May 17, 1927. 1,628,972

L. E. HANSEN

ROTATABLE BLOCK HOUSING

Filed June 16, 1923 2 Sheets-Sheet 1

Fig. 1.

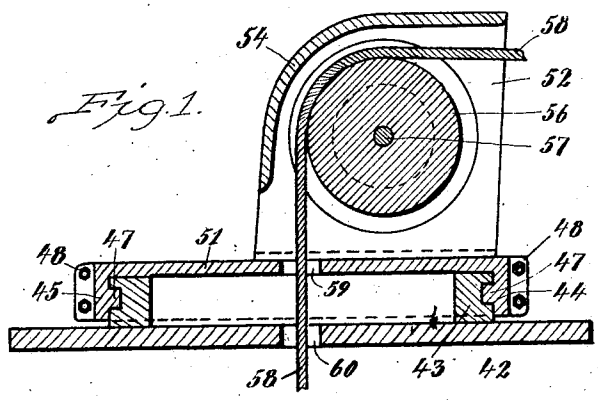


Fig. 2.

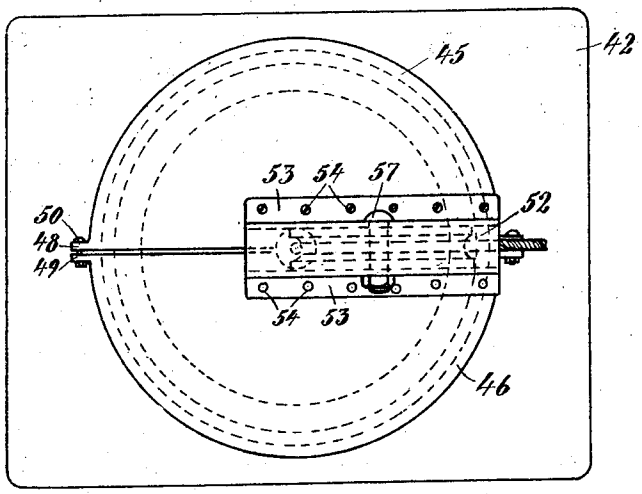
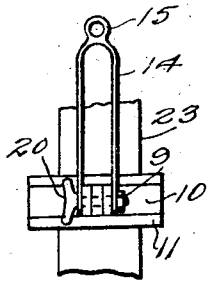


Fig. 5.



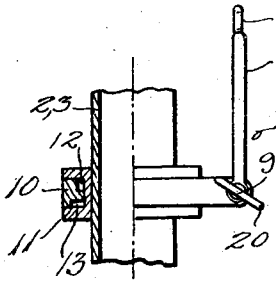


Fig. 6.

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Filed June 16, 1923 2 Sheets-Sheet 2

