July 25, 1944. C. CHRISTOFFERSEN 2,354,182

CARGO HANDLING DEVICE

Filed June 8, 1943 4 Sheets-Sheet 1

Fig. 1.

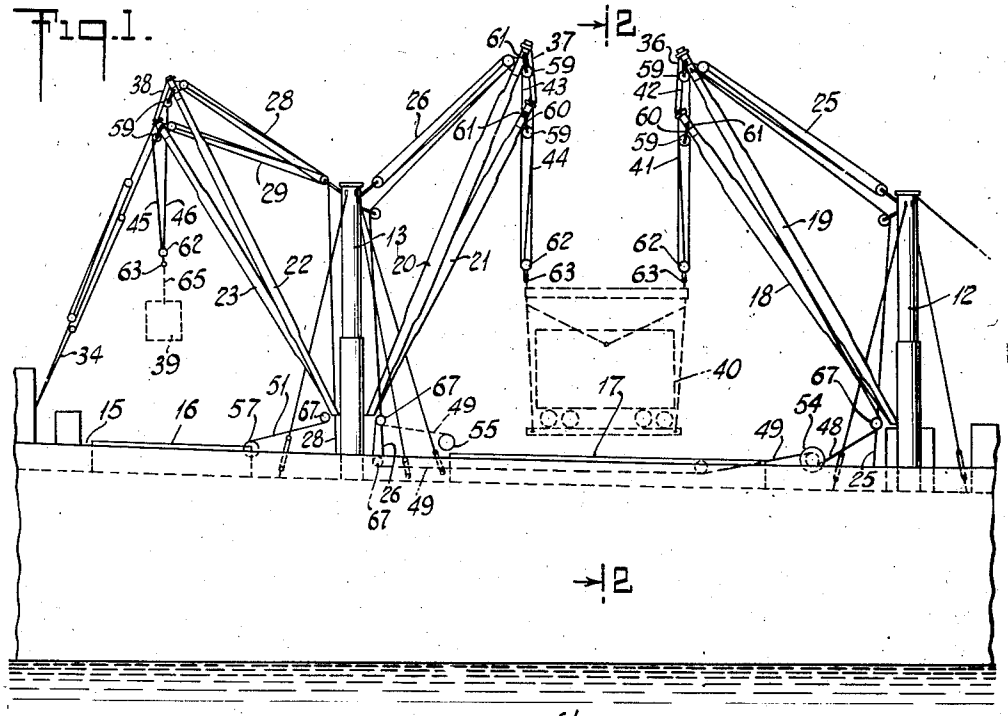
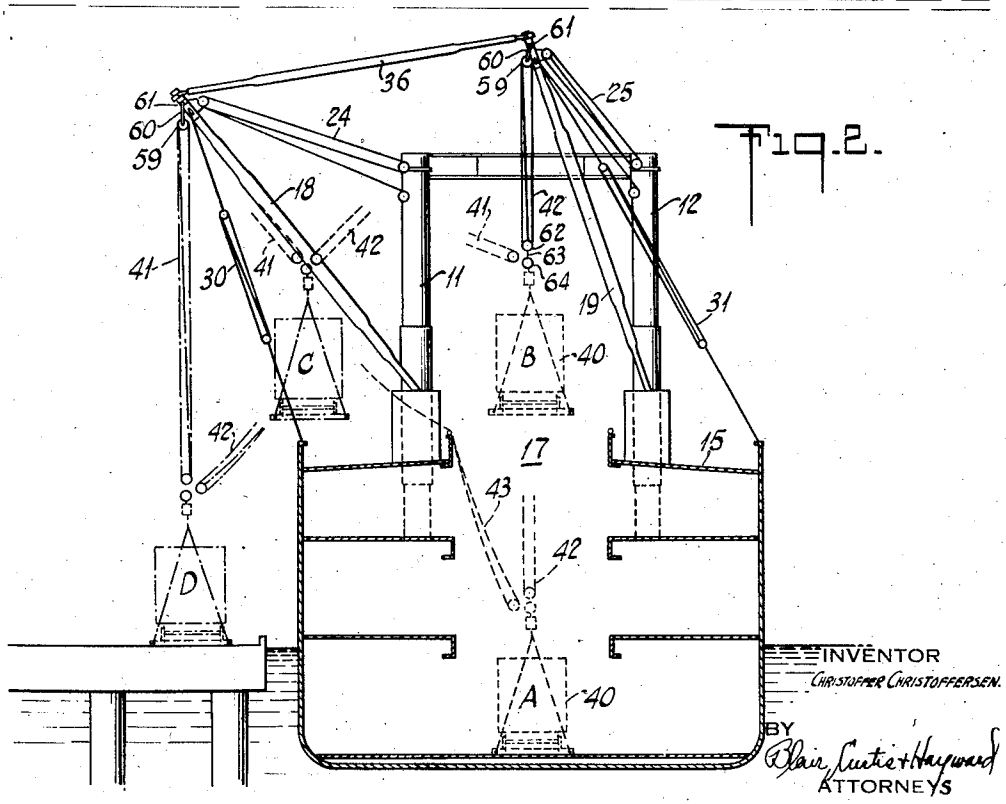


Fig. 2.



