

No. 746,120.

PATENTED DEC. 8, 1903.

D. F. MACDONALD.
CRANE FOR VESSELS.

APPLICATION FILED SEPT. 14, 1903.

NO MODEL.

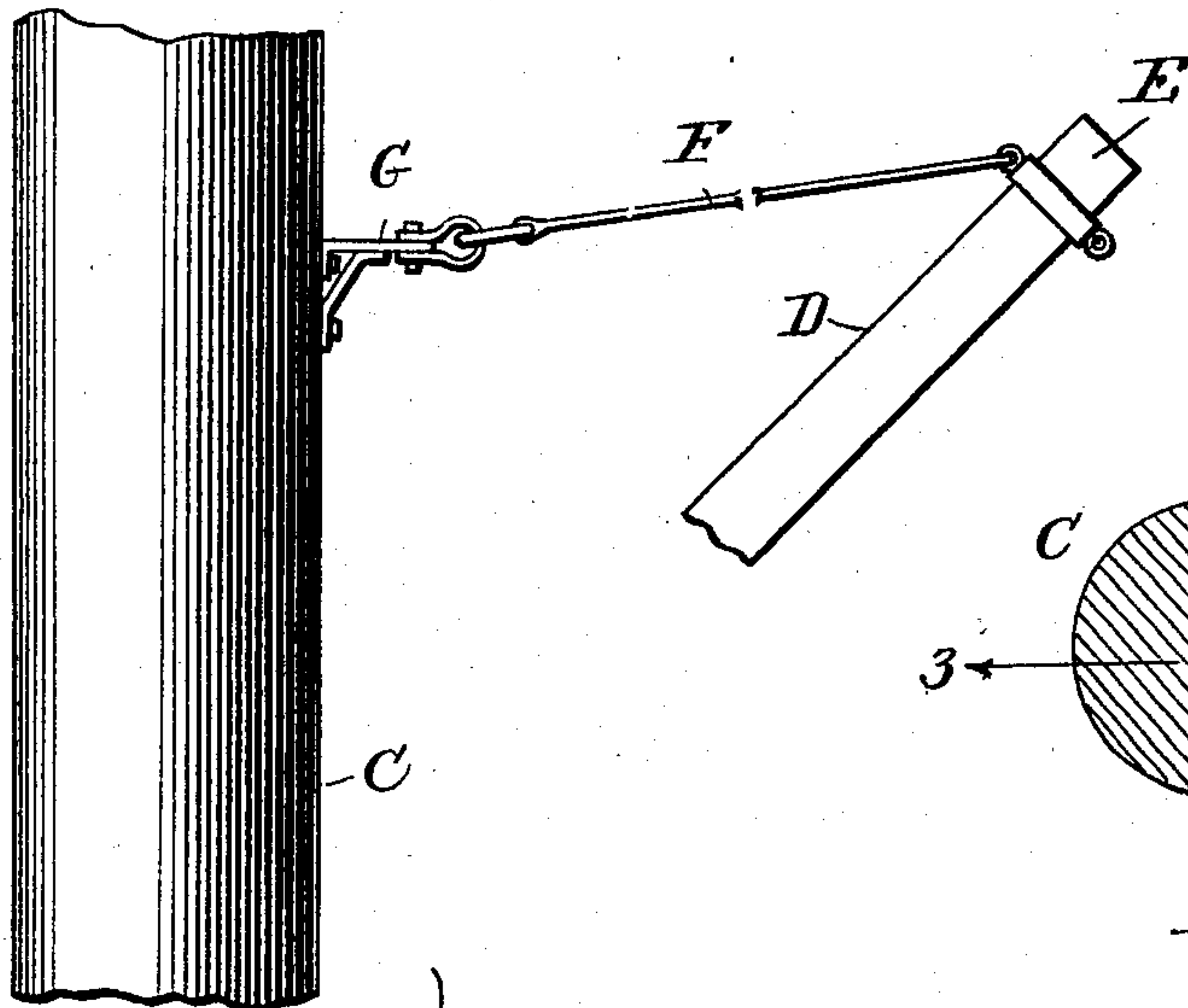


Fig. 1.

