Nov. 4, 1952 W. D. WARNER 2,616,664

LIFTING DEVICE

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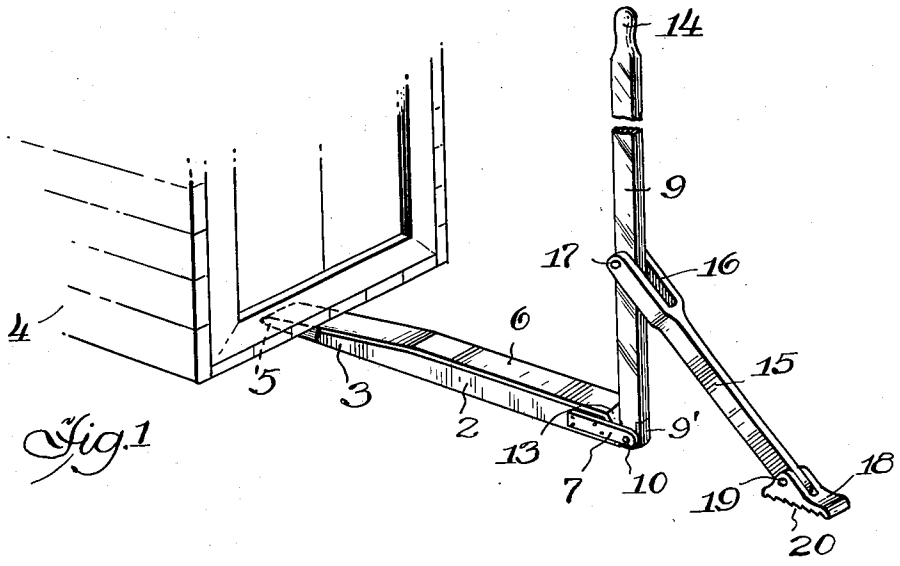

Fig. 1

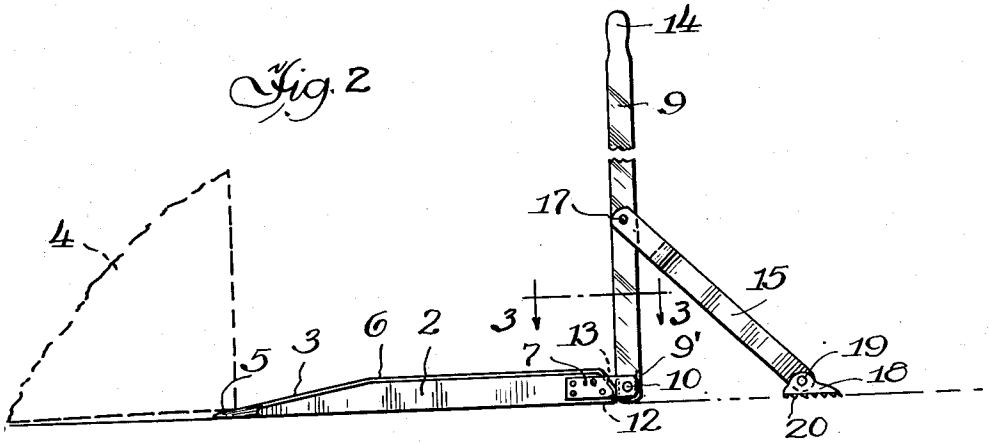

Fig. 2

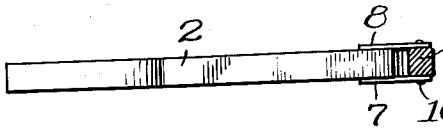

Fig. 3

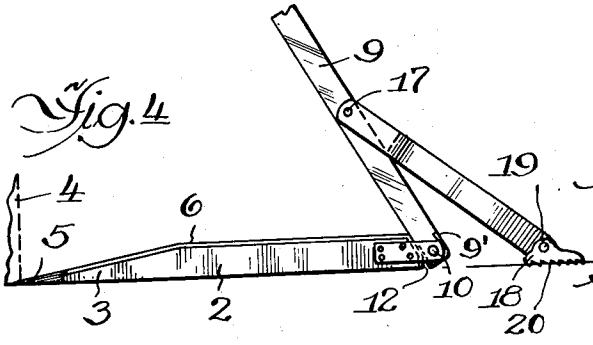

Fig. 4

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LIFTING DEVICE

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8 Claims. (Cl. 254—113)

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This invention relates to a mechanical lifting device or hoist and more particularly to one such device for raising one end of a heavy crate or box from a floor or other flat surface.

