

June 26, 1956

I. C. THOMPSON
INDUSTRIAL TRUCK

2,752,054

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3 Sheets-Sheet 2

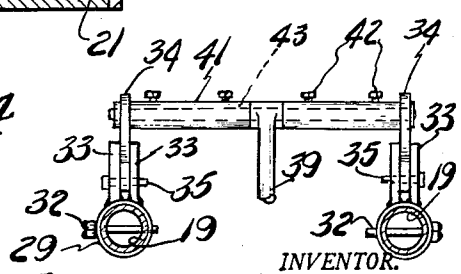
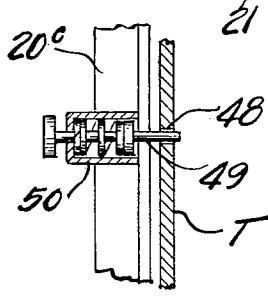
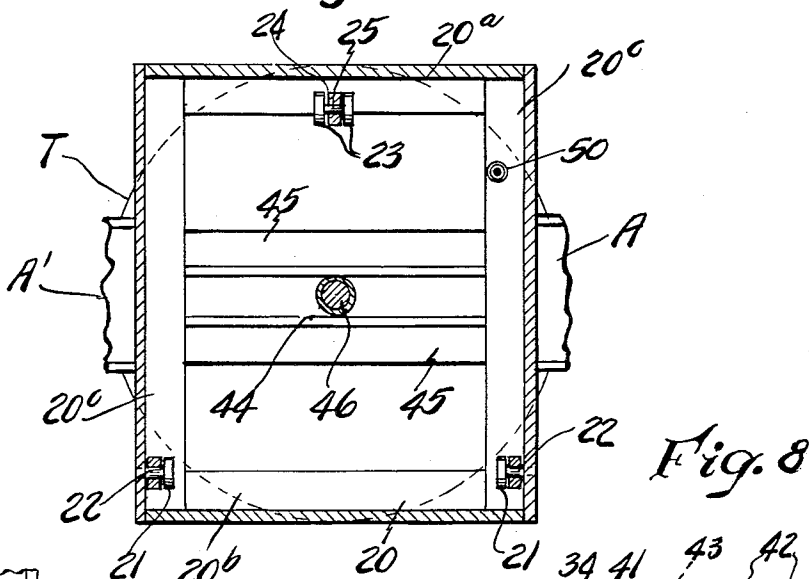
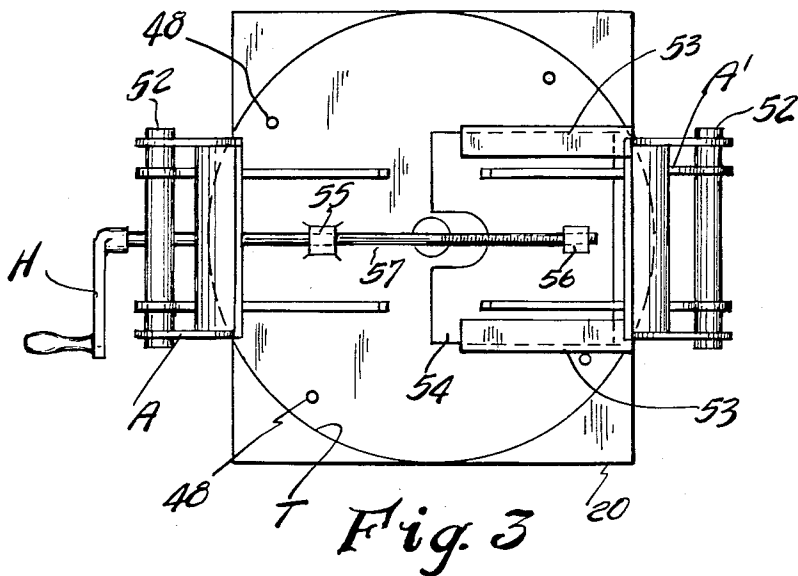


