(No Model.) 2 Sheets—Sheet 1.

W. T. BARKER

AUTOMATIC GRAIN WEIGHING MACHINE.

No. 421,850. Patented Feb. 18, 1890.

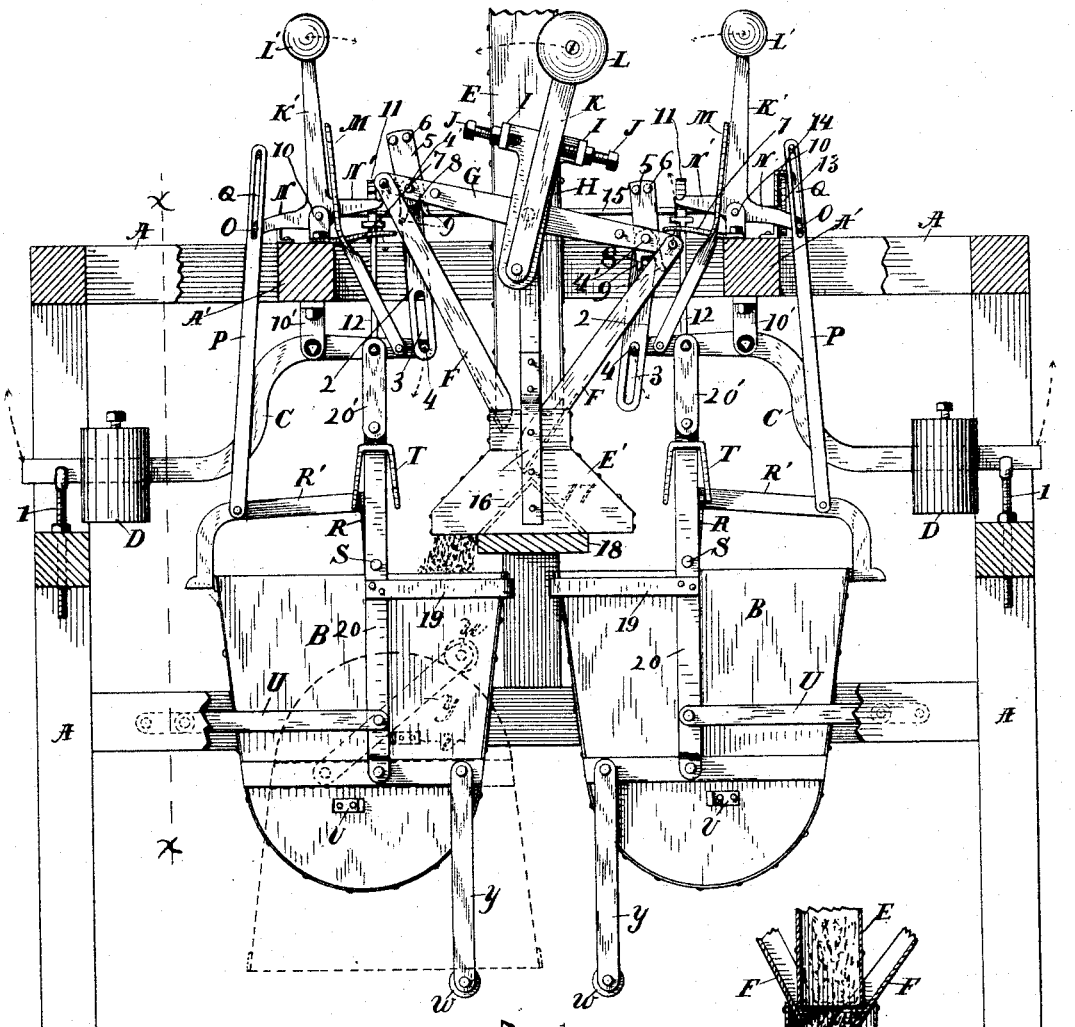

Fig. 1.

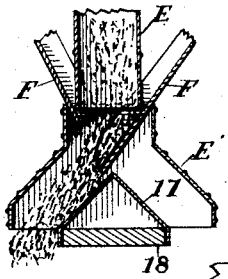

Fig. 3.

