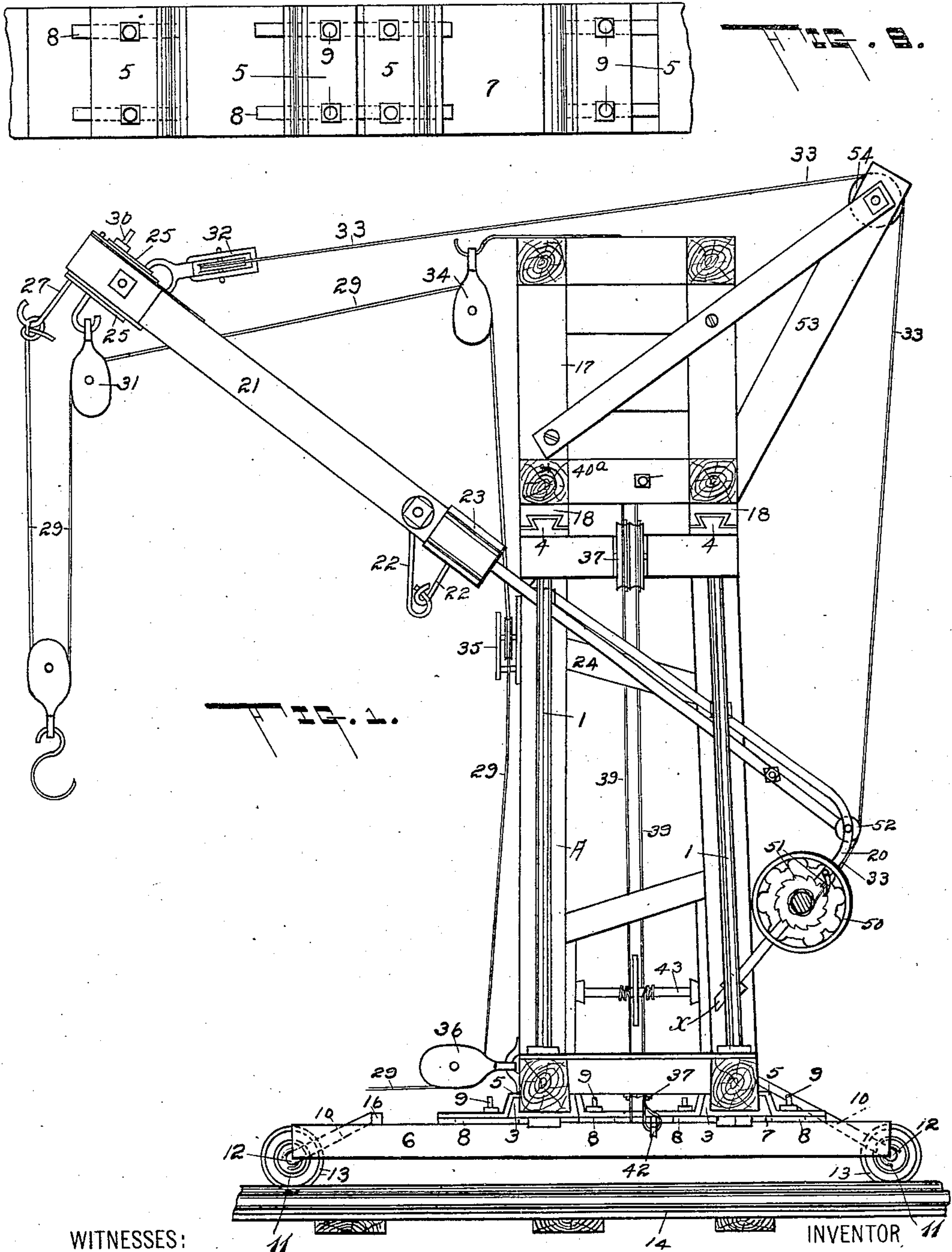


No. 855,332.

