

Sept. 1, 1925.

E. J. BRYAN

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HAND TRUCK

Filed April 14, 1924

2 Sheets-Sheet 1

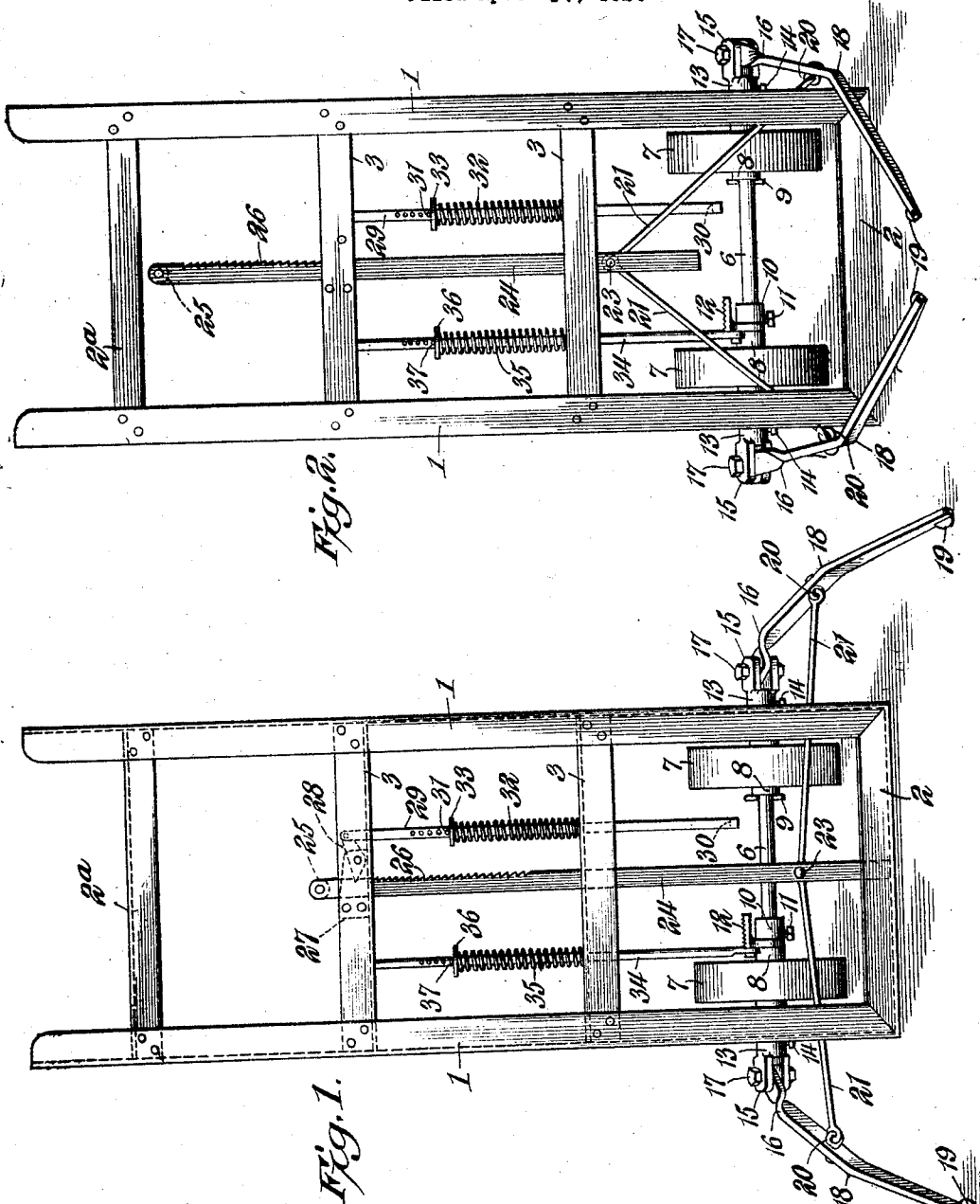


Fig. 2.

