No. 837,794. PATENTED DEC. 4, 1906.

E. D. CARTER.

CONTINUOUS WEIGHING SCALE.

APPLICATION FILED AUG. 21, 1905.

2 SHEETS—SHEET 1.

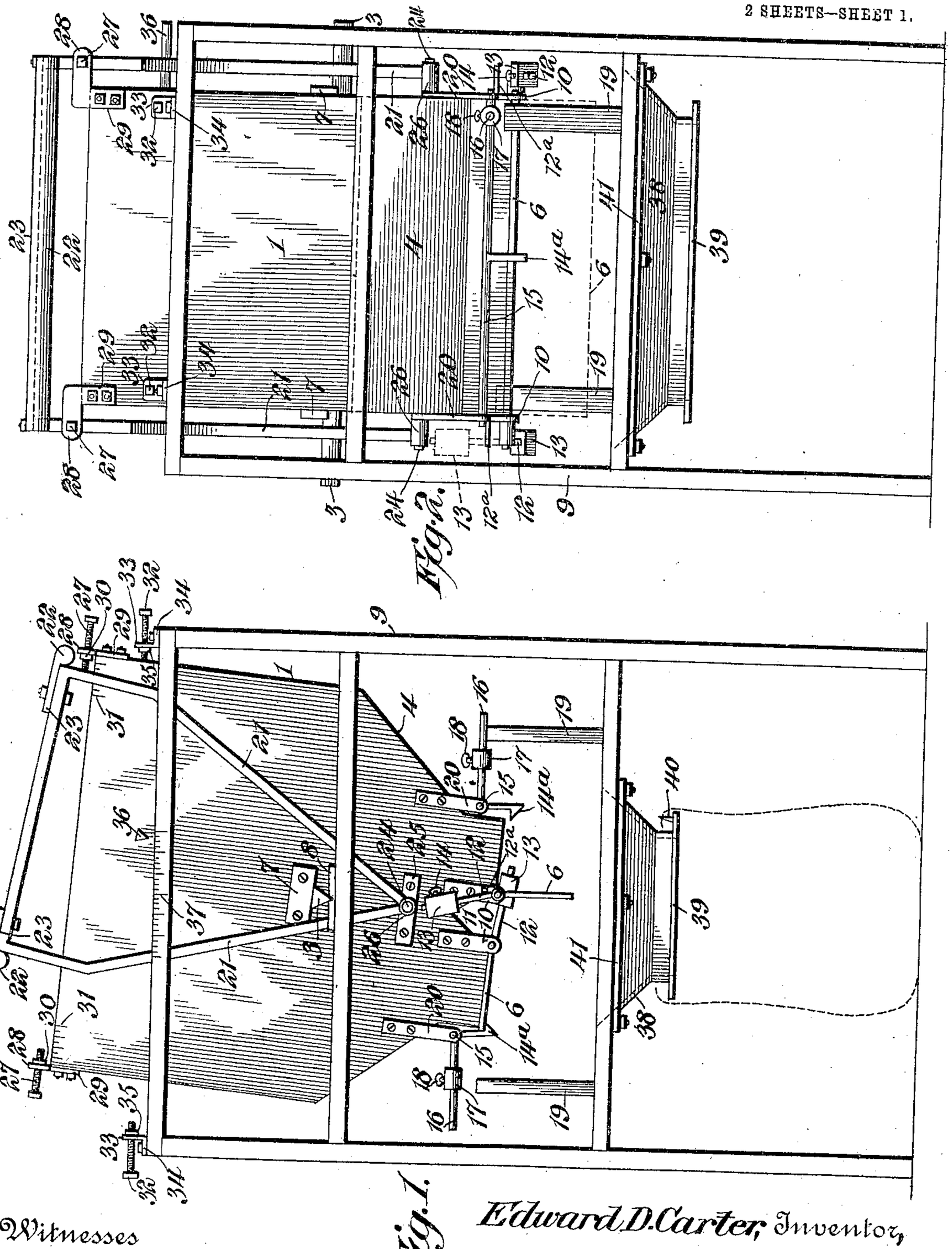

Fig. 1.

Fig. 2.

