

(No Model.)

2 Sheets—Sheet 1.

W. A. JOHNSON.
AUTOMATIC GRAIN METER.

No. 448,238.

Patented Mar. 17, 1891.

Fig. 1.

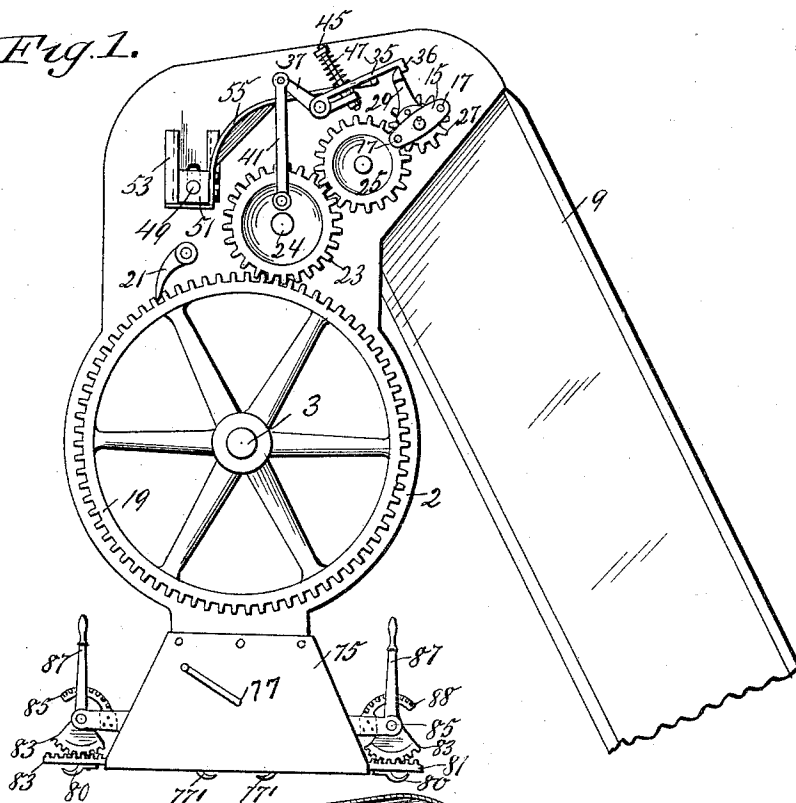
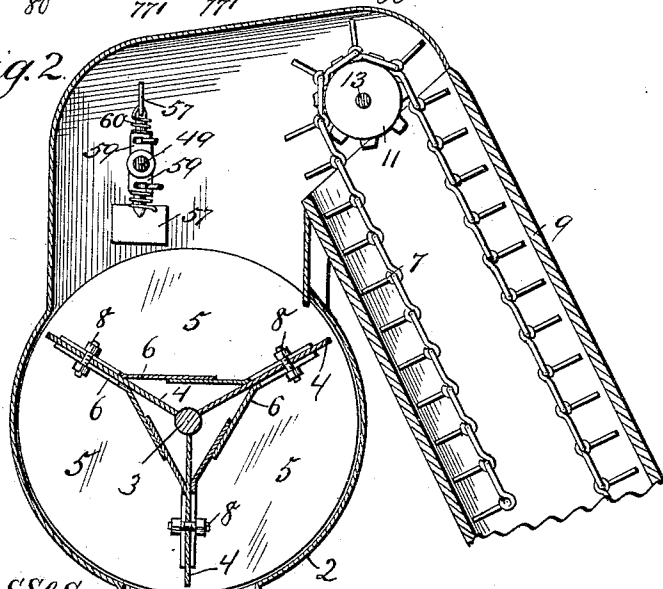


Fig. 2.



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Fig. 3.

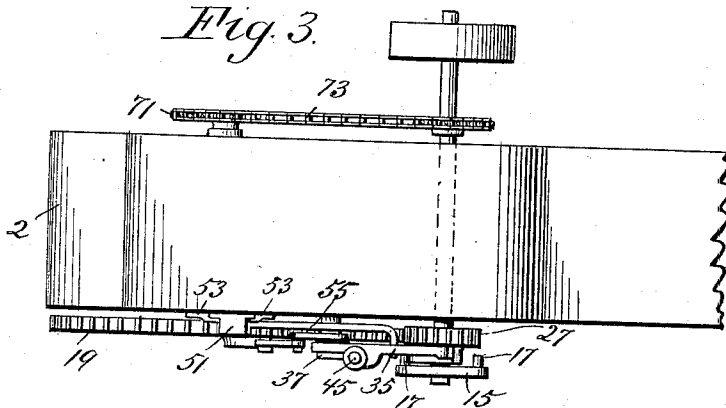


Fig. 4.

