

FD4 Infringement and Validity

Tuesday 13 October 2020

10:00 to 15:45 UK British Summer Time (GMT + 1 hour)

Total time allowed: 5 hours 45 minutes

Starting from the time when you download the question paper, you have 5 hours 45 minutes in which to:

- Print this question paper (if wished)
- Answer the questions
- Take four screen rest breaks of 5 minutes each
- Save your Answer document to your hard drive as a pdf
- Scan any hand-annotated claims and save them to your hard drive as a pdf
- Upload your Answer document(s) to the PEBX system.

INSTRUCTIONS TO CANDIDATES

1. The whole assessment task is to be attempted.
2. The total number of marks available for this paper is 100.
3. You must use the Answer document for your answers.
4. Do not attempt to change the font style, font size, font colour, line spacing or any other pre-set formatting.
5. Start each part of your answer on a new page. Press the control key and the enter key simultaneously to begin a new page.
6. Do not state your name anywhere in the answers.
7. The scripts will be printed for marking purposes.
8. **Candidates who have been granted approval to handwrite their answers:**
Instructions on what to do at the end of the examination are on the Candidate Cover Sheet.
9. This question paper consists of **16 sheets**, including this sheet, and comprises:
 - Assessment task (1 sheet)
 - Client letter (1 sheet)
 - Document A EP 3054321B (5 sheets)
 - Document B GB 2523456A (3 sheets)
 - Document C GB 2123456A (4 sheets)
 - A spare set of Claims (Document A) to use in your answer if you wish (1 sheet).

AT THE END OF THE EXAMINATION

10. Save your Answer document to your hard drive and follow the instructions for uploading your document onto the PEBX system.

Assessment task

Your client sends you the letter and documents listed on the Instructions to Candidates.

Your task is to prepare advice to your client on whether the attached granted patent may be enforced and defended.

You should prepare notes on which you would base your advice in which you:

- a) provide an opinion on infringement and validity, in the UK only;**
- b) identify other patent-related legal issues pertinent to the facts presented;**
- c) outline possible actions that may be taken to strengthen your client's legal position;**
- d) summarise the opinions formed in a) to c) above.**

Note the following:

- a) You should accept the facts given to you and base your answer on those facts.
- b) You should not make use of any other special knowledge that you may have of the subject matter concerned.

Allocation of marks

Construction: 20 marks
Infringement: 20 marks
Novelty: 20 marks
Inventive Step: 25 marks
Amendment and Sufficiency: 5 marks
Advice: 10 marks
Total: 100 marks

Client Letter

Dear Patent Attorney

We are Pat Anchors of Newcastle upon Tyne. Our business is making and selling anchors for boats. In the past we have concentrated mainly on the leisure and smaller boat market, but in recent years we have made inroads into the commercial shipping market.

One of our most successful products is the Pat One anchor. This is a self-burying 'plough' type anchor and is the subject of EP 3054321B (Document A). We obtained patent protection via the EPO and the patent is in force in the UK and a number of other countries, including Norway and France. The version shown in Fig. 1 of Document A has been our leading product for several years. In fact, demand has been so great that we have granted licences to other companies in Norway and France to supply their local markets. These licences have been very successful for all parties and the revenue we obtain from licences is now a significant part of our overall revenue.

When we were approached to make anchors for larger vessels, we found that the version shown in Fig. 4 of Document A was better. The extra weight of the anchors improved their setting characteristics, so the lack of the pivot was less significant. This also made the anchors simpler to make and ended up with a stronger, more robust product.

Last year, we attended an offshore oil industry conference and saw a display by the company Bettermore, who make anchors for oil rigs and drilling vessels in Aberdeen. One particular product caught our eye, the Bettermore NG. We asked Bettermore about this and they told us that they had been manufacturing for a few years and that the product was patented. We found the patent application GB 2523456A (Document B) and the product we were looking at is the one shown in the drawing. While it looks a bit different to Pat One, we think that it works on the same principle and want to know if our patent covers this. If it does, we would like to approach Bettermore to see if they will take a licence. The offshore market can be very lucrative.

The closest prior art we have found is GB 2123456A (Document C), which is described in the introduction to our patent. This is completely different to our product so we do not think it should be a problem, but we include it here for completeness. Interestingly, it also includes a description of generic anchor types that have been known for many years.

Please advise us regarding our position with respect to Bettermore and the Bettermore NG product. We are interested to know if there is anything we should do before approaching Bettermore about taking a licence.

