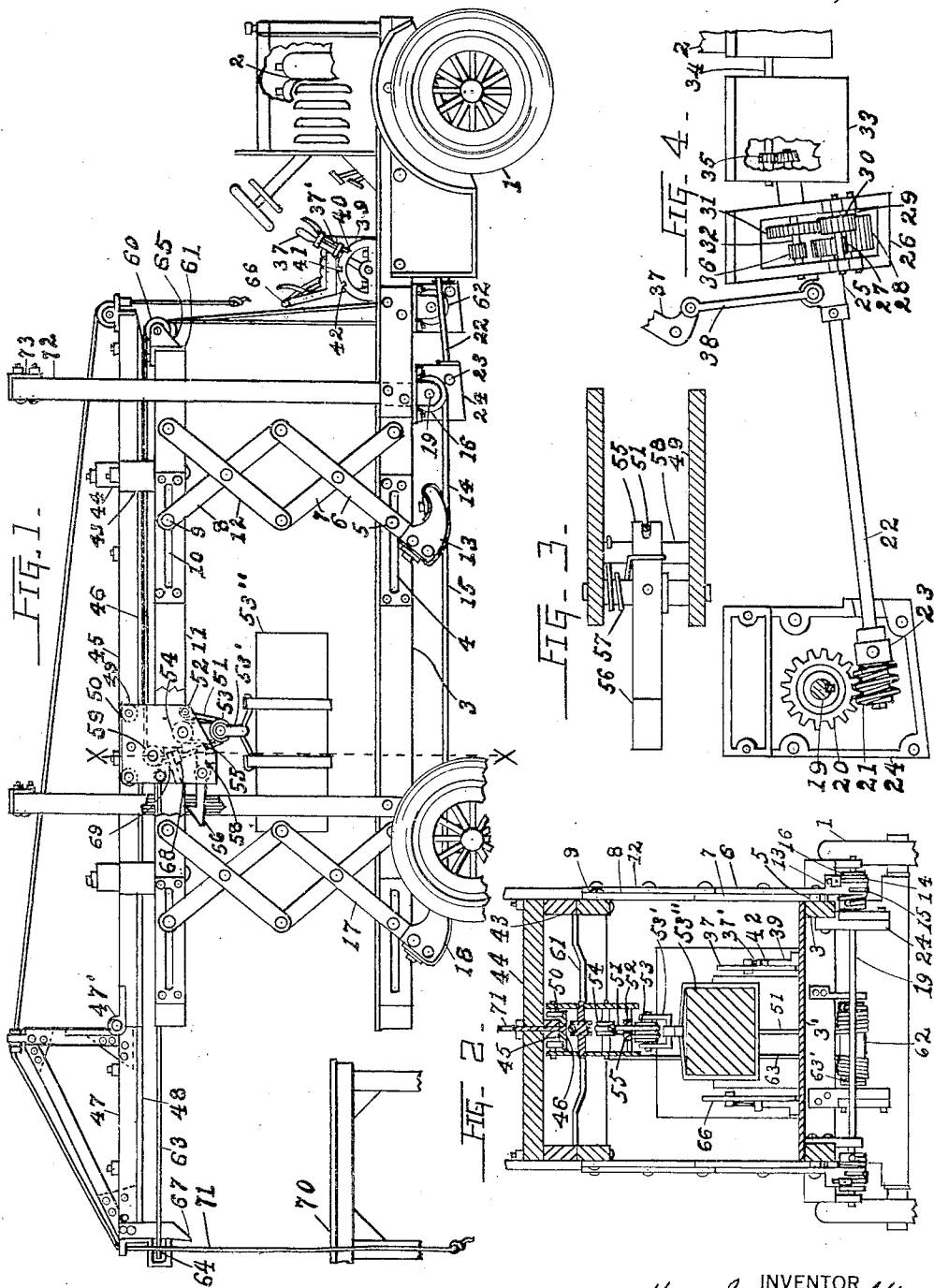


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HOISTING AND LOADING MECHANISM.
APPLICATION FILED AUG. 11, 1919.

1,337,667.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MARY JANE REYNOLDS, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Hoisting and Loading Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in hoisting and loading mechanisms, the objects of which are, first: to provide a simple, substantial and durable mechanism of this class, by the use of which a single operator can lift heavy and bulky articles from an elevated position or from the ground and deposit them on a vehicle, such as a motor truck, wagon and the like, second: to provide ready means whereby certain parts of the mechanism are so elevated and extended that articles of great bulk and weight can thereby be moved through a second story window of a building and be deposited on said vehicle, third, to so construct and arrange the parts of a mechanism of this class, that they can be lowered and folded into a comparatively small amount of space.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1 is a side view of the mechanism, as it appears when in use, certain parts being broken away. Fig. 2 is a transverse section on the line X X, seen in Fig. 1, looking toward the right, certain parts being broken away. Fig. 3 is an enlarged view in detail of the carrier holding hook, looking downward. Fig. 4 is an enlarged side view of one of the power transmitting mechanisms, the gear case cover being removed and certain parts being broken away.

