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(71) Applicant: **Scrubbis AB**
**163 29 Spanga (SE)**

(72) Inventor: **Bahrton, Svante**
**129 36 Hägersten (SE)**

(74) Representative: **Rosenquist, Per Olof**
**Ehrner & Delmar Patentbyrå AB**
**P.O. Box 10316**
**100 55 Stockholm (SE)**

(54) **A cleaner for the bottom of launched vessels**

(57) A cleaner for the bottom of launched vessels comprising a floating body (3), a shaft (1) and an angled member (2), arranged between the floating body (3) and the shaft (1), as well as cleaning elements (4) arranged on the floating body. The floating body (3) is arranged to be detachably fixed onto the angled member (2) with a locking member (9) extending through a central longitudinal channel (10) in the floating body, and through a hole (6) at the end of the angled member in alignment with the longitudinal channel (10).

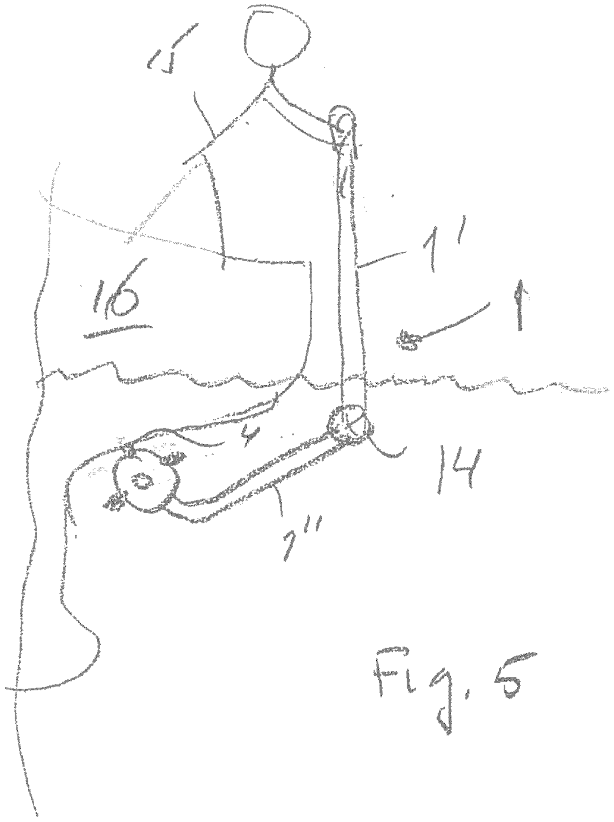


Fig. 5

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## Description

### Field of the invention

**[0001]** The present invention relates to a cleaner for the bottom of launched vessels comprising, a floating body, a shaft and an angled member arranged between the floating body and the shaft, as well as cleaning elements arranged on the floating body.

### Background

**[0002]** There are different kinds of boat bottom cleaners in the market to be used on launched boats and/or vessels, ranging from scrubbing plants, onto or into which boats or any vessel can be taken in order to be brushed clean from fouling and other contaminants during and after the boat season; to handheld bottom cleaners in the form of cleaners with a floating body arranged at the end of a shaft and intended to be brought manually over the bottom of a vessel by someone standing on a bridge at the side of the vessel or even on the vessel itself.

**[0003]** One problem with previously known scrubbing plants is that the bottom will not become completely clean, e.g. it may be difficult to remove shells. This is believed to be due to the surface pressure being too low because the brushes have a large contact surface, in combination with a desire to minimize the risk of scratching the bottom surface.

**[0004]** Handheld equipment known by the inventor of the present invention is expensive and for some reason it has not been accepted on the market to any great extent. The cleaning means is said to be comprised of a sponge or a body resembling a sponge containing pores so that a certain upward force is available.

### Short description of the Invention

**[0005]** The object of the present invention is to provide a boat bottom cleaner which is easy to manipulate, which effectively removes all fouling from the bottom of a vessel lying in the water, and which is simple and inexpensive to manufacture.

