

June 9, 1964

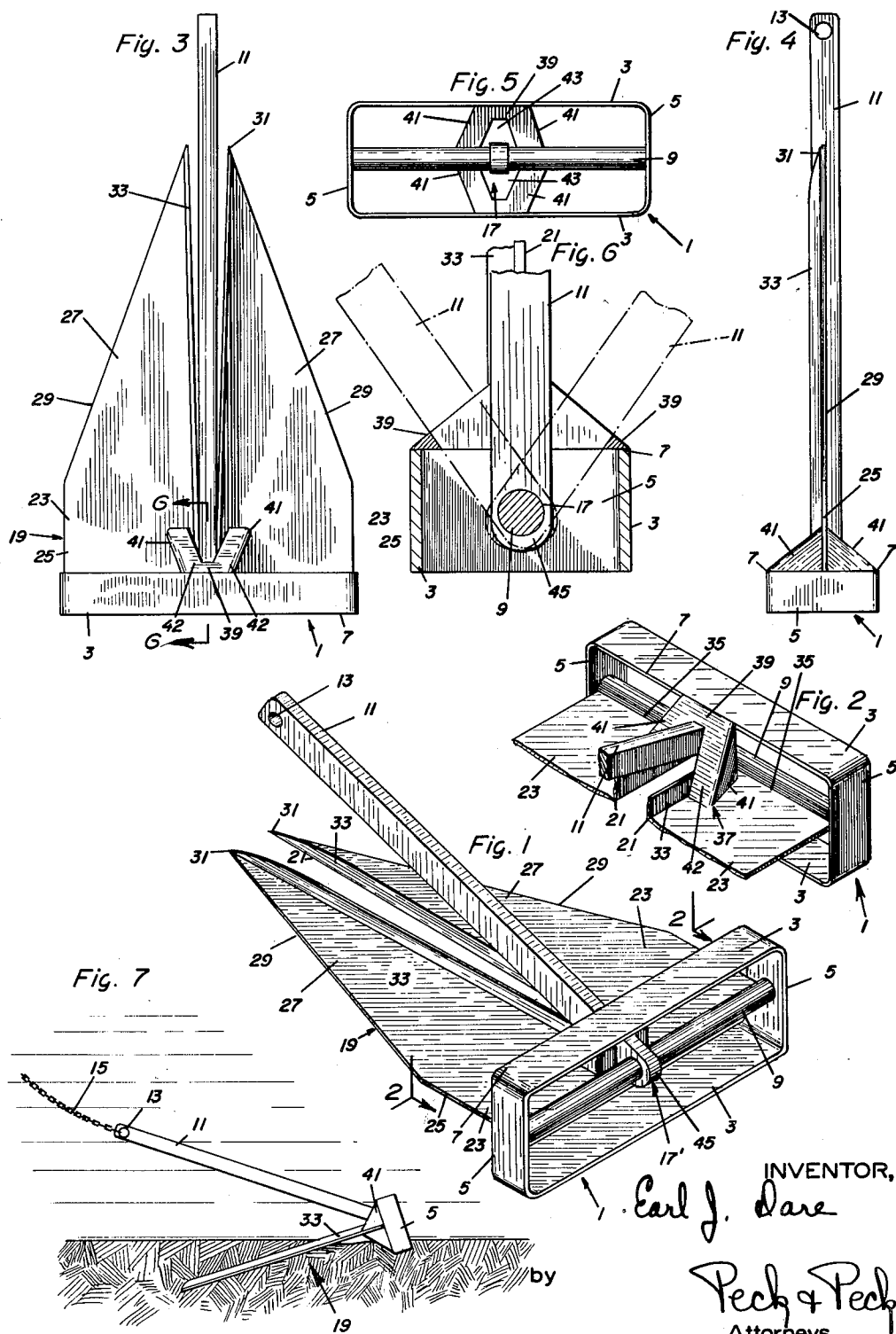
E. J. DARE

3,136,278

ANCHOR

Filed May 31, 1963

3 Sheets-Sheet 1



INVENTOR,

Earl J. Dare

Peck & Peck
Attorneys

June 9, 1964

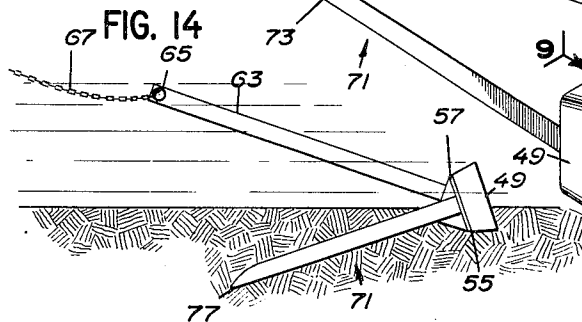