PATENTED MAY 28, 1907.

A. A. McINTOSH.  
HOISTING MECHANISM.  
APPLICATION FILED APR. 20, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

Roy Wallis.  
L. A. Marshall.

INVENTOR

Augus. A. McIntosh.  
BY

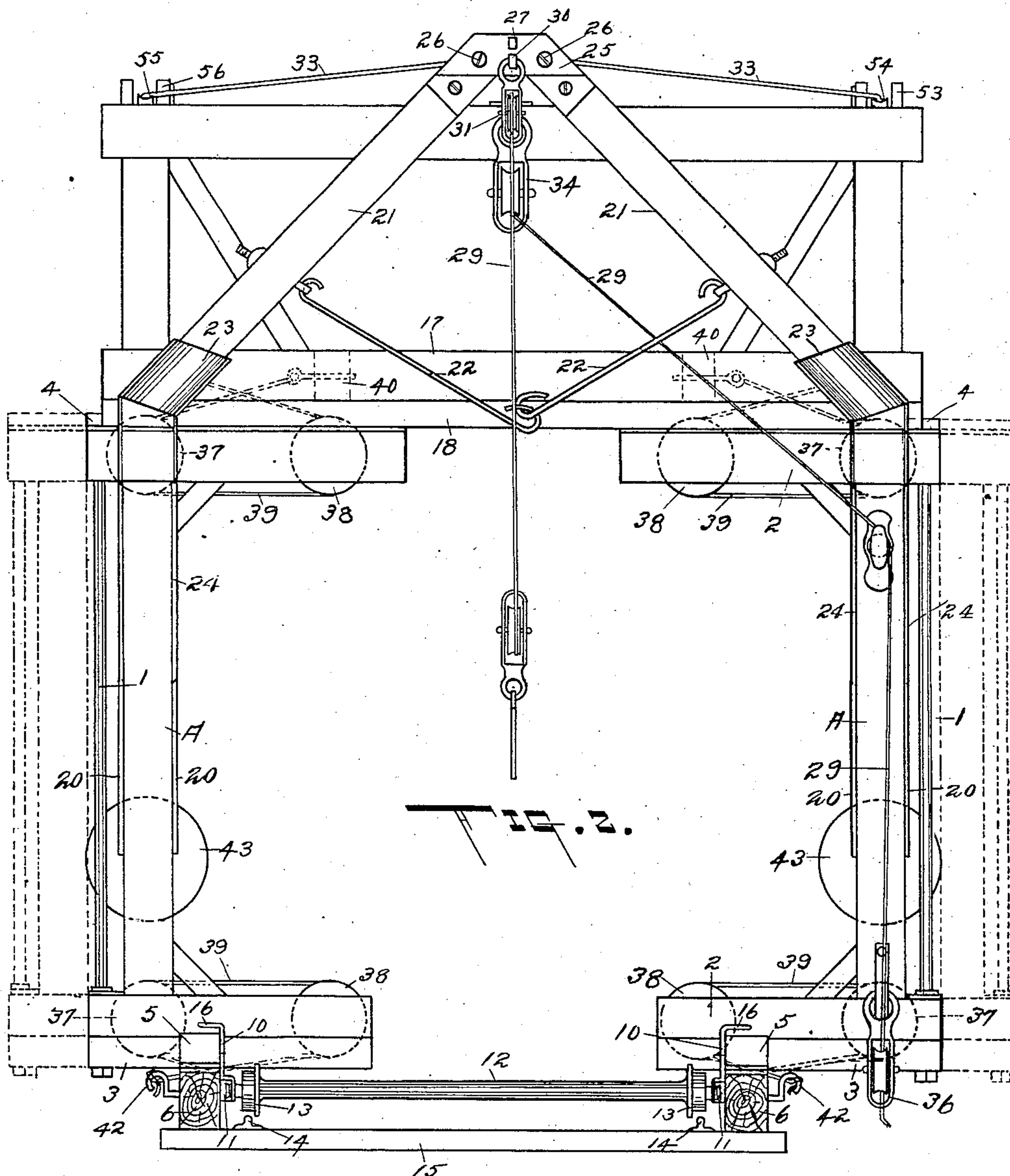
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3 SHEETS—SHEET 2.



