Sept. 15, 1953 J. B. TIPPS 2,652,164

LUMBER HOIST TRUCK

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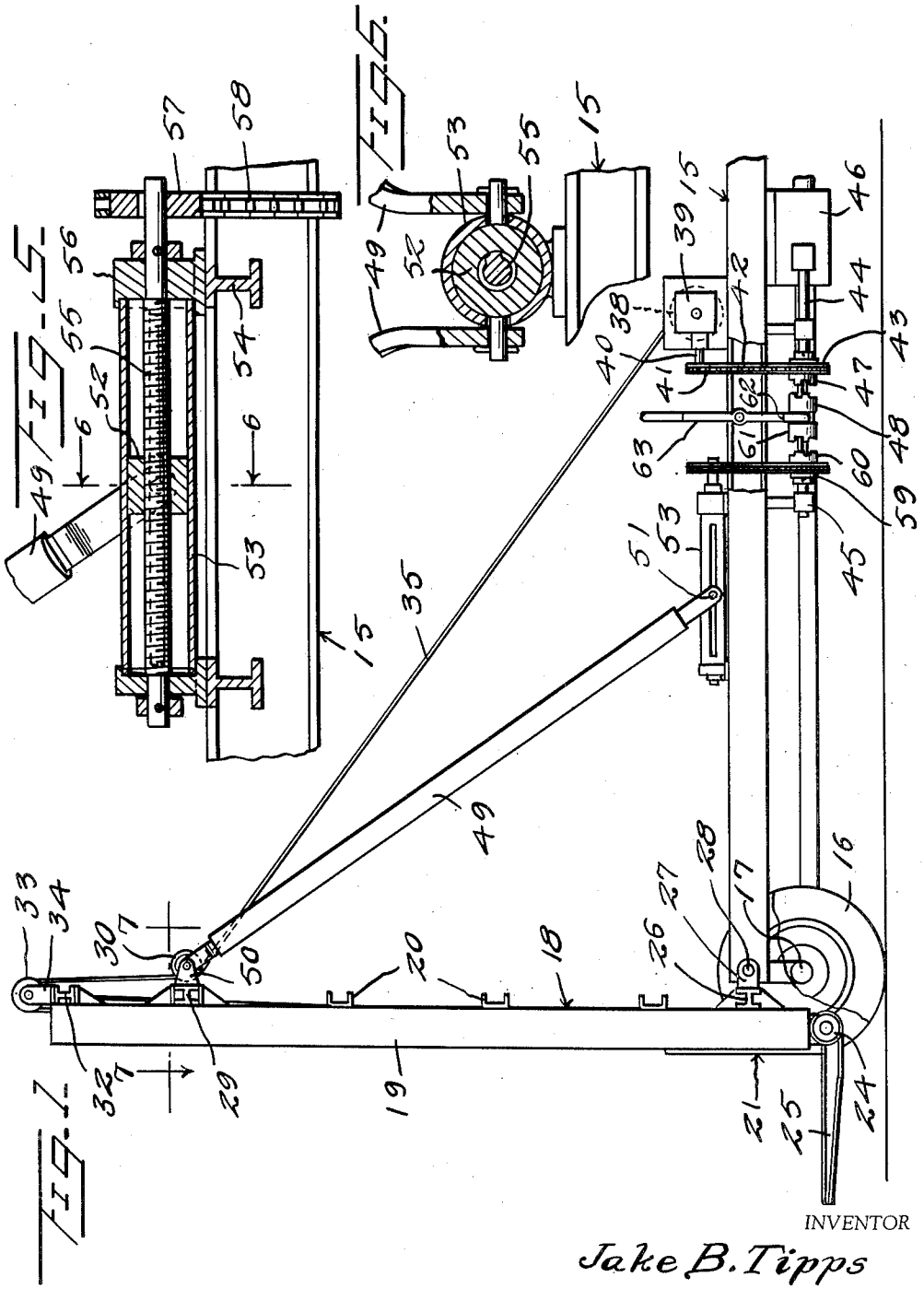


FIG. 1.

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Fig. 2.