**[0006]** A further object of the invention is to provide a bottom cleaner, which can be assembled and disassembled with ease, in order to take up as little space as possible when it is not in use.

**[0007]** These and other objects are achieved with the cleaner for the bottom of boats lying in water with the features in the characterizing part of claim 1.

**[0008]** Developments and preferred embodiments are defined in the sub claims.

### Short description of the drawings

**[0009]** The invention will be described more in detail in the following description of embodiments shown in the drawings, in which

Fig. 1 shows a first embodiment of the bottom cleaner according to the present invention in an assembled, ready-to-use state,

Fig. 2 shows the bottom cleaner in disassembled state and with the different parts spread out side-by-side,

Fig. 3 shows a cross section according to A-A in Fig. 2 through a floating body with cleaning elements,

Fig. 4 shows the use of the bottom cleaner according to the first embodiment of the invention, and

Fig. 5 shows the use of the bottom cleaner according to a second embodiment of the invention.

### Detailed description of the Invention

**[0010]** In Fig. 1 one embodiment of the cleaner according to the present invention is shown. It comprises a shaft 1, an angled pipe 2 which e.g. might be bent approximately 90° and a floating body 3 consisting of a cellular plastic cylinder with cleaning elements 4 thereon.

**[0011]** The shaft 1 is preferably telescopic which is indicated at 5, and can be a conventional extension handle which is used e.g. by painters when rolling ceilings etc.

**[0012]** The angled pipe 2 is preferably manufactured from aluminium and comprises a through bore 6 passing perpendicularly through the pipe. The function of this through bore will be discussed in detail below. This angled pipe might be an aluminium pipe of the kind that is used for cover-scaffolds for boats on land.

**[0013]** The floating body 3 shall consist of a material, which gives a substantial upward force when it is below the surface of the water. This force corresponds to the pressure exerted against the bottom when performing the cleaning. A suitable material is cellular plastic normally used for insulation of pipes. With such a pipe insulation piece with a central longitudinal bore with a diameter of 18 mm, a length of 500 mm and an outer diameter of about 75 mm, the upward force below the surface of water will be about 2.3 kg, while at the same time the weight of this piece is about 30 g.

**[0014]** Cleaning members 4 are fastened onto the floating body 3. In the embodiment shown in the drawings, the cleaning members consist of rubber strips. They are preferably manufactured from rubber of a quality which corresponds to windshield wiper rubber. According to a preferred embodiment three such cleaning strips are fastened onto the floating body, suitably glued to the periphery of the floating body. Each strip 4 has a number of rather sharp ridges 7; in the embodiment shown there are five ridges. Of course the cleaning strips can be manufactured from other materials, such as a plastic material, and they could also have different designs without deviating from the basic inventive thought.

**[0015]** In the floating body there is also a radial through

bore 8 substantially in the middle of the floating body extending in a radial direction from the central channel 10 of the body through its wall. This bore is a mounting bore through which one end of the angled member is inserted so that it protrudes into the longitudinal channel running through the whole of the floating body. The hole 6 at the end of the angled element is so arranged that it is in alignment with the longitudinal channel in the floating body, when the angled pipe 2 is fully inserted into the bore 8.

**[0016]** When the angled element is inserted into the floating body, the floating body is locked onto the angled pipe by the insertion of a locking pipe/rod 9, see Fig. 2, into the central longitudinal channel 10. This pipe/rod has preferably a pointed end 11, in order to facilitate the insertion of the pipe through the hole 6 in the angled pipe. This locking pipe/rod also acts as a stiffener of the floating body with the cleaning strips arranged thereon. In case the above mentioned pipe insulation is used, this function is of a minor importance, but this locking pipe/rod makes it possible to use materials with substantially less natural stiffness if desired.

**[0017]** With the cleaner according to the invention a person might stand comfortably on a, preferably low, bridge 12 with the boat lying about 1 meter from the bridge, as is illustrated in Fig. 4. When the cleaner with its floating body has been forced down into the water and is underneath the bottom of the boat, the floating body will press at least one cleaning member 4 against the bottom of the boat, and by moving the cleaner back and forth all fouling is effectively removed from the bottom. With the above described design and choice of materials, the cleaner might be moved using only one hand back and forth without requiring the application of any substantial force. Tests in reality show that all fouling including shells are removed without demanding any force in addition to the force resulting from the upward force of the floating body.

