

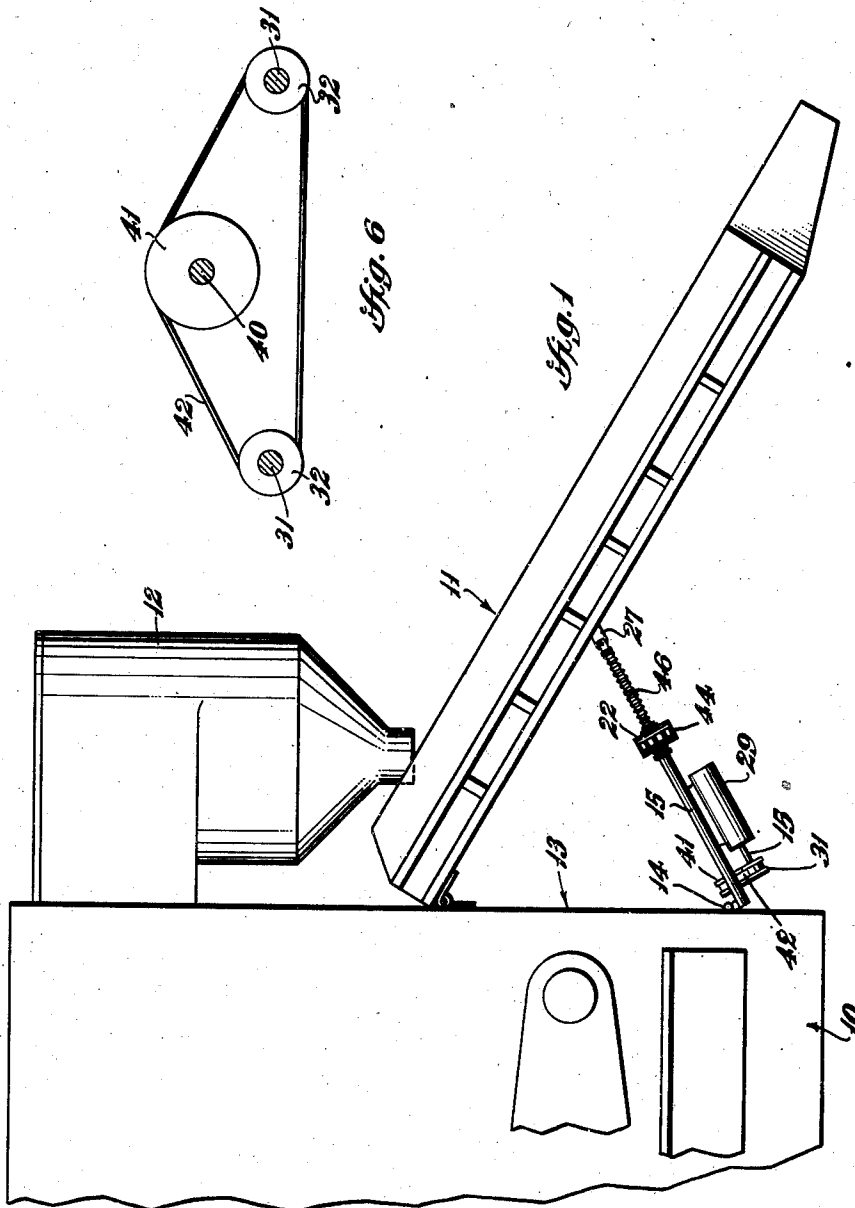
Nov. 23, 1948.

