Aug. 31, 1926. 1,598,229

G. WILCOX

TRUCK

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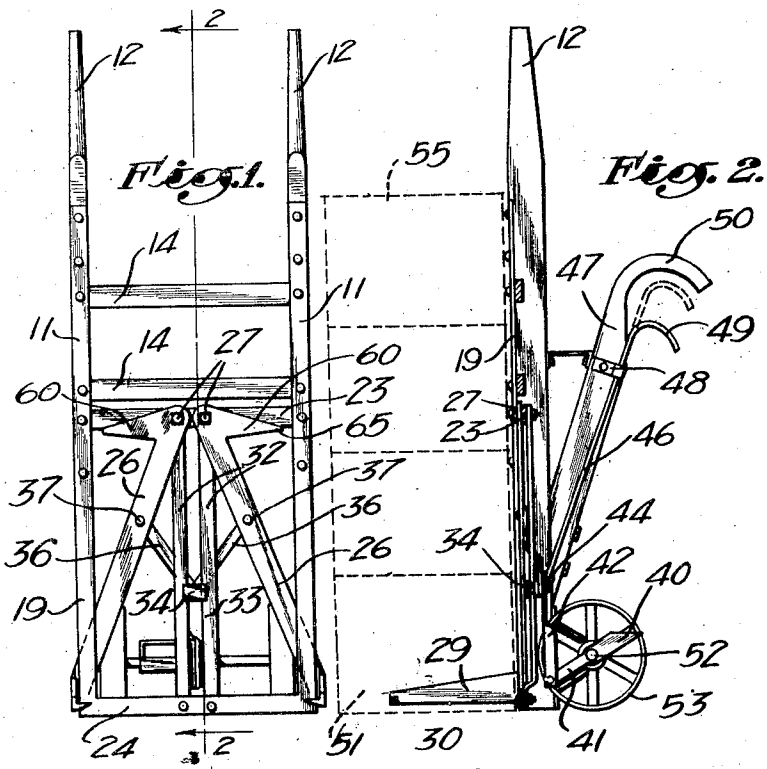


Fig. 1.

Fig. 2.

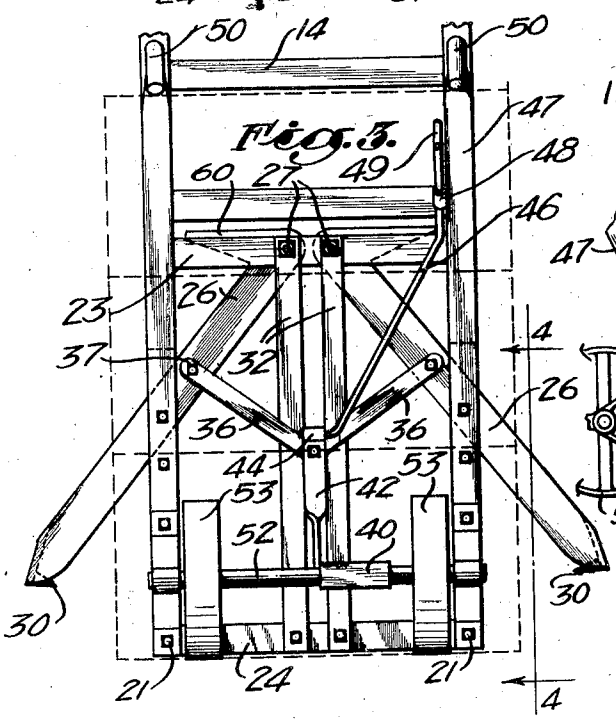


Fig. 3.

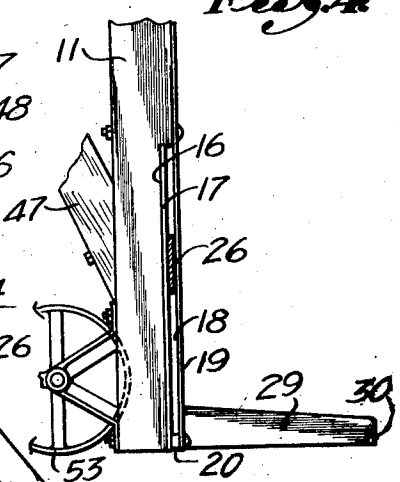


Fig. 4.

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UNITED STATES PATENT OFFICE.

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TRUCK.

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My invention relates to hand trucks of the type employed to transport boxes and other similarly shaped articles.

The ordinary type of hand truck, employed for moving boxes from place to place within the warehouses, consists of a carriage having a shelf or tongue and a pair of wheels at one end thereof, and grips at the other end. In using this type of truck, the shelf must be forced under the box to be carted in order that the box may be lifted from the floor. This is often difficult to accomplish where the boxes are placed and moved in stacks owing to the considerable weight of the stack and the fact that it must be tilted in order to insert the shelf of the truck thereunder.

