

G. E. RICHMOND.
 AUTOMATIC DUMPING ELEVATOR.
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940,065.

Patented Nov. 16, 1909

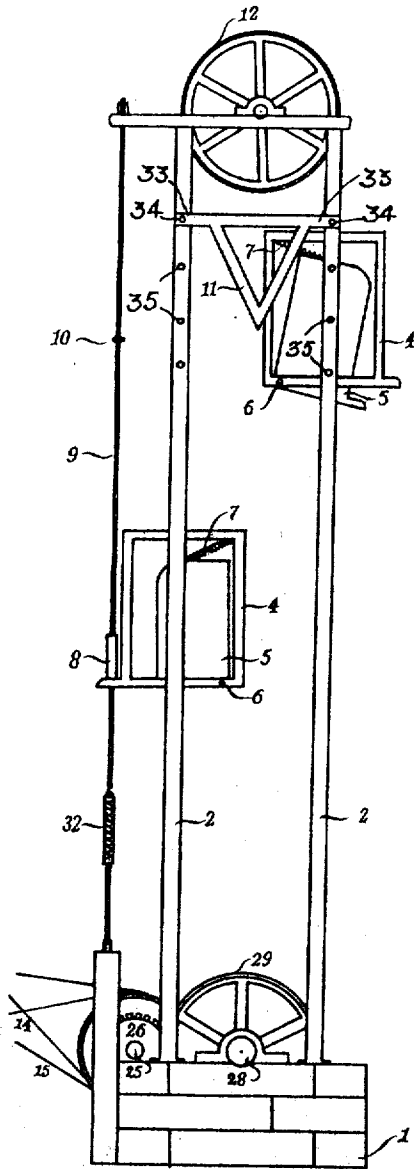


Fig. 1.

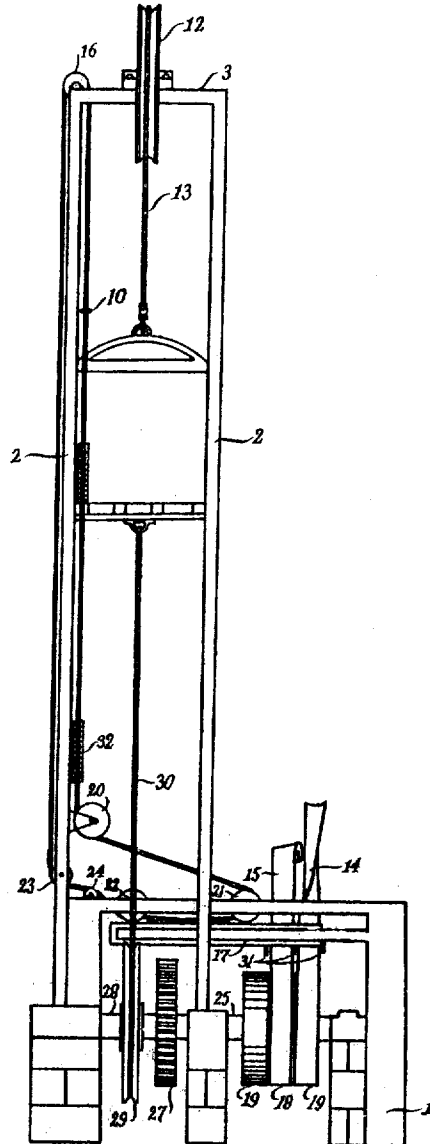


Fig. 2.

George E. Richmond Invention

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UNITED STATES PATENT OFFICE.

GEORGE E. RICHMOND, OF HOUSTON, TEXAS.

AUTOMATIC DUMPING-ELEVATOR.

940,065.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed September 15, 1908. Serial No. 453,071.

To all whom it may concern:

Be it known that I, GEORGE E. RICHMOND, citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Automatic Dumping-Elevators, of which the following is a specification.

My invention relates to new and useful improvements in elevators and more particularly to that class of elevators which unload automatically.

The object of the invention is to provide a device of this character which will automatically unload anything that has been placed in it for elevation to a stated place.

Another object of the invention is to provide mechanism whereby the load carried by the elevator may be automatically unloaded from the same mechanism at different heights by means of a tripping device which can be adjusted on the frame work to any desired height.