Fig. 7

Fig. 4

Fig. 8

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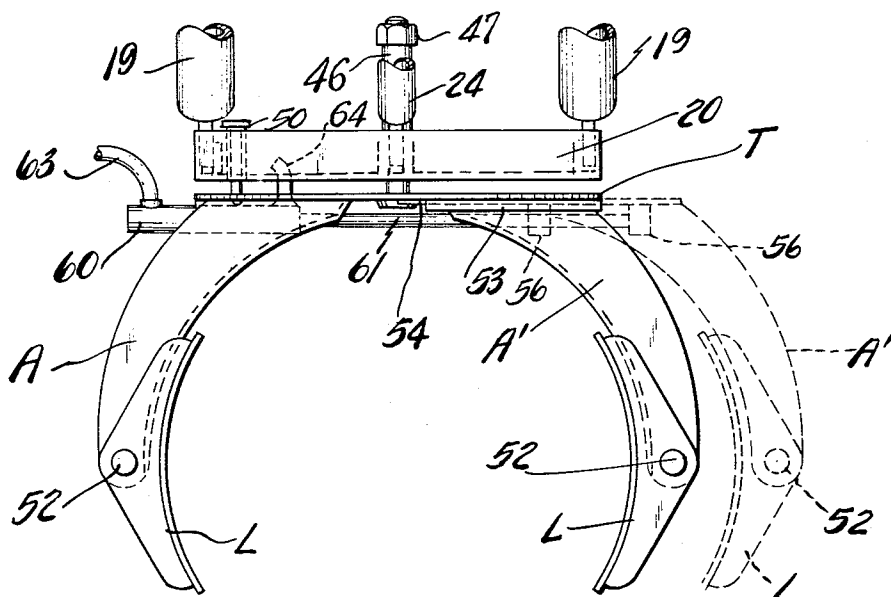


Fig. 5

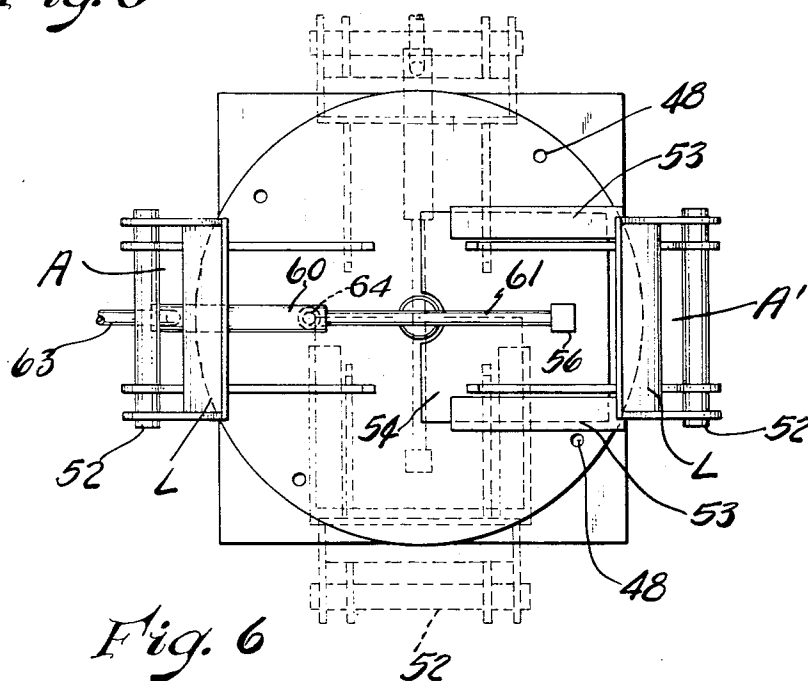


Fig. 6

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2,752,054

INDUSTRIAL TRUCK

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7 Claims. (Cl. 214—147)

This invention relates to trucks in general and more particularly to an industrial truck for lifting, transporting and emptying barrels, drums and other generally cylindrical objects of considerable weight.