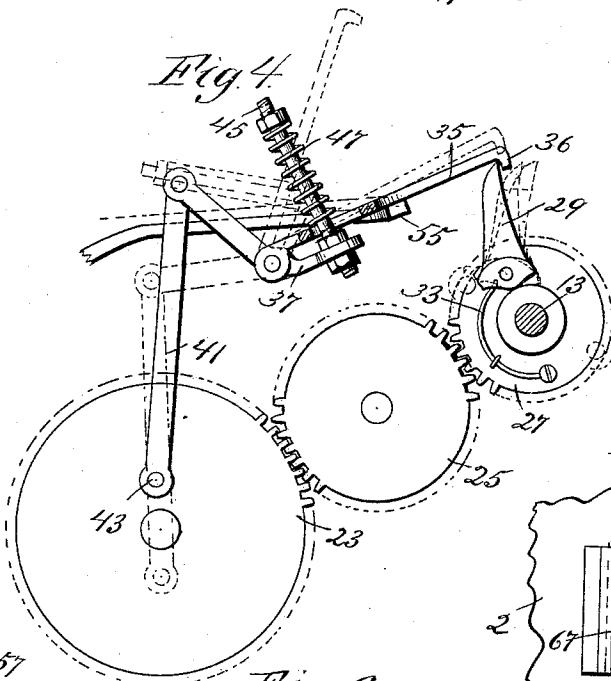


Fig. 5.

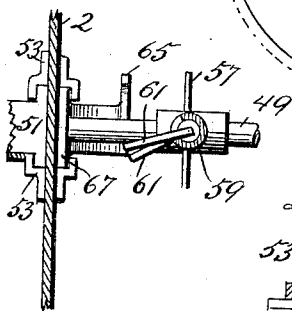


Fig. 6.

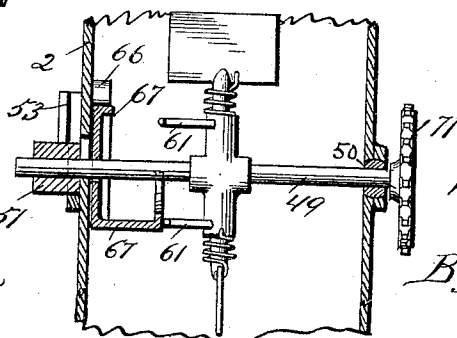
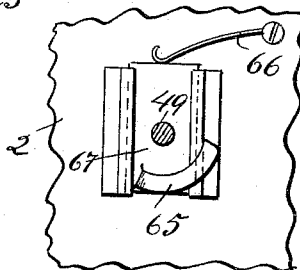


Fig. 7.



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UNITED STATES PATENT OFFICE.

WALTER A. JOHNSON, OF BYRON, MINNESOTA.

AUTOMATIC GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 448,238, dated March 17, 1891.

Application filed April 18, 1890. Serial No. 348,745. (No model.)

To all whom it may concern:

Be it known that I, WALTER A. JOHNSON, of Byron, in the county of Olmsted, State of Minnesota, have invented certain Improvements in Automatic Grain-Meters, of which the following is a specification.

The object of this invention is to provide an improved grain-measuring device designed especially for use in connection with a thrashing-machine or separator, and arranged preferably with an improved bag-holder, by means of which the grain may be directed into either one of two bags supported by the bag-holder.

The invention consists in a rotating measuring-wheel having a series of compartments, each of which is adapted to hold a predetermined amount of grain, a tripping device that is acted upon by the grain after it has filled said compartments, and driving mechanism that, when said tripping device is released, causes the wheel to be rotated a sufficient distance to empty the filled compartment and bring another into position to be filled.

The invention consists, further, in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of my improved device. Fig. 2 is a central vertical section. Fig. 3 is a plan view. Figs. 4, 5, 6, and 7 are details.

