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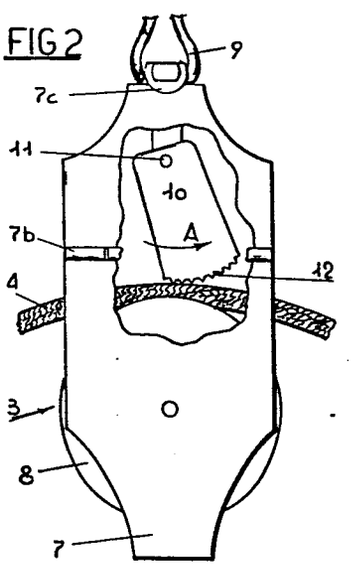
(54) Device and process for the recovery of submerged bodies, particularly anchors.

(57) With this structurally most simple device that is suitable to be used even for craft of small dimensions, it is possible to recover immediately, without any effort, submerged bodies in general, and anchors in particular.

The device comprises a float 2 of a volume in proportion with the weight of a submerged body 5 to be recovered, a sheave device 3 that is hung on to the said float 2 and can enter into sliding engagement with a connecting cable 4 running between the said body 5 to be recovered and a boat 6, and means 10 for restraining the said cable 4, designed to allow it to slide in one single direction on the said sheave device 3.

FIG 2



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Device and process for the recovery of submerged bodies, particularly anchors

The invention relates to a device and process for the recovery of submerged bodies, particularly anchors.

As is known, one of the less agreeable operations on pleasure craft of small or very small dimensions is that of recovering the anchor, and this is because such boats are not normally provided with automatic winches or similar anchor lifting means and so, therefore, the recovery has to be effected manually.

This operation is particularly onerous since the anchors are of quite a considerable weight and, in many cases, sink many many metres in depth. This means that metre after metre of the line or cable that connects the anchor to the boat, has to be recovered, while the anchor is constantly straining and encumbering the said line.

Automatic winches are not mounted on boats of small or very small dimensions since they are costly, take up a lot of space and, therefore, are not in keeping with the characteristics of the said craft.

It should also be noted that in many instances the lifting of the anchor is rendered difficult on account of the fact that it tends to get stuck when dragged transversely to the vertical direction. When this happens, the boat then has to be moved in such a way as to position it perpendicularly to the anchor, after which an attempt, employing a considerable manual effort, has to be made to recover the anchor.

This situation is clearly to the detriment of, and one that inflicts hardship on, craft of the most popular ty-

pes, namely the said small or very small boats.

Thus the technical problem has arisen of creating a device and a process for recovering anchors, and submerged bodies in general, which, although allowing the anchors or submerged bodies to be lifted automatically without any manual effort, is suitable to be used on even small or very small craft.

The technical task that forms the basis of the invention is to solve the said technical problem.

Within the framework of the said technical task, one important object of the invention is to create a device that is not only economical and small in volume but also can easily be fashioned out of materials on open sale, that is to say, a device that virtually requires no maintenance.

Another important object of the invention is to create a device that can easily be adapted to situations that are quite different and, in particular, can readily be made to suit the various types of anchors used in the nautical field.

The technical task mentioned above and the objects specified are attained, according to the invention, by a device for the recovery of submerged bodies, particularly anchors, that is characterized by the fact of comprising: a float of a volume in proportion with the weight of a submerged body to be recovered, a sheave device that is hung on to the said float and can enter into sliding engagement with a connecting cable running between the said body to be recovered and a boat, and means for restraining the said cable, designed to allow it to slide in one

single direction on the said sheave device.

Advantageously a process is envisaged for the recovery of submerged bodies, and this is characterized by the fact that it consists : in fitting to a line taut between a submerged body and a boat, a sliding support that is held in a raised position by a float, and in causing the boat in question, rendered integral with one extremity of the said line, to move away from the said support.

Further characteristics and advantages of the invention will become more apparent from the description of one preferred embodiment for the device, illustrated purely as an unlimited example on the accompanying drawings, in which :

- Figure 1 shows, diagrammatically, the device and the process according to the invention in the act of recovering an anchor;
- Figure 2 shows, in a front view partially cutaway, one part of the device illustrated in Figure 1, through which a line or cable passes;
- Figure 3 shows, in a lateral view, the device illustrated in Figure 2 devoid of the line or cable.

With reference to the above listed figures, the device according to the invention is shown globally at 1. Fundamentally it is constituted by a float 2 and by a sheave device 3 that is hung on to the said float 2 and can enter into sliding engagement with a line or cable 4, one part of which terminates, for example, at an anchor 5, and the other at a boat 6.