Fig. 1.

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WITNESSES

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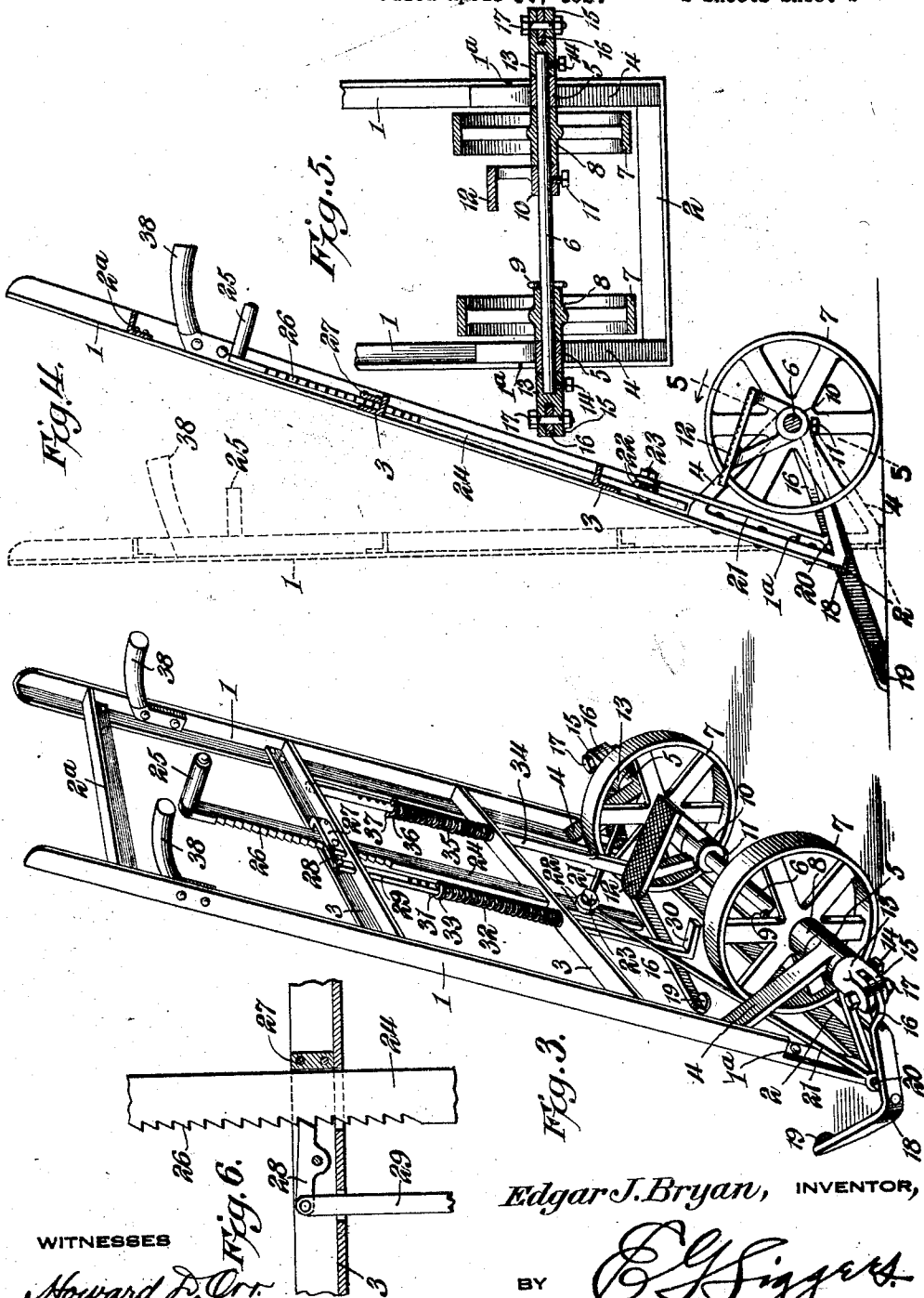
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WITNESSES

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UNITED STATES PATENT OFFICE.

