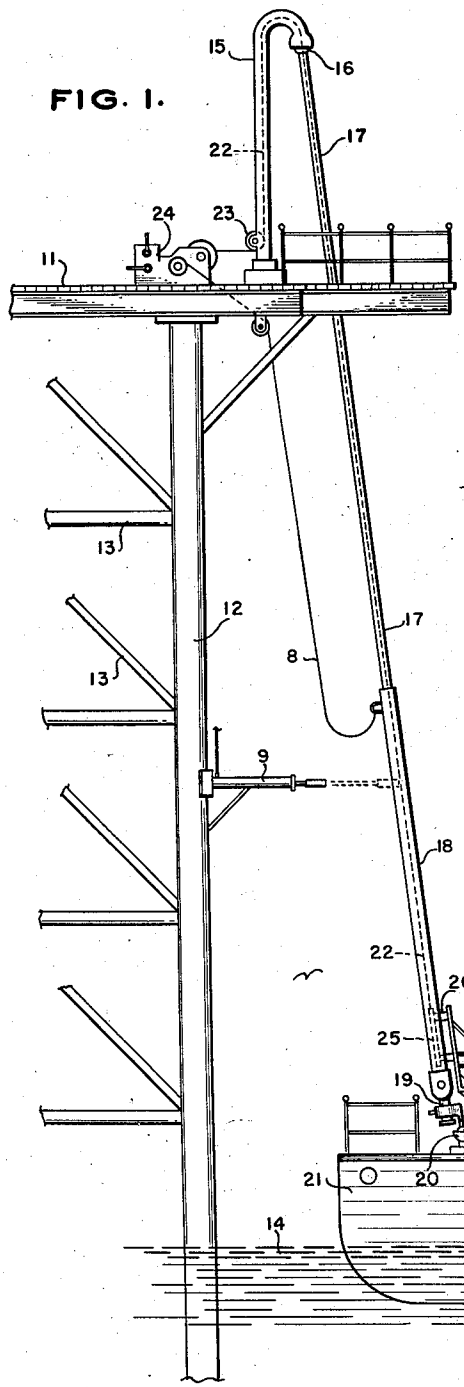
March 10, 1959 M. E. TRUE ET AL 2,876,919

MARINE TRANSFER ASSEMBLY

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FIG. 1.



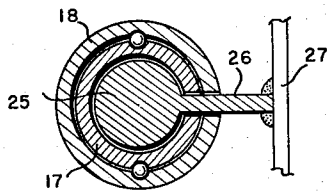


FIG. 3.

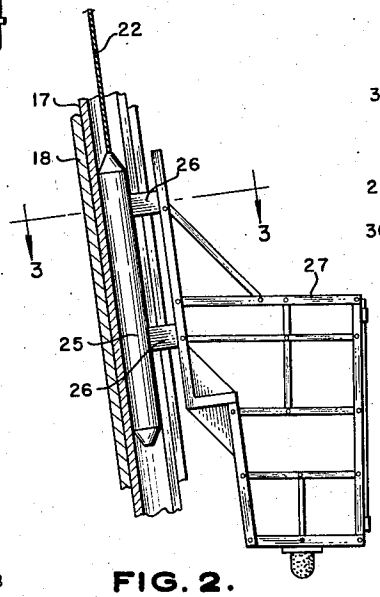


FIG. 2.

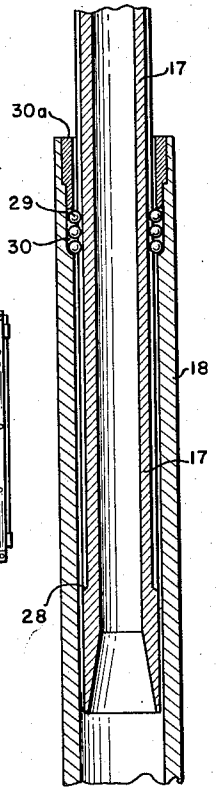


FIG. 4.