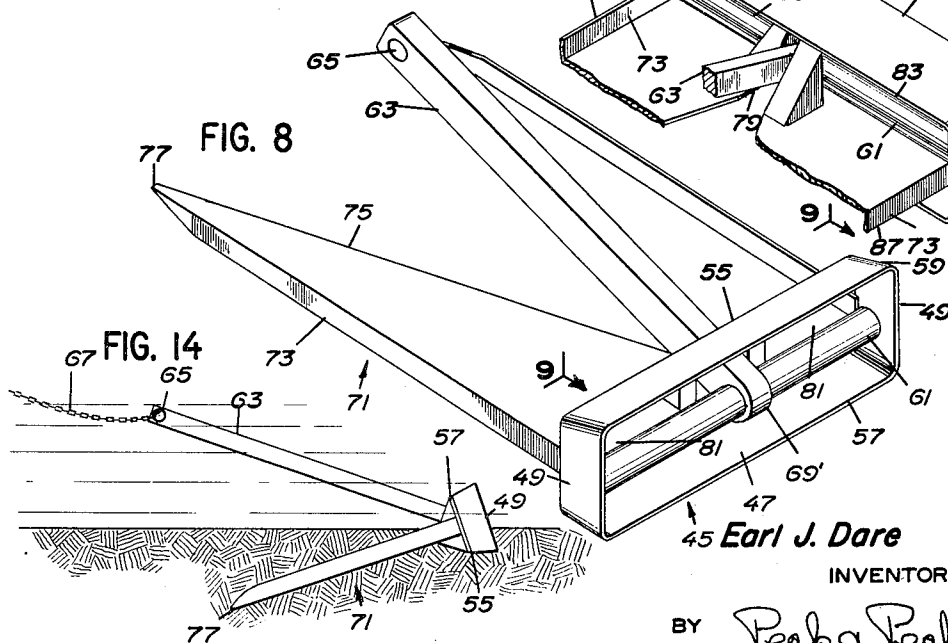
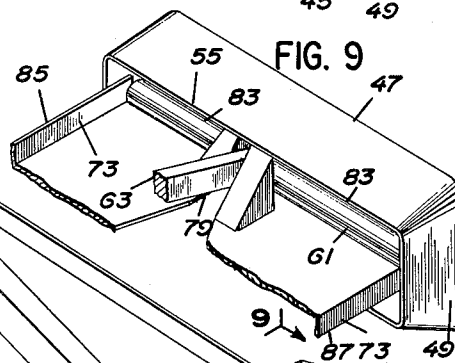
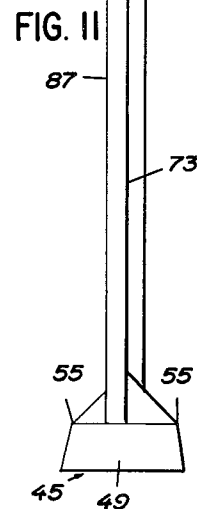
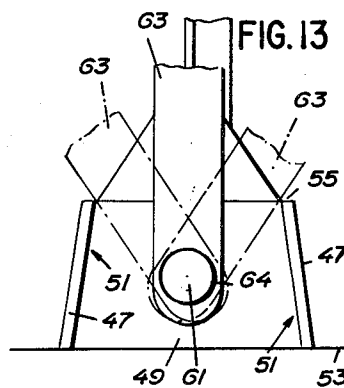
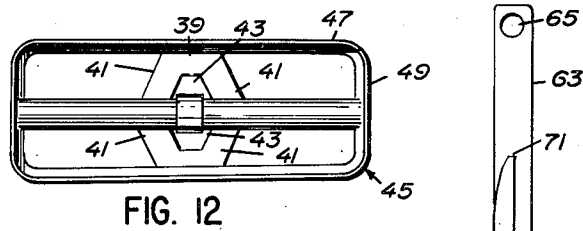
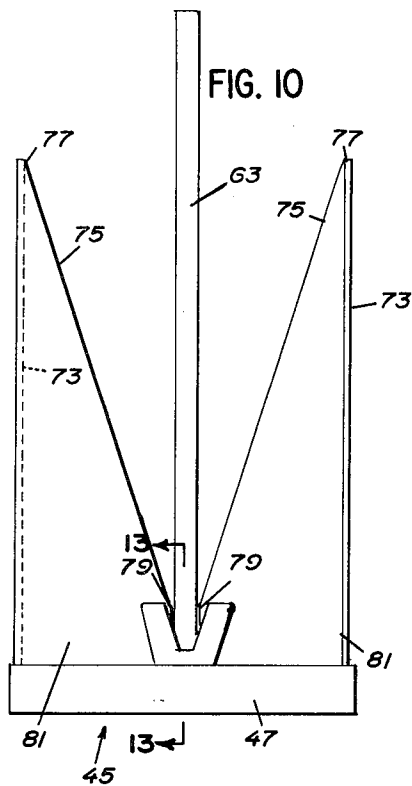
E. J. DARE

