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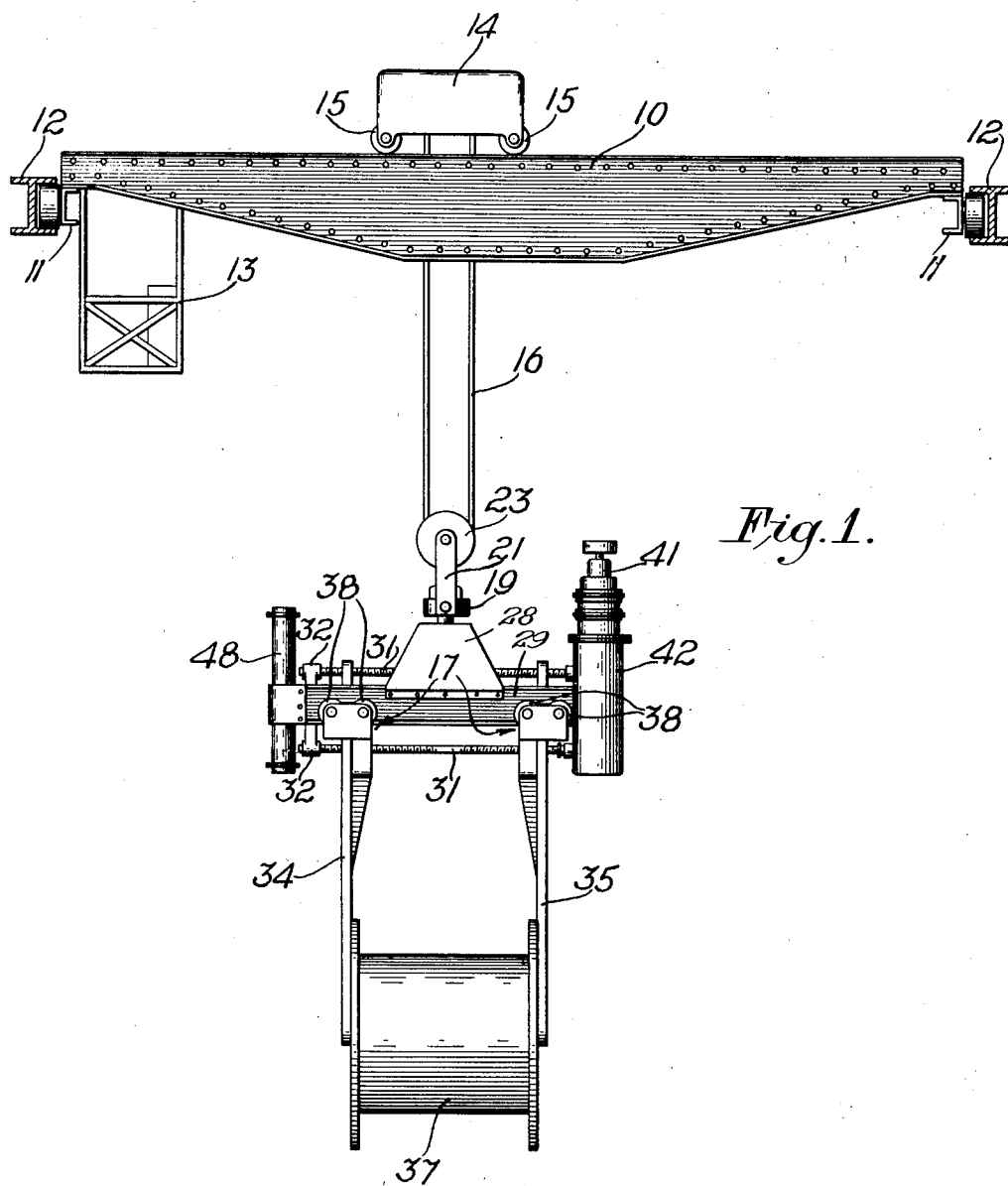
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1,615,115

