(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 428 814 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **89830508.1**

(51) Int. Cl.5: **B63B 21/29**, B63B 21/44

(22) Date of filing: **17.11.89**

(43) Date of publication of application:
29.05.91 Bulletin 91/22

(84) Designated Contracting States:
DE ES FR GB GR IT NL SE

(71) Applicant: **POSIDONIA S.R.L.**
Via Montesuello, 16/1
I-16129 Genova(IT)

(72) Inventor: **Ardito, Ettore**
Via 5 Maggio, 4c
I-16100 Genova(IT)

(74) Representative: **Jorio, Paolo et al**
STUDIO TORTA Società Semplice Via Viotti 9
I-10121 Torino(IT)

(54) Articulated weight-adjustable anchor.

(57) An articulated anchor (1) having a shank (2) connected by an articulated joint (5) to a gripping body (3) consisting of a hub (4) and palms (6) extending from and formed in one piece with the hub (4); each palm (6) presenting a respective arm; the shank (2) and gripping body (3) being molded from synthetic material and defining respective inner chambers (25,26) communicating externally via respective openings (30,34) having respective removable closing members (31,35); and ballast (36,37) of adjustable weight being provided inside each chamber (25,26) and being removable from the same via the aforementioned opening (30,34).

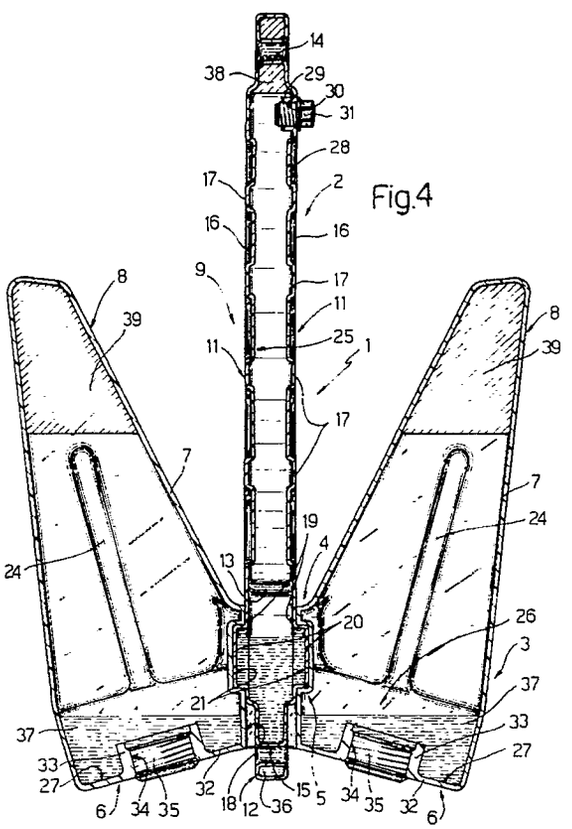


Fig.4

EP 0 428 814 A1

ARTICULATED WEIGHT-ADJUSTABLE ANCHOR

The present invention relates to an articulated weight-adjustable anchor.

In particular, the present invention relates to an articulated anchor especially, though not exclusively, suitable for use as a spare anchor, or on relatively small pleasure craft on which the anchor, once weighed, does not remain suspended through the hawse or resting on deck, but is weighed on board and stowed.

In the past, the anchoring capability of an anchor substantially depended solely on its weight. In other words, anchors of the past acted substantially as mooring posts, with practically no regard to their ability to "hook" into the sea bed, and their weight was a direct function of the size of the craft, in particular, its wetted surface and quick works.

In more recent times, anchors have been devised featuring palms and arms so designed as to enable positive engagement of the sea bed, and in particular of sandy sea beds. On such an anchor, the ground breaking resistance, which for a given type of anchor usually depends on the nature of the sea bed, is added to the "mooring post" effect created by its weight, and is inversely proportional in importance to the weight of the anchor. This therefore provides, at least on relatively small craft, for reducing the weight of the anchor while at the same time maintaining, if not improving, its anchoring capability.

