No. 883,288.

PATENTED MAR. 31, 1908.

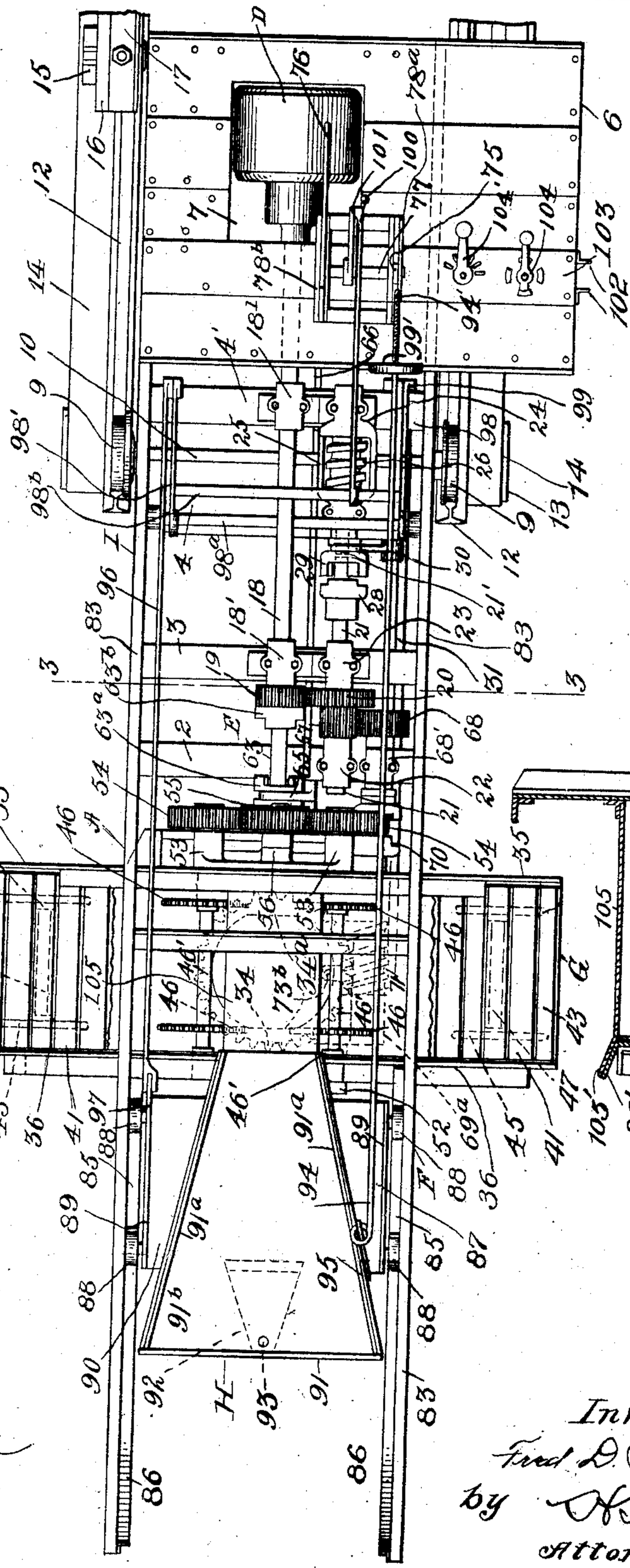
F. D. BUFFUM.

BOX CAR LOADER.

APPLICATION FILED AUG. 29, 1903.

4 SHEETS—SHEET 1.

Fig. 1.



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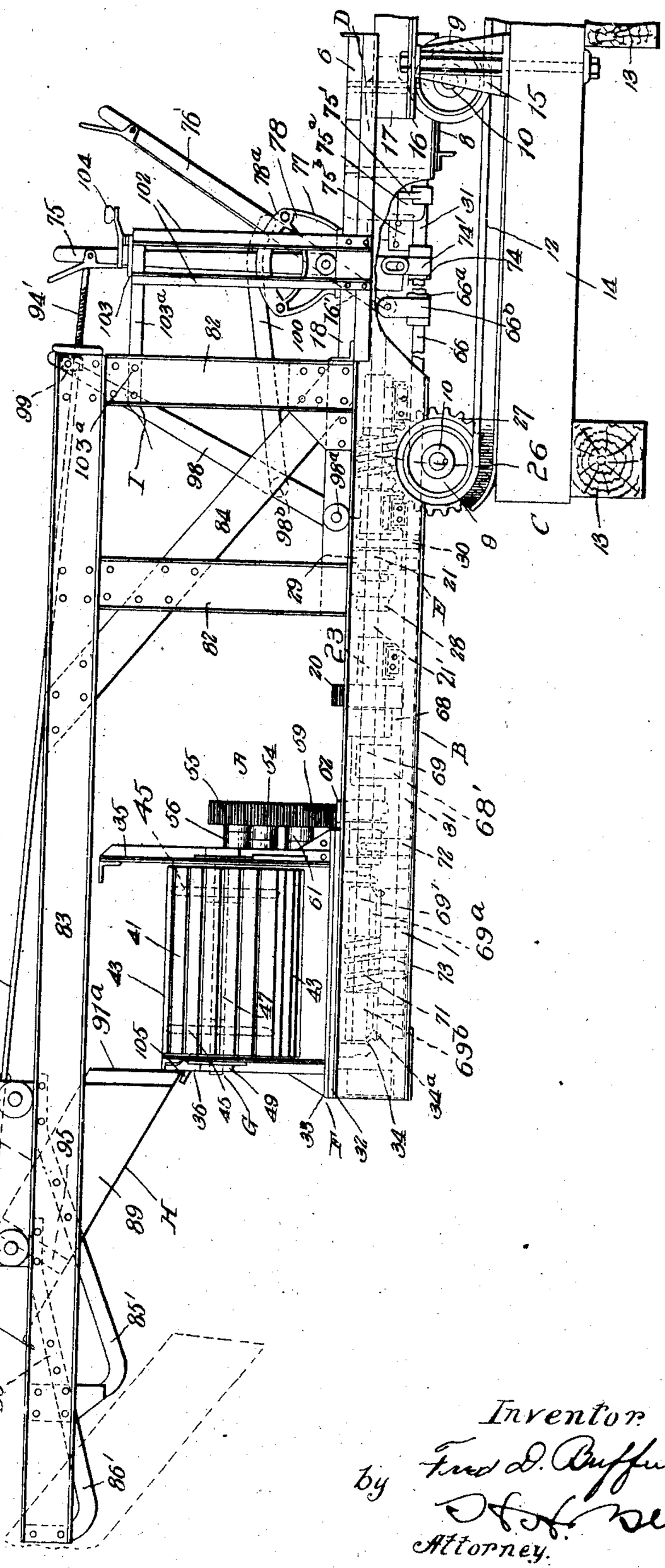
4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