3,136,278

ANCHOR

Filed May 31, 1963

3 Sheets-Sheet 2



Earl J. Dare

INVENTOR

BY Peck & Peck
ATTORNEYS

June 9, 1964

E. J. DARE

3,136,278

ANCHOR

Filed May 31, 1963

3 Sheets-Sheet 3

Fig. 15

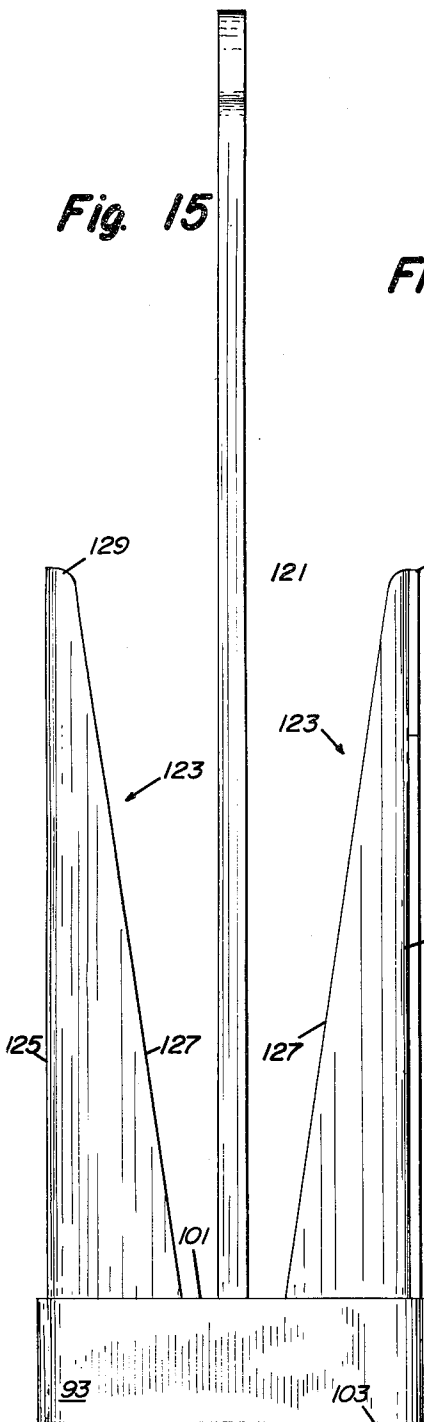


Fig. 16

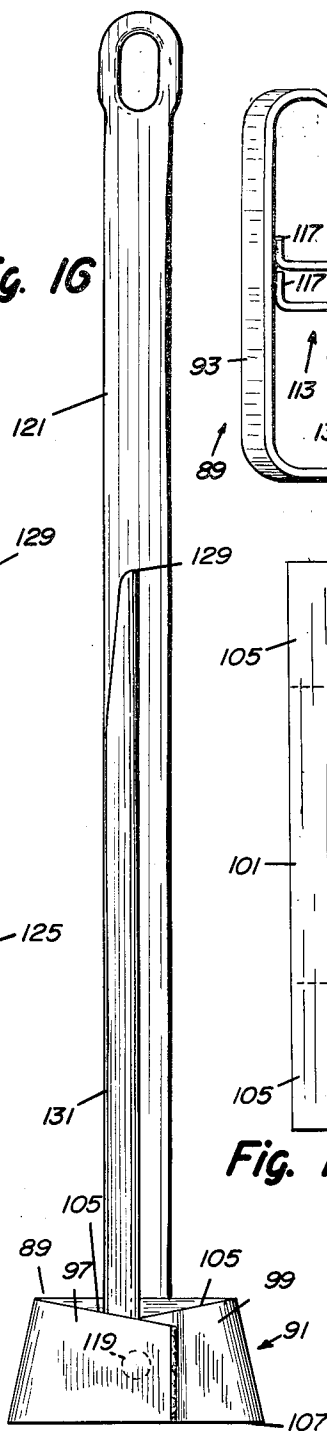


Fig. 17

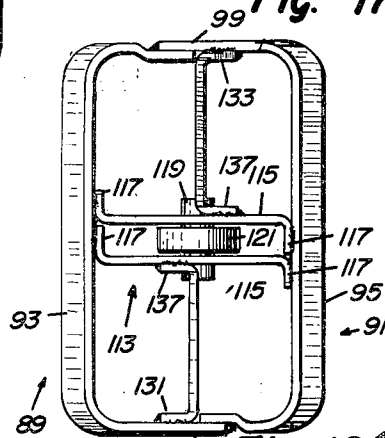


Fig. 18

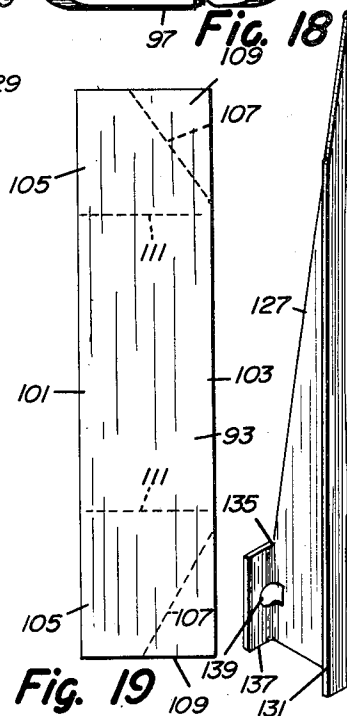


Fig. 19

Inventor
Earl J. Dare
By: Peck & Peck
Attorneys

1

3,136,278
ANCHOR

Earl J. Dare, Stuart, Fla., assignor to Columbian Bronze Corporation, Freeport, N.Y., a corporation of New York

Filed May 31, 1963, Ser. No. 286,104
6 Claims. (Cl. 114—208)

This application constitutes a continuation-in-part of my application Serial No. 178,619, filed March 9, 1962, now abandoned.