MOTOR DRIVEN TRAVELING CRANE MECHANISM

Filed May 8, 1925

2 Sheets-Sheet 1



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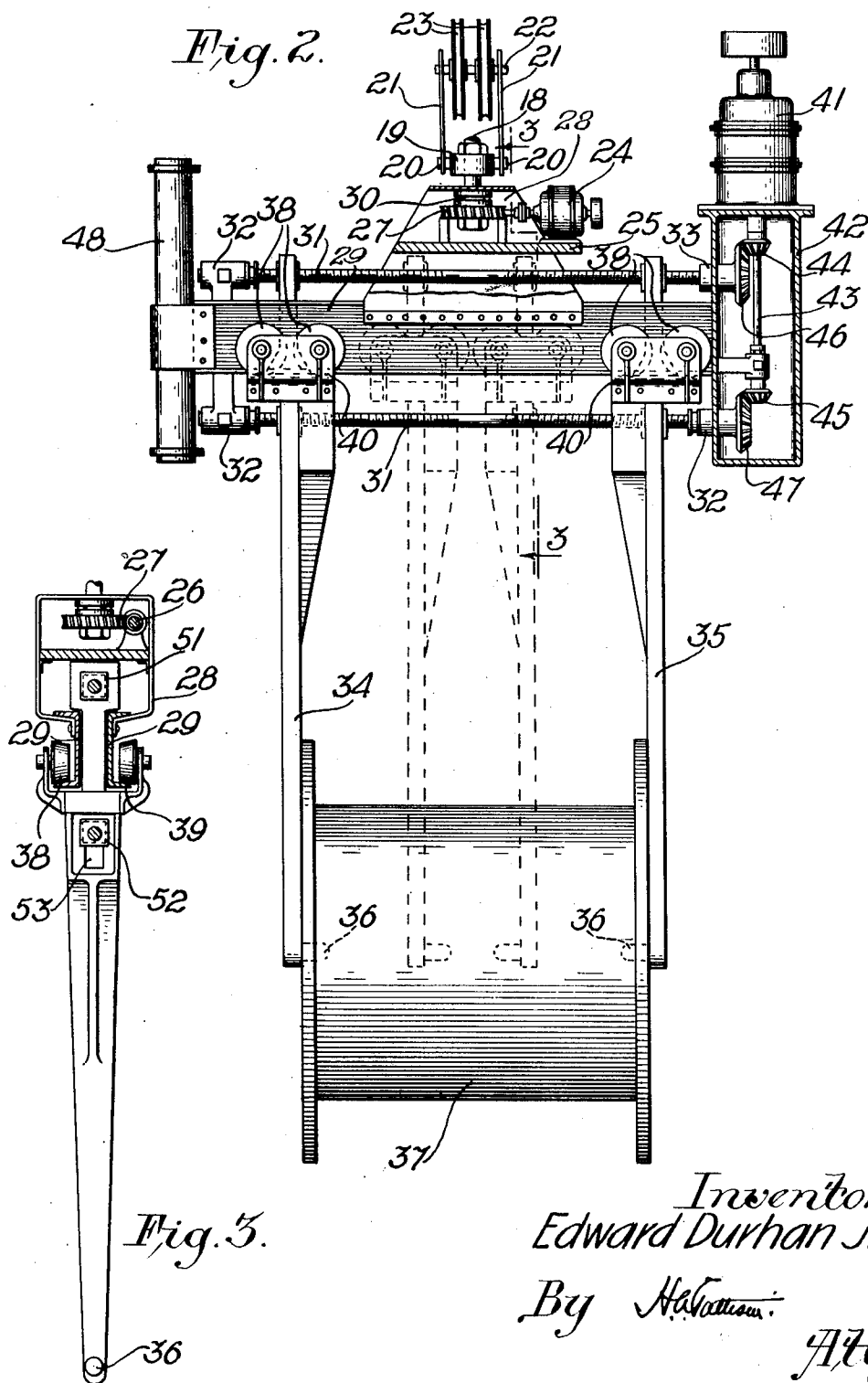
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UNITED STATES PATENT OFFICE.

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MOTOR-DRIVEN TRAVELING-CRANE MECHANISM.

Application filed May 8, 1925. Serial No. 28,762.

This invention relates to devices for handling material, and more particularly to devices capable of being readily manipulated and controlled to suit varying conditions.

5 An object of the present invention is the provision of a device for handling material which may be efficiently and expeditiously manipulated for moving and lifting objects of various sizes.

10 These and other objects are accomplished by providing a construction and an arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claims.