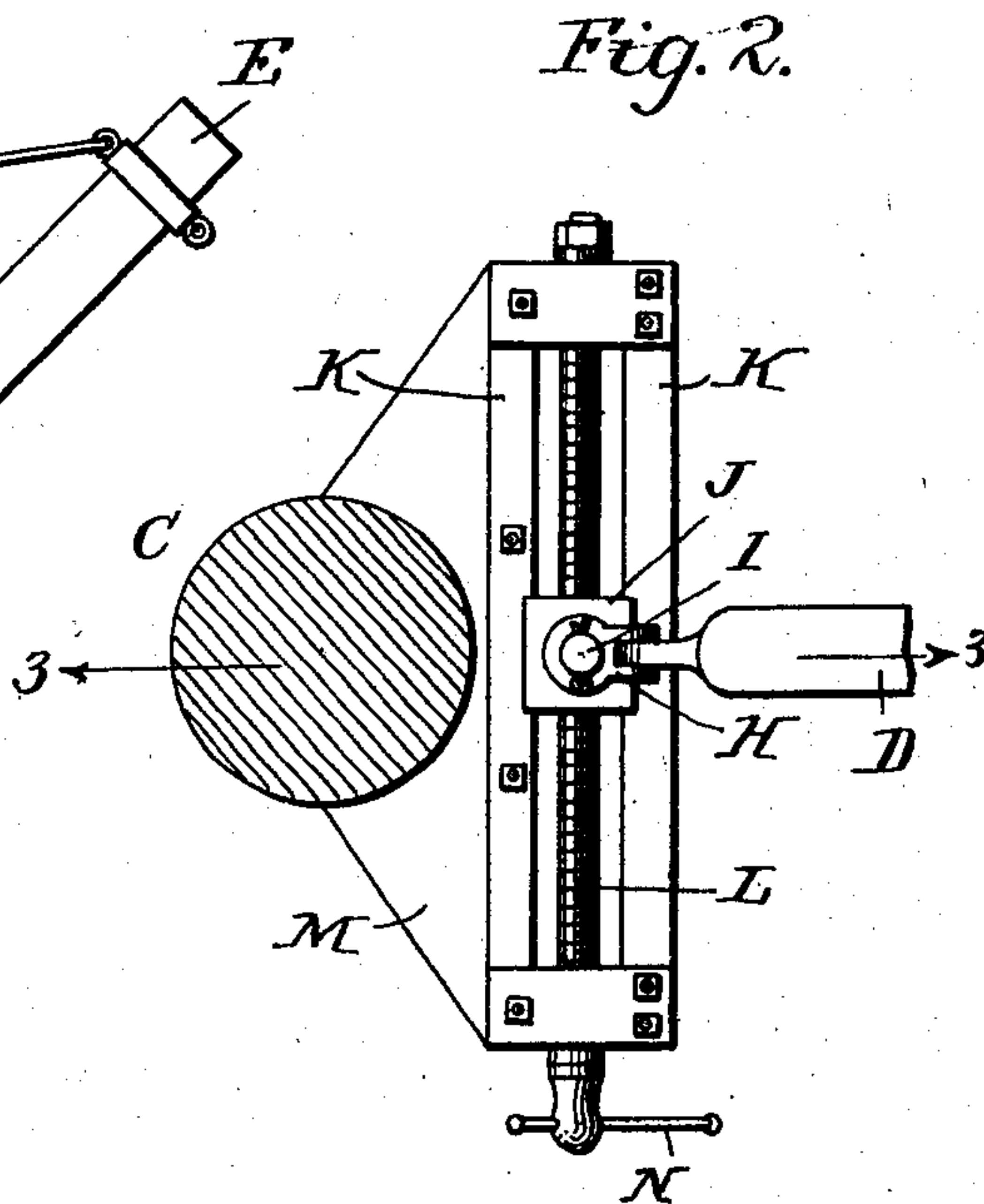


Fig. 2.