WITNESSES:

*Roy Wallis.*  
*L. A. Marshall.*

INVENTOR

*Angus A. McIntosh*

BY

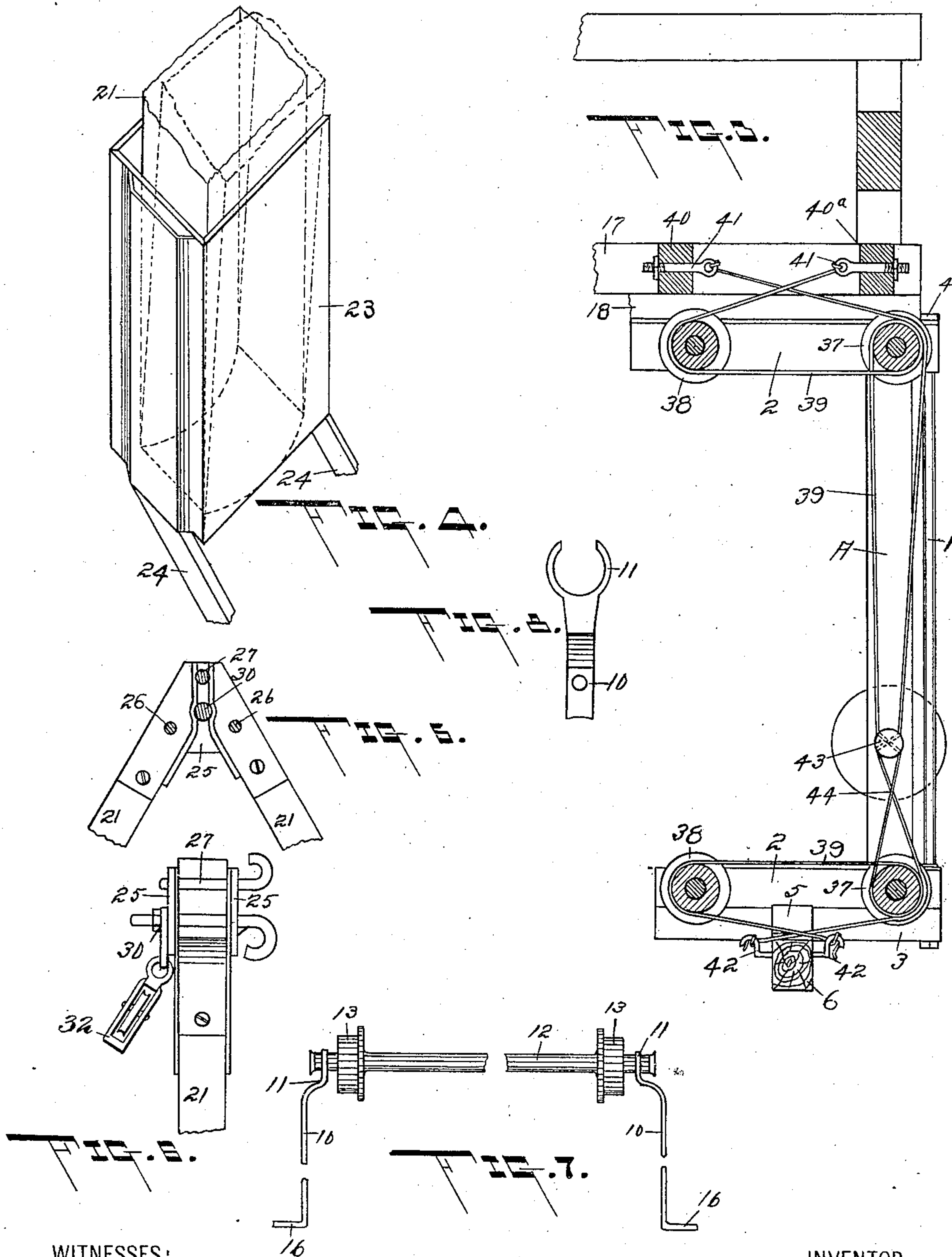
*Geo. B. Wilcox* ATTORNEY

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3 SHEETS—SHEET 3.