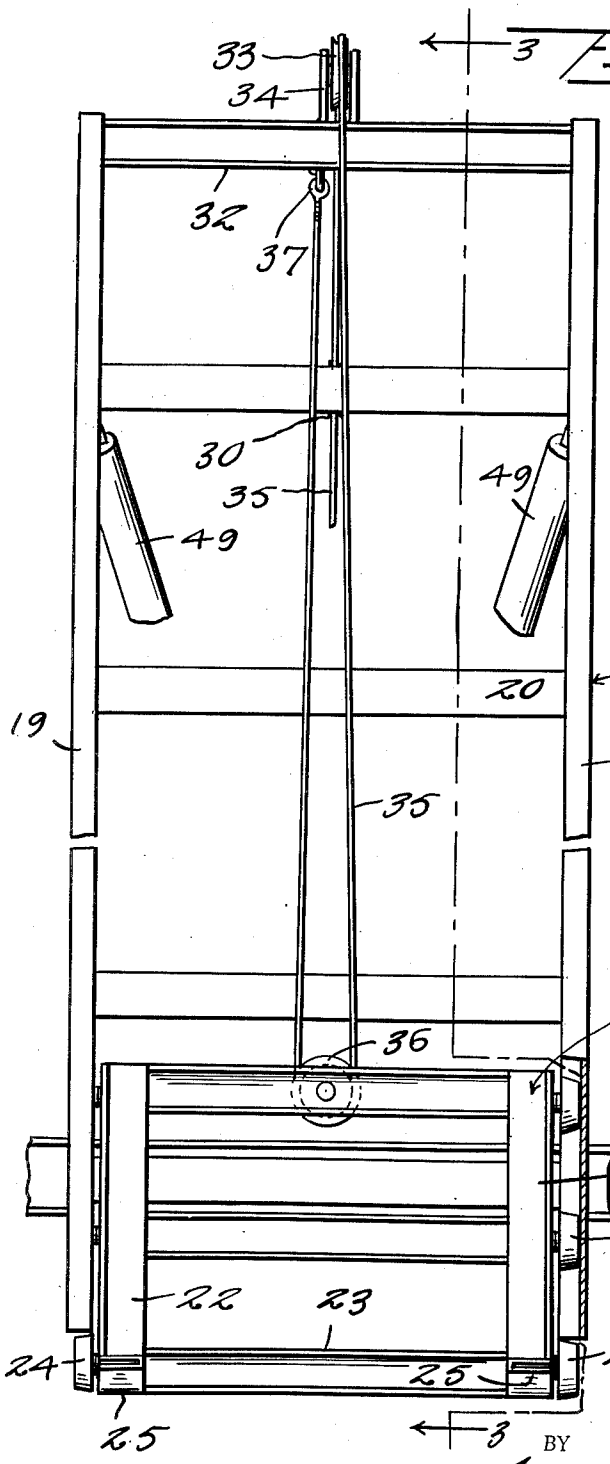
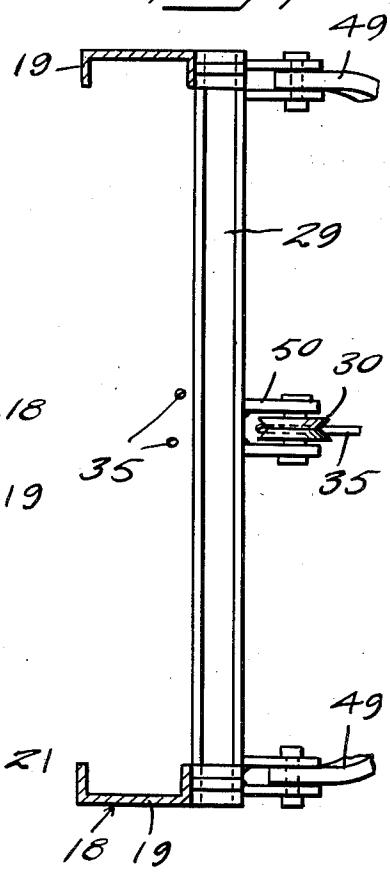


Fig. 7.



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FIG. 3.