Yours sincerely

Patrick A. Weigh

Pat Anchors Ltd

EP 3054321B – Improved Anchor

Date of filing: 01.01.2008

Date of publication and mention of grant of the patent: 30.09.2010

5 This invention comprises improvements in or relating to anchors for mooring yachts, ships, and other floating vessels. The main object of the invention is to provide an anchor of the type known as a 'stockless anchor' and having a self-burying and self-righting capability in use.

10 GB 2123456A discloses an anchor of the twin fluke type having a shank with a forward end and an after or rear end with a point of cable attachment at the forward end, a pivot mounting the flukes on the shank at the after end with the flukes extending towards the forward end and with the shank between the flukes.

15 In traditional stockless anchors having a pair of flukes (see, for example, Figure 2 of GB 2123456A and its associated description), a problem can occur when only one fluke engages on the sea bed and the forces on the anchor become unbalanced causing the anchor to twist and lift the engaged fluke out of the sea bed.

If the resistance of the flukes to being buried is too high, the anchor can skid over the seabed. On the other hand, if the flukes are too narrow, they can be dragged through the seabed material if it is very soft.

This invention aims to address these problems.

20 According to the invention, there is provided an anchor as defined in the accompanying claims.

Examples embodying the features of the invention are described below with reference to the accompanying drawings, in which:

25 Figure 1 is a side view of an anchor according to the invention,
Figure 2 is a plan view of the fluke arrangement of Figure 1,
Figure 3 is a view of a plate used to make one of the fluke blades, and
Figure 4 is a side view of an anchor according to an alternative embodiment of the invention.

30 The anchor shown in Figure 1 is a stockless anchor having an elongate shank 10 having a conventional attachment for a cable at the head end 12 and a fluke arrangement 14 at the crown end 16.

35 The fluke arrangement 14 is built up from two sheet-metal plates 19 of the form shown in Figure 3. The two plates 19 are first bent to a curved configuration and then welded together along corresponding edges 20 to form blades 21 in a structure (similar to a back-to-back pair of plough-share blades) that progressively widens towards the rear of the fluke arrangement 14 so that the area is greater in the rearmost half of the fluke arrangement 14. As shown in Figure 1, the blades 21 are wing-shaped, meeting at a point or bill 22 at the forward end of the centre line 24 of the fluke arrangement 14 and extending in a concave curve. With the fluke arrangement 14 in an upright position, i.e. resting on the lower edges of the blades 21,

the centre line 24 forms a ridge that extends upwardly from the bill 22, and the fluke arrangement rests on the blades 21.

While the fluke arrangement 14 described above is made from two separate plates 19 (as shown in Figure 3) that are bent and welded together to form a contiguous structure, alternative forms of construction in which the blades 21 extend from the center line 24 are also possible, depending on the particular configuration of fluke arrangement required. For example, the fluke arrangement 14 can be cast in a single piece or can be formed from a single plate that is curved and/or folded to achieve the desired shape.

The shank 10 is formed in two parts, namely a fixed crown part 17 and a hinged part 18. The crown part 17 is fixed to the rear of the fluke arrangement 14 at the centre line 24.

The fluke arrangement 14 is symmetrical about the centre line 24 which lies in a central plane (x, x', x'', x''') containing the centre line 24 and at least the fixed shank crown part 17. The outer end of the fixed shank part 17 extends upwardly and rearwardly from the centre line 24. At its upper extremity 26 it is bent forward and carries a pivot pin 28, the axis of which lies in the plane of symmetry.

By providing the bill 22 on the centre line 24, the curved shape of the blades 21 means that when drag is applied by the cable or mooring chain to the shank 10, the bill 22 is driven into the seabed. The curved shape of the blades 21 then provides a self-righting action.

When the anchor is dropped on to the seabed it may lie on one side or the other. When lying on its side, the hinged portion 18 of the shank 10 extends flat along the ground. When the anchor in this position is dragged forward by the cable attached to the head end 12 of the shank 10, the bill 22, which is in (or at least very close to) the plane of symmetry, naturally digs into the ground. The position of the bill 22 being in the plane of symmetry means that the likelihood of a twisting force arising is reduced. This in turn reduces the likelihood that the anchor will be pulled out of the seabed accidentally. As the blades 21 start digging in, the downward pressure due to the shape of the blades 21 turns the bill 22 still further downwards. As the fluke arrangement 14 buries itself, the curved shape of the blades means that the earth pressure on the blades 21 tends to bring the fluke arrangement 14 to an upright position with its plane of symmetry in the line of action of the mooring chain and the hinged shank portion 18. The anchor will remain substantially in that orientation while the drag is continued but will progressively dig into the seabed. As this occurs, the resistance will increase due to the increasing width across the blades 21 presenting greater blade area until the resistance balances the drag on the mooring chain.

