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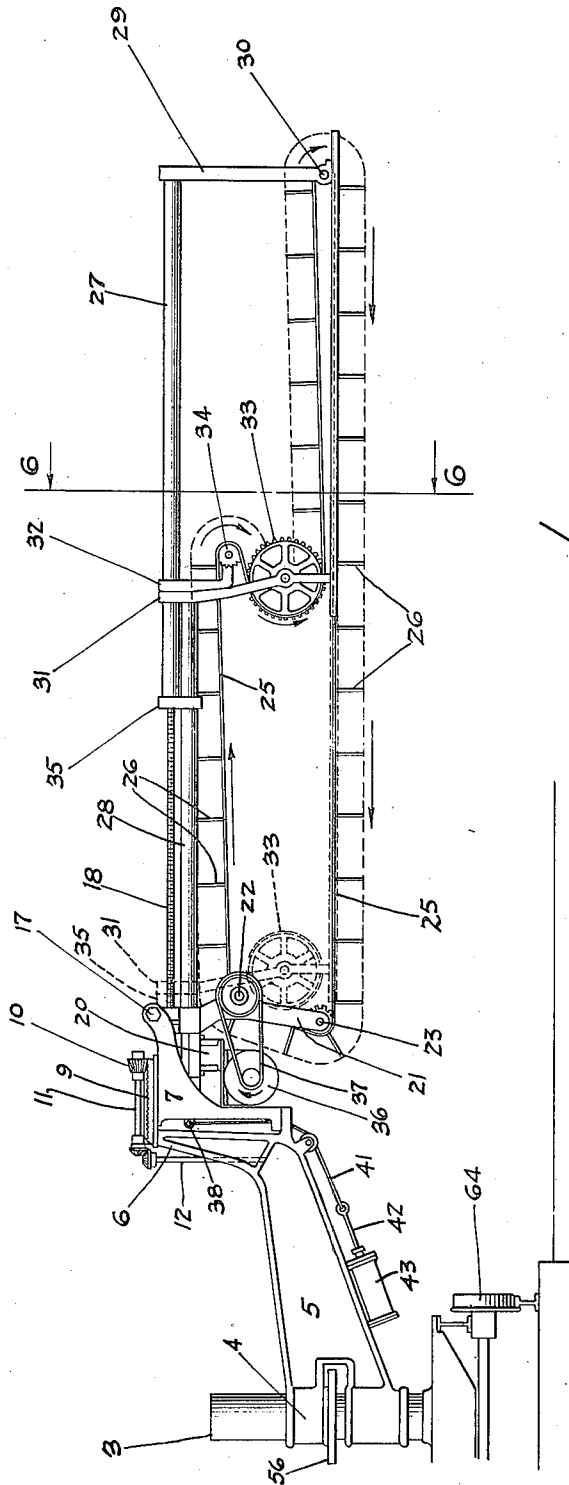
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F. L. HAGUE

BOX CAR UNLOADER

Filed March 25, 1921

5 Sheets-Sheet 1



Inventor
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By Paul Paul
His Attorneys

Dec. 30, 1924.

