Jan. 17, 1928. 1,656,501

G. W. RIENKS

LOADING APPARATUS

Filed April 19, 1924 3 Sheets-Sheet 1

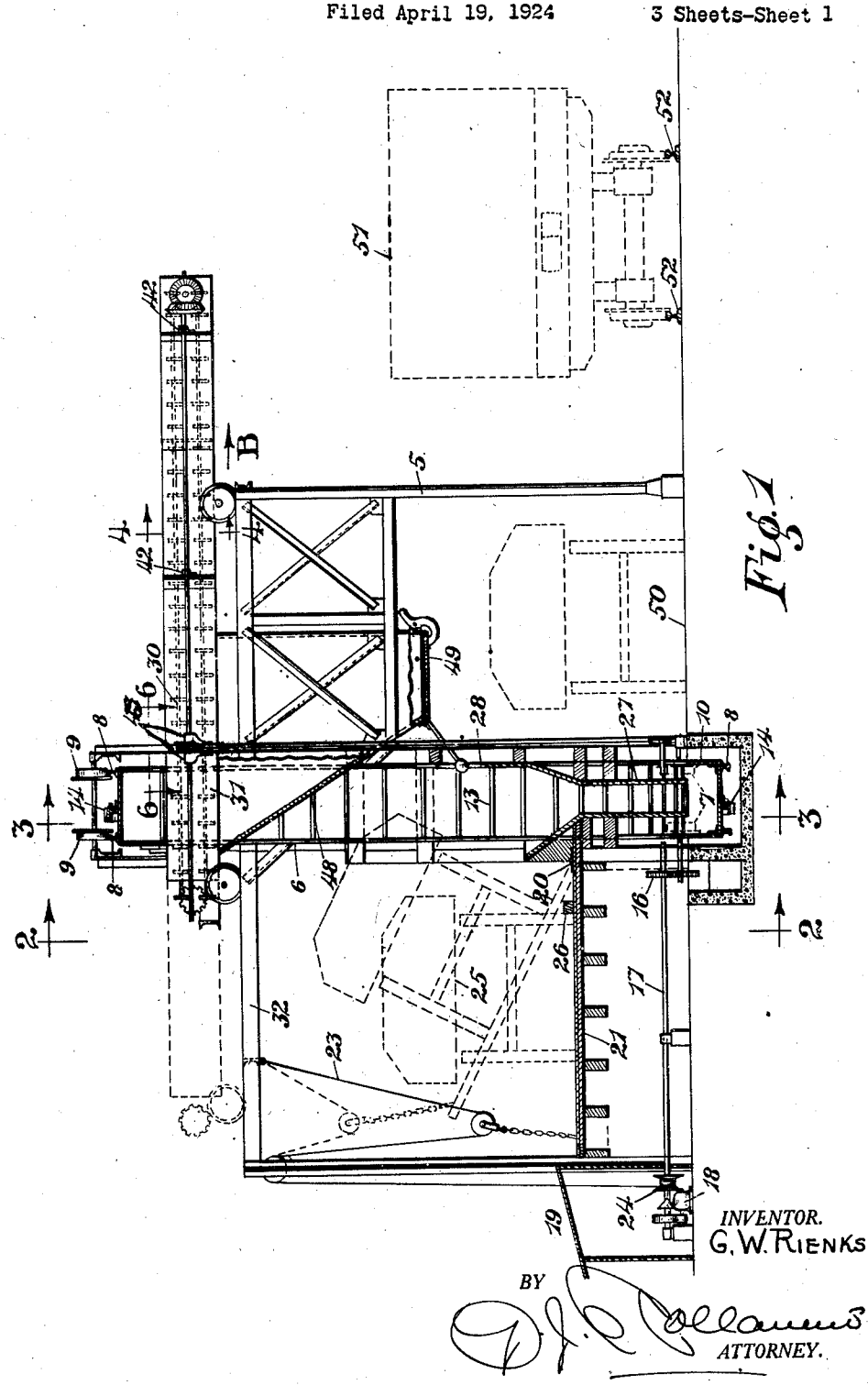


Fig. 1

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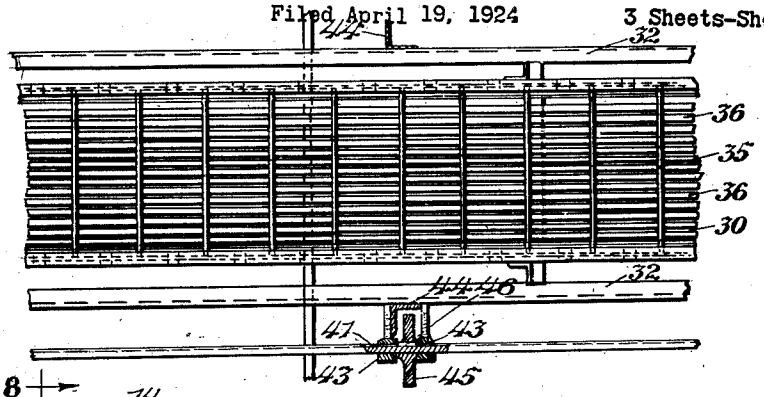