Witnesses

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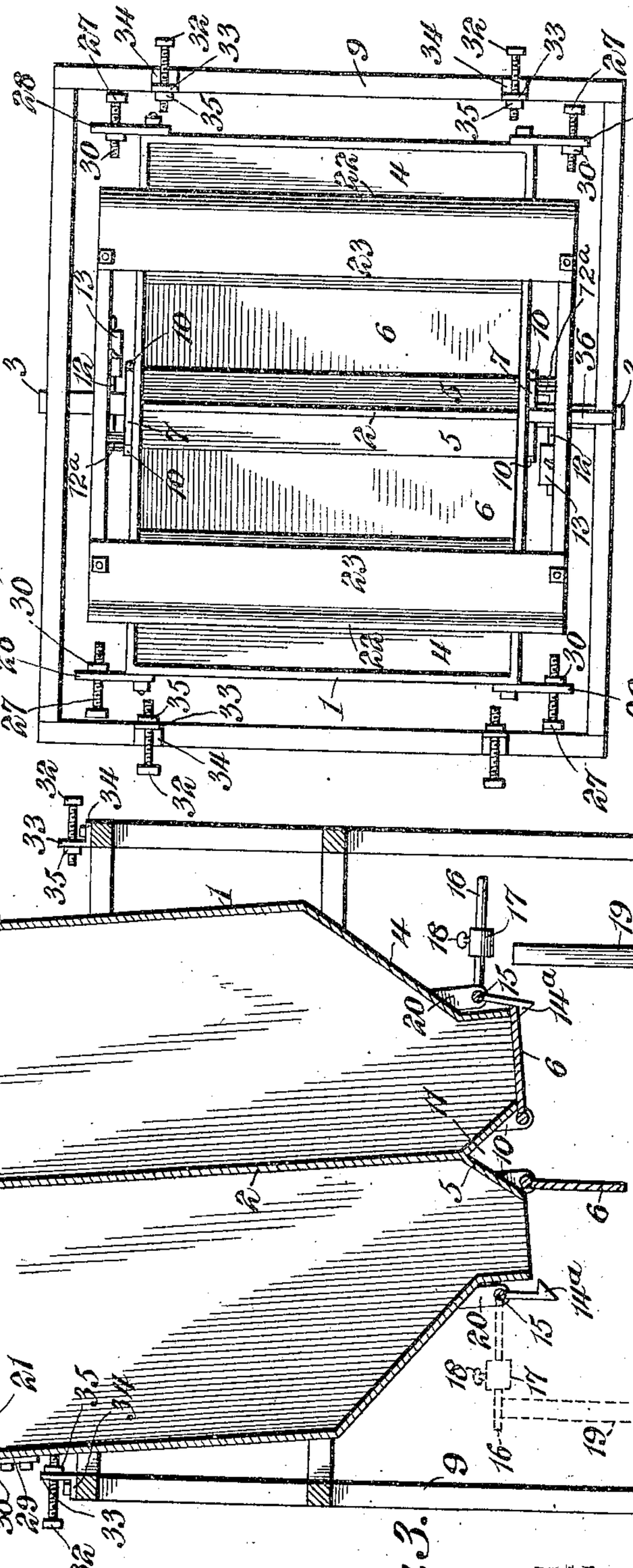

Fig. 4.

