

A Device for use in connection with fishing.

The present invention relates to a device for use in connection with fishing, comprising a container adapted for dispensing of odour agents under water.

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Many kinds of fish are completely dependent on the sense of smell in order to find food. This in particular applies to demersal fish species which often live in environments (great depths, darkness) where odour agents dispensed from prey animals are the only signals which enable the fish to discover and localize
10 its food. Advantage is derived from this circumstance when fishing with tackles based on bait, as for instance longline and fish pot.

Chemical analyses have shown that the concentration of odour agents dispensed from natural bait diminishes very rapidly. Measurements have been
15 made which show that the sinking time of tackles based on bait is relatively long. A longline uses for instance about one hour in sinking down to a depth of 450 meters. This means that the bait has dispensed the essential of its odour agents before it reaches the relevant depth for catching fish, and this circumstance cannot be affected.

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Different devices for dispensing odour agents under water in connection with fishing are known. US Patent 2791058 shows an elongate container having several apertures, whereby a water soluble bladder containing an odour agent is situated inside the container, so that the odour agent will trickle out while
25 the bladder is dissolved. US Patent 2922246 also shows a container containing a bladder with odour agent. The container has an aperture at one end and a nozzle at the other end, and by being pulled in the direction of the end having the aperture the bladder will be subjected to a certain external pressure which squeezes the odour agent through the nozzle. The US Patents
30 4267658 and 4888907 show hollow fishing implements which are equipped with hooks and which contain agents that are attractive to fish, whereby the agents are dispensed through apertures in the implements. US Patent 4267658 shows the use of the force in a line in order to cause a certain

internal pressure head in a bellows containing the agents.

The present invention is based upon the recognition that the efficiency of fishing implements based on bait and implements traditionally not based on bait can be significantly increased if the dispensing of odour agents can be controlled in a favourable manner, both with respect to the point of time when the dispensing of odour starts and the duration of the dispensing, and that it may be favourable to vary the dispensing by adapting it to activity peaks which the fish may have during 24 hours. A use of the device with respect to fishing not based on bait may be in net fishing.

The device according to the invention is characterized by the features appearing from the accompanying claims.

During use under water the device according to the invention will dose a controlled quantity of liquid concentrate of odour agent, for instance finely divided octopus or mackerel, in doses or with a controlled, possibly a constant dispensing of the odour agent.

The device according to the invention can be fastened to the catching trickle or lowered separately, and it may be equipped with electronic timing and/or quantity control means and a mechanical automatically working dosing mechanism which dispenses odour agents luring the fish to the catching trickle. By not actuating the device until a large pressure head is present due to the depth, dispensing of odour agents on depths that are not of interest for catching fish is prevented. The use of the odour agents, thus, can be performed selectively and rationally.

An example of a device in accordance with the invention will in the following be explained more detailed, with reference to the accompanying drawings.

Fig. 1 shows a longitudinal section through the device, in a condition before it is influenced by an external pressure which actuates the device.

Fig. 2 is a cross section along the line A - A in Fig. 1.

Fig. 3 shows the device in an actuated condition, during dispensing of odour agents.

- 5 The device in accordance with the invention comprises a cylindrical container 1 divided into two chambers, A and B, having approximately the same volume. The diameter of the chamber B is larger than that of the chamber A. The bottom and top of the container 1 (as shown extending vertically) are closed by screw caps 2, 3 which constitute end portions of the chambers A and B. The cap 3 has a small throughgoing aperture 4 in the axially outermost end. The cap 2 has a larger (with respect to diameter) throughgoing aperture 5 in the axially outermost end. A dosing piston 6 having a piston rod 9 is situated in the chamber A and protrudes through the aperture 5 in the cap 2. In order to resist large water pressures the container may externally be reinforced by ribs 8 (Fig. 2). The chamber A is pressure balanced in that water flows into the chamber. In the chamber B is provided a piston 7 having a seal 14 and a piston rod 12 in abutment against the dosing piston 6.
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In place of two pistons 6 and 7 a unitary (integrated) piston may be used, where the pistons 6 and 7 constitute piston portions.

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The piston rod 9 of the dosing piston 6 is shaped with a longitudinal groove 10 and circumferential recesses or "pockets" 11 for transportation of the odour concentrate. By moving the piston 7 and the dosing piston 6 to the bottom of the respective chambers A and B (at the bottom of Figs. 1 and 3), whereby a cavity is formed on the upper side of the pistons, the cavity above the piston 6 in the chamber A can be filled with odour concentrate.