EDGAR J. BRYAN, OF RIVERSIDE, CALIFORNIA, ASSIGNOR OF ONE-SIXTH TO LEONARD DIFANI, ONE-THIRD TO ANDREW DIFANI, AND ONE-SIXTH TO OAKLEY K. MORTON, ALL OF RIVERSIDE, CALIFORNIA.

HAND TRUCK.

Application filed April 14, 1924. Serial No. 706,544.

To all whom it may concern:

Be it known that I, EDGAR J. BRYAN, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented new and useful Hand Trucks, of which the following is a specification.

This invention relates to hand trucks.

The object is to provide a truck having gripping jaws for engaging boxes, barrels, kegs, crates, etc., said jaws having a wide range of lateral movement to properly grip and support boxes of different sizes, and having means for adjusting said jaws to the proper distance apart where a number of such articles of the same size are to be handled, so as to avoid unnecessary movement of the jaws at each operation.

Another object is to provide a truck with gripping jaws which have a sweeping movement across the floor toward each other when an article is being picked up, in order that the active ends of the jaws may grip the lower face of said article.

A further object is to provide gripping jaws which are caused to automatically engage the load when the truck frame is tilted in a rearward direction, after pressure by the foot of the operator has been imparted to a pedal mounted on the truck axle for holding the jaws to the floor.

A final object is to provide hand-operated means for adjusting the jaws closer together or wider apart and which may be quickly and easily released to permit the jaws to separate and to release the load, the said hand-operated means and the foot pedal being within easy reach of the operator behind the truck when the same is in upstanding position, as when loading.

A full and complete understanding of the invention may be obtained from a consideration of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification, it being understood that while the drawings show a practical form of the invention, the latter is not to be confined to strict conformity with the showing thereof, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the appended claims.

In the drawings, in which similar reference characters designate corresponding parts throughout the several figures:—

Figure 1 is a front elevation showing the gripping jaws extended to their maximum capacity;

Figure 2 is a similar view showing the jaws in their innermost positions;

Figure 3 is a rear perspective view of the improved truck slightly tilted in a rearward direction;

Figure 4 is a vertical, longitudinal section through the same, the normal position being shown in dotted lines;

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 4; and

Figure 6 is a detail sectional view illustrating the means for holding the jaw adjusting bar in adjusted position.

Referring to the drawings, there is illustrated a truck constructed in accordance with the present invention and comprising a frame of the usual proportions and preferably constructed of angle iron. The spaced, longitudinal side rails 1 are connected at one end by a cross rail 2 constituting the foot of the truck frame and adjacent to the other or upper ends another cross rail 2^a joins the rails 1, the projecting portions of the latter serving as handles when the truck is lying flat upon the ground or floor.

Upper and lower intermediate cross bars 3 are also connected to the rails 1, the several cross members 2, 2^a, and 3 being preferably equally spaced apart and forming a strong and rigid structure to support the loads which may be carried by the truck.

Triangular brackets 4 are preferably bolted or riveted to the lower ends of the rails 1, said brackets having attaching portions and converging, rearwardly extending arms terminating in bearings 5, which are spaced somewhat in rear of the frame and also spaced a short distance from the lower cross rail 2 or foot of the truck, so that, when the truck is stood on end, in a well known manner, the truck assumes a vertical position with the wheels and the foot resting on the supporting surface as shown in dotted lines, Fig. 4.

The axle 6 is rotatably mounted in the bearings 5 and is of a length to project beyond the same, wheels 7, of ordinary construction, being loosely mounted on said

shaft with the hubs 8 abutting the inner ends of said bearings. One of the wheels, preferably the left hand one, as viewed from the rear, is held against longitudinal movement along the axle by a cotter pin 9, while the other wheels 7 is similarly held by a sleeve 10 secured to the axle by a set screw, and having upstanding arms joined to a plate constituting a foot pedal 12, which has its upper face roughened or serrated and which extends forwardly towards the rear side of the truck frame.