This invention relates broadly to the anchor arts and in its more specific aspects it relates to a lightweight, compact anchor having substantial holding characteristics, as well as safety features, preventing line fouling or damage to the vessel when being boated; and the nature and objects of the invention will be readily recognized and understood by those skilled in the art to which it relates in the light of the following explanation and detailed description of the accompanying drawings illustrating what I at present believe to be the preferred embodiment or mechanical expressions of my invention from among various other forms, arrangements, combinations and constructions, of which the invention is capable within the spirit and scope thereof.

Conventional anchors are so constructed that they present ends, obstructions, sharp edges and the like which are not only dangerous to human beings but are also troublesome and dangerous to the safety of the vessel. Such conventional construction often results in fouling of deck lines, fouling of the anchor lines when the anchor is in use and many times causes damage to the vessel when the anchor is being boated.

It has been one of my prime purposes to provide a lightweight, compact anchor, the construction of which eliminates most of the sharp edges, ends, obstructions and the like which are found in prior art anchors and which from my experience often cause line fouling, are dangerous to the safety of the vessel and to the human beings who are on the vessel.

In evolving an anchor having the aforesaid characteristics which lend themselves to safety of both human beings and vessels, I have devised a structural combination of anchor components which also results in an anchor having substantial holding powers when in use on the bottom. Thus, I have not sacrificed the efficiency of the anchor for the safety features which are inherent in its structural design.

It will be evident to anyone skilled in this art that it is highly desirable that an anchor catch in the bottom as rapidly as possible to prevent undue drifting of the vessel. The anchor of this invention has this quality and results from the provision of a greater tripping surface relative to the anchor size than is usually the case and from the type of flukes with respect to the head of the anchor.

As will become evident as this description proceeds, the flukes will dig down gradually into the bottom so that a substantial amount of fluke surface will be used, instead of only the tip or point thereof being operative. This constitutes a substantial advantage and is obtained because I have limited the angle the flukes may assume with respect to the horizontal. Since suction is a weighty factor in holding bottom, the smaller the angle assumed by the flukes, the greater the suction and resultant holding power of the flukes.

I have provided my anchor with a head which is related to the other elements in a novel manner so as to provide the advantages mentioned above, as well as certain others which will be explained hereinafter. For instance, this head stops rolling of the anchor when it is engaging bottom. This is significant for it will be recog-

2

nized that a rolling anchor will not catch the bottom efficiently or rapidly. The head also functions as a stabilizer when the anchor is being boated.

My invention is also characterized by its excellent holding qualities in mud, grass, gravel, sand and the like, and by the fact that the contour of the bottom does not effect its ability to take hold and not drag.

Due to the ingenious design my anchor may be made lighter with less material, which is important when this anchor is used on small vessels.

In one form of my invention I have provided a structural arrangement whereby the holding power of the anchor is increased by as much as 50% over many anchors. This is accomplished by so forming parts of the anchor that it digs downwardly instead of sliding along the bottom.

The anchors of this invention are relatively simple and economical to produce; are efficient and sure in operation; and are long lasting under normal use conditions.

In a further form of my invention I have provided an anchor involving the same basic principles and features found in all of the forms of the invention, however, in this form I have obtained certain production economies and lighter weight construction which add substantially to the efficiency and desirability of the anchor. Other improved features stem from the construction of this form of anchor.

With the foregoing general objects, features and results in view, as well as certain others which will be apparent from the following explanation, the invention consists in certain novel features in design, construction, mounting and combination of elements, as will be more fully and particularly referred to and specified hereinafter.

Referring to the accompanying drawings:

FIG. 1 is a perspective view of the anchor of this invention.

FIG. 2 is a view taken on line 2—2 of FIG. 1.

FIG. 3 is a view in elevation of the anchor.

FIG. 4 is an end elevational view.

FIG. 5 is a bottom plan view.

FIG. 6 is a view taken on line 6—6 of FIG. 3.

FIG. 7 is a view of the anchor in operative position on the bottom.

FIG. 8 is a perspective view of a modified form of anchor.

FIG. 9 is a view taken on line 9—9 of FIG. 8.

FIG. 10 is a view in elevation of the modified form of anchor.

FIG. 11 is an end elevational view of the modified form of anchor.

FIG. 12 is a bottom plan view of the modified form of anchor.

FIG. 13 is a view taken on line 13—13 of FIG. 10.

FIG. 14 is a view of the modified form of anchor in operative position on the bottom.

FIG. 15 is a side elevational view of yet another form of anchor.

FIG. 16 is an end elevational view of the anchor illustrated in FIG. 15.