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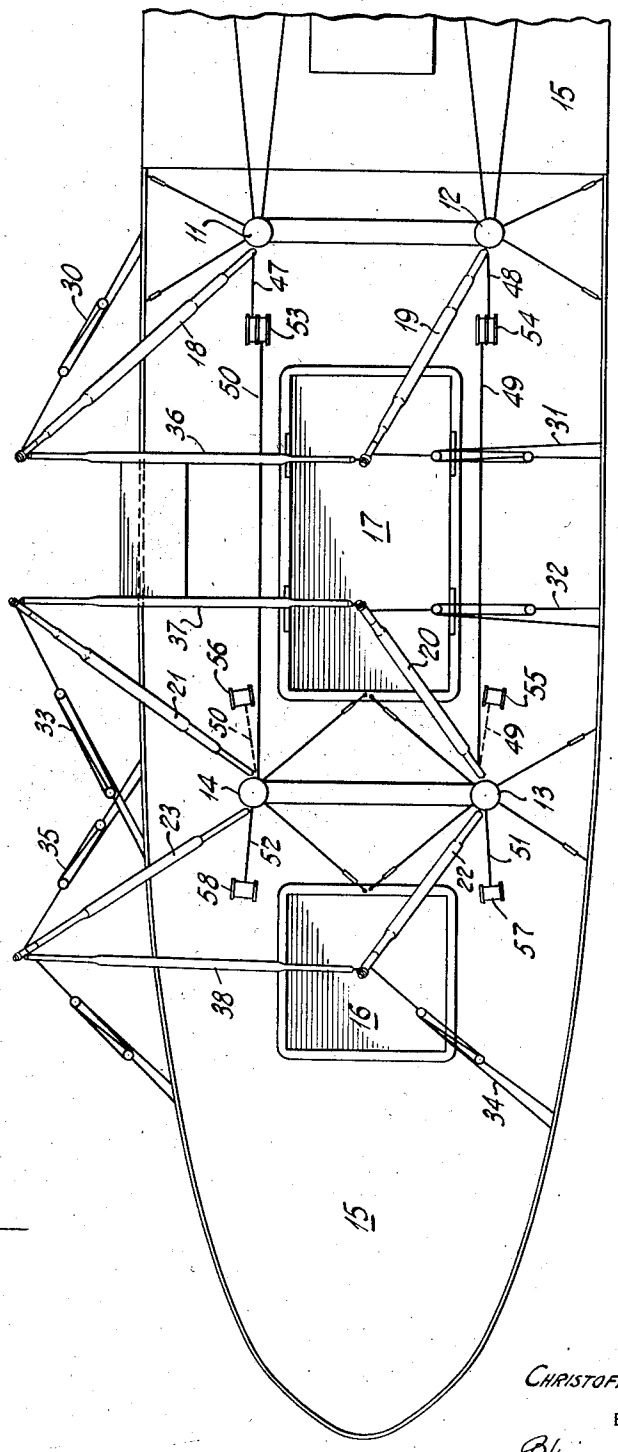


Fig. 3.

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CARGO HANDLING DEVICE

Filed June 8, 1943 4 Sheets-Sheet 3

Fig. 4.

