

**AUTOMATIC BOX CAR LOADER.**

Patented Aug. 10, 1909.

2 SHEETS—SHEET 1.

**930,381.**



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 Dr. L. M. Cathran.

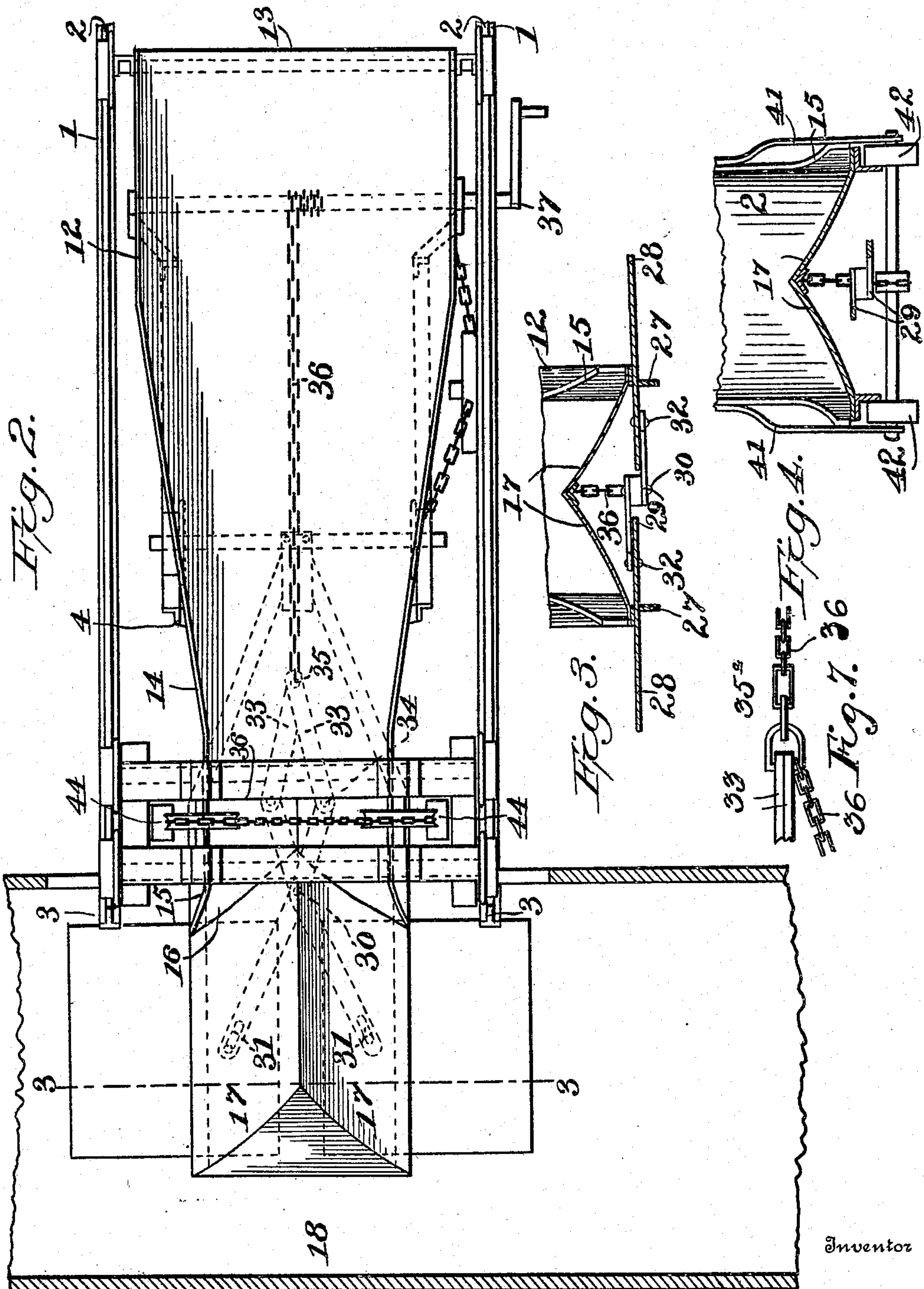
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APPLICATION FILED JUNE 20, 1908.