It is an object of my invention to provide a truck for handling boxed goods having no shelf or tongue which must be forced under the boxes to be transported; but is provided with means for gripping the lower box of the stack in such a manner that the entire stack may be lifted clear of the floor when the truck is pulled back out of vertical position.

It is a further object of the invention to provide a hand truck having a frame which extends in substantially vertical position so that when the truck is placed against a stack of boxes, this frame will rest against one side of the stack.

The invention further provides an auxiliary handle extending rearwardly from the vertical frame and provided with curved grips whereby the operation of the truck is facilitated.

It is a further object of the invention to provide an improved and simplified form of gripping means in which a pair of rectilinear arms are pivoted centrally to the frame of the carriage and extend downwardly and outwardly beyond the sides of the carriage and have forwardly extending portions which are provided with inwardly projecting engagement tongs. A simplified form of operating means which may be hand or pedal operated is further provided for swinging the arms outwardly out of engagement position.

It is a further object of the invention to provide box engagement members which by the action of their own weight come into position of engagement with the box to be carried, and which thereafter grip the box with a force proportionate to the weight of the box, due to the novel arrangement of these gripping members. With this arrangement, the above noted operating means has only the function of moving the gripping means out of engagement position.

It is a still further object of the invention to provide a hand operated lever connected with the operating means which enables a truck operator to conveniently retain the gripping members spread apart while wheeling the empty truck to the next box, or stack of boxes to be handled.

The especial advantages of the invention and further objects thereof will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only,

Fig. 1 is a face view of a truck embodying the features of my invention, the gripping mechanism thereof being disposed in closed position.

Fig. 2 is a section taken substantially upon a plane represented by the line 2—2 of Fig. 1.

Fig. 3 is an enlarged rear elevation of the lower part of the truck.

Fig. 4 is a fragmentary section taken upon a plane represented by the line 4—4 of Fig. 3.

As shown in the drawings, the truck is comprised of a pair of vertical side members 11 having the upper ends thereof shaped to form grips 12, and cross bars 14 which extend between the side members 11. As shown in Fig. 4, the lower ends of these side members 11 are recessed as shown at 16, and straps 17 are placed in the bottoms of the recess so that a metal lined channel 18 is formed between each strap 17 and the iron strap 19 which is placed upon the front of each of the side members 11 and is spaced apart from the strap 17 by spacers 20 through which the bolts 21 extend.

Upon a cross bar 23 which is attached somewhat above the bottom cross member 24 of the carriage, a pair of arms 26 are pivoted upon bolts 27 which are spaced equally upon each side of the central axis of the truck. These arms 26 extend diagonally outwardly through the channels 18 provided between the straps 17 and 19 as shown in the drawing, and have the ends 29 thereof bent forwardly and ending in inwardly projecting prongs 30.

A pair of vertical members 32, which extend between the cross bar 23 and the bottom cross bar 24, provide a vertical slide 33 in which a central block 34 operates. This block 34 has toggle links 36 pivoted thereupon which are attached by bolts 37 to the arms 26. It will be perceived that by raising the block in the slides 33 from the position shown in Fig. 1 to the position shown in Fig. 3, the arms are swung outwardly upon the pivot bolts 27 so that the prongs 30 are spread apart. The lifting of the block may be accomplished by forcing down upon a foot lever 40 having a forwardly extending arm 41 which is connected to the block 34 by a link 42. This link 42 has an eye 44 rolled at the upper end thereof which is engaged by a rod 46. The rod 46 is supported against one of the auxiliary handle members 47 by a bracket 48, as shown in Figs. 2 and 3, and has the upper end thereof bent in the form of a handle 49 so that an upward pull may be exerted thereby. The auxiliary handles 48 are mounted upon the backs of the side members 11 and extend diagonally rearwardly as shown and are provided with curved grips 50 which are in such a position as to expedite the handling of the truck. It will be seen that in placing the truck against a stack of boxes and moving a loaded truck from place to place considerable difficulty is experienced if the truck is to be handled by the grips 12 of the side members 11, owing to the fact that the grips are disposed forwardly from the axis 52 upon which the wheels 53 of the carriage are mounted; therefore, the auxiliary handles 50 are provided to facilitate the running of the truck about empty.