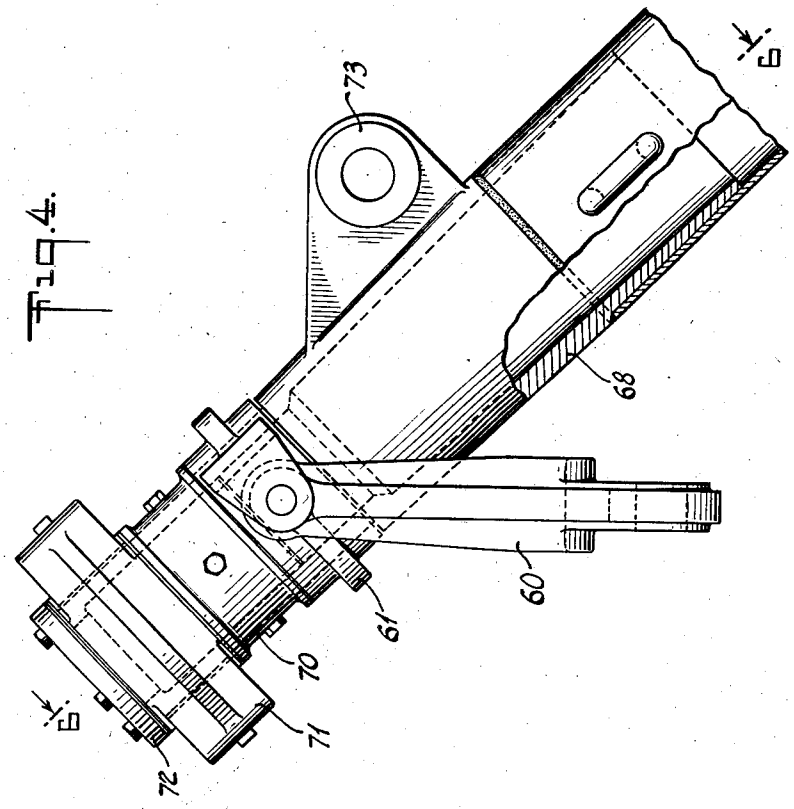
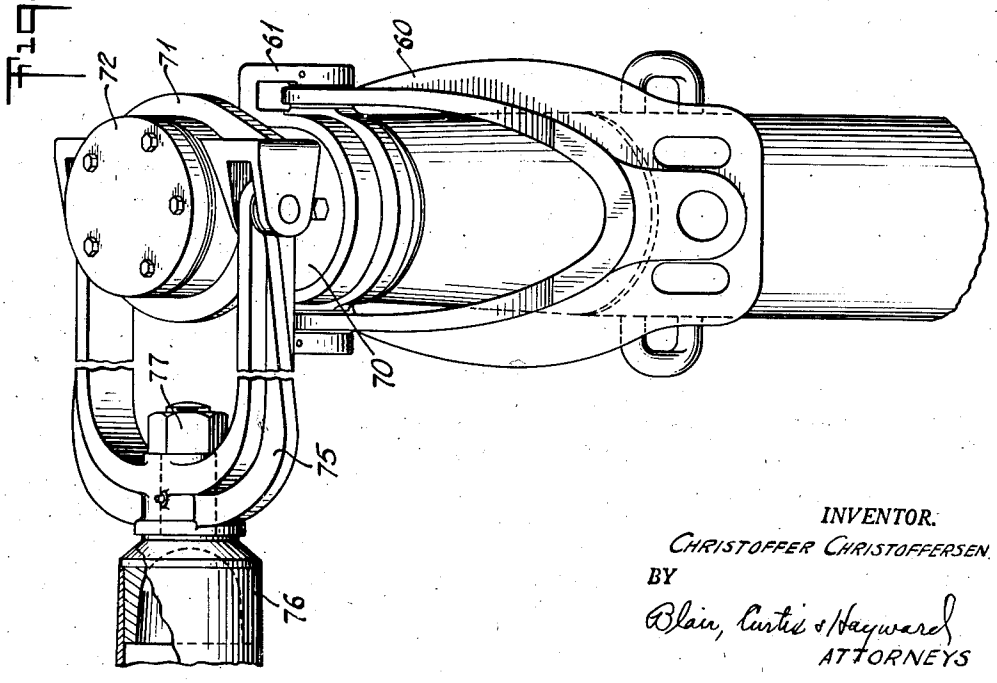


Fig. 5.



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Filed June 8, 1943 4 Sheets-Sheet 4

Fig. 6.

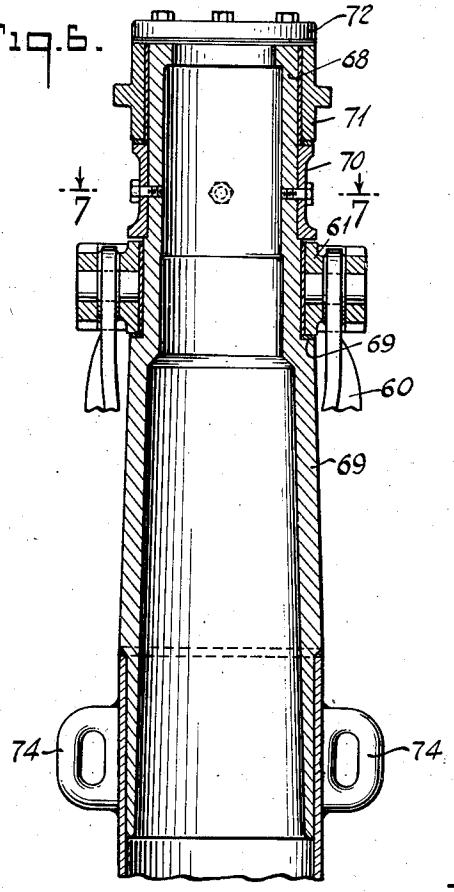


Fig. 7.

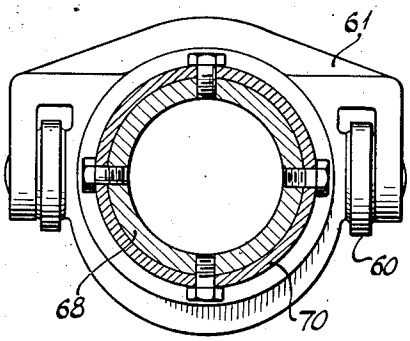
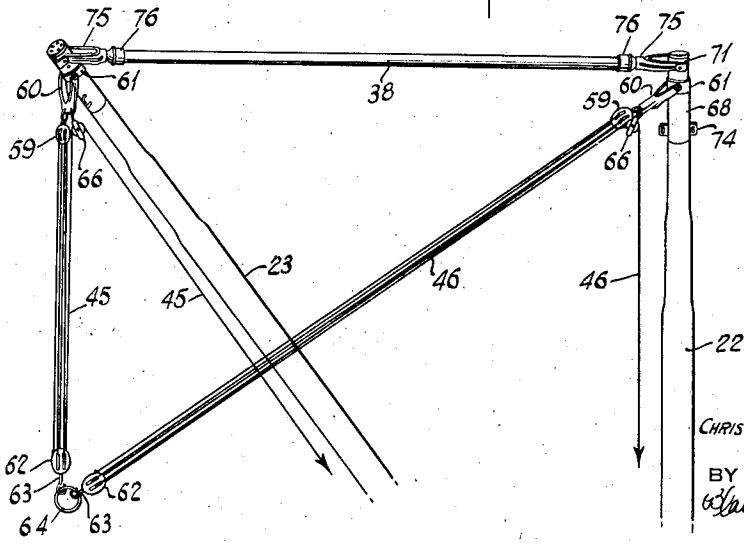


Fig. 8.



