Nov. 19, 1929. L. S. ROSENER 1,736,016

APPARATUS FOR HANDLING HEAVY OBJECTS

Filed March 7, 1927 2 Sheets-Sheet 1

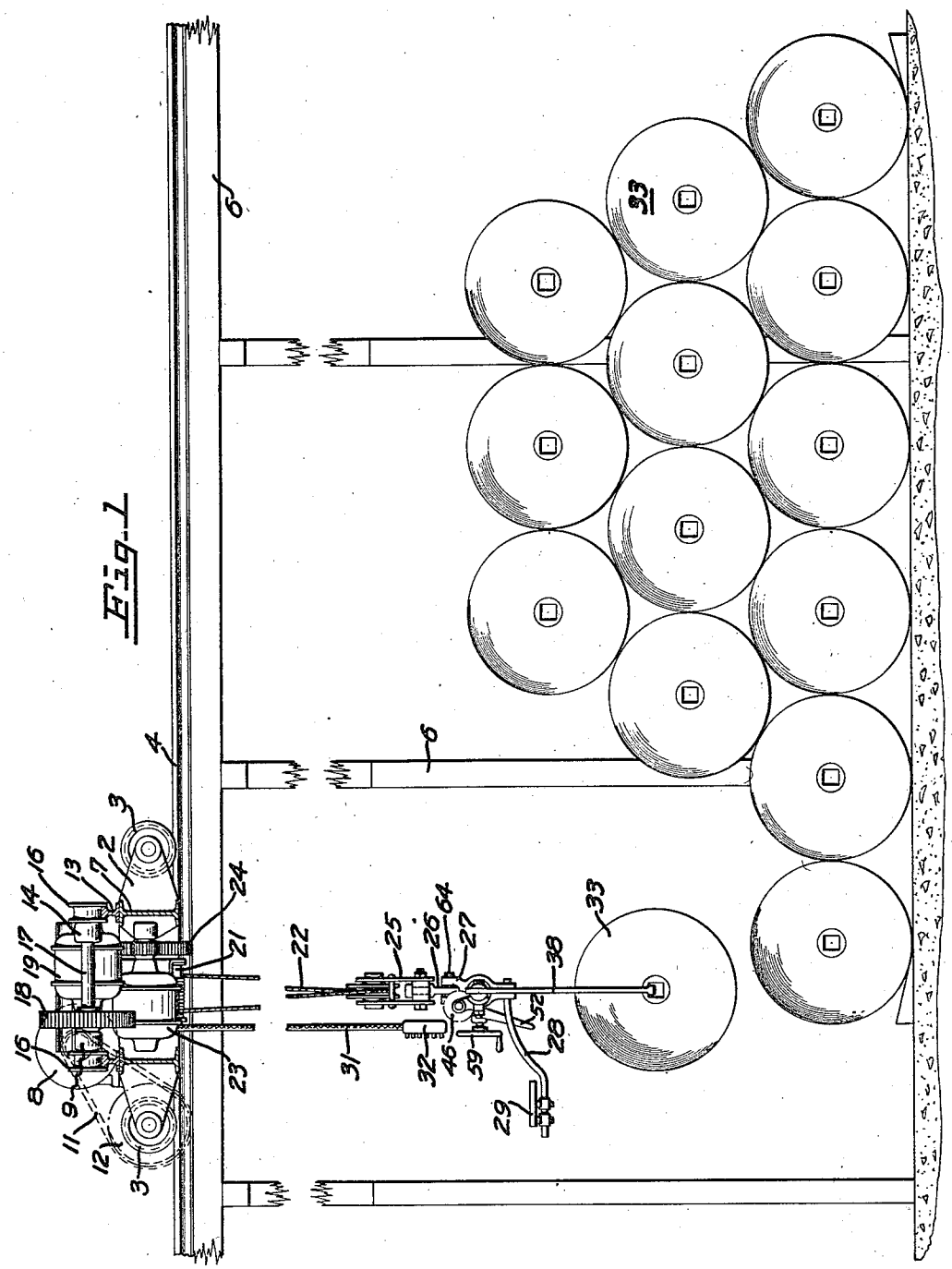


Fig. 1

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Fig. 2

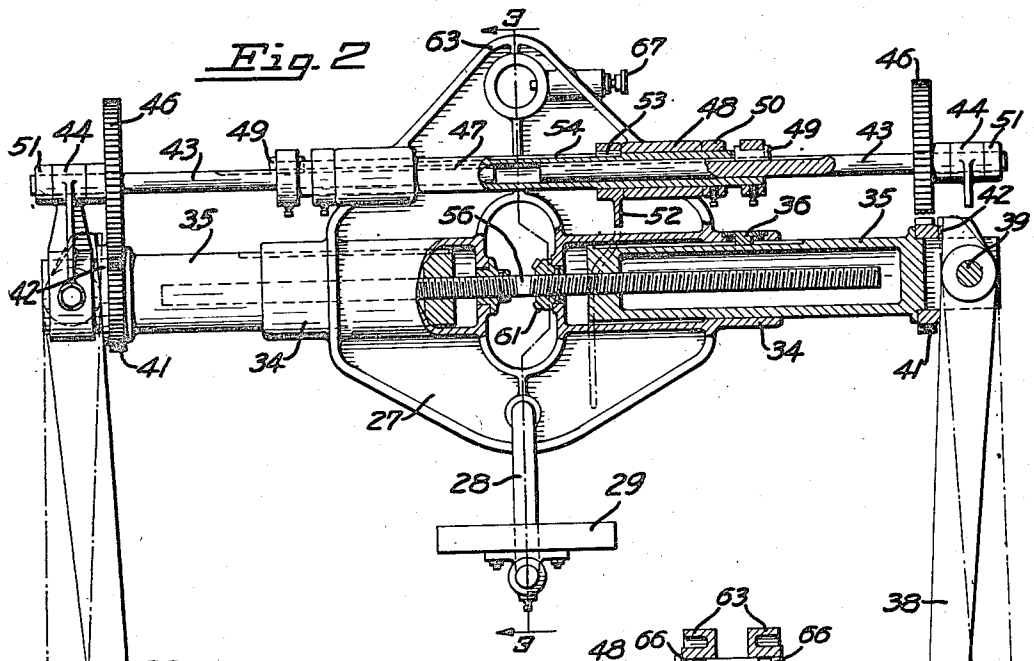
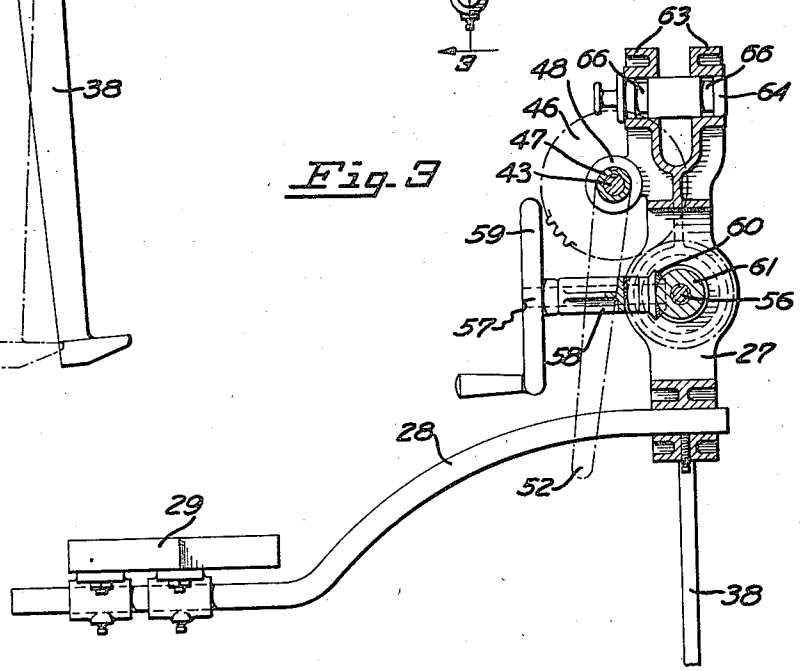


Fig. 3



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UNITED STATES PATENT OFFICE

LELAND S. ROSENER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE PARAFFINE COMPANIES, INC., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF DELAWARE

APPARATUS FOR HANDLING HEAVY OBJECTS

Application filed March 7, 1927. Serial No. 173,327.

