T. J. SCANLAN.

DERRICK.

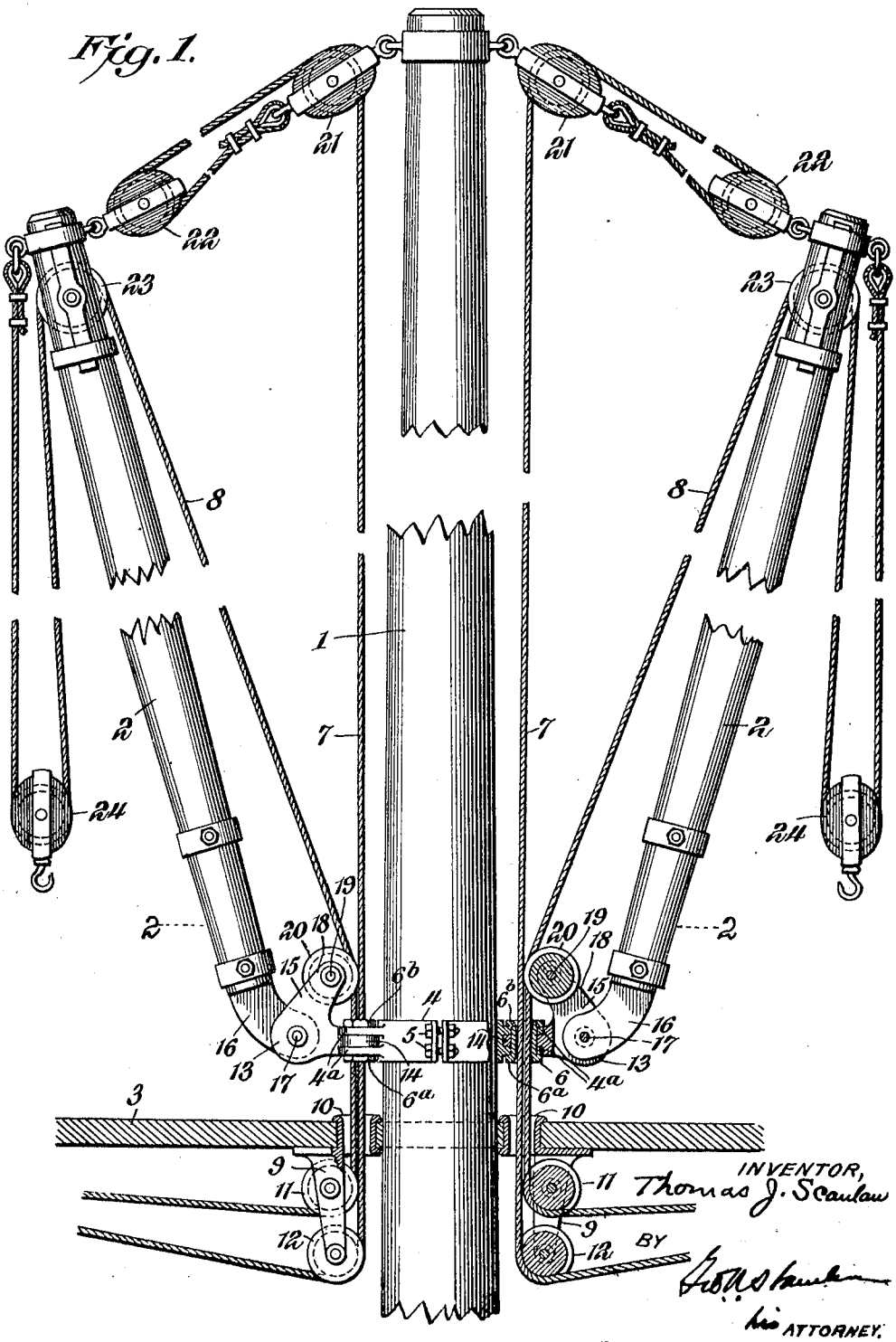
APPLICATION FILED DEC. 28, 1918.

1,313,741.