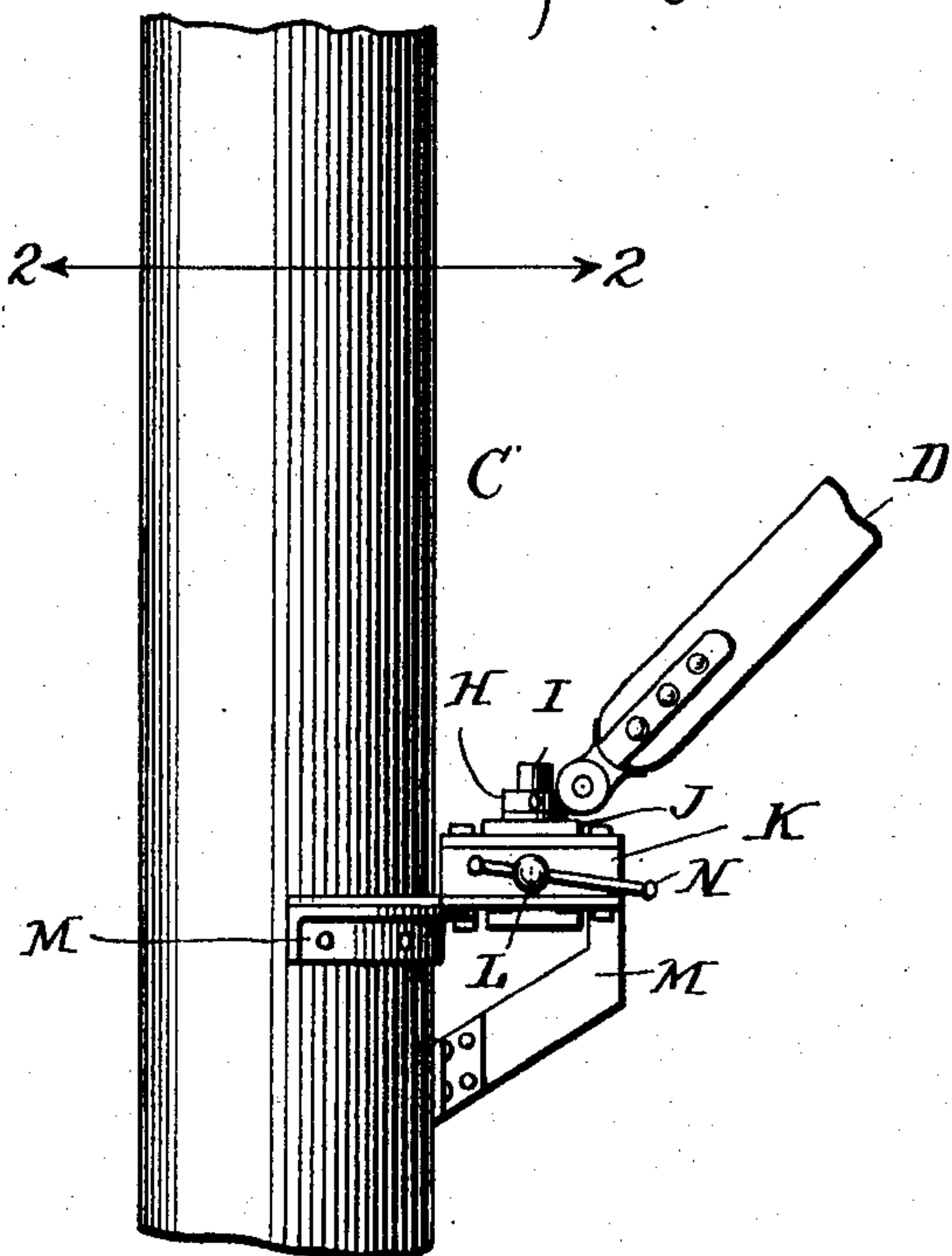