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Patented July 25, 1944

2,354,182

UNITED STATES PATENT OFFICE

2,354,182

CARGO HANDLING DEVICE

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Application June 8, 1943, Serial No. 490,010

13 Claims. (Cl. 212—3)

My invention relates to apparatus useful in hoisting, moving and/or lowering heavy weights by means of lifting tackles suspended from derricks or other lifting booms.

In one important feature my invention is particularly useful to the process known as burtoning, in another feature it relates to handling loads which it is desired to keep level and/or parallel to a given axis; and in other features the invention relates to moving of heavy loads on a lifting tackle without exerting an excessive twisting strain on the lifting booms, boom fittings and/or other attachments and without twisting and/or fouling the parts of the lifting tackles and/or their falls.

Prior to my invention light loads have been handled by the process known as "burtoning," wherein the lifting tackles of two spaced booms are both attached to a common load, the load is first picked up by the lifting tackle of one of the booms, which ordinarily would be positioned nearly over the load, then, when the load has been hoisted to a sufficient height, a strain is taken by the other lifting tackle so as to move the load towards the second boom, the first lifting tackle being gradually slacked off as the second lifting tackle takes more and more of the weight of the load, and finally, as the load approaches the point where it is desired to lower it, both tackles are slacked away. With this process it has been necessary to stay the booms against swinging toward the load; and this has been done ordinarily by "vangs" which run from the top of the boom to anchor points, but a severe strain was placed upon the vangs, particularly when the gear is aboard a vessel where satisfactory leads for the vangs cannot be arranged because their respective anchor points must be aboard the vessel herself. It was also necessary to rig, haul and keep taut, two vangs to each boom; and, since these pull in part against one another and each with a component of force longitudinal of the boom, this imposes a pre-loading on the boom which must be added to the stress imposed by its own weight and by the weight and inertia of the load. When heavier loads are handled in this way, the strain imposed by the vangs must be increased; and there soon comes a practical limit beyond which the dead weight of the boom and rigging necessary to meet the stresses exceeds the limits of practical possibility.

Also, since prior to my invention the upper blocks of lifting tackles have been shackled to eye bolts, through-bolted to their respective booms, or to pad eyes, attached to the respective booms, or to ears, riveted or otherwise attached to their booms, or to like devices, any increase in the weight of loads handled by burtoning has added a severe twisting strain or torque to the longitudinal strain discussed above. Although the tackles heretofore used and the means for their attachment to the booms has afforded some latitude to the upper blocks in changing position as their load swung and twisted and moved laterally, as in burtoning, this has not availed to overcome the destructive effects of twisting strains or torque and fouling of lines in the upper blocks when attempts have been made to handle by burtoning loads of more than a few tons.

It is an object of my present invention, to make available for the handling of heavy loads the recognized advantages of the burtoning method.

Another object of the invention is to provide hoisting and handling equipment which is adapted to rapid handling of heavy loads and which will avoid the recognized dangers and disadvantages of known burtoning equipment with such loads.

Another object of the invention is to permit the safe use of lighter equipment for handling of heavy loads.

Another object is to improve the control of, and ease of controlling, heavy loads, particularly when lifting on shipboard or other location subject to movements which may cause swinging and twisting of the load while suspended by the lifting tackle. Specifically it is an object to facilitate the handling through hatches of loads which allow little clearance or which are longer than one dimension of the hatch and to so control the position of the load during lifting as to avoid danger of its fouling under the deck in way of the hatch.

A further object of my invention is to provide a device of the character described which is simple in construction and economical to manufacture.

Other objects and advantages of my invention will be apparent from the following description.

I am able to attain these objects according to my invention by use of a strut fitted between two booms, the upper ends of which are spaced so as to be approximately over positions of lifting and lowering, respectively. Such struts readily withstand the horizontal components of force exerted by a common load suspended from and between said booms since such horizontal component is wholly compression stress in said

strut. It is an advantage of my invention that the strut can be applied to and removed from the ends of swinging booms suitable in every respect for use in the ordinary ways for handling cargo and other loads. Thus existing equipment can be readily and inexpensively converted to take advantage of the invention; and on ships so equipped the booms can be lowered to the deck, the strut disconnected and stowed and the booms lashed on deck or otherwise held in place as is usual in the case of cargo vessels.

By using, according to my invention, a rotating yoke or universal joint fitting on or near the outer end of each cargo boom for connecting it to one end of the strut heretofore described, my invention makes possible raising and lowering and otherwise changing the position of the cargo booms independently as well as in unison while they are thus attached to one another by the strut.

By the use of my invention much lighter gear, particularly lighter vangs, booms and topping lifts, can be used than would be required, especially for burtoning, without my invention; and further my invention makes possible the burtoning of heavy loads with safety and speed, a result which never has been attained without the use of my invention.