WITNESSES:

Roy Wallis  
L. H. Marshall.

INVENTOR

Angus A. McIntosh.

BY

Geot. J. Willcox, ATTORNEY



# UNITED STATES PATENT OFFICE.

ANGUS A. McINTOSH, OF ALEXANDRIA, ONTARIO, CANADA.

## HOISTING MECHANISM.

No. 855,332.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed April 20, 1906. Serial No. 312,916.

*To all whom it may concern:*

Be it known that I, ANGUS A. McINTOSH, a subject of the King of Great Britain, residing at Alexandria, in the county of Glengarry and Province of Ontario, Canada, have invented certain new and useful Improvements in Hoisting Mechanism; 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 relates to hoisting mechanism and in the present instance, is embodied in a log loading crane, though it is not limited in its use to such apparatus.

One object of my invention is the provision of a device removably mounted upon wheels and capable of traveling on a railroad track, the device being so constructed as to permit the passage therethrough of the regular railway traffic.

Another object of my invention is the provision of a support for the crane capable of extension and contraction to permit the passage therethrough of loads of various widths and also to permit the crane to be moved along railroad tracks of varying gage.

A further object of my invention is the provision of a base capable of resting upon the ends of the ties of a track outside the rails.

A still further object of my invention is the provision of a crane capable of extension and contraction with its support.

Another object of my invention is the provision of a crane of economical and simple construction which can be inexpensively operated.

Another object is the provision of a crane capable of being quickly set up or taken down.

A further object is the provision of a wheeled crane with means for easily raising or lowering the crane on or off its wheels.

A still further object is the provision of means for adjusting the angle of the jib to permit it to pass under bridges, wires or other obstructions.

To these ends, therefore, my invention consists in certain novel features and combinations of parts or their equivalents, such as will be more fully set forth hereinafter and particularly pointed out in the claims.

In the accompanying drawings illustrating one embodiment of my invention, Figure 1 is a side view of a hoisting crane, Fig. 2 is a

front view thereof, Fig. 3 is a view in vertical section of a portion of my invention showing the arrangement of the cables for extending and contracting the frame, Fig. 4 is a detail perspective view of the socket for the jib showing the rounded lower end of the jib within, Figs. 5 and 6 are detail front and side views respectively of the connections at the apex of the jib, parts being removed to better disclose the construction. Figs. 7 and 8 are detail views of the hangers, and Fig. 9 is a detail top plan view of one of the base beams showing the guides.

The frame of the crane preferably comprises a pair of oppositely located sides (A) suitably trussed and provided with the tie rods (1) (1), the sides having the inward extensions (2) (2), each extension provided with a pair of preferably parallel rails (3) (3), (4) (4). The lower rails (3) (3) are received in adjustable guides or ways (5) (5), secured to a pair of base beams (6) (6), the beams extending transversely relative to the extensions, the greater length of the beams being disposed in front of the crane to afford a long support therefor and prevent forward tilting of the crane under the weight of a heavy load on the jib. The beams pass beneath the frame and extend some distance in the rear thereof, one beam being located on each side of the frame. Superposed on the upper surfaces of each of the beams is a bearing plate (7) on which rest the angle iron guides (5) (5), the bearing plate being provided with slots (8) (8) to receive bolts (9) (9) passing therethrough and through the guides (5) (5), the bolts being secured to the beams whereby to permit an adjustment of the frame of the crane longitudinally of the beams, the rails (3) (3) on the lower extensions of the frame being received in and moving between the guides.

