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H. C. BECKWITH

HOISTING MACHINE

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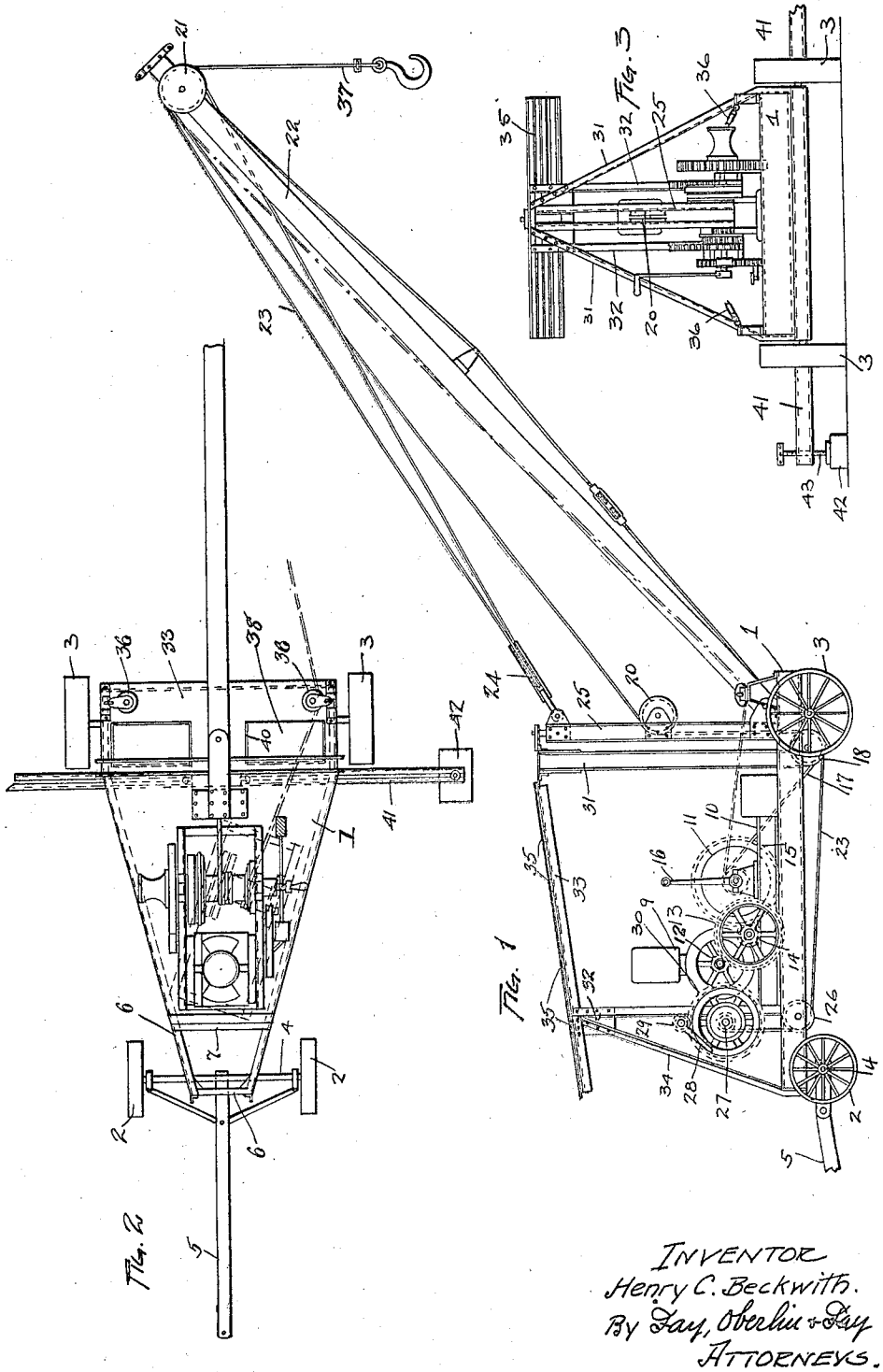


Fig. 1



Fig. 2



Fig. 3

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# UNITED STATES PATENT OFFICE.

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## HOISTING MACHINE.