I also contemplate according to my invention, connecting a pair of lifting tackles, to the respective drums of a double-drum winch, thus attaining, by the operation of one winch, raising and lowering of a load in a constantly and mechanically maintained horizontal position. More especially, I achieve, by employing two such pairs of lifting tackles on oppositely arranged booms fitted with struts and tackle according to my invention, that a load may be easily lifted, moved to one side and lowered by the burtoning method, with full control of its angular orientation as well as of its horizontal and vertical positions.

I have found great advantage, according to my invention, in providing a universal connection for the upper blocks of the lifting tackle onto the upper ends of the cargo booms, whereby said upper blocks may accommodate themselves to the changing positions of their load; and I have found advantage also in making and mounting the upper main block of the lifting tackle separate and apart from the lead block through which the fall of the tackle is led along the boom to its winch so that the latter block may assume a different position from that of the upper main block or blocks, all of said blocks being so spaced that they may twist independently without striking one another.

Although my invention is adapted to a wide variety of uses, it has especial advantage in the handling of heavy machinery, trucks, locomotives, railway cars and the like; and is particularly advantageous for trans-shipping of loaded railway cars in ocean-going vessels (sometimes referred to as "sea-trains"). By use of the invention, railroad cars can be hoisted from alongside a ship, moved over the hatch and lowered into the hold with speed and safety, the car always being maintained in a horizontal position and parallel to the hatch through which it is lowered. The booms, by virtue of my invention, maintain their positions in spite of unsatisfactory leads of the vangs and the excessive weight of loaded freight cars.

My invention is also useful on lighters handling relatively heavy loads, for speedy and safe handling of loads ashore and afloat, and for many other purposes.

Although in this specification and the accompanying drawings I have shown and described a preferred embodiment of my invention and have suggested various modifications thereof, it is to be understood that these are not intended to be exhaustive nor limiting of the invention, but on the contrary are given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and manner of applying the same in practical use and may be enabled to modify and adapt it in various forms each as may be best suited to the conditions of a particular use.

In the drawings, in which like reference characters refer to like parts throughout,

Figure 1 is a diagrammatic view in side elevation showing the cargo handling gear embodying my invention in its relation to a ship;

Figure 2 is a diagrammatic cross-sectional view taken on line **2—2** of Figure 1;

Figure 3 is a diagrammatic plan view of the ship and cargo-handling gear;

Figure 4 is a fragmentary view in side elevation and on enlarged scale of the upper end and fittings of a boom embodying my invention;

Figure 5 is a view in front elevation of the same boom end and fittings as shown in Figure 4;

Figure 6 is a view of the same taken in axial section on line **6—6** of Figure 4;

Figure 7 is a transverse section taken on line 7—7 of Figure 6; and

Figure 8 is a diagrammatic view in front elevation of a portion of a burtoning tackle embodying my invention.

Referring first to the diagrammatic Figures 1–3 inclusive, masts **11**, **12**, **13** and **14** are arranged above the deck **15** and approximately at the corners of the hatches **16** and **17**. Booms **18**, **19**, **20**, **21**, **22** and **23** are mounted near the bases of the respective masts for swinging in both vertical and horizontal arcs, the booms being raised, lowered and held during operation by the topping lifts **24**, **25**, **26**, **27**, **28** and **29** respectively for the several booms. The booms are swung in horizontal arcs and held in position laterally by vangs **30**, **31**, **32**, **33**, **34** and **35**. Struts **36**, **37** and **38**, respectively connect the ends of booms **18—19**, **20—21** and **22—23** and brace them against the horizontal component of force of the load **39** or **40** suspended between the booms, thus doing away with the need for double vangs on each boom.

Lifting tackles **41**, **42**, **43**, **44**, **45** and **46** on the several booms are connected at one end to their loads **39** and **40** and lead, by their respective falls **47**, **48**, **49**, **50**, **51** and **52** to their respective winches or like hoisting devices **53**, **54**, **57** and **58**, with or without **55** and **56**, depending upon the type of work being done. Winches **53** and **54** are double drum winches, while **55**, **56**, **57** and **58** are single drum winches.

The winches for the topping lifts, the falls from the topping lifts, and in some of the figures, the topping lifts themselves are not shown in order to avoid confusion of lines. This gear and tackle may be of the type already known as standard for such work, and therefore needs no detailed showing or description.

In each of the lifting tackles, an upper block **59**, single or multiple sheave, is connected to the boom by the yoke and trunnion **60—61** and a lower block **62**, single or multiple sheave, is con-

nected to the load, e. g. by the hook 63, the ring 64 and the bridle 65. The fall of the lifting tackle passes from the lower block over an upper single block 66 and thence to a block 67 near the bottom of the boom and finally to the winch 53, 54, etc.

The yoke 60 is pivoted on a trunnion ring 61, as more clearly shown in Figures 4 and 5, and this in turn is rotatably mounted on a bearing 68 on the end of the boom 18, 19, 20, 21, 22 and 23, as shown in Figures 4, 5 and 6. As best shown in Figure 6, the boom end 68 is formed with an annular shoulder 69 which forms a thrust bearing for the trunnion ring 61. Between trunnion rings 61 and 71 is fitted a second ring or sleeve 70 which is bolted to the boom end 68 and thereby forms an upper thrust bearing for the trunnion ring 61 and a lower thrust bearing for the trunnion ring 71 through which the strut 36, 37 or 38 is connected to the boom. The cap 72 bolted to the boom end 68 completes the boom end assembly and forms the upper thrust bearing for the trunnion ring 71.