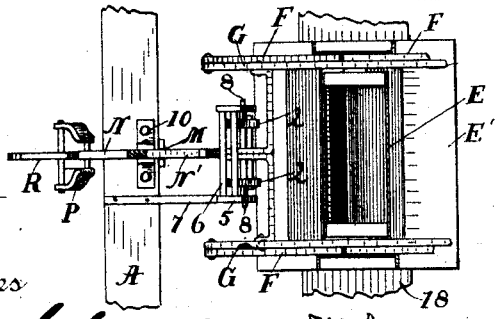

Fig. 4.

Witnesses

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Geo. W. Rawlins

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By his Attorneys

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(No Model.) 2 Sheets—Sheet 2.

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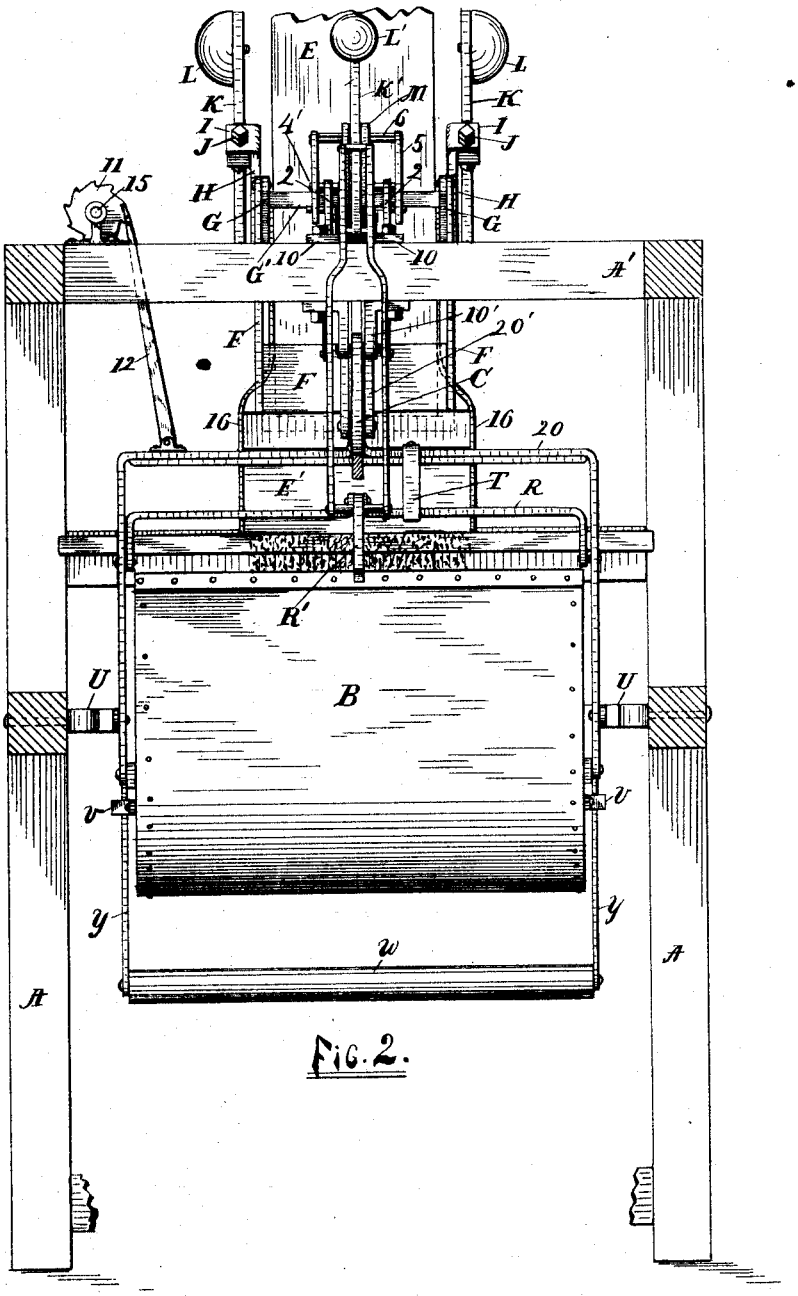

Fig. 2.