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MARINE TRANSFER ASSEMBLY

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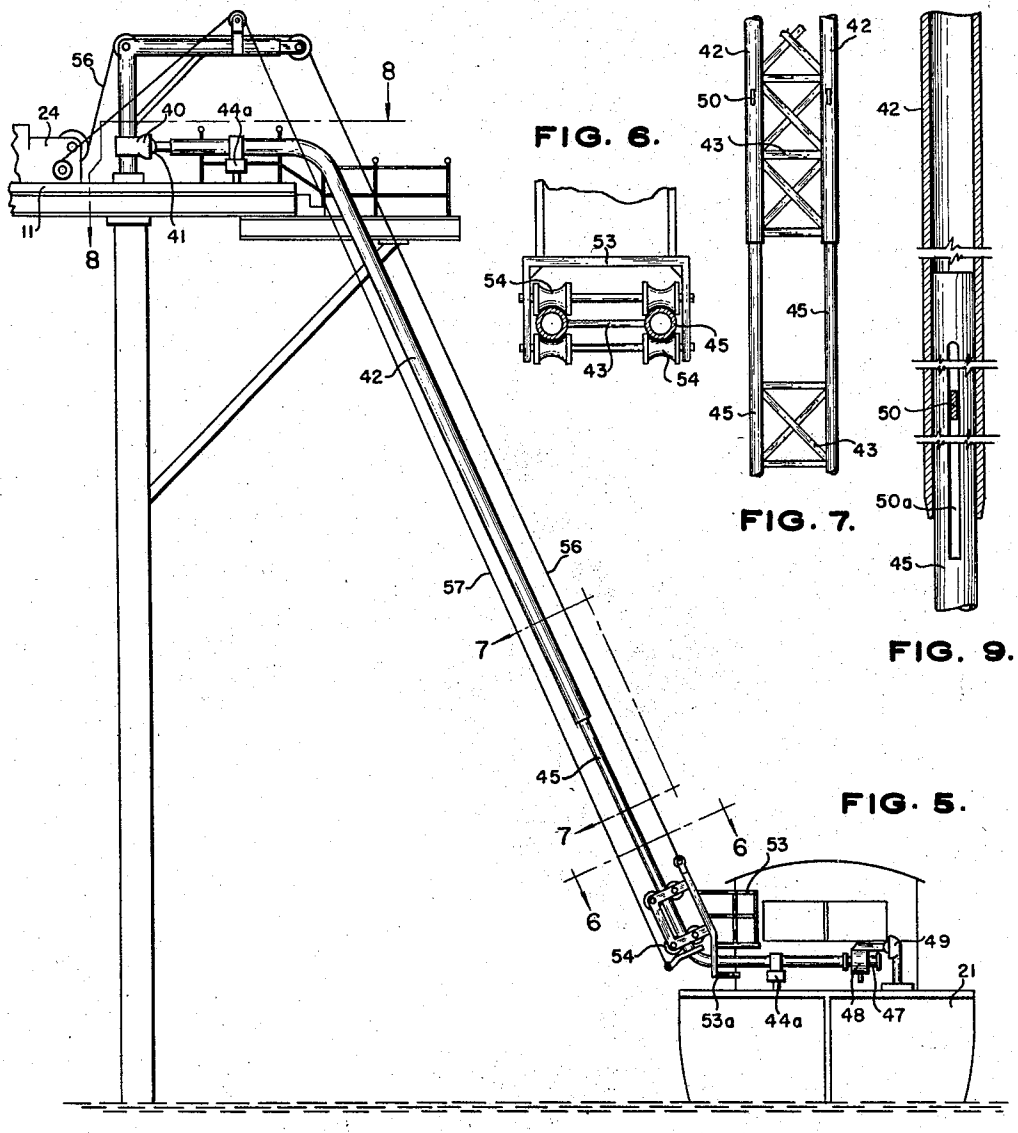


FIG. 5.

FIG. 6.

FIG. 7.

FIG. 9.

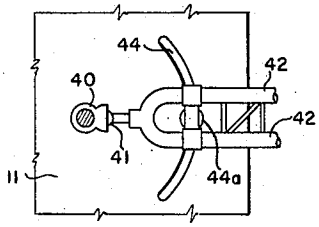


FIG. 8.

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MARINE TRANSFER ASSEMBLY

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FIG. 10.