Figure 4 shows an alternative embodiment of the invention in which there is no hinge in the shank 10' but otherwise is essentially the same as the embodiment of Figure 1. This embodiment still exhibits the ability to dig in and self-right as the embodiment described above with the hinge although it can take longer before the fluke arrangement 14' is fully dug in. The larger and heavier the anchor is, the less sensitive it is to the lack of a hinge as its weight will tend to enhance the burying action. This design is structurally simpler and stronger.

Claims

1. A stockless anchor, comprising:
 - a shank (10) having a head end (12) and a crown end (16); and
 - a fluke arrangement (14) connected to the shank (10) at the crown end (16);
- 5 characterised in that the fluke arrangement (14) includes:
 - a bill (22) for penetrating the seabed; and
 - a pair of blades (21) disposed symmetrically on either side of a centre line (24) lying in a plane (x, x', x'', x''') that includes the shank (10);
 - 10 wherein the distance between the outermost edges of the blades (21) increases from the front to the rear so as to be widest at or close to the rear of the fluke arrangement (14).
2. An anchor as claimed in claim 1, wherein the shank (10) includes an articulated part (18) which is pivotable with respect to the fluke arrangement (14).
3. An anchor as claimed in claim 1 or 2, wherein the bill (22) lies on or close to the centre
15 line (24).
4. An anchor as claimed in claim 3, wherein the fluke arrangement (14') is fixed with respect to the shank (10').
5. An anchor as claimed in any preceding claim, wherein the blades (21) extend from the centre line (24) and define a central ridge extending to the bill (22).