Sockets 13 are secured, by means of set screws 14, to the ends of the axle 6, where the latter project beyond the bearings 5, said sockets abutting against the outer faces of the bearings, to prevent any longitudinal movement of the loosely mounted axle. The outer ends of the sockets are provided with spaced ears 15 provided with alined apertures, and between said ears there is mounted the rear ends 16 of gripping jaws formed of suitable, strong bar iron, the said ends being apertured for the reception of pivotal bolts 17, traversing the ears and permitting the said jaws to freely swing about the axis of the bolt 17 and, through the medium of the socket 13 and set screw 14, to partake of any rocking movement of the axle when actuated by the foot pedal 12 in a manner to be explained.

The bar iron comprising the gripping jaws is given a quarter turn just in advance of the pivotal connection, and the jaws are continued forwardly substantially to the front side of the frame, where they are angularly bent toward each other, as at 18, the terminals being preferably tapered and provided on their lower inner edges with rearwardly directed lips 19 for the purpose of engaging beneath a box or other package.

At a point adjacent to the angular bend 18, each jaw is provided with an inwardly directed swiveled eye 20, to which is connected the outer end of a link or pull rod 21, the inner end of each rod being formed into an eye 22. The rods normally occupy an inclined position, as shown in Figures 2 and 3 of the drawings, and the lower portions of the same travel through cut-away portions 1^a formed in the side flanges of the longitudinal rails 1, at the lower ends of the same.

The eyes 22 of the links or pull rods are connected to a pivotal bolt 23, which is secured near the lower end of a longitudinally slidable bar 24 located at the longitudinal center of the frame, and having suitable bearings through the intermediate cross bars 3. The lower end of the bar 24 extends somewhat below or beyond the pivotal connection of the links 21, and is adapted at times to rest upon the upper surface of the rear flange of the lower cross bar or foot 2, as shown in Figure 1, while the upper end

of the said bar 24 extends above the upper, intermediate cross bar 3, and is provided at its upper terminal with a rearwardly extending handle 25 within easy reach of the operator.

One side edge of the bar 24 is provided with serrations or teeth 26 adjacent to its upper end, and where passing through the opening in the upper, intermediate cross bar 3, a suitable housing 27 being secured to the latter to guide the said bar and to provide means for pivoting a pawl or dog 28, having one end shaped into a nose for engagement with the teeth 26, as clearly shown in Figure 6, and connected, at its outer end to a longitudinally disposed bar 29 slidably mounted in the intermediate cross bars 3 in spaced relation to the longitudinal bar 24.

The lower end of the bar 29 is bent to form a foot piece 30, extending to rear of the truck and within easy reach of the feet of the operator. Adjacent to the upper end, where connected to the dog 28, the bar 29 is provided with a plurality of holes for the reception of a pin 31, which may thus be adjusted to regulate the compression on a coiled spring 32 surrounding the bar and bearing, at the lower end, upon the lower, intermediate cross bar 3 and at its upper end against a washer 33 interposed between the pin and the end of the spring. The normal tendency of the spring is to force the bar 29 upwardly and to hold the dog 28 in engagement with the teeth 26 of the longitudinal bar 24, and it will be noted that the shape of the said teeth is such as to permit the bar 24 to be elevated by means of the handle 25, without the necessity for releasing the dog, but, in order to move the bar 24 downwardly, it is necessary to depress the foot piece 30 against the tension of the spring 32 and to rock the engaging end of said dog upwardly out of engagement. The bar 24 then drops by gravity.

