March 7, 1950 R. W. BAKER 2,500,055

COMBINED TRUCK AND HOIST DEVICE

Filed May 19, 1948 2 Sheets-Sheet 1

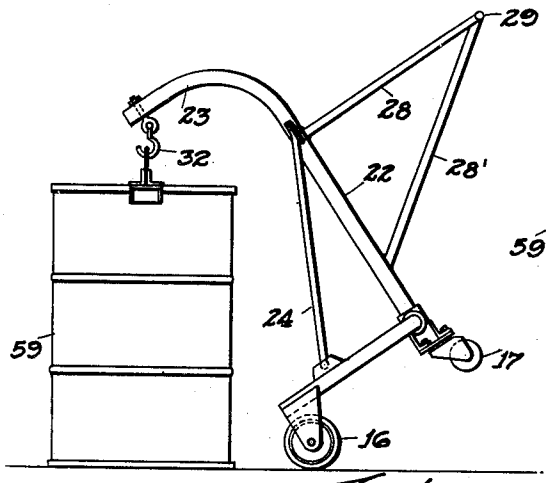


Fig. 1.

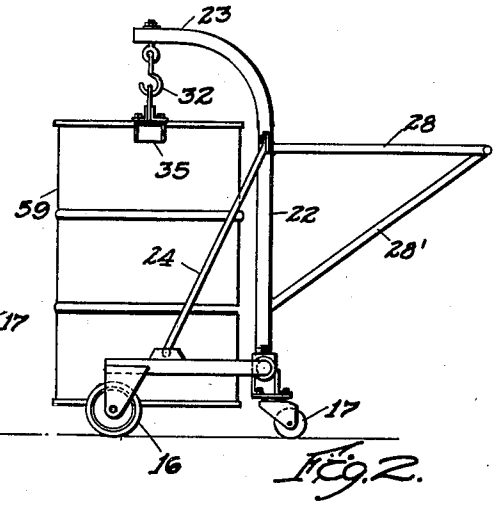


Fig. 2.

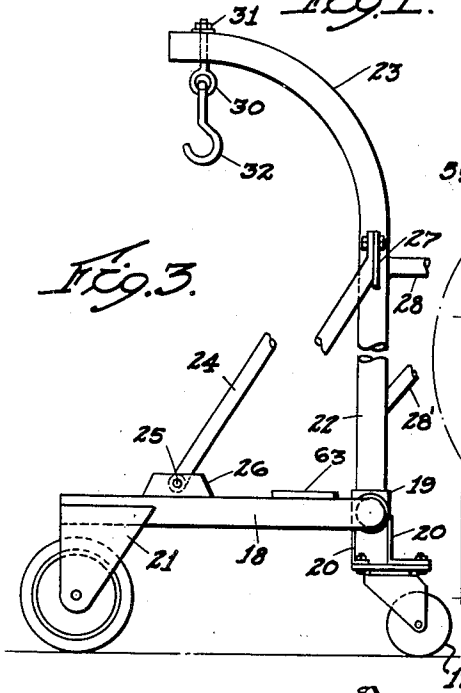


Fig. 3.

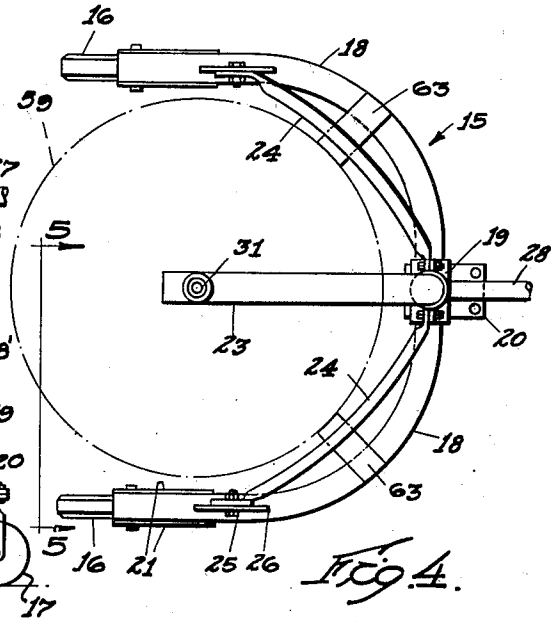


Fig. 4.

