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Publication number: **0 145 688 B1**

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EUROPEAN PATENT SPECIFICATION

- 49 Date of publication of patent specification: **19.06.91** 51 Int. Cl.⁵: **B63C 7/00, B63B 23/04**
- 21 Application number: **84850378.5**
- 22 Date of filing: **06.12.84**

54 **Device on ships for lowering buoy stations or corresponding other apparatuses or apparatus assemblies overboard into the sea and for lifting them on board.**

30 Priority: **09.12.83 FI 834516**

43 Date of publication of application:
19.06.85 Bulletin 85/25

45 Publication of the grant of the patent:
19.06.91 Bulletin 91/25

64 Designated Contracting States:
BE DE FR GB NL SE

56 References cited:
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Description

The invention relates to a device on ships for launching and recovering from the sea buoy stations, or similar apparatus such as marine research equipment, said device including a wire guiding structure pivotable around a horizontal axis located close to the shell plating or gunwale of the ship and including a wire or rope connected to a winch for lowering and raising the apparatus.

A buoy station is a contraption used in marine research in which e.g. measuring equipment is attached to a wire or rope between an anchor and a carrying buoy. In prior art, as shown for instance in US-A-3807334, submergeable equipment is launched and recovered from a ship by means of an auxiliary unit which is lowered over the side by a pivotable recovery boom and winch arrangement. This kind of device is not suitable for handling equipment which must be attached to a wire or rope at set intervals between an anchor and a buoy. If this is done with the recovery boom pivoted inboard there must be long lengths of the wire or rope loose on the deck, and if done with the boom pivoted outboard the wire or rope will be swinging with the motion of the ship and difficult to reach in safety from the deck. Similarly when using a conventional davit, attachment of equipment to the wire or rope must take place over the ship's side. In any seaway this can be a hazardous operation and if the ship is moving violently this can cause a pendulum motion of the wire or rope, with risk that delicate and expensive equipment will strike the legs of the davit or the side of the ship.

The object of the present invention is to provide a novel device for the purposes of use mentioned above, by means of which device it is possible to substitute for the use of davits and to avoid the said drawbacks and risk factors occurring in connection with the use of davits.

In view of achieving these objectives, and those that will come out later, the invention is mainly characterised in that the wire guiding structure is a pivotable platform having a first end edge close to its pivot axis and a second end edge remote from its pivot axis, the first end edge being fitted with a roller and the second end edge being fitted with a pulley, both engageable by the wire or rope, and that the platform is pivotable inboard to provide a preferably horizontal working surface at a convenient height for the attachment/ release of apparatus to/from the wire or rope, and is pivotable outboard for moving the wire or rope engaged in the pulley far enough away from the side of the ship for convenient lowering or hoisting of apparatus into and out of the sea.

Further features of the invention are given in the appended subclaims.

In the device in accordance with the invention, the shifting of loads overboard is considerably better controlled. There is no movement similar to the pendulum motion taking place between the support legs of a conventional davit.

In the invention, the wire can be passed from the winch of the ship to the plane pivoting platform as protected, e.g., through the deck or in troughs placed on the deck. When the pivoting platform is in the upper position, it is also possible to pass the wire to the pulley of the pivoting platform as protected.

The attaching of the apparatuses to the wire takes place in the advantageous working position placed at an appropriate level, wherein the apparatuses to be attached to the wire rest on the substantially horizontal pivoting platform. The wire passing into the sea is attached to the ship preferably by means of a brake or some other, corresponding device, e.g., by the intermediate of the pivoting platform, so that the wire placed on the pivoting platform is free from tensions.

In the following, the invention will be described in more detail with reference to an exemplifying embodiment of the invention, illustrated in the figures of the attached drawing, whereat the invention is not restricted to the details of the said exemplifying embodiment.

Figure 1 is an axonometric view of a device in accordance with the invention in the horizontal inwardly pivoted position.

Figure 2 shows the device of Fig. 1 in the outwardly pivoted position.

The device shown in the figures mainly comprises a plane pivoting platform 10, which is provided with vertical sides 11a and 11b at both longitudinal edges. A roll 13 is attached rotably by means of shafts 15 to one edge of the pivoting platform 10, and a pulley 21 is journaled to the opposite edge of the platform 10. The pivoting platform 10 is fitted in connection with the deck of the ship as pivotable on vertical flanges 14a and 14b, which are attached to immediate proximity of the shell plating 23 of the ship.