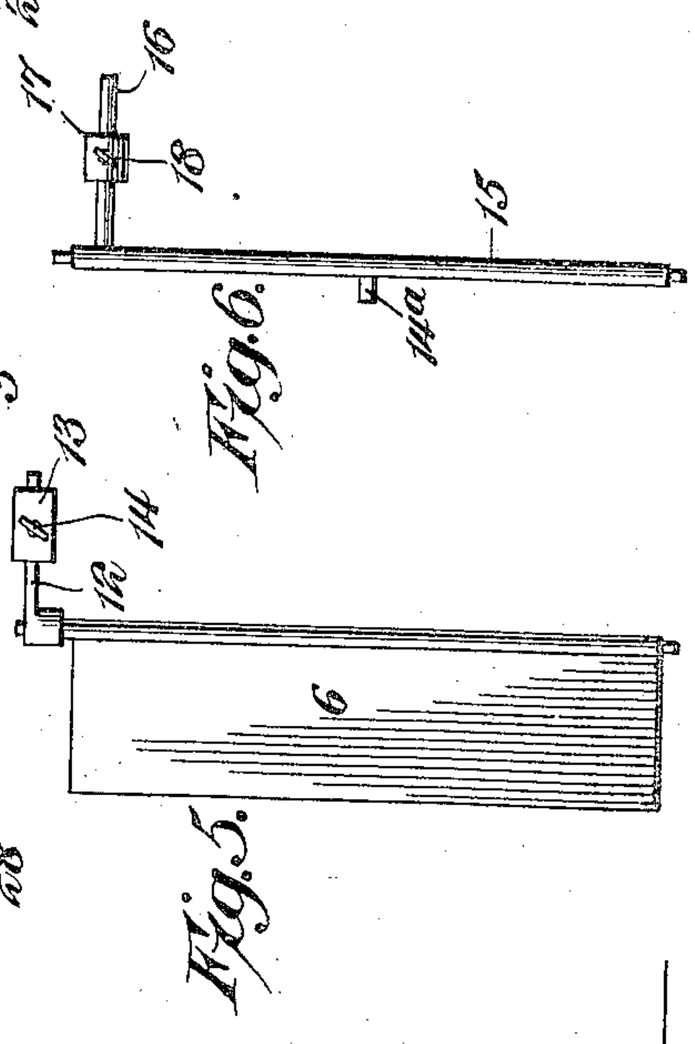

Fig. 6.

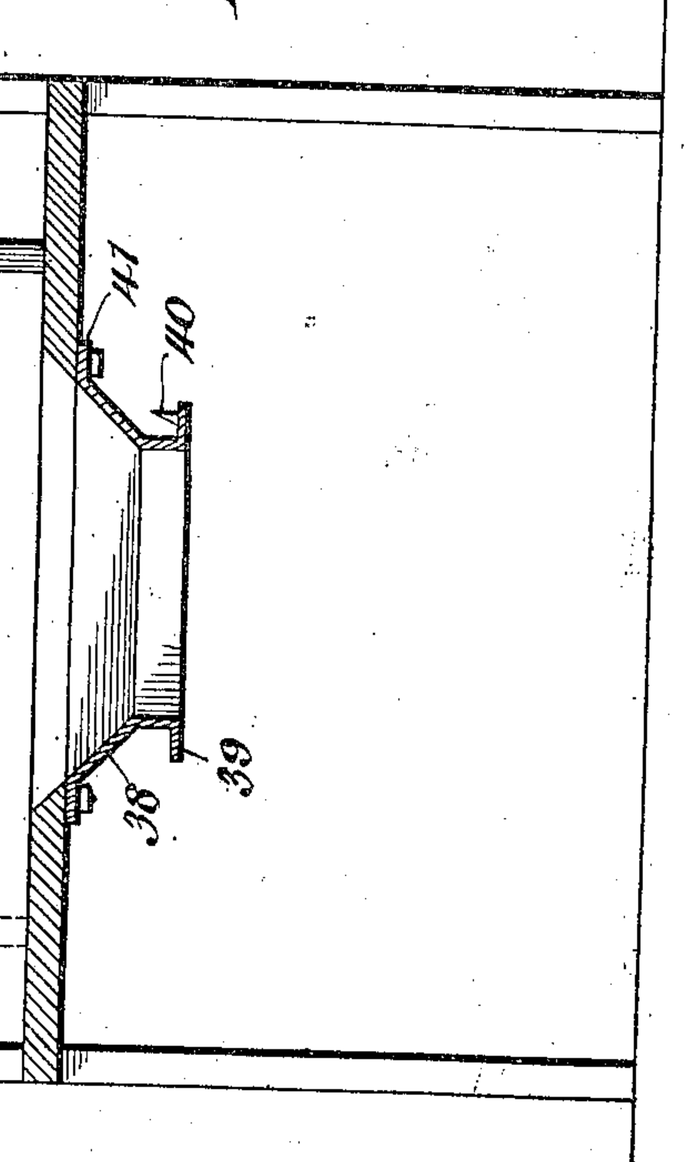

Fig. 5.

Fig. 3.

Witnesses

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EDWARD D. CARTER, OF BRENHAM, TEXAS.

CONTINUOUS WEIGHING-SCALE.

No. 837,794. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed August 21, 1905. Serial No. 275,047.

To all whom it may concern:

Be it known that I, EDWARD D. CARTER, a citizen of the United States, residing at Brenham, in the county of Washington and State of Texas, have invented a new and useful Continuous Weighing-Scale, of which the following is a specification.

