Aug. 8, 1950 W. J. WALLACE, JR 2,517,813

HOIST

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Fig. 1

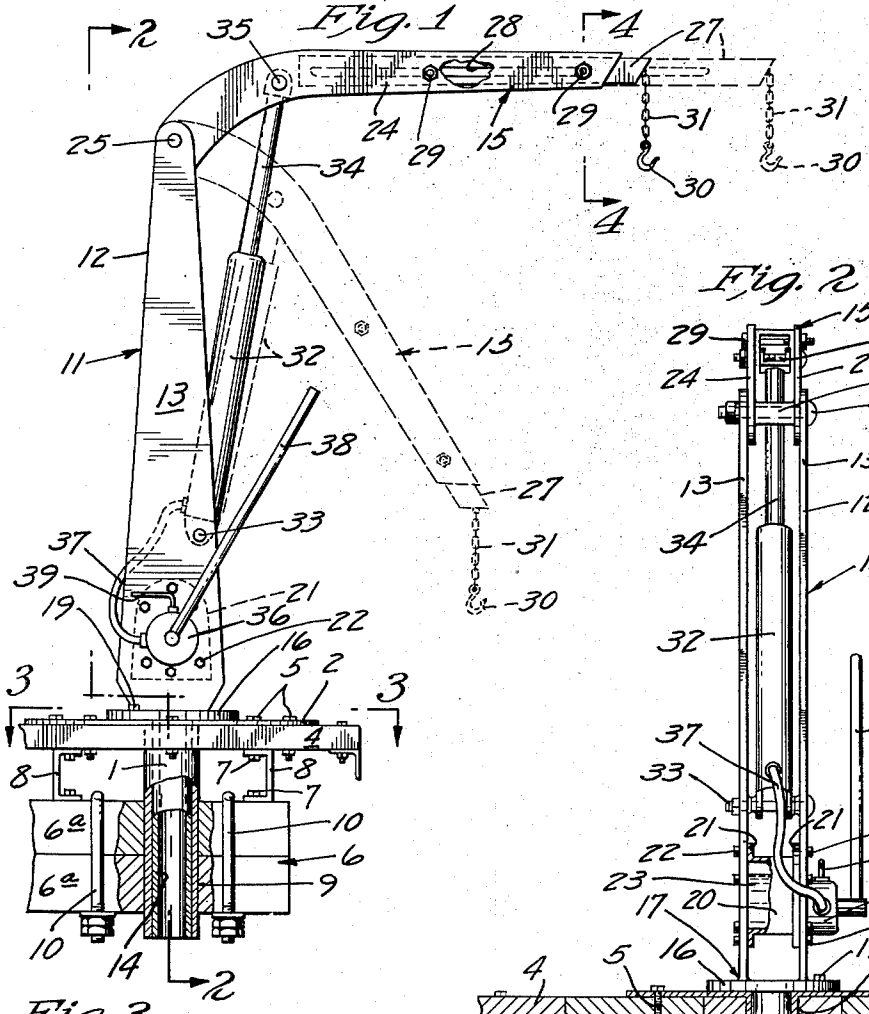

Fig. 2

Fig. 3

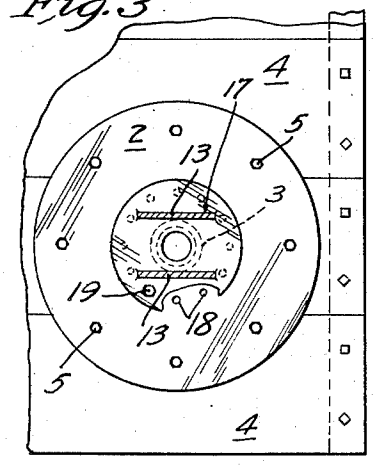

Fig. 4

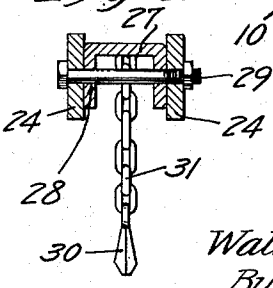

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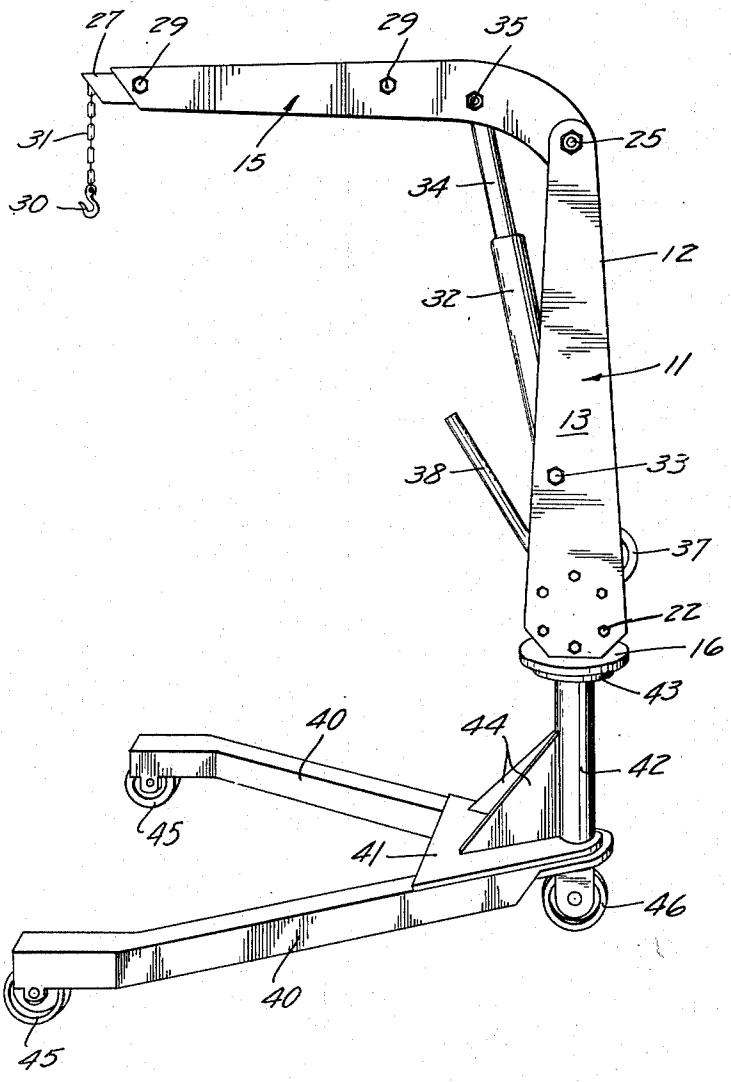
Fig. 5



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UNITED STATES PATENT OFFICE

2,517,813

HOIST

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3 Claims. (Cl. 212—35)

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My invention relates to lifting hoists and, more particularly, to portable hydraulic hoists.

More specifically, my invention relates to relatively light-weight lifting hoists such as are frequently used on loading platforms or the back ends of delivery trucks and the like. Heretofore, it has been common practice to provide a truck with a permanent lifting hoist and to have a separate lifting hoist on the loading platform of the warehouse from which the loading truck operates. The primary object of my invention is to provide a lifting hoist which may be readily lifted by the operator from one base to another. For instance, one such a base could be permanently installed in a truck and another on a shipping platform, and still another on a hand truck or the like for movements about a factory or warehouse. In accordance with my invention, one hoist could be operated from all three bases, thereby effecting a considerable saving.

Another object of my invention is the provision of a hydraulic lifting hoist having the above characteristics, which is relatively light in weight so as to readily facilitate manual carriage thereof from one base of operation to another, but which is also rugged in construction and durable in use.

A still further object of my invention is the provision of a device of the above type which has a minimum of working parts and which is relatively inexpensive to manufacture and easy to operate.

Still further objects and advantages of my invention will become apparent from the following detailed specification, appended claims, and attached drawings.

Referring to the drawings, wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view at side elevation of my novel device, some parts being broken away and other parts being shown in section;

Fig. 2 is a view, partly in end elevation and partly in section, taken on the line 2—2 of Fig. 1;

Fig. 3 is a view in section, taken on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged section, taken on the line 4—4 of Fig. 1; and