Connected to the forward end of the foot pedal 12, there is a push rod 34, extending upwardly and having a sliding bearing through a suitable aperture formed in the lower intermediate cross bar 3, the upper end of said rod normally abutting the under side of the rear flange of the upper intermediate cross bar 3, which acts as a stop to arrest the upward movement of the rod 34 and the foot pedal 12. A coiled spring 35 surrounds the rod 34, and bears at one end against the flange of the lower cross bar 3, and at the other end against a washer 36, which is held in adjusted position on the rod by a pin 37 traversing one of a series of holes formed in the rod, the action of the spring 35 serving to normally hold the rod 34 in abutting relation to the cross bar 3 at the top thereof, and to hold the foot pedal in elevated position when no pressure is applied to the same. As a result the jaws are

retained in proper position for operation and prevented from dropping down when unloaded.

Handles 38 are secured to the undersides of the longitudinal frame members 1, by means of which the truck may be manipulated to run the truck up to a load to be transported and for operating the truck during such transportation, and when the truck is laid down upon the floor or ground in a horizontal position, the handles 38 serve as legs to support the rear end of the truck.

In the event there is a large number of articles or packages of uniform size to be handled by the truck, the latter is run up to one of said articles, in the position shown in Figure 3 of the drawings, wherein the truck is in an upright position with the gripping jaws resting upon the floor. By depressing the foot 30, the dog 28 is released and the operator grasping the handle 25, slides the bar 24 either up or down to make the proper adjustment of the jaws. By pushing down on the handle, the links or rods 21 force the jaws apart and by a reverse movement the jaws are brought together. This gives a rough adjustment to the jaws to approximate the width of the packages to be moved, and upon releasing the foot 30 the dog 28 again locks the sliding bar 24 against any downward movement. The operator now places his foot upon the pedal 12 and holds the same from any movement upwardly, and at the same time rocks or tilts the frame of the truck rearwardly for the foot pressure on the pedal prevents the axle 6 from rocking. This results in holding the jaws in contact with the floor, but the rearward movement of the truck causes a pull on the links 21, which, in turn, cause the jaws to be drawn inwardly toward each other by pivoting the same on the bolts 17. The lips 19 are forced beneath the edge of the load, and the latter is caused to fall back against the truck, the result being that the heavier the load the stronger the inward pull on the jaws will be. Where a variety of sizes of packages or articles are to be handled, the operator must shift the position of the sliding bar 24 to adjust the jaws to each of such articles, as will be understood. When the load is to be discharged or unloaded from the truck, the operator simply depresses the foot member 30, thus releasing the dog 28 and allowing the bar 24 to slide downwardly by the weight of the load on the jaws pulling downwardly through the links 21.

From the foregoing it will be seen that a simple, strong and durable hand truck has been provided, containing a small number of parts, and giving a wide range of movement to the gripping or load-supporting jaws, so that the latter may be readily ad-

justed to different sized loads. The weight of the load serves to cause the gripping action of the jaws, the latter being held to the floor by a simple pressure of the foot of the operator, while the truck is tilted in the usual manner to receive the load, so that the jaws may engage the load at the bottom thereof, thus making the truck valuable for service in handling boxes, barrels, kegs, crates and even the more or less fragile cartons now in general use for shipping purposes.

What is claimed is:—

1. A hand truck comprising a frame, wheels thereon, an axle for the wheels, gripping jaws having their inner ends mounted on the extended ends of the axle outside the wheels, and a pedal rigidly mounted on the axle for controlling the position of said jaws.

2. A hand truck comprising a frame, an axle rotatably mounted in the frame, wheels loosely mounted on the axle, the latter having its ends projecting beyond the wheels, sockets mounted on the extended ends of the axle, gripping jaws having their inner ends pivoted in the sockets and extending in front of the frame, and a pedal rigidly mounted on the axle for controlling the position of said jaws.

3. A hand truck comprising a frame, wheels thereon, an axle for the wheels rotatably mounted on the frame, gripping jaws mounted on the extended ends of the axle, outside the wheels, a pedal rigidly mounted on the axle for controlling the position of said jaws, and hand-operated means connected to said jaws forward of their connection with the axle, to adjust the positions of the jaws in relation to each other.