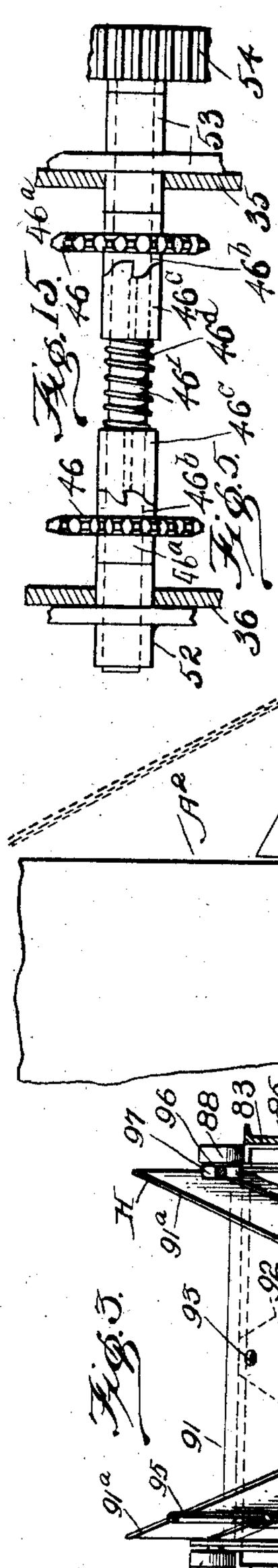

Fig. 13.

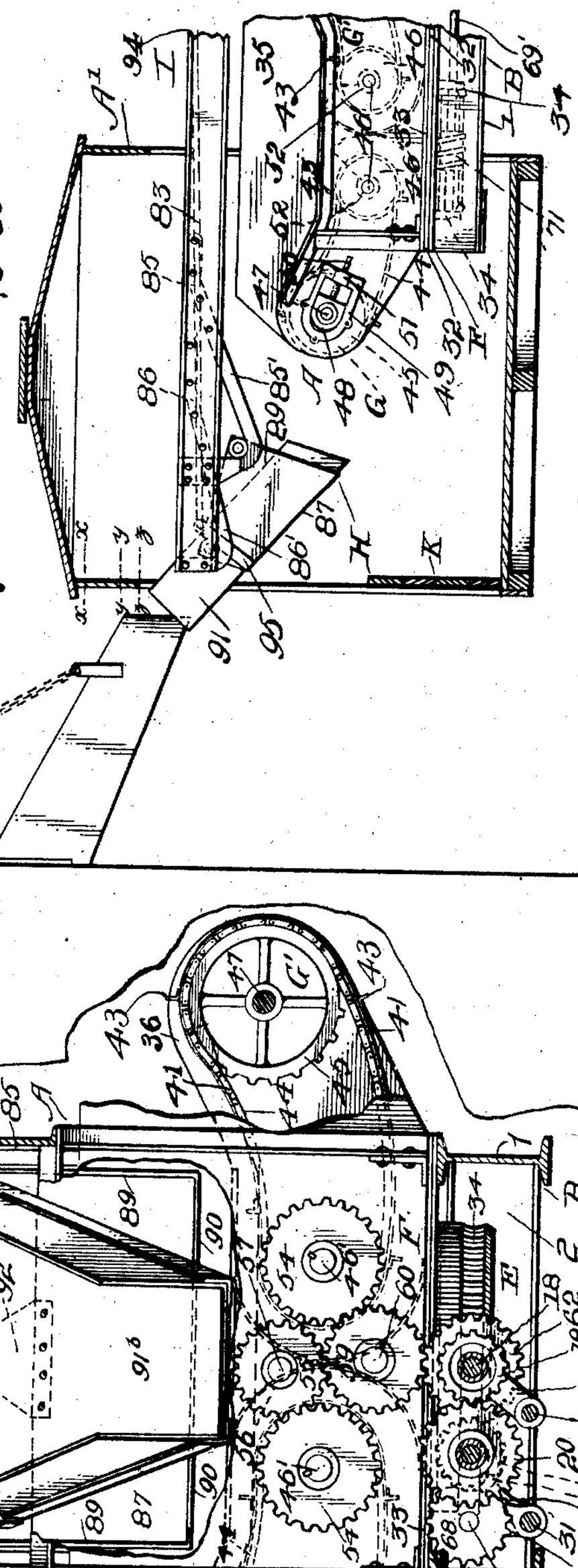

Fig. 14.

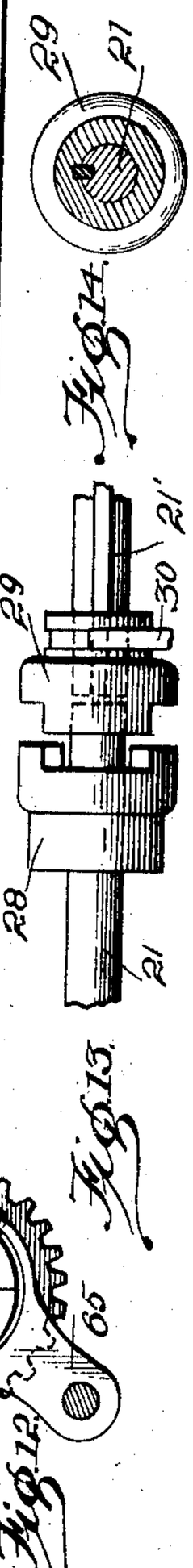

Fig. 12.

Fig. 5.