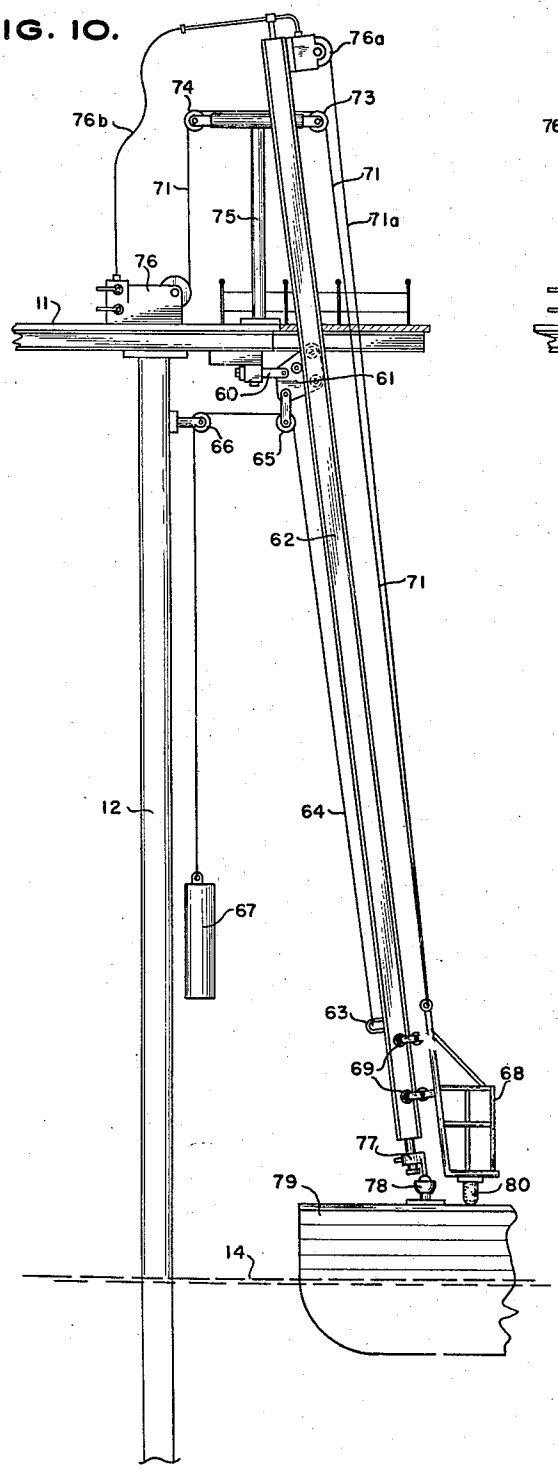
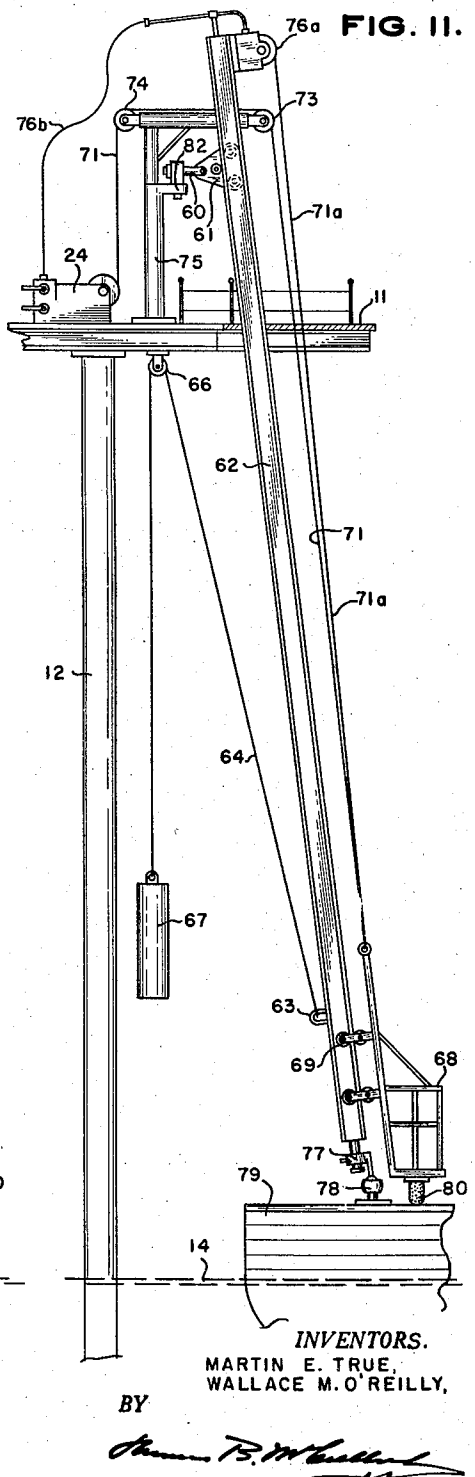


