No. 648,877. Patented May 1, 1900.

A. & J. H. McLEOD.

AUTOMATIC GRAIN WEIGHING MACHINE.

(Application filed June 5, 1899.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 1.

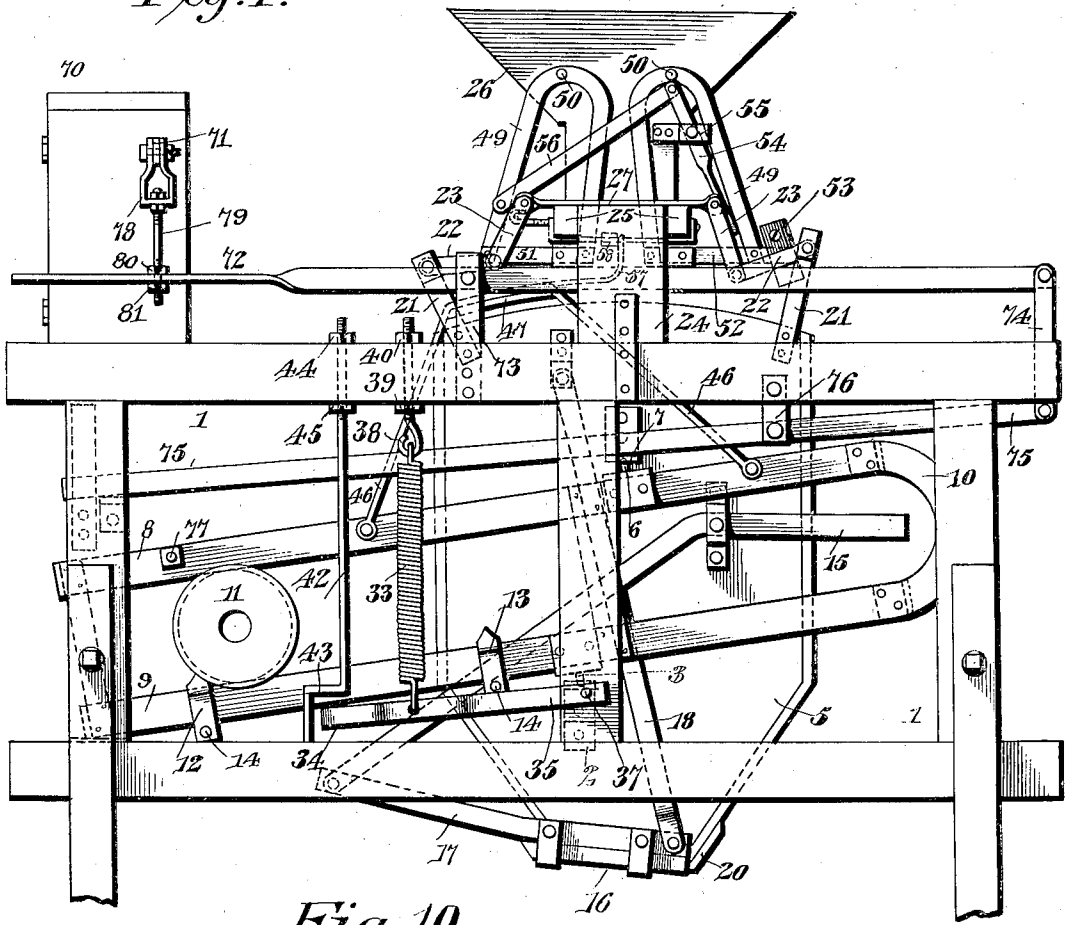
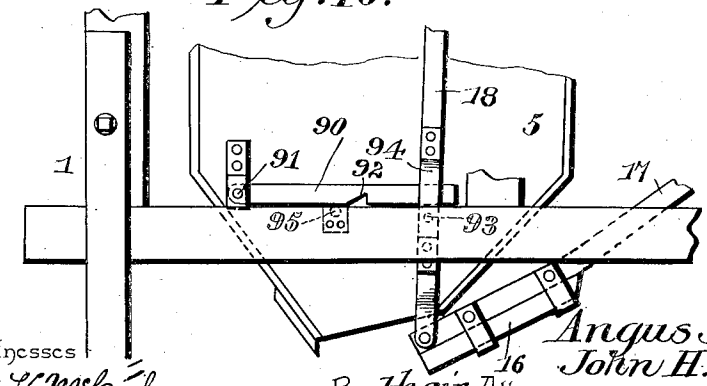


Fig. 10.



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(No Model.) 5 Sheets—Sheet 2.

Fig. 2.