Fig. 6

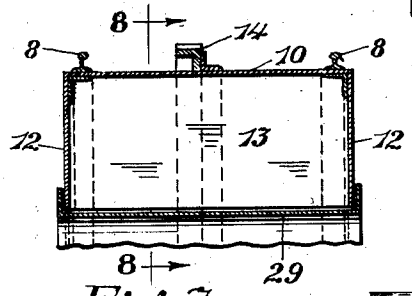


Fig. 7

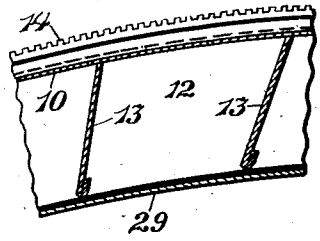


Fig. 8

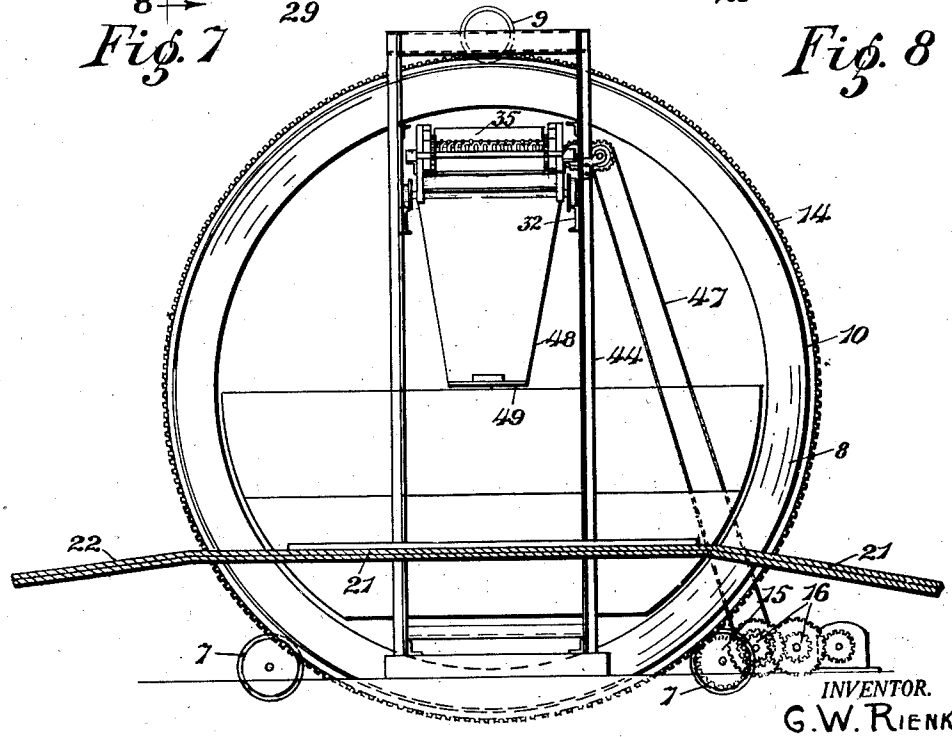


Fig. 2

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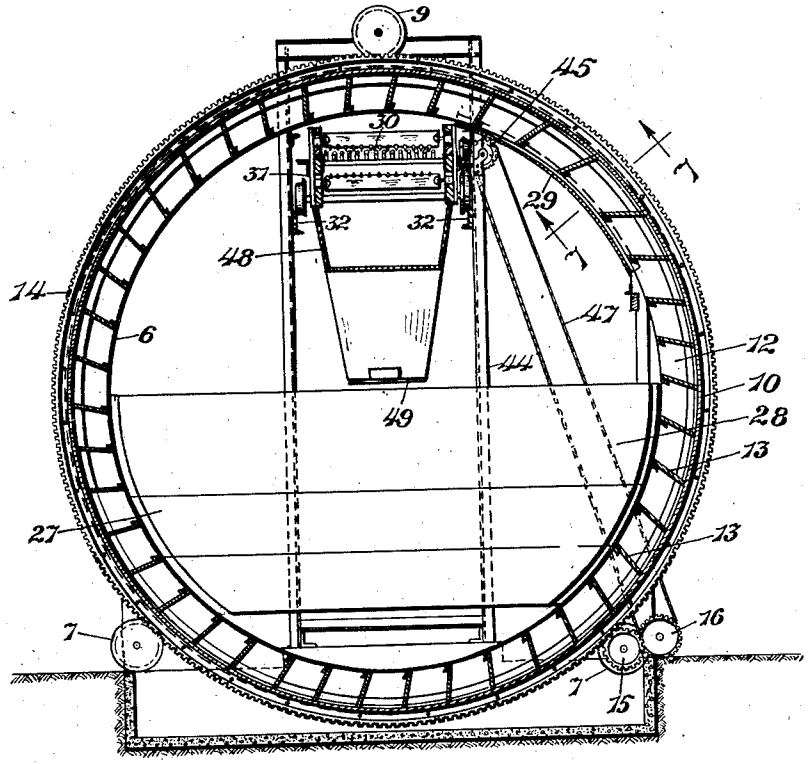


Fig. 3

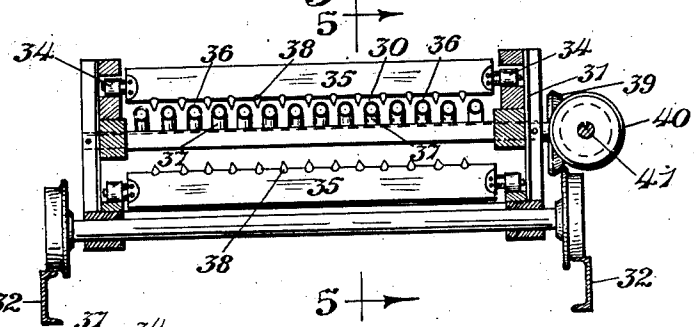


Fig. 4

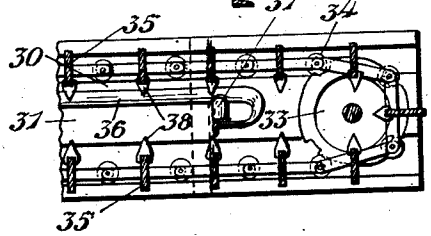


Fig. 5

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Patented Jan. 17, 1928. 1,656,501

UNITED STATES PATENT OFFICE.

GEORGE W. RIENKS, OF DENVER, COLORADO.

LOADING APPARATUS.

Application filed April 19, 1924. Serial No. 707,630.

My invention relates to apparatus for loading beets or other produce of similar character into wagons or railroads cars and its primary object is to provide a combination of elements which co-operate to convey beets delivered in quantities by wagons or other conveyances, to an elevated point of discharge and to cause during the course of their conveyance adherent dirt to be separated from the roots.