An ear or lug 73 formed on the skirt of the boom end 68, provides a suitable connection for the topping lift tackle. Eyes 74 for attaching the vangs may be riveted, welded, through-bolted or made integral with the boom end. Since my invention relieves the vangs of most of the load normally imposed upon them, such connections can be readily made without need for heavy reinforcement.

A yoke member 75 is secured to each end of each strut 36, 37 and 38 by means of a swivel pin 76 welded to each end of the struts and threaded on the swivel end to take nut 77 for holding yoke 75 in place. The opposite ends of the yoke are pivotally mounted on the trunnion ring 71 in the same manner as the mounting of the yoke 60 on the trunnion ring 61. This gives a secure connection between the end of the boom and the strut which at the same time is capable of universal movement so that the boom can be raised and lowered and swung in any arc with or about the end of the other boom. At the same time the strut is readily detachable by removal of the nut 77 to release the swivel pin 76 from the yoke 75. When thus released the boom can be used in any way exactly like the booms of the standard cargo handling equipment.

In the interest of simplicity of description, I shall first describe my invention as applied to a single pair of interconnected booms. As shown in Figure 2, these may be lifting one end of a long load; or with the same operation would handle an entire load, as shown over the fore hatch 16 in Figure 1.

The load 40 is picked up from the hold, in position A in Figure 2, is hoisted by operation of winch drum 54 as shown in Figures 1 and 3 and by means of hoisting tackle 42 until it is sufficiently above the hatch 16 and approximately in position B in Figure 2. Winch drum 53 meanwhile has first taken up the slack and then taken a strain on the hoisting tackle 41 and continues to hoist on 41 while hoisting tackle 42 is first held and then slacked off gradually, the load meantime moving laterally to approximately position C in Figure 2. Hoisting tackle 41 is then held, or slacked away more slowly, while hoisting tackle 42 is further slacked off until the entire weight of the load is carried by hoisting tackle 41; whereupon both hoisting tackles are slacked off until the load is landed in the desired position D. In practice, and in the hands of a skilled winchman this is a continuous, smooth operation. While the load is moving from position B in Figure 2 to the point over position D, there is a heavy compression strain on the strut 36, connecting booms 18 and 19, and the strain on the vangs 30 and 31 is relieved thereby.

If a load were being handled by a single bridle, as the load 40 over the fore-hatch in Figure 1, this would constitute the entire operation. As shown at the main hatch 17, however, my invention may combine two burtoning devices operated in conjunction, connected to the respective ends of a single load. In principle, these operate as hereinbefore described in the case of a single burtoning device, but in addition, this feature of my invention makes provision for controlling the orientation of the load so that, for example, it can be kept always parallel to the hatch opening and always horizontal. The load 40 is hoisted from or lowerred through hatch 17 by lifting tackles 43 and 44 operating as one burtoning device and 45 and 46 operating as another burtoning device. Lifting tackles 41 and 44 are led to the respective drums of double drum winch 53 and lifting tackles 42 and 43 are led to the respective drums of double drum winch 54. Hoisting tackles 41 and 42 are attached to the after end of the load and hoisting tackles 43 and 44 are attached to the forward end of the load.

Winch 54 at first hoists the load by means of lifting tackles 42 and 43 and winch 53 takes up the slack of lifting tackles 41 and 44. When the load has attained a sufficient height, winch 53 takes a strain and thereafter the load moves laterally to the desired position for lowering and is then lowered, as in the case of the single burtoning device hereinbefore described; in this case, however, the lifting tackles 42 and 43 are mechanically and automatically operated in synchronism as are also lifting tackles 41 and 44, thus constantly maintaining the load in a level or horizontal position and parallel to the fore and aft axis of the vessel. Such synchronism may also be attained by careful operation of separate winches or by any automatic control device for synchronizing the operation of the winches; but it is most simply and satisfactorily attained by driving the winch means for both booms from the same prime-mover.

The struts 36 and 37 connecting booms 18 and 19 and connected booms 20 and 21 respectively, take the heavy compression strain and relieve the strain on the vangs, 30, 31, 32, and 33.

As the load is thus swung from one position to another, the upper blocks 59 and 66 are freely and automatically adjusted to keep their sheaves in the respective planes of the lines which pass over them. To the extent that the movement of the load is transverse to the boom, the adjustment of the blocks is accomplished by rotation of the trunnion ring 61 on the boom end 68 and thus the pull of the load is always along a line passing through the axis of the boom and no torque or twisting strain can be imposed upon the load. To the extent that the load swings inward or outward toward or away from the boom, such movement is accommodated by swinging of the yoke 60 on the pivots of the trunnion 61 and thus, again, the pull of the load is carried as a simple compressive stress on the boom and tensional stress on the topping lift with avoidance of twisting strains which might result in failure of boom or fittings and in any case would require much heavier parts to protect against such failure.