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Witnesses

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC BOX-CAR LOADER.

No. 930,381.

Specification of Letters Patent.

Patented Aug. 10, 1909.

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*To all whom it may concern:*

Be it known that I, JOB E. JONES, a citizen of the United States, residing at Centerville, in the county of Appanoose and State of Iowa, have invented certain new and useful Improvements in Automatic Box-Car Loaders, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to means for loading a car or vehicle, and particularly to a box-car loader.

The object of the invention is the provision of means for facilitating the loading of a  
15 box-car or like vehicle.

Another object of the invention is the construction of a vertically-adjustable chute carrying a loader, which is adjustably mounted thereon.

20 A further object of the invention is the provision of means for adjusting an auxiliary chute or a loader upon a primary chute, and also the adjusting of the primary chute relative to a receptacle or car which is to be  
25 loaded.

With these and other objects in view, the invention consists of certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described  
30 and claimed.

In the drawings: Figure 1 is a view in side elevation of an apparatus constructed in accordance with the present invention. Fig. 2 is a top plan view of the apparatus depicted  
35 in Fig. 1. Fig. 3 is a vertical, sectional view taken on line 3, 3, Fig. 2. Fig. 4 is a sectional view taken on line 4, 4, Fig. 1. Fig. 5 is an inverted plan view of the loader or auxiliary chute. Fig. 6 is a fragmentary,  
40 sectional view of the loader or auxiliary chute. Fig. 7 is a detail view of the clevis connection between the toggle levers and their operating chain.

Referring to the drawings by numerals, 1  
45 designates beams of a suitable framework upon which are mounted or secured rails 2; said rails are, preferably, tee-iron rails. Each rail is provided at its outer end with a hook or upwardly curved or bent portion 3,  
50 for stopping the truck 4.

The truck 4 comprises flanged wheels 5 secured to or journaled upon shafts 6; the shaft 6 being attached to a framework 7,

which framework is provided with short standards 8. The standards 8 are provided 55 with brackets 9 in each two of which brackets, is journaled a transverse shaft 10. Upon each shaft 10 is mounted a pulley or curved wheel 11. The wheels 11 extend transversely of the tracks for the purpose herein- 60 after described. The tracks are constituted by said beams or ties 1 and the rails 2.

The primary chute is provided with an upper, open end 13, Fig. 2, for receiving the coal from the mine chute above, which consti- 65 tutes a single continuous chute from the tipple to the car. The primary chute 12 converges toward its lower end, as at 14, and terminates at its lower end in an outwardly flanged or flared portion 15; the extreme 70 lower end 16 of the chute 12 is cut substantially V-shaped, the sides of the V-shaped structure being slightly curved for conforming to the inclined shape of the sides 17 of the bottom of the auxiliary chute or loader 18, 75 hereinafter described. The upper end of the chute 12 is secured to a shaft 19, which shaft is provided with flanged wheels 20; said shaft constitutes an axle for wheels 20. The wheels 20 travel upon the rail 2 and pivotally sup- 80 port the upper end of the chute upon the bracket. Shafts 6 and 19 are connected by a pair of horizontal bars 21, whereby, as the upper or rear end of the chute 12 is adjusted upon the bracket or framework, the truck 4 85 will also be synchronously adjusted, thereby retaining the truck in a given position at all times relative to the rear end of the primary chute 12.

Secured to the sides of the chute 12 are de- 90 pending U-shaped brackets 22. These brackets 22 are, preferably, formed of angle-iron and the lower portion of each bracket constitutes a track upon which travels a flanged wheel 23. 95

The wheels 23 are secured to or journaled upon a transverse shaft 24, which shaft 24 supports the inner or upper end of the loader or auxiliary chute 18, as the loader is pivotally secured to said shaft by any suitable 100 means.

Carried by each track is a horizontal bar 25, which, preferably, engages the top of the wheel 23 for preventing accidental displace- 105 ment of the wheel off of the track carrying the same, irrespective as to the adjustment or



jarring of the loader or auxiliary chute 12. However, it is to be noted that the loader or auxiliary chute 18 can be adjusted longitudinally of the track, and, consequently, longitudinally of the primary chute 12, whereby the loader or auxiliary chute can be placed under the primary chute, as shown by dotted lines 26, when the operator desires.