4. A hand truck comprising a frame, an axle rotatably mounted in the frame, wheels loosely mounted on the axle, a pedal rigidly mounted on the axle, gripping jaws connected to the ends of the axle and held from upward movement by said pedal, and means independent of said pedal and connected to said jaws in advance of their connection with the ends of the axle, to adjust the positions of the jaws toward or from each other.

5. A hand truck comprising a frame, an axle rotatably mounted in the frame, wheels loosely mounted on the axle, a pedal rigidly mounted on the axle, gripping jaws connected to the ends of the axle and held from movement by said pedal, and a longitudinally movable bar mounted on the frame, means for connecting the bar to the two jaws in advance of their connection with the ends of the axle.

6. A hand truck comprising a frame, an axle rotatably mounted in the frame, wheels loosely mounted on the axle, a pedal rigidly mounted on the axle, gripping jaws connect-

ed to the ends of the axle and held from movement by said pedal, a longitudinally movable bar mounted on the frame, means for connecting the bar to the two jaws in
 5 advance of their connection with the ends of the axle, a latch mechanism for holding the bar from movement, and means for controlling said latch mechanism.

7. A hand truck comprising a frame, an
 10 axle rotatably mounted in the frame, wheels loosely mounted on the axle, a pedal rigidly mounted on the axle, gripping jaws connected to the ends of the axle and held from movement by said pedal, and a spring-actuated push rod mounted on the frame and
 15 connected to said pedal.

8. A hand truck comprising a frame, an axle rotatably mounted in the frame, wheels loosely mounted on the axle, a pedal rigidly
 20 mounted on the axle, gripping jaws connected to the ends of the axle and held from movement by said pedal, a longitudinally movable bar mounted on the frame, means for connecting the bar to the two jaws in
 25 advance of their connection with the ends of the axle, a second longitudinally movable bar slidable on the frame, pawl and ratchet connections between said bars, a spring for the second-named bar, and means for operating the same to disconnect said pawl and
 30 ratchet connections.

9. A hand truck comprising a frame, an axle rotatably mounted in the frame, wheels
 35 loosely mounted on the axle, a pedal rigidly mounted on the axle, gripping jaws connected to the ends of the axle and held from movement by said pedal, a longitudinally movable bar mounted on said frame, rods connecting said bar with the jaws in
 40 advance of their connection with said axle, and means for controlling the movement of said bar to effect the adjustment of said jaws.

10. A hand truck comprising a frame, an axle rotatably mounted on the frame, spaced
 45 wheels loosely mounted on the axle, opposed gripping jaws hinged to the ends of the axle and adapted to partake of the rotary movement therewith, a longitudinally slidable bar mounted in the frame, latch mechanism for holding the bar against sliding,
 50 links connecting the hinged jaws to the slidable bar, and means for holding the axle against rotation when the truck frame is tilted rearwardly to cause the jaws to grip
 55 a load.

11. A hand truck comprising a frame having rearwardly extending brackets at its lower ends, an axle rotatably mounted in the brackets, wheels loosely mounted on the
 60 axle within the brackets, gripping jaws carried by the ends of the axle and extending around the outside of the frame and bent inwardly toward each other, said jaws being hinged to swing transversely of the
 65 truck frame and mounted to partake of the

rotary movement of the axle, an adjustable bar mounted in the frame, foot-controlled means for holding the bar in adjustment, links connecting the bar to the jaws, and a
 70 foot pedal mounted on the axle for preventing rotation of the latter when the truck frame is tilted rearwardly to cause the front active ends of the jaws to approach each other.

12. A hand truck comprising a frame, an
 75 axle offset from one end thereof and rotatably mounted thereon, wheels loosely mounted on said axle, sockets rigidly secured to the ends of the axle, gripping jaws having their rear ends mounted on pivots transversely of the axle and having their forward
 80 ends bent toward each other in advance of the truck frame, a hand-operated, longitudinally slidable bar mounted in the frame, oppositely disposed, outwardly extending
 85 links connecting the lower end of said bar to intermediate points of the jaws, latching means for holding the bar in adjusted position and adapted to be depressed by foot to permit the slidable bar to drop and the
 90 jaws to separate and release their load.