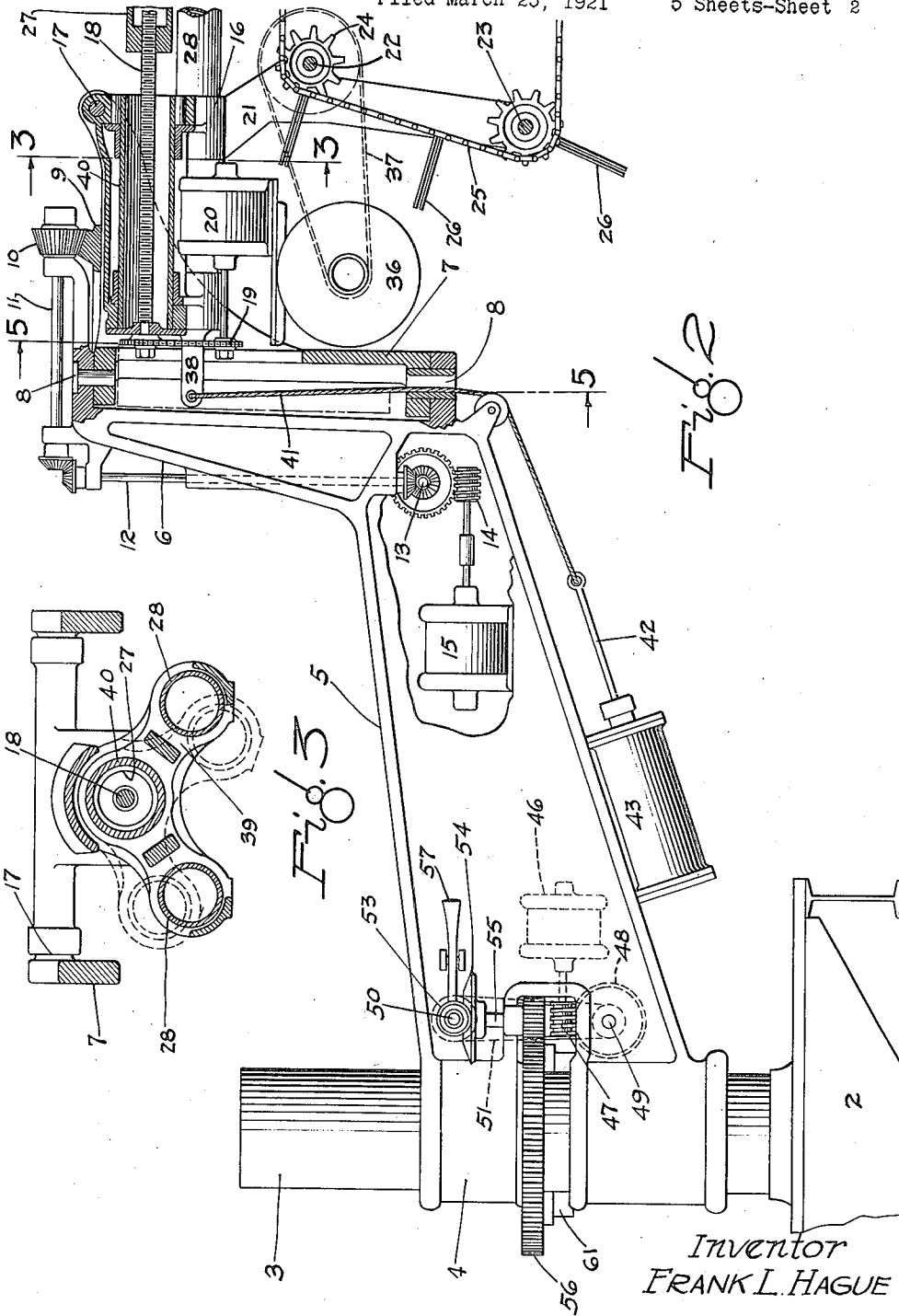
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5 Sheets-Sheet 2