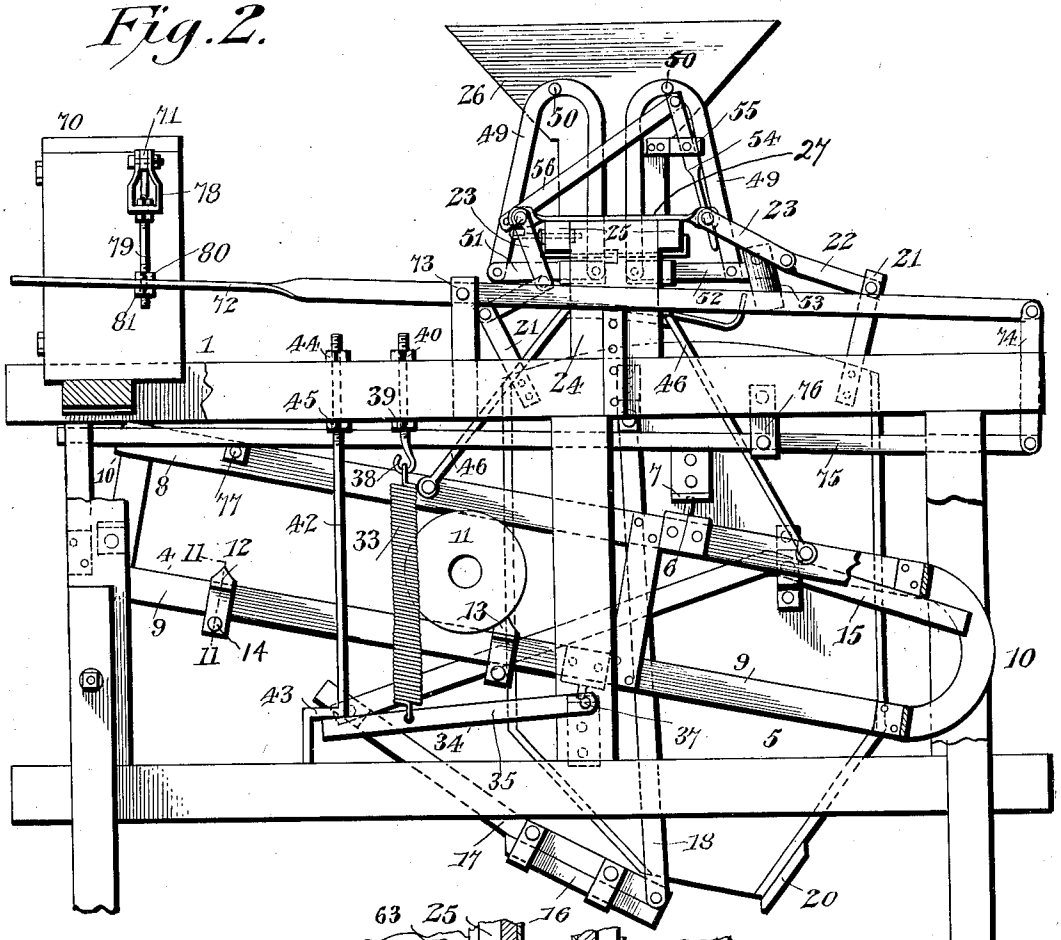


Fig. 9.

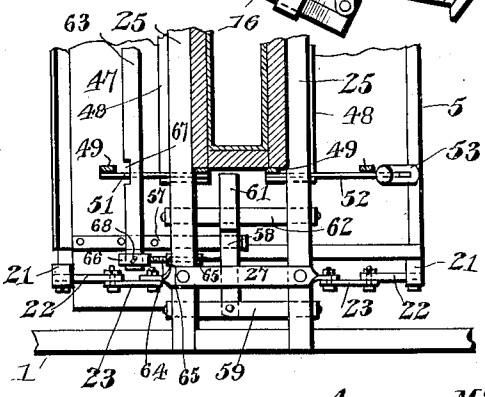


Fig. 11.



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(No Model.) 5 Sheets—Sheet 3.

Fig. 5.

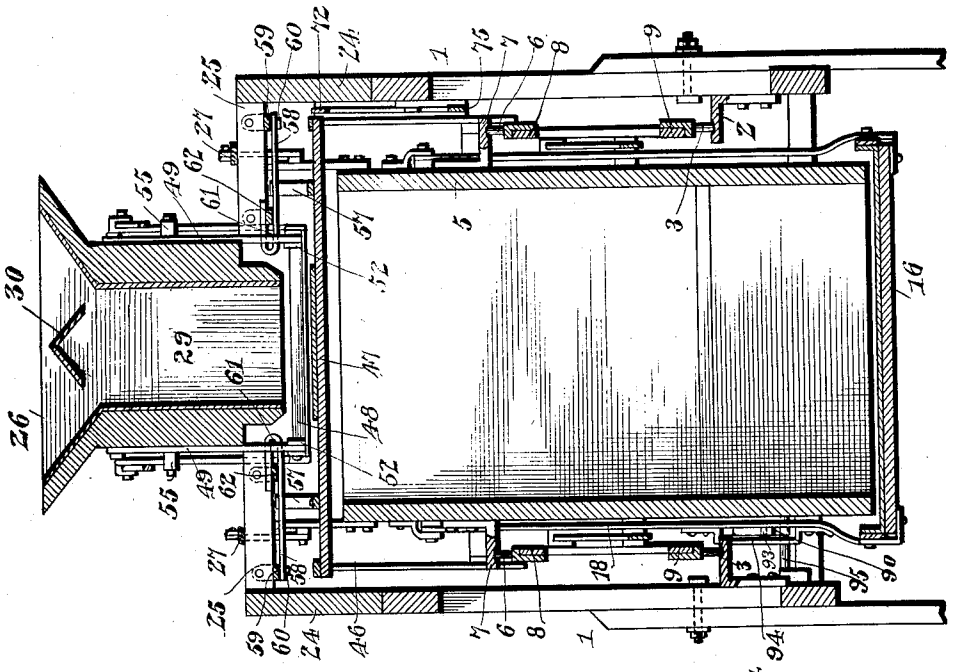
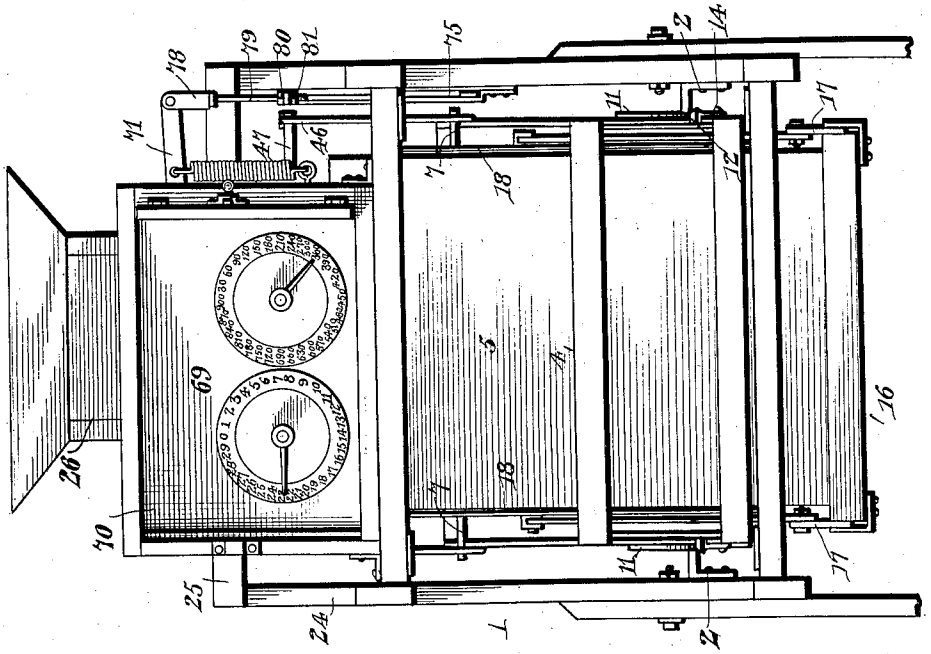