One of the prime objects of the invention is to design a barrel truck which is of simple and durable construction and which can be economically manufactured and assembled, the truck being constructed largely of pipe sections and other readily available standard stock materials.

Another object of the invention is to provide a barrel truck for lifting a barrel or drum to any desired elevation so that it can be conveniently transported from one location to another, or tilted to discharge its contents into any convenient receptacle or truck.

A further object of the invention is to design a barrel truck which is highly efficient and reliable in use and enables the easy handling of drums weighing in the neighborhood of 800 pounds or more, without danger of injury to the operator or other workmen in the vicinity.

Another object of the invention is to provide a very maneuverable and mobile truck which can be readily moved into position for clamping the work, and which is provided with easily and conveniently adjustable barrel or other work-engaging means for clamping barrels, drums or other work of varying diameter or shape so that they may be elevated and/or removed from one location to another.

A further object of the invention is to provide a barrel truck which permits the lifting of barrels or drums to heights not possible with conventional lifting units.

Still a further object of the invention is to provide means for adjusting the angle of leverage of the lifting arms so that heavy objects may be readily raised to a limited height or lighter objects raised to greater heights.

A still further object of the invention is to design a barrel truck which can be very conveniently used in the vertical stacking of drums and which further is provided with a pivotal barrel clamping and supporting arm assembly which can be angularly rotated to bring the barrel to a horizontal or other position, and generally facilitate stacking or tilting etc. for emptying the barrel contents.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportion, and minor details of construction, without departing from the spirit, or sacrificing any of the advantages of the invention.

In the drawings:

Fig. 1 is a side elevational view of my barrel truck shown supporting a barrel in elevated position, the broken lines indicating a still further elevated position of the device.

Fig. 2 is a top plan view thereof.

Fig. 3 is an enlarged, front elevational view showing the turntable and associated clamping arms etc.

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Fig. 4 is a fragmentary, transverse, cross-sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is an enlarged, fragmentary, plan view showing the barrel-engaging clamping arms, the broken lines illustrating an adjusted position of the adjustable arm.

Fig. 6 is an enlarged, front elevational view similar to Fig. 3 showing a modified design, the broken lines illustrating the barrel clamping turntable assembly rotated to an adjusted position.

Fig. 7 is an enlarged, sectional detail showing the means for releasably securing the turntable in adjusted position.

Fig. 8 is a sectional detail showing of the means for connecting the lift arms and the hydraulic means for actuating the arms.

Referring now more particularly to the accompanying drawings wherein I have shown the preferred embodiment of my invention, a numeral F generally indicates the frame of my lifting truck which comprises side channel members 10—10 connected by end angle members 11—11, the front end of the truck being provided with an axle 12 on which are journaled the supporting wheels 13. The rear end of the truck is supported on depending casted wheel assemblies 14, thus providing a chassis that is very maneuverable and capable of quick turns and changes of direction to enable it to avoid the various hazards always present on crowded shop and garage floors, and to further facilitate its rapid maneuvering or jockeying into barrel-engaging position preparatory to clamping and lifting a particular barrel or other object.

Rigidly mounted on the rear end of the frame F is a pair of transversely spaced, rearwardly inclined support posts 15—15 reinforced by angularly disposed braces 16—16 connected to the posts 15 at points adjacent the upper ends thereof, and the front member 11 at the front corners of the frame F. A horizontally disposed cross brace 17 spans the upper ends of the posts 15 and extends therethrough, trunnions 18 being provided on the ends of said brace to revolvably support the rear ends of the forwardly extending lift arms 19 which are pivotally connected to the lift bracket 20 in a manner to be presently described.

