A device for an easy quick refloating of anchors, fouled in the sea-bottom.
Description

This invention relates to a device enabling an easy quick refoating of heavy means fouled in the sea-bottom, such as for example anchors, or enabling the hauling in of the anchoring rope or chain from any object or body located at a pre-determined position even, for example after having performed a specific operation.

Usually, an anchor comprises a shank having two arms normally secured or hinged to one end thereof, said arms terminating with triangular ends or flukes. The connecting end between said arms and shank is referred to as crown. Through the anchor ring, said anchoring rope or chain is engaged at the other end of the shank.

The quite frequent drawback of anchors being run aground, particularly in ports or harbours, is such that an anchor can not be brought into service due to the inability of one or both arms being extended, thus, upon being fouled, a marine term has been properly coined (to be fouled).

A fouled anchor is one that is entrapped in something in the sea-bottom, such as a chain, rope, net or heavy body, so that the two arms of the anchor, when the latter drags the bottom for seizing purposes, insert under the obstacle and take such an attitude that the anchor can be brought about only by retraction. To do this, a tensile force has to be exerted on the rear portion, that is on the crown.

Sailors of old times used large circular stones having a hole at the center for bringing about the fouled anchors and exert such a force at the crown. The rope or chain was inserted through this hole and then the stone was allowed to sink to such a position that, by relying on the weight of the stone resting on the bottom, the anchor could be heaved so that a travel was effected which was reverse to that for fouling.

Various devices intended for the same purpose are commercially available. For example, a so-called "iron hand" has been developed, which is a kind of C-shaped hook for lifting the rope under which the anchor is fouled. However, this device, operated by two ropes, has the disadvantage of use only in case the anchor is fouled with a body which, in turn, can be lifted and retained at such a position by said "iron hand", to disconnect the anchor and then the "iron hand".

Another device at present used provides the use of an anchor with two ropes or chains, of which one for standard use and the other of which for disengaging a disconnecting device arranged between said shank and arms. Thus, upon being released, such arms can rotate and be arranged on the same axis as the shank and then disengage from the obstacle. Such means are referred to as "Maria Teresa". The disadvantage of this device is bonded to the provision of said two ropes or chains which have to be always present and unitedly operated. As apparent, this involves the possible mutual entanglement thereof or knotting thereof both outside and inside the water. Moreover, said "Maria Teresa" might also be dangerous because, should the disconnecting device between the arms and shank unfortunately or by misfunction be operated at a time of risk, for example when the anchor is dropped in water to slow down the boat in case of collisions, the anchor with free arms would be incapable of gripping. Thus, the disconnecting device of the "Maria Teresa" anchor, once operated, that is once the arms have been released from the shank, would make the anchor useless until the anchor is hauled in and brought to standard operating position, that is with the arms integral or fast with the shanks. Thus, the disconnecting device is effective on the anchor structure rendering, the anchor useless during hauling in thereof. Further, in this latter device there are high dispersions between the shank and arms strength at the disconnecting device, which considerably restricts the gripping capability of the anchor.

US-A-2 480 460 describes a device for easy quick refoating of an anchor, comprising a shank having a plurality of arms engaged to one end thereof and made integral by the crown, wherein the operating rope or chain is connected to one end of said shank at the anchor ring, the operating rope or chain is connected to the anchor also at the crown, whereas the connection of said operating rope or chain with the anchor ring occurs through engaging means.

In said device a disengaging action of the operating rope from the engaging means is operable from the boat by a sharp pull and quick release effected on the operating rope. No separate engaging means is provided for exerting a force in the same direction along which the chain extends.

Therefore, it is the object of the present invention to provide engaging means which are brought to a disengagement position by disengaging means exerting a force in the same direction along which the chain extends which, by remote operation, would allow to translate the rope or chain attachment location, to which the anchor is engaged, from the anchor head at the anchor ring, to the opposite side of the shank, or crown, so as to haul it in a reliable way by using the least number of ropes as possible and leaving integral the structure of the anchor.

It is an auxiliary object of the present invention to provide a device for use only in case of need, that is when the anchor is fouled in the sea-bottom, so that, when not necessary, a portion thereof can be stored and used in a subsequent occasion.

It is a further object of the invention to use said device without disengaging the chain from the winch and hawsehole, as is instead the case for "Maria Teresa" device.