Fig. 3.



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(No Model.) 5 Sheets—Sheet 4.

Fig. 4.

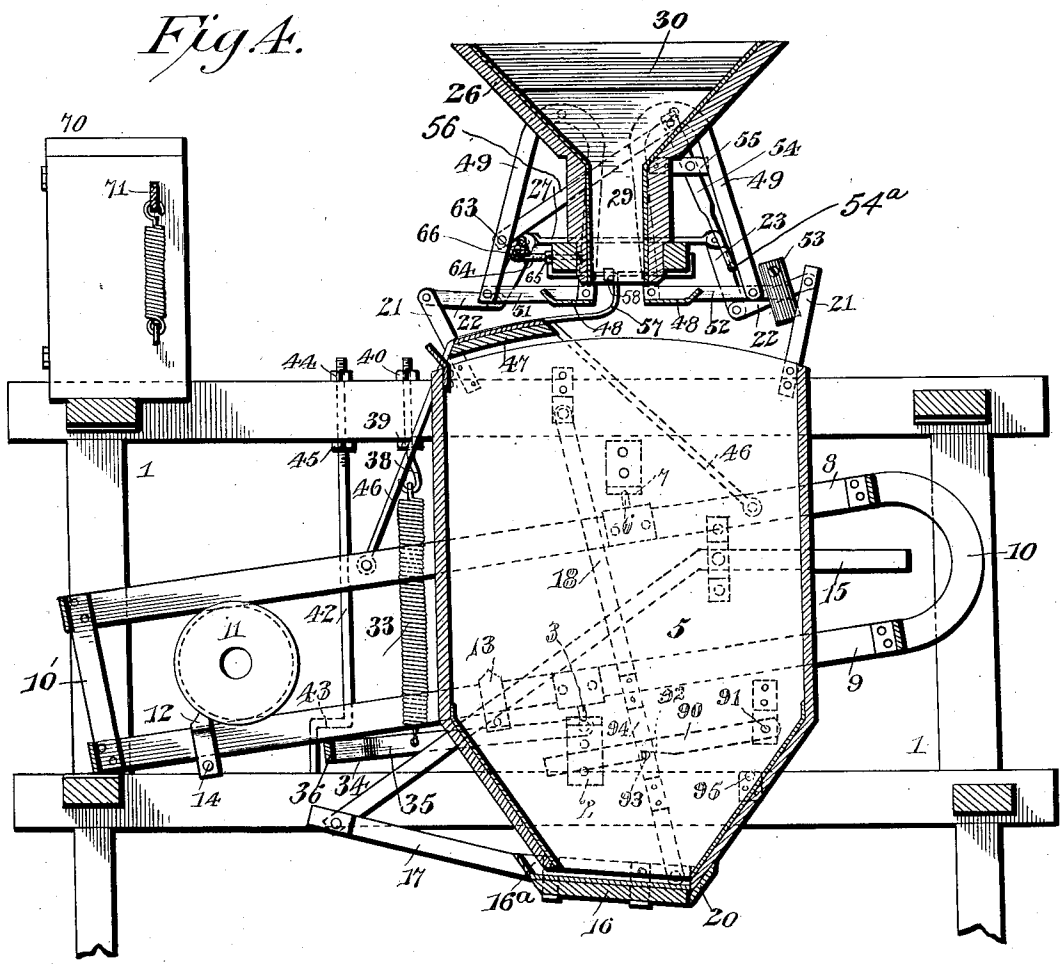
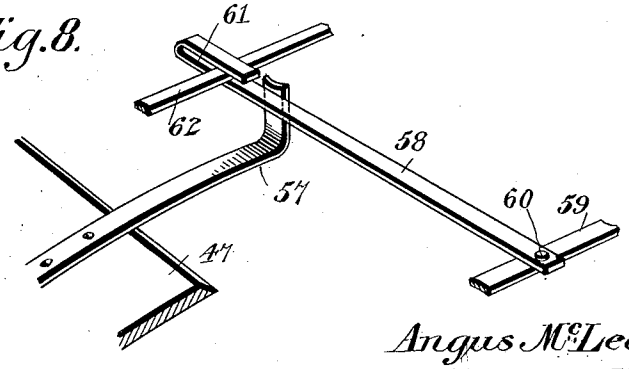


Fig. 8.



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(No Model.) 5 Sheets—Sheet 5.

Fig. 6.