My invention relates to mechanism for handling heavy objects and one of the purposes of the invention is the provision of a machine which practically eliminates the danger associated with the handling and storage of these objects.

Another purpose of the invention is the provision of a labor saving machine of the character described which enables one man to handle objects which heretofore required the combined efforts of several men in their handling.

Another purpose of the invention is the provision of a machine of the character described by which the operator is carried on the grappling means adjacent the object being handled.

My invention possesses other objects and valuable features, some of which will be set forth in the following description of my invention which is illustrated in the drawings forming part of the specification. It is to be understood that I do not limit myself to the showing made by the said description and drawings, as I may adopt varying forms of my invention within the scope of the claims.

Referring to the drawings:

Figure 1 is a vertical sectional view thru the carriage of my apparatus, the grappling means being shown pendantly supported therefrom in side elevation. The carriage trackway and a pile of paper rolls which the apparatus is especially adapted to handle are also shown in elevation.

Figure 2 is a front elevation of my grappling means, portions of which are shown broken away to reveal the adjustment and control mechanisms.

Figure 3 is a sectional view of the grappling means, the plane of section being indicated by the line 3—3 of Figure 2.

In broadly descriptive terms, the apparatus of my invention comprises a mobile carriage which supports a frame adapted to grapple the objects to be handled and on which is carried the operator's seat or station. Means are provided adjacent the operator's station for the remote control of the carriage and also means for effecting the movements and adjustments of the grappling means. Thus in handling objects exemplified in Figure 1 as heavy rolls of sheet material, the operator is always carried above and out of the reach of the load and the piled material, should the rolls slip and tumble to the floor. Heretofore the handling of such rolls has proved extremely haxardous. My apparatus removes this hazard.

More particularly, my apparatus comprises a truck 2 provided with flanged wheels 3 adapted to roll on the rail 4 supported by suitable framework 6. A similar truck and supporting rail are disposed apart from and parallel with the truck 2 and its rail 4; and beams 7 span the intervening space and tie the trucks together, to form a longitudinally movable carriage. Motion is imparted to the carriage by the reversible motor 8 thru its pinion 9, the chain 11 and the sprocket 12 fixed to one of the wheels 3.

Rails 13 mounted on the beams 7 provide a trackway for the transversely movable carriage 14, carried on the flanged rollers 16 which are fixed for rotation with the shaft 17, suitably journaled in bearings on the carriage, and gearing 18 connects the shaft 17 with a reversible motor 19, which furnishes motive power for the carriage 14.

Secured to the underside of the transversely movable carriage, and forming a part thereof, is the hoisting mechanism comprising the drum 21 upon which the cable 22 is wound, and the motor 23 operatively connected to the drum by the gears 24. The cable 22 passes from the drum thru a sheave 25 and thence to the carriage adjacent the drum where the end is secured by any suitable means. The sheave is provided with a pivotally mounted eye 26 in which is supported the frame 27 of the grappling means. An operator's station is provided adjacent the grappling means comprising the arm 28 carrying the seat 29. Remote control of all motors is provided by directing the leads therefrom thru the cable 31 to the push button switch box 32 within easy reach of the operator.

Means for picking up the heavy rolls 33, are provided on the frame 27. Formed on each side of the frame is a sleeve 34, in which a bar 35 is slidably disposed. Keys 36 pre-

vent rotary movement of the slide bars in the sleeves. The outer end of each bar is slotted to provide a mounting for the grappling arm 38, pivotally mounted therein on the pivot pin 39. Journaled on each bar 35 adjacent the grappling arm 38 is a collar gear 41, formed with a cam 42 on its side. The cam is arranged to bear against the face of the grappling arm on both sides of the pivot pin so that rotation of the gears 41 in the same direction rocks the two grappling arms on their pivot pins toward and from each other. Shaft 43 suitably journaled in the bearing 44, fixed to the slotted ends of the arms by the pivot pins 39, carry gears 46 in mesh with the cam collar gears 41. Each of these shafts is slidable in and rotatably engaged with a sleeve 47 journaled in suitable bearings 48 on the frame 27.