In the employment of this truck, the arms 26 are spread apart as shown in Fig. 3 so that considerable space exists between the forwardly extending portions 29 thereof, the arms 26 being held in separated position by holding the handle 49 in raised position by gripping it with the hand which holds the auxiliary handle 50. The truck is then run into position against a stack of boxes indicated by the dotted lines 55 with the front of the carriage resting against the side of the boxes. By releasing the handle 49, the block 34 is permitted to move downwardly in the slide 33, allowing the arms to swing inwardly and the tongs 30 to be brought into engagement with the sides of the bottom box 57 of the stack 55. The truck may then be tilted backwardly upon the wheels 52, and the stack of boxes lifted from the floor and transported as desired. The release of the boxes from the truck is accomplished by bringing the truck and stack back to the position shown in Fig. 2 and then depressing the pedal 40 or lifting the handle 49 to cause the separation of the arms 26.

In pivoting the bars 26 centrally upon the carriage an arrangement is provided whereby the downward force exerted upon the lower ends of the arms 26, due to the weight of the box, causes a rotative tendency of the bars around their pivots which forces the lower ends of the bars inwardly with a force proportionate to the downward force exerted; therefore, it will be seen that when the prongs are swung into engagement with box 57, an increase of weight upon the box only serves to further imbed the tongs in the sides of the boxes, with the result that the box is more firmly gripped.

At the upper end of each bar 36, I provide an integrally formed projection or arm 60 which extends outwardly in the plane in which the arms 26 rotate. These arms 60 bear against the cross bar 23 of the carriage and thus provide a broad surface of contact for taking the axial torsion stresses exerted in the bars 26 by the outward reaction of the boxes against the tongs 30. It will be understood that it is not necessary for the entire face of each member 60 to be in contact with cross bar 23, but that only the ends 65 thereof need be, and that the length of these members 60 may be increased or decreased to give the desired freedom of action of the bars 26.

A particular advantage is found in the employment of the operating handle 49. By its use the truck operator is enabled to deposit a stack of boxes and to maintain the tongs in separated position, by gripping the handle against the underside of the plow handle type of grip 50, while wheeling the truck back to the next stack of boxes to be carted. With the tongs in this extended position the truck is brought into place before the next stack, whereupon the handle 49 is released, allowing the arms 26 to drop and the tongs brought into gripping engagement.

My invention provides a truck which may be moved into a position against a stack of boxes, as hereinbefore described, and will pick up this stack of boxes without the necessity of moving or tilting the stack as necessary where the common type of hand truck, employing a shelf, is used. The simplicity of the parts makes it possible to build a truck of the type shown at a small cost, and adds considerably to the durability thereof.

I claim as my invention:

1. In a hand truck provided with two sets of handles, the combination of: a carriage; a pair of one-piece arms pivoted on fixed pivots within the sides of said carriage and having lower ends which extend outwardly beyond said sides; arm operating means engageable by the fingers of a hand holding one of said handles and engagement means formed at the outer ends of said arms.

2. A truck, as defined in claim 1, in which said arms are of substantially rectilinear

form and are provided at their upper ends with separate pivots and separate bearing extensions.

3. A truck, as defined in claim 1, in combination with toggle means for spreading said arms, said toggle means comprising a central guided block, movable either by hand-operated or by foot-operated means and carrying the pivots of links which extend to said arms.

4. A truck, as defined in claim 1, in combination with means for spreading said arms which includes a vertically movable central, guided block and toggle links extending between said block and said arms.

5. A truck, as defined in claim 1, in combination with means in the form of integral extensions in the same plane with said arms resisting axial rotation of said arms.

6. A truck, as defined in claim 1, comprising axial rotation resisting members formed at the pivot ends of said arms, said members projecting substantially in a radial plane respective to the axes of the pivots of said arms, and bearing against the structure of said carriage.

7. In a hand truck, the combination of: a carriage having wheels at the lower end thereof; a pair of arms pivoted centrally upon said carriage and at a point above the lower end thereof and extending in substantially straight line formation downwardly and outwardly beyond the sides of said carriage; forwardly extending portions, having inwardly projecting prongs, bent up on the outer ends of said arms; extensions integrally formed at the inner ends of said arms, said extensions extending laterally in the plane through which said arms swing, and bearing against the structure of said carriage; a block; a vertical slide for said block; spreader links extending between said block and said arms; and a lever for moving said block in said slide.

8. In a hand truck, the combination of: a wheeled frame; toggle-operated gripping means disposed at the lower end of said frame and comprising arms pivoted directly thereto, said gripping means being normally disposed in engagement position; and means operable by foot pressure, for moving said gripping means from said normal engagement position when it is desired to engage an article to be transported.

9. A device, as defined in claim 8, in combination with a manually operated rod secured to a central, guided block to which toggle links are pivoted, said rod constituting alternative means for actuating said gripping means.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 11th day of January 1923.

GEORGE WILCOX.