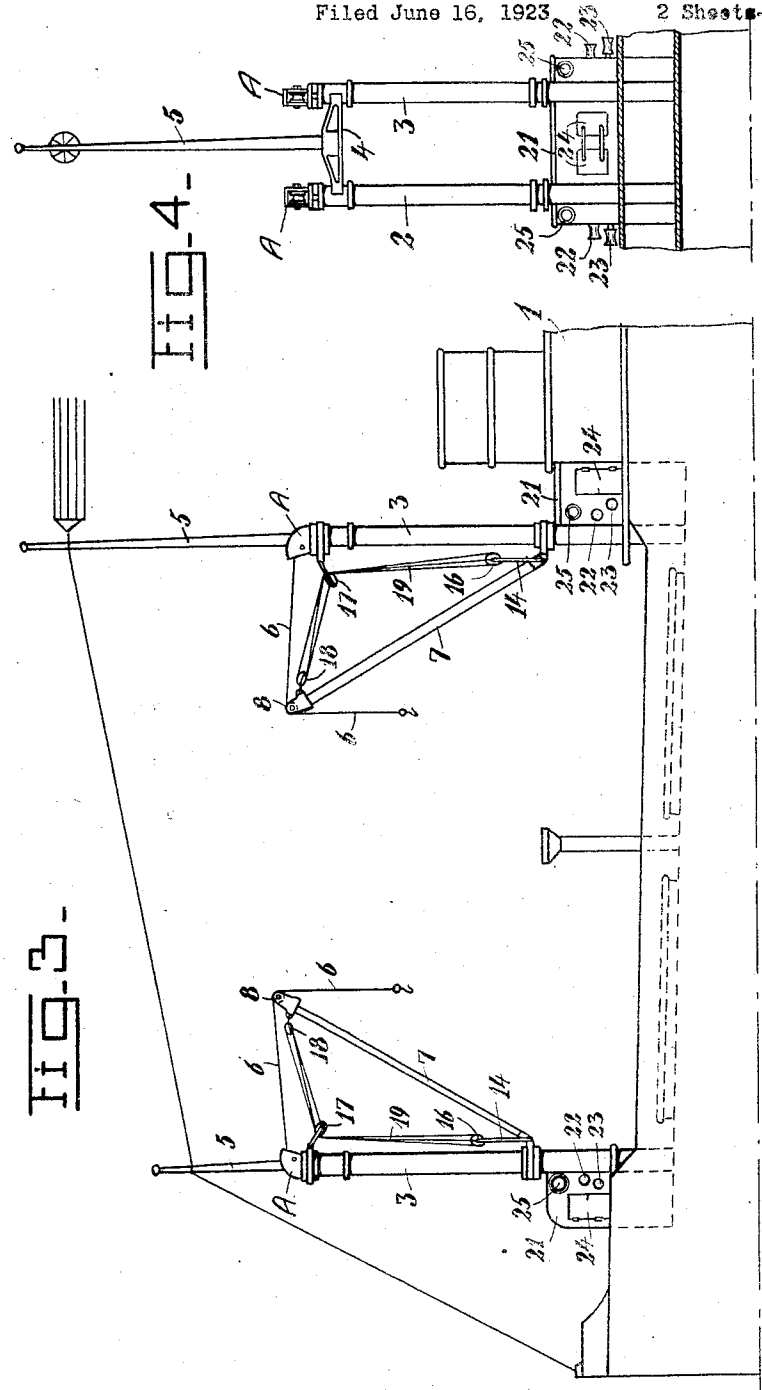


Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

LORENTZ EMIL HANSEN, OF BERGEN, NORWAY.

ROTATABLE BLOCK HOUSING.

Application filed June 16, 1923, Serial No. 645,840, and in Norway June 28, 1922.

The present invention relates to an arrangement of rotatable block housings and the invention is mainly characterized by the block housing being fastened, by means of turning rings or the like, to its support or base part in such a manner that the housing with the block sheave fully loaded may be turned or rotated horizontally into any position without incurring any shifting of the hoisting line, which always remains in the centre of the circle of rotation.

Further the invention consists in the use of such block housings in connection with hoisting cranes on board ships, whereby such cranes may be simplified and utilized most effectively, in that the uppermost deck becomes unobstructed (cleared), which is very advantageous for the placing of deck-cargo, such cargo being also better protected than usual thereby against damage from the sea-water.

The above mentioned advantages are obtained by arranging a rotatable block at the top of the crane mast, so that the hoisting line may be passed down through the interior of the mast and to the hoisting machinery through suitable passages above or below the deck. The hoisting machinery may be placed below the deck or in a suitable deck erection so as to be protected against damages from sea-water or the like. The hoisting lines may for instance all be conducted to the middle part of the ship so that the winches may all be located in the midship deck house and thereby always be under the control of the engine staff. This is especially advantageous when electrically operated winches are employed, because the starting apparatus for such winches, which apparatus occupy but a small space, may be located at any convenient place at which the operator may survey the area of operation. By means of a cable the said starting devices may be made transportable, so that they may be shifted to any desired place independently of the location of the winches or hoisting machinery. In this way—exclusively on account of the circumstance that the hoisting lines are passed by rotatable block housings through the interior of the mast—the hoisting machinery may be located at any convenient place on the ship without reducing the effect of the cranes. Further the cranes themselves may be simplified considerably, in that all cantilevers for the derricks may be dispensed with above and below. Hereby the area of action of the crane in the lateral direction is increased. For unobstructed cranes the area of action is increased to 360°.

The above mentioned system may naturally be employed at any place, but in the following description the same will for the sake of simplicity only be described in connection with ships.

A constructional form of the invention is shown by way of example in the accompanying drawings, in which—

Figure 1 is a vertical section through the block housing;

Figure 2 is a plan view of the same;

Figure 3 is a partial side view of a ship equipped with the invention;

Figure 4 is a front view of a set of cranes;

Figure 5 is a front view of a novel swivel-link of the derrick.

Figure 6 shows the same partially in section and seen from the side.

To the base plate 42 (Figures 1 and 2) a ring or circular guide 43 is fastened which at its periphery is formed with a groove 44 or the like, in which the flange 47 of a cover is embedded, said cover being formed from two semi-circular portions 45 and 46. The flange 47 serves for securing the relative position of the ring 43 and the cover 45, 46. Each of the halves 45 and 46 of the cover is equipped with flanges 48, 49 through which screws 50 are passed. By means of these screws the cover-halves are clamped to the ring 43. The upper plate 51 of the cover rests upon the upper face of the ring 43 and may be rotated upon this.