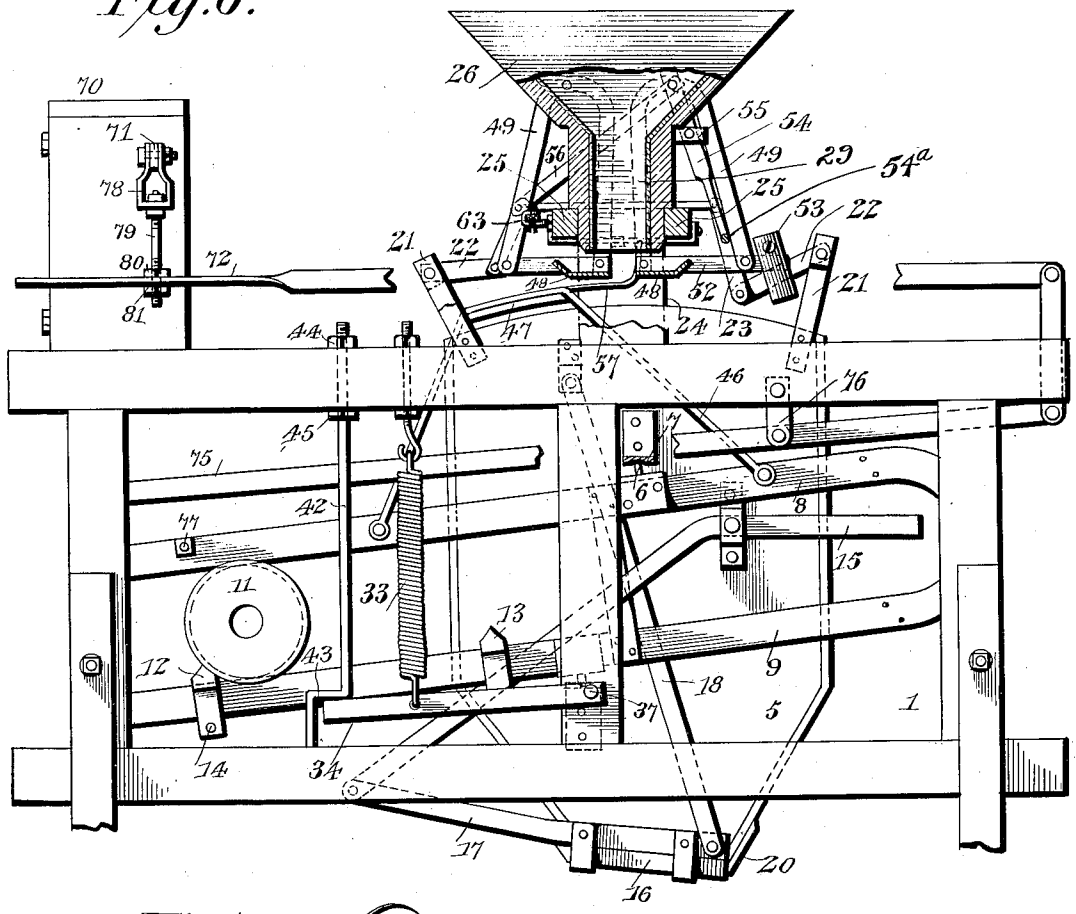
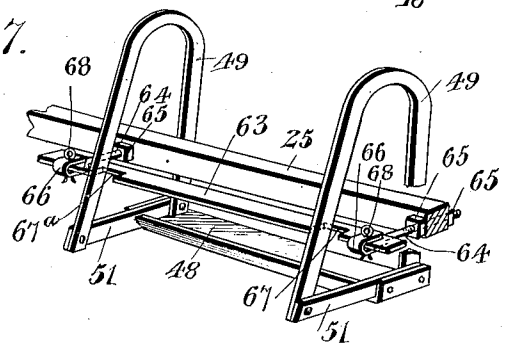


Fig. 7.



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UNITED STATES PATENT OFFICE.

ANGUS McLEOD AND JOHN H. McLEOD, OF MARIETTA, KANSAS.

AUTOMATIC GRAIN-WEIGHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 648,877, dated May 1, 1900.

Application filed June 5, 1899. Serial No. 719,469. (No model.)

To all whom it may concern:

Be it known that we, ANGUS McLEOD and JOHN H. McLEOD, citizens of the United States, residing at Marietta, in the county of Marshall and State of Kansas, have invented a new and useful Automatic Grain-Weighing Machine, of which the following is a specification.

The invention relates to improvements in automatic grain-weighing machines.

One object of the present invention is to improve the construction of grain-weighing machines, more especially that shown and described in Patent No. 587,680, granted to us August 3, 1897, and to enable the flow of grain or other material being weighed to be partially cut off and reduced to a dribble as the poising-point is reached, so that the instant the weighing-receptacle receives its full charge the feed will be entirely cut off to prevent more than what is necessary to counterbalance the scale-weights from being discharged into the weighing-receptacle, thereby insuring great accuracy.

A further object of the invention is to enable the parts to be readily adjusted to cut off the flow of the material to the desired extent and to cause such operation to be effected when the machine has received the desired amount of its charge.

Another object of the invention is to provide a simple construction whereby the weighing mechanism may be readily connected with a registering mechanism, so that the amount of material passed through the machine may be readily ascertained.

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.