FIG. 11.



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MARINE TRANSFER ASSEMBLY

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Application February 13, 1957, Serial No. 639,911

9 Claims. (Cl. 214—14)

The present invention is directed to a marine transfer assembly. More particularly, the invention is directed to a marine transfer assembly for moving personnel and cargo or cargo from a vessel to an elevated platform and from the elevated platform to the vessel. In its more specific aspects, the invention is concerned with a marine transfer assembly which provides for safe moving of objects from a substantially stationary supporting means to a moving vessel.

The present invention may be briefly described as a transfer assembly which comprises a rail member pivotally affixed at its upper end to an elevated supporting means in a body of water and extending downwardly therefrom. Means are provided on the lower end of the rail member for pivotally and releasably affixing the rail member to a vessel in the body of water. A carriage is movably arranged on the rail member for travel thereon and means are attached to the carriage for moving the carriage on the rail member. The rail member is provided with means for extending and shortening its effective length to compensate for rise and fall of the vessel with the body of water.

The extending and shortening means of the present invention may be a telescopic member or it may be a means which provides vertical travel of the rail member relative to the supporting means.

The rail member may be a single member having a rail thereon or it may comprise a plurality of parallel interconnected members having parallel rails thereon.

The moving means is suitably a power-operated flexible member such as a cable or a rope attached to a power means which may be arranged on the supporting means or elevated platform or on an elevated vessel in the body of water.

The telescopic member is suitably provided with means for limiting its longitudinal traverse. The means for limiting the longitudinal traverse may suitably be a stop member or suitably may be a member which embodies a shock absorber for absorbing shock and for limiting the longitudinal traverse of the telescopic member. Rather than provide a shock absorber on the telescopic member, it may be desirable to provide the carriage with a shock absorber to prevent its striking the vessel with damaging impact when it is lowered thereto.

The present invention will be further illustrated by reference to the drawing in which:

Fig. 1 is a view of the preferred embodiment;

Fig. 2 is a partial sectional view showing the attachment of the carriage of Fig. 1;

Fig. 3 is a sectional view of the apparatus of Fig. 2 taken along the lines 3—3;

Fig. 4 is a sectional view showing the arrangement of the telescopic member of Fig. 1;

Figs. 5–9 illustrate another embodiment of the present invention;

Figs. 10–11 are elevational views of still two other embodiments of the present invention.

Referring now to the drawing and particularly Figs.

1–4 in which identical numerals will be employed to designate identical parts, numeral 11 designates a platform supported by pilings 12 which are interconnected by cross bracing 13. The pilings 12 are arranged in a body of water 14 and driven into the underlying land bottom. It is to be understood that the platform 11 and the supporting member 12 may suitably be attached to a barge which may be sunk in the body of water 14 or the platform 11 may suitably be arranged on or form part of a large marine vessel.

Arranged on the platform 11 is a suitable stanchion 15 to which is attached a swivel socket 16. Attached to the swivel socket 16 is a guide or rail member 17 which slidably or telescopically fits within a tubular member 18. The tubular member 18 has arranged on its lower end an extension member 19 which is releasably latched into a latch member 20 which is pivotally mounted on the deck of the vessel 21. Arranged within the stanchion 15 and extending through the guide or rail member 17 and the member 18 is a flexible member, such as a cable 22, which is carried over a pulley 23 to a power means 24 arranged on the platform 11. The cable or rope 22 is connected also to an inner plumb member 25 to which is connected by webs 26 a carriage 27 for carrying personnel and/or cargo from the vessel 21 to the platform 11. The plumb member 25 is arranged within the guide or rail member 17 which, in turn, is slidably arranged within the tubular member 18.