Referring to Fig. 1, the running gears 1 are provided with the engine 2, for propelling said running gears. The two longitudinally disposed sills 3 are secured on said running gears.

The floor 3' is secured on said sills. Slots 4 are formed through said sills, in which slots the lazy tongs pivots 5 are slidably mounted.

Since all four of the sets of lazy tongs are alike in their construction and operation, but one set is described in detail.

One of said pivots is secured in the lower end portion of the lazy tongs member 6, which member crosses member 7 and is piv-

otally connected with center of the latter. The lower end of member 7 is pivotally connected with the sill 3, while its upper end is similarly connected with the lower end of member 8, the upper end of which is provided with pivot 9, which pivot is slidably mounted in slot 10, which is formed through the cap stringer 11. The upper end of the lazy tongs member 12 is pivotally connected with said stringer, extends downward therefrom and is similarly connected with member 8 at their centers. The lower end of member 12 is similarly connected with the upper end of member 7.

The cable holder 13 is secured on the lower end of member 7.

The periphery of said cable holder is channeled for the reception of the cables 14 and 15. The rear end of cable 14 is secured on the rear surface of said cable holder, while its front end portion extends therefrom, beneath said holder to the winding drum 16, on which the front end of said cable is secured and wound.

The rear set 17 of the lazy tongs, is similarly provided with the cable holder 18, on the rear surface of which the rear end of the cable 15 is secured. Said cable extends therefrom beneath the holders 18 and 13, with the front end of said cable secured on the upper surface of the forward portion of the last mentioned cable holder. A winding drum 16 is secured on each end of the rotatably mounted drum shaft 19, as seen in Fig. 2. The worm gear 20 (see Fig. 4.) is secured on said drum shaft. Said gear is in engagement with the worm 21, which is secured on the rear end of the worm shaft 22.

The rear end portion of said shaft is rotatably mounted in the bearing 23, which is oscillatably mounted in the gear case 24. The front end portion of said shaft is similarly mounted in the bearing 25, which is slidably mounted for vertical movement in the frame 26. Gear wheel 27 is secured on the front end of said shaft and is in engagement with pinion 28, which pinion is secured on the pinion shaft 29, and is driven by the intermediate gear 30, which latter gear is in engagement with the drive gear 31. Said drive gear is secured on the drive shaft 32, which shaft is rotatably mounted in said frame. The front end portion of said shaft extends into the transmission case, in which power is transmitted from the

engine shaft 34 to said drive shaft, by the gears 35.

Pinion 36 is secured on shaft 32, in such position that gear 27 can be lifted into engagement therewith.

Bearing 25 is rod connected with the lower end of the lever 37, by the connecting rod 38, as seen in Fig. 4. The lower end of said lever is L-shaped and is oscillatably mounted, on the latch segment 39, in which the notch 40 is formed. Said lever is provided with the latch and latch rod 37', the lower end of said rod being adapted to be moved into either one of the notches 41 and 42, from the notch 40, for detachably holding said lever in three respective positions, for controlling the rotations of the winding drum 16. The previously described parts, for brevity, will hereafter be termed cable winding means.

Referring to Figs. 1 and 2, blocks 43 are secured on the cap stringers 11, on which blocks the ends of the tie pieces 44 are secured. The longitudinally disposed girder 45 is secured on the centers of the under surfaces of said tie pieces, with the tram rail 46 secured on its under side, the edges of which extend beyond the edges of said girder. Said girder is provided with the girder extension 47, the front end of which is hinge connected with the rear end of said girder by hinge 47'.

The tram rail extension 48 is secured on the under surface of said girder extension. Said girders and the thereby carried tram rails are raised to any desired height, and are lowered by the action of the described lazy tongs, as hereinafter described.

The load carrier 49 is provided with wheels 50 which support said carrier and are thereby moved along and upon the extended edge portions of the tram rail extension 48 and the tram rail 46.