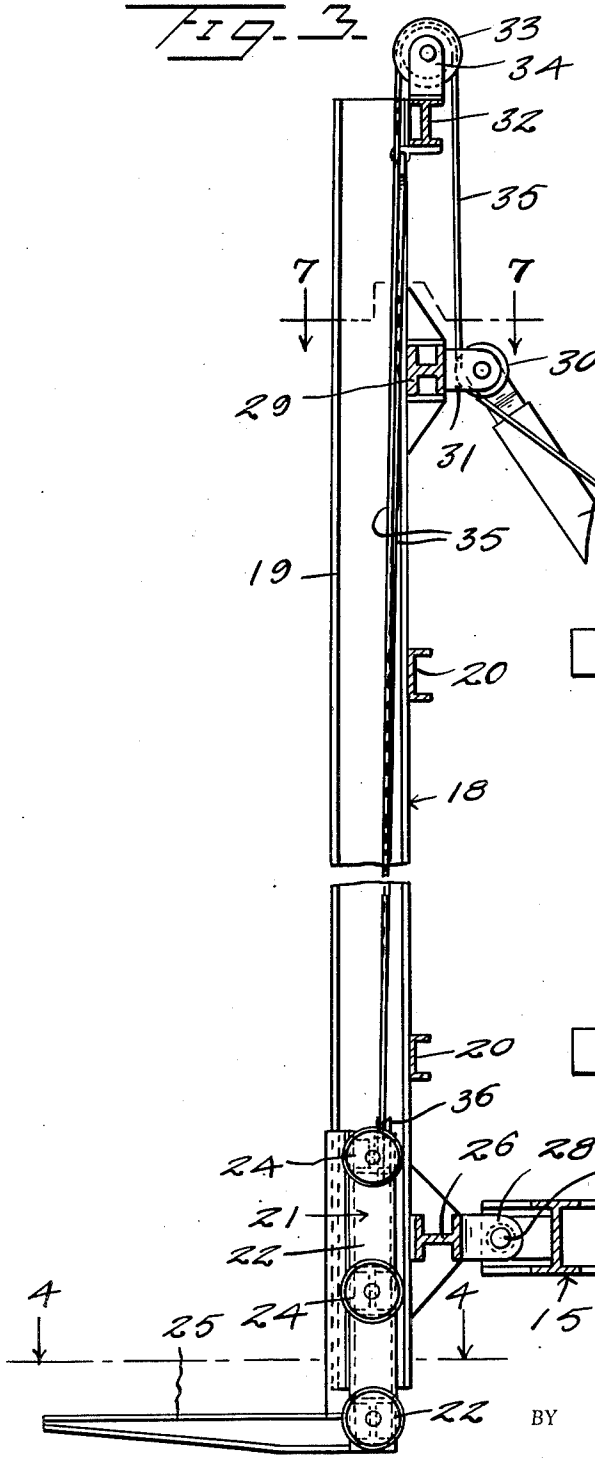
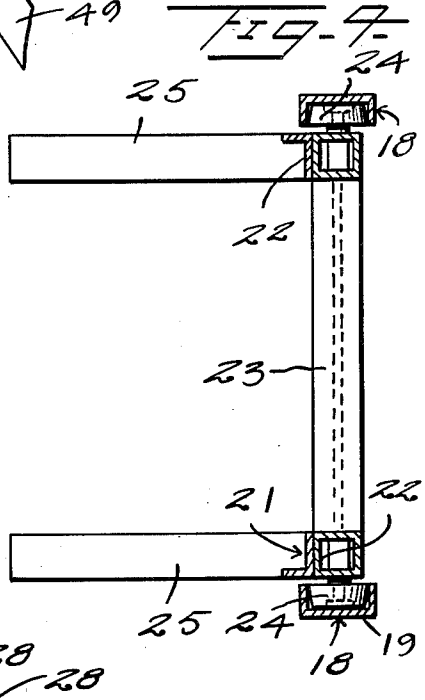


FIG. 4.



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Fig. 8.