The float 2 can, for example, be a buoy of a volume proportional to the weight of the anchor 5.

Alternatively, the float 2 can be constituted by ordinary

empty containers or by elements inflatable at the time of use.

The sheave device 3, illustrated in Figures 2 and 3, is constituted by a pair of plates 7, side by side and parallel one with the other, rendered integral in the region of one extremity.

The plates 7 support a grooved wheel 8 on which is mounted the line 4, and it is possible to position this between the plates 7 since one of these is provided with an aperture.

The said aperture, that runs over the full width of the plate, can be open or provided with a cover 7a that can be displaced around a pivot 7b and be locked by means of a cam 7c placed on the opposite side to the pivot 7b.

The two plates 7 of the sheave device 3 fasten on to the float 2 through, for example, a spring catch 9.

An important characteristics of the device according to the invention lies in the fact that it is provided, inside the sheave device 3, with restraint means designed to allow the line 4 to slide only in one direction.

The structure of the restraint means 10 can be seen in Figures 2 and 3.

Virtually, the means are constituted by a toothed element that oscillates around a pin 11 and is provided with an active profile 12, this meshing with the arcuate or parabolic line 4.

The said restraint means 10 release spontaneously the line 4 when this is forced in the same direction as the

arrow A for the movement of the toothed element, shown in Figure 2.

Whenever, instead, the said line 4 moves in the opposite direction, the toothed element meshes, through the active profile 12 thereof, forcibly with the said line 4.

The operation of the device according to the invention is particularly obvious.

By rotating the cam 7c, through a knob integral therewith, it is possible to open the cover 7a and to expose an ample inside part of the sheave device 3.

Once this has been done, the toothed element 10 is rotated and raised, the line 4 being inserted in the free space created between the said toothed element and the wheel 8. The toothed element is then left free and the cover 7a is put back over the aperture.

The sheave device 3 is then rendered integral, through the spring catch 9, with a float 2 and thrown into the water.

The subsequent towing of the line 4 causes, because of the resistance offered by the float 2 to the displacement of the sheave device 3, the said line 4 to slide over the wheel 8.

This sliding motion is free when it follows the direction indicated by the arrow A but is immediately prevented by the toothed element when in the reverse direction.

The device described above makes possible an advantageous process for the recovery of submerged bodies that is also an integral part of the invention.

The said process is illustrated in Figure 1 and consists

essentially in fitting to a line taut between a submerged body and a boat, a sliding support that is held in a raised position by a float, and in causing the boat to move away from the said sliding support.

In actual practice, with this process it is the boat itself that effects the lifting of the submerged body by merely towing the line that connects the boat to the said submerged body.

With this operation, the submerged body is not made to rub against the bottom and thus to get entangled therewith since the sliding support obliges the line to effect an angular deviation whereby the final section thereof is carried in a direction close to vertical.

The submerged body is, therefore, compelled to move systematically upwards irrespective of the inclination of the line in proximity of the boat that is towing it.

The invention achieves the proposed objects; indeed, a device and a process of extreme simplicity and economical cost have been devised, thanks to which the recovery of, for example, an anchor creates no problem and requires no manual effort.

Furthermore, the recovery operations are extremely fast and of intuitive execution : all that has to be done is to fit the device to a line and then tow the line with the boat.

The anchor will be pulled up and recovered when the line also carries in movement with it, the device complete with float : this means that the said anchor is in a position of contrast with the device according to the invention.

What then has to be done is simply to displace the boat to a point corresponding to where the device is located and to take hold of either the anchor or the buoy.

From the foregoing description it is obvious that the restraint means 10 prevent, in this final recovery stage, the anchor from returning towards the bottom.

Furthermore, it is stressed that, thanks to the essentially vertical raising direction of the anchor, any entanglement of this is generally thwarted.

Finally, it is important to note that the float can be even in the form of the most simple means to be found on all craft : for example, an empty petrol can.

The invention as outlined above is liable to undergo numerous modifications and variants, all of which falling within the conceptual framework of the invention.

Moreover, all the component parts may be replaced with others technically equivalent, while the materials, shapes and sizes may be any to suit the requirements.

Claims:

1. Device for the recovery of submerged bodies, particularly anchors, characterized by the fact that it comprises : a float 2 of a volume in proportion with the weight of a submerged body 5 to be recovered, a sheave device 3 that is hung on to the said float 2 and can enter into sliding engagement with a connecting cable 4 running between the said body 5 to be recovered and a boat 6, and means 10 for restraining the said cable 4, designed to allow it to slide in one single direction on the said sheave device 3.