Horizontal guides 17 are attached to the edge of the shell plating 23 of the ship by means of pivot shafts 18, the said guides being supposed to guide the lifting and lowering wire 20. The guides 17 are shown in the outwardly pivoted guiding position by means of reference numeral 17', whereat the wire 20 runs between them V.

The platform 10 can be pivoted either by manual force or by means of particular actuating means, e.g. by means of a hydraulic cylinder, and the pivoting platform 10 can be locked at the working position shown in Fig. 1, located at an appropriate height H from the deck. In this position, e.g., the apparatus K can be lifted onto the pivoting

platform 10, the said apparatus being shown schematically in the figure. The apparatus K is attached to the wire 20, e.g., by means of a shackle 22 or by other means, the said wire 20 running via the pulley 21 of the pivoting platform 10 to the winch of the ship (not shown) through the deck and/or in troughs on the deck.

To the end of the pivoting platform 10 placed next to the guide roll 13, a brake device 19 is attached, which consists, e.g., of two brake shoes placed one opposite the other, the wire 20 being fitted so as to pass through the space between them. By pivoting the said brake shoes against each other by means of an appropriate actuating means (not shown), it is possible to lock the wire 20, by the intermediate of the pivoting platform 10, in relation to the ship so that the wire 20 placed on the pivoting platform 10 is free from tensions.

After the apparatus K has been attached to the wire 20 in the position shown in Fig. 1, by means of a shackle 22 or equivalent, the pivoting platform 10 is pivoted by means of an actuating device (not shown) or manually to the outwardly pivoted position 10' shown in Fig. 2. Thereat the pivoting platform 10' extends by the dimension L to outside the shell plating 23 of the ship, i.e. to the sea-side. The lifting and lowering wire 20 runs as guided by the pulley 12 of the pivoting platform 10' and by the other pulley 24 to the winch of the ship. In the position shown in Fig. 2, by means of the wire 20 or by means of a corresponding rope, by using the winch of the ship, the apparatus K or any other, corresponding apparatus or instrument can be lowered into the sea and, correspondingly, lifted out of the sea.

In the position shown in Fig. 2, the pivoting platform 10' is kept in position by an appropriate limiter or any other, corresponding device. When various apparatuses are lifted out of the sea in the position of the pivoting platform 10' shown in Fig. 2, the apparatus is first lifted to the level of the pivoting platform 10', and thereupon the pivoting platform 10' is pivoted to the horizontal position shown in Fig. 1, whereby the apparatus K lifted out of the sea can be placed onto the pivoting platform 10 reaching the horizontal position under control, in which position the necessary operations can be carried out and, if necessary, the apparatus K be detached from the wire 20 and, after necessary operations, possibly be lowered again into the sea.

At the stage of lifting of the apparatus in the sea, the guides 17 may be pivoted around their pivot shafts 18 to the position 17' or to an appropriate V-angle so that the wire 20 is guided appropriately into connection with the pivoting platform 10. By means of the guides 17, it is also ensured that the wire 20 is guided between the shoes of the brake 19. If the brake is of such a type that the

bringing of the wire 20 into connection with the brake can be ensured by other means, the guides 17 are not necessarily needed.

When the device in accordance with the invention is out of operation, it is kept pivoted in the inwardly pivoted position of Fig. 1, or it may be kept in any position considered to be most advantageous from the point of view of the other use of the ship. The guides 17 are in the inward position shown in Fig. 1.

In the following, the patent claims will be given, whereat the various details of the invention may show variation within the scope of the inventive idea defined in the said claims.