Fig. 5 is a view in perspective showing my novel hoist mounted on a mobile frame or hand truck.

Referring with greater particularity to Figs. 1–4 inclusive of the drawings, I provide a tubular well-forming element 1 which has an open upper end and which terminates adjacent said open upper end in a radially-projecting bearing skirt 2 which is preferably formed integrally with the

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member 1. As shown, the well-forming member 1 is adapted to project downwardly through an opening 3 in the floor 4 of a truck or the like, whereas the bearing skirt 2 is adapted to be rigidly secured to said floor 4 by means of a plurality of circumferentially-spaced nut-equipped anchoring bolts 5. The lower end of the well-forming element 1 is braced against lateral movements by any well-known means such as a beam 6 rigidly secured to the underside of the floor 4 by anchoring bolts 7 which project through U-shaped angle irons 8. As shown, the element 1 is tightly received within an opening 9 in the central portion of said beam 6. Beam 6 may take any form but, as shown, is comprised of a pair of planks or the like 6a which are rigidly secured together by means of nut-equipped tie members 10.

At this point, it should be pointed out that any given number of well-forming members 1 and cooperating bearing skirts 2 may be installed in various floors 4, if desired, depending upon where the objects to be lifted are located. Adapted to cooperate with the well-forming elements 1 and cooperating bearing skirts 2, I provide a novel hoist, identified in its entirety by the numeral 11, and comprising a mast 12 made up of a pair of laterally-spaced members 13, a spindle 14, and a boom 15. As shown, spindle 14 is adapted to be telescopically and rotatably received within the well-forming element 1 and preferably is formed integrally with and projects downwardly from an enlarged base 16 in axial alignment with the mast 12. As shown, base member 16 is in the nature of an enlarged plate adapted to overlie the skirt member 2 and is rigidly secured to the lower ends of mast-forming members 13 by welding or the like, as indicated at 17. As shown, particularly by Figs. 2 and 3, the skirt element 2 is provided with a plurality of circumferentially-spaced openings 18 underlying the base 16. The base 16 is provided with a locking bolt 19, which is receivable within an opening not shown in the base 16 but which opening is registrable with the several openings 18 in the skirt 2 upon rotation of same. In this manner, the base 16 may be locked against rotation with respect to the skirt 2 in approximately any desired position.