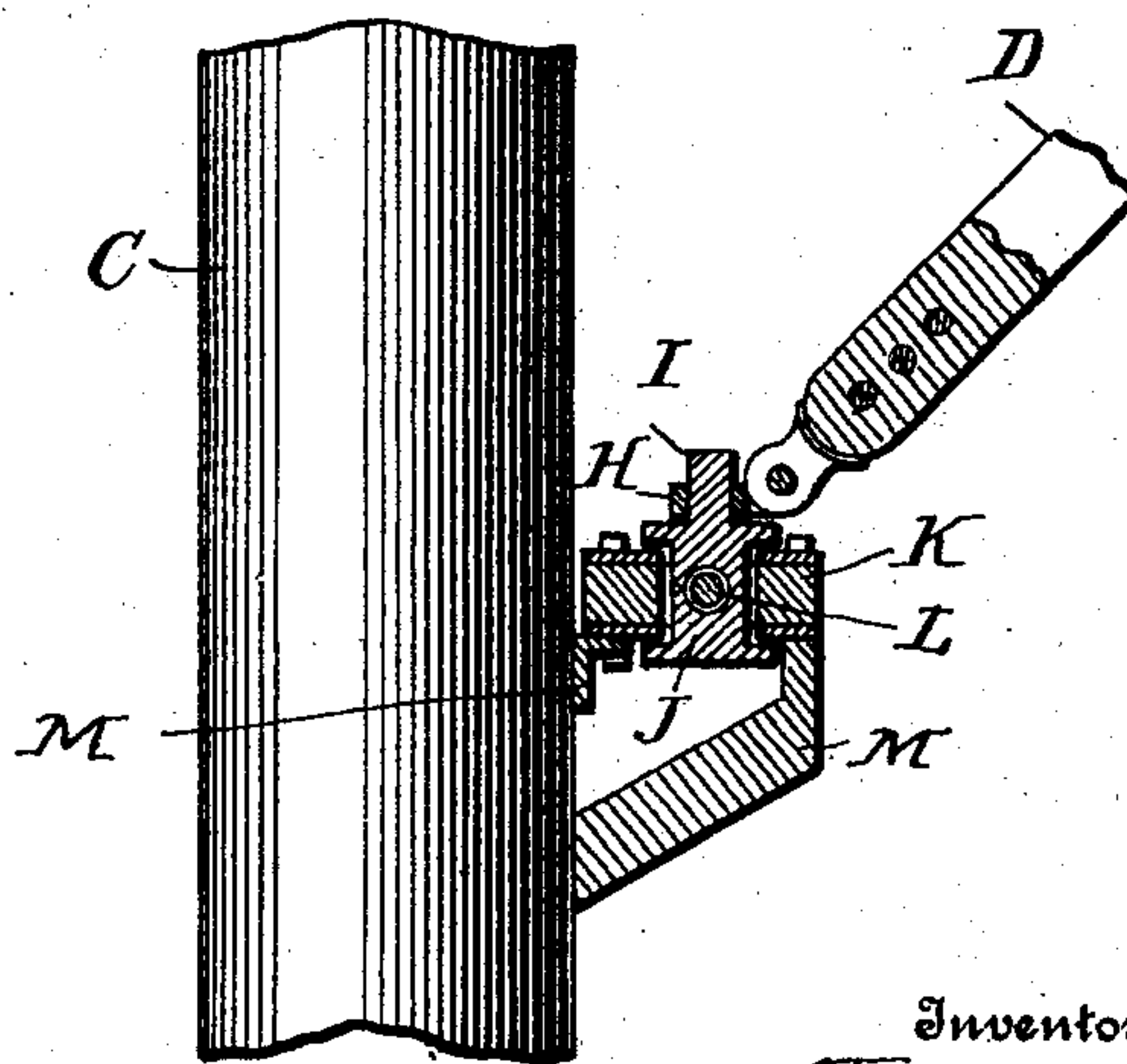


