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3,258,129

ARRANGEMENT OF SHIP GANTRY CRANE

Filed Aug. 19, 1963

2 Sheets-Sheet 1

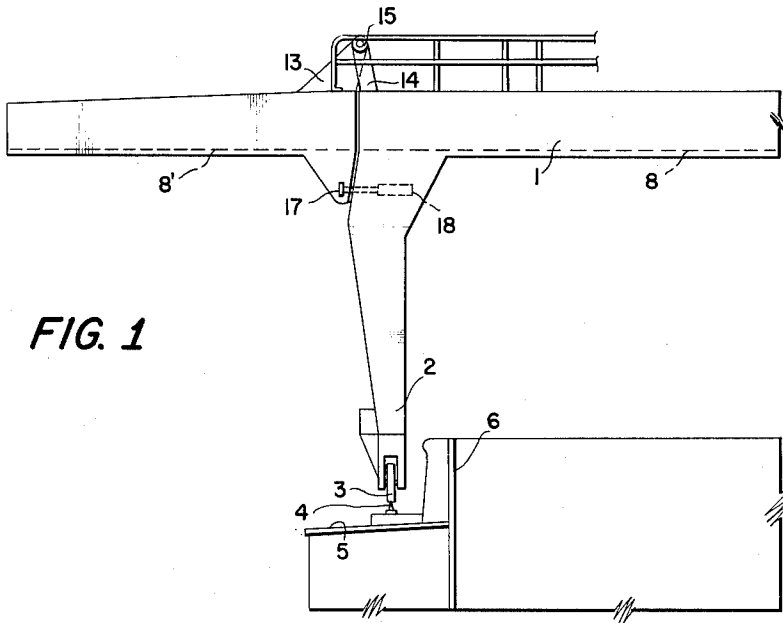


FIG. 1

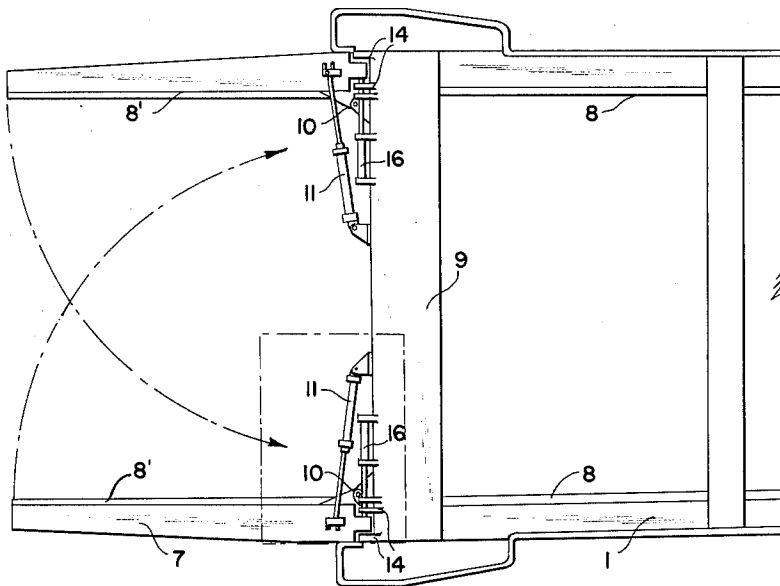


FIG. 2

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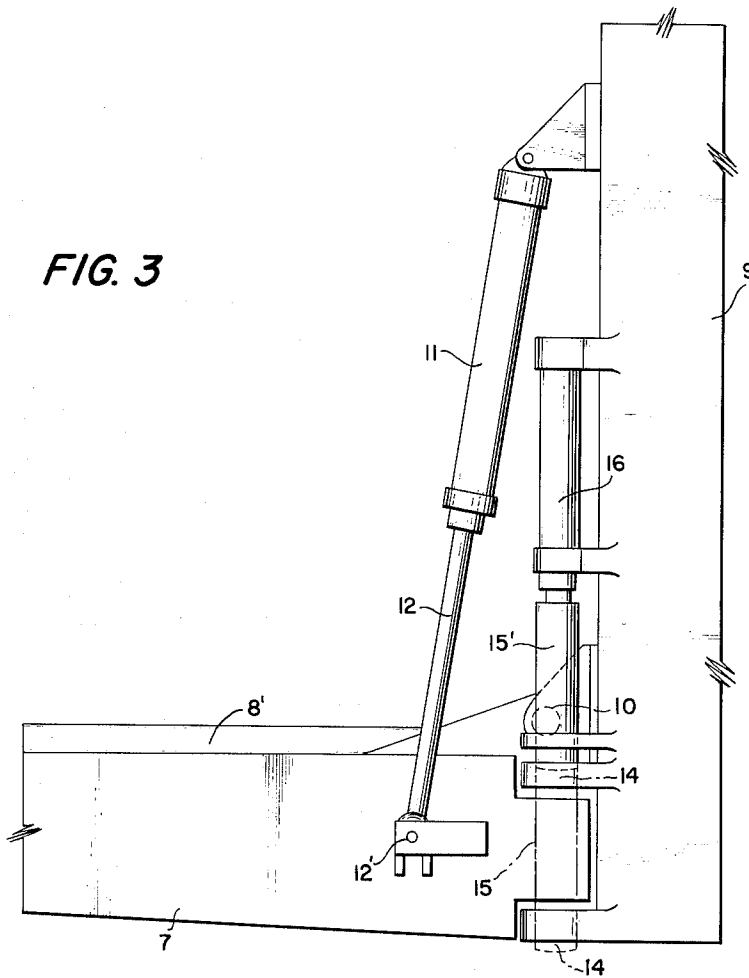
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FIG. 3



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ARRANGEMENT OF SHIP GANTRY CRANE

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2 Claims. (Cl. 212—15)

The invention relates to an arrangement by ship gantry cranes of the type which consists of a framework which can be moved along the ship on wheels that run on rails fastened to the deck on both sides of the hatches, which framework is provided with rails for athwartships moveable trolley, and has jibs that can be swung out to extend the path of the trolley outside the sides of the ship.

The object of the invention is to provide a crane of the above-mentioned type where the position of the jibs when they are swung in is given a favourable location so that they i.a. do not impede a free view from the captain's bridge. It is a further object to provide such a crane wherein the jibs can be swung out or in when the ship is lying by the quay independent of the water level or the height of the ship in relation to the quay. This is often made difficult by cranes with jibs that are turnable around a horizontal axis.

It is a further object of the invention to arrange such jibs in such a way that they with their inner pivoted ends are given a strong and secure fastening or fixing to the crane in swung-out position.

It is still a further object of the invention to arrange the jibs so that the forces transmitted to them during loading and unloading are absorbed in a way that is not unfortunate or damaging to the crane.