The invention relates to improvements in continuous weighing-scales.

The object of the present invention is to improve the construction of scales and to provide a simple and comparatively inexpensive one which will be entirely automatic in its operation and which will be adapted for continuously weighing material in bulk, such as grain or the like.

A further object of the invention is to provide a scale of this character in which the charge of material or amount weighed may be readily varied without adding weights to or removing them from the scale.

The invention also has for its object to improve the construction of that class of scales having an oscillatory receiver provided with a pair of compartments adapted to be alternately filled and discharged and to enable such scales to operate substantially frictionlessly.

Another object of the invention is to improve the construction of the mechanism for automatically operating the gates or doors for controlling the discharge of the material from the compartments of the receiver and to provide means for automatically closing and locking the same.

A further object of the invention is to provide a gate or door which will remain open until the contents of the compartments are entirely discharged and which may be readily adjusted to control the closing movement.

Furthermore, it is the object of the invention to enable a bag or sack to be quickly applied to the scale and to be securely held in position to receive the material weighed and to be quickly removed after it has been filled.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of an automatic scale constructed in accordance with this invention. Fig. 2 is an end elevation of the same. Fig. 3 is a central vertical sectional view. Fig. 4 is a plan view. Fig. 5 is a detail view of one of the gates or doors. Fig. 6 is a similar view of the catch for locking the gate or door in its closed position.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates an oscillatory receiver constructed of suitable material, preferably sheet metal, and provided with a central partition 2, arranged vertically when the receiver is in a vertical position and dividing the same into two compartments, as clearly shown in Fig. 3 of the drawings. The receiver, which is mounted to oscillate on knife-edged bearings 3, has a tapered lower portion 4, and the central partition is provided with a lower forked portion 5, which presents inclined faces to the material and which contracts the lower portion of the compartments. The inclined walls formed by the forked portion 5 facilitate the discharge of the material. The sides are preferably cut away between the forked portion of the central partition to provide an open space between the lower ends of the compartments to facilitate mounting a pair of hinged doors or gates 6. The top of the receiver is open, and the separate compartments are adapted to be alternately brought beneath the spout or other suitable means for discharging the material to be weighed into the scale. When the receiver is tilted to one side, one of the compartments is in position to receive the material, and when the receiver is tilted in the opposite direction the other compartment is brought into position to receive a charge.

The knife-edged bearings 3 consist of depending substantially triangular projections formed integral with attachment-plates 7, which are secured to the outer faces of the sides of the receiver at points below the center thereof. The tapered portions or projections rest upon bearing-plates 8, having suitable notches and mounted on a supporting-frame 9 within which the receiver oscillates. The supporting-frame 9 may be constructed of any suit-

able material, and it preferably consists of corner posts or uprights and suitable horizontally-disposed side and end connecting bars.

The hinged gates or doors 6 are provided with suitable pintles, which are mounted in bearing-eyes of straps or pieces 10, which are secured to the outer faces of the sides of the receiver and which depend at the central bottom recess 11. The pintles of the doors or gates are extended at opposite sides of the receiver and are provided with arms 12, carrying adjustable weights 13, secured to the arms by set-screws 14 and located at opposite sides of the receiver, so that the weight of one door will not interfere with the weight of the other door and the operation thereof.

The weights are adjusted so as to counterbalance and close the doors or gates when the receiver is empty, and when a door hangs in a vertical position, as illustrated in Fig. 1 of the drawings, the arm is disposed at an inclination and is adapted to automatically close the door as soon as the contents of the compartment are completely discharged. A suitable stop 12^a may be provided for limiting the upward movement of the weighted arms, if desired. The doors or gates are locked in their closed position by means of catches 14^a, consisting of arms mounted on opposite shafts or pintles 15 and provided with beveled engaging heads. The shafts or pintles 15 are provided with outwardly-extending arms 16, carrying weights 17, which are secured in their adjustment by set-screws 18. The arms 16 are adapted to engage fixed trips 19, mounted on the supporting-frame of the scale and arranged in the path of the arms, whereby when one of the compartments receives its full charge and oscillates the receiver to bring the empty compartment into position to receive the material the downward movement of the full compartment will carry the arm 16 into engagement with the fixed trip and throw the catch 14 out of engagement with the hinged door or gate. The weight of the material will open the released or unlatched door or gate, and the entire contents of the full compartment will discharge before the door is closed by the weighted arm thereof. The door closes before the receiver is again oscillated, and when the receiver swings sufficient to lift the arm 16 from the trip 19 the catch 14 will be automatically carried into engagement with the door or gate and will lock the same in its closed position. The shafts or pintles 15 are mounted in suitable bearings of straps or plates 20, secured to the outer faces of the sides of the receiver at points beyond the discharge ends of the compartments. The fixed tripping devices are suitably mounted on the supporting-frame at opposite sides thereof.