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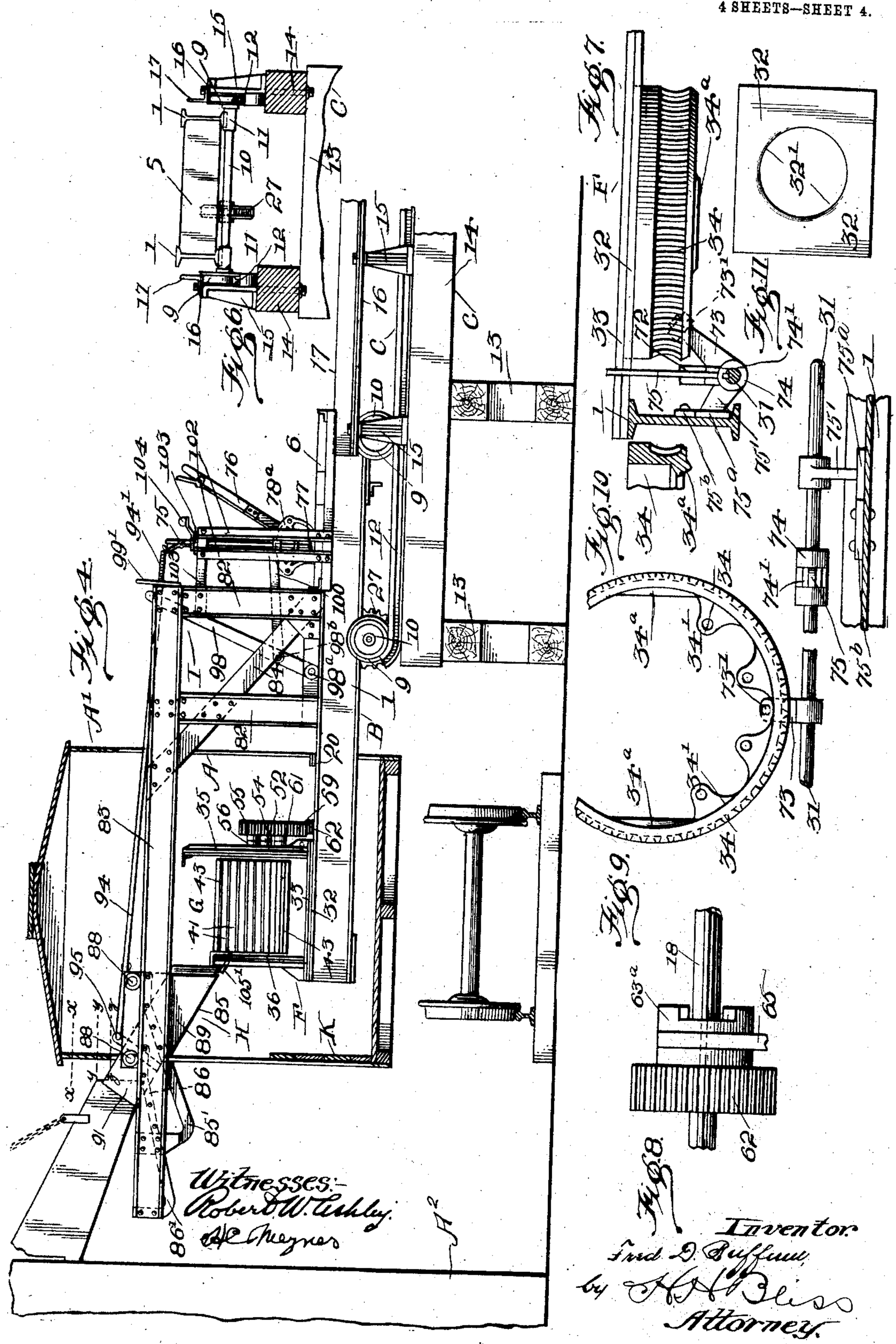
4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

FREDERICK D. BUFFUM, OF COLUMBUS, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE JEFFREY MANUFACTURING COMPANY, A CORPORATION OF OHIO.

BOX-CAR LOADER.

No. 883,288. Specification of Letters Patent. Patented March 31, 1908.

Application filed August 29, 1903. Serial No. 171,244.

To all whom it may concern:

Be it known that I, FREDERICK D. BUFFUM, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Box-Car Loaders, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to devices for loading box cars with various kinds of materials, it being particularly adapted for the loading of coal.

The mechanism herein described is an improvement over the mechanism shown in my application for patent Serial Number 142,770, filed Feb. 10, 1903.

Figure 1 is a plan view of a loading device embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 shows a loader within a car and adjusted to deliver material to both ends thereof. Fig. 5 shows the position of the loader when delivering coal to the center of the car after the ends have been filled. Figs. 6 to 16 show details.

In the drawings A represents the loader as an entirety, A′ the car and A^2 the tipple or pocket containing the material to be loaded.

B represents the framework or carriage of the loader as an entirety, C the track structure upon which the loader is mounted, and D the motor mounted on the carriage.

E represents as an entirety the power transmitting mechanisms between the motor and driven parts of the loader.

F represents as an entirety the turn table and G the conveyers on the turn table which are adapted to deliver the coal at both ends of the car.

H is a delivery chute adapted to be adjusted longitudinally of the loader carriage and to be held in position by a framework secured to the carriage and indicated as a whole by I.

The carriage B is constructed preferably of longitudinal **I** beams 1—1 joined together by cross bars 2, 3, 4 and 4′ which also serve as supports for the bearings for the power driven parts of the loader to be hereinafter described.

5—5 are channel beams connecting the **I** beams 1—1 at their ends. To the top sides of the beams at their rear ends is secured the platform 6 having the apertures near one side of the same through which projects the motor D which is mounted on the platform 8 secured to the under sides of the beams at their rear ends. The framework B is supported upon the wheels 9 keyed to the axles 10 which are journaled in bearings 11 secured to the under side of the **I** beams 1. These wheels in turn are supported upon the track rails 12 of the track structure C which is made up of the cross beams 13, the longitudinal beams 14 to which the side rails are secured, the uprights 15 carrying the plates 16 to which are secured angle plates 17 which project out over the tread of the wheels 9, as shown in Fig. 6, and serve to keep the said wheels down on their rails.