Witnesses.
John A. Smith,
Geo. W. Rancé

Inventor
Wells T. Barker.

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UNITED STATES PATENT OFFICE.

WELLS T. BARKER, OF NASHVILLE, MICHIGAN.

AUTOMATIC GRAIN-WEIGHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 421,850, dated February 18, 1890.

Application filed April 29, 1889. Serial No. 309,069. (No model.)

To all whom it may concern:

Be it known that I, WELLS T. BARKER, a citizen of the United States, residing at Nashville, in the county of Barry and State of Michigan, have invented certain new and useful Improvements in Automatic Grain-Weighing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in automatic grain weighing and registering machines; and the object of my invention is to automatically weigh and register grain issuing in a continuous stream from a spout; and the special object of my invention is to provide a machine that will perform this operation with accuracy, regardless of fluctuation in the volume of such stream. I accomplish this result by the mechanism illustrated in the accompanying drawings, and in which—

Figure 1 is a side elevation with parts of the frame broken away to show details. Fig. 2 is a similar end elevation. Fig. 3 is a detail of spouts and gates. Fig. 4 is a plan detail.

The machine is substantially in duplicate, and is arranged to operate in alternation upon each side of the spout. Many of the working parts are arranged in pairs, which are represented in the drawings by a single letter or numeral. Therefore, whenever the letter or numeral used indicates such duplicate or paired parts, both parts will be understood without further explanation.

A represents any suitable frame-work, to which the machine is attached, and A′ any suitable cross-beams, arranged upon each side of the spout for supporting parts of the mechanism.

B B are buckets, preferably cylindrically bottomed, suspended from cross-beams A′ by means of hangers 10, scale-beam C, and bails 20, having loose loops 20′.

C are scale-beams suspended from cross-beams A′ by hangers 10, and are provided with the usual knife-edge pivots, both for the buckets and hangers. They are curved downward and outward from the point of suspension, and are provided with the weights D and adjustable supports 1. The advantage of this double curved form will be explained later.

E represents a vertical spout, by means of which the grain is conveyed into the machine.

E′ is an expanded, divided, and substantially detached portion of the spout E, to which it is secured by straps 16, and is divided by the bridge 17, resting upon the shelf 18, so that it has two openings at the bottom, one adapted to each bucket.

F F are gates, the lower ends of which are inserted in the openings between E and E′ upon each side, and the upper ends are pivoted to an oscillating frame G, having beams pivoted to the spout E upon each side and provided with a connecting-bar G′. (Shown in Fig. 4, also in Fig. 2.)

H is a T-plate having arms I, which embrace the bar K, loosely pivoted thereto at its lower end, and are provided with set-screws J, and is rigidly secured to the side beams G.

L L′ L′ are weights secured to the ends of their respective levers.

K′ K′ are T-shaped levers pivoted to A′ by hangers 10 and having horizontal arms N N′ and weights L′ L′. The arm N has the pin O, which engages with the slot Q, for operating the lifting-rods P, and arms N′ engage with the tilting-frame 5, hereinafter more fully described.

M is a forked prop pivoted to scale-beam C at its lower end. The upper end straddles N′ for placing the lever K′ perpendicularly.

R is a latch arranged oppositely to stop 19 and consisting of the yoke R, pivoted to the bail at S, and having the pawl R′, engaging with the sides of the buckets for holding them permanently upright.

T is a stop for regulating the movement of the latch R.

U are steadying-bars for the bails, arranged upon each side of the bail, pivoted at their respective ends to said bails and to the frame A.

V are bail-stops secured to the sides of the buckets to prevent their turning too far over when emptied.

W is a weight journaled to buckets B by hangers Y, for restoring said buckets to an upright position after being emptied.

2 are connecting-rods having slots 3 for en-

gaging with pins 4, fixed at the inner ends of scale-beam C, and are pivoted to beams G at their upper ends.