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*To all whom it may concern:*

Be it known that I, HENRY C. BECKWITH, a citizen of the United States, and a resident of Ravenna, county of Portage, and State of Ohio, have invented a new and useful Improvement in Hoisting Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention, relating, as indicated, to a hoisting mechanism, is more particularly directed to the provision of an improved small light portable hoist which may be conveniently used for loading and unloading material in bulk, and for similar purposes. A further object of the invention is the provision of such a machine which will not only be extremely light and compact, but shall be simple in its construction and convenient to operate by a few workmen. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of the various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Fig. 1 is a side elevation of my improved machine; Fig. 2 is a plan view of the same taken from the point beneath the canopy or cover; and Fig. 3 is a rear view of the same.

The operating mechanism of my improved machine is mounted on a suitable framework or platform 1, which is in turn supported on front and rear wheels 2 and 3 respectively, the front wheels being mounted on a single axis 4, which is provided with a tongue or handle 5 for pulling the machine from place to place. No power means are shown for driving or moving the machine, although such may be provided if desired, as it is intended to be capable of movement by hand, which can be readily done because of its light weight and small size.

The platform, which is shown best in Fig. 2, will be seen to taper considerably from the rear end of the machine toward the front. The platform comprises channel members 6, which are bolted or riveted together with several transverse braces 7 connecting them and serving as supports for two longitudinal channel members 8, upon which may be mounted the hoisting mechanism and winding drum when in their normal position. The entire framework is covered by a heavy planking of sufficient size and strength to support the hoisting engine wherever it may be placed on the platform, although its normal position is shown in Figs. 1 and 2, in which position the hoisting engine and winding drum extend longitudinally of the platform and are mounted closely adjacent to the forward or narrower end thereof.

The engine 9 shown in the drawings, is intended to represent merely one type which may be used, and is, in this case, a single-cylinder gasoline engine, although it will be understood that other devices, such as electric motors, steam engines and the like, may be used in place of the engine here shown. This engine 9 is mounted upon a frame 10, which also carries a winding drum 11, which may be operated from the engine through gears 12, 13, 14 and 15, while a friction clutch controlled by a lever 16 is provided for connecting the winding drum to the shaft operated by the gear 15. From the winding drum a hoisting cable 17 extends under a pulley block 18, mounted beneath the platform on the frame, and from there over a second pulley 20, to a pulley 21, carried on the end of a pivoted boom 22. In a machine of this size, constructed for the purpose for which this machine is designed, it is unnecessary to provide power operated means for raising or lowering the boom, and I provide hand-operated means for this purpose, which consist of a cable 23 fixed to the end of the boom and then passing around a sheave 24 attached to vertical members 25, fixed on the platform, and then back over a second sheave disposed in alignment with the sheave 21, and from there over other sheaves disposed in alignment with the sheaves 20 and 18, respectively. This cable 23 is then carried around a sheave 26 and from there to a winding drum 27, which may be operated by a hand lever 28, and gears 29 and 30, a sufficient reduction being secured through the use of gears, of about the size shown, to allow of the boom being hoisted readily by hand.

The vertical member 25, which carries the sheave 24 is pivotally mounted in the platform 1 and in a member extending forwardly from other vertical members 31 mounted at the rear end of the platform, as may be seen in Fig. 1. It is customary in such machines to then support these forward vertical members by braces which extend downwardly at an angle from the tops of the members, but this makes an extremely awkward construction, particularly around the center of the machine as these bracing members are in the way of the operator and are very inconvenient. I have avoided this construction by the use of a second vertical framework or member 32 mounted at the opposite end of the platform, that is, at the forward end, and extending to a level slightly below that of the top of the members 31. These members 31 and 32 are then joined by rigid connected members 33, of which there may be two or more, while the member 32 is securely braced by means of inclined supports 34, extending from its top to the forward end of the platform. The rigid connections 33 serve still another purpose as they afford a convenient support for transversely extending rods or plates 35, on which may be mounted plates of metal or other material which serve as a canopy or cover for the hoisting engine and winding mechanism and for the operator.