18 is a longitudinal shaft arranged preferably centrally of the loader framework and directly connected to the armature shaft. It is supported in bearings 18′ on the cross beams 3 and 4′. The said shaft carries the pinion 19 loosely mounted thereon and adapted to mesh with the gear wheel 20 rigidly secured to the horizontal shaft 21 the axis of rotation of which is preferably in the same horizontal plane as the axis of rotation of the shaft 18.

22 and 23 are bearings for the shaft 21 rigidly secured to the cross beams 2 and 3 respectively.

21′ is a shaft arranged in close proximity to the inner end of the shaft 21 and having its horizontal axis in alinement with the horizontal axis of the shaft 21.

24 is a bearing block having bearing surfaces at either end for the shaft 21′ and provided between said bearing surfaces with an aperture 25 adapted to receive the worm 26 which is rigidly secured to the shaft 21′. The said bearing block is itself secured to the cross beams 4 and 4′. The worm 26 meshes with a worm gear 27 rigidly secured to the forward axle 10 of the carriage.

28 represents a clutch jaw rigidly secured to the shaft 21 and 29 is the other jaw of the clutch, it being splined to the shaft 21′ and provided with a shift lever 30 which is rigidly secured to the longitudinally extending shaft 31.

In the present construction, as in the case of my former loader, the turn table upon which the distributing conveyers are mounted is adapted to be adjusted so that the conveyers are within the longitudinal vertical planes of the sides of the loader frame when the loader is to be inserted into the car and are in the planes at right angles to the afore-

said planes of the framework when the turn table is rotated into working position within the car.

32 is a plate rigidly secured to the upper sides of the outer ends of the longitudinal beams 1. Mounted on this plate is the bottom plate 33 of the turn table F carrying the worm gear 34 which projects down through the circular aperture 32′ in the plate 32 in such a manner that the said worm wheel operates as a pivot for the turn table.

Upon the plate 33 I erect a hopper-like structure which is adapted to receive the distributing conveyers, and to provide for the proper distribution of the material to be loaded. Preferably, this structure consists of the vertical plates 35 and 36, both of which are secured to the plate 33, the former extending upward for a considerable distance on the side of the hopper structure on which the power transmitting parts of the distributing conveyers are mounted in order to prevent any material from being thrown over into said parts, or from escaping from the distributing conveyers other than from the upper ends thereof. The plate 36 is secured to the plate 33 on the receiving side of the hopper structure and has its top edge preferably formed in shape substantially conforming to the course of the travel of the flights on the distributing conveyers and extends upward a distance at least equal to the distance of the tops of said flights from the plate 33. Secured to this plate 36 is a lip 36′ adapted to extend outward under the delivery chute. These vertical plates are preferably provided with suitable lateral and longitudinal braces, and are of the peculiar shape shown in Fig. 3.

The distributing conveyers, which are indicated as a whole by G, are preferably formed of a series of transverse slats 41 having at intervals ribs or flights 43 projecting at right angles therefrom and adapted to engage the material and to prevent its flowing backward under the action of gravity as the conveyer slats or plates are moved upward toward their point of delivery. These slats 41 are preferably secured to the chains 44 which are adapted to run on the sprocket wheels 45 and 46, the former of which is secured to the shaft 47 mounted in the bearing block 48 adjustable in the guides 49 which are rigidly secured to the faces of the hopper plates 35. 50 is a screw connected with the bearing block 48 and engaging with screw threads in the projection or boss 51 of the guides 49 by means of which the shaft 47 may be adjusted to take up slack in the conveyer chains.

The sprocket wheels 46 are secured upon transverse shafts 46′ mounted in bearings 52 and 53 secured to the side walls of the hopper in horizontal planes somewhat below the horizontal planes of the bearings for the shafts 47 so that the conveyers will travel upward at an inclination to the horizontal. Each of the said shafts is provided at its end which is innermost when the turn table is turned into operative position with a gear wheel 54. 55 is a gear wheel meshing with one of the said gears 54. It is secured to the shaft 57 mounted in a bearing 56 secured to the said inner wall of the hopper. And 59 is a gear wheel rigidly secured to a shaft 60 likewise mounted in a bearing 61 secured to the side wall of the hopper and meshing with the aforesaid gear 55 and with the other gear wheel 54. By means of this arrangement of gears it will be seen that when rotation is imparted to the shaft 60, the distributing conveyers will be caused to advance simultaneously and in opposite directions.

62 is a driving gear splined to the shaft 18 and adapted to mesh with the gear 59. Said gear 62 carries on its inner face one jaw 63^a of a clutch 63, the other 63^b of which is rigidly secured to the loose pinion 19 on the same shaft.

65 is a lever arm engaging with the clutch jaw 63^a secured to the longitudinal shifting bar 66.

67 is a pinion rigidly secured to the shaft 21 and adapted to mesh with the gear 68 rigidly secured to the horizontal shaft 69 whose axis of rotation is preferably in the same horizontal planes of the axis of rotation of the shafts 21 and 18. This shaft is mounted in the bearing 68′ secured to the cross beam 2 and has secured to its outer end one jaw of the clutch 70 the other jaw of which is splined to the shaft 69′ which is mounted in alinement with the shaft 69 and has the same axis of rotation. This shaft 69′ is mounted in the bearings 69^a—69^b secured to the framework of the loader. Between these latter bearings is a worm wheel 71 rigidly secured to the shaft 69′ and meshing with the worm wheel 34 of the turn table.

In order to provide against breaking any of the parts of the machine by attempting to insert it into or withdraw it from a car when the longitudinal lines of the distributing conveyers are in vertical planes other than the vertical longitudinal planes of the loader carriage, I have so correlated the clutch elements on shaft 18 and between shafts 21 and 21′ and 69 and 69′ respectively that the power transmitting mechanism for advancing or withdrawing the carriage cannot be thrown into action when the turn table is turned at any angle to the longitudinal vertical central plane of the carriage, nor can the turn table be rotated excepting when the carriage advancing and withdrawing mechanism is out of action.

72 is a shifting lever connected to the outer jaw of the clutch 70 on the shaft 69′ and rigidly secured at its lower end to the shifting rod 31. 73 is an arm secured to the outer end of the said bar 31, and projecting inwardly at an inclination to the horizontal.