Despite this improvement, however, the question of weight still remains a determining factor in modern anchor design, to the extent that, depending as it does on the size of the craft, each craft can still be said to have "its own" anchor. As such, modern anchor makers are obliged to cater to a relatively wide range of weight requirements, which inevitably results in a considerable increase in manufacturing cost.

From the user standpoint, articulated anchors, which usually consist of two mutually mobile parts, are not only difficult to handle, but may also result in damage to the craft when weighed or stowed.

Furthermore, being made of metal, anchors of this type are highly susceptible to rusting, particularly at the joints and, as often happens in the case of spare anchors, when they are stowed for long periods of time. The aim of the present invention is to provide an anchor enabling a drastic reduction in the weight range required for manufacture.

A further aim of the present invention is to provide an anchor which is substantially rustproof.

Yet a further aim of the present invention is to provide an anchor designed to minimise damage when weighing or stowing the same.

With these aims in view, according to the present invention, there is provided an articulated anchor comprising a gripping body, and a shank connected by an articulated joint to said gripping body; said gripping body being formed in one piece and comprising a hub, palms integral with said hub, and an arm integral with each said palm; characterised by the fact that said shank and said gripping body are molded from synthetic material, and define at least one inner chamber; weight adjusting means being housed inside said inner chamber for adjusting the total weight of the anchor within a given range.

Said shank and said gripping body are preferably hollow, and define a respective first and second chamber, each preferably housing respective weight adjusting means. Said weight adjusting means preferably comprise a variable amount of ballast, preferably consisting of particulated and/or loose material; said or each said inner chamber communicating externally via a ballast opening; and removable closing means being provided for said opening.

A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Fig.1 shows a front view of a preferred embodiment of the anchor according to the present invention;

Fig.2 shows a side view of the Fig.1 anchor;

Fig.3 shows an underside view of the anchor in Fig.s 1 and 2;

Fig.4 shows a section along line IV-IV in Fig.3.

As shown in the attached drawings, particularly Fig.4, number 1 indicates an anchor consisting of two articulated parts, a first part consisting of a shank 2, and a second part consisting of a gripping body indicated as a whole by 3 and consisting of a hub 4 connected to shank 2 by an articulated joint 5, and two palms 6 extending in opposite directions from hub 4 and each having a respective arm 7, an end portion of which constitutes a bill 8 for connection of anchor 1.

As shown more clearly in Fig.2, shank 2 comprises a rod 9 defined at the front and rear by two slightly curved surfaces 10 of substantially constant height, and laterally by two generally triangular surfaces 11 with the base facing gripping body 3. Shank 2 also comprises an appendix 12 substantially in the form of a rectangular parallelepipedon, extending coaxially with rod 9 from the front end of the same facing gripping body 3, and defining two opposed shoulders 13 on said end of rod 9. Close to their free ends, rod 9 and appendix 12 present respective through holes 14 and 15 perpendicular to surfaces 11, which present two peripheral lon-

gitudinal ribs 16 joined by a number of transverse ribs 17.

As shown more clearly in Fig.s 3 and 4, hub 4 presents a through slot 18 defined laterally by surfaces 19 parallel to each other and to surfaces 11, and engaged by appendix 12 which is connected to hub 4 by joint 5. In particular, appendix 12 presents two coaxial cylindrical transverse bosses 20 perpendicular to surfaces 19, and which engage in rotary manner respective cavities 21 formed on respective surfaces 19.

As shown in Fig.1, on the side facing rod 9, hub 4 presents a head shaped laterally substantially in the form of a triangle and defined at the front and rear by two inclined surfaces 22 converging towards rod 9 and cooperating with respective shoulders 13 for limiting rotation of shank 2 to a given angle in relation to gripping body 3.

Again as shown in Fig.1, said two palms 6 extend from hub 4 in opposite directions substantially perpendicular to respective surfaces 19, whereas each arm 7 extends from respective palm 6 on the same side as rod 9, and is defined at the front and rear by substantially triangular surfaces 23 having respective longitudinal ribs 24.