The lift bracket 20 comprises top and bottom structural members 20^a and 20^b rigidly connected by vertically disposed members 20^c, as by welding or the like, and lugs 21 are formed in the lower corners thereof, pins 22 rigidly spanning each lug 21 and the adjacent side members 20^c for pivotally securing the forward ends of the levers 19.

Centrally disposed lugs 23 are provided on the upper portion 20^a of the lift bracket 20, and an upper lift arm 24 is connected thereto by means of the pin 25 to aid in supporting the load carried by the lift bracket 20. The lift arm 24 is mounted on the upper end of a post 26, the lower end of said post being welded to a cross support 27 which spans the posts 15, the lift arm 24 being provided with a clevis 28, and a pin 28^a serves to pivotally connect the upper end of the post thereto.

Horizontally disposed bearing sleeves 29—29 are slidably mounted on the lift arms 19—19, and openings 30 are provided in said sleeves in register with one of the spaced-apart openings 31 provided in the lift arms 19, a pin 32 serving to secure the sleeves in an adjusted position, and for a purpose to be presently described.

Spaced-apart, parallel plates 33—33 are welded to the sleeves 29—29 and a center plate 34 is interposed between said plates and is pivotally connected to the one end thereof by means of the pivot pin 35, a plurality of openings 36 being provided in the opposite ends of the plates 33 and a single opening (not shown) is provided in the plate 34, a pin 37 being provided for securing the plate 34 in adjusted position.

A transversely disposed shaft 38 spans the lift arms 19—19, and one end of a piston rod 39 mounted in the

hydraulic cylinder 40 is revolubly connected thereto at a point equidistant from the ends of said shaft, sleeves 41—41 being mounted on the end sections of the shaft as shown and are secured in position by means of set-screws 42 as usual.

Centrally disposed openings 43 are provided in the center plate 34 and form a bearing for the end sections of the shaft and sleeves 38 and 41 respectively, so that as the piston rod 39 is actuated, the lift arms will be raised or lowered accordingly, and it will be obvious that the leverage of the lifting arms can be increased or decreased, to suit the weight of the load to be lifted by merely adjusting the position of the sleeves 29 on the lift rods 19.

A horizontally disposed bearing sleeve 44 is provided centrally on the bracket 20 between the spaced-apart, transversely disposed braces 45, and a stud shaft 46 on the revoluble turntable T is mounted on the front end of the bracket 20 and is revolubly journaled in said sleeve, the shaft 46 being retained in position by means of a nut 47 threaded on the end thereof. Circumferentially spaced openings 48 are provided in the turntable T, and a spring-pressed locking pin 49 (see Fig. 7 of the drawings), extends into one of said openings to retain the turntable in the desired adjusted position, the pin housing 50 being secured to one of the members 20° with the pin 49 extending through an opening as shown.

Mounted on the turntable T intermediate the ends thereof is a pair of oppositely disposed, forwardly extending, channel-shaped, arcuate clamp arms A and A', and openings (not shown) are provided in said arms to accommodate the vertically disposed pins 52—52 which swivelly support said arcuate-shaped clamp arms L and L, and since different sizes of barrels C or other objects are to be accommodated, it is desirable to rigidly mount the one clamp arm A' on the turntable and provide guide tracks 53—53 on the face of the turntable in which a guide plate 54 is slidably mounted so that the clamp arm A' may be adjusted with relation to the arm A to tightly clamp and grip the barrel C or other objects of various shape or diameter.

In the preferred embodiment of the invention (see Figs. 3 and 4), an interiorly threaded bearing 56 is provided on the plate 54, and a horizontally aligned, non-threaded bearing 55 is provided on the turntable T. A shaft 57 is supported in said bearings 55 and 56, and a crank handle H is provided on the outer end thereof, the shaft 57 being threaded to cooperate with the bearing 56 and actuate the guide plate 54 transversely in either direction, depending on the direction in which the handle H is turned. The inner end of the shaft 57 is of course keyed in the bearing 56 so as to be rotatable therein, although prevented from transverse movement with relation thereto.