The weighing operation of the scale is controlled by an oscillatory weighing-beam, which is in the form of a skeleton frame composed of downward-tapered approximately triangular sides 21 and opposite weights 22, which are in the form of bars and which extend across the top of the scale. The weight-bars 22, which connect the triangular end frames 21, are provided with attachment portions or flanges 23, which are bolted or otherwise secured to the top transverse portions of the end frames or members 21. The oscillatory weighing-frame is pivotally mounted at the lower ends or apexes of the tapering sides or members 21 by means of pivots or trunnions 24, extending laterally from attachment-plates 25 and arranged in suitable eyes or bearings 26 of the sides or members of the weighing-frame. The weighing-frame is pivoted at points below the knife-edged bearings of the oscillatory receiver, and the weight of the charge of material is controlled by the degree of movement of the weighing-frame, adjustable stops 27 being provided for limiting the movement of the weighing-frame independently of the movement of the receiver. The adjustable stops consist of screws mounted in threaded openings of flanges or projections 28 of plates 29, which are secured to the opposite walls of the receiver. The projections or flanges extend laterally from the receiver, as clearly illustrated in Fig. 2 of the drawings, and the inner ends of the screws are arranged in the path of and are adapted to receive the sides or members 21 of the weighing-frame. Suitable lock-nuts 30 are provided for securing the screws in their adjustment. The lock-nuts are arranged at and are adapted to engage the inner faces of the projecting portions or flanges 28. Any other form of adjusting devices, however, may be employed for limiting the movement of the weighing-frame, and the receiver is provided with graduations 31, located adjacent to the screws, for enabling the same to be accurately adjusted. By adjusting the screws the weight of the charge necessary to oscillate the receiver may be increased or diminished, and this change in the weight of the charge is effected without adding weights to or removing the weights from the scale. The weight of the charge may also be varied by controlling the movement of the receiver and the consequent movement of the weighing-frame, and for this purpose opposite adjusting-screws 32 are provided. The receiver oscillates between and is alternately engaged by the opposite screws 32, which are mounted in threaded openings of flanges or projections 33 of plates 34. The plates 34, which are substantially L-shaped, are secured to the top of the frame, and their upwardly-extending portions form the flanges or projections 33. The screws 32 are provided with lock-nuts 35 for securing them in their ad-

justment. The degree of movement is ascertained by a centrally-arranged indicator 36 and a series of graduations 37. The indicator 36 is mounted on and carried by the receiver, and the graduations, which form a central scale, are marked on the supporting-frame. The movement of the receiver may be ascertained by bringing it to a vertical position, with the indicator over the central mark of the scale 37, and the screws 32 may then be adjusted to permit the receiver to swing the desired distance to each side of the center.

The material discharges into the upper or higher compartment until the weight is sufficient to overbalance the weighing-frame, and the movement of the latter to the opposite side of the scale causes a sudden sharp movement of the receiver, which insures a quick action of the automatic scale and a positive operation of the tripping mechanism. The tilting movement of the receiver carries one compartment away from the discharging material and brings the other compartment into position for receiving the material.

The supporting-frame is provided with a tapering spout or chute 38, located beneath the receiver and provided at its lower contracted portion with an outwardly-extending bag-receiving ledge or flange 39, having an upwardly-projecting spur 40, adapted after the mouth of the bag or sack has been placed around the spout or chute to receive the loose portion of the bag or sack, whereby the latter will be securely held in position to receive the material. The spur or projection 40 extends upwardly from the flange or ledge 39 and enables a bag or sack to be quickly applied to and removed from the spout or chute. The ledge or flange is horizontal, and the spout or chute is provided at its top with an outwardly-extending horizontal attachment-flange 41, which is bolted or otherwise secured to the supporting-frame.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic weighing-scale, the combination of an oscillatory receiver, a weighing-frame pivotally mounted on the receiver and carried by the same in the movement thereof, said weighing-frame being also capable of movement independently of the receiver, and adjusting means carried by the receiver for controlling the movement of the weighing-frame for varying the weight of the charge of material weighed by the automatic scale.