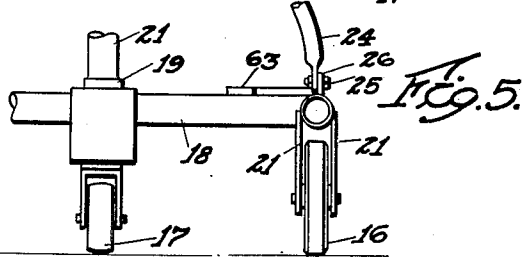


Fig. 5.

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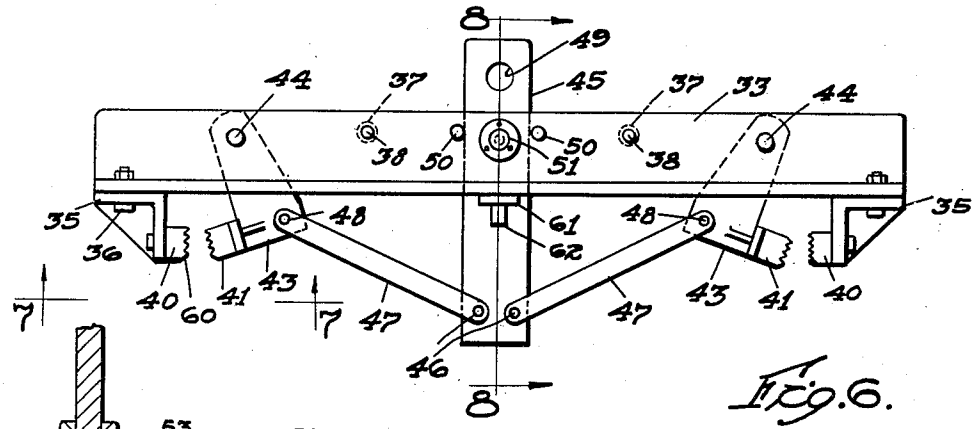


Fig. 6.

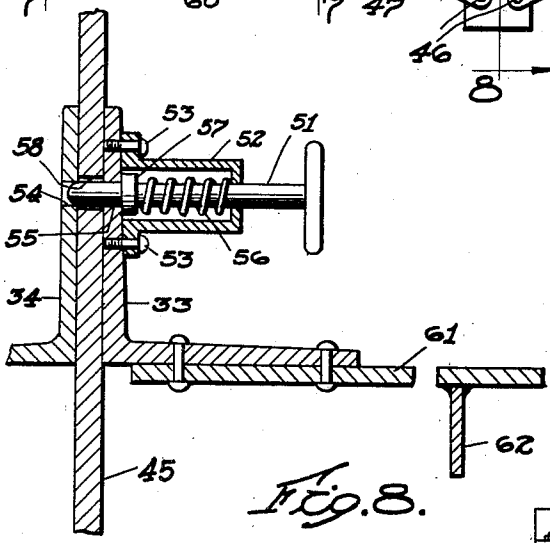


Fig. 8.

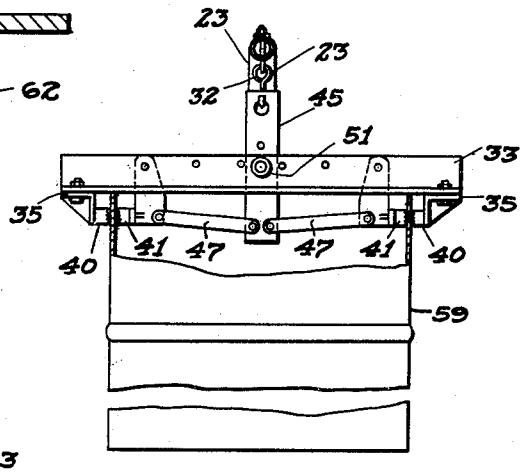


Fig. 9.