2. Device according to Claim 1, characterized by the fact that the said sheave device 3 is defined by a pair of side by side plates 7, one integral with the other, that support a grooved wheel 8 and the said restraint means 10, the latter being positioned in the region of one edge of the said wheel 8.

3. Device according to Claim 2, characterized by the fact that the said cable 4 can be inserted in between the said plates 7 through an aperture machined in one of the said plates 7 and occupying the full crosswise extension of this.

4. Device according to Claim 3, characterized by the fact that with the said aperture engages a cover 7a that can be moved around a pivot 7b and be locked, in the closed position, by corresponding means 7c, these being placed on the opposite side to the said pivot 7b; the said cover 7a constituting, in the closed position, part of the said plate 7.

5. Device according to Claim 4, characterized by the fact that the said means 7c are constituted by a knob operated cam.

6. Device according to Claim 1, characterized by the fact that the restraint means 10 are constituted by a toothed element able to oscillate on to the said cable 4.

7. Process for the recovery of submerged bodies, particularly anchors, characterized by the fact that it consists : in fitting to a cable 4 taut between a submerged body 5 and a boat 6, a sliding support 3 that is held in a raised position by a float 2, and in causing the said boat 6, rendered integral with one extremity of the said cable 4, to move away from the said support 3.

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FIG2

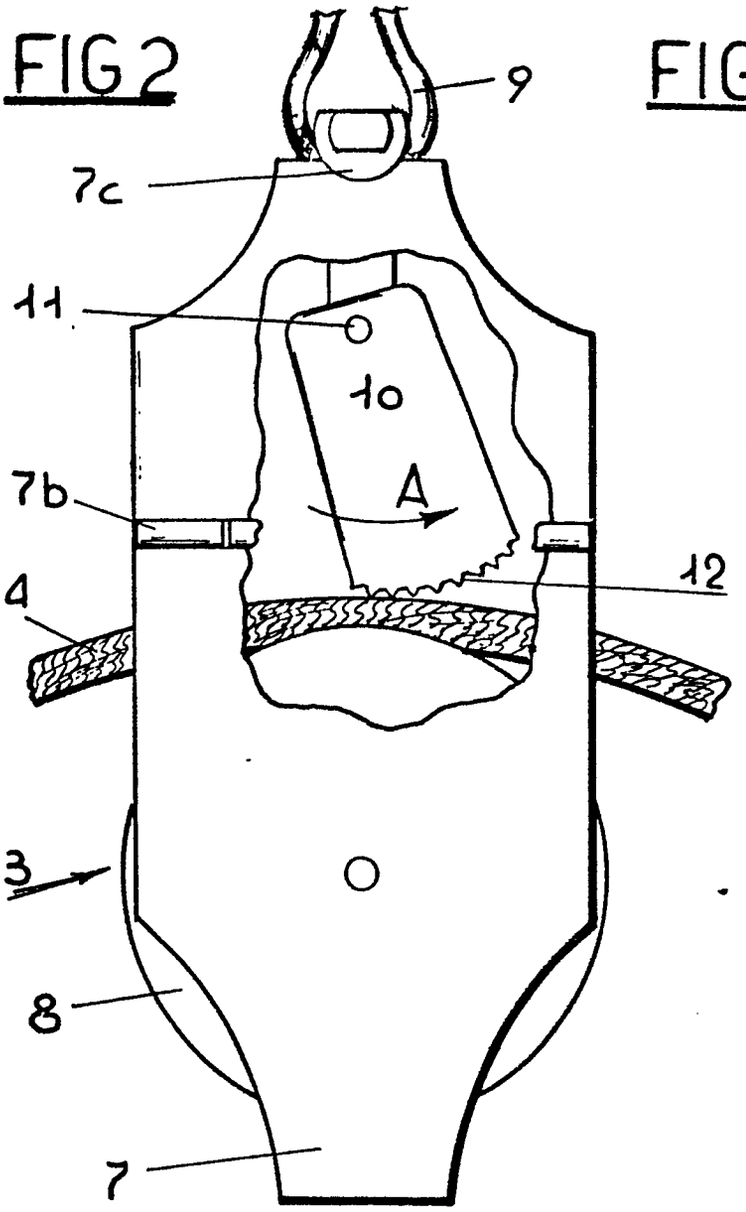
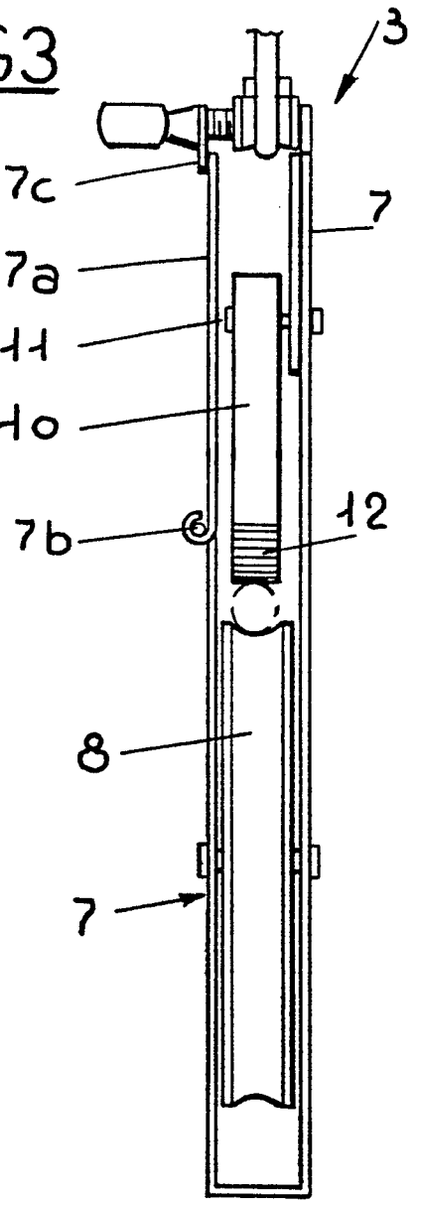