5 represents a tipping-frame consisting of two side bars forked at their lower ends, having their tops connected by parallel pins 6, and is journaled on a pin 4′. Its function is to engage by its pins 6 the ends N′ of the levers K′ for operating, through and by means of connecting mechanism, the latches R.

7 is a fixed arm, having its outer end secured to A′, and its inner end adapted for engaging the outer prong of the forked end 9 of the side bars of frame 5 upon its upward movement to enable frame 5 to engage arm N′ upon its downward movement.

8 is a stop-pin rigidly secured to bar 2, located within the forked end of 5 for limiting its motion.

11 is a ratchet-wheel provided with the pawl 12, attached to the bail and operates the shaft 15 and the dial 13, which has the usual index 14 for registering the number of buckets filled and emptied.

The operation of the machine is substantially as follows: Grain pouring down spout E, in whatever volume, is deflected by one of the gates F into one of the buckets, (which for convenience we designate as No. 1.) As it fills the weight of the grain inside causes it to depress the inner end of scale-beam C, the curved form of the outer arm of which admits of the weight being adjusted below the plane of the pivot, thus affording greater leverage. The weight D may be adjusted to regulate the amount of grain that shall be permitted to fall into the bucket before it begins to descend. As the weight of the bucket increases by the continued pouring in of the grain, it continues to settle. Pin 4 engages rods 2 at the bottom of the slot 3, and pulling downward upon the rod depresses the oscillating frame G upon that side. This interposes the end of the gate F upon that side and diverts a portion of the stream of grain into the opposite buckets. As bucket No. 1 continues to fill, it continues to settle down, farther depressing G and increasing the amount of the interposition of said gate, diminishing the volume of the stream pouring into bucket No. 1 and increasing that pouring into No. 2. It will be observed that the adjustment of the T-plate H and weighted lever K upon G is such that as G approaches the horizontal K will approach a perpendicular position. As soon, therefore, as G, passing the horizontal, lifts K to the perpendicular position, a very slight movement of G in the same direction will cause K to fall against the opposite set-screw. The adjustment of the parts is such that when this occurs the inertia and increased weight upon that side causes a shifting of the gates F, cutting off entirely the stream upon that side and throwing it into No. 2. Simultaneously the pins 6 engage the arm N′, depressing which it raises the outer end of N. Pin O engages the end of P at the end of slot Q, lifts it, disengaging the pawl R′ from the edge of the bucket, which, being eccentrically pivoted below and at one side of its center of gravity, as shown in Fig. 1, instantly turns outward, discharging its contents, the position being indicated in Fig. 1 by dotted lines. The grain being removed, the weight W causes the bucket to resume the upright position, and the weight D and beam C cause it to resume its former elevation. As the inner end of the beam C rises, it carries the prop M, which throws the lever K′ back to position. Frame 5 is set by engagement with brace 7, as described. As the bucket rises, pawl 12 engages ratchet 11, pushing it forward a notch, registering upon the dial. In the meantime bucket No. 2 has been filling, and after bucket No. 1 has resumed its former position No. 2 begins to settle, the stream of grain is again divided, the parts connected to No. 2 repeat the operations described, and the operation of No. 1 is repeated by No. 2, and this alternation continues so long as grain continues to come down the spout. It will be observed that the adjustment of the weight D and weighted lever K regulates the dividing of the stream of grain and the volume flowing into the filling bucket, while the adjustment of the set-screws J, regulating the throw of the weighted lever K, determines the point at which it shall be cut off, and that fluctuation in the volume of the stream pouring down the spout E would effect the speed of the machine only and not its accuracy.

What I claim as new, and wish to secure by Letters Patent of the United States, is—

1. In an automatic grain-weighing machine, substantially as described, in combination with a frame and spout provided with means of dividing a stream of grain and deflecting it alternately into buckets arranged upon either side of said spout, substantially as described, a scale-beam pivoted to said frame, adapted to support a bucket from its inner end, provided with suitable means of dumping, substantially as described, and having its outer arms curved downward and outward, and provided with a weight and adjustable support, substantially as described, and for the purposes herein set forth.