Patented Aug. 19, 1919.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

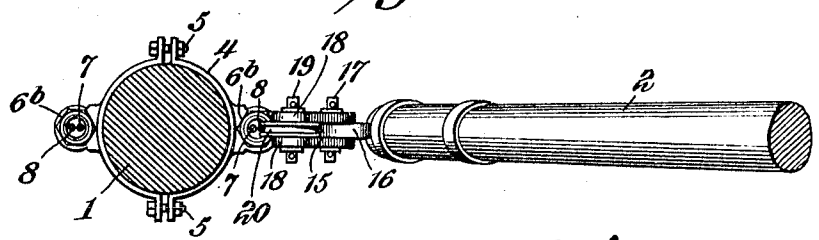


Fig. 3.

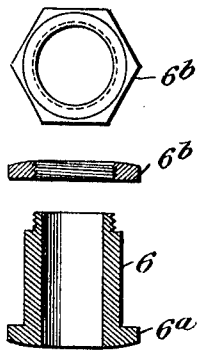


Fig. 4.

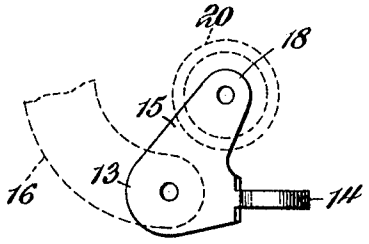


Fig. 5.

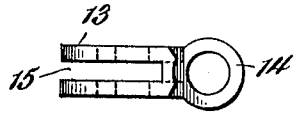


Fig. 6.

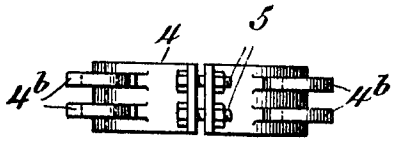
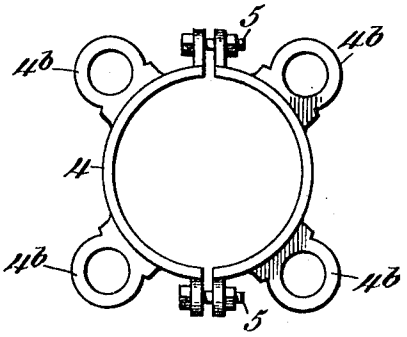


Fig. 7.



Thomas J. Scanlan INVENTOR,

BY

his ATTORNEY.

UNITED STATES PATENT OFFICE.

THOMAS J. SCANLAN, OF EL PASO, TEXAS.

DERRICK.

1,313,741. Specification of Letters Patent. Patented Aug. 19, 1919.

Application filed December 28, 1918. Serial No. 268,709.

To all whom it may concern:

Be it known that I, THOMAS J. SCANLAN, a subject of the King of England, residing at El Paso, in the county of El Paso and State of Texas, have invented certain new and useful Improvements in Derricks, of which the following is a specification.

This invention relates to derricks, and, more particularly, to those which are used on the decks of ships and other vessels.

Ships' derricks, in particular, should be as free as possible of cables above deck, due to the limited space available for operations; further, provision should be made for a wide arc of swing of the boom and for the disposition of the hoisting and fall ropes or cables, so that in the swinging of the boom, there will be no possibility of interference with objects.

My object is to provide a derrick, particularly one adapted for use on shipboard, which will satisfactorily fill these conditions, and others to which a derrick of that character is subject, and to that end I have provided improvements in fittings, construction, relationship, and combination of parts such as are set forth fully hereinafter, shown in the accompanying drawings, and recited in the appended claims.

One of these improvements comprises a band which is adapted to be positioned at any height on the mast, the band serving as the means for connecting the boom or booms to the mast; a further improvement resides in the provision of a hollow bolt constituting the pivot for the horizontal swing of the boom and arranged for the passage of the fall and hoist ropes or cables; another improvement is a novel fitting to which the heel of the boom is pivoted for vertical movement and which itself is centered on the hollow bolt through which the fall and hoist ropes pass, to provide for the horizontal swing of the boom. These fittings provide a universal joint which enables the boom to be raised or lowered to any desired extent and to be swung around horizontally, without any tangling of the fall and hoisting ropes, and thus the deck is kept clear of these ropes or cables.