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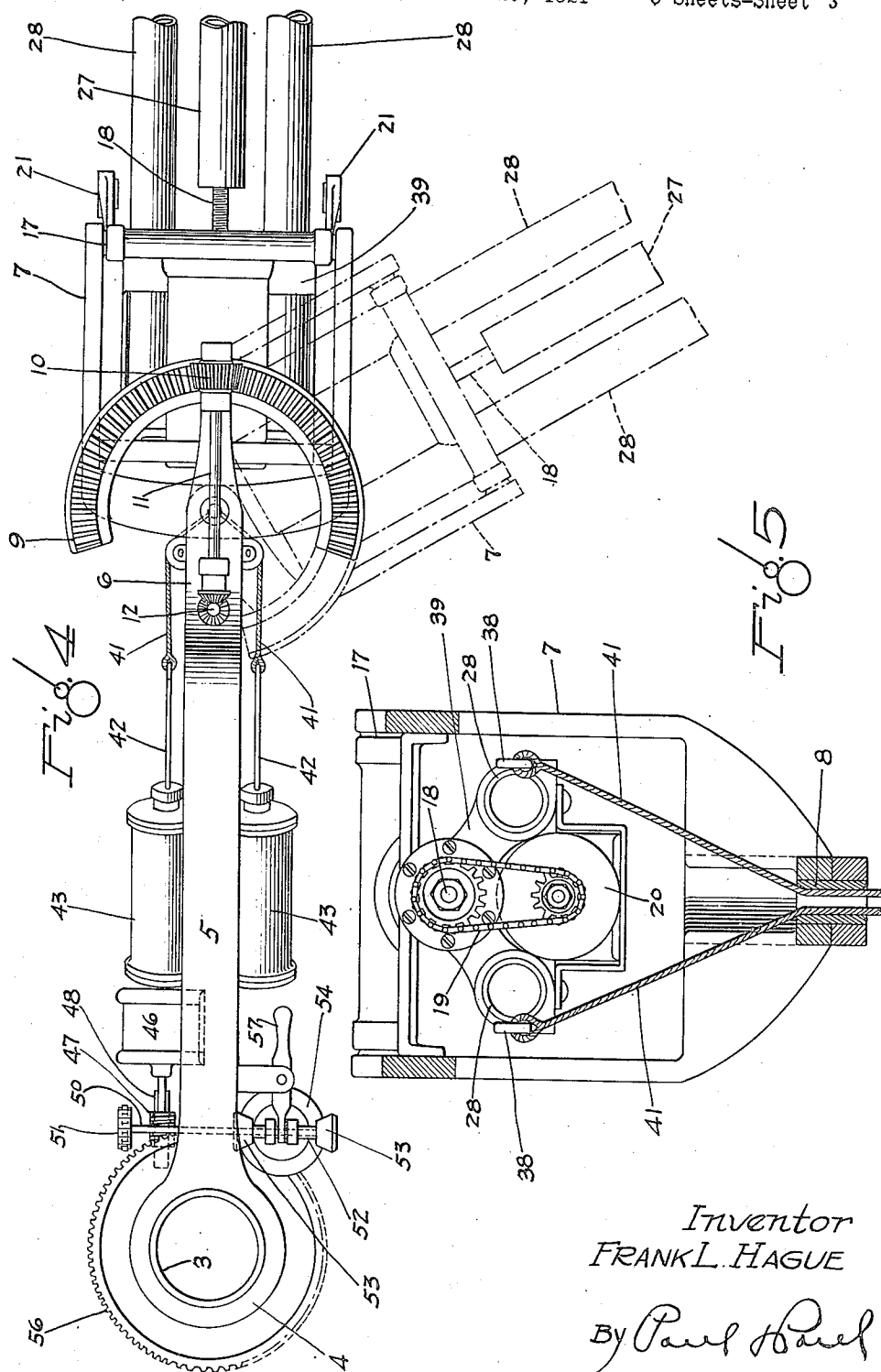