**[0018]** The locking element can be of any suitable type, such as a pipe or rod made of plastic, wood or even metal.

**[0019]** Further, the shaft need not be telescopic, and even a shaft made of wood having a suitable means for attachment of the angled pipe would serve its purpose.

**[0020]** According to a development of the invention, the shaft is designed with a knee joint 14. As is indicated in Fig. 5, with this design a person 15 standing on board of the boat 16 to be cleaned and with the knee joint free to move, the shaft will be angled and the upward force of the floating body 3 will press a cleaning member against the bottom of the boat and follow its outline. When cleaning a keel, which extends substantially vertically, the knee joint might be locked in a desired position in order to facilitate the claning of the keel. Experiments show that an upper bandler or shaft part 1' suitably can be about 1 m long and that the further shaft or handle part 1", which also carries the floating body, can be about 1.40 m long.

**[0021]** The form of the angled pipe is an expedient design, which facilitates handling when cleaning curved bottoms, which at the same time works as well with planar bottoms.

**[0022]** In order to provide an inexpensive and simple construction by using existing materials/parts, the locking element for locking the floating body onto the angled element is a conventional plastic pipe which normally is used for placing electrical conductors in walls in buildings etc. They can easily be cut into the appropriate lengths, and it is also quite easy to provide a pointed end, in order to facilitate the introduction of the pipe into the hole in the angled pipe being in alignment with the longitudinal channel in the floating body.

**[0023]** By the appropriate choice of material in the floating body the upward force can be varied, and this can also be achieved by varying the dimensions of the floating body, without waiving the simplicity or cost structure of the cleaner according to the invention.

## Claims

1. A cleaner for the bottom of launched vessels comprising a floating body (3), a shaft (1) and an angled member (2) arranged between the floating body (3) and the shaft (1), as well as cleaning elements (4) arranged on the floating body, **characterized in that** the floating body (3)is cylindrical with a central longitudinal channel (10),
   that it comprises a locking and stabilizing member (9) in the form of a pipe or a rod having a diameter corresponding to the diameter of the longitudinal channel (10) in the floating body (3),
   **that** the angled member (2) is a pipe which is bent into an angle of about 90°, one end of which being arranged to receive one end of the shaft (1) and the other end of which being adapted for connection with said floating body (3) with a through opening (6) having a dimension corresponding to the diameter of the longitudinal channel (10) of the floating body (3), and **in that** the floating body (3) has a radial opening (8) arranged in a central area thereof, which opening extends from the outer surface of the cylindrical body to the longitudinal channel (10), which opening is adapted to receive the other end of the angled member (2) with its through opening (6) arranged in alignment with the central longitudinal channel (10) of the floating body (3), so that the angled member and the floating body in a simple and safe way can be locked to each other, and be disengaged from each other, respectively, with the aid of said locking and stabilizing member (9).

2. The cleaner according to claim 1, **characterized in that** the floating body (3) is comprised of a piece of pipe insulation having a diameter of about 75 mm, a central channel having a diameter of about 18 mm and a length of about 500 mm.

3. The cleaner according to any of the preceding claims, **characterized in that** the cleaning members (4) are comprised of rubber strips with one or several sharp edges for bearing against the boat bottom to be cleaned.

4. The cleaner according to claim 3, **characterized in that** three rubber strips are glued onto the floating body evenly distributed in angles 90, 180 and 270°, respectively, in relation to the radial opeing (8) in the floating body (3).

5. The cleaner according to claim 1, **characterized in that** the shaft (1) is telescopic.

6. The cleaner according to claim 1, **characterized in that the** shaft (1) has a knee joint (14) which connects an upper shaft part (1') and a lower shaft part (1") and **in that** the cleaner can be used with a movable knee joint for cleaning of the bottom of a boat by a person (15) standing on board of the boat (16) itself, while at the same time the knee joint is lockable for e.g. cleaning of a substantially vertical keel.