In spaced relation to the base member 16 and extending between the mast-forming members 13 is a tubular member 20 which is provided with outturned anchoring flanges 21 at its opposite ends. Nut-equipped bolts 22 extend through the members 13 and the flanges 21 and rigidly secure said member 20 to the inner surfaces of the mem-

bers 13, whereby to provide a closed fluid reservoir 23.

Boom 15, preferably and as shown, is likewise made up of a pair of laterally-spaced members 24, which are pivotally secured to the upper ends of the mast-forming members 13 by means of a pivot pin 25 which projects therethrough. A tubular sleeve 26 maintains both the upper ends of the elements 13 and the inner ends of the members 24 in spaced relation.

Boom 15 is preferably longitudinally extensible and retractible and, to this end, I provide an inverted U-shaped member 27 which is provided with longitudinally-extended aligned slots 28 on each side which are adapted to slidably receive transverse supporting bolts 29 which project through the members 24. At its projected outer end, the member 27 is provided with a hook 30 preferably secured thereto by means of a chain or the like 31.

A hydraulic cylinder 32 is pivotally secured to the intermediate portion of the mast-forming members 13 by means of a pin 33. A piston, not shown, operates within the cylinder 32 and is provided with a connecting rod 34 which projects outwardly therefrom and is pivotally secured, as indicated at 35, intermediate the boom-forming members 24. A conventional hydraulic pump 36 is secured by suitable means to the outer surface of one of said mast-forming members 13 laterally outwardly from the tubular reservoir-forming member 20 and is connected to the reservoir 23 through said member 13 by a passage not shown. A flexible conduit 37 connects the pump 36 with the lower end of the hydraulic cylinder 32. Pump 36, preferably and as shown, is provided with an operating handle 38 for pumping fluid from the reservoir 23 into the lower end of the hydraulic cylinder 32 and with a valve, not shown but operated by means of a handle 39, for permitting return of the fluid within the cylinder 32 to the reservoir 23.

From the above, it should be clear that a hydraulic hoist built in accordance with my novel combination and arrangement of parts is sufficiently compact and light in weight to permit a single operator to lift the connected boom 15, mast 12, spindle 14, and associated parts from one well 1 and be moved to another thereof at a different location. It is important to note that, by virtue of the novel combination and arrangement of parts above-described, the above advantage may be achieved without sacrifice of any of the weight-lifting ability of the hoist. Fig. 5 illustrates further the adaptability of my novel hoist for use on a hand truck or the like. The hoist of Fig. 5 is identical in all respects to that of Figs. 1–4 inclusive and is identified by like characters. The hand truck or mobile base frame of Fig. 5 comprises a pair of converging base frame members 40 reinforced at their inner ends by a gusset plate 41. A supporting tube or well

42 extends upwardly from the gusset plate 41 and is provided at its other end with a circumferential flange 43. The supporting tube 42 is supported in its upright position by a pair of reinforcing ribs 44 welded thereto and to the gusset plate 41. Mobility is imparted to the base frame by supporting wheels 45 journalled in the free end portions of the members 40 and a caster wheel 46 located below the supporting tube 42. With this arrangement, a load may be picked up from any location in a shop or warehouse and readily moved manually to a desired point of delivery.

My invention has been thoroughly tested and found to be highly successful for the accomplishment of the above objects; and, while I have shown a commercial form of my device, in compliance with section 4888 of the United States Statutes, it should be clear that the same is capable of limited modification without departure from the spirit and scope of the appended claims.

What I claim is:

1. A lifting hoist comprising a tubular well-forming element, said element terminating at its upper end in a radially-projecting bearing skirt, a supporting mast, a boom pivotally secured to the upper portion of said mast, said mast including a pair of laterally-spaced members, a hydraulic cylinder pivotally secured at its lower end to the intermediate portion of said mast-forming members, a connecting rod-equipped piston in said cylinder, said connection rod being pivotally secured to the intermediate portion of said boom, said mast terminating at its lower end in a plate-like base, a liquid reservoir between said mast-forming members intermediate the lower end of said cylinder and said base, a hydraulic pump secured to the outer surface of one of said mast-forming members laterally outwardly from said reservoir and connected to said reservoir through said mast-forming members, conduit means leading from said pump to said cylinder, and a spindle projecting radially downwardly from the intermediate portion of said base in axial alignment with said mast, said spindle adapted to make telescopic engagement with said well-forming element and to be lifted therefrom.

2. The structure defined in claim 1 in which said reservoir comprises an open-ended tubular member which is rigidly secured at its opposite ends one each to the inner surface of one of said mast-forming members, said mast-forming members providing the end walls of said reservoir.

3. The structure defined in claim 1 in which said telescoping spindle is mounted for rotation in said well-forming member, and in further combination with means on said base and skirt members for adjustably locking one thereof with respect to the other thereof.

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No references cited.