One end of cable 51 is secured to said carrier at 52, which cable is passed around the sling pulley 53, which is rotatably mounted in the sling piece 53'. Said sling piece is secured to the load 53''. Cable 51 is passed thence around pulley 54, which is rotatably mounted in the load carrier 49. Said cable is again passed around pulley 53, thence upward between the bifurcations 55 of the hook 56, which is oscillatably mounted in said load carrier. Said hook is provided with the helical spring 57, which is mounted on its shaft portion, whereby the bifurcated end portion of said hook is yieldably held against the hook stop 58, seen in Fig. 3. Cable 51 extends from said bifurcations over the pulley 59 which is rotatably mounted in the carrier 49. Said cable extends therefrom, over the guide pulley 60, which is rotatably mounted on the central portion of the tie bar 61, the ends of which bar are secured on the front ends of the cap string-

ers 11. Said cable extends from said guide pulley to one side of the winding drum 62, on which it is wound, with its wound end secured on said drum.

One end of the tail cable 63 is secured to the load carrier 49, extends therefrom around the tail pulley 64, thence forward over the guide pulley 65, (which is mounted on the central portion of the tie bar 61,) thence downward to the other side of drum 62, on which it is wound, with its wound end detachably secured on said drum.

Said tail cable draws the load carrier 49 to the rear end of the tram rail extension 48.

Drum 62 is provided with cable winding means which is controlled by the lever 66, seen in Fig. 1, and since said cable winding means is the same in construction and operation as the one previously described, it is neither shown nor described in detail.

Abutment 67 is secured on the rear end of girder extension 47 for stopping the load carrier 49, which is abutted thereagainst when drawn to the limit of its rearward travel.

The lower end of said abutment is engaged by the hook 56 at this time, for holding said carrier against forward travel, while a load 53'' is being hoisted by the cable 51, from platform 70.

Button 68 is secured on said cable and is stopped against the button stop 69, which is secured in the load carrier 49.

In cases where the stress on the cable 51, in pulling the carrier 49 along the tram rails is less than the stress of the load 53'' upon said cable, said load gravitates slightly, thereby drawing said cable backward until the thus drawn cable moves button 68 onto the bifurcated end 55 of hook 56, which end is supported on stop 58, preventing further gravitation of said load.

The extension cable 71 is used at the front end of the truck for lifting the described tram rail extension to a vertical position, and at the back end for lowering the same therefrom to the position shown.

The lower ends of the standards 72 are secured on the sills 3, while their upper ends are secured to the ends of the tie bars 73, respectively, for guiding the cap stringers 11 and preventing lateral movement of the same.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. The combination with the running gears of a vehicle, such as a motor truck, a wagon and the like, of sills mounted on said vehicle; a plurality of sets of lazy tongs connected at their lower ends with said sills; a tram rail supported by the upper ends of said lazy tongs; a load carrier transportably supported on said tram rail; lowering and raising means for said lazy tongs where-

by their upper end portions are lowered and raised; hoisting means connected with said load carrier whereby a load of freight is lifted; carrier holding means whereby
 5 said carrier is held against movement on said rail, while said hoisting is being accomplished; releasing means whereby said holding means is automatically released after said load is hoisted; carrier moving means
 10 whereby said load carrier is moved along said rail; and hoist holding means whereby said hoisting means is held against return movement.

2. The combination with a vehicle provided with an engine for propelling it; of
 15 a tram rail; a load carrier transportably supported on said tram rail; lazy tongs raising and lowering means whereby said tram rail is raised and lowered; cables
 20 whereby said lazy tongs are operated; cable winding means whereby said cables are wound on and unwound from winding drums; disconnectible gear connections
 25 whereby said winding means is connected with the shaft of said engine; and controlling means whereby said gear connections are controlled; thereby controlling the movements of said lazy tongs and the there-
 by supported parts.

30 3. The combination with a vehicle provided with an engine thereon; of a tram rail supported on said vehicle; raising and lowering means whereby said tram rail is

raised and lowered; a load carrier transportably supported on said tram rail; a
 35 hoisting cable one end of which is secured to said carrier; load hoisting means operated by movement in one direction of said cable; carrier holding means whereby said
 40 carrier is held against movement on said rail while said load is being hoisted; releasing means whereby said carrier holding means is automatically released after said load is hoisted; cable holding means where-
 45 by said cable is held for holding said load against return movement by gravitation thereof; a winding drum on which said cable is wound thereby hoisting said load and drawing said carrier along said tram
 50 rail; a tail cable one end of which is secured to said load carrier; guide pulleys around which said tail cable is guided to said winding drum the guided end of said tail cable being wound on said drum and detachably
 55 secured thereon in such manner that said tail cable is unwound from said drum while said hoisting cable is being wound thereon and vice versa; drum rotating means disconnectibly gear connected with the shaft
 60 of said engine; and gear controlling means whereby said gear connections are controlled thereby controlling the rotations of said drum.

In testimony whereof I affix my signature.

MARY JANE REYNOLDS.