The loader comprises a bottom, formed by the inclined sides or portions 17, each of which sides is connected at its outer edge with an angle-iron or member 27, Fig. 3, each of which angle-irons is provided with an elongated slot or opening in its side, in which is slidably mounted a flat wing or plate 28, the wing or plate 28 being of sufficient width to extend under the lower end of the chute 12, Fig. 1. A pair of crossed levers 29 are pivotally connected near their center, as at 30, and each lever is provided near its outer end with an elongated slot 31, within which slot is mounted a stud or lug 32 for connecting said lever to a wing. Toggle levers 33 are employed for operating the crossed levers 29, said toggle levers having one of their ends pivotally connected to said crossed levers 29, the other ends of the toggle levers being held in pivotal relation by means of a double clevis 35<sup>a</sup> preferably composed of a short length of chain one link of which forms the pivotal connection between the toggle levers. A chain 36 is coiled about the shaft 37 and has one end fastened to the free end of the double clevis 35<sup>a</sup>, the other end portion of said chain extending to and around the sprocket wheel 38, and thence to the pivot link of the double clevis. This arrangement of the chain 36 and its connection with the double clevis, permits of the toggle levers being relatively expanded or contracted, according to the direction in which the pull is imparted upon said chain.

When the loader is being put into a car, the chain is placed in a slot or fork, which is fastened or bolted to axle 23, Fig. 6. The loader is then pulled into the car or is withdrawn, as desired, and then, the chain is dropped out of the fork or hook 40. Then, upon continuing turning the crank on shaft 37, in the same direction, this will result in extending the wings or plates 28. When pulling the loader back again, underneath the chute 12, by turning the crank in the opposite direction, the wings will be folded underneath the loader. After this is done, the loader can be pulled underneath the chute 12 by continuing to turn the crankshaft. Rotation of crank shaft 37, in one direction, results in the inner ends of the toggle bars 33 being spread apart, which also results in the spreading apart of the outer ends of the levers, and in the extending of the wings or plates, as shown in Fig. 2. Upon continuing rotating the shaft in one direction, after the wings have been ex-

tended to the farthest position, within the sides of the bottom or body of the loader, the loader will be projected beyond the discharge end of the chute 12. When it is desired to draw the loader under the primary chute or longitudinal brackets 22, it is only necessary to rotate the crank shaft 37 sufficiently to draw the wings under the loader or auxiliary chute, so that the auxiliary chute can pass under the discharge end of the primary chute 12, and then by hooking a link of the chain over a hook 40, Fig. 6, attached to the upper or inner end of the loader 18, the loader will be drawn inward to the position shown by dotted lines 26, thereby placing said loader or auxiliary chute under the primary chute.

Vertical straight brackets 41 are fixedly secured to the sides of the primary chute 12, near its discharge end, and journaled in these brackets is shaft 39, the shaft 39 being placed under the primary chute, and wheels 42 are journaled upon these brackets, upon which wheels travel the angle members 27 of the loader 18. Secured to the upper end of each vertical bracket 41 is a chain 43, which chain is passed over a grooved wheel or pulley 11 and attached to the opposite end of the chain, is a counter-balance or weight 44, whereby, when the primary chute 12 is adjusted to its desired position, preparatory to loading a car or vehicle, the same will be held in said position by the weights 44. It will be obvious that two weights or counterbalances are used, as there are two chains employed and two pulleys 11.

When it is desired to raise the primary chute 12, carrying the longitudinally adjustable loader, this may be accomplished by employing any suitable means, as for instance, a cable or rope shown by dotted lines 45, may be connected by any suitable means, near one end, to the brackets 41, and its opposite end wound or fastened to a windlass or winch shown by dotted lines 46. By operating the windlass or winch 46, the primary chute and the loader will be moved.