FIG. 17 is a bottom plan view of the anchor illustrated in FIG. 15.

FIG. 18 is a perspective view of one of the flukes used with the anchor of FIG. 15.

FIG. 19 illustrates the blank form from which the members of the head are fabricated.

In the accompanying drawings I have used the numeral 1 to designate the head of my anchor in its entirety. This head comprises a generally rectangular frame or box-like structure of open construction formed of any suitable material such as metal of strap or band-like construction, and comprises a pair of spaced-apart, longitudinal side

3

members 3 connected at their ends by transverse end members 5. It is preferable, though not necessary, that the head 1 be formed as an integral unit. The longitudinal side members 3 each have a leading edge 7, the purpose of which I shall describe hereinafter.

I provide what I shall term a "mounting and supporting rod" 9 which is fixed to and extends between each transverse end member 5 intermediate the longitudinal side members 3. The mounting and supporting rod is fixed to the transverse end members intermediate the ends thereof, as by welding, or in any other suitable manner, and is non-rotatable with respect thereto.

The shank 11 of the anchor is, as is usual, of elongated construction and is provided at its forward end with a hole 13 by means of which the usual chain 15 is secured thereto. Adjacent its rear end the shank 11 is formed with a hole 17 through which the mounting and supporting rod 9 freely extends, so that the shank is pivotally mounted on and supported by said rod. The pivotal mounting of the shank on the rod is best shown at 17' in FIG. 1.

I provide twin flukes designated generally by the numeral 19. Each fluke is of the same configuration and is preferably formed of any suitable metal preferably of lightweight and comprises a straight inner edge 21, a base section 23 having a straight or linear outer edge 25 parallel with said inner edge. Each fluke also includes an outer section 27 having an inwardly extending outer edge 29 extending from the outer edge 25 and terminating at a juncture with said inner edge 21 to form a point 31 on each fluke. A flange 33 is provided along the inner edge 21 of each fluke 19, such flange being extended in only one direction from the fluke.

The base of each fluke is fixedly secured to the mounting and supporting rod 9 as shown at 35. This fixed attachment of the flukes to the rod may be accomplished by welding or in any other suitable manner. The twin flukes are mounted on the mounting and supporting rod so that they extend therefrom in the same direction and in substantially the same plane and their inner edges 21 are spaced apart a distance at least slightly greater than the width of the shank 11 so that it may swing freely between the flukes.

As will be apparent from consideration of the drawings, the shank 11 is operatively positioned substantially midway between the ends of rod 9, and is kept from axial sliding along the rod by the inner edges of the flukes.

V-shaped braces generally indicated by numeral 37 extend between each side of the flukes and the longitudinal members 3 of the frame or head. There are two of such braces and each is of the same construction and comprises a base 39 which is fixed to the leading edge 7 of frame member 3 and extends therealong and across the space between the inner edges of the flukes. I provide each such base with a pair of spaced-apart legs 41 which extend from the base to the flukes, one leg extending to and fixed to one fluke and the other leg extending to and fixed to the other fluke. The legs diverge as they extend from the base to the flukes providing a space 43 therebetween which becomes uniformly wider from the base outwardly toward the flukes. The legs 41 constitute triangular blocks and the outer or forward surfaces 42 thereof are inclined upwardly and rearwardly from the flukes forming sliding surfaces when the anchor is digging into a soft bottom.

It will now be appreciated that the mounting structure for the flukes (the mounting and supporting rod 9), the pivotal connection for the shank 11 on the rod 9 and the rod 9 are all housed within the head or frame 1 so that they will not become fouled with any lines while on deck or in use, and furthermore, they will not comprise dangerous areas to human beings, particularly when the vessel is rolling. Thus, the head or frame 1 provides, in effect, a housing and protective medium for the afore-mentioned members of the anchor, and since the head comprises smooth or flat members, there are no

4

sharp edges, obstructions or the like for contact and tangling with lines or to cause injury to persons on the vessel. In connection with the rod 9 it will be noted that the axial plane thereof is entirely within the area defined by members 3 and 5 of the head, that the bases 23 of the flukes are fixed to the rod and this connection is entirely within the confines of the area defined by members 3 and 5, and that the projection 45 of shank 11, while being outside the axial plane of rod 9, is still completely within an area defined by members 3 and 5 of the head 1.

As I have stated, the shank 11 is pivotally mounted on the non-rotatable mounting and supporting rod 9 and is restrained from axial movement therealong by the flukes 19, and, as will now be explained, by the braces 37. I have explained that the legs 41 of the braces diverge outwardly from the base 39 to provide a space 43 in which shank 11 swings, which space is of substantially uniform widening width outwardly. FIG. 2 illustrates that the width of space 43 at its base or inner end is substantially the same as the width of the shank so that the shank is braced against lateral movement by the brace legs as well as by the flukes at and just prior to the limit of its swinging stroke. Thus, it will be evident that this constitutes an advantage over prior constructions. The braces 37 also function as a brace for maintaining the flukes in proper position in the anchor organization as well as a further function which will be described hereinafter.