Located near the opposite ends of the beams are hangers (10) (10). These hangers are pivotally secured to the beams at points near their offset slotted ends (11) (11), the hangers on one beam lying opposite those on the other beam and being adapted to receive the ends of an axle (12) carrying wheels (13) (13), the opposite ends of the axle being received in the slots in the offset ends of the hangers, which latter, by reason of their pivotal connection to the beams can be swung in one direction or the other to bring the wheels on the rails (14) of a track and raise the crane thereon to permit it to be drawn



along the track. Or the hangers may be swung in the opposite direction to raise the wheels off the track and simultaneously lower the beams (6) (6) onto the ends of the ties (15) (15) outside the rails, thus affording a sufficient support for the beams, and when the crane is in this latter position the axle and wheels may be removed, thus leaving the track clear to permit the passage of trains or cars through the crane, the sections of the frame being moved apart, as shown by dotted lines in Fig. 2, for this purpose, the sections being capable of adjustment toward and from each other to admit of the passage of loads of varying widths. The free ends of the hangers opposite the offsets may be provided with stops (16) (16) as shown in Figs. 1 and 2 adapted to rest on the beams when the wheels are in place on the track (see Fig. 1) to limit the movement of the hangers in one direction or the upper ends (16), (16), of the hangers may lie against the frame, as shown in Fig. 1, to effect the same result. It will also be seen that the beams can be moved toward and from each other so as to accommodate axles of different lengths for different gages of track.

A transverse bridge 17 is mounted upon the upper inward extensions of the frame, the transverse bridge comprising a suitably trussed and preferably rectangular member provided with the grooved ways (18) (18) adapted to receive the rails (4) (4) on such extensions and such bridge may also support a motor (not shown) for controlling the hoisting cables hereinafter set forth.

The rear faces of the side frames are each provided with the bent knees (20) (20), such knees projecting some distance in rear of the frame and having the lower ends of the A-shaped jib pivotally secured thereto, the jib comprising the divergent legs (21) (21) preferably connected by means of the adjustable links (22) (22), the lower ends of the legs being rounded and received in the inclined sockets (23) (23) supported on the ends of the skeleton levers (24) (24) the opposite ends of which levers are secured to the knees as above stated, the levers and legs together constituting the jib. The skeleton levers embrace the side frames and by mounting the jib on the rearwardly projecting knees, the weight imposed on the jib is thrown or caused to bear on the rear of the base to prevent overturning. The levers project across the side frames as shown in Fig. 1 and the sockets are inclined relative thereto to receive the rounded ends of the divergent legs, the sockets being larger along one dimension only, than the ends of the legs in order to permit the legs to rock laterally therein when the side frames are extended or contracted, the levers moving with their respective side frames while the legs assume a more or less inclined position relative to each other as the

side frames are moved from or toward each other.

The legs at the meeting point or apex of the jib may be pivotally connected as follows—A pair of approximately triangular plates (25) (25) are secured to the upper ends of each of the legs by means of a single bolt (26) (26) so that the upper ends of the legs are pivotally secured between the two plates.

The plates themselves may be connected by means of a fastening (27) extending between the meeting ends of the legs, the fastening affording a convenient means to which one end of the hoisting cable (29) is secured. A second fastening means (30) connects the plates at a point beneath the first fastening means, thereby retaining the plates immovable relative to each other, the plates forming a casing in which the upper ends of the legs are received, such upper ends being recessed to receive the second fastening means, and bearing thereon in their movement. Said second fastening means may conveniently serve as a support for a block (31) through which the hoisting cable passes and the same means may carry a second block (32) through which passes the cable (33) controlling the inclination of the jib. The hoisting cable (29) may extend from the block (31) to an engine or motor (not shown) mounted on the bridge or it may extend to a block (34) on the bridge thence over an idle pulley (35) on the frame, thence through a guide block (36) near the bottom of the frame, to a horse, windlass or other power.