73′ is a friction roller rotatably mounted on the end of the arm 73. This roller is adapted normally to engage with the inner surface 34′ of the downwardly projecting annular flange of the worm wheel 34. This inner surface of the worm wheel is provided with lugs 34ª having inwardly and downwardly inclined faces with which the roller 73′ is adapted to engage.

74 is a block or casing rigidly secured to the rod 31 and having a projection 74′, to which the end of the shifting lever 75 is pivotally connected in such manner as to be free to rock slightly when the rod 31 is rocked.

75′ is an arm rigidly secured to the inner end of rod 31 and projecting outwardly at an angle thereto carrying at its upper end a stop plate 75ª.

75ᵇ is a stop or lug secured to the frame of the carriage and with which the said plate 75ª is adapted to engage.

It will be noted that when the turn table is in the position shown in Figs. 1 and 2 the friction roller 73′ is not in engagement with one of the lugs 34ª on the inner surface of the rim of the worm wheel 34 and that in consequence, owing to the angle between the arms 73 and 75′, the stop plate on the latter arm will be held in engagement with the stop 75ᵇ and will thus prevent the forward throw or movement of the rod 31. When the turn table is rotated so that its parts are in position for inserting into or withdrawal from the car one of the cam surfaces 34ª on the worm wheel 34 will have come into engagement with the roller 73′, and will have caused the downward movement of the arm 73, thereby rocking the rod 31 and releasing the stop 75ª from its engagement with the stop 75ᵇ and permitting the end-wise movement of the rod 31.

Heretofore, so far as applicant is aware, in all box car loaders of the class in which the loader mechanism is inserted into the car through the car door on the opposite side of the car from which the material to be loaded is received, chutes or delivering devices for feeding the material to the distributers in the car have been mounted independently of the loader structure proper and have been operable from the side of the car on which the said chutes or delivering devices are mounted. As a rule these chutes have been swung from or mounted on frame structures in close proximity to the tipples or pockets containing the material to be loaded or to stationary chutes leading from said tipples or pockets. In most cases where coal is to be loaded into box cars, the door way on the material-receiving side of the car is boarded up for some little distance as indicated at K in the drawings. In view of this, custom any form of tipple chute which is hinged to swing into and out of the car is a disadvantageous one, as it must necessarily swing so that its delivery point clears the car door sill by a sufficient distance to permit the said delivery end to enter the car above the tops of the boards above mentioned which obstruct the lower part of the door way. Nor is the form of chute which relies on the raising of the front end and lowering of the rear end during its insertion into the car a satisfactory one, because of the delay incident to adjusting the chute and the general clumsiness of such a construction. To avoid these difficulties, I have arranged a chute which is adapted to deliver material directly to the distributer within the car, upon a framework mounted upon the loader carriage so that this delivery chute is inserted into the car and projected through the door of the receiving side thereof simultaneously with the insertion of the distributing mechanism within the car. I furthermore provide longitudinal and lateral adjustment for the chute operable from the loader carriage.

Preferably, I construct the framework, the delivery chute and its operative parts as follows: 82—82 are channel beams rigidly secured to the **I** beams 1 of the carriage and arranged to support the channel beams 83 rigidly secured thereto and extending longitudinally above the carriage frame and for a considerable distance beyond the outer end of the **I** beams 1. This extension is to provide for the projection of the delivery chute through the material receiving door of the car when the loader is adjusted in operative position. 84 are brace beams for the beams 83. 85—86 are angle plates or rails rigidly secured at their upper, inner ends to the inner sides of the channel beams 83 near their outer ends. These angle plates are bent downward, as indicated at 85—86, respectively, and are rigidly secured at their outer lower ends to the said beams 83 or to blocks projecting therefrom. The delivery chute H comprises a carriage 87 having the vertical side walls 89 and the bottom inclined wall 90. 88 are anti-friction rollers mounted on journals secured to the side walls 89 and adapted to travel on the angle plates 85—86. 91 is the chute proper, having the oppositely inclined side walls 91ª and the bottom wall 91ᵇ supported by the bottom wall 90 of the carriage structure. This chute is pivoted at 93 to a plate 92 which is rigidly secured to the bottom plate 90 of the carriage. 94 is a rod arranged at one side of the carriage 87 and pivotally secured to the strap 95 which is rigidly secured to one of the side walls 91ª of the chute 91, and 96 is a rod pivotally secured at 97 to side wall 89 of the carriage and arranged at the opposite side thereof from the rod 94. The inner end of the rod 94 is screw-threaded as shown at 94′ and carries a swivel block 99 which is journaled in the

upper end of a lever arm 98. 99′ is a hand wheel the hub of which is journaled in the swivel block 99. 98′ is a lever arm the outer end of which is pivotally connected to rod 96. The lever arms 98 and 98′ are keyed to the transverse shaft 98^a which is mounted in bearings on the carriage frame. 98^b is another transverse shaft which connects the lever arms 98 and 98′ at a point above the shaft 98^a. 100 is a lever arm having its lower, outer end pivoted on the shaft 98^b and its inner end pivotally secured to the upper end of the lever 101, the lower end of which is keyed to shaft 77. 76 is a shifting lever keyed to the said shaft, and projecting below it, as shown at 76′. 66^a is a block rigidly secured to the shifting rod 66 and having the projection 66^b which is pivoted to the lower end 76′ of the lever 76.

The levers 75 and 76 are preferably guided between the walls 78^a and 78^b respectively, of the support 78 in which the shaft 77 is mounted. It will be noted that when the lever 76 is thrown rearward, as shown in Figs. 1 and 2, the rods 94 and 96 are drawn into their innermost positions, thereby causing the chute 91 to be drawn rearward and upward into delivering position above the distributing conveyers G. And it will be further noted that this rearward shifting of the lever 76 will cause the forward throw of the shifting rod 66 bringing into engagement the driving gear 62 with the gear 59, so that the power from the motor will now be transmitted entirely to the distributing conveyers. The forward throw of the lever 76 will first disengage the gear 62 from the gear 59 simultaneously causing the forward and downward movement of the delivery chute carriage 87 along its rails 85 and 86. The complete forward throw of the said lever 76 will bring the clutch jaw 63^a into engagement with the clutch jaw 63^b on the gear 19, thereby establishing power communication between the motor and the driving gear for the turn table and carriage moving devices. Any power from the motor will now be transmitted to the gear 68. As soon as the turn table is in proper alinement with the carriage frame the lever 75 can be shifted rearward thereby disengaging the jaws of the clutch 70 and bringing into engagement the clutch jaws 28 and 29 on the shafts 21 and 21′ which will permit the transmission of power to the carriage advancing and withdrawing gears.

