Abstract: Hoisting system (1) comprising a movable support frame (2) which can be secured onto a base (9), and counterweights (7) which are provided on the support frame (2). The system further comprises a hoisting crane (8) which is secured on to or the support frame (2) in a position relative to the counterweights (7) such that, when a load is hoisted, the forces exerted on the support frame (2) by the hoisting crane (8) and the counterweights (7) are in balance. An individual hoisting system (1) is provided which can be tailored to the object to be achieved, and which additionally provides space on the deck of a vessel (5).
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
MOVABLE HOISTING SYSTEM FOR USE ON VESSELS

The present invention relates to a hoisting system.

Boats are fitted with such a hoisting system, which is provided on deck of a vessel. In general, a hoisting crane is provided on deck, which may or may not be freely moveable thereon, and which is adjustable for position or moveable on deck. Other equipment, tools, spare parts etcetera are often also present on deck. In the case of vessels which are used to remove, for example a floating layer containing oil, algae or chemicals, from the surface of the water, use is made of sweeping arms which can be hoisted on and off deck at regular intervals, in which skimmer containers or receptacles can be arranged and to which means for removing the floating layer can be coupled, such as brushes, buckets, discs, pumps etcetera.

A constant point of attention is that on deck there should be sufficient, well-arranged space for walking, hoisting operations and maneuvering under sometimes rough conditions, in particular from the point of view of safety, but also with respect to the required speed of acting in the case of removing oil from the surface of the water.

It is an object of the present invention to provide an improved hoisting system, which is suitable in particular for safe use onboard ships, and which can be installed rapidly in a flexible manner and with fewer drawbacks as compared to those mentioned above, and which can be flexibly employed on a variety of vessels which are customarily not equipped for such a hoisting system.

To achieve this, the movable hoisting system according to the invention has the characteristics as claimed in claim 1.

The invention has the advantage that it enables to create an independent modular hoisting system by hoisting
the supporting frame, carrying the hoisting crane and the counterweights, onboard ships at the proper location and in the proper position and then securing said frame. This system enables simple on-shore storage and such a system can be flexibly employed, if required, on various types of ships, such as barges, floating dredges, offshore ships, supply ships etcetera, where such a hoisting system according to the invention is not even available without structural changes to the vessel. Said changes, which are not necessary when the invention is employed, are structural adaptations to the ship's construction, the ship's deck and adaptations on board of the ship, which are required for anchoring, for providing attachment points or to create sufficient space. These adaptations generally also require extra human labor, such as grinding, welding, or cutting by means of a torch, etcetera. An additional advantage that is achieved by employing the invention resides in that a change and revision of the classification of the vessel are not necessary. By virtue thereof, ships which are normally not used, or are unsuitable for use, as oil-containment ships can be reconverted within a short period of time to oil-containment ships.

In order to function well, the hoisting crane, whose freedom of movement is limited because the crane is movable always in relation to the support frame and the counterweights, does not have to be a crane which is mobile on deck. This limited freedom of movement leads to fewer unsafe situations for personnel on deck and, in addition, creates more deck space, which also has a favorable effect on the survey ability.

In particular on vessels which are used for specialist activities and operations and on which specific hoisting operations take place, such as vessels used for oil containment, where use is made of sweeping arms, coupling
elements thereof and skimmer containers with accessories which are hoisted on and off the ship regularly, it has been found to be advantageous to limit the maneuvering space of the hoisting crane, which is adapted for said specialist tasks, to the respective hoisting area. Unlike what would normally be expected, this leads to the above-mentioned advantages elsewhere on deck and to safer use of the hoisting system.

A preferred embodiment of the hoisting system according to the invention is characterized in that guide means over which the hoisting crane is movable are secured on or to its support frame. This has the advantage that, while the above-mentioned advantages are preserved, more possibilities still can be created in the direct vicinity, enabling further hoisting activities to be performed in a flexible manner and if required by in-situ conditions.

A further preferred embodiment of the hoisting system according to the invention is characterized in that the support frame forms part of at least one module or container provided with hoisting and locking members. This has the advantage that the hoisting system can be transported, for example, on the road like an ordinary container, or can be hoisted on/off the vessel and locked in position on deck. By virtue thereof, the hoisting system does not have to be secured on deck by welding and detached by grinding, which is advantageous.

Further detailed possible embodiments, which are set forth in the remaining claims, are mentioned together with the associated advantages in the following description.
The hoisting system according to the present invention will now be explained in greater detail with reference to the drawings shown below, in which corresponding parts bear the same reference numerals. In said drawings:

Figure 1 is a perspective view of an operational possible embodiment of the hoisting system according to the invention;

Figure 2 is a plan view of the hoisting system of fig. 1;

Figures 3 and 4 are diagrammatic perspective views of a further embodiment of the system according to the invention; and

Figure 5 is a perspective view of yet a further embodiment of the hoisting system according to the invention; and

Figure 6 is a plan view of the hoisting system according to the invention.

Figure 1 shows a hoisting system 1 which can be installed on shore, on a vehicle or, in this case, on a vessel by means of hoisting. The system 1 comprises a movable support frame 2, which is shown more clearly in the embodiments of figures 3 and 4. In figures 1 and 2, the support frame 2 is situated at the bottom of a shown container 3, and in figures 5 and 6, it is situated on the container 3. The container may be a customary 20-foot container which can be readily hoisted up and anchored or guyed, using guy ropes 6, to a base, in this case the deck 4 of a vessel 5. In figures 3 and 4, the container walls have been removed. Counterweights 7 are provided on, or are at least coupled to, the support frame 2 secured on or to the base 4. If necessary, said counterweights 7 may be a number of separate weights. The counterweights are, for
example, ballast tanks 7 which are to be filled in situ with usually seawater.