Frequently crates or boxes too heavy to be moved except on a hand truck are placed on a floor until they are moved to their ultimate destination. It is extremely difficult if at times not impossible for one man to lift one end of such a box so that a hand truck or dolly may be inserted under the raised edge. The lifting device of the present invention described in the following specification enables the operator to raise one end of a heavy box and hold it in position so that a hand truck or dolly may be positioned under the raised end. It is possible to use two such lifting devices, at opposite edges of one end of the box, either singly or ganged together by any suitable members, to raise both ends of the box to be moved.

The front end of the lifting device of the present invention is wedge-shaped so that the end of the box is raised as the front end of the lifting device is forced under the box.

The lifting device of my invention comprises very few parts, is inexpensive to manufacture, simple to operate, and is exceedingly durable in use. The leverage made possible with my lifting device enables the user to lift heavy boxes with comparatively little effort. By using the lifting device of the present invention, a person can handle and move a box that might otherwise require the labor of two or three men unless other, more expensive equipment was available, and without damage to the box.

The structure by which the above advantages are attained will be described in the following specification, taken in conjunction with the accompanying drawings showing a preferred embodiment of my invention, in which:

Figure 1 is a perspective view of the lifting device having its front end positioned under one end of a box to lift the end from the floor;

Fig. 2 is a side elevation of the lifting device in the position shown in Fig. 1;

Fig. 3 is a cross sectional view taken along the line 3—3 of Fig. 2; and

Fig. 4 is a fragmentary side elevation showing the lifting device with its front end in position to be forced under one end of the box.

In the drawings, the reference numeral 2 indicates a substantially horizontal member which constitutes the base of the lifting device. The forward end of the base member is wedge-shaped, as indicated at 3, to facilitate positioning it under one end of a heavy box 4 or similar object without the necessity of previously lifting such end manually. The extreme forward edge of base member 2, preferably formed of steel, is sharply pointed, as indicated at 5, to facilitate positioning it under the end of the box to be tilted. The base member itself may be formed of steel, but is preferably formed of wood and is provided with a steel cap strip 6 to prevent the wood from receiving excessive wear. Preferably the steel strip extends around the rear edge 13 of the base member.

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A pair of metal plates 7 and 8 is secured to the opposite sides of base member 2 adjacent the rear edge, in any suitable manner. Plates 7 and 8 project beyond the rear edge of the base member, and an upstanding lever 9 fitting between the extended portions of the plates is pivoted thereto, as indicated at 10, to move in a vertical plane towards and away from the base member.

The lower portion of rear edge of base member 2 is vertical, as indicated at 12, to form a stop against which the lower edge of lever 9 abuts when the lever is in its vertical position (as shown in Figs. 1 and 2), to prevent movement of the lever to the right (as seen in Fig. 2) of its vertical position. The upper portion of the rear edge of base member 2 is tapered, as indicated at 13, to permit a limited forward movement of lever 9. The portion of lever 9 which abuts the rear edge of the base member is preferably provided with a steel cap 9' to provide a metal to metal contact with the edges 12 and 13. The upper portion of lever 9 is preferably shaped to form a handle 14.

A link 15 is provided with a bifurcated end 16 adapted to embrace lever 9. Link 15 is arranged to extend to the right of lever 9, as seen in Fig. 2, and the bifurcated end is pivoted to the lever at a point 17 spaced a suitable distance from its lower edge. The fulcrum point to a large extent determines the leverage, as is known; however, the handle must belong enough to force the forward edge of the base member under the end of the box without too much force. The opposite end of link 15 has a claw or foot portion 18 pivoted thereto, as indicated at 19. The claw is suitably grooved, or provided with teeth 20, to provide traction so that it will not slip when the lifting device is operated. The length of link 15 is sufficient to make its claw or foot portion engage the floor surface at a point spaced far enough to the rear of pivot point 17 to provide stable support for pivot 17 when lever 9 is moved rearwardly. The stationary engagement of the claw or foot portion 18 of link 15 with the floor sur-

face causes the link to act as a fixed support for pivot point 17 so that it becomes a fulcrum for lever 9 when the lever is moved rearwardly. If the lifting device is to be used on a wood floor the claw may be provided with a rubber base, but if the floor surface does not require protection the teeth are preferably formed integral with the claw. This claw is preferably made out of steel.