The guide or rail member 17 is maintained in the tubular member 18 by providing a shoulder, such as 28, on the lower end of the guide or rail member 17 which is adapted to be suitably restrained or maintained in the tubular member 18 by spherical members 29 arranged within a recess 30 in the upper end of the tubular member 18. Recess 30 is defined by an upper stop member 30*a* which is in the form of a threadedly connected collar attached within the member 18. Stop member 30*a* restrains spherical members 29 in place. A cable 8 is connected to tubular member 18 and to a second drum on power means 24 to raise and lower the tubular member 18. A piston and cylinder assembly 9 is also attached to piling 12 to push the tubular member 18 toward the vessel 21.

Referring now to Figs. 5–9 specifically, a platform 11 is provided with a mounting means 40 to which is attached by a pivotal means 41 substantially parallel rail members 42 which are structurally interconnected by cross members 43. A semi-circular rail or supporting means 44 is arranged on the platform 11. A spring loaded track follower 44*a* is attached to the rails 42 with its lower end riding in or on semicircular track 44.

The rail members 42 are provided with telescopic members 45 converging at their lower end in an extension member such as 47 which is releasably latched into a latch member 48. Latch member 48 is pivotally socketed into a member 49 which is attached to the deck of vessel 21.

The telescopic members 45 are slidingly maintained within the track members 42. An internally projecting lug 50 of track member 42 rides in a slot 50*a* in telescopic member 45 as shown in the fragmentary view of Fig. 9.

The lower end of telescopic member 45 is also arcuately supported in a track not shown in the vessel 21 as is the upper end of tracks 42 by spring loaded track follower 44*a*. This allows arcuate movement of vessel 21 in respect to the track assembly and also maintains the lower end of telescopic members 45 substantially parallel to the vessel.

As shown in Fig. 5 a carriage or car 53 provided with a step 53*a* to make the carriage convenient to enter is movably arranged on the rail assembly consisting of members 42 and 45. Carriage or car 53 is provided with

flanged wheels 54 which engage both the upper and lower sides of the rail assembly. It will be understood that the wheels may be of the spring loaded mount type to maintain constant contact with the track assembly and also to allow movement over the joint where members 45 telescope into members 42. Flanged wheels 54 are designed to accommodate both sizes of the pipe rail members. A cable 56 connected to a first drum on power means 24 serves to raise and lower the carriage 53. A second cable 57 is connected to a second drum on the power means 24 and serves to raise and lower the track members 45 into connecting relationship with the vessel 21.

Latch member 48 is of the automatic closing type so that when track extension member 47 swings into it it strikes a trigger arrangement which trips a spring thereby snapping the jaws shut. Such a mechanism is disclosed in U. S. Patent No. 2,722,450 issued November 1, 1955, to Norman A. Nelson. The latch member 48 is pivotal by means of a ball and socket assembly 49.

Referring now to Figs. 10 and 11, a platform 11 is provided with a swivel 60 into which is attached a guide block 61. Arranged for vertical travel on the guide block 61 is a rail member 62. Attached to the rail member 62 at its lower end by attaching means 63 is a cable or flexible member 64 which extends over sheaves 65 and 66 and is connected to a weight member 67 which counterbalances the weight of the rail member 62. Movably arranged on the rail member 62 is a carriage 68 provided with wheels 69 for engagement with track 62. A flexible member, such as a cable or rope 71, is attached to the carriage 68 and extends over sheaves 73 and 74 carried on a cross bracing member 75 and arranged on the platform 11. The flexible member 71 connects to a powered hoisting means, such as 76.

The lower end of the rail member 62 is releasably latched into a latch member 77 as in the previous modifications. Latch member 77 is pivotally socketed into a member 78 attached to the vessel 79. The lower end of the carriage 68 is suitably provided with a shock absorber or bumper 80 to absorb any shock of the carriage striking the deck of vessel 79.

