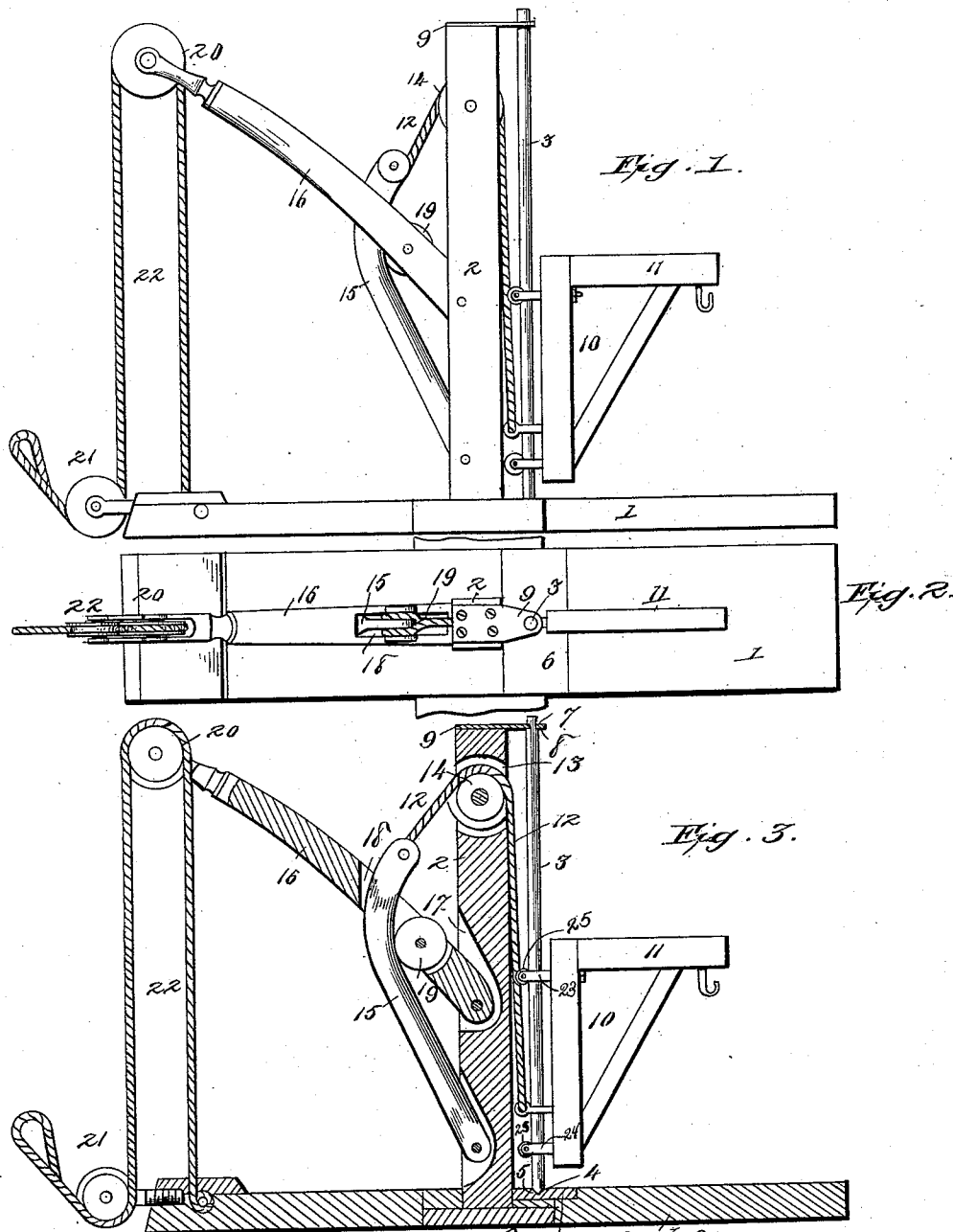


(No Model.)

J. O. RICHMOND
HOISTING CRANE.

No. 471,898.

Patented Mar. 29, 1892.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN O. RICHMOND, OF HART, MICHIGAN.

HOISTING-CRANE.

SPECIFICATION forming part of Letters Patent No. 471,898, dated March 29, 1892.

Application filed September 30, 1891. Serial No. 407,337. (No model.)

To all whom it may concern:

Be it known that I, JOHN O. RICHMOND, a citizen of the United States, residing at Hart, in the county of Oceana and State of Michigan, have invented certain new and useful Improvements in Hoisting-Cranes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in a hoisting-machine, the same being more especially applicable to cranes and derricks of various construction, as will be fully understood by the following specification and the accompanying drawings, in which similar figures of reference indicate corresponding parts in the several views.

Referring to the drawings, Figure 1 is a side elevation of the hoisting-machine complete. Fig. 2 is a top plan of the same. Fig. 3 is a vertical section on a line with the arm and the operating-lever.