From the foregoing description, it will be noted that I have constructed a loading apparatus, which comprises a pivotally-mounted, primary chute capable of being adjusted upon a support relative to the receptacle, or body of a car, that is to be loaded, and that said primary chute carries an adjustable loader or auxiliary chute, which loader is provided with wings or plates capable of being laterally projected, so that the load can be spread over a large area of the body of the receptacle that is to be loaded. The wings facilitate the distributing of the load, so that it will not be deposited in one place nor choke the entrance to the vehicle when said entrance is in the nature of a side-opening of an ordinary box-car.

The balance weights are placed one on each



side of the chute 12, and attached to either weight, is a pulley, to which is attached a chain, or other suitable connecting means, fastened to a winch or windlass, for the purpose of raising or lowering the chute.

What I claim is:

1. In an apparatus of the class described, the combination with a support, of a primary chute pivotally mounted at one end upon and capable of being adjusted longitudinally of said support, an auxiliary chute pivotally supported at one end upon the primary chute and being capable of longitudinal adjustment thereon, and means for projecting the auxiliary chute beyond the discharge end of the primary chute and moving the auxiliary chute back under the primary chute.

2. In an apparatus of the class described, the combination with a support, of a primary chute carried by said support, said primary chute provided with a discharge end having a substantially V-shaped cut-out portion, an auxiliary chute slidably mounted upon said primary chute and being positioned under its discharge end, said primary chute provided with a bottom substantially V-shaped in cross-section and conforming to the shape of the cut-out portion of the discharge end of the primary chute, and means for adjusting the auxiliary chute upon the primary chute.

3. In an apparatus of the class described, the combination with a support, of a primary chute pivotally mounted upon and being capable of traveling longitudinally of said support, a truck carried by said support, rigid means connecting said truck and primary chute, and means provided with a counterbalance attached to the discharge end of said primary chute and supported upon said truck for holding the discharge end of said chute in an adjusted position.

4. In an apparatus of the class described, the combination with a support provided with tracks, wheels positioned upon said tracks, a shaft connecting said wheels, of a chute pivotally mounted upon said shaft, a truck provided with wheels mounted upon said track, connecting members secured to said truck and the shaft carrying said chute, and means carried by said truck and adjustably supporting the discharge end of said chute.

5. In an apparatus of the class described, the combination with a support, of a chute pivotally supported at one end upon said support, a truck mounted and capable of traveling upon said support, means connecting the chute and truck and retaining the same at all times, the same distance apart, and means provided with a counterbalance carried by said truck and secured to the discharge or lower end of the chute.

6. In an apparatus of the class described, the combination of a chute, tracks carried by said chute, wheels mounted upon said tracks,

guide members secured to said tracks and engaging said wheels for preventing displacement of the wheels, an auxiliary chute, and means connecting said auxiliary chute to said wheels.

7. In an apparatus of the class described, the combination with a support, of a primary chute pivotally mounted upon said support, U-shaped brackets secured to the sides of said primary chute, horizontal guide members secured to the tracks and below said primary chute, wheels traveling upon said tracks and having portions engaging said guide members, an auxiliary chute connected to said wheels and capable of being projected beyond the discharge end of said primary chute, and means for adjusting said auxiliary chute upon said primary chute.

8. In an apparatus of the class described, the combination with a support, of a primary chute pivotally mounted upon said support, a truck traveling upon said support, said truck provided with bearings, a shaft in said bearings, a grooved wheel supported by said shaft, a flexible connecting member passed over said wheel and attached near one end to said chute, and provided near its opposite end with a weight or counterbalance, and means rigidly connecting said truck and chute, whereby the same are retained in a spaced position at all times.

9. In an apparatus of the class described, the combination with longitudinally-extending beams, rails upon said beams, of a truck traveling upon said rails, a pivotally mounted chute provided with wheels, the wheels mounted upon said rails, horizontal bars or rods attached near one end to the truck and fastened near the opposite end to the chute, said truck provided with a pair of wheels, chains passed over said wheels, the chains provided near one end with counterbalances or weights, and means connecting the opposite ends of said chains to said chute.