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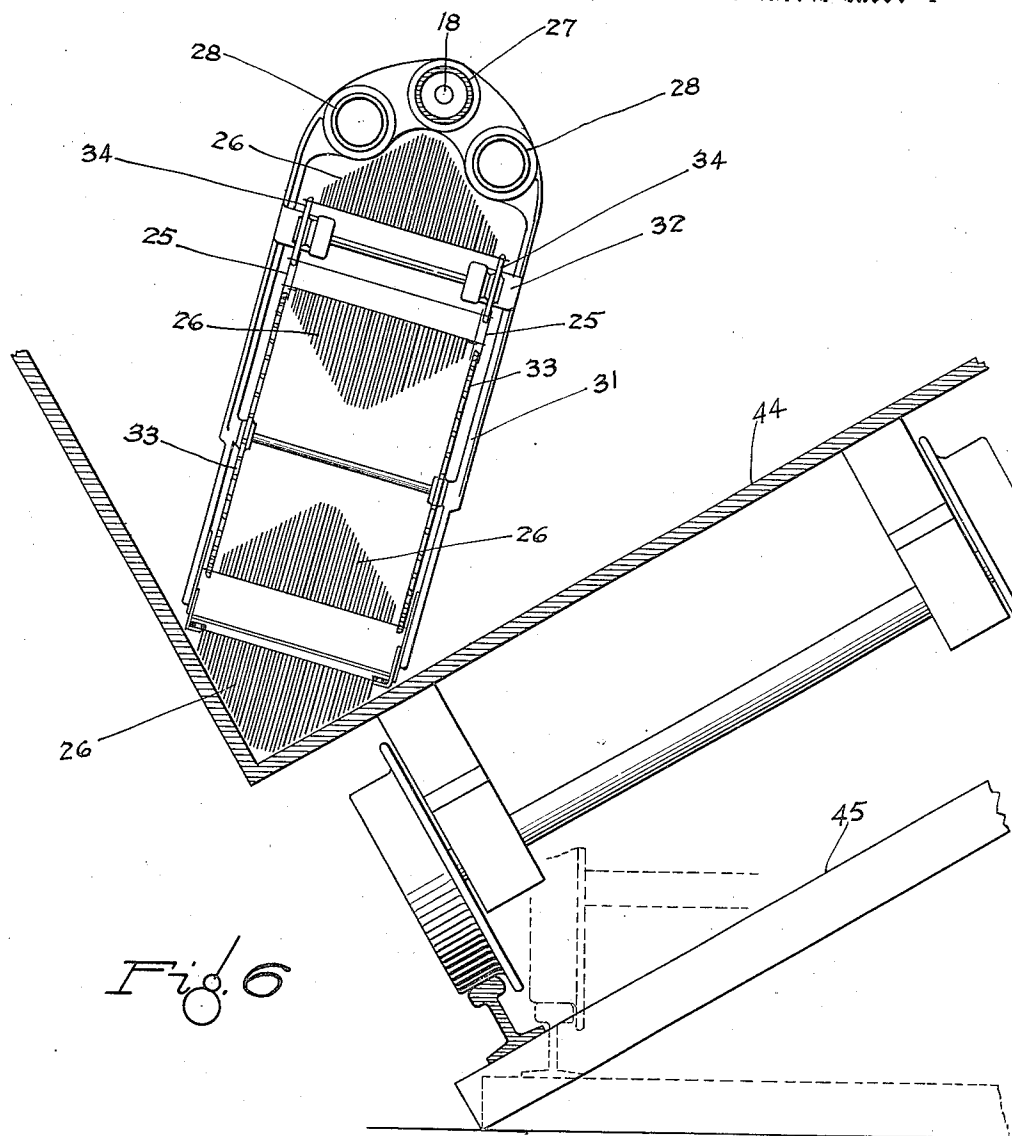