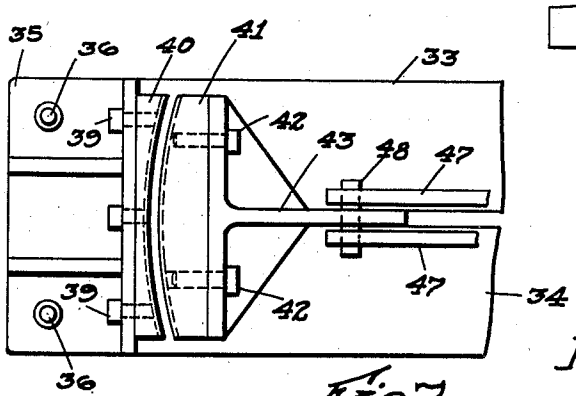


Fig. 7.

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COMBINED TRUCK AND HOIST DEVICE

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4 Claims. (Cl. 214—65.4)

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The present invention relates to a combined truck and hoist device of the manually operable type which is adapted for hoisting, hauling, and supporting receptacles or divers types of heavy bulky items.

A primary object of the present invention is to provide such a unit which is capable of hoisting and handling, with facility, open top barrels.

A still further object of the present invention is to provide a combined truck and hoist unit which may be readily handled by a single operator.

Yet another object of this invention is to provide a unit of the above noted type which, although most efficient in use, is, at the same time, designed to be readily and inexpensively manufactured.

A further object of the present invention is to provide with such a truck unit a hoist or grasp device which is particularly adapted for grasping open top receptacles such as barrels.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention from which the several features of the invention and the advantages attained thereby will readily be understood by those skilled in the art.

In the drawings—

Fig. 1 represents a side elevation of the present unit tilted to its barrel-engaging position, the barrel being illustrated as resting upon a floor in a vertical position.

Fig. 2 represents a side elevation of the device in its normal or barrel-sustaining position.

Fig. 3 represents, on an enlarged scale, a fragmentary side elevation of the present truck with the grasp or hoist element removed therefrom.

Fig. 4 represents a top plan view of the device as illustrated in Fig. 3.

Fig. 5 represents a fragmentary front elevation view of a portion of the truck, which view is taken substantially along the line 5—5 of Fig. 4.

Fig. 6 represents, on an enlarged scale, a front elevation view of the grasp unit which is illustrated in Figs. 1 and 2.

Fig. 7 represents a bottom plan view of a portion of the device disclosed in Fig. 6, which view is taken substantially along the line 7—7 of Fig. 6.

Fig. 8 represents a large scale fragmentary sectional view taken substantially along the line 8—8 of Fig. 6.

Fig. 9 represents a front elevation view of the present grasp unit disclosing the same in its operable position with an open top barrel secured between its jaws.

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Referring particularly to Figs. 1 to 5, inclusive, the present truck unit comprises a substantially U-shaped base generally designated by the numeral 15, which is supported upon a pair of front wheels 16, 16 and a single rear swivel wheel 17. More specifically, the present base 15 comprises a pair of similarly shaped arms 18, 18 each of which has its one end portion threaded within a T-shaped union member 19. Welded to the union member 19 are a pair of angle plates 20, 20, to the bottom portions of which is secured a conventional type swivel wheel 17. Referring particularly to Fig. 5, each of the front wheels 16, 16 is rotatably mounted between a pair of spaced plates 21, 21 which are welded or otherwise suitably secured to the forward end portion of a respective one of the arms 18, 18.

Threaded into the upper portion of the union 19 is an upright column 22, the upper end of which is curved so as to form a hoist or grasp support 23. In order to lend rigidity to the column 22, there are provided a pair of brace members 24, 24 each of which has its lower end portion suitably secured, as by means of a bolt 25, to a plate 26 which may be welded upon the upper portion of one of the arms 18. The upper portion of each of the braces 24, 24 is similarly bolted, or otherwise secured, to a respective one of a pair of plates 27, 27 which are welded upon the opposite side portions of the upright column 22.

Projecting rearwardly from the upright column 22 is a handle member 28 having handgrip portions 29, 29 formed at the free end thereof. The other end portion of the handle is welded to the upright column 22. In order to lend rigidity to the handle 28, there is provided a brace member 28', the lower end portion of which is welded to the base of the column 22, while the upper portion thereof is similarly secured to the free end portion of the handle.