In the drawings, Figure 1 is a side elevation of an automatic grain-weighing machine constructed in accordance with this invention, the weighing receptacle or bucket being in an elevated position. Fig. 2 is a similar view, partly in section, the weighing receptacle or bucket being in its discharging position. Fig. 3 is an elevation of one end of the machine. Fig. 4 is a longitudinal sectional view. Fig. 5 is a transverse sectional view. Fig. 6 is a vertical sectional view showing the position of the parts when the bucket-carrying frame is partly raised by the springs to effect the first closing movement of the cut-off mechanism. Fig. 7 is a detail perspective view of one of the upper cut-offs. Fig. 8 is a detail perspective view of one of the L-shaped arms of the main cut-off and the adjacent oscillating bar. Fig. 9 is a horizontal sectional view of the upper portion of the machine, illustrating the arrangement of the cut-offs. Fig. 10 is a detail side elevation showing the position of the different parts of the gate fastener or catch when the bottom gate for the weighing-bucket is in its open position. Fig. 11 is a detail sectional view of one of the adjustable stops on the line 11 11 of Fig. 2.

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

1 designates a supporting-frame of substantially-rectangular form, constructed of any suitable material and provided at opposite sides with inwardly-extending bearings 2, receiving depending fulcrums 3, of a substantially-rectangular pivotally-mounted bucket-frame 4, which carries a bucket or weighing-receptacle 5 and the scale-weights and which is tilted when the charge of the bucket or weighing-receptacle overbalances the scale-weights. The bearings 2 consist of substantially L-shaped brackets having their vertical arms bolted or otherwise secured to the sides of the supporting-frame and provided in their horizontal arms with depressions or concavities for the reception of the fulcrums 3. The fulcrums 3 consist, preferably, of pointed depending projections or studs formed integral with plates, which are secured to the bottom portion of the bucket-frame. The top portion of the bucket-frame is provided at opposite sides of the machine with upwardly-extending tapering projections 6, constructed similar to the fulcrums 3 and receiving L-shaped bearings 7, which are secured to the bucket or weighing-receptacle at opposite sides thereof. The bearing-brackets 7 have outwardly-extending horizontal arms, which are provided at their lower faces with depressions or concavities similar to those of the bearings 2.

The bucket or weighing-frame is composed

of two sides having upper and lower bars 8 and 9 and connected by suitable transverse bars. Each side is substantially U-shaped, the upper and lower bars 8 and 9 being connected at one end by a bend or curved portion 10 and at the other end by a short bar 10'. The upper and lower bars of the weighing or bucket-carrying frame form tracks or ways for shifting weights 11, consisting, preferably, of peripherally-grooved wheels or disks and adapted when the bucket or weighing-receptacle descends under the weight of a charge of material to roll inward toward the said bucket or receptacle, whereby the latter is retained in its discharging position a sufficient length of time to permit all the contents to run out.

The grooved disks or wheels are mounted on the longer arm of the sides of the bucket-carrying frame, which is fulcrumed at a point between its center and one of its ends, and in order to regulate the movement of the disks or wheels stops 12 and 13 are adjustably mounted on the sides of the bottom band or portion of the bucket-carrying frame. These stops, which are provided with tapering heads or upper portions, project above the upper edges of the lower bars 9 and are composed of two sides connected at their upper ends by the said heads and provided at their lower ends with bolts 14 or other suitable fastening devices, whereby they are firmly clamped on the said lower bars 9. By adjusting the stops on the frame 4 the amount of the charge necessary to operate the machine may be varied and the return movement of the bucket or weighing-receptacle may be regulated.

When the bucket or weighing-receptacle is in an elevated position, the pivoted frame rests upon one end of the supporting-frame, and as the bucket or receptacle descends under the weight of a charge the other end of the pivoted frame engages a pair of levers 15, and thereby opens a gate 16 at the bottom of the bucket or receptacle to discharge the contents of the latter. The levers 15, which are fulcrumed in suitable brackets or supports at opposite sides of the bucket or receptacle, have their upper arms arranged at an angle to their lower arms, the said upper arms being disposed in substantially a horizontal position when the bucket or receptacle is raised and the lower arms being disposed at an inclination. The upper arms project outward beyond the bucket or receptacle and are located between the upper and lower bands of the pivoted frame in position to be engaged by the upper band when the pivoted frame tilts. The lower inclined arms of the side levers project beyond the opposite side of the bucket and are pivoted to a pair of arms 17, extending from the gate 16, which is supported by a pair of long links or hangers 18, extending from one of the side edges of the gate to a point adjacent to the upper edges of the bucket or receptacle. The bucket or receptacle is provided at one of the side edges of its bottom opening with a depending flange or portion 20, forming a stop, and the gate is provided at its opposite side edge and at its ends with upwardly-extending flanges 16^a, whereby the bottom of the bucket or receptacle is effectually closed to prevent any leakage of the material.

The bottom gate 16 for the weighing-bucket 5 is held partially closed by gravity; but to provide for positively holding the gate in its closed position and preventing the same from accidentally jarring open there is employed a fastening or catch device, which during the operation of the machine becomes automatically locked and unlocked. This fastening or catch device for the gate 16 essentially comprises a gravity latch-bar 90, arranged exterior to the weighing bucket or receptacle and pivoted at one end, as at 91, to the bucket or receptacle, as plainly shown in Figs. 4 and 10 of the drawings. The said gravity latch-bar 90 is provided in the lower edge thereof, at a point intermediate its ends, with an engaging notch 92, adapted to engage with a locking-pin 93, located within the guide-keeper 94, fitted to one of the swinging hanger-links 18 of the bottom gate 16. The unpivoted or free end of the notched latch-bar 90 plays within the guide-keeper 94, and thereby serves to maintain the latch-bar always in the proper working position, thus obviating all possibility of the engaging notch thereof missing the pin 93 as the hanger-link 18, having the pin, swings toward the pivotal support of the latch-bar. To provide for automatically disengaging the notched latch-bar from the locking-pin 93, there is associated with the latch-bar a fixed trip projection 95, fitted to and projecting inwardly from one side of the stationary supporting-frame 1 of the machine and lying in a plane below the latch-bar 90. With the parts positioned as shown in Fig. 4 of the drawings the notched bar 90 is engaged with the locking-pin 93, thereby securely holding the bottom gate 16 in its closed position and preventing the same from accidentally opening; but when the weighing bucket or receptacle receives its load and commences to lower the latch-bar 90 is carried against the fixed trip projection 95, and thereby elevated out of engagement with the locking-pin 93, which action releases the gate 16 and permits the same to be freely swung open through the medium of the levers 15 in the manner previously explained.