A hoisting crane 8 is provided on, secured to, or at least coupled to the support frame 2. The counterweights and the hoisting crane 8 are connected to the support frame 2 in a position relative to one another, within an area, such that when a load L is hoisted, the forces exerted on the support frame 2 by the hoisting crane 8 and the counterweights 7 are in balance at least to some extent.

Under certain conditions, the weight of the load L is known beforehand, depending on the mission to be performed by the vessel 5. The robustness and solidity of the flexibly employable system 1 and the above-mentioned components thereof, will have been adapted in the design stage to the expected future mission, so that a tailored hoisting concept, without over dimensioning or under dimensioning of the components of the vessel, guarantee optimum employability and commercial feasibility.

In the case of a fixed arrangement, as shown in figures 3 and 4, the counterweights 7 and the base or pivoting pin 9 of the hoisting crane 8 are each fixed onto the support frame 2 and are integrated therein. The figures specifically show two counterweights 7 and, between them, an area covering the operational positions of the hoisting crane 8 during hoisting in a balanced position. Balance is achieved, in particular, when a sweeping arm 10, such as used on an oil-sweeping vessel 5 of the current Applicant, is hoisted, from the deck 4, into or out of the water by the hoisting crane 8, which in said area, is positioned on the support frame 2. The shown counterweights 7, viewed in a horizontal plane, each are triangular in section, the oblique side 11 of which facing said area and the position of the hoisting crane 8. This has the advantage that space for mounting the hoisting crane 8 becomes available between
the oblique sides 11, and the area around the base 9 of the crane is flanked by the stability-increasing weights 7.

In the case of incidental hoisting operations which could cause imbalance of the system 1, an auxiliary balance arm (not shown), which can be coupled to the support frame 2 and which is adjustable for length if necessary, can be extended outwards, and said auxiliary balance arm can be supported in a stable manner on the deck 4 by means of known supporting struts.

For the purpose of the required flexible employability in situ of the system 1, guide means 12 may have been provided, if required, between for example the support frame 2 and the hoisting crane 8. By virtue thereof, the base 9 of the hoisting crane 8 can be moved across the area, and even, if necessary, to the area outside the contours of the support frame 2 (see figures 5 and 6). This leads to an even wider employability with respect to lighter-weight hoisting activities, wherein, for example, pumps, spare parts, skimmer containers or, for example, floating layer-removing means to be coupled thereto, such as brushes, buckets, discs, etcetera, must be hoisted.

In a preferred embodiment, wherein all of the possibly required, aforementioned parts of the system 1 are accommodated in a number of containers 3, said containers can be centrally stored, allowing them to be loaded onto trailers, if required, and transported to a harbor.

The containers 3 can be advantageously arranged, in any required shape or orientation, as a modular entity on the deck 4. By virtue thereof, the modular system can suitably be adapted in a simple manner to existing deck-geometries, without any of the aforementioned structural adaptations being required.
CLAIMS

1. A hoisting system comprising:
   - a movable support frame which can be secured onto a base,
   - counterweights which are secured on or to the support frame, and
   - a hoisting crane which is secured on or to the support frame in a position relative to the counterweights such that, when a load is hoisted, the forces exerted on the support frame by the hoisting crane and the counterweights are in balance.

2. The system according to claim 1, characterized in that the counterweights are a number of separate counterweights secured on or to the support frame.

3. The system according to claim 1 or 2, characterized in that the counterweights comprise at least two counterweights and, between them, an area covering the positions of the hoisting crane during hoisting in a balanced position.

4. The system according to any one of claims 1 to 3, characterized in that, viewed in a horizontal plane, the counterweights are triangular in section, the oblique sides of which face the position of the hoisting crane.

5. The system according to any one of claims 1 to 4, characterized in that the
counterweights are formed by tanks which are filled with ballast, such as water or sand, container pontoons, or steel or concrete blocks.

6. The system according to any one of claims 1 to 5, characterized in that the system comprises at least one auxiliary balance arm which is secured to the support frame and which can be extended outward from said support frame.

7. The system according to any one of claims 1 to 6, characterized in that the system comprises guide means over which the hoisting crane can be moved, and which are secured between the support frame and the hoisting crane.

8. The system according to any one of claims 1 to 7, characterized in that the system comprises supporting struts which are adjustable for length and which are secured to the support frame and which can be supported outside the support frame.

9. The system according to any one of claims 1 to 8, characterized in that the support frame forms part of at least one module or container provided with hoisting and locking members.

10. The system according to claim 9, characterized in that the at least one module or container is provided with walls which are at least partly detachable from the support frame.
11. The system according to claim 9 or 10, characterized in that the at least one module or container is provided with hoisting and/or transport means for locking the at least one module or container on a vehicle and/or vessel.

12. The system according to any one of claims 9 to 11, characterized in that in the module or container there is free space on the support frame for storage of at least one sweeping arm which is to be hoisted into the water by means of the hoisting crane, which sweeping arm is used to remove a floating layer which may contain oil, algae or chemicals and the like from the surface of the water.
INTERNATIONAL SEARCH REPORT
International application No
PCT/NL2013/05Q109

A. CLASSIFICATION OF SUBJECT MATTER
INV. B66C23/74 E02B15/00 B66C23/20
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B66C E02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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Date of the actual completion of the international search
21 June 2013

Date of mailing of the international search report
01/07/2013

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**Information on patent family members**

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