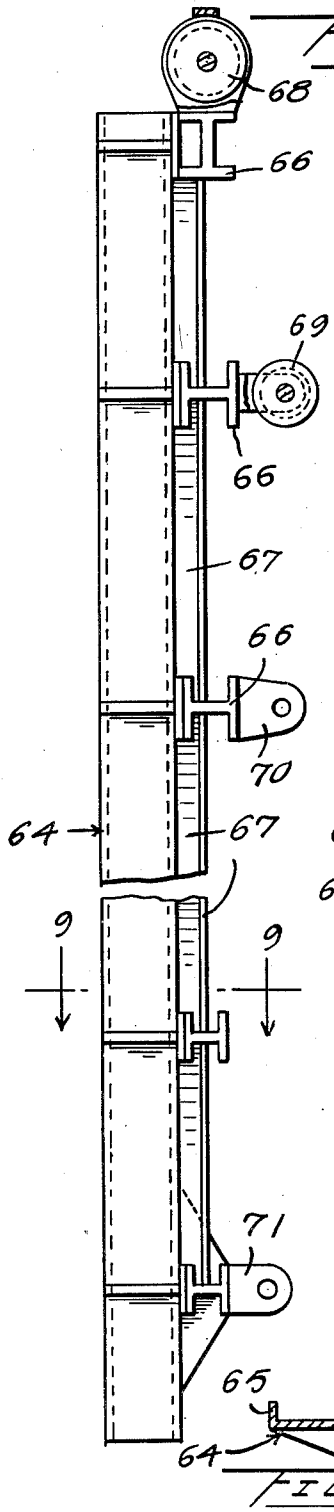
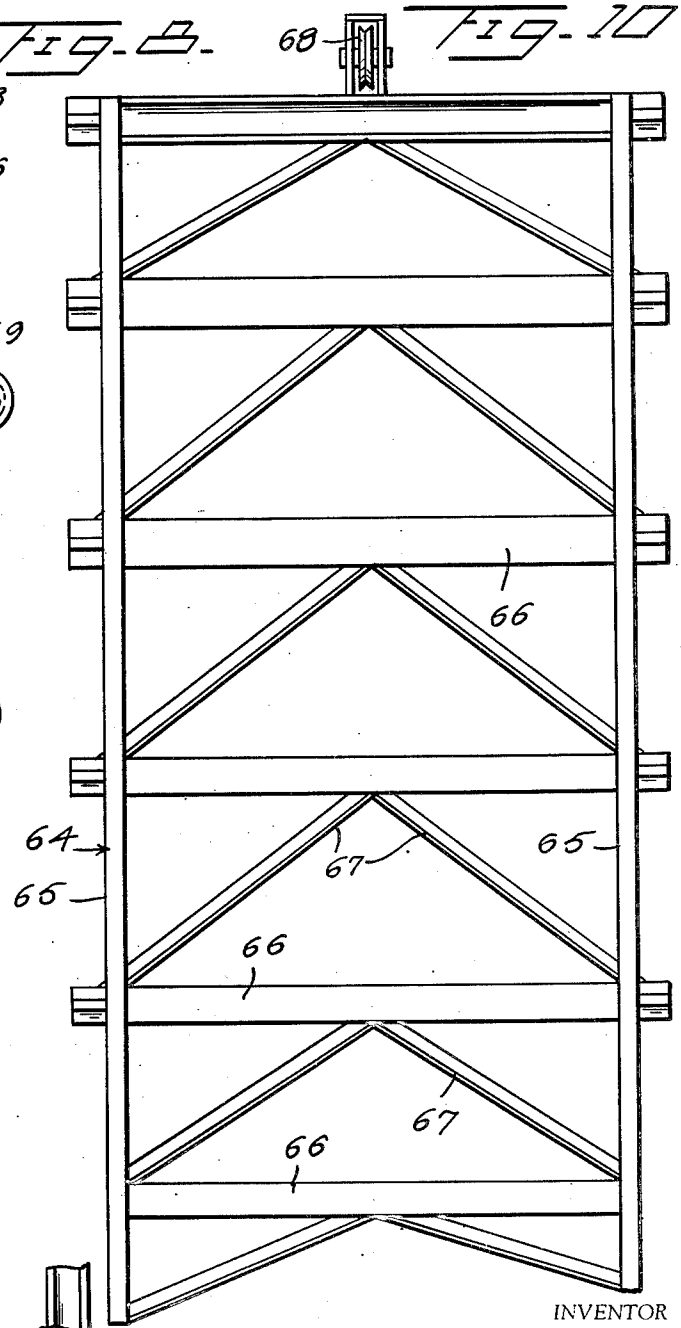


Fig. 9.

Fig. 10



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LUMBER HOIST TRUCK

Jake B. Tipps, Laurel, Miss.

Application October 16, 1950, Serial No. 190,330

1 Claim. (Cl. 214—672)

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This invention relates to a material handling device.