For the sake of brevity, reference will be made hereinafter to an operating chain, as well as of course to any rope, cordage or tie rod, having those modifications made thereto as quite obvious to those skilled in the art.

The object is achieved as claimed in claim 1.

Further features of the invention are claimed in sub-claims 2—7.
The invention will now be described in connection with a preferred, but not exclusive embodiment thereof, with reference to the accompanying drawings, in which:

Fig. 1 is a side view showing an anchor lying on the sea-bottom and fouled;

Fig. 2 shows the disengagement device on approaching to the engaging means for the chain with the anchor ring of the anchor;

Fig. 3 is a view showing an intermediate step during anchor bringing afloat or recovery upon disconnection of the chain from the anchor ring engaging means through the operation of the disengaging means and by the pull of an auxiliary rope or chain from the boat;

Fig. 4 is a view showing the anchor bringing afloat or recovery at a step subsequent to that of Fig. 3;

Fig. 5 is a detail of the engaging means as mounted and retaining the operating chain; and

Fig. 6 is a sectional view taken along line 6-6 of Fig. 5.

From Figs. 1, 2 and 3 it will be seen that the engaging device 40, integral with the fouled anchor, is then brought to disengaging position by means 41. These Figs. 1, 2 and 3 show a small section of connecting rope or chain 1, in this case a chain, secured to the rear portion 2a of crown 2 of anchor 3 by means of spring catches or rings 4. Said connecting means constituted by chain 1 is suitable to restrain the operating chain 5 at the last ring 6 to allow for sliding and accordingly free rotation of shank 7 relative to arms 8, hinged or pivoted to crown 2 at location 9, and fouled in an obstacle 10. Chain 5 is connected to the boat, the head of which (not to scale) is quite schematically shown in the figures of the drawings.

The engaging means 40 is shown with reference to Figs. 5 and 6. Such means comprise a fork 11, secured to said shank 7 by means of the anchor ring 12, completed with an inner U-bolt 13 which, by engaging the link 14 of the operating chain 5, restrains the latter so as to assure load transmission of anchor 3. The small section of bell-shaped tube 15 constitutes a blocking means. It is fitted on fork 11 and retained in position by means of two pins 17 inserted within two holes 18 in said fork 11 and kept in engagement in groove 19 through the action of a leaf spring 20. Said groove 19 provides a lead-in surface 19a for insertion or connection and a surface 19b of relative sealing. Provision is also made for a protection collar 21, integral with fork 11, provided with a counterbored and 21a, and an abutment 31 for abutting and protection of said small section tube 15. This would prevent casual impacts from causing a displacement of said small section tube 15. The surface 32 constitutes a guide for the positioning of chain 5.

The device can be mounted with some slight adjusting operation on most of commercially existing anchors. Thus, only a small change to the anchor is sufficient, by providing an attachment location of the operating chain also to the extreme rear portion of crown 2.

The position illustrated in Figs. 1 and 2 shows chain 5 connected to the crown and running along the shank 7. This chain is restrained to the anchor head by the small section of bell-shaped tube 15, making it integral with fork 11 which, in turn, is integral with anchor ring 12. From the above Figs. 1 and 2, it will be appreciated that should the anchor become fouled, it will suffice to slip off said small section of bell-shaped tube 15 so as the chain disengages from fork 11 on which it is inserted, is released and thus results connected only to the crown 2. This allows for anchor bringing afloat owing to the force exerted on the crown, so as to pull the anchor in direction opposite to that in which it is fouled.

Therefore, a disengaging means should be used for exerting a force in the same direction along which the chain extends, engaging the small section of bell-shaped tube 15 and extracting it from the collar 21 integral with the head of shank 7.

This means is particularly shown in Figs. 2, 3 and 4. It comprises a bell 22 made of heavy material and internally provided with release pawls 23 movable between two extreme positions owing to the provision of per se known stop means (not shown). Said bell 22 is divided into two interlocking valves and completed by a small section of rope 24 connected to the head by means of two rings or catches 25, to which the auxiliary rope 26 is coupled by a catch 27. The disengaging means or member is used as follows.