A further object of the invention resides in providing a simple and highly efficient rotary appliance for the elevation of the beets, and still other objects reside in details of construction as will fully appear in the course of the following description.

A practical embodiment of my invention has been illustrated in the accompanying drawings in the several views of which like parts are similarly designated and in which

Figure 1 represents a sectional elevation of the elements comprised in the invention in their co-operative association;

Figure 2, a vertical section along the line 2—2, Figure 1;

Figure 3, a similar section taken on the line 3—3, Figure 1;

Figure 4, an enlarged transverse section of the horizontal conveyor and separator of the apparatus in a plane indicated by the line 4—4 in Figure 1;

Figure 5, a longitudinal section of an end portion of the conveyor;

Figure 6, a fragmentary plan view of the conveyor in connection with adjoining parts of the supporting structure, looking downwardly from the plane designated in Figure 1 by the line 6—6;

Figure 7, an enlarged transverse section of the elevator of the apparatus along the line 7—7, Figure 2; and

Figure 8, a section taken on the line 8—8, Figure 7.

Referring more specifically to the drawings, the reference numeral 5 designates a supporting structure preferably composed of structural metal upon which the elements comprised in the invention are co-operatively assembled.

A circular elevator 6 is supported for rotation upon two pairs of flanged wheels 7 which engage with rails 8 at the circumference thereof, and it is held against lateral deflection by a third pair of similar wheels 9 which engage the rails at the highest point in their circular movement.

The elevator comprises a spokeless wheel composed of a rim 10 and parallel inwardly directed side-flanges 12, the space between said flanges being divided by slanting partitions 13 into buckets which are open at the inner circumference of the wheel.

The elevator is provided with a peripheral toothed circular rack 14 which is operatively engaged by a pinion 15 on the shaft of one of the pairs of supporting wheels, and a train of reduction gears 16 connect the pinion shaft 17 with a line shaft which in the operation of the appartus, is driven by connection with the rotor of a motor 18 shown in Figure 1 as installed in an engine room 19 built at an end of the supporting structure.

Hinged as at 20 at a side of the elevator, is a tilting platform 21 onto and from which the delivery wagons are driven along slanting approaches 22 as shown in Figure 2.

A tackle 23 connects the platform at its edge opposite to that at which it is hinged, to a hoist 24 which is installed in adjacency to the motor and in geared connection with the driving part thereof.

In the operation of the apparatus, the wagons 25 in which the beets are delivered from the field are driven onto the platform and unloaded by tilting the platform to the position indicated in Figure 1 in broken lines, sideways displacement of the wagon being prevented by the engagement of their wheels with one or more stop rails 26.

The beets fall from the tilted wagons into a chute 27 which conducts them into the buckets of the rotary elevator at the lowermost point thereof.

The chute is preferably made in the shape of a bottomless box conforming with the space inside the wheel of the elevator at the lower portion thereof and having a hopper-like mouth connected at the rear side of the chute with an upright fender-board 28 which prevents the beets from falling outside the wheel.

The revolving movement of the elevator in the direction of the arrow A in Figure 3,

imparted thereto through the medium of the motor-driven pinion 15, carries the beets loaded into its buckets, upwardly to be discharged therefrom at the highest point of the circle of rotation.

A shield 29 covers the buckets along the upper portion of the ascending side of the wheel to prevent the beets from falling out before they reach the point of discharge and it will be evident that beets carried upwardly in excess of the capacity of the buckets fall back into the chute before the buckets pass across the lower edge of the shield.

The beets dicharged from the elevator fall onto an endless conveyor 30 which extends through the space within the wheel immediately below the point of discharge hereinbefore described.

The conveyor comprises a wheeled carriage frame 31 supported upon a horizontal railroad track laid at the top of the supporting structure for the longitudinal adjustment of the conveyor as will hereinafter be more fully described.

Two pairs of sprocket wheels 33 on shafts rotatably mounted at opposite ends of the conveyor, carry endless roller chains 34 which travel in longitudinal guide ways in the sides of the carriage as best shown in Figure 4. The chains are connected by transverse blades 35 which in the operation of the conveyor impel the beets over a grated floor preferably composed of parallel tubes or rods 36 supported in chains 37 on transverse members of the carriage. Pins 38 on the blades project in the spaces between the tubes to prevent their being clogged by accumulating dirt.

