

UNITED STATES PATENT OFFICE.

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DERRICK FOR SHIPS.

SPECIFICATION forming part of Letters Patent No. 731,584, dated June 23, 1903.

Application filed June 24, 1901. Serial No. 65,805. (No model.)

To all whom it may concern:

Be it known that I, DUNCAN FINLAYSON MACDONALD, residing at Glasgow, Scotland, a subject of His Majesty the King of Great Britain, and a chief officer on the British India Steam Navigation Company's steamship *Fazilka*, at present in the port of Calcutta, India, have invented certain new and useful Improvements in Derricks and Cranes Specially Applicable to Steamers and Ships, of which the following is a specification.

In working derricks or cranes on board ship, whether for the purpose of loading and unloading cargo or otherwise, the slightest list in the vessel has the effect of making the derrick's head fall over in the direction of the list, and in order to prevent its doing so the derrick-head has to be held in position by one or more guys. Should there be a list and it be desired to swing a loaded derrick upward against the direction of the list, a considerable amount of power is required to pull the derrick-head around. Even when there is no list a great deal of force is required to bring around the head of a heavily-loaded derrick.

The object of this invention is to provide certain improvements in derricks and the like whereby the effects of a ship's list may be counteracted and whereby derricks may be worked as easily when there is a list as when they are perfectly upright, also whereby the force required to bring around the head of a heavily-loaded derrick may be reduced to a minimum. To attain this object, certain improvements have been devised, which I will now proceed to describe with reference to the accompanying drawings, in which similar letters of reference designate like parts throughout, and in which—

Figure 1 is an elevation showing a derrick embodying my improvements. Fig. 2 is a plan of the attachment for connecting the derrick-span to the derrick-standard, and Fig. 3 is an elevation of a modification.

The derrick consists of the usual standard C, to the lower part of which is pivotally attached the jib D, whose head E is connected by a span or tie F to the standard at G. Instead of the head of the jib D, however, being secured to a fixed point on the upper part of the standard, as usual, the point of attach-

ment is capable of lateral movement. Thus the inner end of the span or tie F is secured by any suitable means to a block J, sliding in guides K and having a screw L passing through it and lying in bearings in the ends of the frame M, carrying the guides.

As shown, a shackle O is pivotally secured to the block J, and this shackle may be fixed on the top or bottom of the block; but preferably it is fixed to both top and bottom, passing around the outer guide-bar. The frame M is suitably fastened to the derrick-standard by angle-irons, brackets, or other convenient means.

The screw L may be rotated to shift the position of the block J by any suitable means—as, for example, by a wheel P and chain Q, which may be operated from the deck or from the foot of the derrick.

In some derricks the jib is capable of being hung at varying angles, (by increasing or diminishing the length of the span,) so that its head may be placed in more convenient positions for work. These alterations cause the span to assume different angles with the standard, and in order that the strain of the span may always come squarely on the shackle O the whole frame M is hinged instead of being fixed to the standard. This may be done in various ways, that shown consisting of a bar S, attached to the standard and passing through a sleeve T, made in the frame.

In use the invention is simple. When there is a list on the vessel, the derrick-jib will swing from its normal position in the direction of the downward slope of the deck. To restore equilibrium, it is necessary to alter the relative positions of the heel of the jib and the point of attachment to the span or tie, so that they come into a vertical line, (the list having caused their positions to fall out of the vertical.) This is accomplished by rotating the screw L by means of the wheel P and chain Q, so that the block J is moved in the direction of the upward tendency of the list until the span or tie comes into a vertical line with the heel of the jib.

The use of this invention is not restricted merely to derricks when they get out of equilibrium by reason of a list or otherwise; but it can be applied to derricks which are in equilibrium in order to reduce the force re-

quired to rotate or swing around a derrick-head when loaded. As has been above stated, a derrick when heavily loaded requires a considerable amount of force to pull it around.

5 The requisite force could be reduced to a minimum if the point of attachment of the span of the jib were so placed that the derrick would fall over under the action of gravity in the direction that the load had to be swung.

10 Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a derrick or crane, the combination with the standard, of guides attached to the
15 standard, a block arranged to slide between said guides, a jib having a head connected by a tie to said block, and means for moving said block laterally upon the guides, substantially as described.

20 2. In a derrick or crane, the combination with the standard, of guides attached to the standard, a block arranged to slide between said guides, a jib having a head connected by a tie to said block, a screw supported from

the standard operatively engaging the block, 25 and means for turning the screw, substantially as described.

3. In a derrick or crane, the combination with the standard, of guides attached to the standard, a block arranged to slide between
30 said guides, a jib having a head connected by a tie to said block, a screw supported from the standard operatively engaging the block, and a wheel and chain for turning the screw, substantially as described. 35

4. In a derrick or crane, the combination with the standard, of a bar attached thereto, a frame pivotally connected to the bar, a block arranged to slide in the frame, a jib
40 having its head connected by a tie to said block, and means for moving said block laterally in the frame, substantially as set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

DUNCAN FINLAYSON MACDONALD.

Witnesses:

HENRY HAMILTON REMFRY,
RUPERT REMFRY.