Fig. 6

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HIS ATTORNEYS

Dec. 30, 1924.

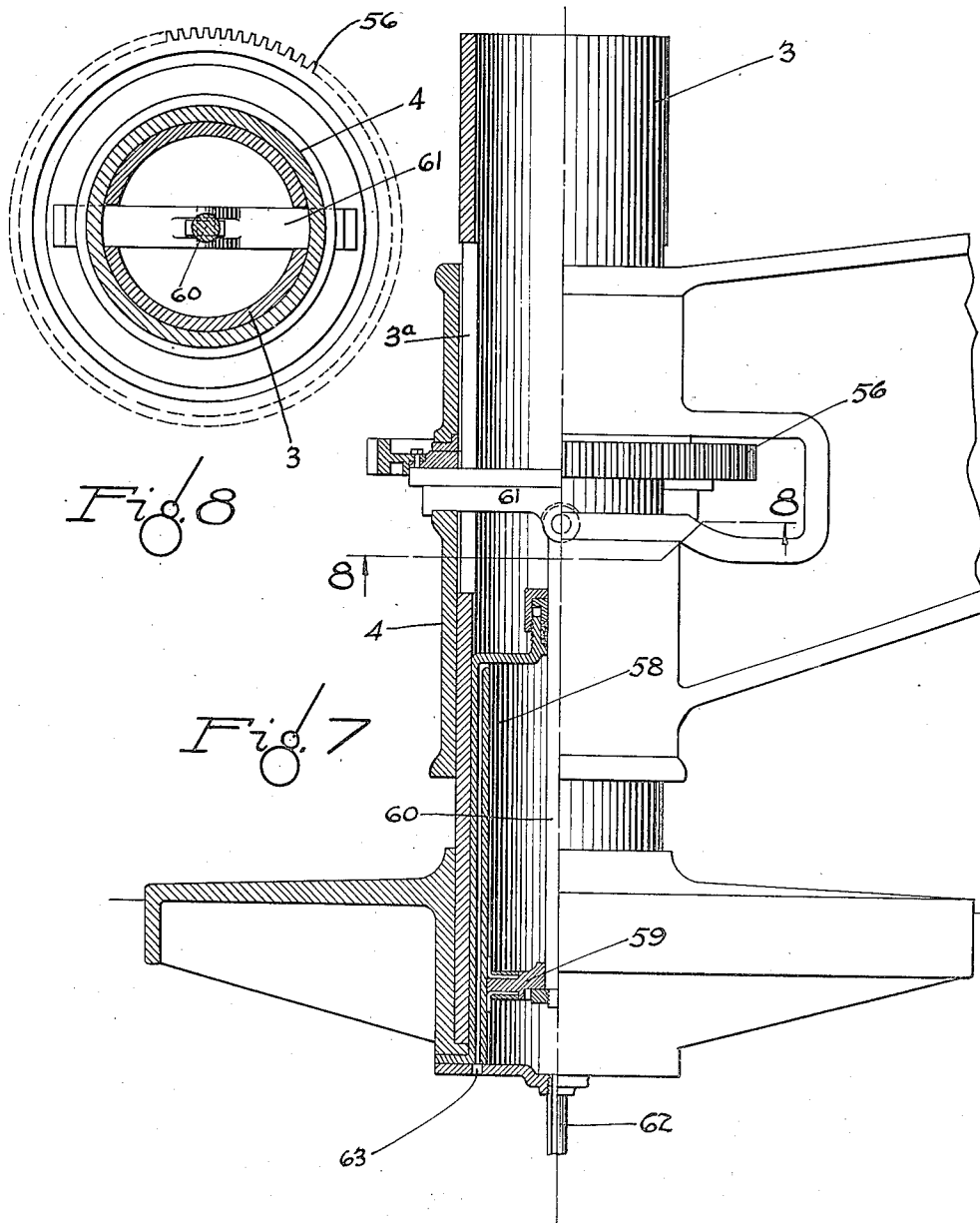
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F. L. HAGUE

BOX CAR UNLOADER

Filed March 25, 1921

5 Sheets-Sheet 5



Inventor
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UNITED STATES PATENT OFFICE.

FRANK L. HAGUE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO FEGLES CONSTRUCTION COMPANY, LIMITED, OF FORT WILLIAM, ONTARIO, CANADA, A CORPORATION OF CANADA.

BOX-CAR UNLOADER.

Application filed March 25, 1921. Serial No. 455,501.

To all whom it may concern:

Be it known that I, FRANK L. HAGUE, a citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Box-Car Unloaders, of which the following is a specification.

The object of my invention is to provide an apparatus by means of which the contents of a box car, such as a small grain car, can be easily and quickly unloaded.

A further and particular object is to provide an apparatus for removing the grain lying in the angle between the floor of the car and the side wall when the car is tilted on a longitudinal axis from its normal horizontal to an inclined position.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a side view of an unloader apparatus embodying my invention,

Figure 2 is a side elevation, partially in section, of one end of the apparatus, showing the operating mechanism therefor,

Figure 3 is a transverse sectional view through the unloader belt supporting mechanism,

Figure 4 is a plan view of the apparatus, showing the means for oscillating the unloader belt and its supporting frame on a vertical axis,

Figure 5 is a transverse sectional view on the line 5—5 of Figure 2,

Figure 6 is a transverse sectional view through a portion of a freight car, showing my improved unloader belt operating in the angle of the car between the floor and the side wall.

Figure 7 is a detail sectional view showing the manner of mounting the oscillating bracket on its upright support.

Figure 8 is a sectional view on the line 8—8 of Figure 7.