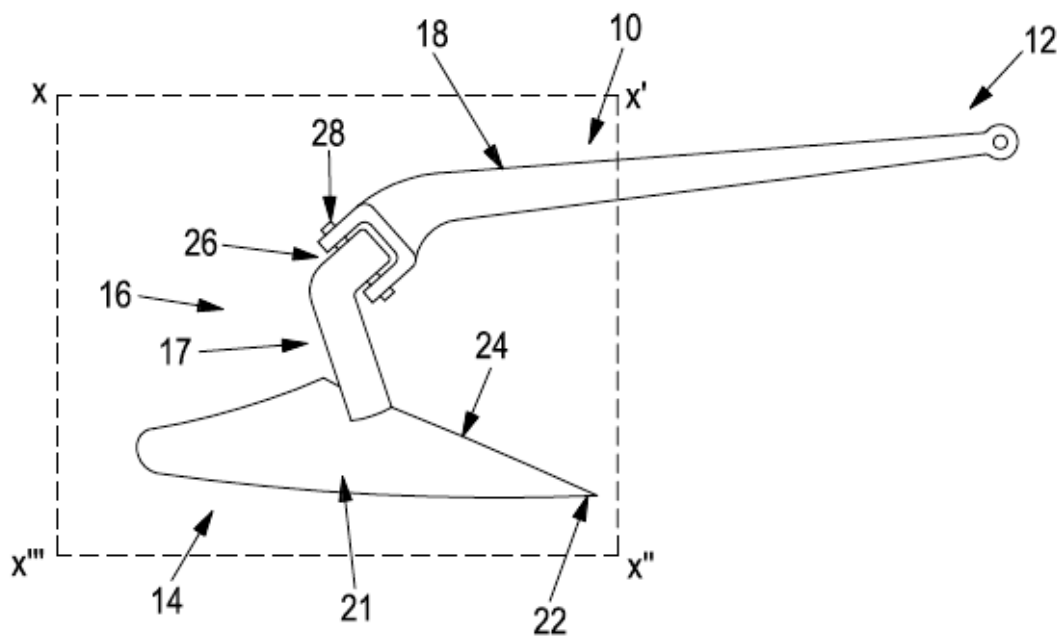


Fig. 1

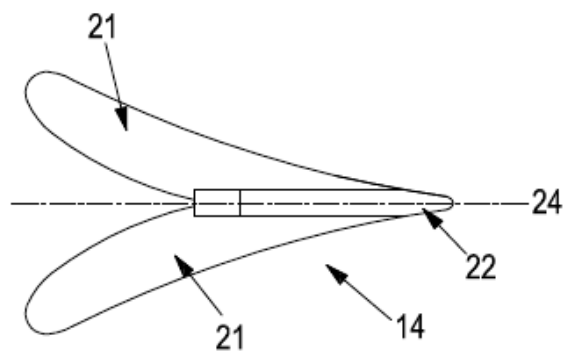


Fig. 2

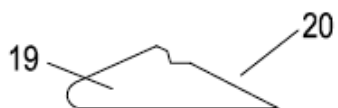


Fig. 3

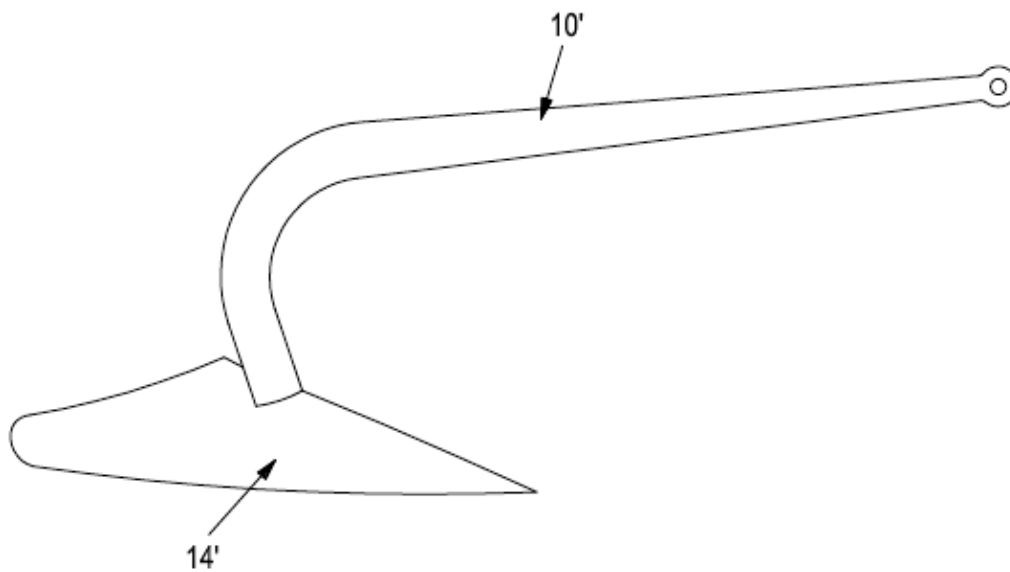


Fig. 4

GB 2523456A - ANCHOR WITH HIGH HOLDING PULL

Applicant: Bettermore Ltd

Filed: 01.01.2017

Published: 25.07.2018

5 The present invention relates to an anchor for mooring an object to a mooring bed; for example, for mooring a vessel or other floating body such as a drilling rig to the seabed.

10 It is known that the greater the depth of penetration of an anchor below the surface of a mooring bed, the greater the pull on the cable it will resist. To utilise this fact, an anchor will advantageously have the following characteristics:

- (1) orientating to a ground-engaging burial orientation when set on the seabed surface and dragged by its cable;
- (2) penetrating through the surface of the seabed while remaining stable in orientation; and
- 15 (3) remaining stable while fully buried.

An object of the present invention is to provide anchors which are stable when dragged and which are capable of developing high holding pulls.

20 According to one aspect of the present invention, an anchor includes at least one elongate transverse member attached to the shank and/or fluke and having two curved surfaces disposed one on each side of the plane of symmetry of the anchor; said elongate surfaces together being symmetrical about the plane of symmetry.

Embodiments of the present invention will now be described by way of example with reference to the accompanying drawings wherein:

25 Fig. 1 shows a perspective view of an embodiment of the present invention; and Fig. 2 shows a plan view of the embodiment of Fig. 1.

30 Referring to Fig. 1, in one embodiment of the present invention, an anchor 51 for mooring a vessel to a mooring bed by a cable includes a shank 52 formed by an elongate bar bent to form two limbs 52a, 52b located in a plane of symmetry of the anchor vertically disposed when the anchor is in a final working burial attitude and a single burial fluke 53 mounted on the shank 52 and defining a concave upward-facing burial surface.

35 In normal operation, the anchor is connected to a vessel by a cable of suitable length. The anchor is dropped onto the sea bed, where it can rest (a) with the point of the fluke 53 and the foremost extremity 52a of the shank in contact with the mooring bed surface in a ground engaging attitude or (b) lying with one portion of the fluke 53 and the foremost extremity of the shank 52a in contact with the mooring bed surface or (c) lying with one portion of the fluke 53 and an aft portion 52b of the
40 shank in contact with the mooring bed surface.