The weighing-receptacle is provided at opposite sides with upwardly-extending arms 21, arranged in pairs and connected with a projecting upper portion of the supporting-frame by links 22 and 23. The projecting upper portion of the supporting-frame consists of vertical side pieces 24 and horizontal cross-pieces 25, which support a centrally-arranged spout or hopper 26, adapted to deliver the grain to the weighing-receptacle. The upper ends of the links 23 are secured to the

terminals of the bars 27, which are fastened to the transverse bars 25 of the projecting outer portion of the supporting-frame and which extend outward from opposite sides of the bars 25, their terminals being provided with quarter-bends and perforated to form ears to receive the pivots of the upper or inner links 23.

The hopper 26, which is centrally mounted above the weighing bucket or receptacle, is of an upwardly-flaring shape and is provided with a contracted neck 29, which extends between the parallel transverse bars 25 and is located centrally above the weighing bucket or receptacle when the latter is in its elevated position. Within the flaring portion of the hopper 26, above the plane of its contracted neck or spout 29, there is arranged a transverse inverted-V-shaped deflector-strip 30. This deflector-strip 30 is centered within the upper flaring portion of the hopper and intersects the vertical plane of the contracted neck or spout portion 29 thereof, so as to provide for breaking up the body of material introduced therein and causing a uniform feed through the neck or spout of the hopper and at the same time insuring the material falling into the center of the weighing bucket or receptacle, as will be readily understood by those familiar with the art.

In order to render the weighing-machine exceedingly sensitive and accurate, so that the flow of material into the weighing-receptacle will be cut off as soon as the said receptacle has received its full charge, the depressed portion of the weighing-frame is partially elevated when the weighing-receptacle has received about ninety per cent. of its full charge, and the feed is then reduced to a dribble. This upward movement of the weighted end of the weighing-frame is effected by means of a pair of counterbalancing-springs 33 and a lifting-frame 34. The lifting-frame 34 consists of two sides or arms 35 and a transverse portion 36, which extends beneath the weighted portion of the weighing-frame, and the arms 35 are pivoted to the supporting-frame at 37. The springs 33, which are of spiral form, are disposed vertically and are connected at their lower ends to the lifting-frame and at their upper ends with the top of the supporting-frame by adjusting devices 38, consisting of bolts or other suitable devices for regulating the tension of the counterbalancing-spring, so that the upward movement of the weighing-frame and the partial cut off of the feed of the material will be effected at the proper time. The adjusting screws or bolts are provided at their lower ends with open hooks or eyes to engage eyes of the upper ends of the springs, and they are provided with nuts 39 and 40, located above and below the top rail or bar of each side of the supporting-frame. This upward movement of the weighing-frame brings it nearer the poising-point; but before reaching the same it is relieved of the upward pressure of the counterbalancing-springs by vertically-adjustable stops 42, consisting of vertical rods adjustably secured to the top of the supporting-frame and having their lower terminals guided on the bottom of the supporting-frame. These rods are provided near their lower ends with angular bends forming horizontal shoulders 43, which are located above the transverse portion of the lifting-frame, whereby the upward movement of the same is limited. The upper portions of the rods 42 are threaded for the reception of nuts 44 and 45, located above and below the top rails or bars of the supporting-frame and adapted to raise and lower the shoulder to limit the upward movement of the weighing-frame, so that the completion of such upward movement of the weighted portion of the weighing-frame may take place as quickly as desired to effect a complete cut-off of the feed of the material.

The weighing-frame is provided at opposite sides with upwardly-extending substantially V-shaped brackets or supports 46, to which is secured a main cut-off 47, located above the weighing-receptacle and to one side of the contracted portion of the hopper when the weighing-receptacle is elevated and adapted to be brought directly beneath the discharge end of the hopper by the tilting of the weighing-frame, whereby the feed will be entirely cut off while the weighing-receptacle is dumping its charge.

At a point between the lower end of the hopper and the main cut-off are arranged supplemental cut-offs 48, located at opposite sides of the lower end of the hopper and adapted to move inward toward each other to reduce the feed of the grain to the desired extent. The supplemental cut-offs, which are connected with the hopper by hangers 49, are dished, being provided at their ends with flanges and having their outer longitudinal or side edges extended upward. The hangers, which are substantially inverted-U shaped, are pivoted at their top at 50 to the hopper, and their depending sides extend downward at opposite sides of the bars 25, each hanger having its inner side or leg arranged between the bars 25, and the said supplemental cut-offs are provided at their ends with outwardly-extending arms 51 and 52. The inner sides of the hangers are secured to the end flanges of the supplemental cut-offs, and the outer sides of the hangers are secured to the arms 51 and 52. The arms 52 have weights 53, secured to their outer ends and adapted to hold the supplemental cut-offs closed. These weights 53 act directly upon the adjacent supplemental cut-off and hold the other supplemental cut-off closed and actuate it in closing by means of a frame or lever 54, composed of two sides and a transverse connecting-piece 54^a, which is arranged at the inner edges of the outer sides of the adjacent hangers. The sides of the frame or lever 54 are fulcrumed between their ends on suitable supports 55, and the upper por-

tions or arms of such sides are connected by links or bars 56 with the outer sides of the other hangers. The lower portion of the lever-frame 54 is swung inward by the weights when the weighing-frame is actuated by the counterbalancing-springs, and the upper portions of the sides of the lever-frame 54 are swung outward, thereby drawing the link-bars 56 and the hangers to which they are pivoted inward.