In the drawing, 2 represents a suitable base on which is mounted a stationary upright column 3. 4 is a sleeve mounted to slide vertically and rotate on said column. This sleeve is provided with an outwardly

projecting bracket 5 whereon the unloader mechanism is supported, as will hereinafter be described in detail. The outer end of the bracket 5 has an upwardly turned portion 6 and a yoke 7 has vertical pivots 8 on the end 6 and is adapted to oscillate laterally on said pivots to shift the unloader belt from side to side. This shifting movement is effected by any suitable mechanism, preferably by means of a quadrant 9 mounted on the yoke 7 and meshing with a spur pinion 10 that is secured to a shaft 11 which has bearings in the end 5 of the bracket and is driven through shafts 12 and 13 and a suitable gearing from the worm 14 on the shaft of an electric motor 15. This motor is mounted for forward and reverse movement so that the shaft 11 may be revolved in either direction to oscillate the yoke 7 to the right or the left, as may be desired. A casting 16 is pivoted at 17 in the yoke 7 and has a bearing for a feed screw 18 that is operated through a belt 19 from an electric motor 20. Brackets 21 depend from the casting 16 and shafts 22 and 23 are mounted in said bracket and have sprocket wheels 24 to engage belts 25 on which sweeping or scraping blades 26 are mounted at intervals, said blades being preferably in the form of brushes, gradually increasing in length from the ends to the middle, as indicated in Figure 6, to form a brush of such shape that it will fit into the angle of the car between the floor and side wall when it is tilted, as shown in Figure 6, and thereby the material, such as small grain in the angle of the car, will be swept clean therefrom toward the discharge opening.

At the outer end of the screw 18 is a pipe 27 having threaded engagement with the screw, as indicated in Figure 2, so that as the screw is revolved, the pipe 27 will be moved back and forth thereon. Pipes 28 are also provided, one upon each side of the pipe 27 and in parallel relation therewith. The outer end of the pipe 27 has a hanger 29 thereon supporting the shaft 30 of the conveyor belts and hangers 31 and 32 are mounted on the inner portion of the pipe 27 and support sprocket wheels 33 and 34 which engage the upper run or stretch of the unloader belt, as shown in Figure 1. The hanger 31 slides on the pipe 28 in projecting and retracting the pipe 27 and the hanger 32 is mounted on pipes 28 and forms

a guide for the pipe 27. A yoke 35 is mounted on the inner end of the pipe 27 and also slides on the pipes 28, the purpose being to project and retract the conveyer belt within the car to be unloaded, and at the same time maintain the desired tension of the belt. The yoke 35 is loosely mounted on the pipe 27 so that when the yoke reaches the end of its travel inwardly on the pipes 28, the pipe 27 may slide in said yoke and travel to the inner end of the operating screw.

A sweeping movement of the belt is effected by suitable means, such as an electric motor 36 for operating a belt 37 which has driving connections with the shaft 22 of the unloading belt. By this means the unloading belt may be operated at the desired speed to sweep the grain out of the car and particularly out of the angle between the floor of the car and the side wall when the car is tilted on a longitudinal axis.

I also prefer to provide means for tilting the unloader belt on a horizontal axis—that is, the pivot 17. Arms 38 are mounted on the yoke 39 that is carried by the sleeve 40 journaled in the casting 16 concentric with the screw 18. Cables 41 connect the arms 38 with piston rods 42 of fluid pressure cylinders 43. By this means, when fluid pressure is applied simultaneously to the cylinders 43, the casting 16 will be oscillated on its horizontal pivot 17 to raise or lower the outer end of the unloader belt and adapt the brushes to the work.

It may be desired, however, to rock or tilt these brushes to adjust them in the angle of the car, and I may then operate one of the cylinders 43 and rock the pipes 28 and the screw driving motor 20 with the sleeve 40 in its bearings in the casting, as indicated by dotted lines in Figure 3, the pipe 27 and the operating screw 18 being stationary during such movement and when the desired tilting position is obtained, the screw may be operated through the motor 20 to project or retract the belt and adjust its brushes to the work.

In Figure 6 I have shown a freight car 44 tilted upon a suitable supporting platform 45 to the desired angle so that the brushes of the unloader belt can operate in the space between the side wall and the floor of the car and sweep the material accumulated therein when the car is tilted toward the door of the car or other discharge opening.