In the operation of the apparatus, the endless element of the conveyor is driven in the direction of the arrow B in Figure 1 by means of a pair of beveled gear wheels 39 and 40 mounted respectively on the shaft of one of the pairs of sprocket wheels and on a shaft 41 which extends longitudinally of the conveyor at one side thereof.

The shaft is supported for rotation in boxes 42 fastened at the adjacent side of the conveyor carriage and in bearings 43 fastened to an upright 44 of the supporting structure.

A sprocket wheel 45 disposed between the last mentioned bearings, is mounted to impart a rotary movement to the shaft 41 through the instrumentality of a key 46 which is slidably fitted in a longitudinal groove of the shaft and the sprocket wheel is driven by means of a chain 47 passing around a corresponding wheel on one of the shafts of the transmission gearing as best shown in Figures 2 and 3.

It will be apparent that the sliding key in the longitudinal groove of the shaft 41 maintains an operative connection between the driving mechanism and the endless conveyor irrespective of the position of the carriage upon which the conveyor is mounted, relative to the supporting structure.

During movement of the beets across the ribbed and grated floor of the conveyor, the adhering dirt is dislodged from the beets and passes through the spaces of the floor, into a bin 48 which is mounted on the supporting structure inside the wheel of the elevator.

The bin has sloping sides to facilitate the downward movement of the dirt to a discharge opening in the bottom of the bin, which is normally closed by a latched and counterbalanced door 49. The discharge-opening of the bin is positioned above a driveway 50 so that when the door is opened the dirt may be discharged into wagons similar to those by which the beets were delivered.

The cleaned beets carried on the conveyor are discharged across the outer end thereof and fall into railroad cars 51 on a track 52 laid alongside of the structure of the apparatus.

By longitudinal adjustment of the carriage on which the conveyor is mounted, its discharge-end may be placed to the best advantage with relation to the box or opening of the car into which the beets are dumped and when the apparatus is not in operation, the conveyor may be completely withdrawn from the space above the track to permit of the passage of higher cars or cars that are loaded to the prescribed height limit.

Having thus described my improved loading apparatus, it will be understood that variations in the construction and arrangement of its parts may be resorted to within the scope and spirit of the invention.

It may be found desirable, for example, to unload the wagons 25 and reload them with dirt at the same side of the elevator in which case, the tilting platform must be placed beneath the dirt-bin and the fender board of the delivery chute is arranged at the opposite side of its hopper-shaped mouth.

It will also be apparent that by using dump wagons to convey the beets to the elevator, the platform 21 may be made stationary and the tackle and hoist can be eliminated unless its use is desired for lifting the wagon boxes.

What I claim and desire to secure by Letters Patent is:

1. In loading apparatus comprising a spokeless wheel mounted for rotation about a horizontal axis and having buckets fixed interiorly of its rim, means for loading the buckets, means inside the wheel to receive the load of the buckets below their point of discharge in the circle of rotation, and a shield covering the buckets above the loading means and to the point of discharge at

the ascending side of the wheel to prevent of their being unloaded before they reach the point of discharge.

2. In a loading apparatus, a rotary elevator wheel, buckets on the interior of the rim of said wheel, a chute within said wheel to direct material thereto, said chute conforming to the interior of said wheel, and means to receive the material from the elevator.

3. In a loading apparatus, a rotary elevator wheel, buckets on the interior of the rim of said wheel, a two-sided open-ended chute adapted to direct material to the buckets in the lower portion of the elevator wheel, and means to receive the material from the elevator.

4. In a loading apparatus, a rotary elevator wheel, buckets on the interior of the rim of said wheel, and a chute to direct material to the buckets, consisting of a side having a feeder board and spaced therefrom a fender board to restrict the material fed to the chute.

In testimony whereof I have affixed my signature.

GEORGE W. RIENKS.