According to the invention the above-mentioned objects are attained because the jibs at the inner end can be swung out about a vertical axis, and are shaped with parts that in swung-out position engage with or co-operate with correspondingly shaped parts on the crane for suitable locking or fixing of the jibs in this position.

According to a further feature it is suggested to have one or more locking means that in the swung-out position of the jibs further assist in giving a secure locking.

It is further suggested according to the invention that said co-operating parts and the locking means are arranged as extensions upwards at a considerable height above the top side of the jib, and that the jib at said inner end further has an extension downwards so that the contact between this extension and the crane takes place at a level well below the lower side of the jib.

The above as well as further features characterizing the invention will appear more clearly from the following description of an embodiment schematically shown in the enclosed drawings.

FIG. 1 shows one half of the gantry crane according to the invention seen from the end.

FIG. 2 shows the same half of the crane seen from above.

FIG. 3 shows in a greater scale the detail that is framed by dotted lines in FIG. 2.

The gantry crane according to the example shown consists of an ordinary having a bridge 1 and legs 2 with crossbars 9 and provided at each of the four corners with wheels 3 that run along rails 4 fastened to the deck 5 of the ship at each side of the hatchway coaming 6. The crane bridge 1 is provided with rails 8 for a trolley that is not shown, by aid of which loading and unloading takes place. The crane bridge 1 is provided with members 7 that can be swung out, with rail extensions 8', so that the trolley can move out past the ship side at both sides.