The embodiment of the present invention shown in Figs. 1 and 2 has portions in the form of two curved and tapering plates 56, 57 extending transversely from an edge of the fluke. The inside surfaces 59, 60 of the curved plates 56, 57 constitute stabilising surfaces of the anchor and lie in an upwardly concave surface of cylindrical form whose axis is located in the plane of symmetry of the anchor. The surface of the fluke 53 is also arranged to lie in a portion of the same circular surface as the inner surfaces of the curved plates 56, 57. The shape of the fluke means that the resistance to dragging increases as the fluke buries itself into the holding ground. Also, the curved shape of the fluke and plates means that the anchor will self-right as load is applied, causing the fluke 53 to dig into the holding ground.

In operation of the anchor as shown in Figs 1 and 2, in the event of a disturbance occurring when the anchor is buried in its working orientation causing the anchor to roll to one side or another, one curved plate 56, 57 becomes displaced lower than the other plate and the force due to movement of the mooring bed material over its inner surface is smaller than that from the upwards displaced plate. The resultant unbalanced forces act in a direction such as to oppose the rolling of the anchor and return the anchor to its original working burial orientation.

[CLAIMS OMITTED]

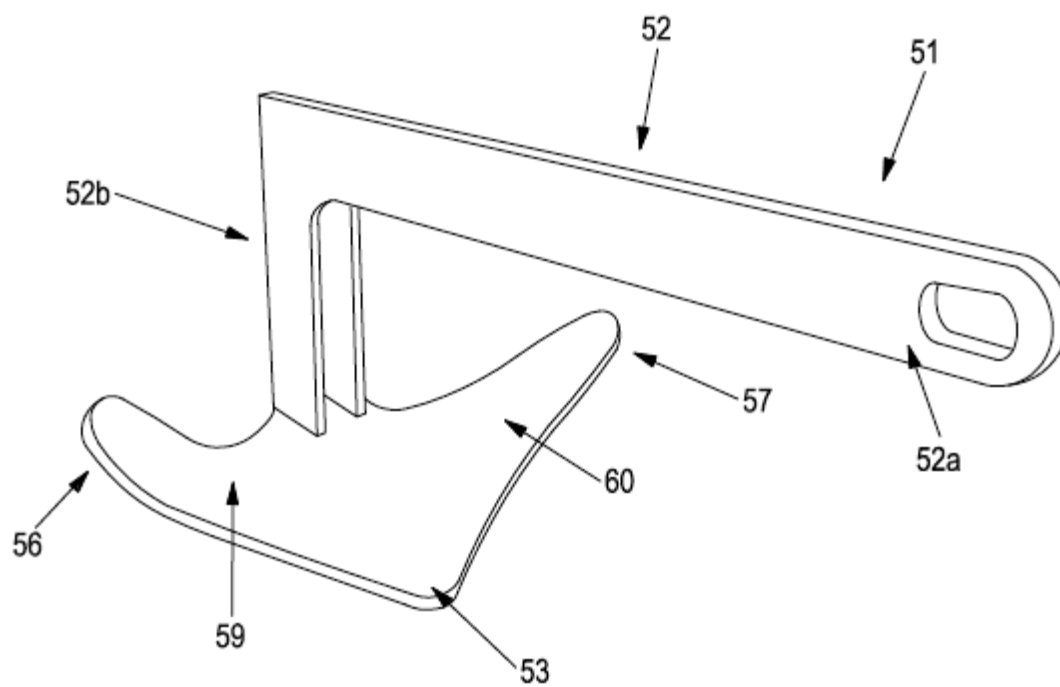


Fig. 1

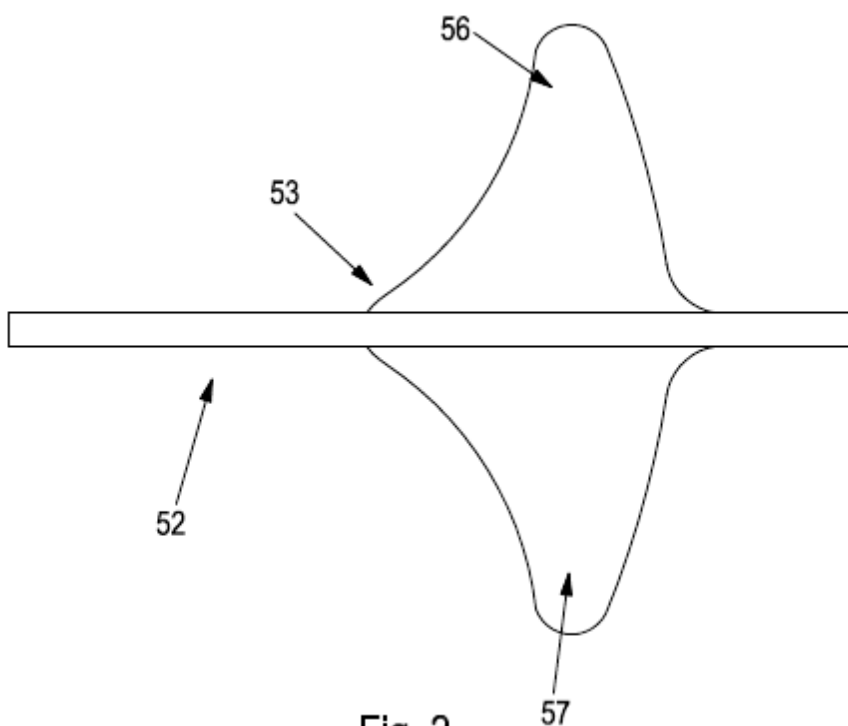


Fig. 2

GB 2123456A – Anchors

Applicant: C-Cure Ltd
Published: 31.05.2000

This invention relates to improved anchors for marine vessels.

5 Anchors can be divided into two groups, the traditional ‘Admiralty’ or ‘fisherman’s’ anchor and the ‘stockless’ anchor. An example of the former is shown in Figure 1. An example of the latter is shown in Figure 2. The former includes a shank 1 having a crown end 2 from which project two oppositely extending curved arms 3, each carrying a fluke or palm 4 ending in a point or bill 5. The other end of the shank, the head end 6, is where the anchor cable (not shown) is connected. A long bar, the stock 7, is connected at the head end 6 and aligned in a direction at right angles to that of the arms 3. The stock helps to urge a fluke 4 into the seabed when the anchor is lying on the seabed.

15 The stockless anchor is commonly used today on most merchant and navy ships. As its name implies, there is no stock at the head end 6’ so it can be drawn up into a hawsepipe (the pipe in the side of a ship through which the anchor cable runs) and held there ready for use. It includes a shank 1’ and twin flukes 4’, usually secured together as a unit 3’, pivoted at the crown end 2’ of the shank 1’ whereby both flukes 4’ engage the ground together.

20 Known stockless anchors can fail during setting when only one of the flukes engages in the seabed so that the anchor twists under load and frees itself from ground engagement.

25 The anchor of this invention is of the twin fluke type in which the shank passes between the flukes and both flukes engage the ground more or less simultaneously and cooperate to provide holding power, to ensure proper fluke engagement, and to prevent twisting.