In the drawings, 2 represents a suitable casing of substantially cylindrical form, and having arranged therein a measuring-wheel 3, having a series of compartments 5, each of which is adapted to receive and hold a predetermined amount of grain. This wheel fits closely in the casing, so that no grain can pass through the casing except by being carried through by the rotation of the wheel. A suitable elevator 7 is arranged in a casing 9, and is adapted to deposit the grain in the casing and in the compartment that is uppermost. This elevator passes over suitable sprocket-wheels 11 at the upper end of the elevator-casing 9. These sprocket-wheels are mounted on a shaft 13, that extends through the wall of the casing, and has secured to it outside of the casing a cross-plate 15, provided with pins 17. This shaft and plate rotate continuously.

Upon the shaft of the measuring-wheel 3 is secured a large gear-wheel 19, that is prevented from turning backward by a suitable pawl 21. This wheel meshes with a wheel 23 on a short shaft 24, and the wheel 23 meshes with another wheel 25, and that in turn with a loose wheel 27 on the shaft 13. The wheels 19 and 23 are so proportioned that the wheel 19 makes a third of a revolution, while the wheel 23 makes a full revolution. The wheel 27 being loose on the shaft 13, permits that shaft to rotate freely, while the wheel 27 remains stationary.

Secured to the loose wheel 27 is an arm 29, upon which is a lug or projection 31, having a spring 33 connected to it and to the arm 29, so as to throw the projection up when the arm is released, as hereinafter described, thereby bringing the projection into the path of one of the pins 17 on the plate 15. The plate thus causes the wheel 27 to turn with the shaft 13, and through the wheels 25 and 23 the wheel 19 is moved a distance to correspond to the number of compartments that it contains, while the wheel 23 makes a full revolution. A locking-arm 35 is pivoted upon the outside of the casing, and is furnished with a lug 36 on its end that is adapted to engage the arm 29 and cause the spring 33 to be compressed, so as to permit the arm 29 to tip down into such position that the pins in the plate 15 will clear it as the shaft 13 rotates. The arm 35 is provided with means for causing it to release the arm 29, as hereinafter described, and as soon as it has released said arm the spring 33 throws the arm 29 forward and away from the arm 35. As soon as the arm 35 has released the arm 29 and the train has started, the arm 35 is acted upon by a device which keeps it out of the path of the arm 29 until the wheel 27 has made the desired number of revolutions. This device consists, preferably, of a lever 37, pivoted upon the same center as the arm 35, and having one end extending under the arm 35 and the other connected by a rod 41 to a crank-pin 43 on the wheel 23. A rod 45 projects from the lever 37, through the arm 35, and has a coiled spring 47 thereon bearing on the arm 35 and holding it down into position to be encountered by the arm 29. As the wheel 23 rotates, the lever 37 is turned on its center and raises

the arm 35 and holds it in an elevated position, while the wheel 23 makes a complete revolution, when the arm 35 returns to its normal position, with its lug 36 in the path of the arm 29, so that said lug is encountered by said arm, releasing the projection 31 and stopping the train of gears.

I provide means for tripping the arm 35 when the proper amount of grain has entered the casing. Any suitable device may be used for this purpose. I prefer to use a rotating shaft 49, that is mounted in boxes 50 and 51 in the frame of the machine, the shaft and one of the boxes being capable of rising, a slot in the wall of the casing permitting such movement. The other box 50 is pivotally supported and turns to permit the shaft to move with the other box. The box 51 preferably moves in suitable guides 53, arranged on the outside of the casing. An arm 55 is secured to the box 51 and extends under the arm 35, so that as soon as the shaft 49 and arm 55 have been raised a sufficient distance the arm 35 is moved so that it releases the arm 29. The shaft 49 extends through the casing, and is provided with a series of blades 57, pivotally supported in a hub 59 upon said shaft, and being provided with springs 61, each having one end secured to the blade 57 and the other end secured to the hub 59. These springs tend to hold the blades 57 in a position parallel with the shaft. These blades are capable of being turned a quarter-revolution in their bearings, so as to be brought into a position substantially at right angles to the shaft 49. A pin 61 is secured to the axis of each blade, the hub being cut away to permit the pin 61 to project through the bearing. A guide 65 is secured upon a plate 67 upon the inside of casing, said plate being arranged in guides 53, so as to be capable of moving vertically with the shaft. The guide 65 projects into the path of the pin 61. As the shaft 49 rotates the blades strike on the grain, which piles up on the wheel, and thereby the shaft 49 is raised, moving the box 51 and arm 55 with it, and releasing or tripping the arm 35, as already described. The blades strike with their flat side upon the top of the grain, and this tends to raise the shaft. As the blades turn through the grain the pins 61, striking on the guide 65, turn the blades into a position substantially at right angles to the shaft 49, and when they are in this position they pass very easily through the grain. A suitable spring 66 is arranged above the slide 67, and tends to bring the shaft 49 down to its normal position after it has been raised by the accumulation of grain in the receptacle. By this means it will be seen that as the grain is carried up by the elevator 7 it is deposited in the casing and upon the compartment of the wheel 3 that is uppermost at the time. After the compartment has become full and the grain has reached a point where it will be encountered by the movable blades, the shaft