When anchor 3 has to be brought afloat, valves of bell 22 will be opened onboard, such valves being preferably made of very heavy material, such as cast iron, and the latter will be fitted on the operating rope or chain 5, then closing again and clamping said valves by means of suitable per se known hooks, not shown on the drawings. It is thus apparent that it is not necessary to disengage the chain from the winch or hawsehole. The bell 22 is lowered as secured to the auxiliary rope or chain 26. Owing to its own weight said bell will exert a force for connection to the end of said small section of tube 15, overcoming the reaction of the springs of said release pawls 23. Confirmation for the user will be given in that said auxiliary rope will be released of the load due to the weight of bell 22. As above pointed out, said pawls are inwardly movable, while stop means are provided for end positions. By exerting a pull on an auxiliary rope or chain 26, said small section of bell-shaped tube 15 is released from fork 11 and accordingly said operating chain 5 is disengaged from fork 11. Thus, said chain is no longer restrained to the anchor ring of the anchor head, but only to said crown 2. By pulling said operating chain 5, the last ring 6 will slide to the end of small section of chain 1 and shank 7, with said fork 11 in abutted condition by means of anchor ring 12, will downward rotate (see Fig. 4).

The anchor 3 will be fouled as said shank 7 will continue in downward rotation and arms 8 will
upward rotate, whereas the rear plate of crown 2 will take a nearly aligned position with operating chain 5. Upon release of small section of tube 15, said bell can be recovered by exerting a pull on rope 26.

Then, by pulling said chain 5, the anchor 3 is brought afloat. Said anchor 3 will be brought back to standard position, restraining again the operating chain 5 to fork 11 and upsetting the small section of bell-shaped tube 15 on the latter until the pins 17 snap into groove 19 (see Figs. 5 and 6). Thus, said shank 7 will be connected again to the operating rope 5, that is with said anchor 3 again at holding position.

Thereby it will be clearly evident that double operating ropes or chains are required only when anchor recovery is concerned, and not during normal use thereof. Additionally, at any time the anchor can be used and cast or dropped into sea when required, as the structure thereof is not at the last involved, neither the chain has to be disengaged from the hawsehole and winch. As a whole, the device is of a limited cost and complete reliability during operation thereof.

As above pointed out, the small section of bell-shaped tube is particularly designed in order to avoid any displacement from its normal position in case of hurried operation, or operation carried out under conditions of rough seas.

Claims

1. A device for easy quick refloating of an anchor, said anchor comprising a shank (7) having two arms (8) engaged to one end thereof and made integral by a crown (2), wherein the operating rope or chain (5) is connected to the other end of said shank (7) at an anchor ring (12), the operating rope or chain (5) being connected to the anchor also at the crown (2), whereas the connection of said operating rope or chain (5) with the anchor ring (12) occurs through engaging means (40), characterized in that said engaging means (40) comprise a portion (11, 13, 20, 21) integral with the other end of said shank (7) and is internally provided with at least one member or means (13) for retaining at least one portion or link (14) of the rope or chain (5), to assure the load transmission to said anchor, and further comprising snap blocking means (15) for engagement with the integral portion (11, 13, 20, 21) of the engaging means (40), and provided with a gripping surface (15a) for cooperation with a disengaging means (41), said disengaging means (41) comprising a tubular element (22) provided with a through opening for the internal slide of said rope or chain (5) and further comprising connecting means (23) for the gripping surface (15a) on the blocking means (15) to grip said blocking means (15).

2. A device according to claim 1, characterized in that said blocking means or member (15) is provided with a through opening for internal slide of said rope or chain (5).

3. A device according to claim 1, characterized in that said portion (11, 13, 20, 21) integral with the anchor ring (12) comprises at least one resilient element (20), the pivot ends (17) of which engage with an annular groove (19) in said blocking means (15).

4. A device according to claim 1, characterized in that said connecting means (23) for the gripping surfaces (15a) comprise release paws or rackets, the end positions of which are set by stop means.

5. A device according to claim 1, characterized in that said disengaging means (41) are divided into at least two interengaged valves to aid an insertion of said rope or chain (5) when desiring to operate with said disengaging means (41).

6. A device according to claim 1, characterized in that said rope or chain (5) engages with connecting means (1) secured to the rear end portion of the crown (2) which is unaffected relative to any gripping position of the anchor, to allow the changing of the application location for the force exerted through said rope or chain (5) from one to the other end of the anchor (3).

7. A device according to claim 1, characterized in that said portion integral with the engaging means (40) comprises a collar (21) having counterbored edges (21a) and an abutting surface (31) for abutment and protection of said blocking means (15).