The controllers for the motor can be located at any suitable point on the car loader. In the drawings I have shown a framework comprising the vertical angle bars 102 secured at their lower ends to the platform 6 and carrying at their upper ends the transverse plate 103 which is braced at its end by a bar 103^a which is rigidly secured to one of the uprights 82. In this structure the controllers are arranged. I have conventionally indicated their operating levers at 104—104′.

In operation, the car to be loaded is positioned with its doors in alinement between the loader structure and the pocket or tipple from which the material is to be delivered. The lever 76 on the loader carriage is shifted to its extreme forward position. This will cause the engagement of the clutch jaws 63^a and 63^b, as hereinbefore described. The lever 75 is then thrown rearward, power is applied through the motor and the loader structure is advanced until its delivery chute projects beyond the door on the material receiving side of the car and the turn table is in proper position to be rotated into working position within the car.

As previously stated, the clutches on the shafts 21—21′ and 69 and 69′ are so correlated that when one is in the other is out of operative engagement. The lever 75 is now thrown to its forward position, disengaging the clutch jaws 28 and 29 and bringing into engagement the jaws of the clutch 70. Power is now transmitted to the worm wheel 34 on the turn table, causing the same to be rotated into working position within the car.

The driving mechanism for the distributing conveyers is now brought into action by the shifting rearward of the lever 76, which simultaneously causes the engagement of the gears 62 and 59 and the upward and forward movement of the chute carriage 87 so as to properly position the delivery chute 91 relatively to the distributing conveyers. It will be understood that during the shifting of any of the levers the current can be cut off from the motor so as to avoid any sudden impact between any of the various driving gears. When the distributing conveyers are properly positioned in the car, the mechanism is ready for loading the material which may be fed to the delivery chute 91 in any desired manner.

In Figs. 4 and 5 A^2 represents a stationary tipple chute located on the material receiving side of the car. The horizontal lines *x*—*x*, *y*—*y*, and *z*—*z* indicate, respectively, the altitudes of the highest, medium and lowest car doors now in use. It will be noted that when the chute 91 and its carriage 87 are in their lowest and outermost positions, that is, the positions in which the loader is free to be inserted into or withdrawn from the car, that the uppermost part of the said delivery chute 91 is below the horizontal line *z*—*z* of the lowest car door. When the chute is drawn inward and upward into its position for delivering material to the distributing conveyers, it will be noted that the uppermost part of the said chute projects somewhat above the line *z*—*z* of the lowest car door and that the upper outer end of the chute is properly positioned to receive the material from the stationary tipple chute. This longitudi-

nal and vertical adjustability of the delivery chute further serves in the loading of the central part of the car after its ends have been loaded. Heretofore, the loading of the central part of the car has been accomplished after the loader carriage was entirely removed from the car, various means having been provided for this purpose. In my present construction after the ends of the car have been filled the chute carriage is adjusted to its forward, lowest position, and the turn table is rotated into longitudinal alinement with the loader carriage. The carriage is then withdrawn from the car until the delivery chute 91 comes into position below the stationary tipple chute as indicated in Fig: 5. The withdrawal of the loader carriage is stopped at this point and the material is fed from the stationary tipple chute to the delivery chute 91 which distributes the same in the center of the car. When the center of the car is filled up to the line of the lowermost end of the delivery chute, the flow of the material from the stationary tipple chute is cut off and the loader is entirely withdrawn from the car.

By swiveling the delivery chute 91 as indicated at 93 I provide for regulating the delivery of material to the distributing conveyers so that in case one end of the car is filled up more rapidly than the other, the delivery chute may be swung to deliver a greater portion of its charge to the distributing conveyer at the other end of the car, thereby providing for the even loading of the same. This adjustment of the delivery chute 91 is provided for by means of the hand wheel 99′ on the screw threaded end of the rod 94. The operator on the platform 6 can swing the chute 91 about its pivot 93 in either direction desired by adjusting the said hand wheel 99′. Any suitable form of hood or deflector may be provided within the hopper on the turn table to prevent any of the material to be loaded escaping between the distributing conveyers and to insure its proper delivery to the same. 105 is a horizontally arranged plate secured to the side walls 35 and 36 of the hopper-like structure at points above the course of travel of the distributing conveyers. 105^a and 105^b are curved divider plates secured in place between the said hopper walls and adapted to divide off the space between the distributing conveyers and to serve as supports for the plate or deflector 105. Preferably, the plate 105 has a lip 105′ which extends out under the delivery end of the chute 91 when the latter is in position to deliver material to the distributing conveyers.

In order to prevent the reversing of the said distributing conveyers, in which case the material would be carried backward, probably wrecking the dividing plates between the conveyers, I secure the sprocket wheels 46 to loose sleeves 46^a on the shaft 46′. These loose sleeves at their inner ends are provided with a clutch jaw 46^b adapted to engage with a clutch jaw 46^c which is splined to the shaft 46′. Between the two jaws 46^c on each of said shafts is arranged a spring 46^d adapted to normally maintain the operative engagement of the clutch jaws. The teeth on the said jaws are so shaped as to compel the rotation of the sleeves 46^a in the direction for properly advancing the distributing conveyers and to cause the inward movement of the said jaws 46^c against the pressure of the spring 46^d should the power transmitting mechanism be rotated in the opposite direction, the resistance of the conveyers to this backward movement being sufficient to cause the disengagement of the spiral clutch jaws.

It will be noted that every part of my loader mechanism is controllable from the platform 6 of the loader carriage; so that but one operator is needed to manipulate the loader; and that it is absolutely impossible for him to advance or withdraw the loader carriage excepting when the turn table and the delivery chute are in their proper positions for insertion into or withdrawal from a car.