Both shank 2 and gripping body 3 are formed from synthetic material, preferably plastic, by means of a known combined molding technique enabling the formation of the connection defined by joint 5 during the molding operation.

As shown in Fig.4, shank 2 and gripping body 3 are hollow bodies with continuous walls of substantially constant thickness, and define respective fluidtight inner chambers 25 and 26. In particular, chamber 25 extends over substantially the entire length of rod 9 and appendix 12, whereas chamber 26 is divided into two communicating chambers 27, each encompassing substantially the entire volume of respective palm 6 and arm 7.

Rod 9 is defined laterally by a wall 28 having a molded inner extension 29 with a cylindrical internally-threaded through hole or opening 30 perpendicular to respective surface 19 and engaged in fluidtight manner by a removable threaded plug 31. Similarly, on the opposite side to that connected to respective arm 7, each palm 6 is defined laterally by a wall 32 having a molded inner extension 33 with a cylindrical internally-threaded through hole or opening 34 engaged in fluidtight manner by a removable threaded plug 35.

Holes 30 and 34 provide for feeding chambers 25 and 26 with respective ballast 36 and 37, each consisting of a variable amount of particulated and/or loose material of a high specific weight, such as sand and/or lead pellets and/or metal hardware, etc.

As shown in Fig.4, part of chambers 25 and 26 is occupied by respective optional metal inserts 38 and 39 inserted as disposable cores when molding.

According to a variation (not shown), shank 2 presents no inner chamber, by virtue of being formed from solid plastic, or by virtue of said inner chamber being totally occupied by a metal insert.

The advantages of the present invention will be clear from the foregoing description.

Firstly, anchor 1 presents a softer outer surface extremely resistent to corrosion and deterioration. Secondly, anchor 1 is extremely light when empty, thus affording considerable advantages to both the maker and user in terms of transport, handling and stowage. Thirdly, anchor 1 is relatively cheap to produce, by virtue of the relatively low cost of the plastic material employed and the possibility of employing ballast material of substantially negligible cost. Last but not least, anchor 1 may be manufactured in an extremely limited range of sizes, by virtue of the possibility of varying the weight of a given anchor within a given range as required, by varying either the type or amount of ballast employed.

Claims

1) - An articulated anchor (1) comprising a gripping body (3), and a shank (2) connected by an articulated joint (5) to said gripping body (3); said gripping body (3) being formed in one piece and comprising a hub (4), palms (6) integral with said hub (4), and an arm (7) integral with each said palm (6); characterised by the fact that said shank (2) and said gripping body (3) are molded from synthetic material, and define at least one inner chamber (25/26); weight adjusting means (36/37) being housed inside said inner chamber (25/26) for adjusting the total weight of the anchor (1) within a given range.

2) - An anchor as claimed in Claim 1, characterised by the fact that said shank (2) and said gripping body (3) are hollow, and define a respective first (25) and second (26) said chamber.

3) - An anchor as claimed in Claim 2, characterised by the fact that said first and second chambers (25,26) house respective said weight adjusting means (36,37).

4) - An anchor as claimed in any one of the foregoing Claims, characterised by the fact that said weight adjusting means comprise a variable amount of ballast (36/37); said inner chamber (25/26) communicating externally via an opening (30/34) for said ballast (36/37), and removable closing means (31/35) being provided for said opening (30/34).

5) - An anchor as claimed in Claim 4, characterised by the fact that said ballast (36/37) comprises particulated material such as sand.

6) - An anchor as claimed in Claim 4 or 5, characterised by the fact that said ballast (36/37) comprises loose material such as lead pellets or metal hardware.

7) - An anchor as claimed in any one of the foregoing Claims, characterised by the fact that it comprises at least a metal insert (38/39) housed inside said chamber (25/26).