FIG3



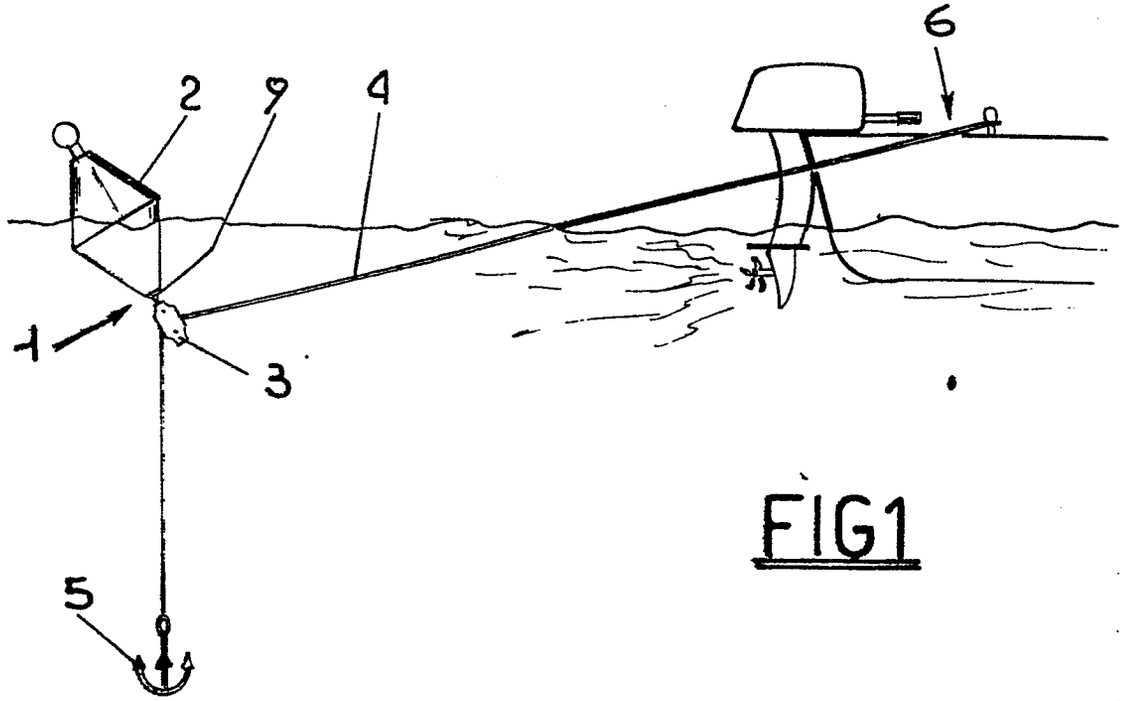


FIG1