The supplemental cut-offs are automatically opened, when the weighing-receptacle has discharged its load, by an arm 57, mounted on the main cut-off and extending inward and upward and adapted, when the said main cut-off moves away from the hopper, to engage an oscillating bar 58. A pair of L-shaped arms 57 is provided, and each side of the weighing-machine has an oscillating bar 58, which is fulcrumed at its outer end on a horizontal support 59 by a suitable pivot 60. The inner end of each oscillating bar 58 is bent upon itself to form a loop or opening 61, which receives a horizontal guide-bar 62, and the said inner ends of the oscillating bar are arranged at the inner sides of the hangers to which the link-bars 56 are pivoted and are adapted to swing the same outward. This outward movement of the arms of the main cut-offs also opens the supplemental cut-off which carries the weights, as such movement will be communicated to the weighted cut-off by the frame or lever 54 and the links 56.

The inward movement of the supplemental cut-offs is regulated by an adjusting device comprising a transverse bar 63 and adjusting-screws 64. The transverse adjusting-bar, which is located directly above the arms 51, is arranged to be engaged by the outer side of the adjacent hangers, which are secured to the arms 51. The adjusting-screws 64, which are mounted on the adjacent cross-bar 25, are provided at the inner and outer faces of the same with nuts 65, and they have openings or loops 66 at their outer ends to receive the end portions of the bar 63. The loops 66 are preferably formed by flattening the heads of the screws and bending the same upon themselves, and the said bar 63, which is provided at its ends with openings 67 and 67^a, is retained in loops or openings of the adjusting-screws by means of keys 68. By moving the transverse bar 63 inward and outward the closing movement of the supplemental cut-offs is limited, and the feed of the material may be reduced to any desired extent after the weighted end of the weighing-frame is actuated by the counterbalancing-springs.

The weighing-machine is provided at one end with registering mechanism 69, designed to be mounted in a casing 70, as shown, and having an oscillating arm 71, which is actuated at each weighing operation of the machine, and as the latter may be employed in connection with various kinds of registering mechanism a detailed description of the latter is deemed unnecessary. The arm 71 is adjustably connected with one arm of an upper longitudinal lever 72, fulcrumed between its ends on a suitable bracket or support 73 and having its other arm connected by a pair of links 74 with a lower longitudinal lever 75. The lower longitudinal lever 75 is fulcrumed between its ends on a depending bracket or hanger 76, and it has one end located beneath the arm 71 and adapted to be engaged by a pin 77, carried by and extending laterally from the weighted end of the weighing-frame. The laterally-projecting pin 77 is mounted on the upper bar of the adjacent side of the weighing-frame, and when the weighted end of the latter moves upward the pin 77 engages the lower longitudinal lever 75 and lifts the same. This movement lifts the corresponding end of the upper longitudinal lever and actuates the registering mechanism. The adjustable connection between the arm 71 and the longitudinal lever 72 consists of a depending link or frame 78 and an adjusting-screw 79. The link or frame 78 is pivoted to the outer end of the arm 71 and depends therefrom, its lower portion being provided with an opening to receive the adjusting-screw, and the latter is provided above and below the bottom of the link or frame and the lever 72 with nuts 80 and 81. This construction enables the longitudinal levers to be readily adjusted to correspond to the movement of the weighing-frame, so that the registering mechanism will be positively operated at each weighing operation of the machine.

The invention has the following advantages: The weighing-machine, which is positive and reliable in its operation, is exceedingly sensitive and accurate, and it is capable, after the weighing-receptacle has received about ninety per cent. of its charge, of cutting off the feed to a dribble and of moving the weighing-frame in the direction of the poising-point, so that the weighing-receptacle as soon as it receives its full charge will rapidly descend and entirely cut off the feed. The counterbalancing-springs which lift the weighing-frame when the weighing-receptacle receives about ninety per cent. of its charge may have their tension readily regulated, and the stops for limiting this first movement of the weighing-frame may be adjusted to make the initial movement of any length and bring the weighing-frame as near the poising-point as desired. The supplemental cut-offs, which are located between the hopper and the main cut-off, are automatic in their operation, and the adjusting device connected with them regulates their closing movement and enables the feed to be reduced to the desired extent.

When desired, the weighing-machine may be worked to only one-sixth of its capacity by properly adjusting the supplemental cut-offs. Also the shifting weights, which are in the form of disks or wheels, constitute scale-weights and are designed for weighing ma-

terial to one-half the capacity of the weighing bucket or receptacle; but, if desired, the weight-adjusting device described and claimed in my former patent may be utilized. However, the adjustment of the shifting weights through the medium of the stops on the lower bar of the tilting frame will be found amply sufficient to correct the weighing-machine, so that the charge necessary to operate it will range from any desired weight to one-half the capacity of the weighing bucket or receptacle.

The machine is adapted to operate with great rapidity, and a large amount of grain may be measured in a comparatively-short period of time.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What is claimed is—

1. In a weighing-machine, the supporting-frame, the tilting weighing-frame fulcrumed within the supporting-frame, the weighing-receptacle suspended from the weighing-frame at one side of the fulcrum of the latter, a swinging lifting-frame having a cross-bar engaging beneath the weighing-frame at the opposite side of its fulcrum and beyond the weighing-receptacle, springs connected with the lifting-frame and normally exerting an upward strain thereon, and stops arranged in the path of the cross-bar to relieve the lifting-frame from the weighing-frame during the tilting movement of the latter, substantially as specified.