It will thus be obvious that the arm A' can be adjusted transversely with relation to the stationary arm A, and that the turntable and arm assembly can be rotated on the bracket 20 to various positions of angular adjustment.

Angles 58 span the frame members 10 adjacent the rear end thereof, and a hydraulic jack unit J is mounted on said angles, a control lever N being provided on the jack J within easy reach of the truck operator.

The jack J includes a hydraulic cylinder 40 in which the piston rod 39 is mounted, the end 59 being rockably connected to the shaft 38 on which the sleeves 41 are mounted, these sleeves engaging the plates 34, and it will be obvious that when the jack control lever N is actuated to move the jack stem or rod 39 upwardly, the lift arms 19, lift bracket and clamping arm assembly will be swung upwardly about the pivot point 18, all as clearly indicated in broken lines in Fig. 1 of the drawings. While in the instant application I have shown the device as manually propelled, it will be clearly obvious that it can be motor-driven if desired without departing from the spirit of the invention.

In operation, the truck is moved to the barrel or drum

C to be lifted, the clamps L and L coming into embracing position with respect thereto, and inasmuch as the clamps are pivotally mounted, they can be very readily brought into clamping engagement with the barrel C by grasping the crank handle H and actuating the shaft 57 to move the arm A towards arm A'. The control lever N can then be actuated to raise the barrel the desired distance off the floor, whence the truck is wheeled to the desired position. As previously noted, the turntable T can also be revolved, if necessary, to tilt the barrel to empty the contents thereof. It is merely necessary to retract the locking pin 49 so that the turntable can be revolved.

In Figs. 5 and 6 of the drawings I have shown an alternate construction in which hydraulic means is used for actuating the clamp arm A', and it will be obvious that this means replaces the threaded shaft and bearings 55, 56 and 57. In this form of the invention, a hydraulic cylinder 60 of conventional design is mounted on the turntable T, and a piston rod 61 extends from said cylinder and is rigidly connected to the guide plate 54 at 62 to slide said plate in the ways 53 when a pressure fluid is fed to the cylinder 60. Flexible lines 63 and 64 lead from both ends of the cylinder 60 as usual to an oil supply chamber (not shown), within the jack J, and these lines are of sufficient length so that they will not interfere with any adjustment or movement of the turntable and clamp arm assembly.

It will, of course, be obvious that various other work-engaging means may be substituted for the clamp arms and turntable for engaging the work or on which the work rests, without departing from the spirit of the invention.

From the foregoing, it will be apparent that I have perfected a very simple, practical and economical all-purpose truck for use in handling barrels, drums, and other objects of various shapes and diameters.

What I claim is:

1. In a barrel truck, a wheeled frame, upwardly extending support means on the rear end thereof, forwardly extending lift arms pivotally mounted on said support means, a lift bracket carried by said lift arms and overhanging the front edge of said frame, a turntable revoluble on the front of said lift bracket, a pair of spaced-apart, forwardly extending arms on said lift bracket, means for adjusting the relative position of said clamp arms to clamp the work therebetween, jack means between the ends of said lift arms and connected thereto for swinging said lift arms in a vertical plane and elevating and lowering the work, circumferentially spaced openings in said turntable, and pin means on said bracket normally accommodated in one of said openings to maintain the turntable in an angularly adjusted position, said pin means being retractable to permit angular adjustment of said turntable to an adjusted position in which the barrel is tilted and the contents thereof can be poured.