In operation, the lifting device is positioned with its forward edge 5 against the end of box 4 with lever 9 in its forward position and claw 18 flat against the floor, as shown in Fig. 4. Lever 9 is then pulled rearwardly and teeth 20 prevent rearward movement of the claw, thereby forcing the base member forwardly. The inclined surface of the forward edge of the base member moves under the end of box 4 and lifts it upwardly as the base member is forced forwardly beneath the box. When lever 9 reaches its vertical position the end of box 4 is high enough to permit entrance of the edge of a hand truck or other device desired to be inserted beneath the box. Rearward movement of lever 9 is stopped by edge portion 12 of the base when the lever reaches its vertical position. It is desirable to limit the rearward movement of the lever to its most vertical position because movement of the lever beyond this point would tend to lift the rear edge of the base member.

Although I have described a preferred embodiment of the invention in considerable detail, it will be understood that the description is illustrative, rather than restrictive, as many details of construction may be modified or changed without departing from the spirit or scope of the invention. Accordingly, I do not desire to be limited to the exact structure described.

I claim:

1. A lifting device comprising a base member, a lever pivoted at one end to the rear end of said base member to move in a vertical plane towards and away from said base member, a link pivoted at one end to said lever intermediate its ends, and a foot portion secured to the free end of said link, said foot portion engaging the floor surface to prevent rearward movement of the free end of said link when said lever is moved rearwardly about its pivot, thereby forcing the base member of said lifting device forwardly.

2. A lifting device comprising a base member, a lever pivoted at one end to the rear end of said base member to move in a vertical plane towards and away from said base member, a link pivoted at one end to said lever intermediate its ends, and a foot portion pivotally secured to the free end of said link, said foot portion engaging the floor surface to prevent rearward movement of the free end of said link when said lever is moved rearwardly about its pivot, thereby forcing the base member of said lifting device forwardly.

3. A lifting device comprising a base member, an upstanding lever pivoted to said base member to move in a vertical plane towards and away from said base member, and a link pivoted at one end to said lever and extending rearwardly thereof, the free end of said link engaging the floor surface to prevent slippage of said link when said lever is moved rearwardly.

4. A lifting device comprising a base member having a wedge-shaped forward edge, an upstanding lever pivoted at its bottom to the rear edge of said base member to move in a vertical plane towards and away from said base member, and a support pivotally secured to said lever and engaging the floor surface to force said base member forwardly as said lever is moved rearwardly about its pivot.

5. A lifting device comprising a base member, an upstanding lever pivoted to the rear edge of said base member to move in a vertical plane towards and away from said base member, the lower portion of the rear edge of said base member engaging the lever to limit the pivotal movement of said lever in its rearward direction and a support pivotally secured to said lever and extending rearwardly thereof, said support fixedly engaging the floor surface to force said base member forwardly when said lever is moved rearwardly about its pivot.

6. A lifting device comprising a base member, an upstanding lever pivoted to the rear edge of said base member to move in a vertical plane towards and away from said base member, the rear edge of said base member engaging the lever to limit the pivotal movement of said lever in its forward direction, and a support pivotally secured to said lever and extending rearwardly thereof, said support fixedly engaging the floor surface to force said base member forwardly when said lever is moved rearwardly about its pivot.

7. A lifting device comprising a base member an upstanding lever pivoted to the rear edge of said base member to move in a vertical plane towards and away from said base member, the upper portion of the rear edge of said base member being tapered to permit limited pivotal movement of said lever in a forward direction, and a support pivotally secured to said lever and extending rearwardly thereof, said support fixedly engaging the floor surface to force said base member forwardly when said lever is moved rearwardly about its pivot.

8. A lifting device comprising a base member, an upstanding lever pivoted to the rear edge of said base member to move in a vertical plane towards and away from said base member, the upper portion of the rear edge of said base member being tapered to permit limited pivotal movement of said lever in a forward direction, a link pivoted at one end to said lever intermediate its ends, and a foot portion pivotally secured to the free end of said link, said foot portion engaging the floor surface to prevent rearward movement of the free end of said link when said lever is moved rearwardly about its pivot, thereby forcing the base member of said lifting device forwardly.

WILBUR DEWEY WARNER.

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