One of the rearwardly projecting knees (20) has a drum (50) journaled therein, the drum provided with a pawl and ratchet mechanism (51) to prevent unwinding, and said drum is adapted to have secured thereon one end of the jib cable (33), the jib cable extending beneath an idler (52) preferably located at the outer end of the knee where the rear ends of the skeleton levers are pivotally secured, thence over an idler (54) journaled in a rearwardly projecting bracket (53) carried by the bridge, thence through the block (32) at the apex of the jib, thence backwardly and over an idler (55) journaled in a bracket (56) similar to the bracket (53), but at the opposite end of the bridge and thence downwardly to the point of connection of the skeleton levers and knee opposite the knee on which the drum is supported, where it is made fast. The jib may be raised or lowered by rotating the drum (50) in one direction or the other, the drum being held in its position by means of the pawl and ratchet mechanism (51). By this means the jib may be lowered to avoid bridges, telegraph wires, or what not, and subsequently raised to the desired height to accommodate the loads.

It will be understood that in moving the side frames (A) (A) toward or from each other, the base beams and the bridge remain



stationary. Hence it is necessary to provide some mechanism for effecting the movement of the side frames, either simultaneously or separately, as conditions may require, it being possible to move one side frame independently of the other and as one means for achieving this result, I have shown the side frames as provided with double pulleys (37) (37) at the upper and lower ends thereof, the upper and lower extensions being also provided with double pulleys (38) (38). Over each of these double pulleys I pass a pair of cables (39) (39) in the manner shown in Fig. 3.

Cross braces (40) (40<sup>a</sup>) are carried by the bridge and each are preferably provided with an adjustable eyebolt (41) to each of which the respective cables (39) are secured in the manner shown. I employ a pair of cables on each side frame in order to divide the strain and increase the effectiveness of the mechanism, as well as to prevent the side frames from crowding or wedging in the ways and guides during the movement of the frames.

The purpose of the adjustable eyebolts is to take up slack in the cables when necessary. Each base beam carries a pair of fastenings as hooks (42) (42) for instance, the hooks being located on opposite sides of the beams and to which the respective cables are secured. Intermediate the double pulleys (37) (37) at the upper and lower ends of the frame I place a drum (43) the two cables passing through the axle of the drum in opposite directions, whereby as the drum is rotated in one direction or the other one of those portions of the cable above the drum will be wound thereon as the other upper portion unwinds, and similarly a portion of one of the cables below the drum will unwind as the other is wound on the drum. Furthermore, those portions of the cables beneath the drum are crossed as shown at (44), and when the frame is at one or the other of its limits of movement, the drum will have wound thereon a considerable length of one of the cables above the drum and one of the cables below the drum, the coil of the two cables being wound reversely on the drum.

Thus it will be seen that as the drum is rotated, a tension is simultaneously brought to bear on either the inner pulleys (38) (38) or the outer pulleys (37) (37) to bring them nearer to the fixed hooks and eyebolts and consequently move the frame in or out relative to the beam on which it rests.

It is evident that many changes might be made in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein shown.

Having thus fully disclosed my invention, what I claim as new is—

1. A crane comprising a suitable base, side frames movably supported on the base and

adapted to be moved toward or from each other, a stationary carriage connecting the upper ends of the side frames, and relative to which the side frames are movable, and a jib, the legs of which are pivotally secured to the respective side frames, the adjacent ends of the legs at the apex of the jib being pivotally connected.

2. A crane comprising side frames, a base and a bridge with which the side frames slidably engage, and means on the side frames and secured to the bridge and base for moving the side frames toward and from each other.