15 Referring to the drawings,

Fig. 1 is an end elevational view of the conventional form of traveling crane showing my improved mechanism embodied therein;

20 Fig. 2 is an enlarged detailed elevational view partly in section of my improved form of carriage, and

Fig. 3 is a cross sectional view taken on the lines 3—3 in Fig. 2 showing the construction of my improved lifting elements or arms.

In carrying out my invention I have shown the same in connection with a conventional form of traveling crane which comprises the usual traveling bridge 10 provided with suitable trucks 11 on its opposite ends which travel in the channels of the opposite I beams 12 of the main supporting structure of the crane. Suspended below the traveling bridge, preferably at one end thereof, is the usual operator's cab 13 of any well known construction. Mounted to travel longitudinally of the bridge structure 10 is a trolley 14 of the usual construction which is mounted on suitable truck wheels 15, which travel on the bridge 10. Suspended below the bridge 10 by a cable 16 extending from suitable pulleys (not shown) mounted in the trolley 14 is my improved construction of a carriage 17.

One of the important features of my invention is the provision of a construction in which the carriage is adapted to rotate about a swivel connection for properly aligning itself in a position where the lifting elements or arms may properly engage the hubs of the reels to be lifted. This mechanism comprises a swivel bolt 18 which is held in suspended position in a trans-

versely extending swivel member 19. The swivel member 19 is provided with oppositely extending aligned studs 20 which in turn are pivotally mounted in vertically extending oppositely disposed straps 21. The upper ends of the straps 21 are preferably supported on a horizontal shaft 22 which in turn has journaled thereon two pulleys 23, which are operated by the cable 16 extending from the trolley 14. The complete carriage 17 is rotated or swung about the swivel bolt 18 for adjusting the lifting elements or arms to their proper positions for engaging the hubs of the reels, by an electric motor 24 which is mounted on a suitable support 25. The motor 24 is connected directly to the worm 26, which in turn, is in mesh with the worm wheel 27 secured to the lower end of the swivel bolt in any well known manner. The carriage 17 is suspended from the bolt by a bracket 28 which has its lower end secured to the transverse channel or main frame members 29 and its upper end apertured to receive the swivel bolt 18. In order to permit the free rotation of the carriage on the swivel bolt 18 suitable anti-friction bearings 30 may be inserted. From this construction it will be understood that with the electrical connections running from the motor 24 to the operator in the cab 13, the rotary adjustment and control of the carriage may be readily had.

Another important feature of my improved crane construction is the wide range of horizontal and recti-linear adjustments of the lifting elements or arms for accommodating reels of various sizes. This construction comprises the positioning and supporting of two shafts 31 on the opposite sides of the main frame member 29 of the carriage. Each of these shafts is provided at one end with left hand threads and at the other end with right hand threads and extreme outer ends thereof are journaled in suitable bearings 32 and 33.

Mounted for recti-linear adjustment and controlled by the rotary adjustment of the shafts 31 are the oppositely disposed lifting elements or arms 34 and 35. These lifting arms 34 and 35 are preferably placed in threaded engagement with the threaded shafts 31 by positioning suitable nuts 51 and 52 in the upper ends of these arms and securing them against displacement from the

arms in any suitable manner. The lower nuts 52 are preferably mounted in longitudinal slots 53 in the lifting arms so as to accommodate any variation which may arise between the two threaded shafts. The lower ends of the lifting arms 34 and 35 are provided with inwardly extending lugs 36 which are adapted to engage the hubs of a reel 37. The weight carried by each of the arms 34 and 35 is directly supported by two pairs of tapered rollers 38 and 39 which are journaled in brackets 40 on the opposite sides of and support and retain these rollers in the opposite channels 29 of the main frame of the carriage as clearly shown in Figs. 2 and 3, the lower horizontal arms of the channels serving as trackways along which the rollers 38 and 39 roll. The lifting arms 34 and 35 are adjusted to and from each other by an electric motor 41 in a housing 42 which in turn is secured to the main frame 29 in any well known manner. Journaled within the housing 42 and operatively driven by the shaft of the motor 41 is a shaft 43. The shaft 43 has secured at its upper and lower ends two pinions 44 and 45, respectively, which in turn mesh with gears 46 and 47, respectively. The gears 46 and 47 are secured to one end of each of the rotatable shafts 31, respectively. From the above construction it will of course be understood that suitable wiring connections extend from the motor 41 to the cab 13 of the crane from which the control of the motor may be had by the operator for adjusting the lifting arms or elements. It will further be understood that operatively driving the shaft 43 in one direction or the reverse controls the adjustment of the lifting arms to and from each other for accommodating the arms to the different sized reels to be lifted.