Referring in detail to the several parts of the hoisting-machine, 1 is the base, which is preferably formed by two sections of heavy timber crossing each other at right angles near their middle and secured firmly in position at that point. Upon the center of the base thus formed I erect the standard 2, which is effectively anchored in said base and adapted to hold the other parts, hereinafter referred to, in their operative positions. Near said standard I erect the pivoted jib 3, which may be formed of wood or other preferred material, the lower end being provided with a central end bearing-point 4, which fits loosely in the socket 5, formed in a metal base-plate 6, embedded in the upper surface of the base near the foot of the standard 2. The upper end of the pivoted jib is provided with an annular groove 7, adapted to be encircled by an aperture 8, provided in the horizontal arm 9, said arm being affixed to the upper end of the standard 2, as shown. This construction will permit the jib to rotate, carrying with it the triangular or usual form of crane or lifting arm 10, which is secured to said jib in such a manner that it may swing and slide thereon. The outer end of the crane-arm 11 is provided in the usual manner with a pulley block or hook adapted to form connection with the weight lifted, while that side of said arm lying

adjacent to the jib is provided with an outwardly-reaching arm or collar extension, to which is secured one end of the rope 12. The other end of said rope is then extended upward and reaches through the slotted opening 13, within which is mounted the pulley 14. After passing through the slotted opening above and in contact with the pulley just referred to said rope is attached to the upper end of the lifting-arm 15, the lower end of said arm being pivotally connected to the lower end of the standard 2. The lifting-lever proper 16 is pivoted in a slotted opening 17, provided in that side of the standard 2 opposite the crane, and reaches outward horizontally therefrom, and is provided with the vertical opening 18, within which is loosely placed the pulley-wheel 19. It will be seen that the slotted opening 18 in said lever is sufficiently extended on the outer side of the pulley to permit the reception of the arm 15, the function of the lever being to bear against the inner face of said arm and depress the same with a minimum of friction. To the free end of the lever 16 I secure the pulley 20, which, in conjunction with pulley 21, fully controls the downward movement of the lever 16, as will be more clearly understood by reference to the drawings.

It will be understood that the ropes acting upon the various parts just referred to may be made of any preferred material, which will be determined by the weight of the load. The downward pull upon the rope 22, engaging with pulleys 20 21, will depress the outer end of the lever 16 and the same end of the arm 15, drawing the rope attached to the crane outward through the slotted opening 14, and thus elevate the crane and the load attached thereto. I prefer to connect the crane to the pivoted jib by means of the encircling collars 23 and 24, which are provided with grooved pulleys 25, adapted to bear against and ride upon a strip or track of metal secured to the inner side of the jib.

Another anti-friction device consists in securing the grooved pulley 25 to the inner side of the crane in such a position that it will ride upon a metal rib or track placed upon the jib; or, if preferred, the jib may be entirely surfaced with sheet metal to prevent abrasion or undue wear. It will be further understood

that by the use of compound or twofold tackle at the outer end of the lever 16 the power used in depressing said lever will be increased many fold.

5 The combination of the several parts just described is such that a working machine will lift in the ratio of one hundred pounds for every five pounds applied on the end of the rope 22. The crane or arm 10 is constructed
10 and braced in the usual manner, and when the several parts are assembled in the manner herein described the operation and advantages of the same will, it is thought, be readily apparent, and further description is
15 deemed unnecessary.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a hoisting-machine, the combination
20 of the standard secured to the base, substantially as described, the lever 16, pivoted in a central slot or bearing in said standard, the arm 15, pivotally connected to said standard and reaching upward through the vertical slot
25 in said lever, the pivoted jib arranged parallel to the standard and adapted to rotate upon the base-plate 6, the crane provided with the anti-friction rollers or grooved pulleys adapted to slide upon said jib, and means of connecting the crane and the upper end of said
30 arm, so that the crane will be raised when the lever 16 is depressed, as set forth.

2. In a hoisting-machine substantially as

described, the combination, with the standard having the friction-pulley adjacent to its upper end and the vertically-movable crane, of the arm pivotally connected to the standard, the rope taking over the pulley of the standard and connecting the free end of the arm and the crane, the lever pivotally connected
40 to the standard and having a slot to receive the arm and a friction-pulley journaled in said slot and bearing against the arm, and a suitable means for depressing the free end of said lever, substantially as specified. 45

3. In a hoisting-machine, the combination of the base, the standard mounted thereon, the arm 15, pivoted at its lower end to said standard, the lever 16, pivoted to the middle of the standard and provided with the slotted vertical openings and pulleys 19 20, the rotating
50 jib erected in central bearings, the sliding and swinging crane mounted on said jib, the rope connecting the arm and the crane, the lateral arm 9, adapted to hold the jib parallel with the standard, the frictional pulleys 14, 21, and
55 25, and the rope connected to the base and taking over the pulley 20 and under the pulley 21, all arranged substantially as and for the purpose set forth. 60

In testimony whereof I affix my signature in presence of two witnesses.

JOHN O. RICHMOND.

Witnesses:

W. P. SACKRIDER,

H. J. HOLMES.