10. In an apparatus of the class described, the combination with a support, of an adjustable chute carried by said support, and an auxiliary chute adjustably mounted upon the first mentioned chute and capable of being projected beyond the discharge end thereof for directing a load in opposite directions, when discharged from the chute.

11. In an apparatus of the class described, the combination of a pivotally and vertically adjustable chute, and means adapted to be projected beyond one end of said chute and capable of being positioned entirely beneath the chute for separating a load and distributing it in different portions of a car-body or receptacle.

12. An apparatus of the class described, comprising a primary and an auxiliary chute, the auxiliary chute being adjustably mounted upon the primary chute, and said auxiliary chute provided with slidable wings capable



of being extended beyond the sides of the same.

13. An apparatus of the class described, comprising a chute, and means for distributing a load in opposite directions, carried by the lower end of said chute, said means provided with slidable wings adapted to be projected beyond the sides thereof.

14. In an apparatus of the class described, the combination with a support, of a primary chute pivotally mounted upon said support, an auxiliary chute slidably mounted upon said primary chute, said auxiliary chute provided with flat wings slidably mounted thereon, means for separating said wings and drawing the same together, and means for adjusting the auxiliary chute longitudinally of the primary chute.

15. In an apparatus of the class described, the combination of a primary chute, an auxiliary chute adapted to be projected beyond the end of said primary chute and said auxiliary chute provided with adjustable means for increasing its width, said adjustable means capable of being positioned entirely under the body of the auxiliary chute.

16. In an apparatus of the class described, the combination of a chute provided with a reduced portion terminating in a flared outer end, said outer end provided with a notch, spreading means slidably mounted under the discharge end of said chute and engaging the notched end thereof, and said spreading means provided with laterally adjustable wings.

17. In an apparatus of the class described, the combination with a chute, of spreading means adapted to be projected longitudinally of the chute beyond its discharge end and said spreading means provided with wings or portions adapted to be extended in opposite directions for increasing the distributing area of the spreading means for distributing a load over a great area of the receptacle or body of the car.

18. In an apparatus of the class described, the combination with a support, of a loader carried by said support, said loader provided with a pair of wings capable of being projected laterally relative to the loader, levers pivotally connected to said wings, and means for operating said levers for opening and closing said wings.

19. In an apparatus of the class described, the combination with a support, of a loader carried by said support, said loader provided with oppositely-disposed flat slidable wings,

and lever means cooperating with said wings for operating the same.

20. In an apparatus of the class described, the combination with a support, of a primary chute carried by said support, an auxiliary chute slidably mounted upon said primary chute, wings slidably mounted upon said auxiliary chute, and means for adjusting said auxiliary chute upon said primary chute and said wings upon said auxiliary chute.

21. In an apparatus of the class described, the combination with a support, of a primary chute carried by said support, an auxiliary chute slidably mounted upon said primary chute, a crank shaft carried by said primary chute, wings carried by said auxiliary chute, means for moving the auxiliary chute longitudinally of the primary chute, said means being connected to the wings whereby the wings can be opened and closed and the auxiliary chute moved upon the primary chute.

22. In an apparatus of the class described, the combination with a primary chute, of brackets secured to the sides of said primary chute, a shaft carried by said brackets, wheels carried by said shaft, an auxiliary chute positioned under the primary chute and supported by said wheels, and adjustable wings carried by the auxiliary chute.

23. In an apparatus of the class described, the combination with a support, of a loader carried by said support, said loader provided with angle members near opposite sides, each angle member provided with an elongated opening, and plates or wings slidably mounted in the openings of said angle members.

24. In an apparatus of the class described, the combination with a support, of a crank shaft journaled upon said support, a chain attached to said crank shaft, a chute carried by said support, said chute provided with a hook, the hook adapted to be engaged by a link of said chain, whereby when the crank shaft is rotated, the chute can be adjusted upon said support in one direction, and means cooperating with said chute and chain whereby when the chain is traveling in an opposite direction, the chute will be adjusted opposite to the position to which it is adjusted when the hook is engaged by a link of the chain.

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

JOB EPHRAIM JONES.

Witnesses:

JOHN JOHNSON,  
JOSEPH GILL.