When the shank 11 swings from its inoperative position parallel to and between the flukes (FIG. 4), its stroke on either side of the flukes is limited by its engagement with a base 39 of one of the bases. I have so related the bases 39 to the flukes and to the inoperative position of the shank that the maximum stroke of the shank on either side of the flukes is limited and may be on the order of 30°. This stroke is significant for it causes the flukes to engage on the bottom at the proper angle in order for the holding characteristics of the anchor to be most effective. This correct engagement of the bottom increases the suction in the soft bottom; increases the holding power and prevents the anchor from sliding sideways and losing suction.

The V-shaped braces 37, and particularly surfaces 42, also serve to make the anchor engage the bottom better, particularly on a soft bottom, as is clearly disclosed in FIG. 7 of the drawings.

The particular configuration and construction of the head 1 not only functions as enumerated above, but it also acts as a stabilizer when the anchor is being boated and prevents the anchor from rolling when the anchor is engaging the bottom, and when it engages the bottom, the shank will tilt it forward on one or the other of the leading edges 7 to cause the flukes to dig into the bottom.

In FIGS. 8 through 14 of the accompanying drawings I have illustrated a modified form of my anchor which involves certain structural and operation differences over the anchor which I have described in detail above. While the anchor which has been explained above is highly satisfactory I have found that certain improved results are obtained by an anchor which is constructed in accordance with the disclosure of FIGS. 8 through 14.

In this form of my invention the anchor is provided with a head, frame or box-like structure which I have designated in its entirety by the numeral 45. This anchor head is of generally rectangular configuration and comprises a pair of spaced apart longitudinal side members 47 which are connected together at their ends by transverse end members 49. The head 45 is preferably formed of any suitable metal of strap or band-like type, and may be formed as an integral unit, or the side and end members may be welded or otherwise fixed together at their abutting ends.

One of the significant features of this form of my invention resides in the structural concept involving the angling or inclined arrangement of the longitudinal side members relative to the perpendicular, as particularly shown at 51

5

in FIG. 13 of the drawings. The longitudinal side members of the head 45, due to this inclined or angled construction, extend upwardly and inwardly toward each other at an angle preferably less than 45°. It is to be understood that the transverse end members are not so angled, so that when the anchor is in an upright position as shown in FIG. 13, the end members extend in a plane perpendicular to a flat anchor supporting surface 53. The edges 55 of the longitudinal side members 47 constitute the leading edges of the head 45, and as will be appreciated are closer together than the trailing edges 57 of the longitudinal side members of the head.

It will be understood that the ends of the transverse end members 49 are angled or cut off as shown at 59 to coincide with the inclined ends of the longitudinal side members. In this way there are no edges or other obstructions extended without the confines as defined by the side and end members of the head of the anchor.

As in the hereinbefore described form of my invention, I provide a mounting and supporting rod 61 which is fixed to and extends between each transverse end member 49 intermediate the longitudinal side members 47. This mounting and supporting rod is fixed to the transverse end members intermediate the ends thereof, as by welding, or in any other suitable manner, and is non-rotatable with respect thereto.

I provide the usual anchor shank 63 which is of elongated construction and is provided at its forward end with a hole 65 by means of which the usual chain 67 is secured thereto. Adjacent its rear end the shank is formed with a hole 69 through which the mounting and supporting rod 61 freely extends, so that the shank is pivotally mounted on and supported by said rod. The pivotal mounting of the shank on the rod is best shown at 69' in FIG. 8 of the drawings.

The anchor is provided with twin flukes which are designated in their entirety by the reference numeral 71. Each fluke of the pair of flukes is preferably formed of metal preferably of lightweight and comprises a straight outer edge 73 and an inclined inner edge 75, the inner and outer edges merging into an outer point 77. The inner edge 75 of each fluke adjacent the root or base of the fluke extends straight and parallel to edge 75 as at 79, forming a base or root portion 81 on each fluke. The base or root portion of each fluke is fixedly secured to the mounting and supporting rod 61 as shown at 83. The twin flukes are mounted on the mounting and supporting rod so that they extend therefrom in the same direction and in substantially the same plane and their inner edges 79 are spaced apart a distance at least slightly greater than the width of the shank 63 so that it may swing freely between the flukes.

One fluke is provided with a flange 85 which projects in one direction from the outer straight edge 73 of the fluke, while the other fluke is provided with a flange 87 which projects in the opposite direction from the outer straight edge 73 of that fluke.

Consideration of the drawings clearly indicates that the shank 63 is operatively positioned substantially midway between the ends of the mounting and supporting rod 61, and is kept from axial sliding along the rod by the inner edges 79 of the flukes.

In this form of my invention I utilize the V-shaped braces 37 which are the same in construction and operation as the braces described in connection with FIGS. 1 through 7, and I have used the same reference numerals as hereinbefore used to designate these braces and the component parts thereof. The braces are formed the same and operate and function the same as those hereinbefore described, and I shall not now again describe the structure and operation of these braces.