E. J. BRINKERT  
LIFTING DEVICE

2,454,548

Filed July 5, 1947

2 Sheets-Sheet 1



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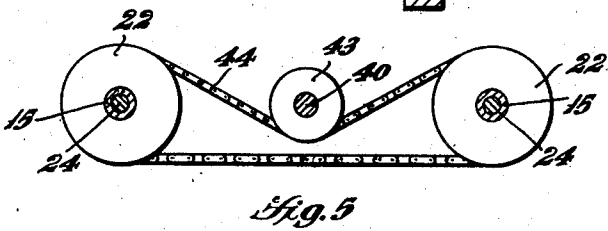
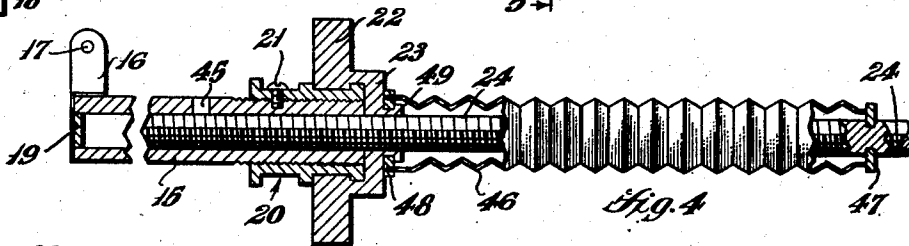
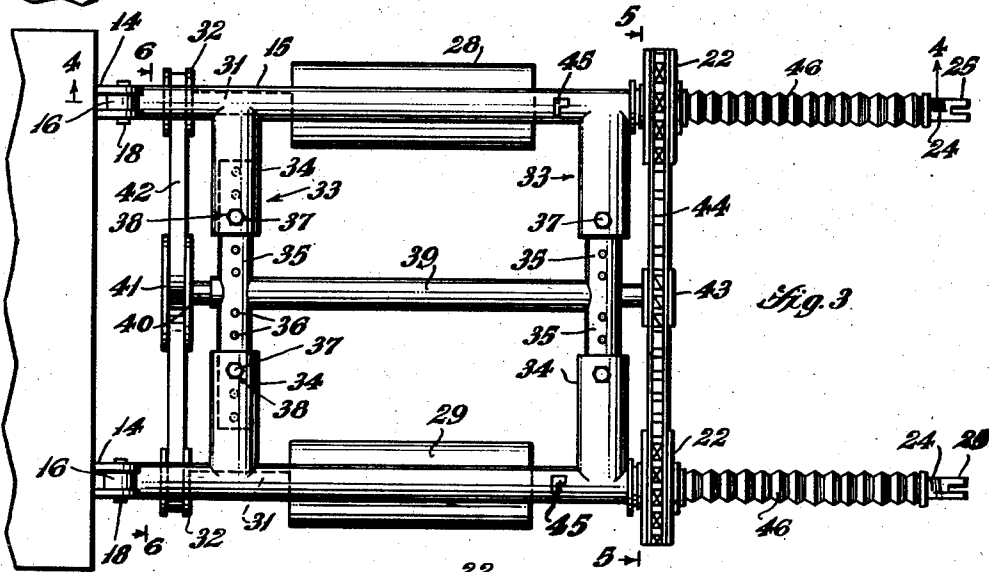
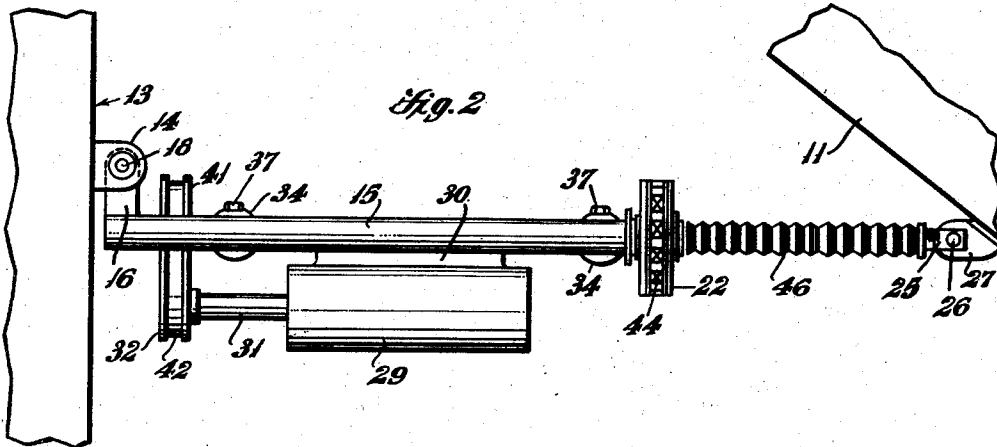
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# UNITED STATES PATENT OFFICE

2,454,548

## LIFTING DEVICE

Edward J. Brinkert, Hartley, Iowa

Application July 5, 1947, Serial No. 759,136

4 Claims. (Cl. 74-424.8)

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This invention relates to lifts for machines such as, for example, shellers, grinders, combines, etc., and aims to provide a novel, useful and practical lift for tilting the chute from such a machine or mill to the desired angle for the purpose at hand.