From the above, it will be readily understood that the present hand truck is adapted to be supported on a floor surface by means of the wheels 16, 16 and 17 in a manner such that the truck may be readily trundled about from place to place by a single operator. Furthermore, it will be appreciated that the truck structure is designed in a manner such that it may be readily and inexpensively fabricated.

As hereinabove noted, the present truck device is adapted for hoisting and hauling various heavy

and bulky objects, and particularly open top barrels. In order to adapt the present truck unit for such hoisting operations, it is provided with a hoist or grasp device which is more fully described hereinbelow. More specifically, the upper horizontal portion 23 of the column 22 is provided with a swivel eye bolt 30 having its free end portion received within an apertured portion of the column and secured thereto by means of a nut 31. Pivotally connected to this eye bolt, in the usual manner, is a depending hook element 32 upon which a grasp or hoist element may be carried.

The present grasp or hoist unit is particularly disclosed in Figs. 6 to 9, inclusive. Referring particularly to Figs. 6 and 7, the present grasp comprises a pair of angle members 33 and 34 which are spaced apart and secured together by means of a pair of bracket members 35, 35. Each of these bracket members is secured by means of bolts 36, 36 to the lower flange portions of the angle members 33 and 34. Although the angle brackets 35, 35 function to space the members 33 and 34 apart, there are provided a pair of auxiliary spacing elements in the form of a pair of apertured cylindrical collars 37, 37. As may be particularly noted in Fig. 6, each of these collars 37 is disposed directly between the members 33 and 34, and a bolt 38 passes through the collar and has its opposite end portions received within appropriately disposed apertures provided by the members 33 and 34.

Still referring to Figs. 6 and 7, it is to be noted that each of the bracket members 35, 35 has secured thereto, as by means of bolts 39, 39, a hardened jaw element 40. More specifically, each of these jaw elements 40, 40 has its active or barrel-engaging face, formed as a concave surface which may be appropriately serrated so as to make for an efficient gripping surface. Cooperating with each of the concave jaws 40, 40 is an associated jaw 41 which is secured, as by means of bolts 42, upon the lower end portion of a pivot plate 43. Each of these plates 43, 43 has its upper portion received between the members 33 and 34 and, furthermore, it is pivotally secured to these latter members by means of a cross pin 44. As may be particularly seen in Fig. 7, each of the jaws 41, 41 has its active or barrel-engaging face formed as a convex serrated surface so as properly to mate with its associated jaw 40. From this, it may be readily understood that each of the plate members 43, 43 may be rotated about its pivot pin 44 so as to shift its jaw 41 toward or away from its associated stationary or concave jaw 40.

Referring particularly to Figs. 6 and 8, there is slidingly mounted between the members 33 and 34, a vertically disposed jaw-actuating bar 45. The lower portion of the bar 45 has pivotally secured thereto, as by means of a pair of pins 46, 46, two pairs of link elements 47, 47. Each pair of these link elements 47, 47 are also pivotally secured to a respective one of the plates 43, 43 as by means of a pin 48. From this, it will be readily appreciated that whenever the bar 45 is in its lowermost position, as illustrated in Fig. 6, it will function to hold the jaws 41, 41 away from their associated jaws 40, 40. By the same token, whenever the bar 45 is raised relative to the members 33 and 34, it will function to shift the movable jaws 41, 41 toward their associated stationary jaws 40, 40 to the end that these jaws may grasp the opposite side portions of a receptacle in a manner as particularly disclosed in Fig. 9. Those skilled in the art will readily understand that the present grasp operates in the manner of a toggle mechanism for the purpose of applying a tremendous gripping force between each pair of the associated jaws.