2. In an automatic weighing-scale, the combination of an oscillatory receiver, an oscillatory weighing-frame pivotally mounted on the receiver and carried by the same in the movement thereof, said weighing-frame being also movable independently of the receiver, adjustable means carried by the receiver for varying such independent movement, and means for varying the movement of the receiver.

3. In an automatic weighing-scale, the combination of an oscillatory receiver, an oscillatory weighing-frame pivotally mounted on the receiver, and opposite adjusting devices carried by the receiver for limiting the movement of the weighing-frame.

4. In an automatic weighing-scale, the combination of an oscillatory receiver, an oscillatory weighing-frame pivotally mounted on and carried by the receiver, opposite adjusting devices also carried by the receiver for limiting the movement of the frame, and other adjusting devices for limiting the movement of the receiver.

5. In an automatic weighing-scale, the combination of an oscillatory receiver, an oscillatory weighing-frame pivotally mounted on the receiver, and opposite adjusting-screws carried by the receiver for limiting the movement of the frame, said receiver being also provided with graduations located adjacent to the screws.

6. In an automatic weighing-scale, the combination of a supporting-frame, an oscillatory receiver, a weighing-frame mounted on and movable independently of the receiver a central series of graduations arranged on the supporting-frame, an indicator carried by the receiver, and opposite adjusting devices mounted on the supporting-frame and limiting the movement of the receiver.

7. In an automatic weighing-scale, the combination of a supporting-frame having a central series of graduations, an oscillatory receiver mounted on the supporting-frame and having an indicator coöperating with the said graduations, said receiver being also provided with side graduations, an oscillatory weighing-frame mounted on the receiver, adjusting devices coöperating with the side graduations and mounted on the receiver in position for limiting the movement of the weighing-frame, and separate adjusting devices mounted on the supporting-frame and coöperating withthe indicator and central graduations and limiting the movement of the receiver.

8. In an automatic weighing-scale, the combination of an oscillatory receiver, and a weighing-frame composed of sides pivotally mounted on the receiver, and weight-bars connecting the sides and arranged to clear the receiver.

9. In an automatic weighing-scale, the combination of an oscillatory receiver, an oscillatory weighing-frame composed of downwardly-tapering sides pivotally mounted at the bottom on the receiver, and weight-bars located above the receiver and connecting the said tapering sides.

10. In an automatic weighing-scale, the combination of an oscillatory receiver, a

weighing-frame composed of open substantially triangular sides pivotally connected at the bottom to the receiver, and weight-bars secured at opposite points to the said triangular sides.

11. In an automatic scale, the combination of an oscillatory receiver having doors or gates hinged at opposite sides of the bottom, shafts mounted on the receiver and extending across the end walls thereof and provided with depending catches arranged to engage the free edges of the doors or gates, and arms extending from the shafts at opposite sides of the receiver and provided with adjustable weights.

12. In an automatic weighing-scale, the combination of an oscillatory receiver having opposite compartments and provided at the lower ends thereof with discharge-openings, gates or doors hinged to the receiver at the inner sides of the discharge-openings and provided with weighted arms for automatically closing them, shafts mounted on the receiver at the outer sides of the discharge-openings and provided with catches arranged to engage the free edges of the gates or doors, arms extending from the shafts and provided with weights, and means arranged in the paths of the arms for automatically releasing the gates or doors.

13. In an automatic weighing-scale, the combination of an oscillatory receiver having opposite compartments and provided with gates or doors hinged to the receiver at opposite sides of the center of the bottom, each door or gate having a weighted arm, which extends upward in substantially a vertical position when the door or gate is open, and the weighted arms being located at opposite sides of the receiver, stops for limiting the upward movement of the weighted arms, catches for holding the doors or gates in their closed position, and means for automatically tripping the catches.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD D. CARTER.

Witnesses:

WM. PERRY,

W. R. JOHNKE.