Another improvement which I have provided is the arrangement of guide sheaves below the deck or platform, and the provision of hawse pipes or bushings where the ropes pass through the deck. Thus, the ropes or cables, instead of running along the deck from the region of the mast to the winch, run below the deck to the winch. Thus, the deck is kept clear of cables and operations are expedited and rendered safer than at present.

A further improvement is the placing of the sheave block of the hoisting rope in the center of the "peak" of the boom, whereby a greater tendency to sustain the load is obtained.

Other objects and advantages will appear from the following description of the invention. The disclosure is to be considered as illustrative rather than restrictive of the scope of the invention, as modifications may be resorted to.

In the accompanying drawings,

Figure 1 is a side elevation, certain parts being in section and others broken away, illustrating the invention;

Fig. 2, a horizontal section on line 2—2 of Fig. 1, one of the booms and universal joint being omitted;

Fig. 3, detail view of one of the hollow bolts;

Figs. 4 and 5, detail side and plan views, respectively, of one of the universal joints, and

Figs. 6 and 7, detail side and plan views, respectively, of a band arranged for four booms.

My invention is particularly adapted for use as a ship's derrick, but it is not limited to that use as it finds application to any situation where a derrick may be utilized. The invention is shown and described as being embodied in a two-boom derrick, but it may be carried out in a derrick having any number of booms.

The usual mast is shown at 1, the boom or booms at 2, and the deck or platform at 3.

A two-part band 4 secured by bolts 5, encircles the mast 1 and may be clamped thereon at any desired height. The booms are connected to this band.

If more than two booms are used, for instance four, the band may assume the form shown in Figs. 6 and 7 where the eyes are set at quadrant distances apart as shown at 4^b, instead of diametrically opposite as at 4^a, in the two boom form.

The eyes 4^a are arranged in vertically alined pairs. Referring to Fig. 3, a hollow bolt 6 passes through each pair of eyes

4ª, said bolt having a head 6ª on one end and being secured by a nut 6ᵇ screwed onto its other end. The pairs of eyes 4ª are thus reinforced and strengthened and these hollow bolts 6 are arranged to serve as guides or passageways for the fall ropes 7 and hoist ropes 8 controlling the respective booms. The ropes 7 and 8 for each boom 2 pass through the hollow bolt which constitutes the axis of rotation for horizontal movement of the given boom.

Secured to the underside of the deck or platforms 3 are brackets 9 which have hawse pipes 10 as an integral part thereof, said pipes extending through the deck 3 to the upper surface thereof. The brackets 9 carry guide sheaves 11 and 12. The fall rope 7 and hoist rope 8 for each boom pass down through the hollow bolt 6 and thence through the hawse pipe 10 and finally around the guide sheaves 11 and 12 and lead to the hoisting winch. Thus, the upper surface of the deck 3 is entirely clear of ropes used to operate the booms.

Referring to Figs. 4 and 5, universal joints 13 are provided for the booms 2, said joints comprising metal fittings having a horizontal eye or ear 14 which is mounted to swing horizontally on the bolt 6, and a bifurcated portion 15 which receives the flat metal heel 16 of the boom and to which said heel is pivoted on a bolt 17. The fitting or joint 13 has arms 18 which carry, on a bolt 19, a centering sheave 20 over which the hoist rope 8 passes. The sheave 20 is of such size and so disposed that its periphery is arranged above the hollow interior of the bolt 6 and, consequently, the hoist rope 8 runs direct from said sheave to the sheave 11, without touching the walls of either the hollow bolt 6 or the hawse pipe 10.

The eye 14 allows the boom to swing horizontally and the pivot bolt 17 is the pivotal point for the rise and fall of the boom. The horizontal swing and rise and fall of the boom may, therefore, be carried out without in any manner tangling the ropes or cables 7 and 8. In setting the band 4 on the mast 1, the eyes 4ª and bolts 6 will be arranged vertically in line with the hawse pipes 10.

The fall ropes 7 run to the usual blocks 21 at the top of the mast, thence to blocks or sheaves 22 at the peaks of the booms.