Another object of the invention is the provision of an electrically operated lift so constructed that it may be controlled to readily raise or lower the chute at will, in a simple manner and with the expenditure of a minimum of labor.

The above as well as additional objects will be set forth in the following description, wherein characters of reference refer to like-numbered parts in the accompanying drawings. It is to be noted that the drawings are intended for the purpose of illustration only, and that it is neither desired nor intended to limit the invention necessarily to any or all of the exact details of construction shown, excepting insofar as they may be deemed essential to the invention.

Referring briefly to the drawings: Fig. 1 is a fragmentary side elevational view of a machine such as, for instance, a grinding mill of the portable type, having the device of this invention applied thereto.

Fig. 2 is a fragmentary side elevational view of the same, enlarged to illustrate the invention more clearly.

Fig. 3 is a fragmentary plan view of the same, with the chute omitted.

Fig. 4 is a sectional view taken on the line 4-4 of Fig. 3.

Fig. 5 is a sectional view taken on the line 5-5 of Fig. 3.

Fig. 6 is a sectional view taken on the line 6-6 of Fig. 3.

Referring in detail to the drawing, the numeral 10 indicates any portable machine of the class mentioned, having a chute 11 pivoted thereto under the hopper 12 so that material delivered into the hopper from the mill 10 descends on to the chute. It is necessary that the tilt or lift of the chute be changed frequently, and this invention provides simple means for accomplishing this purpose.

Secured in a common horizontal plane against the front wall 13 of the mill 10, are a pair of spaced forked brackets 14. Sleeves or pipes 15 are provided with tongues 16 having holes 17 therethrough, each tongue 16 being pivotally mounted in one bracket 14 by passing a bolt 18 through the bracket and the hole 17. The sleeves or housings 15 have, as shown, their rear ends sealed, and the sealing of these ends of the sleeves may be accomplished in any other manner than that

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shown; the seals 19 shown comprise plugs or discs which may be welded in the pipe ends.

Mounted on the forward end of each pipe 15 is a hub 20, internally threaded and screwed over the threaded pipe end, and further locked by a set screw 21. Of course any other means may be provided for the purpose of rotatably mounting the sprocket pinion 22 on the pipe 15. The sprocket pinion or gear 22 has a collar 23 extending over the free end of the pipe, this collar being internally threaded and having a worm 24 in mesh therewith and extending at one end into the pipe 15 and at the other end beyond the free extremity of the pipe. At its other extremity 25 the worm 24 is forked, and the forked ends of the worms are pivoted at 26 to brackets 27 on the chute 11. Electric motors 28 and 29, which are identical excepting that they are selected to normally rotate in opposite directions, are hung rigidly on hangers 30 from their respective pipes 15. Each motor has its shaft 31 provided with a pulley 32.

Telescopically adjustable spacer or cross members 33 are provided between the pipes 15 near both ends thereof. These comprise sleeves 34 secured at one end to their respective pipes in any desired manner, with pipe sections 35 having their ends slidably mounted in the mutually adjacent ends of the sleeves 34. The pipe sections 35 are provided with a plurality of longitudinally spaced holes 36 therethrough, receptive of bolts 37 upon alignment of one hole in each sleeve 34 with one of the two holes 36 through the free ends of the sleeves 34. Thus, by lifting out the bolts 37, pulling the sleeves 34 apart or pushing them together until a new pair of holes 36 is in alignment with the holes 38, the spread or distance between the pipes 15 may be increased or decreased. This adjustability is for the purpose of making the device applicable to machines of different widths, for in some cases the front wall 13, for instance, is not wide enough to spread the brackets 14 as far apart as illustrated.