Referring now particularly to Figs. 6 and 8, it will be noted that the upper portion of the vertically disposed bar 45 is provided with an aperture 49 which is particularly adapted for receiving the above noted hook element 32 so as to suspend the entire grasp from the upper portion 23 of the truck column 22. In order properly to guide the bar 45 between the elements 33 and 34 there are provided a pair of guide pins 50, 50, each of which may be force-fitted or riveted across the spaced elements 33 and 34 adjacent a respective side portion of the bar 45. From the above, it will be manifest that whenever the grasp unit, as disclosed in Fig. 6, is suspended from the truck hook 32, the weight of the grasp unit will be sufficient to force the elements 33 and 34 downwardly relative to the bar 45 to the end that the jaws will be closed. Therefore, in order to hold the jaws open, the present invention contemplates the provision of a latch pin 51 which is particularly illustrated in Figs. 6 and 8. More specifically, this latch pin 51 is slidingly mounted within a sleeve 52 which is secured by screws 53, 53 directly to the member 33. The members 33 and 34 are provided with axially aligned apertures 54 and 55 for receiving one end of the pin 51 which is biased toward these apertures by a coil spring 56. A flange 57 limits the inward movement of the pin.

The upper portion of the bar 45 is provided with an aperture 58 which is adapted to receive the latch pin 51 whenever the bar is in the position disclosed in Fig. 6. From this it will be manifest that the latch pin functions to hold the jaws in their open position whenever it is received within the bar aperture 58, even though the grasp unit may be suspended from the hook 32. It will also be appreciated that an operator may permit the jaws to close under the force of gravity by merely pulling the latch pin 51 outwardly against the force of its spring 56.

Referring now particularly to Figs. 1, 2 and 9, there is disclosed an ordinary type open top cylindrical barrel or drum which is generally designated by the numeral 59. In order to secure the above described grasp or hoist unit to such an open top drum, it is merely necessary to position the grasp above the drum with the jaws locked in their open position, and thereafter the entire grasp unit may be lowered so that the stationary or outer jaws 40, 40 will snap over the chime portion of the drum into the position disclosed in Fig. 9. In this connection, it is to be understood that the distance between the jaws 40, 40 is substantially the same as the outside diameter of the drum, and due to the fact that each of these jaws has its lower edge portion beveled, as at 60, it will be understood that the jaws may be readily snapped into position over the chime of the barrel. Once the grasp is so positioned about the barrel, the operator may then release the latch mechanism 51 and thereafter the bar 45 may be elevated so as to close the inside jaws to the end that the opposite wall portions of the drum will be locked between the jaws. Further elevation of the bar 45 will function to raise the entire barrel off its resting place. The action of the barrel jaws does not depend upon the presence of a chime about the barrel.

In order properly to center the grasp unit upon a barrel or drum, the present invention contemplates the provision of a guide arm 61 whose one

end portion is riveted, or otherwise suitably secured, to the member **33** in a manner as is particularly illustrated in Figs. 6 and 8. Thus, the guide **61** projects away from the grasp device, and is provided at its free end portion with a depending finger **62**. It is to be understood that the finger **62** is adapted to engage the inner wall portion of the barrel in a manner such as to insure that the jaws of the grasp will engage the barrel at diametrically opposite points, to the end that whenever the barrel is suspended from the bar **45**, it will have no tendency to tilt out of its normal vertical position.

In utilizing the present invention, the above described grasp unit is normally adapted to be suspended from the truck hook **32** in a manner as disclosed in Figs. 1 or 2. However, whenever it is desired to move a receptacle from one place to another, it is contemplated that the operator may remove the grasp unit from the truck and snap the unit over the side portions of the barrel or receptacle in a manner as hereinabove described. Thereafter, the operator may wheel the truck to a position adjacent the barrel, and then tilt the same to a position similar to that illustrated in Fig. 1. In such a position, the hook **32** may readily engage the hole **49** of the bar **45** of the grasp, and thereafter the operator may release the latch **51**, and by depressing the truck handle **28**, it will be clear that the barrel will be elevated from the floor as the truck is shifted back to the position illustrated in Fig. 2. In this latter connection, it will be understood that by depressing the handle **28**, the truck will move toward the barrel at the same time that it tends to lift the latter, so that the U-shaped base portion of the truck will encircle the barrel. From this, it will be appreciated that since the barrel is suspended from a single pivotal point, it will have no tendency to tilt so as to spill or splash its contents out of the barrel. Once the barrel has been elevated from the floor, it will be locked in the position as disclosed in Fig. 2, and since the center of gravity of the barrel will be disposed directly over a point located within the confines of the three wheels of the truck, a most stable condition will prevail, so that as the truck with its barrel is trundled about, there will be no tendency for the truck to overturn.