I arrange the sheaves for the hoist ropes 8 centrally in slots in the peak of the boom, as shown at 23. The hoist ropes 8 are thus made to run direct from the centering sheaves 20 to the peak sheaves 23, and, being above the booms, they are not only out of the way, but they have a tendency to sustain the load. The usual grapple blocks 24 are provided.

What I claim is:

1. A derrick comprising a mast, a fitting which is pivoted to the mast to swing horizontally in relation thereto, a boom pivoted to the fitting so that it may be raised or lowered and will also swing with the fitting, the vertical pivotal connection between the fitting and the mast being hollow, and fall and hoist ropes for the boom which pass downwardly through the hollow pivotal connection aforesaid.

2. In a derrick, the combination with a mast, of a clamp band adapted to be secured to the mast at different heights thereof, said clamp band having a vertically arranged eye, a fitting having a horizontally arranged eye, a hollow bolt arranged vertically and constituting a pivotal connection between the two eyes aforesaid, whereby the fitting may swing horizontally, a boom having a horizontal pivotal connection with the fitting, and fall and hoist ropes for said boom which pass downwardly through the hollow bolt aforesaid.

3. In a derrick, the combination with a mast, of a clamp band adapted to be secured to the mast at different heights thereof, said clamp band having a vertically arranged eye, a fitting having a horizontally arranged eye, a hollow bolt arranged vertically and constituting a pivotal connection between the two eyes aforesaid, whereby the fitting may swing horizontally, a boom having a horizontal pivotal connection with the fitting, a centering sheave carried by the fitting, a hoist rope for the boom which passes over said centering sheave and downwardly through the hollow bolt, and a fall rope for the boom which passes downwardly through the hollow bolt.

4. In a derrick, the combination with a mast provided with a vertically arranged hollow pivot bolt, of a boom having a pivotal connection with said hollow bolt, and fall and hoist ropes passing downwardly through said hollow bolt.

5. In a derrick, the combination with a mast, and a hollow vertically disposed pivot bolt secured thereto, of a fitting mounted on said hollow bolt to swing horizontally in relation to the mast and provided with a bifurcated portion, a boom having a heel received in the bifurcated portion aforesaid and pivoted thereto on a horizontal connection, a centering sheave carried by the fitting above the pivot of the heel of the boom, a hoist rope for the boom which passes around said sheave and down through the hollow bolt, and a fall rope for said boom which also passes downwardly through the hollow bolt.

6. In a derrick, the combination with a deck or platform, having a hawse pipe extending therethrough, of a bracket secured below the deck or platform, sheaves carried by the bracket, a mast, a clamp band on the mast which is adapted to be moved up or down or therearound prior to being

clamped, a hollow bolt carried by the band and arranged in vertical alinement with the hawse pipe, a boom having a pivotal connection with the hollow bolt, and hoist and fall ropes for the boom which pass downwardly through the hollow bolt and the hawse pipe and around the sheaves below the deck or platform.

7. In a derrick, the combination with a deck or platform having a hawse pipe extending therethrough, of a bracket secured below the deck or platform, sheaves carried by the bracket, a mast, a clamp band on the mast which is adapted to be moved up or down or therearound prior to being clamped, said band having a pair of vertically alined eyes, a hollow bolt located in said eyes, a fitting having a horizontal eye which is located between the eyes on the band and is mounted on the bolt, a sheave carried by the said fitting, a boom having a heel which is pivoted to the fitting on a horizontal bolt, and hoist and fall ropes for the boom which pass downwardly through the hollow bolt and the hawse pipe and around the sheaves below the deck, the hoist rope also passing over the sheave carried by the fitting.

8. In a derrick, the combination with a mast, of a fitting pivoted thereto, a boom pivoted to the fitting, a peak sheave located centrally within the boom near the peak thereof, a fall rope for the boom, a centering sheave carried by the fitting and located above the pivotal connection of the boom with the fitting, and a hoist rope passing over the centering sheave and thence to the peak sheave aforesaid.

In testimony whereof I affix my signature.

THOMAS J. SCANLAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."