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The device may for instance be lowered together with the catching implements, alternatively separately by having weights mounted thereon, to the desired depth. Along the path down to the desired depth the statical water pressure increases, and water flows into the chamber B through the aperture 4 and presses the piston 7 in the direction of the chamber A. The water

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pressure creates a counterforce against the upper side of the dosing piston 6, but because the end surface of the piston 7 is larger than the end surface of the dosing piston 6, the force against the piston 7 will be larger than against the dosing piston 6, and both of the pistons 6 and 7 will be forced in the
5 direction of the aperture 5, until the piston 7 reaches the transition between the chambers A and B (Fig. 3), where the container 1 has a step. The water seeps into the chamber A, forced by the statical water pressure, along the groove 10 in the dosing piston 6, whereby the pressure inside the chamber A becomes the same as on the exterior. The small aperture 4 in the cap 3 may
10 be made with different diameters in order to adjust the rate of seeping in the water. With small aperture diameters the seeping in of water into the chamber B is choked, whereby the velocity of the pistons is reduced to the desired velocity. During the movement of the pistons the rod 9 is moved progressively longer out of the aperture 5 and dispenses in the free water on the exterior a
15 certain amount of odour agent through the groove 10 in the rod 9. When a recess or "pocket" in the rod 9 reaches and passes the aperture 5 a relatively large amount of odour agent is dispensed in the free water, until a new zone of the rod 9 without any recess or "pocket" passes the aperture, whereby odour agent can only pass through the groove 10. The process of movement
20 continues until the dosing piston 6 and the piston 7 reach the end positions (at the top of the Figs. 1 and 3) and the chamber A is approximately emptied of its contents of odour agent (Fig. 3).

The rod 9 through the aperture 5 may be replaced by a valve, for instance an
25 automatic check valve or an electronically controlled valve. Also the aperture 4 may be equipped with a valve, for instance a valve which opens at a predetermined external pressure (i.e. a predetermined water depth) or an electronically controlled valve. The controlling of the operation of the device may also take place by means of an electronically controlled unit for timing
30 and regulation of the amount. This unit may be operative at one of the apertures 4 or 5, or at both. Thereby may be achieved that the device follows a predetermined program for dispensing of odour agent. Controlling of the apertures 4 and 5 is sufficient, because the pistons 6 and 7 are driven by the

statical water pressure, in response to opening and closing of the apertures 4 and 5, or choking of the aperture 4, respectively.

The device according to the invention may be made in several sizes, adapted
5 to leisure fishing as well as to professional fishing, and it may of course be adapted to or dimensioned for any water pressures or water depths. In particular for professional fishing several devices can be used simultaneously.

The components incorporated in the device can be made of several different
10 materials, but materials which are resistant against water are of course preferred. For use in salt water the components should of course also withstand both water and salt. Different plastics types, possibly fiber reinforced, and composite materials, are well suited for the container and the piston device, but different metals may also be used.

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The container may of course be equipped with attachment members, in order to be attached to for instance a line or a wire, or in order to be attached to fishing implements for being lowered therewith. Moreover, the container may be shaped for mounting of electronic equipment.

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Claims.

1. A device for use in connection with fishing, comprising a container (1) adapted for dispensing of odour agents under water, c h a r a c t e r i z e d
5 i n that the container contains a piston device having portions (6, 7) with two different diameters, whereby one end of the portion (7) having the largest diameter is situated in a drive chamber (B) having at least one aperture (4) for inlet of water axially outside of said portion, while one end of the portion (6) having the smallest diameter is situated in a chamber (A) containing the odour agent, whereby the portion (7) having the largest diameter is able to force the
10 portion (6) having the smallest diameter along the inner of the container (1), in order to force the odour agent out through at least one aperture (5) in the chamber (A) containing the odour agent, axially outside of the portion (6) having the smallest diameter, whereby means is provided for controlled
15 dispensing of the odour agent.
2. A device according to claim 1,
c h a r a c t e r i z e d i n that the means for controlled dispensing consists of a rod associated with the portion (6) having the smallest diameter, said rod
20 protruding out through an aperture (5) and having a varying cross-sectional shape, in such a manner that recesses which can carry along with them odour agent out through the aperture (5) are formed in the rod.
3. A device according to claim 1 or 2,
25 c h a r a c t e r i z e d i n that the aperture (4) for inlet of water is associated with means for adjustment of the cross-section of the aperture.
4. A device according to claim 1 or 2,
c h a r a c t e r i z e d i n that the aperture (4) for inlet of water is
30 associated with means for pressure-dependent opening.
5. A device according to any of the claims 1 - 4,
c h a r a c t e r i z e d i n that at least one of the apertures (4, 5) is



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associated with means for electronically controlling the progress of dispensing odour agent.