A second hoisting means 76*a* is mounted to the upper end of track or rail 62 and is provided with a line or cable 76*a* connected to the carriage 68. A control line 76*b* connects into hoist 76*a* and to hoisting means 76 whereby action of the two hoists may be coordinated as desired. For example, when the carriage is to be lifted from the vessel to the platform it is raised a predetermined distance by the hoist 76*a* whereupon the hoist 76 takes over and raises the carriage to the platform 11. When the carriage is to be lowered from the platform to the vessel, it is lowered by hoist 76 to the same predetermined distance above the vessel and then the hoist 76*a* is powered to lower the carriage to the vessel. This procedure eliminates the danger of the vessel being raised suddenly by wave motion and striking the bottom of the carriage.

Fig. 11 shows a modification of the device of Fig. 10 and differs therefrom in that the swivel 60 and the block 61 are attached to the supporting member 75 by means of a bracket 82. It is to be noted also that in this embodiment the sheave 65 has been eliminated and only the sheave 66 is provided for counterbalancing weight 67. Relocation of the counterbalance sheave from the swivel 60 position will cause different resultant forces. Actually there is no basic alteration between the embodiments of Figs. 10 and 11. Fig. 10 illustrates a preferred embodiment.

The assembly of the present invention with respect to Figs. 1 to 4 operates in the following manner:

For example, when the vessel 21 would approach the platform 11, the lower end of the members 17 and 18 would be drawn aboard the vessel 21 and latched into the pivotal latch member 20. Any adequate connection which permits swivel movement may be used. Thus, the vessel 21 would then be affixed to the platform 11 for three-dimensional movement. With the carriage 27 connected to the power means 24, personnel may then be transported from the vessel 21 without endangering the life or safety thereof. Free movement of the vessel 21 is permitted by the two swivel connections in combination with the longitudinal travel of the member 18 with respect to the member 17. When the carriage 27 reaches the platform 11 personnel and/or cargo may be unloaded safely.

In the device of Figs. 5 to 9, the assembly is affixed on the vessel 21 by latching the extension member 47 into the latch 48, the whole assembly being drawn inboard on the vessel 21 which has been maneuvered into place, the vessel 21, of course, being maintained at a suitable distance between the vessel 21 and the piling 12. Movement of personnel and the like on the carriage 53 may then be accomplished to the platform 11 and from the platform 11 to the vessel 21 in complete safety.

In the embodiment of Figs. 10 and 11, a vessel or boat, such as 79, would pass sufficiently close to the rail 62 to permit the operator to grasp a dangling soft line or rope which would then be inserted through an eye or snatch block on the boat deck to bring the lower end of the rail 62 into engagement with and to latch same in the latch 77 which would releasably attach the rail 62 to the vessel 79. Thus, with the device of Figs. 10 and 11, the rail 62 may move vertically with the rise and fall of the boat and move pivotally as the boat 79 yaws due to wind or wave action. Of course, the boat 79 would be maintained at a safe distance by anchor or under minimum power. Personnel and/or cargo may then be transferred to the boat by operating the power means 76 or personnel or cargo may be transferred from the platform 11 to the boat 79.

While not shown in the several embodiments, the carriage or elevator in each embodiment may be provided with a suitable braking mechanism to control movement thereof and the releasable connection means is provided with a suitable lock or release for locking and releasing the rail member in the socket.

In the embodiments of Figs. 10 and 11, the rail member may suitably be constructed of two "I" beams defining with its surfaces a track for the movable carriage and for the guide block.

The present invention is of considerable advantage and utility since means are provided by way of which cargo and/or personnel may be transported safely from a vessel in a body of water to a fixed platform and from a fixed platform to a vessel in a body of water. It is contemplated also that the fixed platform may suitably comprise the deck of a larger vessel or the fixed platform may be supported on pilings driven into the underlying sea bottom or the platform may be arranged on a barge which may be floating or sunk.