2. In a machine of the class described, the combination of a supporting-frame, a weighing-frame, a weighing-receptacle connected with the latter, a pivoted actuating-frame mounted on the supporting-frame and having a transverse portion extending beneath the weighing-frame, springs connected with the pivoted frame and having adjusting devices for regulating their tension, and the adjustable rods mounted on the supporting-frame and provided with angular bends located above and limiting the movement of the pivoted frame, substantially as described.

3. In a machine of the class described, the combination of a weighing-frame having upper and lower bars forming ways, a weighing-receptacle, a shifting weight mounted in the ways of the weighing-frame, and the adjustable stops mounted on one of the bars of the weighing-frame and provided with heads projecting into the path of the weight, said stops being provided with sides to receive the weighing-frame and having adjusting devices for clamping the latter, substantially as described.

4. In a weighing-machine, the supporting-frame, an oscillatory weighing-frame fulcrumed within the supporting-frame, a weighing-receptacle fulcrumed on the weighing-frame and having a bottom discharge-opening, a swing-gate arranged to cover and uncover said bottom opening of the weighing-receptacle, and a lever mounted on the receptacle and having one arm operatively connected with the gate and its other arm arranged in the path of movement of the oscillatory weighing-frame, substantially as set forth.

5. In a machine of the class described, the combination of a weighing-frame, a receptacle mounted thereon, a gate located at the bottom thereof, links suspending the gate from the receptacle, arms extending from the gate, and levers fulcrumed on the receptacle at opposite sides thereof, connected with the said arms and arranged to be engaged by the weighing-frame, substantially as described.

6. In a machine of the class described, the combination with a hopper or chute, of supplemental cut-offs located beneath the hopper or chute and arranged to swing inward and outward, a lever fulcrumed on a suitable support and arranged to swing one of the cut-offs inward to close the same, a weight connected with the other cut-off and adapted to actuate the lever, the latter being adapted to move the weighted cut-off outward when the supplemental cut-offs are being opened, and means for actuating the cut-offs to open the same, substantially as described.

7. In a weighing-machine, the combination of a tilting weighing-frame, a weighing-receptacle fulcrumed within the weighing-frame, a hopper or chute supported in a fixed position above the weighing-receptacle, a main cut-off carried by the tilting weighing-frame, supplemental cut-offs located between the main cut-off and the hopper or chute, means for automatically causing the supplemental cut-offs to move toward each other, and a device actuated by the main cut-off for holding the supplemental cut-offs open or separated when the weighing-receptacle is elevated, substantially as set forth.

8. In a weighing-machine, the combination of a tilting weighing-frame, a weighing-receptacle fulcrumed within the weighing-frame, a hopper or chute supported in a fixed position above the weighing-receptacle, a main cut-off supported and carried by the tilting weighing-frame, supplemental cut-offs arranged between the main cut-off and the hopper or chute, connections between the two supplemental cut-offs to provide for their movement in unison toward or away from each other, means for normally closing both of the supplemental cut-offs, and separate means, actuated by the main cut-off, for separating or opening the supplemental cut-offs, substantially as set forth.

9. In a machine of the class described, the combination of a hopper or chute, supplemental cut-offs located beneath the same, hangers pivotally suspending the cut-offs, a frame or lever fulcrumed between its ends and having one arm or portion engaging one set of

hangers, connections between its other arm or portion and the other set of hangers, means for closing the cut-offs, said means being connected with one of the cut-offs, a weighing-frame, and a device connected with and operated by the weighing-frame for holding the supplemental cut-offs open, substantially as described.

10. In a weighing-machine, the combination with a hopper, and a weighing-receptacle, of a weighing-frame, supplemental cut-offs connected for movement in unison toward and away from each other, means for automatically closing said cut-offs, a device, operated by the weighing-frame, for holding the supplemental cut-offs open or separate when the receptacle is elevated, and a horizontally-adjustable bar arranged in the path of the hangers of one of the cut-offs to limit the movement of both in one direction, substantially as set forth.

11. In a machine of the class described, the combination with a hopper, and a weighing-receptacle, of a weighing-frame, supplemental cut-offs located beneath the hopper and provided with hangers and having means for automatically closing them, a device operated by the weighing-frame for holding the supplemental cut-offs open, and an adjusting device comprising a bar arranged to be engaged by the hangers of one of the cut-offs, and screws supporting the bar and adapted to move the same inward and outward, substantially as described.

12. In a machine of the class described, the combination with a hopper, of supplemental cut-offs provided with hangers and located beneath the hopper, said cut-offs being connected with each other and provided with means for automatically moving them inward, a weighing-frame carrying a main cut-off, an oscillating bar arranged to engage one of the hangers to move the same outward to open the supplemental cut-offs, and an arm carried by the main cut-off and arranged to engage the oscillating bar, substantially as described.

13. In a machine of the class described, the combination with a hopper, and a weighing-receptacle, of a weighing-frame, supplemental cut-offs provided with hangers and suspended beneath the hopper, said cut-offs being connected with each other and provided with means for automatically moving them inward, guide-bars located at opposite sides of the hopper, oscillating bars fulcrumed at their outer ends and having their inner ends supported by the guide-bars and arranged to engage the hangers of one of the supplemental cut-offs, and a main cut-off carried by the weighing-frame and provided with arms for engaging the oscillating bars, substantially as described.

14. In a machine of the class described, the combination with the supporting-frame, of a vertically-movable weighing-receptacle, an automatically-operated gate for the discharge-opening of the receptacle, hangers for the gate, one of which is provided with a locking-pin, a gravity latch-bar pivotally mounted on the weighing-receptacle, and having a notch adapted to engage with said locking-pin, and a fixed trip projection arranged in the path of said latch-bar, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

ANGUS McLEOD.
JOHN H. McLEOD.

Witnesses:
W. G. HUNTER,
Z. H. MOORE.