

PATENT SPECIFICATION

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(54) IMPROVED DOCKYARD STAGE INSTALLATION

(71) We, SBIWA KIKO COMPANY LIMITED, of No. 7-1, 3-chome, Ginza, Chuo-Ku, Tokyo, Japan, a Company organised under the laws of Japan, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a dockyard stage installation intended to be used for carrying out repair and building work on a ship hull in the dockyard.

Usually, a known type of stage for the purpose referred to is so constructed that after the repair or building work is finished, it can be dismantled and withdrawn in such a way that it does not obstruct free flotation of the completed ship when the ship hull is removed from the dock.

In the known type of stage a framework is supported by means of a number of shores, and a consequence of this is that there has to be an assembly and disassembly operation for every ship hull. This occupies much labour and time, and considerably reduces working efficiency.

The object of the present invention is to provide a dockyard stage installation which is mobile, versatile and capable of being used with a variety of hulls without the need for separate assembly and dismantling operations.

In accordance with the invention in its widest aspect therefore a dockyard stage installation comprises a guide rail to be affixed to a dockyard wall, a motor driven carriage traversable horizontally along the guide rail, a cantilever arm assembly pivotally coupled at one end to the carriage so as to be adjustable by turning about a vertical axis and also by turning about a horizontal axis, and a platform pivotally

arm assembly.

The platform is preferably coupled to the cantilever arm assembly in such manner as to remain horizontal irrespective of the position of turning about the horizontal axis.

A typical and at present preferred dockyard stage installation in accordance with the present invention is illustrated by way of example in the accompanying drawings in which:—

Figure 1 is a side elevation;

Figure 2 is a plan view; and

Figure 3 is an enlarged part fragmentary view of part of Figure 2.

Referring now to the drawings, there is shown a dockyard wall W in the top of which, near the edge, there is mounted a horizontal rail 13. Mounted on this rail is a carriage 1. This carriage has rollers 8 which engage the rail 13 and it also has a downward extension or leg 1' which is maintained in parallel spaced relation to the wall W by a roller assembly 9. Pivotaly supported parallel to the leg 1' between upper and lower brackets is a swivel 10. The top end of this swivel 10 carries a pivot pin 2' which is coupled to the main element 2b of a cantilever arm assembly 2. The middle part of the swivel 10 is coupled to the main element 2b by an hydraulic cylinder and ram assembly 3,3', whereby the cantilever arm assembly can be swung upwardly and downwardly in a vertical plane, e.g. to the positions indicated by the chain lines in Figure 1, whilst also being horizontally swingable through 90° about the axis of the swivel 10 by operation of an hydraulically operated cylinder and ram assembly 4,4' coupled between the carriage 1 and a lever 11 attached to the swivel 10.

At the free end of the cantilever arm

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assembly there is a work platform 5 which is swingably attached by a horizontal pivot to the end of the main element 2b so as to be movable in a vertical plane. The platform 5 has upward extensions 2a' which are coupled by a link 2'' to a pair of upward extensions 2a from the swivel 10. The elements 2a, 2b, 2a' and 2'' thus constitute a parallelogram linkage such that whatever angle the cantilever arm assembly is caused to assume in a vertical plane the platform 5 stays horizontal.

Mounted above the platform 5 for swivelling movement through 90° about the axis of a vertical pivot 12', as most clearly shown in Figure 3, is a work table 6, the rotational position of which is controlled by a lever-coupled hydraulic ram 12 mounted beneath the platform 5.

The carriage 1 is traversed along the rail 13 by means of a roller 7 which is driven by a motor M. Figure 2 also shows an oil tank 18 and a control box 14. As shown in Figure 2, the cantilever arm assembly includes a base plate 2c between the sides of the main element 2b and as shown in Figure 1 a hand rail 2d is provided at each side along the main element 2b.

If it should be required to turn the pivot 12' through an angle exceeding 90°, for instance 120° to about 180°, a rack would be provided at the foremost end of the ram piston and would engage a pinion fixed on the pivot 12'.

The dockyard stage of the present invention having the aforementioned construction is one wherein the vertical and horizontal position of the work table 6 in relation to a ship in the dockyard can be selected by adjusting the angular position of the cantilever arm assembly in vertical and horizontal directions by using the hydraulic cylinder and ram assemblies 3,3' and 4,4'. Simultaneously the position of the work table 6 can be selected by traversing the carriage 1 to right or left so that it may serve for repair or other work on the hull of a ship in the dock.

Further the work table 6 itself can be

turned so that it is set in a direction best suited for the work to be performed.

WHAT WE CLAIM IS:—

1. A dockyard stage installation comprising a guide rail to be affixed to a dockyard wall, a motor driven carriage traversable horizontally along the guide rail, a cantilever arm assembly pivotally coupled at one end to the carriage so as to be adjustable by turning about a vertical axis and also by turning about a horizontal axis, and a platform pivotally coupled to the free end of the cantilever arm assembly.

2. A dockyard stage installation as claimed in Claim 1, wherein the platform is coupled to the cantilever arm assembly in such manner as to remain horizontal irrespective of the angle of inclination of the cantilever arm assembly about said horizontal axis.

3. A dockyard stage installation as claimed in Claim 1 or 2 wherein a work table is swivellably mounted on said platform.

4. A dockyard stage installation as claimed in any of Claims 1 to 3 wherein the cantilever arm assembly is connected by a horizontal pivot to a swivel which is supported from a downward extension of the carriage which engages the dockyard wall.

5. A dockyard stage installation as claimed in any of Claims 1 to 4 and including hydraulically operated means for turning the cantilever arm assembly about the vertical and horizontal axes.

6. A dockyard stage installation as claimed in Claim 2, 3, 4, or 5 wherein the platform is coupled to the cantilever arm assembly by a component of a parallelogram linkage.

7. A dockyard stage installation constructed and arranged substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

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Mounted above the platform 5 for swivelling movement through 90° about the axis of a vertical pivot 12', as most clearly shown in Figure 3, is a work table 6, the rotational position of which is controlled by a lever-coupled hydraulic ram 12 mounted beneath the platform 5.

The carriage 1 is traversed along the rail 13 by means of a roller 7 which is driven by a motor M. Figure 2 also shows an oil tank 18 and a control box 14. As shown in Figure 2, the cantilever arm assembly includes a base plate 2c between the sides of the main element 2b and as shown in Figure 1 a hand rail 2d is provided at each side along the main element 2b.

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The dockyard stage of the present invention having the aforementioned construction is one wherein the vertical and horizontal position of the work table 6 in relation to a ship in the dockyard can be selected by adjusting the angular position of the cantilever arm assembly in vertical and horizontal directions by using the hydraulic cylinder and ram assemblies 3,3' and 4,4'. Simultaneously the position of the work table 6 can be selected by traversing the carriage 1 to right or left so that it may serve for repair or other work on the hull of a ship in the dock.

Further the work table 6 itself can be

turned so that it is set in a direction best suited for the work to be performed.

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