Claims

1. A device on ships for launching and recovering from the sea buoy stations, or similar apparatus such as marine research equipment, said device including a wire guiding structure pivotable around a horizontal axis located close to the shell plating or gunwale (23) of the ship, and including a wire or rope (20) connected to a winch for raising and lowering the apparatus, characterized in that the wire guiding structure is a pivotable platform (10) having a first end edge close to its pivot axis (16) and a second end edge remote from its pivot axis (16), the first end edge being fitted with a roller (13) and the second end edge being fitted with a pulley (21), both engageable by the wire or rope (20), and that the platform (10) is pivotable inboard to provide a preferably horizontal working surface at a convenient height for the attachment/release of apparatus to/from the wire or rope (20), and is pivotable outboard for moving the wire or rope engaged in the pulley (21) far enough away from the side of the ship for convenient lowering or hoisting of apparatus into and out of the sea.
2. A device as in claim 1, characterized in that the pivotable platform (10) has a flat bottom surface and sides (11a, 11b), the sides being pivotally connected at the pivot axis (16) to supports (14a, 14b) which are attached to the deck of the ship close to the gunwale (23).
3. A device as in claim 1 or 2, characterized in that the pivotable platform (10) is fitted with a brake (19) by which the wire or rope (20) running over the platform can be locked relative to the platform.
4. A device as in any of the claims 1 to 3, characterized in that guide arms (17) are fitted to the deck, below the roller (13) and adjacent

to the gunwale (23) to ensure that the lifting wire or rope (20) will be guided on to the roller (13) in a correct position.

5. A device as in claim 4, characterized in that the guide arms (17) are mounted on pivots (18) so that they may be swung inboard when not in use.

Revendications

1. Dispositif embarqué pour larguer ou récupérer en mer des stations formant bouée ou appareil similaire tel qu'un équipement de recherche marine, le dispositif comportant une structure de guidage de câble pivotante autour d'un axe horizontal situé à proximité du bordé de la coque ou du plat bord (23), et comportant un câble ou cordage (20) relié à un treuil pour lever ou abaisser l'appareil, caractérisé en ce que la structure de guidage du câble est une plateforme pivotante (10) ayant un premier bord d'extrémité à proximité de son axe de pivotement (16) et un second bord d'extrémité éloigné de son axe de pivotement (16), le premier bord d'extrémité étant muni d'un rouleau (13) et le second bord d'extrémité étant muni d'une poulie (21), qui sont tous deux susceptibles de coopérer avec le câble ou le cordage (20), et en ce que la plate-forme (10) est pivotante à l'intérieur du bord pour fournir une surface de travail de préférence horizontale à une hauteur adaptée pour accrocher l'appareil au câble ou cordage (20) ou décrocher l'appareil de celui-ci, et est pivotante à l'extérieur du bord pour éloigner le câble ou cordage coopérant avec la poulie (21) assez loin à l'extérieur du bateau pour, de manière adaptée, abaisser l'appareil dans la mer ou le relever à l'extérieur de la mer.
2. Dispositif selon la revendication 1, caractérisé en ce que la plate-forme pivotante (10) comporte une surface inférieure plane et des côtés (11a, 11b), les côtés étant reliés de manière pivotante au niveau de l'axe de pivotement (16) à des supports (14a, 14b) qui sont fixés sur le pont du bateau à proximité du plat bord (23).
3. Dispositif selon la revendication 1 ou 2, caractérisé en ce que la plate-forme pivotante (10) est munie d'un frein (19) grâce auquel le câble ou cordage (20) courant au-dessus de la plate-forme peut être bloqué par rapport à la plate-forme.
4. Dispositif selon l'une quelconque des revendications

1 à 3, caractérisé en ce que des bras de guidage (17) sont fixés au pont en-dessous du rouleau (13) et de manière adjacente au plat bord (23) pour assurer le guidage du câble ou cordage (20) vers une position correcte sur le rouleau (13), lors du relèvement du câble ou cordage.

5. Dispositif selon la revendication 4, caractérisé en ce que les bras de guidage (17) sont montés sur des pivots (18) de manière telle qu'ils peuvent être basculés à l'intérieur du bord lorsqu'ils ne sont pas utilisés.