In this form of my anchor as in the form shown in FIGS. 1 through 7, the same parts and connections are all housed within the head 45 of the anchor and therefore this form of anchor involves all of the attributes of the

6

anchor illustrated in FIGS. 1 through 7 of the drawings.

Experience in the use of the anchor shown in FIGS. 8 through 14 shows that with the outer edges of the flukes formed straight the anchor is more rapid in its action of digging into the bottom, and it will be noted that in this form of the invention the points 77 of the flukes are remote from the shank rather than being adjacent thereto. It has been established by my experiments that the angled construction of the longitudinal side members 47 adds over fifty percent to the holding power of the anchor. As I show in FIG. 14, these longitudinal side members cause the head to dig downwardly when it is embedded rather than to slide along the top of the sea bottom. For example, the increase in pull was observed from 500 lbs. to 775 lbs. due to the angling of the longitudinal side members of the head of the anchor.

It has also been found that substantial economies in tooling and inventory result from the construction and arrangement of the flanges on the flukes as illustrated in the modified form of the invention which I have described.

In FIGS. 15 through 19 of the drawings I have illustrated a further form of anchor which embodies the advantageous features and characteristics of the anchors described above, with certain additional features and characteristics which will become apparent as this description proceeds.

The anchor of this form of the invention is provided with a head which is formed from two similar strap-like members 89 and 91 which are connected together to form a unitary head, in a manner to be explained, to provide the longitudinal side members 93 and 95 and the end members 97 and 99, the members 89 and 91 being connected and secured together so that the longitudinal members are angled inwardly and upwardly with respect to the perpendicular, as shown in the type of anchor disclosed in FIGS. 8 through 14 of the drawings.

In FIG. 19 I have illustrated a blank from which each of the members 89 and 91 are formed. These members may be formed of any suitable metal and the blanks from which they are formed being of generally rectangular shape and includes a longitudinal top edge 101, a longitudinal bottom edge 103, and transverse or end top edges 105 and transverse or end bottom edges 107. In the fabrication of the members 89 and 91, triangular end pieces 109 are cut off the blank to provide, as will be explained, the bottom transverse or end edges 107.

In the formation of each strap-like member the blank, which is cut at the ends as just described, is bent along each dotted line 111 to form the transverse ends extending from each end of the longitudinal member 93 (FIG. 19). To form the unitary head two of the members are brought together with the edges 107 and 103 in lowermost position, and with the transverse or end bottom edges 107 extending in a horizontal plane. This will result in the upper edges being inclined as shown especially in FIG. 16 of the drawings, and will also produce the angled condition of the longitudinal members 93 and 95 as shown in the drawings. The end members 97 and 99 will overlap and the entire head will be integrated and held together to form a unitary structure by welding or other means. Thus, the end members will be suitably secured together. As shown in FIG. 17 one end of each member is bent slightly inwardly so that the aforesaid overlapping and welding may be accomplished. It will be understood that the angle at which the edge 107 extends relative to edge 103 will determine the angle of inclination of longitudinal members 93 and 95 to the perpendicular.

It will now be appreciated that I have provided an anchor head of box-like construction which is formed of only two components, and which has no projecting parts which would be likely to become entangled with lines or the like, or would otherwise be objectionable.

Within the rigid framework providing the head 91 of the anchor I provide what I shall term the "shank supporting means" of the anchor organization, and I have designated this component generally by the numeral 113. This shank supporting means is positioned within the head intermediate the ends thereof. The shank supporting means 113 comprises a pair of straps of similar construction, each of which is formed with a linear body or portion 115, which is of a length substantially equal to the width of the head 91 of the anchor. Each portion or length of each strap is provided with an arm 117 extending from each end thereof at substantially right angles thereto, one arm extending in one direction and the other arm extending in the other direction. The straps are placed within the head in spaced relation to each other so that the said arms extend along and abut the inside surfaces of the longitudinal members 93 and 95 of the head, and the arms are welded or otherwise secured to these longitudinal members. Each portion 115 of each strap is provided with a central opening therein through which mountedly extends a shank supporting spindle 119 upon which is mounted the usual shank 121 of the anchor.

The anchor of this form of my invention is provided with twin flukes which are designated generally by the reference numeral 123. Each fluke of the pair of flukes is preferably formed of metal, desirably of lightweight, and comprises a straight outer edge 125, and an inner inclined edge 127, the inner and outer edges merging into an outer point 129. Each fluke is provided with a flange along the outer straight edge thereof, one flange 131 extending in one direction and the other flange 133 extending from the fluke in the opposite direction.

Adjacent the root or base of each fluke, the inner inclined edge 127 extends in a straight line as at 135 and this straight edge at the base is provided with a flange 137 which extends in the same direction as the flange on the straight outer edge of the fluke. Each flange 137 is formed with an aperture 139 therein, the purpose of which will be hereinafter described.

The flukes are combined in the anchor by positioning the bases thereof within the head, one fluke being disposed on one side of the shank supporting means 113 and the other fluke being on the other side thereof, and the width of the base portion of each fluke being substantially the same as the distance between a section 115 and the end of the head. Thus, with each fluke so positioned, the flange on the straight outer edge of each fluke will abut in part against the adjacent end of the head while the flange 137 of each fluke will abut against the adjacent portion 115 of the shank supporting means.