What I claim is:

1. In a box car loader, the combination of a longitudinally movable platform frame, a loading mechanism supported on the front end of said frame, a supplementary frame secured to the platform frame and extending over and in front of the loading mechanism, and a chute supported upon the said upper frame, substantially as set forth.

2. In a box car loader, the combination of a longitudinally movable platform frame, a loading mechanism supported at the front end of the said frame, a frame secured to the platform frame, and situated above the loading mechanism and extending to the front thereof, an adjustable chute upon the said upper frame, and means for adjusting the said chute, substantially as set forth.

3. The combination with the loading mechanism and the means for moving it into and out from the car, of the adjustable chute, and means movable with the loading mechanism for supporting the said chute, substantially as set forth.

4. In a box car loader, the combination of the loading mechanism, the movable support therefor, means for bodily moving the loading mechanism to and from its operative position, and the chute movable bodily with the loading mechanism and adapted to have its delivery end adjustable laterally relatively to the loading mechanism, substantially as set forth.

5. In a box car loader, the combination of the loading mechanism, the means for supporting and bodily moving the loading mechanism, the chute movable bodily with the

loading mechanism and adapted to be bodily adjusted vertically, independently of the loading mechanism, substantially as set forth.

6. In a box car loader, the combination of the loading mechanism, the means for supporting and bodily moving the loading mechanism, the chute movable with the loading mechanism, and bodily adjustable toward and from the loading mechanism and adjustable laterally relative to the loading mechanism, substantially as set forth.

7. In a box car loader, the combination of the loading mechanism, the means for supporting and bodily moving the loading mechanism, and the chute bodily movable with the loading mechanism, vertically movable independently of the loading mechanism, and laterally adjustable relative to the loading mechanism, substantially as set forth.

8. In a box car loader, the combination of the loading mechanism, means for moving the loading mechanism to and from its operative position, the adjustable chute upon one side of the loading mechanism, and manually actuated means extending to the other side of the loading mechanism for adjusting the chute, substantially as set forth.

9. The combination of the carriage, the engine or motor, the loader, the power transmitting devices for actuating the loading devices, the power transmitting devices for rotating the loader bodily on the carriage, and automatic means for holding out of action the carriage moving devices while the loader actuating devices are in operation, substantially as set forth.

10. The combination of the loading devices, the carriage, the engine or motor, the power transmitting devices for actuating the loading devices, the power transmitting devices for rotating the loader, the power transmitting devices for moving the carriage, the automatic means for holding out of operation the carriage moving devices until the loader is in a predetermined position relative to the carriage, substantially as set forth.

11. The combination of the carriage, the loader, the engine or motor, the carriage moving devices, the devices for rotating the loader bodily on the carriage, the automatic means for holding the carriage moving devices out of operation until the loader is rotated to a predetermined position in relation to the carriage, substantially as set forth.

12. The combination of the carriage, the loader on the carriage, the carriage moving devices, the devices for rotating the loader on the carriage, and the hand actuated devices adapted to be put into operation alternately with the carriage moving devices and the loader rotating devices, substantially as set forth.

13. The combination of the carriage, the carriage moving devices, the loader, the loader rotating devices, the shaft for transmitting power to either of the said devices, and the clutches for alternately connecting the said shafts with the carriage moving devices and the loader rotating devices, substantially as set forth.

14. The combination of the carriage, the carriage moving devices, the loader, the loader rotating devices, the shaft for actuating the loader rotating devices, the shaft for actuating the carriage moving devices, the gearing connecting the said shafts, and the alternately acting clutches, one for connecting the said shafts to the carriage moving devices and the other for connecting the said shafts with the loader rotating devices, substantially as set forth.

15. The combination of the carriage, the loader, the carriage moving devices, the devices for actuating the loader devices, the clutch adapted to alternately drive the loader operating devices and the carriage moving devices, and movable from one position to another, substantially as set forth.

16. The combination of the loader, the loader rotating devices, the devices for actuating the loader devices, the power devices, and the clutch for alternately connecting the power devices to the loader actuating devices and the loader rotating devices, substantially as set forth.

17. The combination of the carriage, the loader, the carriage moving devices, the driving mechanism, the chute for delivering material to the loader, means for disconnecting the loader devices from the driving mechanism, and means for simultaneously moving the chute, substantially as set forth.

18. The combination of the carriage, the loader, the carriage moving devices, the loader actuating devices, the power devices, the supplemental train of devices, and two levers one adapted to connect the power devices to the loader actuating devices and with the supplemental train of devices, and the other adapted to connect the supplemental train of devices with the carriage moving devices, substantially as set forth.

19. The combination of the carriage, the loader, the power devices, the carriage moving devices, the loader rotating devices, the supplemental train of power devices, means for detachably connecting the power devices to the supplemental power devices, and means for connecting the supplemental power devices either with the carriage moving devices or with the loader rotating devices, substantially as set forth.

20. In a box car loader, the combination of the loading mechanism, the means for supporting and bodily moving the loading mechanism, and the chute arranged to deliver material to the loading mechanism and

adapted to be adjusted laterally relative to the said loading mechanism, substantially as set forth.

21. In a box car loader, the combination of the loading mechanism adapted to be inserted within the car, the means for supporting and bodily moving the loading mechanism, the chute bodily movable relative to the loading mechanism within the car, and means for adjusting the delivery end of the chute laterally relatively to the loading mechanism.

22. The combination of the carriage, the loader, the motor, the power transmitting devices interposed between the motor and the loader, the chute for delivering material to the loader, adapted to be adjusted relatively thereto, and means for simultaneously disconnecting the loader mechanism from the power mechanism and for withdrawing said chute from its position for delivering material to said loader.

23. The combination in a box car loader of the carriage, the motor, the loader, the power transmitting devices for actuating the loading devices, the power transmitting devices for rotating the loader bodily on the carriage, the power transmitting devices for moving the carriage, and automatic means for holding out of action any two of said trains of power transmitting devices, while the third one is in operation.

24. In a box car loader, the combination of the carriage, the engine or motor, the loader, the train of power transmitting devices for actuating the loading devices, the train of power transmitting devices for rotating the loader bodily on the carriage, and automatic means for holding out of action either of said trains of power transmitting devices while the other one is in operation.