2. In a barrel truck for elevating and lowering work-pieces, a horizontal wheeled frame, upwardly extending supports on the rear end thereof, a pair of transversely spaced-apart, parallelly disposed, forwardly extending lift arms pivotally mounted on said supports, a connecting member spanning said supports between their ends, a support post extending upwardly from said post between said lift arms, a forwardly extending upper lift arm pivotally mounted on said post, a lift bracket carried by said lift arms, said parallelly disposed lift arms being pivotally connected to the lower end of the bracket, and said upper lift arm being pivotally connected to the upper end of said bracket, a turntable revolubly mounted on the front of said bracket, means for releasably retaining said turntable in adjusted position with relation to said turntable, transverse guides on said turntable, an adjustable, work-engaging clamp arm slidably disposed therein, a stationary, oppositely disposed work-engaging clamp arm on said turntable, means for adjusting said adjustable

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clamp arm toward said stationary clamp arm to clampingly engage the work therebetween, means spanning said parallelly disposed lift arms and connecting the same and hydraulic jack means between the ends of said pivotally disposed lift arms and connected to said means spanning said lift arms for swinging the lift arms in a vertical plane and elevating and lowering the work.

3. The combination defined in claim 2 in which a threaded bearing is provided on said adjustable clamp arm and the threaded end of an adjusting shaft is mounted therein, said shaft having a crank handle on the opposite end thereof for rotating said shaft and adjusting said clamp arm transversely.

4. The combination defined in claim 2 in which circumferentially spaced openings are provided in said turntable, and a spring-pressed plunger is mounted on said lift bracket, the free end of which is normally accommodated in one of said openings to maintain said turntable in adjusted position with relation to said lift bracket.

5. In a lift truck, a wheeled frame, longitudinally extending, substantially parallelly disposed lift arms pivotal on said frame, a lift bracket carried by said lift arms, sleeves slidable on said lift arms between said bracket and the points of pivot thereof, means for retaining said sleeves in an adjusted, longitudinal position on said lift arms, a jack mounted on said frame and having an upwardly extending rod movable axially outwardly and inwardly from said jack, and means spanning said sleeves arcuately adjustable relative thereto and pivotally connected to said rod to permit longitudinal adjustment of said sleeves to vary the leverage provided by the lifting arms.

6. In a lift truck, a wheeled frame, longitudinally extending, substantially parallelly disposed lift arms pivotally supported at their rear ends on said frame, a lift bracket carried by the front ends of said arms, sleeves slidable on said lift arms between the front and rear ends thereof, means for retaining said sleeves in an adjusted, longitudinal position on said lift arms, a hydraulic jack fixed on said said frame between said arms and having an upwardly extendable piston rod, upwardly extending guide plates on said sleeves, adjusting plates pivotally connected thereto, the adjusting plates being connected adjacent their ends so as to be adjustable arcuately relative thereto when said sleeves are adjusted longitudinally, means for holding said adjusting plates in arcuate adjustment, and a shaft fixed between said adjusting plates pivotally connected to the upper end of said piston rod.

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7. A lift truck for elevating and lowering work pieces, a wheeled frame, upwardly extending support means on the rear thereof, a pair of parallelly disposed, spaced apart, forwardly extending side lift arms parallelly mounted on said support means, a support extending upwardly from said means between said lift arms, an upper, central, forwardly extending lift arm pivotally mounted on said support, a lift bracket carried by said lift arm, said parallelly disposed lift arm being pivotally connected to the lower end of the bracket, and said upper lift arm being pivotally connected to the upper end of the bracket, jack means between the ends of said parallelly disposed lift arms, sleeves adjustable on said lift arms, a shaft connecting said sleeves, said shaft being angularly adjustable with relation to said sleeves and pivotally connected to said jack means for swinging the lift arms to a vertical plane for elevating and lowering the work.

References Cited in the file of this patent

UNITED STATES PATENTS

2,415,515	McOscar	Feb. 11, 1947
2,475,367	Avery	July 5, 1949
2,488,767	Drott et al.	Nov. 22, 1949
2,535,727	Dingley	Dec. 26, 1950
2,587,769	Rowe	Mar. 4, 1952
2,596,477	Frischmann et al.	May 13, 1952
2,613,830	Ponnequin	Oct. 14, 1952