It is desirable in an apparatus of this kind to provide means for oscillating the unloader belt supporting bracket on a vertical axis, such as the column 3, and I therefore provide an electric motor 46 having a worm 47 meshing with a worm wheel 48 on a horizontal shaft 49 which drives a

parallel shaft 50 through a sprocket belt 51. This shaft 50 has a sleeve 52 splined thereon provided with clutch members 53 adapted to alternately engage the periphery of a clutch member 54 that is mounted on a shaft 55 that is geared to the gear ring 56 secured to the sleeve 4. A lever 57 controls the friction clutch members 53 sliding them on their shaft to alternately engage the clutch member 54 and transmit motion through the shaft 55 to the gear ring 56 and rotate it on the upright column 3 to change the horizontal position of the bracket.

Referring to Figures 7 and 8, it is desirable to provide means for raising and lowering the unloading belt supporting track and I therefore provide a cylinder 58 in the base of the hollow column 3 having a piston 59 and a rod 60 connected therewith and pivotally attached at its upper end to a bar 61 that is mounted transversely in the sleeve 4 and is slidable vertically in the slot 3^a in the wall of the column. The sleeve is formed in upper and lower sections, as indicated in Figure 7, with the cross bar 61 intermediate to these sections and positioned to allow freedom of rotary movement of the sleeve sections of the column to provide for the lateral oscillation of the bracket and horizontal adjustment of the unloading belt. Admission of fluid pressure to the cylinder 58 is provided for by means of the pipe 62 and a duct 63 connects the upper portion of the cylinder with the atmosphere to provide for freedom of movement of the piston in the cylinder.

The base supporting the upright column 3 may be mounted upon suitable trucks 64, as indicated in Figure 1, to allow the convenient movement of the apparatus from place to place and permit it to be adjusted upon a track opposite and adjacent to another track on which the car to be unloaded may be standing. The track is adjusted vertically to allow the insertion of the unloader belt arm into the car and then the belt may be swung horizontally and tilted until it is positioned to sweep through the angle between the floor of the car and the side wall and collect the small grain that has accumulated at this point.

The apparatus described provides for any desired adjustment of the unloader belt and allows the operator to position it at any point in the car to be unloaded.

I claim as my invention:

1. A car unloading apparatus comprising a suitable frame, an unloader belt carried thereby and provided with a plurality of brushes, said belt and brushes being mounted to rock in their supports to adjust the brushes for sweeping the angle of the car between its floor and side wall when the car is tilted on a longitudinal axis.

2. An apparatus of the class described comprising a frame provided with telescoping sections and an unloader belt supported by said frame and provided with means adapted for adjustment to sweep the floor of a car in the angle between said floor and the car wall when the car is tilted on a longitudinal axis.

3. An apparatus of the class described comprising a supporting frame, an unloader belt mounted therein, a series of brushes carried by said belt, said brushes being tapered for fitting the angle between the floor of the car and its side wall when tilted, said brushes being adapted for adjustment to sweep the material in said angle to the door of the car.

4. An apparatus of the class described comprising a supporting frame, a car unloader belt, bearings therefor in said frame, said belt being provided with a series of sweeping brushes and mechanism for rocking said unloader belt in said bearings on a longitudinal axis to vary the working positions of said brushes with respect to the floor line.

5. An apparatus of the class described comprising a frame, an unloader belt mounted therein and having a series of brushes, mechanism for oscillating said frame on a vertical axis to change the position of said unloader belt and means for tilting said belt on a horizontal or a longitudinal axis to raise or lower the outer end of said belt to adjust said brushes to the work.

6. An apparatus of the class described comprising a bracket mounted for oscillation on a vertical axis, a frame supported by said bracket and projecting outwardly therefrom and also mounted for oscillation on a vertical axis, and an unloader belt carried by said frame and having brushes for sweeping the floor of a car and mounted to rock in its bearings on a longitudinal axis.

7. An apparatus of the class described comprising a bracket mounted for oscillation on a vertical axis, a frame carried by said bracket and mounted for oscillation on a vertical axis and also for oscillation on a horizontal axis, and an unloader belt supported by said frame and having a series of brushes adapted for sweeping the floor of a car, said belt rocking in its supports upon a longitudinal axis to adjust the brushes to a rocking position.