To prevent twisting, the flukes are positioned with respect to each other and with respect to the shank to minimise any tendency of the anchor to twist under pull.

30 According to the present invention there is provided an anchor of the twin fluke type having a shank with a forward end and an after end with a point of cable attachment at the forward end, a pivot mounting the flukes on the shank at the after end with the flukes extending towards the forward end and with the shank between the flukes. The anchor can be provided with a stock at the after end.

35 Figure 1 shows a known fisherman’s anchor.
Figure 2 shows a known stockless anchor.
Figure 3 is a view of the improved anchor, with the flukes in an operative position.
Figure 4 is a plan view showing the flukes in a folded position.

40 The anchor shown in Figure 3 consists of a shank 100, generally in the form of a flat bar, a twin fluke unit comprising the crown 102, flukes 101, and a stock 103 which passes through a hole in the crown 102 and the end of the shank 100 to act as a pivot

for the fluke unit. The head end 112 of the shank may be arranged for the attachment of a chain or cable.

5 The flukes 101 are integral with the crown 102 and with each other and may suitably be formed as a single steel casting. The flukes 101 themselves are relatively thin plates that taper to a point 105. This combination of thin plate flukes and the tapered form has a good ground penetrating characteristic. The flukes can be dished slightly as this has been found to provide enhanced holding power in soft ground.

10 The form of fluke shown in Figures 3 and 4 can have its inner edge 107 substantially parallel to the shank axis, or slightly divergent therefrom in a direction away from the crown (as shown in Figure 4), and its outer edge 108 diverging from the axis of the shank at least at its forward part.

15 The tendency toward twisting increases as the spacing between the flukes increases. It is preferable to keep this spacing to a minimum by placing the inner edge of the fluke as close to the shank as possible. It is also desirable to keep the spacing between the points 105 of the flukes as small as possible so that contact with the seabed is close to the centre line of the shank. The space between the flukes needs to be large enough that the shank can sit between them. This enables the anchor to be stored flat when not in use, as shown in Figure 4.

20 To provide means for positioning the flukes 101 to engage and enter the ground, and for stabilising the anchor when engaged and preventing twisting, extensions 110 are provided laterally on each side of the shank 100. This lateral extension 110 can be a separable element. The terms 'stock' or 'stabilising bar' can be applied to such extensions 110. It is preferable to project the stabilising bar from the crown end 102 of the anchor, as illustrated, though the more common practice of projecting it from 25 the head end 112 of the shank 100 may be followed if desired. In this latter location the advantage of being able to stow the anchor by drawing it into a hawsepipe is lost.