3. A crane comprising a base, a bridge, side frames movable relative to the bridge and base, pulleys mounted on the side frames, cables passing over the pulleys, the cables being made fast to the bridge and base respectively and a drum on which the cables are wound and unwound.

4. A crane comprising a base, a bridge, side frames independently movable relative to the bridge and base, pulleys mounted on the side frames, flexible connections passing over the pulleys, the connections fixedly secured to the base, adjustable means on the bridge to which the connections are secured for taking up the slack therein, and drums on which the connections are wound and unwound.

5. A crane comprising a bridge, a base, guides on the bridge and base respectively, side frames slidably received in the guides and means for moving the side frames relative to the bridge and base.

6. A crane comprising a bridge, a base, a way carried by the bridge, guides adjustably secured to the base, side frames slidably received in the guides and way respectively, and means for moving the side frames relative to the bridge and base.

7. A crane comprising a base, a bridge, side frames slidably engaging the bridge and base, and adapted to be moved toward and from each other, independently or simultaneously, a jib, the legs of which are connected to the respective side frames, and means for pivotally connecting the outer ends of the legs.

8. A crane comprising sides movable toward and from each other, a jib, the legs of which are pivotally connected to the respective sides to swing the jib vertically, and a pivotal connection between the apex ends of the jib to permit the legs to move horizontally with the sides toward and from each other.

9. A crane comprising a base, a frame mounted thereon, a jib carried by the frame, hangers pivoted to the base and trucks releasably engaged by the hangers.

10. A crane comprising base members located a greater distance apart than the rails of a track, hangers pivoted to the base,



trucks received in the hangers, the crane adapted to be supported on the trucks when the hangers are in one position, the base members adapted to be lowered and seated upon the outer ends of the ties of the track when the hangers lie in their opposite positions.

11. A crane provided with a base, hangers pivotally secured thereto, trucks removably carried by the hangers, stops for retaining the hangers in one position when the crane is supported on the trucks, the crane adapted to rest on the base when the hangers and trucks have been moved to their inoperative position.

12. A jib for cranes comprising a pair of divergent legs pivotally connected at their meeting ends, levers pivotally connected to the crane, and sockets carried by the levers to receive the divergent ends of the legs.

13. A jib for cranes comprising a pair of divergent legs, a casing, the outer end of each leg pivotally secured to the casing, an adjustable brace connecting the divergent legs intermediate their ends, levers pivotally secured to the crane and sockets carried by the levers for receiving the lower ends of the legs.

14. A jib for cranes comprising a pair of divergent legs pivotally connected at their outer ends, levers pivotally secured to the crane, and means for adjustably connecting the lower ends of the legs to the outer ends of the levers.

15. A jib for cranes comprising a pair of divergent legs pivotally connected at their outer meeting ends, a pair of levers pivotally secured to the crane, inclined sockets mount-

ed on the free ends of the levers and being of larger size in one dimension than the legs, the free ends of the legs received and movable in the sockets.

16. A jib for cranes comprising a pair of divergent legs, a casing to which the outer end of each leg is pivotally secured, levers pivotally secured to the crane, and means for adjustably connecting the lower ends of the legs to the outer ends of the levers.

17. A crane comprising a suitable frame, bowed supports projecting rearwardly of the frame, and a jib mounted on the bowed supports and extending forwardly of the frame.

18. A crane comprising side frames, rearwardly extending knees secured thereto, and a jib, the legs of which are pivoted to the knees and extend from the rear to a point some distance in advance of the frames.

19. A crane comprising a frame, knees projecting from the frame at opposite sides, a jib pivotally connected to the frame, a drum suitably mounted in the frame, a block mounted at the apex of the jib, idlers journaled in the brackets, a cable wound on the drum and extending from thence over one of the idlers, to the block, and thence rearwardly over the remaining idler, the end of the cable being made fast to the opposite knee.

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

ANGUS A. McINTOSH.

Witnesses:

AGNES H. BURKE,  
HORACE M. SANFORD.