Such swinging of the load from the hatch under one boom toward the other boom or over the side of the vessel results not only in changing the direction of pull of the load, so as to require adjustment of the yoke **60** in planes axial and transverse to the boom; but also, by reason of such changing direction relative to the fixed load of the fall **47**, **48**, **49**, **50**, **51**, or **52**, a third angular shift results which is met according to my invention by an angular adjustment or swivelling of the main block **59** and/or the lead block **66**. A full swivel connection may be provided, if desired, but I have found that, for burtoning as described above and ordinary operations even with a single boom, this may be adequately taken care of by an ordinary shackle which can twist in its opening in the yoke **60**.

It should be understood that certain features of my invention may be used independently as well as in combination. Thus, a single boom fitted with vangs, a topping lift and a single hoisting tackle, may, by use of the connection or fittings embodying my invention, handle a load which is hauled laterally in any direction by guys and will allow swinging and twisting of the load and topping up or lowering of the boom while the load is suspended by the lifting tackle without the problems of torque or twisting strains heretofore encountered. In the arrangement shown in the drawings each boom and the tackle thereon may be operated independently by its adjacent winch, and thus these advantages will be realized at some times in the burtoning of heavy loads by cooperation of the several booms and at other times in the separate handling of cargo by each boom.

The struts **36**, **37**, and **38** are attached at their ends respectively to the booms **18**, **19**, **20**, **21**, **22**, and **23** by the fittings shown in Figures 4 and 5. For convenience in rigging and in shifting the positions of the booms for picking up and lowering a load at desired points, these fittings are designed to allow free angular movement between the struts and the booms. This is achieved, in the embodiment shown in the drawings, by swinging of the yoke **75** about the pivots on the trunnion **71** as well as rotation of the trunnion **71** about the boom end **68**. Similar angular movement occurs when the booms are topped up or lowered either for adjustment to the most favorable position for picking up and lowering the load, or, when my invention is employed aboard a vessel, for lowering the booms in order to secure them for sea. The strut may also be disconnected at its attachment to the yoke **75** and the strut unshipped and stowed.

I claim:

1. A device for loading and discharging cargo into and from a vessel which comprises in combination four booms arranged two on each of opposite sides of the path for movement of the cargo, each boom being pivotally mounted for movement in horizontal and vertical arcs, a topping lift connecting the upper end of each boom to a fixed structure, means for holding the booms against swinging with inertial forces of the load, radial and thrust bearing faces on each boom near its upper end, a ring rotatably mounted on a radial bearing face of each bearing sleeve and bearing against a thrust bearing face thereof, a yoke pivotally attached to each of said rings, means on said yoke for connecting an upper block of a hoisting tackle and adapted to accommodate swivelling of said block in an arc about the axis of its pull, a second ring rotatably mounted on a radial bearing face of each bearing sleeve and bearing against a thrust bearing face, a second yoke pivotally attached to each of said second rings and a strut secured at its ends respectively to said second yokes of the booms on each side of said path of the load, tackle for each boom including said upper block, a companion block connected to the load, a line rove through said blocks and extended in a fall to winch means, and blocks for guiding said fall to said winch means, the companion blocks of the tackle for each boom of the pair connected by each strut being connected to the load near one end thereof and those of the other pair being connected near the opposite end of the load, said winch means being double drum winches, one having the falls from the tackle on the same side of each pair connected to its drums respectively so as to be hauled and slacked in synchronism and the other winch having the other falls of each pair connected in the same manner to its drums respectively.

2. A device for loading and discharging cargo into and from a vessel having at least one mast, spaced cargo booms each pivotally mounted near the base of a mast for swinging in vertical and horizontal arcs, a topping lift from each boom to its mast, at least one vang from each boom to anchor points aboard the vessel, lifting tackle including a block near the upper end of each boom, companion blocks adapted for connection to a common load and lines rove through each of said upper blocks and their companion blocks respectively and extended as falls from said blocks, means for connecting said companion blocks to said load at adjacent positions, whereby said lines from the respective booms form a V, and winches for engaging said falls to operate said tackle, which device comprises in combination therewith a strut connected between the upper ends of said cargo booms adapted to hold them spaced apart against the horizontal component of force exerted by a load suspended between them when in a hoisting position with one of said booms over the vessel and the other extending outboard and well clear of the vessel.

3. A cargo handling device in which one such device as defined in claim 2 is positioned forward of a cargo hatch and another such device is positioned aft of said hatch and the lifting tackles from the fore and aft booms on one side of the hatch are connected to one winch means adapted automatically to synchronize the lifting and lowering of said tackles, and the tackles from the fore and aft booms on the other side of the hatch are similarly connected to winch means similarly adapted to operate them substantially in automatic synchronism.

4. A cargo handling device in which one such device as defined in claim 2, positioned forward of the hatch is combined with a second such device positioned abaft the hatch, a single winch is provided for the lifting tackle on both fore and aft booms, respectively, on each side, said winches respectively being separately controlled but adapted to effect the same lift through the tackle of both fore and aft booms on the same side.