The details described above are known per se and shall therefore not be further described.

Each of the jibs 7 are hinged to the crane by a vertical shaft journal 10, so that the jibs can be swung in along the cross bar 9 portion of the bridge as indicated by the arrows in FIG. 2. The swinging in and out takes place by aid of means known per se in the shape of a hydraulic cylinder 11 whose plunger 12 engages the jib 7 by the turning connection 12'.

The inner part of the jib 7 is made with an upwards extending projection first lug member 13 through the end of which there is a cylindrical bore 15. The crane is provided with corresponding upwards extending parts second lug members 14, which are also provided with through-going bores, so adapted that when the jib 7 is in swung-out position as shown in FIGS. 2 and 3, the bores through the lugs 14, 13, 14 lie in a line with one another. To the cross bar 9 is fastened a hydraulic cylinder 16 whose plunger is provided with a strong cylindrical locking bolt 15'. The outer diameter of this bolt is adapted to the inner diameter of said bores through the lugs 13 and 14. The locking bolt 15' is arranged co-axially with the bore through the lug parts 14, 14. When thus the jib 7 is swung out to the position shown in FIGS. 2 and 3, the locking bolt 15' can be guided by the hydraulic cylinder 16 through all the bores as indicated by dotted lines 15 in FIG. 3, whereby the jib 7 is firmly locked to the crane in correct swung-out position. In the drawing the co-operating parts are shown with exaggerated spaces between them to illustrate the arrangement. In practice there will of course be an accurate fit.

For further steering of the locking bolt 15' a guide 14 is arranged in the example shown.

As it will be seen from FIG. 1, the joining by aid of the locking bolt 15' takes place at a considerable height above the top side of the jib. In a corresponding way the pressure contact between the lower part of the crane girder and the crane leg takes place at a level considerably below the lower side of the jib, the jib at the inner end being given an extension downwards, as shown in FIG. 1. Because of these extensions the pressure to which the jib is subjected during loading and unloading will be absorbed in a favourable way, as the transmission of power to the crane takes place with a relatively big lever in relation to the length of the jib.

The contact between the lower part of the jib and the crane leg can, as indicated in FIG. 1, take place by aid of a stop 17 which co-operates with an adjustable stop 18 on the crane. Thus by adjusting the last-mentioned stop, the position of the jib in the vertical plane can to a certain degree be adjusted. At the same time this stop can serve as a check piece for the swinging-out movement of the jib.

It will immediately be understood that the embodiment shown is only meant to illustrate the inventive idea, and that this can be varied in many ways within the frame of the following claims.

I claim:

1. In combination, a ship having hatches on a deck thereof, rails secured to the deck running lengthwise of said ship on either side of said hatches, a gantry moveable along said rails comprising a bridge provided with trackway means for a crane trolley moveable athwartship along said trackway and leg means supporting said bridge provided at the lower ends thereof with wheels to move said gantry along said rails, said gantry further being provided with an extension member to extend said trackway on each side of said ship and comprising a bridge extension member pivotally secured to said gantry to pivot about a vertical axis from an inboard position wherein the bridge extension member is disposed length-

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wise of said ship to an outboard position wherein the bridge extension member is secured extended at least substantially normal to the ship, trackway means provided on said bridge member and registrable with the trackway means provided on the bridge when the bridge extension member is in said extended position to thereby provide an extended trackway for said crane trolley extending outward of said ship, means to pivot said bridge extension member between said positions, a first lug member extending upwardly from said bridge extension member and provided with bore means at an upper portion thereof substantially above said bridge extension member, a second lug member extending upwardly from said gantry bridge provided with bore means registrable with the bore means in said first lug member when said bridge extension member is in said extended position, a locking bolt moveable into said registered bores to secure the bridge extension member in said extended position, and a projection member provided on the bridge extension member extending downwardly therefrom and engageable with

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said leg means to provide support for said bridge extension member when the bridge extension member is disposed in said extended position.

2. The combination of claim 1 further including means to adjust the engagement of said projection member with said lug means.

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