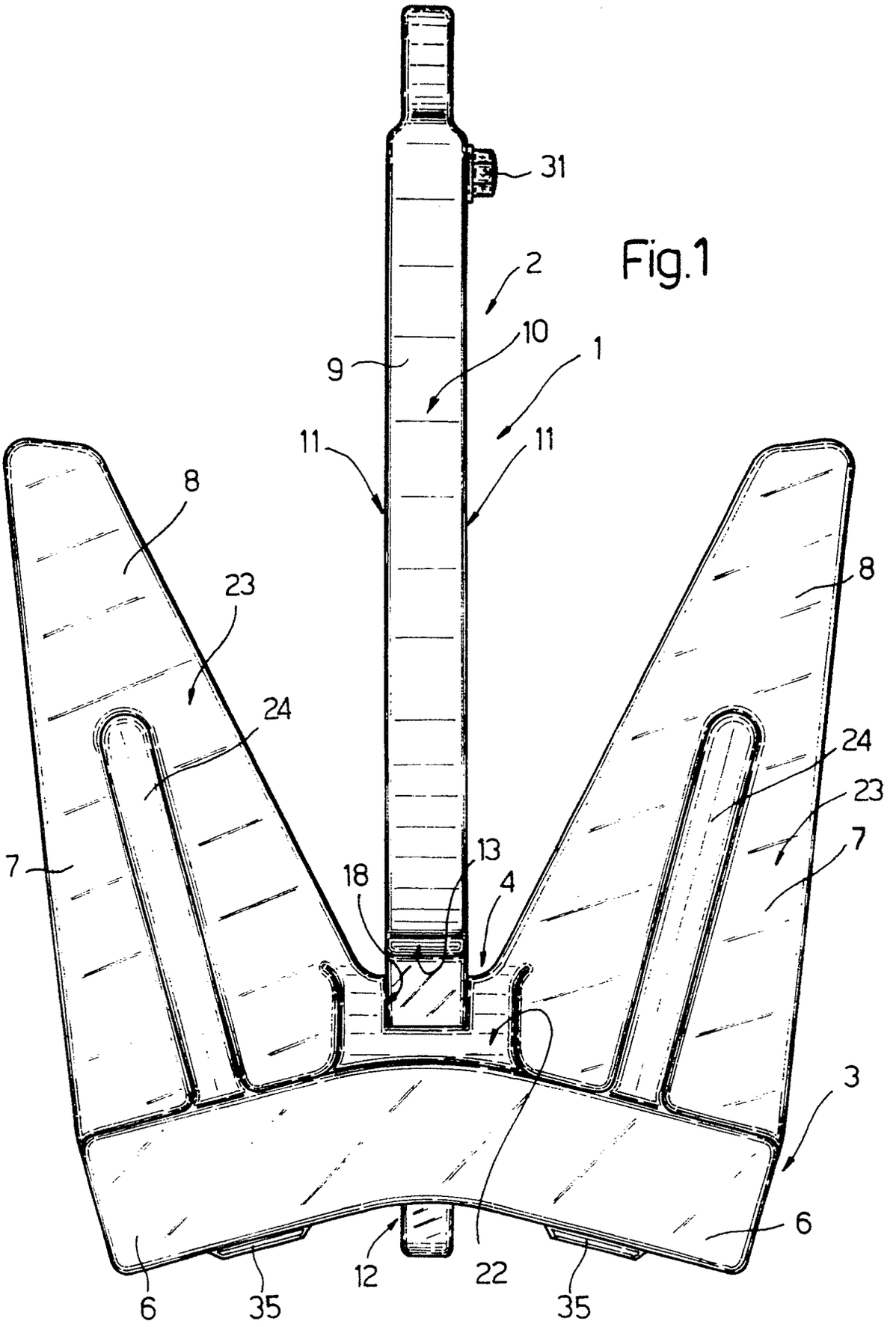
