, the anchor may be neatly folded.

Although I have shown a specific and certain embodiment, it is to be understood that modifications may be made without departing from the true spirit and scope of the invention.

What is claimed is:

An anchor of the kind described comprising: a rod like shank, a first crown having secured thereto at one end a female type opening adapted to permanently receive and retain one end of said shank, and an eyelet secured to the other end of said crown; a pair of cross-members, a pivot plate integrally formed with each of said cross-members at one end thereof, said pivot plates having a thickness of substantially half the diameter of said members, each of said plates being offset with respect to the center line of its member, said plates having contacting faces in a plane substantially through the center line of said members, said plates together oppositely positioned adjacent one another, both of said pivot plates centrally positioned within said crown, means for pivotally retaining said plates in said crown, a nose on the outer periphery of each of said plates and formed on the end of each of said members, said noses positioned in spaced relationship to each other when said cross-members are pivoted toward said shank and in abutting relationship and holding said members extended outwardly in a substantially straight line when said members are opened away from said shank; a second crown having secured thereto at one end thereof a female type opening adapted to permanently receive and retain the other end of said shank, an eyelet secured to the other end of said crown; a pair of flukes, a pivot plate integrally formed with each of said flukes at one end thereof; said pivot plates having a thickness of substantially half the diameter of said flukes, each of said plates being offset with respect to the center line of its fluke, said plates having contacting faces in a plane substantially through the center line of said flukes, and said plates together oppositely positioned with respect to one another, both of said plates centrally positioned within said second crown, means for pivotally retaining said plates within said second crown, a nose on the outer periphery of each of said plates and formed on the end of said flukes, said noses positioned in spaced relationship when said flukes are pivoted toward said shank and in abutting relationship and holding said flukes at less than 180° apart when said flukes are pivoted away from said shank; said cross members and said flukes having an over-all length of the order of two-thirds of that of said shank together with said first and second crowns; and said members and said flukes positioned within their respective crowns to be pivoted at cross-axis with respect to each other about said shank.

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