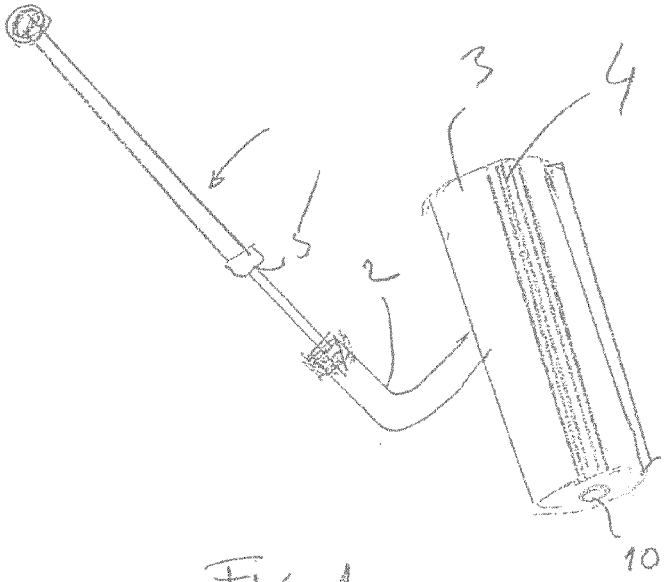


FIG. 1

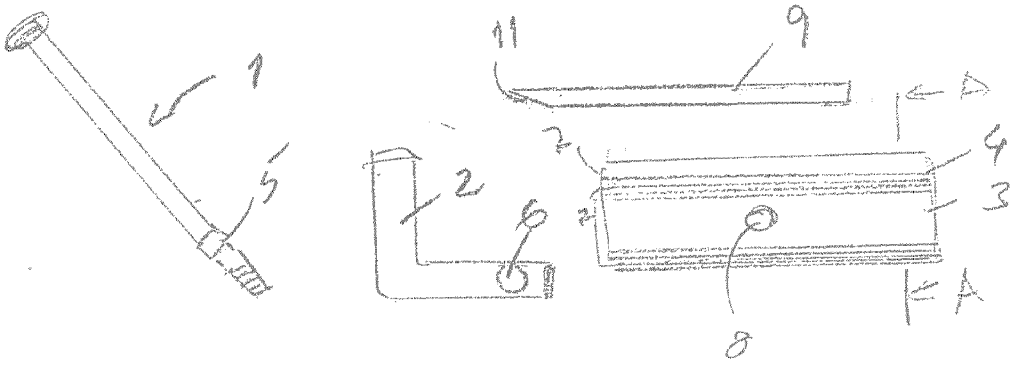


FIG. 2

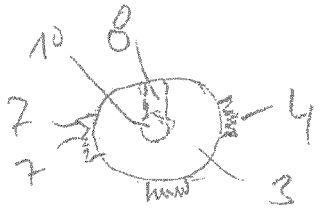


FIG. 3 A—A

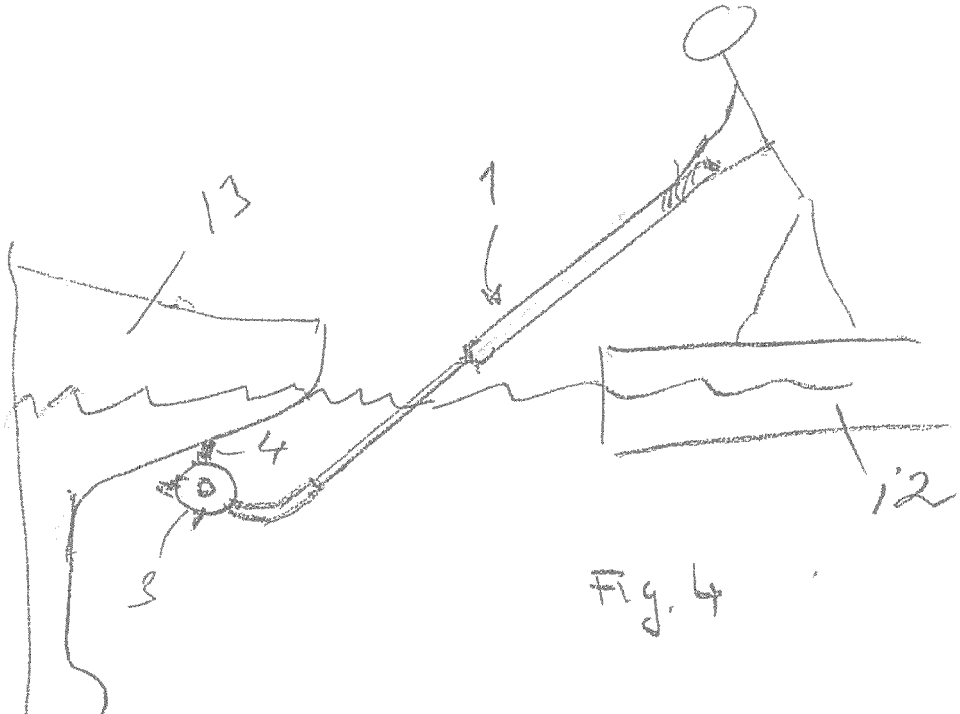


Fig. 4

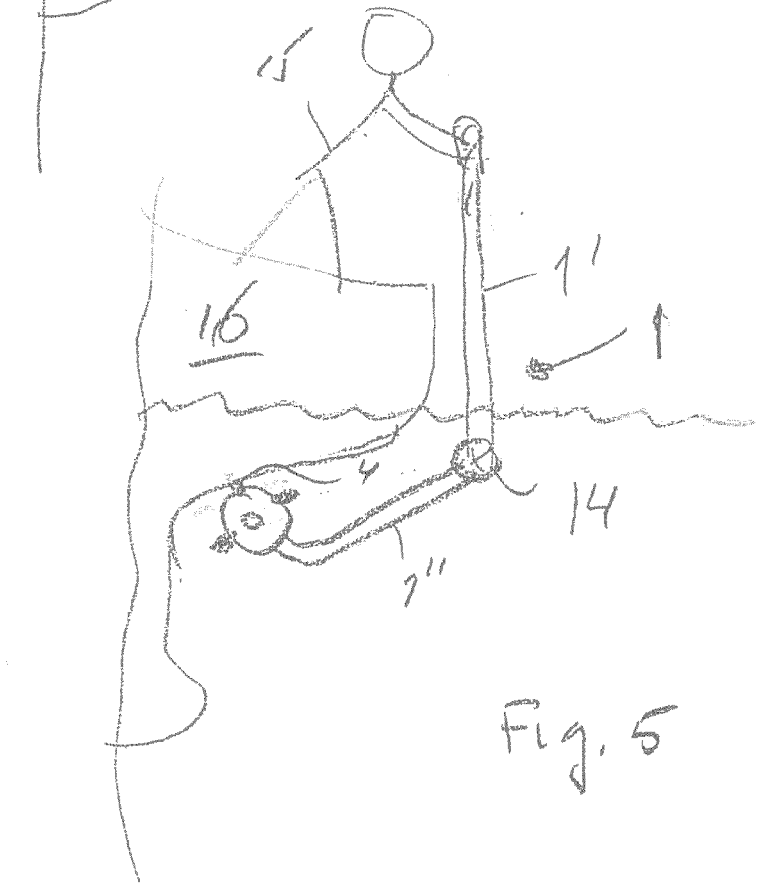


Fig. 5

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# EUROPEAN SEARCH REPORT

Application Number
EP 13 15 4433

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| A | US 5 209 176 A (POMPEI WALTER [US] ET AL) 11 May 1993 (1993-05-11) * column 3, line 63 - column 5, line 14; figures * | 1 | INV. B63B59/08 |
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1 The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| Munich | 10 June 2013 | Vermeulen, Tom |

CATEGORY OF CITED DOCUMENTS

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 15 4433

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82