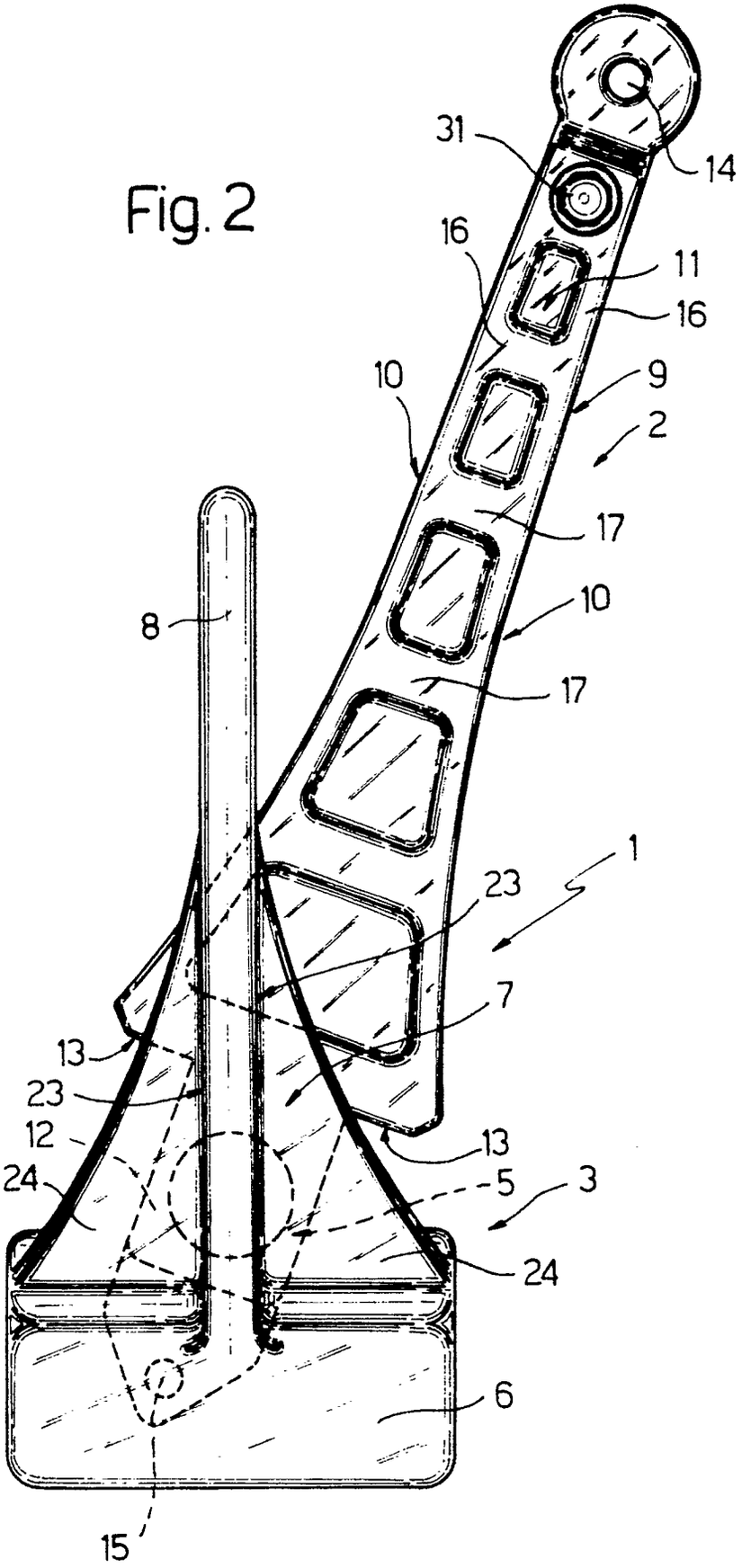