25. In a box car loader, the combination with a longitudinally movable carriage and a motor on the carriage of a pair of endless distributing conveyers adapted to be inserted into a car and to deliver material to either end thereof and a train of power transmitting devices interposed between said motor and said conveyers and having in said train mechanism adapted to prevent reversal of travel of the said conveyers.

26. In a box car loader, the combination with a longitudinally movable carriage and a motor, of a pair of distributing conveyers adapted to be inserted into a car and to deliver material at opposite ends thereof, power transmitting means interposed between the said motor and said conveyers, and means for preventing the reversal of travel of the conveyers.

27. In a box car loader, the combination with material distributing mechanism and a carriage for moving said material distributing mechanism into and withdrawing it from a car, of a chute supported by said carriage and adjustable relatively thereto both to deliver material to said distributing mechanism and directly onto the floor of the car.

28. In a box car loader, the combination with a material distributing mechanism and a carriage for moving said material distributing mechanism into and withdrawing it from a car, of a chute for directing said material to said material distributing mechanism, said chute being adjustably supported upon the carriage.

29. In a box car loader, the combination of a longitudinally movable carriage, material distributing mechanism supported on the front end of said carriage, a chute frame supported upon said carriage and extending over and in front of said material distributing mechanism, a chute supported upon the said chute frame, and means for adjusting the chute relative to the carriage.

30. In a box car loader, the combination of a longitudinally movable carriage, a material conveyer supported at one end thereof and adapted to be inserted into and withdrawn from a car, and power transmitting mechanism for actuating said conveyer including means for preventing reversal of the normal direction of travel of the conveyer.

31. In a box car loader, the combination of a longitudinally movable carriage, a turntable at one end of said carriage, material distributing means mounted on said turntable, a driving shaft on said carriage, and transmission gearing interposed between said shaft and said material distributing means on the turntable including a gear splined to said shaft and movable into and out of engagement with its coöperating gear on the turntable, to permit the rotation of the turntable.

32. In a box car loader, the combination with a longitudinally movable carriage, a turntable thereon and material distributing means on said turntable, of a drive shaft mounted on the carriage, power transmitting means interposed between said drive shaft and said turntable for rotating the latter, and means for automatically throwing out of action said power transmitting means both when the said material distributing means is in material delivering position within the car and when it is in position to be inserted into or withdrawn from the car.

33. In a box car loader, the combination of a longitudinally movable carriage, a turntable mounted thereon, material distributing mechanism mounted on the turntable, a main drive shaft, power transmitting mechanism interposed between said main drive shaft and said distributing mechanism, power transmitting mechanism interposed between said main drive shaft and the driving wheels of said carriage, and power trans-

mitting means for rotating said turntable arranged to receive power from said main drive shaft.

34. In a box car loader, the combination of a longitudinally movable carriage, a material hopper or receiver mounted on said carriage to rotate about a fixed axis, material distributing means arranged within said hopper or receiver, a motor on said carriage, a main drive shaft connected with said motor, power transmitting devices connected at will to said main drive shaft and interposed between it and said hopper or receiver for rotating the latter, and means connecting the said main drive shaft with the said material distributing mechanism.

35. In a box car loader, the combination of a longitudinally movable carriage, a material hopper or receiver mounted on said carriage to rotate about a fixed axis, material distributing means arranged within said hopper or receiver, a motor on said carriage, a main drive shaft connected with said motor, power transmitting devices connected at will to said main drive shaft and interposed between it and said hopper or receiver for rotating the latter, means connecting the said main drive shaft with the said material distributing mechanism, and power transmitting means interposed between said main drive shaft and the driving wheels of the carriage.

36. In a box car loader, the combination of a longitudinally movable carriage, a material hopper or receiver mounted on said carriage to rotate about a fixed axis, material distributing means arranged within said hopper or receiver, a motor on said carriage, a main drive shaft connected with said motor, power transmitting devices connected at will to said main drive shaft and interposed between it and said hopper or receiver for rotating the latter, means connecting the said main drive shaft with the said material distributing mechanism, power transmitting means interposed between said main drive shaft and the driving wheels of the carriage, and automatic means for holding out of action either the carriage moving devices or the hopper rotating devices while the other one of them is in operation.

37. In a box car loader, the combination of a carriage, material distributing means mounted on said carriage and adapted to be inserted into and withdrawn from a car, a main drive shaft on the carriage, a train of power transmitting devices including separable elements for connecting said material distributing means to and disconnecting it from said drive shaft, and a train of power transmitting devices including separable elements for connecting said main drive shaft to and disconnecting it from the driving wheels of said carriage, the movable operation-controlling elements for each train of power transmitting devices being so connected that but one train of said devices can be operated from the drive shaft at a given time.

38. In a box car loader, the combination of a carriage, a turntable mounted on said carriage, material distributing means mounted on said turntable, a main drive shaft on the carriage, a train of power transmitting devices including separable elements for connecting said material distributing means to and disconnecting it from said drive shaft, and a train of power transmitting devices including separable elements for connecting said main drive shaft to and disconnecting it from said turntable for rotating the latter, the movable elements of each of said trains of power transmitting devices being so connected that but one train of devices can be operably connected with the drive shaft at a given time.

39. In a box car loader, the combination of a longitudinally movable carriage, a material distributer supported thereby, a motor mounted on the carriage, power transmitting gearing actuated by the motor for driving the carriage, gearing driven by the motor arranged to put the material distributer into position to be passed through the doorway of a car, and power transmitting gearing driven by the said motor for actuating the distributer, substantially as set forth.

40. In a box car loader, the combination of a longitudinally movable carriage, a material distributer supported thereby, a motor mounted on the carriage, power transmitting gearing actuated by the motor for driving the carriage, gearing driven by the motor arranged to put the material distributer into position to be passed through the doorway of a car, power transmitting gearing driven by the said motor for actuating the distributer, and clutches for controlling the transmission of power through the said sets of gearing connected with the motor, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRED. D. BUFFUM.

Witnesses:
F. R. WILLSON, JR.,
JOE T. WEBSTER.