Ansprüche

1. Eine Vorrichtung auf Schiffen zur Aussetzen und Einholen eines Apparates, wie z. B. einer Marinerforschungsapparatur, von den Seebojenstationen oder dgl., wobei die Vorrichtung eine Drahtführungsanordnung enthält, welche verschwenkbar um eine horizontale Achse nahe der Außenhautbeplankung oder dem Schanzdeck (23) des Schiffes angeordnet ist, und ein Drahtseil oder ein Tau (20) enthält, das mit einer Haspel zum Anheben und Absenken des Apparates verbunden ist, **dadurch gekennzeichnet**, daß die Drahtführungsanordnung eine verschwenkbare Plattform (10) mit einem ersten Endrand nahe seiner Schwenkachse (16) und einem zweiten Endrand entfernt von seiner Schwenkachse (16) ist, wobei der erste Endrand mit einer Rolle (13) und der zweite Endrand mit einer Rillenscheibe (21) versehen ist, und wobei beide durch das Drahtseil oder Tau (20) belegbar sind, und daß die Plattform (10) ins Bordinnere verschwenkbar ist, um eine vorzugsweise horizontale Arbeitsoberfläche in einer geeigneten Höhe zum Anbringen/Lösen des Apparates an/von dem Drahtseil oder Tau (20) zu bilden, und nach außenbords zum Bewegen des in die Rillenscheibe (21) eingelegten Drahtseiles oder Taus weit genug weg von der Seite des Schiffes zum geeigneten Absenken oder Aufziehen des Apparates in die bzw. aus der See verschwenkbar ist.
2. Eine Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, daß die verschwenkbare Plattform (10) eine ebene Bodenfläche und Seitenteile (11a, 11b) aufweist, wobei die Seitenteile verschwenkbar an der Schwenkachse (16) mit Trägern (14a, 14b) verbunden sind, welche am Deck des Schiffes nahe dem Schanzdeck (23) angebracht sind.

3. Eine Vorrichtung nach Anspruch 1 oder 2,
dadurch gekennzeichnet,
daß die verschwenkbare Plattform (10) mit einer Hemmeinrichtung (19) versehen ist, durch welche das über die Plattform laufende Drahtseil oder Tau (20) relativ zu der Plattform festgehalten werden kann. 5
4. Eine Vorrichtung nach wenigstens einem der Ansprüche 1 bis 3, 10
dadurch gekennzeichnet,
daß Führungsarme (17) auf dem Deck unterhalb der Rolle (13) und angrenzend an das Schanzdeck (23) montiert sind, um zu sichern, daß das sich hebende Drahtseil oder Tau (20) 15
auf der Rolle (13) in einer korrekten Position geführt wird.
5. Eine Vorrichtung nach Anspruch 4, 20
dadurch gekennzeichnet,
daß die Führungsarme (17) auf Drehpunkten (18) montiert sind, so daß sie ins Bordinnere geschwenkt werden können, wenn sie nicht in Gebrauch sind.

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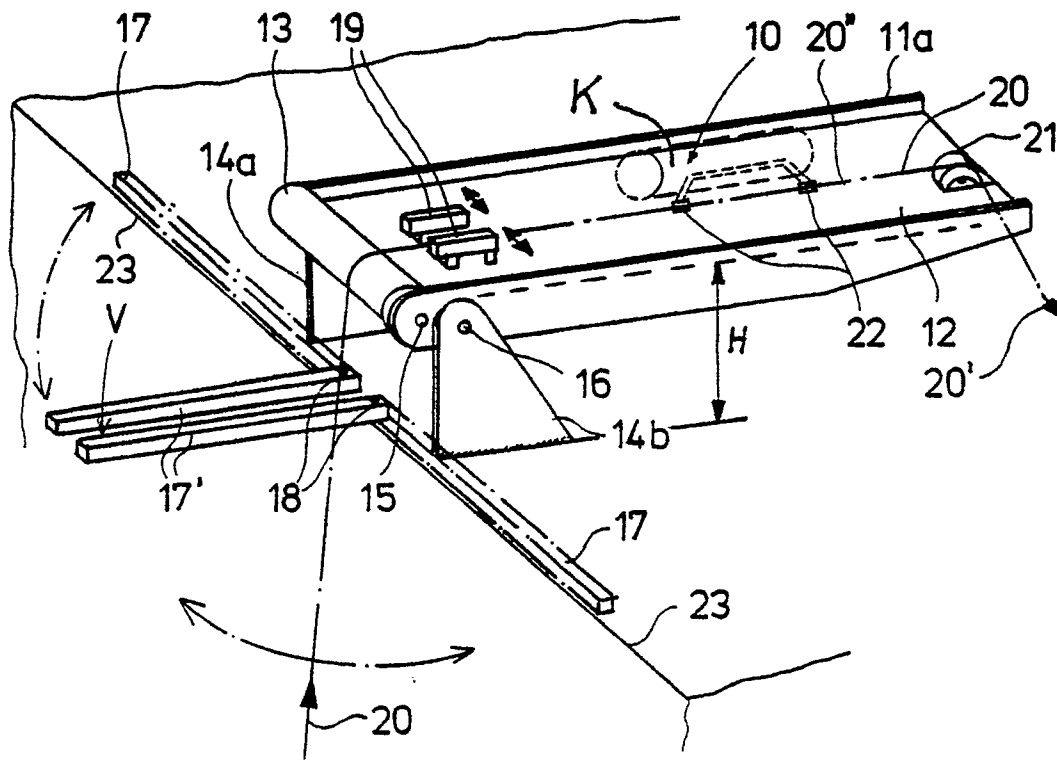