Revendications

1. Dispositif pour le renflouage rapide et aisé d'une ancre, ladite ancre comprenant un tige (7) ayant deux bras (8) engagés à une extrémité de celui-ci et rendus solidaires par un diamant (2), où le câble ou chaîne de manœuvre (5) est joint à l'autre extrémité dudit tige (7) en correspondance d'une cigale (12), le câble ou chaîne de manœuvre (5) étant joint à l'ancre aussi en correspondance du diamant (2), tandis que la jonction dudit câble ou chaîne de manœuvre (5) avec la cigale (12) s'effectue à travers un moyen d'engagement (40), caractérisé par le fait que ledit moyen d'engagement (40) comprend une portion (11, 13, 20, 21) solidaire avec l'autre extrémité dudit tige (7) et est munie intérieurement au moins d'un membre ou moyen (13) apte à retenir du moins une portion ou anneau (14) du câble ou chaîne (5), pour assurer la transmission du chargement à ladite ancre, et comprenant en outre un moyen de blocage (15) à cléña apte à s'engager avec la portion solidaire (11, 13, 20, 21) du moyen d'engagement et pourvu d'une surface de prise (15a) pour coopérer avec un moyen de désengagement (41), ledit moyen de désengagement (41) comprenant un élément tubulaire (22) muni d'une ouverture passante pour le glissement intérieur dudit câble ou chaîne (5) et comprenant en outre moyens d'accrochage (23) pour la surface de prise (15a) sur le moyen de blocage (15) pour saisir ledit moyen de blocage (15).

2. Dispositif selon la revendication 1, caractérisé par le fait que ledit membre ou moyen de blocage (15) est muni d'une ouverture passante
pour le glissement à l’intérieur dudit câble ou chaine (5).

3. Dispositif selon la revendication 1, caractérisé par le fait que ladite portion (11, 13, 20, 21) solidaire avec la cigale (12) comprend du moins un élément élastique (20), dont les extrémités à pivot (17) s’engagent avec une rainure (19) annulaire prévue dans ce moyen de blocage (15).

4. Dispositif selon la revendication 1, caractérisé par le fait que ces moyens d’accrochage (23) pour les surfaces de prise (15a) comportent cliquets à clenche dont les positions extrêmes sont fixées par des moyens d’arrêt.

5. Dispositif selon la revendication 1, caractérisé par le fait que lesdits moyens de désengagement (41) sont subdivisés en du moins deux valves engagées entre elles pour faciliter l’insertion dudit câble ou chaine (5) quand on désire opérer avec lesdits moyens de désengagement (41).

6. Dispositif selon la revendication 1, caractérisé par le fait que ledit câble ou chaine (5) s’engage avec un moyen de jonction (1) assuré à la portion postérieure extrême du diamant (2) qui n’est pas influencé par aucune position de prise de l’ancre, de façon à permettre le déplacement du point d’application de la force exercée à travers ledit câble ou chaine (5) d’une extrémité à l’autre de l’ancre (3).

7. Dispositif selon la revendication 1, caractérisé par le fait que ladite portion solidaire avec le moyen d’engagement (40) comprend un collier (21) ayant bords évasés (21a) et une surface d’aboutement (31) pour l’aboutement et la protection dudit moyen de blocage (15).

Patentansprüche

1. Vorrichtung zum einfachen und schnellen Flottmachen eines Ankers mit einem Schaft (7), der zwei an einem Ende desselben angebrachte Arme (8) hat, die mit einem Diamanten (2) befestigt sind, in dem das Tau oder die Betätigungskette (5) am anderen Ende des Schaftes (7) in Übereinstimmung eines Ankerschäkel (12) verbunden ist, wobei das Tau oder die Betätigungskette (5) auch in Übereinstimmung des Diamanten (2) am Anker befestigt ist, während die Verbindung des Tau oder der Betätigungskette (5) mit dem Ankerschäkel (12) über ein Verbindungsmittel (40) erfolgt, dadurch gekennzeichnet, dass das Verbindungsmittel (40) einen an dem anderen Ende des Schaftes (7) angefertigten Teil (11, 13, 20, 21) aufweist und innen mit wenigstens einem Glied oder Mittel (13) versehen ist, um wenig-