In order to balance the carriage, by reason of the motor 41 being positioned on one end thereof, I have provided a counter-balanced weight chamber 48 which may be filled with any substance to suitably counter-balance the carriage frame.

From the above description it will be readily understood that by reason of my improved construction of traveling crane mechanism the operator in the cab of the crane may control and adjust the recti-linear movement of the lifting arms as well as suitably control the rotation of the carriage about a vertical axis so as to properly align the lifting elements with the hubs of the reel to be lifted and in addition thereto, may vertically adjust the carriage for lifting the reels.

While in the above specification I have described one embodiment which my invention may assume in practice, it will of course be understood that the same is capable of modification and that modification may be

made without departing from the spirit and scope of the invention as expressed in the following claims.

What is claimed is:

1. In a device for handling material, a traveling carriage, means for rotatably supporting the carriage, an arm adjustably mounted on the carriage for movement in a recti-linear direction for engaging material, means including a shaft journaled on the carriage and operatively associated with the arm for adjusting the arm, and means for rotating the carriage about its support.

2. In a device for handling material, a traveling carriage, means for rotatably supporting the carriage, a plurality of arms adjustably mounted on the carriage for engaging material, means including a plurality of shafts journaled on the carriage and having portions threaded in opposite directions and operatively connected to the arms for adjusting the arms with respect to each other, and means for rotating the carriage about its support.

3. In a device for handling material, a traveling carriage provided with trackways, means for rotatably supporting the carriage, a plurality of arms for engaging material, means including a threaded shaft journaled on the carriage and operatively connected to the arms, means for rotating said shaft for causing a lateral movement of the arms, and means for rotating the carriage about its support.

4. In a device for handling material, a traveling carriage provided with trackways, means for rotatably supporting the carriage, a plurality of arms for engaging material, means including a plurality of shafts journaled on the carriage and having portions threaded in opposite directions and operatively connected to the arms for adjusting the arms with respect to each other, means for rotating the carriage upon its support, and means supported on the carriage for rotating the threaded shafts.

5. In a device for handling material, a traveling carriage provided with horizontally disposed trackways, means for rotatably supporting the carriage, a plurality of laterally adjustable lifting arms, rollers journaled at the upper ends thereof and arranged to roll upon the trackways, a threaded shaft journaled on the carriage and operatively connected with the arms for adjusting the arms with respect to each other, and means for rotating the carriage about its support, said means carried upon the carriage.

6. In a device for handling material, a traveling carriage, means for rotatably supporting the carriage, a pair of depending arms adjustably mounted on the carriage for engaging material, means including a pair of horizontally disposed shafts journaled on

the carriage one above the other and having their ends threaded in opposite directions and operatively connected to the arms for adjusting the arms with respect to each other, and means for rotating the carriage about its support.

7. In a device for handling material, a horizontally disposed traveling frame, means for rotatably supporting the frame, a plurality of depending arms for engaging material, means including a horizontally disposed threaded shaft journaled on the frame and operatively connected to the arms, means disposed at one end of the shaft and frame for rotating the shaft for causing a lateral movement of the arms, means carried at the opposite end of the frame for maintaining the frame in a horizontal plane, and means for rotating the frame about its support.

8. In a device for handling material, a horizontally disposed traveling frame, means for rotatably supporting the frame, a plurality of laterally adjustable lifting arms mounted on said frame, rollers journaled on

the upper ends of said arms and engageable with said frame, means including a threaded shaft mounted on said frame and operatively connected with said arms for adjusting said arms with respect to each other, and means for rotating said carriage.

9. In a device for handling material, a horizontally disposed traveling frame, means for rotatably supporting the frame, a plurality of laterally adjustable lifting arms mounted on said frame, a roller journaled on the upper end of each of said arms, and engageable with said frame, a threaded shaft mounted on said frame and operatively connected with said arms, a vertically disposed power driven shaft carried by said frame and geared to said first mentioned shaft for laterally adjusting said lifting arms to and from each other, and means for rotating said carriage.

In witness whereof, I hereunto subscribe my name this 30th day of April, A. D., 1925.

EDWARD DURHAN, Jr.