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CRANE FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 746,120, dated December 8, 1903.

Original application filed June 24, 1901. Serial No. 65,805. Divided and this application filed September 14, 1903. Serial No. 173,147. (No model.)

To all whom it may concern:

Be it known that I, DUNCAN FINLAYSON MACDONALD, a subject of the King of Great Britain, residing at Glasgow, Scotland, have
5 invented certain new and useful Improvements in Derricks or Cranes Specially Applicable to Steamers and Ships, of which the following is a specification.

In working derricks or cranes on board
10 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
15 the derrick-head has to be held in position by one or more guys. Should there be a list and it is desired to swing a loaded derrick upward against the direction of the list, a considerable amount of power is required to
20 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
25 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 where-
30 by 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
35 reference to the accompanying drawings, in which similar letters of reference designate like parts throughout, and in which—

Figure 1 is an elevation of a portion of a derrick constructed in accordance with the
40 present invention. Fig. 2 is a sectional view on the line 2 2 of Fig. 1. Fig. 3 is a sectional view on the line 3 3 of Fig. 2.

The derrick consists of the usual standard C, to the lower part of which is attached the
45 jib D, whose head E is connected by a suitable span or tie F to the standard C at G. Instead of the heel of the jib D, however, being fixed to the standard it is made capable of lateral movement. This is accomplished
50 by hinging the heel of the jib D to a foot H, which fits onto a projection I. This projec-

tion I is fixed to a block J, sliding in guides K and having suitable flanges, so as to fit closely onto said guides K. Through the block J passes a screw L, whose unthreaded
55 ends repose in bearings in the ends of the frame M, carrying the guides K. At one end the screw is provided with a handle N, the rotating of which causes the screw to move the block J, together with the heel of the jib,
60 along the guides in either direction, according to the direction in which the handle is turned. The frame carrying the guides is firmly secured to the derrick-standard at or near its lower end by means of angle-irons,
65 brackets, or other suitable means.

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 direc-
70 tion 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 of the span or tie, so that they come into a vertical line, (the
75 list having caused their positions to fall out of the vertical.) This necessitates an adjustment of either the heel of the jib or of the point of attachment of the span or tie to the standard. This is accomplished by turning
80 the handle N so that the block supporting the heel of the jib moves in the direction of the downward tendency of the list until the heel is in a vertical line with the span or tie, when the equilibrium will be restored and
85 the derrick will swing normally.

It will be noticed that the weight of the jib and load attached thereto is transmitted to the block J at a point between the guides by which said block is supported, and therefore the operating-screw is relieved from strain
90 and a very strong durable construction provided. By supporting the sliding block between two parallel guides it is held in proper position and cannot turn or swing vertically under the strain or pressure applied to the jib.
95

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.
100

To illustrate the value of the invention when applied to a derrick when the ship is in

equilibrium—that is, so balanced on the water that she does not list to either side—it is necessary to describe the relations which maintain between the moving power and the cargo or weight to be moved. The ordinary derrick is immovably fixed to a mast, and when the cargo has been lifted by means of a winch from the hold to points above the hatchways has to be swung outward. This requires that a force proportional to the weight to be moved be exerted independently of the lifting power of the derrick, and it is always supplied by a number of men pulling on ropes or tackles or by a number of men bodily pushing the derrick in the direction that it is desired to deposit the cargo. When the list of a vessel inclines in the direction in which the cargo is to be deposited, the derrick when free will swing in that direction by the force of gravity. Very often the list is so great as to damage the derrick-gear as well as the cargo by swinging too violently. This untoward accident is daily observed, causing much loss in time and material.

The present invention brings about an artificial list to order, which can be adjusted to a fraction of a degree and with so little exertion that a child can manage it, thereby not only insuring the safety of the derrick and cargo, but also causing an immense saving in laborers' wages.

This application is a division of an earlier application on which Letters Patent No. 731,584 were issued June 23, 1903.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. 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 its heel connected to said block, and means for applying pressure to the block, substantially in the vertical plane of the point of resistance, for moving said block laterally between the guides.

2. In a derrick or crane, the combination with the standard, of guides attached to the standard, a block supported by and arranged to slide between said guides, a jib having its heel connected to said block, a screw supported from the standard and operatively engaging the block at points between said guides, and means for turning the screw to move the block and heel of the jib laterally.

3. In a derrick or crane, the combination with the standard, of guides attached to the standard, a block arranged between and having flanges projecting into engagement with said guides, a jib having its heel connected to said block, and means for engaging the block at points between said guides and moving said block laterally between the guides to adjust the heel of the boom, as desired.

4. In a derrick or crane, the combination with the standard, of guides attached to the standard, a block arranged between the guides and having flanges projecting over opposite faces of the guides, a jib having its heel connected to said block, and means acting on the block, in substantially the vertical plane of the point of resistance, for adjusting the block laterally between the guides.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DUNCAN FINLAYSON MACDONALD.

Witnesses:

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