Intermediate their lengths, the pipe sections 35 are provided with aligned openings therethrough and at right angles thereto, and a tube or pipe 39 joins the sections 35 between these openings. A shaft 40 extends through the tube 39 and its ends project from the ends of the sections 35. One end of the shaft 40 has a pulley 41 thereon, lying in the same vertical plane as the pulleys 42. A V-belt 42 is trained about the three pulleys whereby rotation of one of the pulleys 32 will cause rotation of the other pulleys and hence of the shafts 31 and 40. On the other end of the

shaft 40 a sprocket pinion 43 is provided; a sprocket chain 44 is trained about the gears 22 and 43, whereby rotation of the shaft 40 will rotate the gears 22.

When the motor 28 is energized by any suitable means, not shown, so that it rotates, the shaft 40 will rotate as aforementioned, and hence the pinion 43 will cause rotation of both gears 22 in the same direction. Thus the collars 23 will cause the worms 24 to rotate in the same direction and, say, to be moved outward from the pipes 15, thereby swinging the chute 11 upward. When the motor 29 is energized so that it rotates, as stated above, in a direction opposite to that of motor 28, the worms 24 will be drawn into the pipes 15, thereby swinging the chute 11 downward.

Oil openings 45 are provided through the pipes 15 to keep the worms 24 thoroughly oiled, and for this purpose the pipes 15 may be about one-half filled with oil. To prevent the oil from leaking out and being wasted, an accordion-like boot 46 is provided around that portion of each worm 24 which extends outward from the collar 23. This boot may be made of any desired suitable material, and it is provided at one end with a washer 47 anchored in any desired manner to the worm, and at the other end with a washer which may be rotatably mounted behind a flange 49 on the collar 23 so that it may be free to rotate. Thus, as the worms are drawn into the pipes 15, the boots 45 will partly collapse, but at all times they will prevent the oil carried out of the pipes 15 by the worms 24 from dripping off on to the ground.

Obviously, modifications in form and structure may be made without departing from the spirit and scope of the invention.

I claim:

1. In combination with a device having a front wall and having a member pivoted to said front wall and extending outward therefrom, a pair of spaced parallel tubular housings, cross-members mounted between said housings, pivotal means securing one end of each of said housings to said front wall below the pivotal mounting of said member, the other ends of said housings having sprockets rotatably mounted thereon, a third shaft rotatably mounted in said cross-members parallel with said housings and having a sprocket on one end in the same plane as said first-named

sprockets, an electric motor secured to each of said housings, said motor on one of said housings being adapted to be energized to rotate in one direction and said motor on the other of said housings being adapted to be energized to rotate in the opposite direction, said motors having shafts extending parallel with said housings, said motor shafts having pulleys thereon, said third shaft having a pulley thereon lying in the same plane as said motor shaft pulleys, a belt trained about said three pulleys, a sprocket chain trained about said three sprockets, collars on said sprockets extending beyond the free ends of said housings, said collars being internally threaded and having worms extending threadably therethrough into said housings, the free ends of said worms which extend out of said housings being pivotally mounted on said pivoted member.

2. The combination set forth in claim 1, said housings having oil ports, a collapsible boot surrounding said worm between said collars and said free ends thereof, means anchoring one end of said boot on said worm and means rotatably mounting the other end of the boot on said collar.

3. The combination set forth in claim 1, said cross-members having means for adjustably varying the length thereof.

4. The combination set forth in claim 1, each of said cross-members comprising an end sleeve section secured to one of said housings and a central sleeve section having its ends slidably mounted in said end sleeve sections, each of said end sleeve sections having an opening therethrough at right angles to the axis thereof, said central section having a plurality of longitudinally spaced openings therethrough at right angles thereto, said sections being adapted to be positioned with said end section openings in alignment with two of said central section openings, and bolts passing through each of said aligned pairs of openings.

EDWARD J. BRINKERT.

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