The nature and objects of the present invention having been completely described and illustrated, what we wish to claim as new and useful and to secure by Letters Patent is:

1. A transfer assembly which comprises a rail member, means mounted on an elevated supporting means in a body of water pivotally supporting said rail member adjacent its upper end, said pivotal supporting means having means carried thereby providing for vertical travel of said rail member relative to said elevated supporting means, said rail member extending downwardly from said elevated supporting means, means on the lower end of said rail member adapted for pivotally and releasably attaching said rail member to a vessel in said body of water, a carriage movably arranged on said rail member for travel between said vessel and said elevated supporting means, and means attached to said carriage for moving said carriage on said rail member, whereby compensation is provided for rise and fall and yaw of said ves-

sel in said body of water while said carriage is moved on said rail.

2. An assembly in accordance with claim 1 in which the pivotal supporting means is mounted below the elevated supporting means.

3. An assembly in accordance with claim 1 in which the pivotal supporting means is mounted above the elevated supporting means.

4. A transfer assembly which comprises a rail member, means mounted on an elevated supporting means in a body of water pivotally supporting said rail member adjacent its upper end, said pivotal supporting means having means carried thereby providing for vertical travel of said rail member relative to said elevated supporting means, said rail member extending downwardly from said elevated supporting means, means on the lower end of said rail member adapted for pivotally and releasably attaching said rail member to a vessel in said body of water, a carriage movably arranged on said rail member for travel between said vessel and said elevated supporting means, and first and second hoisting means attached to said carriage for moving said carriage on said rail member, said first and second hoisting means each moving said carriage a predetermined distance on said rail member, whereby compensation is provided for rise and fall and yaw of said vessel in said body of water while said carriage is moved on said rail without said vessel striking said carriage.

5. A transfer assembly which comprises a rail member, means mounted on an elevated supporting means in a body of water pivotally supporting said rail member adjacent its upper end, said pivotal supporting means having means carried thereby providing for vertical travel of said rail member relative to said elevated supporting means, said rail member extending downwardly from said elevated supporting means, means on the lower end of said rail member adapted for pivotally and releasably attaching said rail member to a vessel in said body of water; means attached to said rail member and to said elevated supporting means for counterbalancing the weight of said rail member, a carriage movably arranged on said rail member for travel between said vessel and said elevated supporting means, and means attached to said carriage for moving said carriage on said rail member, whereby compensation is provided for rise and fall and yaw of said vessel in said body of water while said carriage is moved on said rail.

6. A transfer assembly which comprises a rail member, means mounted on an elevated supporting means in a body of water pivotally supporting said rail member adjacent its upper end, said pivotal supporting means having means carried thereby providing for vertical

travel of said rail member relative to said elevated supporting means, said rail member extending downwardly from said elevated supporting means, means on the lower end of said rail member adapted for pivotally and releasably attaching said rail member to a vessel in said body of water; means attached to said rail member and to said pivotal supporting means for counterbalancing the weight of said member, a carriage movably arranged on said rail member for travel between said vessel and said elevated supporting means, and means attached to said carriage for moving said carriage on said rail member, whereby compensation is provided for rise and fall and yaw of said vessel in said body of water while said carriage is moved on said rail.

7. An assembly in accordance with claim 6 in which the pivotal supporting means is mounted below the elevated supporting means.

8. An assembly in accordance with claim 6 in which the pivotal supporting means is mounted above the elevated supporting means.

9. A transfer assembly which comprises a rail member, a swivel mounted on and carried below an elevated supporting means in a body of water pivotally supporting said rail member adjacent its upper end, a guide block carried by said swivel providing for vertical travel of said rail member relative to said elevated supporting means, said rail member extending downwardly from said elevated supporting means, means on the lower end of said rail member adapted for pivotally and releasably attaching said rail member to a vessel in said body of water, means attached to said rail member and to said guide block for counterbalancing the weight of said rail member, a carriage movably arranged on said rail member for travel between said vessel and said elevated supporting means, and first and second hoisting means attached to said carriage for moving said carriage on said rail member, said first and second hoisting means each moving said carriage a predetermined distance on said rail member, whereby compensation is provided for rise and fall and yaw of said vessel in said body of water while said carriage is moved on said rail without said vessel striking said carriage.

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