Since in trundling the truck about over a rough floor surface there would be some tendency for the barrel to swing back and forth, the present invention contemplates the provision of a pair of barrel-snubbing members in the form of a pair of plates **63, 63**. Referring particularly to Fig. 4, it is to be seen that each of these plates **63, 63** may be welded or otherwise suitably secured upon the upper portions of the arms **18, 18** so that the free outer edge of each of the plates will engage the side portions of the barrel thereby to steady the same. Also, it should be noted that the free outer edge of each of these plates is made concave so as to conform with the curvature of the barrel.

After the operator has shifted the barrel to its desired position, he may then elevate the free end portion of the truck handle **28** so that the truck will function in the manner of a hoist, so as to lower the barrel to its new resting place. It should be understood that as soon as the grasp ceases to support the barrel, the bar **45** will be lowered by gravity relative to the members **33** and **34** to the end that the jaws will be opened and thus, the latch pin **51** will snap into place, thereby locking the jaws in their open positions.

Thereafter, when the operator depresses the truck handle and shifts the truck back into its normal position, the grasp will be disengaged automatically from the barrel. The latch pin will, of course, retain the jaws in their open positions so that the grasp will be in its proper condition for engaging another barrel in the manner as hereinabove described.

I claim:

1. A device of the character described comprising, a substantially U-shaped base, a plurality of wheels rotatably mounted upon said base for supporting the latter, a column projecting from said base at a location intermediate the ends thereof so as to be disposed at right angles to a plane defined by said base, a grasp support carried by the free end portion of said column, a grasp mechanism including a horizontally disposed member, pairs of fixed and movable jaws carried upon said member, toggle mechanism carried by said member for shifting said jaws relative to each other, a toggle-actuating bar, said grasp mechanism being entirely supported upon said grasp support by said toggle-actuating bar, latch means for releasably maintaining said jaws in an open condition, and a handle member carried by and projecting from an intermediate portion of said column.

2. A device of the character described comprising, a substantially U-shaped base, a plurality of wheels rotatably mounted upon said base for supporting the latter, a column projecting from said base at a location intermediate the ends thereof so as to be disposed at right angles to a plane defined by said base, a grasp support carried by the free end portion of said column, a grasp mechanism including a horizontally disposed member, a first jaw fixed upon each of the opposite end portions of said member, a second jaw pivoted upon each of the opposite end portions of said member adjacent a respective one of said first jaws, toggle mechanism connected to each of said second jaws, a toggle-actuating bar slidingly mounted upon said member, said grasp mechanism being entirely supported upon said grasp support by said toggle-actuating bar, said toggle mechanism being so arranged that the second jaws will each be shifted towards its associated first jaw under the force of gravity whenever the grasp is suspended from said grasp support, and a handle member carried by and projecting from an intermediate portion of said column.

3. A grasp device of the character described comprising, an elongated frame member, a pair of jaws fixed upon said member, a pair of jaws of which each is pivoted upon said member adjacent a respective one of said fixed jaws, an actuating bar slidingly mounted upon said member for movement crosswise of said member, toggle links connecting one end of said bar to said pivoted jaws, means associated with the other end portion of said bar for supporting the entire grasp unit, and latch means associated with said member for releasably maintaining said bar and said member in a predetermined fixed position relative to each other.

4. A grasp device of the character described comprising, an elongated frame member, a jaw fixed upon each of the opposite end portions of said member, a jaw pivotally mounted upon said member adjacent a respective one of said fixed jaws, an actuating bar slidingly mounted upon said member for movements crosswise of said member, toggle links connecting one end of said

bar to each of said pivoted jaws so that relative movements of said bar and member will open and close said jaws, and means associated with the other end of said bar for supporting the entire grasp unit, said toggle links being so arranged that said pivoted jaws will be shifted towards their associated fixed jaws under the force of gravity whenever said grasp unit is suspended from said last mentioned means.

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