In order to reduce the friction between the ring 43 and the cover, ball bearings (not shown) may be arranged between the adjacent faces.

On the cover 45, 46 a block housing 52 is fastened, the same being formed with flanges 53, which are fixed by means of screws 54 to the cover, so that the housing lies symmetrically to the line of partition between the cover parts 45 and 46 each flange 53 being fixed to a different half part of the cover. The block housing 52 comprises two lateral walls, which are interconnected above by means of a proportionately thick connecting rib 55.

56 is the block sheave, which by means of a pin 57 is rotatably arranged in the block housing 52. 58 is the hoisting line, which is passed through an operture 59 in the cover

plate 51 and through an aperture 60 in the base plate 42. According to the drawing the aperture 60 is of the same size as the aperture 59, but it will be understood that the diameter of the former if desired may be made like the inner diameter of the ring 43. As will be seen the block housing with the sheave is arranged in such a manner on the cover 45, 46, that the hoisting line 58, will be situated in the centre of the cover and the ring 43 at any horizontal position of the block housing 52.

The Figures 3 and 4 show the use of such block housings with cranes on board ships. The crane masts 2 and 3 of the ship 1 are in the present instance hollow and are located at a suitable distance from each other in a plane transversely to the longitudinal axis of the ship. Near their upper ends the masts are interconnected by means of a traverse or cross-piece 4, upon which the mast-head 5 is fastened. At the top of each of the masts 2, 3 a block housing 52 is arranged, comprising a block sheave, so that the hoisting line 58 may be passed over the top sheave 8 of the derrick 7 down into the interior of the masts. As will be understood it is not necessary that the line is passed exactly through the centre of the mast, in that it also may be disposed eccentrically to the axis of the mast. At their lower ends the derricks 7 are rotatably fixed, so that they may turn in the vertical direction.

A fork 14 engages the outsides of the fastening ears of the derrick 7 on the ring 10. The upper end of the fork 14 is formed with an eye 15 for the fastening of a block 16, which together with the blocks 17 and 18—of which the former is fixed to the rotatory ring of the block housing A whereas the latter is fixed to the derrick head—serve for the guiding of a line 19 by means of which the derrick 7 may be held in different positions and the angular position of the same may be varied. One end of the bolt 9 is further formed with wings 20 to which the free end of the line 19 may be fastened.

Owing to the fork 14 the derrick may without hindrance be swung up into its maximum height position. Simultaneously the usual cantilevers for the derrick may be dispensed with, as the pressure of the load will be better distributed on the derrick as well as on the mast, when the hoisting line is arranged as above described. Further, the lateral swinging of the derrick will be facilitated considerably, as its suspension (the line 19) will swing round the mast together with the derrick so that no bending occurs.

The winches may be arranged behind the masts 2, 3 in suitable deck houses 21, so that only the drums (22, 23) of the winches are situated outside the said houses. The houses may be equipped on different sides with covers or doors 24 and port-holes 25 through which the crane operator may survey the loading. When steam winches are employed the starting valve and the reversing gear (not shown) may be placed on the roof of the house 21.

Owing to the arrangement of the winches in the described manner in a deck house, the entire upper deck will be free for placing the deck load and at the same time the winches are securely protected against damages from water, breakage and the like.

When employing electrically operated winches the same may be arranged amidships.

The derricks 7 shown in Figures 3 and 4 need only swing about 90°, because two cranes are arranged side by side. The derricks may however also swing about 180°, provided that no stays or shrouds are fastened to the mast.

On fully unobstructed cranes the derricks may swing about 360°. This is very advantageous especially when the crane is located between two hatches, as the crane then may be employed at both hatches.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In combination with a crane having a hollow mast, a circular guide secured at the upper end of said mast, said guide being provided with a peripheral groove, a cover plate adapted to cooperate with said groove for rotation therein, a housing on said plate and a sheave in said housing, said housing, plate and guide being provided with openings to permit a cable to be passed over said sheave and through said mast.

2. A crane as claimed in claim 1, said groove being provided on the outer periphery of the guide, said cover plate being formed from two semi-circular members, and means on said members for clamping the cover to the guide to permit rotation of the cover plate on the guide.

In testimony whereof I affix my signature.

LORENTZ EMIL HANSEN.