A further feature resides in the arrangement of a shifting mechanism, so that when either elevator reaches the desired height the elevators will be made to reverse their directions.

Finally the object of the invention is to provide a device of the character described that will be strong, durable, efficient, easily constructed and comparatively inexpensive to produce and one which will take up a small amount of room and in which the parts will not be likely to get out of working order.

With the above and other objects in view my invention has particular relation to certain novel features of construction and operation an example of which is given in this specification and illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of my device. Fig. 2 is a front elevation of the same showing the shifting mechanism.

Referring more particularly to the drawings the numeral 1 designates a foundation upon which my device is built. Upon this foundation upright supports 2 rest. These supports are held in proper relation to each other by means of cross-beams 3; elevators 4 operate between said supports.

5 designates the cars which are pivoted to the elevators at 6 and are normally held at an upright position by coil springs 7 at the top thereof which are of sufficient strength

to hold the cars in an upright position even when carrying a great weight.

On the front of one of the elevators 4 is a collar 8 through which operating cord 9 slides. This collar is provided with a spring for the purpose of breaking the shock of a sudden stop when the car is elevated to a sufficient height that collar 8 will strike stop 10 immovably mounted on operating cord 9; which occurs just as the car is deflected forward to a degree sufficient that the contents of said car will be dumped out of same. This movement of the car is caused by its striking a V shaped deflector 11. This deflector is so positioned, with respect to supports 2 and the car 5, that when the elevator ascends the top of the rear side of the car, carried by said elevator, comes into contact with the sloping side of the deflector; and the car being pivoted to the elevator, at the point 6, and being yieldably held in an upright position therein by spring 7, is deflected forward as its rear side slides up the outwardly divergent side of deflector 11, and its contents thereby discharged.

The numeral 12 designates a pulley wheel upon which cable 13 operates. One end of this cable is attached to one of the cars, and the other end to the other car, and serves to support said cars. Cord 9 is provided for the purpose of operating and shifting drive belts 14 and 15, and operates upon the pulley 16 at the top of support 2. One end of this cord passes around pulley 20 secured to support 2 near its lower end, and also around pulley wheel 21, secured to a suitable cross beam, at a point preferably, above shifting bar 17, and near the end thereof, remotest from pulley 20, and, after passing around said pulley 21 is secured to said shifting bar 17, in any suitable manner, so that an upward pull on the end of cord 9 passing around pulley 20 will cause said bar to move in a lateral direction. The other end of said cord 9 passes around the pulley 23, carried by support 2, near its lower end, operates on the intervening pulleys 22 and 24 and is secured in any suitable manner, to shifting bar 17 at a point near the end thereof, remotest from pulley 23; so that an upward pull on this end of cord 9 will cause shifting bar 17 to move in a lateral direction the opposite of that movement caused by the upward pull on that end of said cord passing around pulley 20, as above described.

When the shifting bar 17 moves in the direction first above described, it shifts one driving belt from the driven pulley 18 to one of the idlers 19 and at the same time shifts the other driving belt from the other idler to the drive pulley; and when shifting bar 17 moves in the other direction the drive belts are shifted back to their original position, and as drive belt 14 is crossed, it gives a motion to drive pulley 18, which is the reverse of that imparted by drive belt 15, which is not crossed, and consequently each time the drive belts are shifted the movement of the elevators is reversed. This shifting bar 17 is provided with lugs 31 for engaging with said belts and causing them to move with said bar, as hereinafter set forth.

25 is a shaft carrying idlers 19 and drive pulley 18 and also gear wheel 26. This gear wheel 26 operates gear wheel 27 which in turn operates shaft 28 which carries it. This shaft also carries operating pulley 29. A cable 30 operates on pulley 29 and being attached at its ends to the bottom of each of the elevators transmits motion to each of them.