With the flukes positioned as described the flanges 131 and 133 are welded, or otherwise secured to the respective end of the head, and the short inner flanges 137 are welded, or otherwise secured to the portions 115 of the shank supporting means. The aperture 139 which is formed in each flange 137 is so positioned that a shoulder is formed in the fluke against which the ends of the spindle 119 engage to thereby keep the spindle against axial displacement. It will be recognized that a construction of this type eliminates the necessity of welding the spindle in position. It will also be understood that the fluke may be cut out in a manner different from the aperture shown and such arrangement will fall within the spirit and scope of my invention. All that is necessary is to so cut the flukes that a shoulder is provided in each for engagement by the spindle.

It will now be appreciated that the ingenious construction and arrangement of this form of my invention eliminates certain elements which were used in the other forms of anchors. This form ascribes a dual function to the flukes, for they not only perform their usual function but they also act as reinforcing means for the head and also for the shank supporting means and as a positioning means for the shank spindle. Other advantageous fea-

tures of this form of my invention will be apparent from the above description thereof.

I claim:

1. An anchor including, in combination, a head comprised of a pair of members, each member having a longitudinal side and an end element extending from each end thereof at an angle thereto, and the longitudinal side members being angled inwardly and upwardly relative to the perpendicular, the end elements of one member being secured to the end elements of the other member forming a unitary head structure, shank supporting means fixed to and extending between the longitudinal sides of said members, and a shank mounted on said shank supporting means, a pair of flukes, one being fixed to one side of said shank supporting means and extending therefrom to and fixed to the end elements on one end of the head and the other fluke being fixed to the other side of the shank supporting means and extending therefrom to and fixed to the end elements on the other end of the head.

2. An anchor including, in combination, a head comprised of a pair of members, each member having a longitudinal side and an end element extending from each end thereof at an angle thereto, the end elements of one member being secured to the opposing end elements of the other member forming a unitary head structure, shank supporting means within said head and fixed to said members, a shank mounted on said shank supporting means, a pair of flukes, one being fixed to said members and said shank supporting means on one side of the latter and the other being fixed to said members and said shank supporting means on the other side of the latter.

3. An anchor including, in combination, a head comprised of a pair of members, each member having a longitudinal side and an end element extending from each end thereof at an angle thereto, the end elements of one member being secured to the opposing end elements of the other member forming a unitary head structure, a pair of shank supporting elements fixed to and extending between said longitudinal sides in spaced relation, a shank supporting spindle mounted in and extending between said shank supporting elements and a shank mounted thereon, a pair of flukes, one being fixed to the end elements at one end of the head and to one of said shank supporting elements and the other being fixed to the end elements at the other end of the head and to the other of said shank supporting elements.

4. An anchor including, in combination, a head comprised of a pair of members, each member having a longitudinal side and an end element extending from each end thereof at an angle thereto, and each end element being of less length than the distance between the pair of members and the end elements of one member being secured to the opposing end elements of the other member forming a unitary head structure, shank supporting means within said head and fixed to said members, a shank mounted on said shank supporting means, a pair of flukes, one being fixed to said members and said shank supporting means on one side of the latter and the other being fixed to said members and said shank supporting means on the other side of the latter.

5. An anchor including, in combination, a head comprised of a pair of members, each member having a longitudinal side and an end element extending from each end thereof at an angle thereto, the end elements of one member being secured to the opposing end elements of the other member forming a unitary head structure, shank supporting means within said head and fixed to said members, a spindle floatingly supported on said shank supporting means, a shank mounted on said spindle, a pair of flukes, one being fixed to said members and said shank supporting means on one side of the latter and the other being fixed to said members and said shank supporting means on the other side of the latter, and said flukes being in engagement with said spindle to prevent axial displacement thereof.

6. An anchor including, in combination, a head comprised of a pair of members, each member having a longitudinal side and an end element extending from each end thereof at an angle thereto, the end elements of one member being secured to the opposing end elements of the other member forming a unitary head structure, a pair of shank supporting elements fixed to and extending between said longitudinal sides in spaced relation, a shank supporting spindle mounted in and extending between said shank supporting elements and a shank mounted thereon, a pair of flukes, one being fixed to the end elements at one end of the head and to one of said shank supporting elements and the other being fixed to the end elements at the other end of the head and to the other of said shank supporting elements, and each of said flukes

being provided with a cut-out providing a shoulder, and one end of said spindle is in engagement with the shoulder on one fluke and the other end of the spindle is in engagement with the shoulder on the other fluke.

References Cited in the file of this patent

UNITED STATES PATENTS

169,069	Whitecar	Oct. 19, 1875
2,641,215	Danforth	June 9, 1953
2,643,631	Danforth	June 30, 1953
2,894,474	Donaldson	July 14, 1959
2,956,529	Samalion	Oct. 18, 1960

FOREIGN PATENTS

143,111	Sweden	Nov. 24, 1953
---------	--------	---------------