carrying said blades is moved upward by the striking of the blades upon the grain until the tripping device has caused the train of gearing to be brought into operation, so as to cause the filled compartment to be emptied and the next compartment to be brought into position to be filled by the elevator.

As the compartments of the wheel each contain a predetermined amount of grain, preferably one-half bushel each, it will be seen that the grain will be automatically measured.

I prefer to attach or secure to the lower part of the casing a suitable spout 75, having therein a gate or valve 77, that is adapted to be turned so as to direct the grain to either side of the spout, as desired. I also prefer to provide two bag-holders that are secured, one to each side of the spout, so that suitable bags may be attached to these holders, and the grain may then be directed into one bag or the other by simply turning the gate or valve 77. Each bag-holder consists of hooks 77', secured at the lower end of the spout near the center thereof, and similar hooks 80, secured upon sliding rack-bars 81, as shown in Figs. 1 and 2. Segmental wheels 83 are secured upon shafts 85 and engage the rack-bars 81. The shafts 85 are provided with hand-levers 87, each of which has a latch adapted to engage a notched quadrant 88, so as to hold the lever 87 and the parts controlled by it in any desired position. The bags are attached to the holders by slipping them over the hooks 77' and 80, and then moving the hooks 80 outward into such position as to prevent the bags from slipping off. With this arrangement there may always be one bag upon the spout for receiving the grain, while the other bag is being removed and another substituted for it.

It will be seen that this device is exceedingly simple in construction and operation, and that all of its parts are so constructed and arranged as to secure an accurate movement of the measuring-wheel, thereby causing the grain to be accurately measured.

The measuring-wheel consists of a series of radiating plates 4, that are secured upon the shaft of the wheel and extend within a short distance of the inside surface of the casing. Arranged in each compartment are two angular overlapping plates 6, secured to the inner walls of the plates 4 by bolts 8, that pass through slots in said plates 6. By this means these plates may be adjusted nearer to or farther from the center of the wheel, and thereby the capacity of each compartment may be increased or decreased at will.

I claim as my invention—

1. The combination, with the casing and the rotating measuring-wheel, of the rotatable shaft 13, provided with the loose wheel 27, gearing connecting said wheel with a wheel upon the shaft of the measuring-wheel, a rotating and movable shaft arranged in said casing and provided with movable blades and means for turning said blades, and a clutch

mechanism arranged to be thrown into operation by the movement of said shaft and to connect said wheel 27 with the shaft 13, substantially as described.

5 2. The combination, with the measuring-wheel and the rotating shaft 13, of the cross-plate 15, secured upon said shaft and provided with a pin 17, the arm 29, provided with a spring-controlled dog 31, adapted to be engaged by said pin 17, the locking-arm 35, 10 adapted to engage the arm 29, means for causing the arm 35 to release the arm 29, and means for holding said arm 35 out of engagement with the arm 29 for a predetermined 15 time.

3. The combination of the measuring-wheel, the rotating shaft 13, the loose pinion thereon, means connecting said pinion with the shaft of the measuring-wheel, the arm 29, 20 provided with a dog 31, the locking-arm 35,

the lever 37, engaging the arm 35, the crank-pin on the wheel 23, the rod 41, connecting the lever 37 with said crank-pin, the rotating shaft 49, provided with blades arranged in the casing, and the arm 55, connected to said 25 shaft and adapted to raise the arm 35.

4. The combination, with the measuring-wheel and the driving mechanism connected therewith, of the tripping mechanism, means 30 for operating said tripping mechanism consisting of the rotating shaft 49, provided with the movable blades, and means for turning said blades as said shaft is rotated, for the purpose specified.

In testimony whereof I have hereunto set 35 my hand this 7th day of April, 1890.

WALTER A. JOHNSON.

In presence of—

J. A. B. KENDALL,

M. N. ELLIS.