The operation of my device is as follows:

When the machinery is running at will the drive belts 14 and 15 run upon the idlers 19 and the elevators are thus at rest, but when it is desired to operate the elevator the operator may throw one of the belts to the drive pulley 18 and thus set the elevators in motion. The shift bar carries lugs 31 which force the belts back and forth in accordance with the motion of the shifting bar. When the elevators are put in motion one car will ascend and the other car being attached to the same cable will descend at the same time and the same distance. The collar 8 coming in contact with stop 10 forces cord 9 up, which being attached to shift bar 17 gives it a lateral motion and shifts the drive belts from the drive pulley and one idler to drive pulley and the other idler as above described. Near the lower end of this cord and stationary thereon, is a stop 32 also provided with a spring for the same purpose as the spring carried by collar 8 before mentioned. When the descending elevator comes in contact with stop 32 the cord 9 is pulled in opposite direction, and shift bar 17 again shifts the belts and the motion of the elevators is again reversed. This operating cord passes through each of these springs and while the one carried by the cord remains stationary the one carried by the car moves freely upon the operating cord.

When the elevator rises to the desired height the car strikes the V shaped adjustable deflector 11 and is tilted forward to such a degree that the contents carried by the car will be caused to fall out. This de-

flector is provided with lugs or clamps 33, extending laterally from each end of the transverse brace of deflector 11. These clamps embrace supports 2 and are secured to said supports by means of pins 34, which pass through said clamps and through holes 35, in supports 2. A number of said holes 35 are provided to permit the vertical adjustment of the deflector 11 on supports 2. When the car reaches this height the springs carried by the elevator will strike stop 10 upon the operating cord and cause the direction of the elevators to be immediately reversed and when the car reaches a certain position in the opposite direction the elevator will strike stop 32 located on the operating cord, again causing reversal of the elevators as above described.

While this particular form is shown, I do not desire to limit myself to this particular construction. The construction may be varied in any manner so that the principle of the invention is not departed from.

Special attention is called to the method of pivotally holding car in position in the elevator also to the adjustable method of tilting the car so that the contents thereof will be automatically unloaded.

What I claim is:—

1. In an automatic elevating device, elevators, cars carried by said elevators, said cars being pivotally mounted in said elevators means for securing said dumping device to said frame springs carried by each of said elevators, one end of same being secured to its elevator and the other end thereof being secured to its car, a frame in which said elevators operate, an adjustable dumping device mounted upon said frame, pulleys, cables operating in said pulleys and being attached to said elevators and means for rotating said pulleys.

2. In an automatic elevating device, a frame, an elevator, a shifting device, means for operating same, a dumping device, means for restoring said elevator to its normal position, means for lowering and raising said elevator and means for automatically stopping said elevator at any given point.

3. In an automatic elevating mechanism, an elevator frame, an elevator carrying a pivotally mounted car, a spring so attached to said car and said elevator as to tend to hold said car in an upright position and against being tilted, a tilting device adjustably mounted upon said elevator and so placed that it will tilt one or more cars when brought in contact with it.

4. An automatic elevator in combination with an elevator frame, cables for operating said elevator, means for operating said cables, a pivotally mounted car carried by said elevator adapted to tilt forward, means for tilting said car, means for restoring said car to its natural position, a shifting device

carrying sprocket wheels, idlers, a drive pulley, a shifting bar and means for operating said shifting bar.

5. In an automatic elevator, an elevator frame, an elevator adapted to operate therein, an elevator car, shifting device, an adjustable dumping device, means for operating said elevator, means for operating said car and means for operating said shifting device.

6. In an automatic elevator, the combination with a frame, an elevator adapted to operate therein, and a car, adapted to tilt forward carried by said elevator, of means for tilting said car, means for restoring said car to its normal position, a shifting bar, means operated by said elevator for imparting motion to said bar, means for operating said elevator and means for reversing the operation of said last named means and reversing the movement of the elevator.

7. In an automatic elevator, the combina-

tion with a frame, an elevator adapted to operate therein, a car adapted to tilt forward carried by said elevator, of means for tilting said car, means for restoring said car to its normal position, a shifting bar, means operated by said elevator for imparting motion to said bar, means for operating said elevator and means for reversing the operation of said last named means, said reversing means comprising a plurality of idlers and a drive pulley and a plurality of power transmitters for operating on said idlers and pulley and imparting motion to the same.

In testimony whereof I have signed my name to this specification in the presence of the two subscribing witnesses.

GEORGE E. RICHMOND.

Witnesses:

WM. A. CATHEY,
J. C. CARPENTER.