An object of this invention is to provide a device which is capable of handling lumber or the like for stacking or removing lumber in relatively large quantities.

Another object of this invention is to provide a lumber or material handling device which can be mounted on a truck frame so that the lumber can be stacked or removed and shifted about.

A further object of this invention is to provide a device of this kind which includes means for tilting the material when the latter is being shifted so as to prevent the material from slipping off of the carriage or elevator.

A further object of this invention is to provide a material handling device of this kind which can be mounted on a conventional truck having a power takeoff.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claim.

In the drawings:

Figure 1 is a detailed side elevation partly broken away of a material handling device constructed according to an embodiment of this invention.

Figure 2 is a rear elevation partly in section of the device.

Figure 3 is a vertical section taken substantially on the line 3—3 of Figure 2.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a fragmentary longitudinal section of the tilt adjusting means.

Figure 6 is a sectional view taken on the line 6—6 of Figure 5.

Figure 7 is a cross sectional view taken on line 7—7 of Figure 3.

Figure 8 is a detail side elevation of the frame shown in Figure 7.

Figure 9 is a fragmentary sectional view taken on the line 9—9 of Figure 8; and,

Figure 10 is a detail rear elevation of a modified form of guide frame.

Referring to the drawing, and, first, to Figures 1 to 6, inclusive, the numeral 15 designates generally a mobile frame which in the present instance comprises a truck frame having rear wheels 16 mounted on a relatively rigid axle 17. A tiltable elevator frame generally designated as 18 is pivotally mounted on the rear of the frame 15 and comprises a pair of upright channel members 19 connected together by connecting channel members 20.

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The channel members 19 are disposed with their channels in confronting relation and constitute guide channels for a carriage or elevator generally designated as 21. The elevator 21 is formed of a pair of outer tubular frame members 22 which are connected together by connecting channel members 23. The tubular members 22 have pivotally secured to the outer sides thereof a plurality of vertically spaced apart rollers 24 which engage within the channels 19.

The elevator or carriage 21 also includes a pair of rearwardly projecting bars 25 which constitute lift bars and are disposed at right angles to the carriage 21. The bars or fingers 25 taper rearwardly with the smaller ends thereof outermost and are adapted to be extended beneath material which is to be lifted or stacked. The guide frame 18 also includes a transversely extending I beam 26 secured to the forward side of the frame 18 adjacent the lower end portion thereof.

The beam 26 has secured thereto ears 27 which are pivotally mounted on pivot members 28 carried by frame 15. An intermediate I beam 29 is secured to the forward side of the frame 18 at a point below the upper end thereof and a sheave or pulley 30 is rotatably carried by rearwardly projecting ears 31 fixed to the I beam 29. An upper I beam 32 is fixed across the upper end of the frame 18, and an upper sheave 33 is rotatably disposed between a pair of ears 34 which are fixed to the beam 32.

A carriage operating cable 35 engages with the sheaves or pulleys 30 and 33 and extends downwardly from the upper pulley 33 and engages about a pulley or sheave 36 which is rotatably carried by the upper connecting member 23 of the carriage 22. The cable 35 is extended from the lower sheave 36 to the upper beam 32 and is fixed to an eye 37 carried by the beam member 32. The cable 35 is extended downwardly and forwardly from the sheave 30 and is wound about a winding drum 38 which is carried by the frame 15 forwardly of the frame 18. The winding drum 38 is connected with a reduction gearing or transmission 39 having a shaft 40 extending therefrom on which a sprocket 41 is secured. A chain 42 engages about the sprocket 41 and also engages about the sprocket 43 which is loosely mounted on a shaft 44. The shaft 44 is journalled in depending bearings 45 and is connected at its forward end to a power takeoff or transmission 46 which is connected with the operating engine of the truck or frame 15.

The sprocket 43 includes a toothed clutch 47 on the rear face thereof which confronts a toothed clutch 48 which is slidable, but non-rotatable on shaft 44. The frame 18 is held at substantially upright position by means of a pair of upwardly and rearwardly divergent supporting or bracing bars 49 which are pivotally connected at their rear ends to ears 50 which are fixed to the outer end portions of the beam 29. The supporting bars 49 are pivotally secured at their lower ends to pivot members 51 which project from a nut or slide member 52. The nut or slide member 52 is slidable in a tubular guide 53 which is fixed to a pair of transversely extending supporting bars 54 fixed across the frame 15.