13. A hand truck having a frame, an axle rotatably mounted thereon, wheels mounted free to rotate independently of the axle, elongated gripping jaws hingedly mounted
 95 at the ends of the axle to be held depressed thereby when the truck is upright to receive a load, a foot pedal secured to the axle to hold the same from rocking and the jaws in depressed position while the truck frame is
 100 tilted rearwardly, and links connecting the jaws to an adjustable pivot pin on the truck to cause the active ends of the jaws in advance of the truck frame to sweep the floor towards each other and engage the load.
 105

14. A hand truck having a frame provided at its lower end with a rotatably
 110 mounted axle offset in rear thereof, wheels mounted on the axle to rotate independently thereof, gripping jaws carried by the ends of the axle and extending to the front of the truck frame and adapted to be swung up or down by relative rotary movement of the axle and to swing inwardly or outwardly, a
 115 foot pedal mounted on the axle to prevent the same from rotating and to hold the jaws to the floor when the frame is tilted rearwardly, an adjustable bar having teeth and a pivot pin and mounted for longitudinal adjustment in the frame, and links connecting the jaws to the pivot pin to pull the
 120 jaws toward each other during said tilting movement.

15. A hand truck having a frame provided at its lower end with a rotatably
 125 mounted axle offset in rear thereof, wheels mounted on the axle to rotate independently thereof, gripping jaws carried by the ends of the axle and extending to the front of the truck frame and adapted to be swung
 130

up or down by relative rotary movement of the axle and to swing inwardly or outwardly, a foot pedal mounted on the axle to prevent the same from rotating and to hold the jaws to the floor when the frame is tilted rearwardly, an adjustable bar having teeth and a pivot pin and mounted for longitudinal adjustment in the frame, links connecting the jaws to the pivot pin to pull the jaws toward each other during said tilting movement, a pivoted latch engaging the teeth to hold the bar in adjustment, and a longitudinal, spring-pressed rod mounted in the frame and connected to the latch, said rod having a foot piece to disengage said latch to permit the jaws to be adjusted to a maximum or a minimum size load.

16. A hand truck having a frame provided at its lower end with a rotatably mounted axle offset in rear thereof, wheels mounted on the axle to rotate independently thereof, gripping jaws carried by the ends of the axle and extending to the front of the truck frame and adapted to be swung up or down by relative rotary movement of the axle and to swing inwardly or outwardly, a foot pedal mounted on the axle to prevent the same from rotating and to hold the jaws to the floor when the frame is tilted rearwardly, an adjustable bar having teeth and a pivot pin and mounted for longitudinal adjustment in the frame, and links con-

necting the jaws to the pivot pin to pull the jaws toward each other during said tilting movement, and a longitudinal, spring-pressed rod connected to said foot pedal and mounted in the frame to maintain the pedal in normal position.

17. A hand truck having a frame carrying offset bearing brackets at the lower end, an axle journaled in the bearings of said brackets, wheels loosely mounted on the axle, hinge members secured to the ends of the axle to rotate therewith, angular gripping jaws pivoted to the hinge members and extending to the front of the frame, a foot pedal secured to the shaft and adapted when held by the foot to hold the jaws to the floor, when the frame is tilted to the rear, a spring-pressed rod mounted in the frame and connected to the pedal to normally lift the jaws when the frame is tilted, a central, longitudinal, adjustable bar mounted in the frame, links connecting the jaws to the bar above the axle to pull the active ends of the jaws inwardly to grip a load when the pedal is held and the frame is tilted, and latching means for holding the central bar in adjusted position and adapted to be depressed to release the load.

In testimony that I claim the foregoing as my own I have hereto affixed my signature.

EDGAR J. BRYAN.