FIG. 1

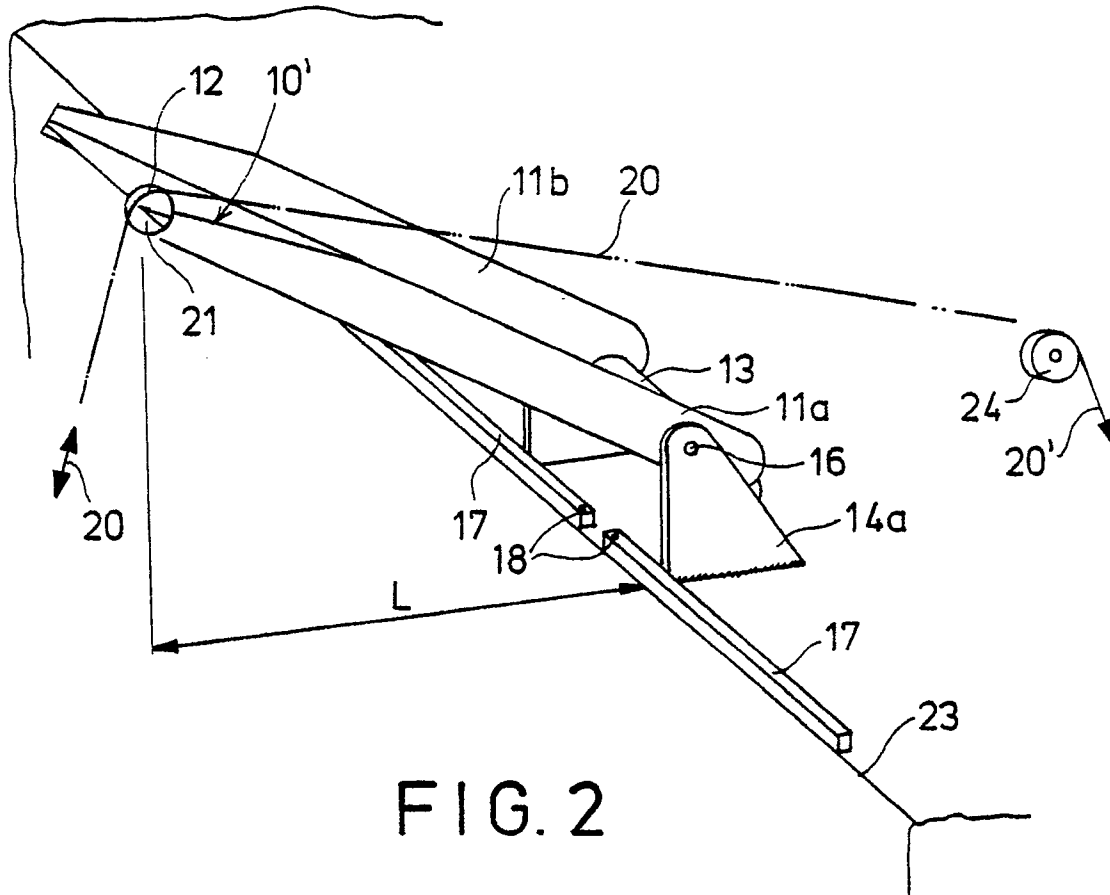


FIG. 2