8. An apparatus of the class described comprising a supporting bracket, a frame carried by said bracket and composed of sections mounted for projection and retraction, a conveyer belt supported by said frame and adapted to be projected and retracted therewith, and also having a rocking movement on a longitudinal axis, and sweeping means mounted on said belt.

9. An unloader apparatus comprising a

bracket, a frame, bearings for said frame in said bracket, said frame being mounted to tilt on a transverse axis and rock in said bearings on a longitudinal axis, mechanism for tilting and rocking said frame and an unloader belt having a sweeping means supported by said frame.

10. An unloading apparatus comprising a bracket, a frame supported thereon and mounted to tilt on a transverse axis and rock on a longitudinal axis, mechanism for tilting and rocking said frame, and an unloader belt having a sweeping means supported by said frame, said frame being composed of extensible sections for projecting and retracting said unloader belt.

11. An apparatus of the class described comprising a truck frame, a bracket mounted for horizontal oscillation thereon, a yoke having vertical pivots in said bracket, mechanism carried by said bracket for oscillating said yoke horizontally, a frame having horizontal pivots in said yoke, means carried by said bracket for tilting said frame, and an unloader belt supported by said frame for operating on the floor of the car.

12. An apparatus of the class described comprising a truck frame, an upright standard thereon, a bracket mounted for vertical movement on said standard and for rotation thereon, a yoke mounted for horizontal oscillation on the outer end of said bracket, a frame supported in said yoke for oscillation therewith and mounted to tilt on horizontal pivots in said yoke, an unloader belt carried by said frame and mechanism for operating said belt to sweep the floor of a car.

13. An apparatus of the class described comprising a truck frame, a standard mounted thereon, a bracket mounted for vertical and horizontal movement on said standard, a yoke having vertical pivots in said bracket, mechanism carried by said bracket for oscillating said yoke horizontally, a frame having horizontal pivots in said yoke, means carried by said bracket for tilting said frame on its pivots, and an unloader belt carried by said frame and having means for sweeping the floor of a car.

14. An apparatus of the class described comprising a truck frame, a bracket supported thereon for horizontal oscillation, a yoke having vertical pivots in said bracket, mechanism for oscillating said yoke on its pivots, a frame having horizontal pivots in said yoke and comprising pipes, one pipe having mechanism for projecting and retracting it with respect to the other pipes, hangers supported by said pipes, and an unloader belt having sweeping means carried by said hangers and projected and retracted by the movement of said pipe.

15. An apparatus of the class described comprising a supporting bracket, a feed screw supported by said bracket, a pipe con-

centric with said feed screw and projected and retracted by the movement of said screw, a hanger and an unloader belt carried thereby, guides and means supporting them concentrically with said screw and pipe for oscillation on an axis concentric with said screw for changing the angle of work of said unloader belt, and mechanism for projecting and retracting said pipe and tilting said guides to vary the angle of said belt with respect to the work.

16. An unloading apparatus comprising a support, a frame carried thereby and mounted to rock upon a longitudinal axis thereon, an unloader belt mounted in said frame and having a sweeping means adapted for adjustment to the angle between a wall and floor by the rocking of said frame.

17. In a car unloading apparatus, a frame adapted to be projected into the door of a car and mounted to rock on a longitudinal axis, and a sweeping means carried by said

frame and adapted by said rocking movement for working adjustment in the angle between the wall and floor of the car. 25

18. In a car unloading apparatus, a frame adapted to be projected into the door of a car and mounted to rock on a longitudinal axis, and a sweeping means carried by said frame and adapted by said rocking movement for working adjustment in the angle between the wall and floor of the car, said sweeping means comprising a belt and wedge-shape brushes mounted thereon. 30

19. A box car unloading apparatus comprising a member adapted for insertion into the car through a side door opening and having a brushing means adapted to fit the angle of the floor and side wall and sweep the loose material therein toward a discharging point. 35 40

In witness whereof, I have hereunto set my hand this 21st day of March 1921.

FRANK L. HAGUE.