For work to the side of the machine, I provide means which permit of the engine base or frame 10, with the engine and winding drum thereon, to be moved bodily into a position at an angle to the center line of the machine and in line with either one of two sheaves 36, which are mounted at the rear corners of the platform 1. This resetting of the engine and other mechanism can be readily accomplished as these parts are not of extreme weight and can be shifted sufficiently to be bolted directly through the planking of the platform in either of these two positions, suitable bolt holes being provided in the planking as indicated, and the engine and frame being removably bolted in its normal position so that it can be freed and reset with but little trouble when necessary. Assuming now that the hoisting engine and winding drum has been swung into alignment with the line passing through the normal center of the engine and one of the sheaves 36, then if a load is attached to the depending end 37 of the cable 17 the weight of this load will tend to swing the boom from its normal central longitudinal position over toward one corner of the frame until the cable 17 lies in the same plane throughout its entire length. At this point the load can be released from this cable and the boom can then be swung back by hand to a position over the material to be loaded, and while this control is not quite as accurate as is required in many kinds of work, it has been found to be sufficient for those classes of work, for which a light portable machine of this type is particularly designed.

The weight of the present machine is kept low, and as the rear wheels 3 are spaced well apart the machine is normally very stable and its stability can be increased by the placing of removable counterweights 38 on either or both of the two sides of the rear portion 39 of the platform. These counterweights 38 may of course be attached to the platform if desired, but it will ordinarily be sufficient to merely set them in recesses 40 provided for that purpose. Additional stability is given to the machine by the use of pivoted outriggers, consisting of members 41, carrying adjustable mounted blocks 42 at their outer ends, which may be dropped onto the ground and adjusted by screws 43. When not in use these outriggers may be swung forwardly into the machine and lie entirely between the narrower tread of the front wheels of the vehicle, and out of the way so that they will not strike obstructions as the machine is moved from place to place.

It will be understood that while the present machine is intended to be propelled from place to place by hand, and while the operation of the hoist for the boom is also constructed for convenient hand operation, power means may very readily be applied as a part of the machine for both propulsion and hoisting of the boom, but as such means are well known in this art and can be readily added it is thought unnecessary to show or describe them in the present application.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a machine of the character described, the combination of a triangular platform bearing hoisting mechanism and having recesses formed therein at the opposite sides of the broader end, and counterweights adapted to fit and be removably mounted in said recesses at either side of the laterally broader end of the platform.

2. In a machine of the character described, the combination of a platform of much greater width at one end than at the other, and having recesses at opposite sides of said wider end a hoisting boom mounted at the broader end of said platform, hoisting mechanism mounted at the narrower end of said platform, and counterweights adapted

to be removably mounted in said recesses at either side of the broader end of said platform.

3. In a machine of the character described, the combination of a triangular platform bearing hoisting mechanism, a boom mounted on the wider end of said platform and operable by said hoisting mechanism, a vertical frame mounted upon the wider end of said platform, a pivoted member mounted in said frame and bearing said boom and serving as a support for a boom-raising cable, means to support said vertical frame, including vertical members mounted upon the opposite narrower end of the platform, rigid converging members connecting the upper ends of said vertical frame and said vertical members, and supporting and bracing members connecting the upper ends of said vertical members with the platform at the narrower end thereof.

4. In a machine of the character described, the combination of a triangular platform bearing hoisting mechanism, a boom mounted on the wider end of said platform and operable by said hoisting mechanism, a vertical frame mounted upon the wider end of said platform, a pivoted member mounted in said frame and carrying said boom and serving as a support for a boom-raising cable, means to support said vertical frame, including vertical members mounted upon the opposite narrower end of the platform, rigid converging members connecting the upper ends of said vertical frame and said vertical members, and supporting and bracing members connecting the upper end of said vertical members with the platform at the narrower end thereof.

5. In a machine of the character described, the combination of a platform, a hoisting engine and winding drums and a supporting frame therefor independently and movably mounted on said platform, means adapted to allow of a re-setting of said engine and drums on said platform, a boom pivotally mounted on said platform and capable of swinging movements independent of the engine and winding drums, and means adapted to carry a winding cable from said drum to said boom in various positions of said engine and said drum.

Signed by me, this 2 day of August, 1918.

HENRY C. BECKWITH.