A screw shaft 55 is threaded through the nut 52 being journalled in the ends or heads 56 of the guide 53, and one end of the screw shaft 55 has fixed thereto a sprocket 57. A chain 58 is trained about the sprocket 57 and is also trained about a lower sprocket 59 which is rotatably mounted on the shaft 44. The sprocket 59 includes a clutch element 60 on the forward side thereof which confronts a complementary clutch member 61 which is fixed relative to the clutch member 48.

The two clutch members 48 and 61 are adapted to be shifted endwise by means of a shifting fork 62 connected with a shifting lever 63.

Referring now to Figures 7, 8, and 9 there is disclosed a modified form of carriage guide frame structure generally designated as 64. The frame structure 64 includes a pair of spaced apart parallel channel members 65 which are connected together by means of a plurality of connecting bars 66. The connecting bars 66 are of H construction, and upwardly convergent bracing bars 67 are fixed between pairs of the connecting members 66. The upper connecting member 66 has fixed thereto an upper sheave 68, and the next adjacent connecting bar 66 has secured thereto a lower sheave 69. The two sheaves 68 and 69 are similar to the sheaves 33 and 30 respectively.

An intermediate connecting bar 66 has fixed thereto forwardly projecting ears 70 with which the bracing and tilting bars are adapted to be engaged. Lower forwardly projecting ears 71 are secured to the lower one of the connecting bars 66 and pivot means are adapted to be extended through the lower ears 71 for rockably securing the elevator frame 64 on the mobile or truck frame. It will be understood that the frame structure 64 will have mounted therein an elevator or lifting carriage similar to carriage 21.

In the use and operation of this device the upright frame 18 is adapted to be secured to the rear of a conventional truck frame, and the power take-off 46 is connected with the transmission of the engine. When it is desired to pick up lumber or other material the carriage 21 is lowered to its lowermost point, and if desired the frame 18 may be tilted rearwardly at its upper end so that the arms 25 will be inclined downwardly and rearwardly. The truck may then be backed to the material, and when the material is engaged on the arms 25 the frame 18 may be swung upwardly and forwardly so as to be in a forwardly and upwardly inclined position. The

frame 18 is angularly adjusted with respect to the vertical by shifting clutch member 61 to engage clutch member 60. At this time screw shaft 55 will be rotated to effect endwise movement of nut 52. Endwise movement of nut 52 will effect rocking or tilting of the frame structure 18. By having a carriage guide frame 18 which can be rocked or tilted to any desired angle when a relatively heavy load is mounted on the carriage or elevator the forward tilting of the frame 18 will have the effect of distributing the weight of the load forwardly, thereby eliminating any hazard of the forward end of the frame 15 being raised off of the ground by the weight of the load.

When a load has been placed on the carriage 21 the device may be shifted to any desired point, and the material can be disposed at any desired height by vertical adjustment of the carriage 21. This device has been produced as an attachment for conventional trucks and has been found to be more practical in the shifting of lumber than the material handling devices at present available.

What is claimed is:

A material handling device comprising a mobile frame, an elongated upright guide frame, oppositely disposed tracks on said guide frame, means pivotally securing the lower end of said guide frame to the rear of said mobile frame, an elevatable carriage movably disposed in said guide frame, a pair of lift arms projecting rearwardly of said carriage, a horizontal longitudinally disposed tubular guide carried by said mobile frame, said latter guide having a pair of oppositely disposed longitudinal guide slots, a centrally disposed screw shaft journalled longitudinally of said tubular guide, a nut threaded on said shaft and slidable in said tubular guide, oppositely extending pins carried by said nut and loosely extending through said slots, a pair of upwardly, rearwardly and outwardly projecting bracing bars pivotally connected between said pins and said guide frame at an elevated point on said guide frame on opposite sides thereof, motor means for rotating said screw shaft, a pulley carried by said bracing bars adjacent the pivoted connection to said guide frame, a second pulley carried by the upper end of said guide frame, a motor driven winch, a cable extending from said winch about said pulleys connected to said carriage for moving said carriage up and down in said frame and clutch means for reversing the direction of rotation of said screw shaft.

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