The keys 49 fix the shafts 43 for rotation with the sleeve; and collars 50 prevent lateral movement of the sleeve, while collars 51 cooperate with the hubs of the gears 46 in preventing lateral displacement of the shafts in the bearings 44. Thus the cam gears 41 are connected for synchronous rotation, thru the extensible shafts 43. Means for rotating the shafts are provided in the lever 52, having in its hub a key 53 slidable in the keyway 54 of the sleeve 47. The lever may thus be positioned to the right or left of the operator at will. Rotation of the sleeve and connected shafts by the lever 52, rotates the cam gears 41, and causes a rocking movement of the grappling arms 38 from retracted to extended positions vice versa, as indicated by the full and dash-and-dot lines in Figures 2.

Lateral adjustment for the grappling arms beyond that afforded by the cam collars is provided in the spindle 56, having right and left hand threads at the ends thereof, and which engage mating threads in the ends of the slide bars 34. A shaft 57 journaled in the bearing 58, which is fixed to the frame 27 has a hand wheel 59 at its outer end, and at its inner end a miter gear 60, meshing with a similar gear 61 fixed for rotation with the spindle 56. Lateral movement of the slide bars 34 is accomplished by rotating the handwheel 59 which rotates the spindle 56 and moves the slide bars along the threads.

Since in handling objects beyond the maximum capacity of the grappling frame it is desirable to change to a larger frame, means are provided for its quick attachment to and release from the eye 26 of the sheave. The upper end of the frame 27 is provided with a pair of spaced lugs 63, between which the eye 26 of the sheave is adapted to lie. A pin 64 having annular grooves 66 therein passes thru the lugs and eye; and is demountably retained in the lugs by a pair of spring pressed bolts 67, the inner ends of which engage in the grooves.

Thus a single operator safely seated on the arm 28 of the grappling frame, and with all the controls of the apparatus within handy reach, is enabled to work over a large area, with speed and accuracy, piling and rearranging or delivering rolls of paper or felt weighing many hundreds of pounds.

I claim:

1. In an apparatus for handling heavy objects, a pendantly supported frame, slide bars arranged on said frame, means for extending and retracting the slide bars, opposed hooks pivotally mounted on the slide bars, and means for rocking the hooks on their pivots.

2. In an apparatus for handling heavy objects, a pendantly supported frame, oppositely extending slide bars arranged on said frame, a threaded spindle operatively engaged with the slide bars to extend or retract them, means for rotating said spindle, opposed hooks pivoted on the slide bars, and means for rocking the hooks on their pivots.

3. In an apparatus for handling heavy objects, a pendantly supported frame, oppositely extending slide bars arranged on said frame, a threaded spindle operatively engaged with the slide bars to extend or retract them, means for rotating said spindle, opposed hooks pivoted on the slide bars, a cam collar on each slide bar for controlling the pivotal movement of the hooks thereon, and means for simultaneously moving the cams.

4. In an apparatus for handling heavy objects, a pendantly supported frame, oppositely extending slide bars mounted on the frame, means for extending and retracting the slide bars, opposed hooks pivotally mounted on the slide bars, an extensible shaft journaled on the frame adjacent the slide bars, means for rotating said shaft, gears mounted on said shaft, and geared cams meshing with said gears for rocking the hooks on their mountings.

5. In an apparatus for handling heavy objects, a pendantly supported frame, a pair of hooks pivotally and slidably mounted on said frame, an operator's seat medially mounted on said frame, and controls for said hooks adjacent said seat.

6. In an apparatus for handling heavy objects, a pendantly supported frame, a pair of hooks pivotally and slidably mounted on said frame, an operator's seat medially mounted on said frame, and manual controls for said hooks adjacent said seat.

In testimony whereof, I have hereunto set my hand.

LELAND S. ROSENER.