An anchor as described above can be stowed flat on deck without the necessity for folding the flukes or stock, and so can be ready for immediate use at all times.

30 [CLAIMS OMITTED]

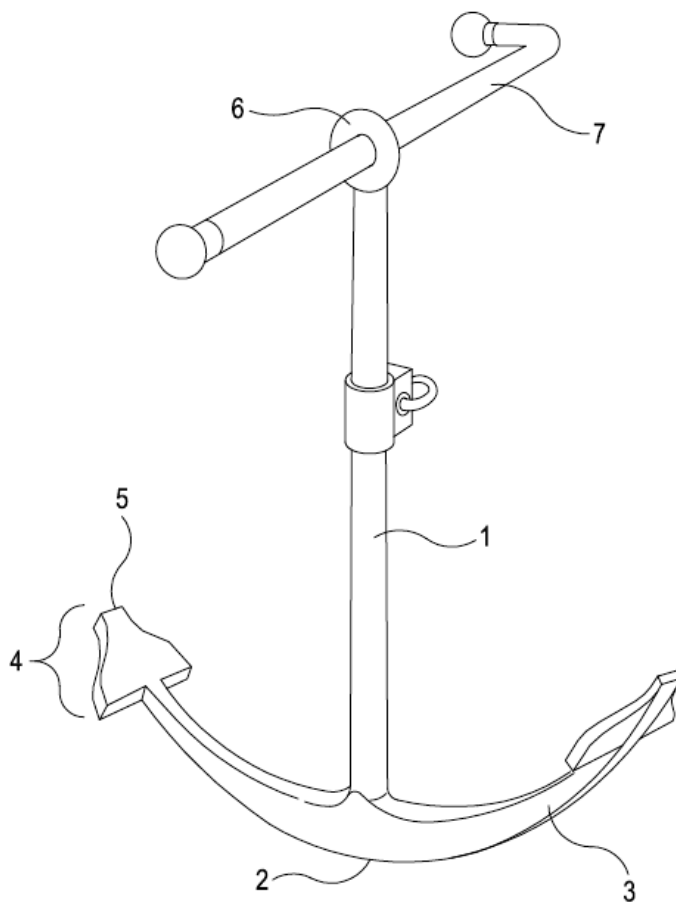


Fig. 1

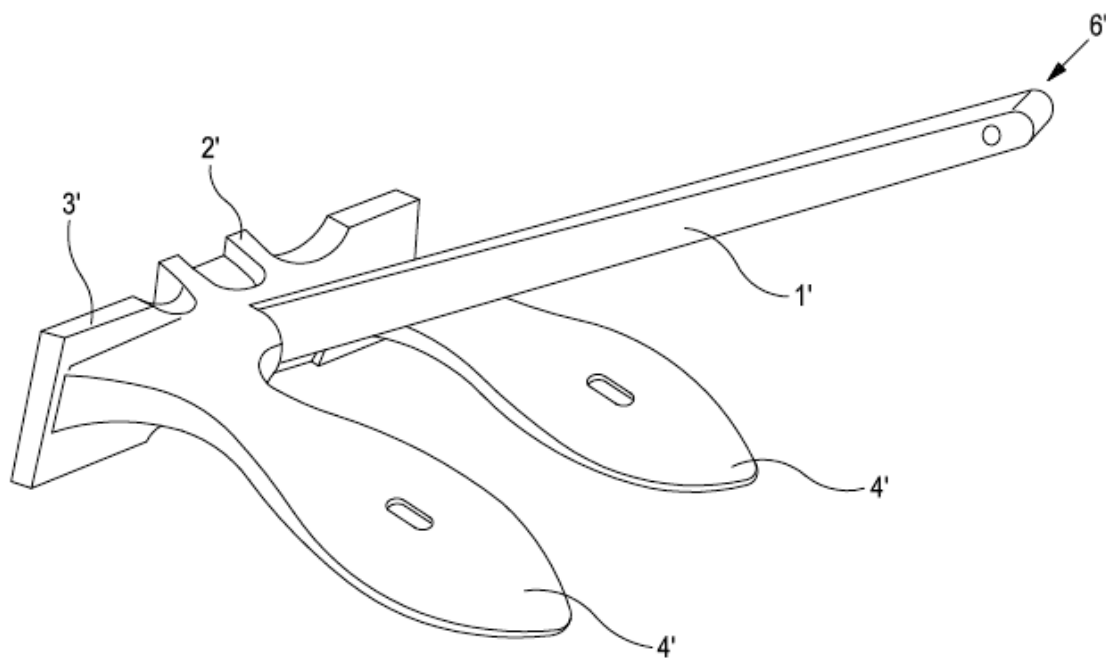


Fig. 2

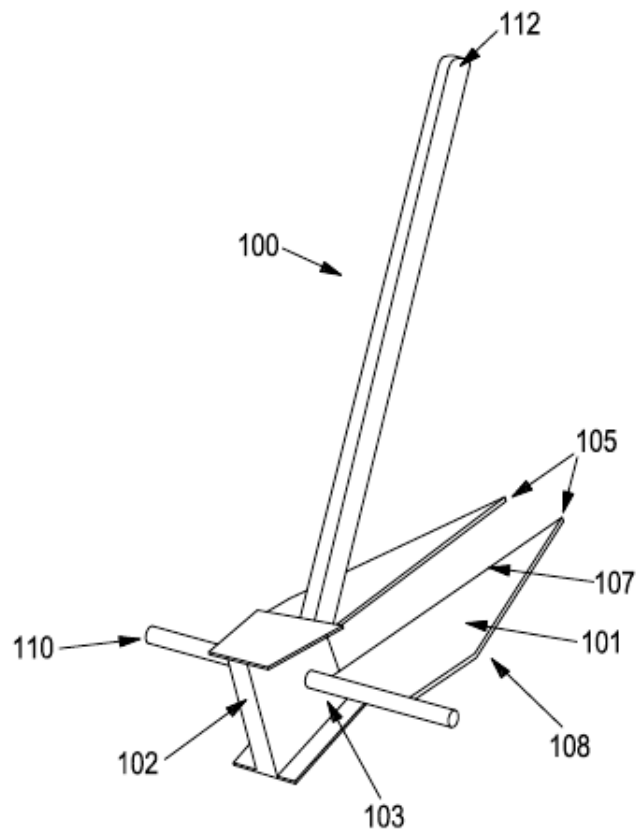


Fig. 3

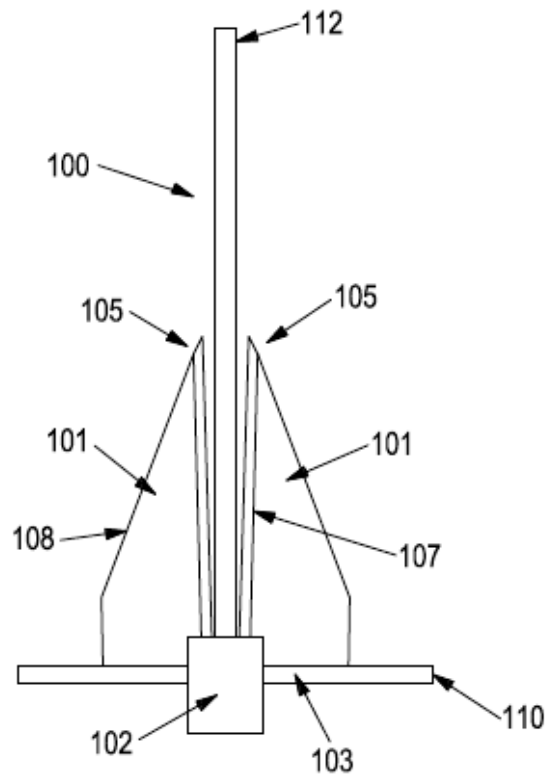


Fig. 4

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CLAIMS

1. A stockless anchor, comprising:

a shank (10) having a head end (12) and a crown end (16); and

a fluke arrangement (14) connected to the shank (10) at the crown end (16);

5 characterised in that the fluke arrangement (14) includes:

a bill (22) for penetrating the seabed; and

a pair of blades (21) disposed symmetrically on either side of a centre line (24) lying in a plane (x, x', x'', x''') that includes the shank (10);

wherein the distance between the outermost edges of the blades (21)

10 increases from the front to the rear so as to be widest at or close to the rear of the fluke arrangement (14).

2. An anchor as claimed in claim 1, wherein the shank (10) includes an articulated part (18) which is pivotable with respect to the fluke arrangement (14).

15 3. An anchor as claimed in claim 1 or 2, wherein the bill (22) lies on or close to the centre line (24).

4. An anchor as claimed in claim 3, wherein the fluke arrangement (14') is fixed with respect to the shank (10').

5. An anchor as claimed in any preceding claim, wherein the blades (21) extend from the centre line (24) and define a central ridge extending to the bill (22).