5. A device for lifting heavy loads which comprises a pair of spaced booms, tackle on each boom adapted for connection to a common load and including a block near its upper end a companion block at its lower end adapted for connection to a common load and means for connecting the companion blocks of each tackle of the pair in adjacent positions so that the tackle extends from the load to said booms in a V, winches for operat-

ing said tackle, means for holding said booms against swinging downward, and a strut connected between said booms near their upper ends to resist the tendency of the load suspended between them to swing them toward one another.

6. A device for lifting loads while holding them in a predetermined direction and angular relation with respect to a predetermined axis which comprises a pair of spaced booms, means for holding said booms against swinging in vertical and horizontal arcs, lifting tackle on each boom including at least one block connected to the boom near its upper end, a companion block adapted to be connected to a common load, the companion blocks of the respective tackles being connected to the load at spaced points thereon on opposite sides of the center of gravity, and the falls of said tackles leading respectively to synchronously operating drums of a double drum winch and being so attached to their respective drums that upon operating the winch the said spaced points on the common load are hoisted or lowered thereby in synchronism.

7. A device for lifting loads and at the same time holding them in a predetermined direction and angle with respect to a predetermined axis, which comprises a pair of spaced booms, a second pair of spaced booms spaced from the first pair in a direction parallel to said axis, means for holding said booms against swinging in vertical and horizontal arcs, lifting tackle on each boom including at least one block connected to the boom near the upper end of the boom and a companion block adapted to be connected to a common load, means for connecting the companion blocks of the respective tackles of each pair to the load at adjacent positions whereby the tackles extend therefrom in a V; and the companion blocks of the respective pairs of booms at spaced positions on opposite sides of the center of gravity of the load, and a double drum winch engaging the falls of the tackles of the booms on the same side of each pair whereby to haul and slack both tackles in synchronism.

8. In a device for lifting heavy loads the combination which comprises fixed radial and thrust bearing means positioned near the upper end of the boom; a ring rotatably mounted upon said sleeve and against said thrust bearing, a yoke pivotally attached to said ring and having at its opposite end means for attaching the upper block of a lifting tackle, said attaching means being adapted to accommodate swinging of said upper block about its boom as its load is swung to one side or the other of its boom or as its boom is topped up or lowered.

9. The combination as defined in claim 8 in which the means for attaching the upper block includes swivel means, whereby said upper block may rotate as its companion lower block rotates in accordance with the shifting or turning of its load.

10. A device as defined in claim 8 in which spaced upper blocks are secured to the end of the yoke, the fall of said lifting tackle is rove through one of said blocks and the other parts of said lifting tackle are rove through the other of said blocks and at least the block for said fall is mounted to permit its swivelling independently of the other block to bring their respective sheaves into the planes of the adjacent parts and fall of the tackle, as the moving and twisting of the load brings the several parts and fall of the tackle into planes in varying angular relation.

11. A device for handling heavy loads by burtoning which comprises a pair of spaced booms, means for holding the booms in substantially fixed position, lifting tackle having two upper blocks at the upper end of each boom, and means for attaching said blocks to their respective booms as defined in claim 8 in which each yoke is provided at the end opposite to its pivot with spaced means for attaching thereto the two upper blocks for independent twisting of either block, the fall of said lifting tackle for each boom being rove through one of said blocks and other parts of said lifting tackle being rove through another of said blocks whereby said upper blocks adjust themselves freely and independently to the respective planes of the lines passing over them in the various positions of the moving load and thereby avoid chafing and fouling of said lifting tackle in the upper blocks.

12. A device for attaching a strut to the end of a boom which comprises radial and thrust bearing means near the end of said boom, a ring rotatably fitted on said radial bearing and against the thrust bearing, a yoke pivotally attached to said ring, and at the end of said yoke opposite its point of pivotal attachment to said ring, means for attaching said strut to said yoke.

13. A device for lifting heavy loads which comprises two pairs of spaced booms, one of such pairs being positioned forward of the load, and the other aft of the load, said booms being pivotally mounted to swing in vertical and horizontal arcs, means for holding said booms against so swinging, respective booms including spaced upper blocks and companion lower blocks adapted to be connected to a common load, radial and thrust bearing means near the outer end of each boom, a ring rotatably mounted on said sleeve and against said thrust bearing, whereby to be held against moving longitudinally down along said boom, a yoke pivotally attached to said ring and having at its end opposite said point of attachment swivel means for connecting said upper blocks to their yoke to permit a clear lead for each said lifting tackle and its fall and radial pull of such tackle on its boom regardless of swinging or shifting of the common load, a second ring rotatably positioned upwards of and beyond the first and a second yoke pivotally mounted on said ring, and a strut having each end thereof secured to the end of one of said second-named yokes opposite to its pivotal attachment, whereby said booms are capable of universal movement with respect to the strut but always at predetermined spacing from each other; the lifting tackles of the pair of booms thus joined by a strut being attached by common means of attachment to one end of the common load; the falls of the lifting tackles on the same side of both pairs being led by appropriate blocks to separate drums of a double drum winch and so attached to their respective winch drums that their respective hoisting tackles are lifted or lowered in synchronism, and the falls of the lifting tackles on the other side of both pairs being similarly led to and similarly attached to the drums of another double drum winch, thus permitting burtoning of the common load and maintaining it in parallelism to a predetermined axis while it is hoisted, swung to one side and lowered.

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