Fig.1

Fig. 2



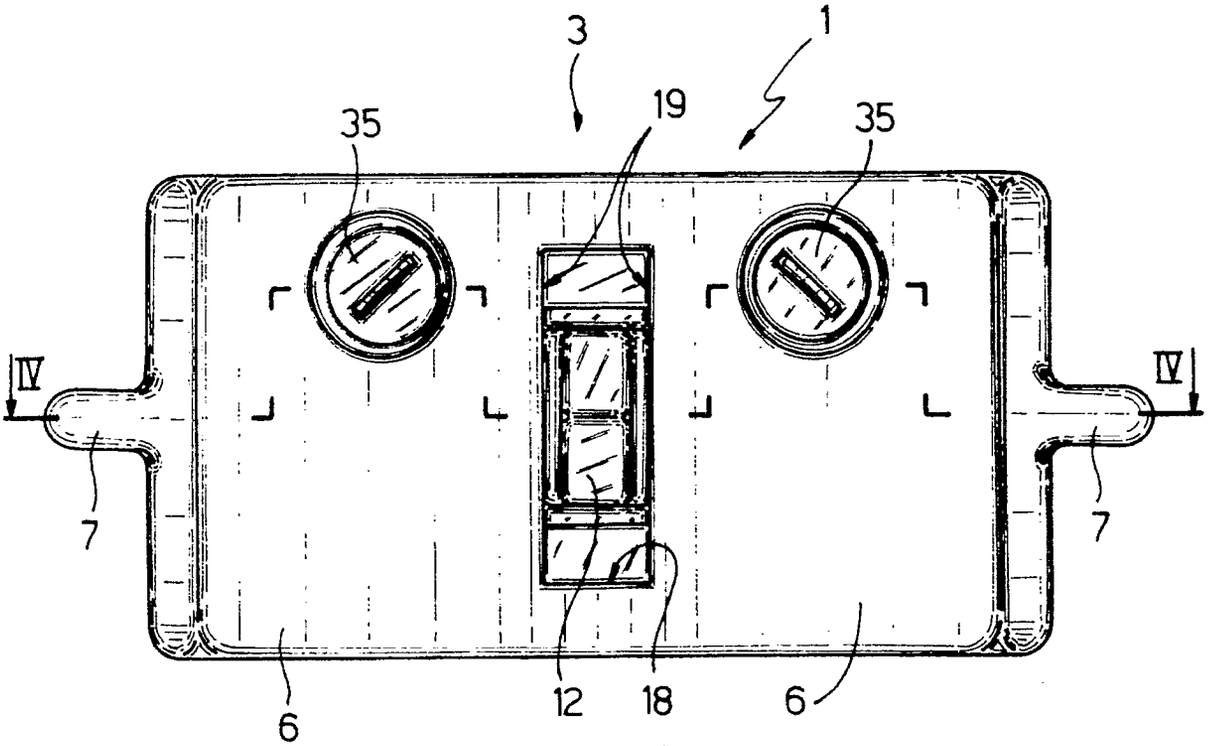


Fig.3

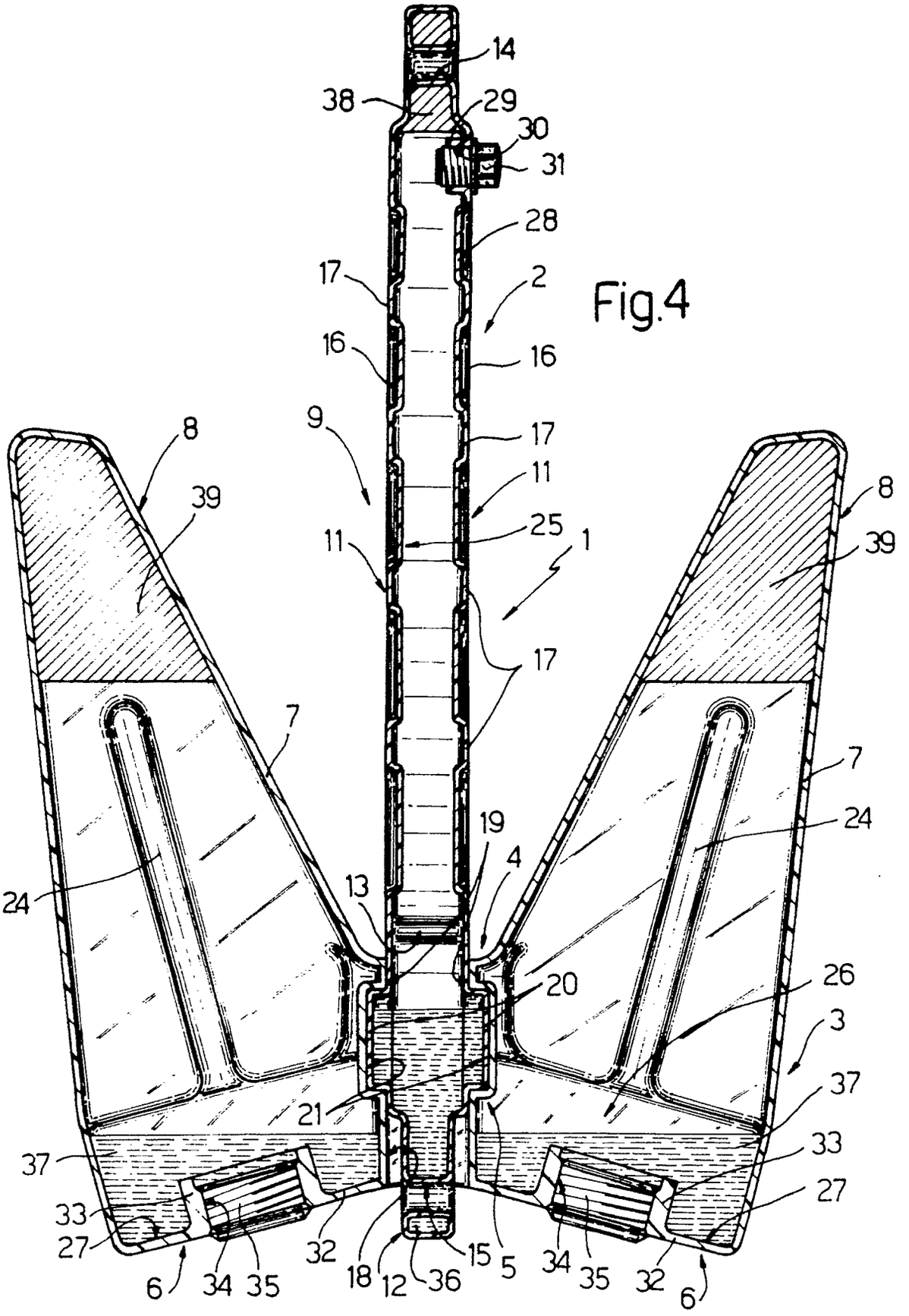

14
38
29
30
31
28
17
2
16
16
9
17
11
11
25
1
17
8
39
8
39
7
7
24
24
19
4
13
20
26
3
21
37
37
33
33
27
27
32
18
12
36
15
5
34
35
34
35
32
6
6

Fig.4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 83 0508

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	LU-A- 72 544 (HELLEVOET) * Page 4, lines 19-37; page 6, lines 37-40; figures 1-3 *	1-7	B 63 B 21/29 B 63 B 21/44
Y	US-A-3 158 127 (GALLAUGHER) * Column 1, line 38 - column 3, line 37 *	1-7	
Y	GB-A-2 115 363 (McIUCKIE) * The complete document *	1-6	
Y	US-A-4 602 588 (MacLEAN) * Column 2, line 53 - column 3, line 16; column 4, lines 17-21; column 6, lines 40-42 *	1-6	
Y	DE-A-2 448 255 (BLOHM & VOSS) * Page 1, line 7 - page 2, line 6; figures 1-6 *	1	
Y	US-A-4 798 159 (TAYLOR) * Column 3, lines 11,12; column 5, line 22; figures 1,6 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.5) B 63 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	25-07-1990	HUNT A.E.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)