2. In an automatic grain-weighing machine, in combination with a vertical spout divided into two sections, the lower section provided with a bridge making a double opening at the mouth, paired gates arranged one upon each side of said spout, adapted to alternately penetrate and withdraw from said spout, having their upper ends pivoted to a suitable oscillating frame pivoted to said spout, said machine having buckets arranged one upon each side of said spout and provided with suitable means, substantially as described, of emptying said buckets and operating said oscillating frame, substantially as described.

3. In combination with the spout E and frame G, the T-plate H, secured to said frame,

having arms I, provided with set-screws J, and the lever K, pivoted to said plate and provided with the weight L, substantially as and for the purposes herein set forth.

4. The combination of the spout E, frame G, gates F, and spout E′ with the plate H, the weighted lever K, pivoted to said plate, the arms I, and set-screws J, substantially as and for the purposes herein set forth.

5. In an automatic grain-weighing machine, substantially as described, having a centrally-arranged vertical spout provided with two discharge-openings, in combination with scale-beams C, frame G, and gates F, the buckets B, eccentrically pivoted and provided with latches R, weights W, stops 19, and steadying-bars U, and suitable means, substantially as described, of unlatching the same, arranged as herein set forth, and for the purposes set forth.

6. In an automatic grain-weighing machine, substantially as described, the combination, with a suitable frame and a vertically-divided spout having two discharge-openings, and having openings at each side, substantially as described, centrally arranged, of the double curved scale-beam C, pivoted to said frame, provided with weight D and adjustable support 1, adapted to support a bucket provided with means, substantially as described, of discharging its contents, connecting-bar 2, and an oscillating frame pivoted to said spout and having gates pivoted thereto at each end adapted to alternately penetrate and retire from said spout, substantially as described, and for the purposes herein set forth.

7. The combination, with the platform 18 and the bridge 17, supported thereby, of the expanded divided spout E′, the spout E, having its discharge end over the bridge, the straps securing the spout E′ to the spout E, and the oppositely-arranged gates F F, substantially as shown and described.

8. The combination, with the platform, the bridge, and the spout E′, of the spout E, attached to the spout E′, the oscillating frame G, and the gates F F, pivotally attached to opposite ends of said frame, with their discharge ends within the spout E′, substantially as shown and described.

9. The combination, with the bridge, the platform, and the spouts E and E′, of the oscillating frame G, the gates pivotally connected therewith, the plate H, secured to the oscillating frame, the arms I, and the bar K, loosely pivoted to the lower end of the said plate, substantially as shown, and for the purpose specified.

10. In an automatic grain-weighing machine, substantially as described, in combination with the spout E and the scale-beams and buckets, arranged as described, the oscillating frame G, provided with the gates F and the weighted lever K, plate I, and set-screws J, arranged substantially as described, and for the purposes herein set forth.

11. The combination of eccentrically-pivoted buckets B, arranged upon each side of the vertically-divided spout provided with two discharge-openings, with said spout and bails 20, stops 19, latches R, and suitable means, substantially as described, connected to the scale-beams, for lifting said latches by the weight of the grain in said buckets, whereby said buckets are caused to revolve on said pivots and turn bottom upward, substantially as described.

12. In an automatic grain-weighing machine, substantially as described, in combination with an eccentrically-pivoted bucket, arranged substantially as described, provided with a latch R, having a lifting-rod P, and a pivoted lever having an arm for engaging said lifting-rod, and an arm N′ and an oscillating frame G, the tilting-frame 5, pivoted to said oscillating frame and adapted to engage the arm N′, substantially as described, and for the purposes herein set forth.

13. In combination with the scale-beam C and bucket B, arranged as described, the latch R, rod P, and the weighted lever K′, having arms N and N′, the prop M, arranged substantially as described, and for the purposes herein set forth.

14. In combination with the frame G, weighted levers K K′, the latch R′, and connections between the latch and levers, plate I, and stops J, the frame 5, and arm 7, arranged as described, and for the purposes herein set forth.

15. In combination with the frame and divided spout provided with openings upon each side and two discharge-openings, substantially as described, the scale-beam C, pivoted to the frame and having weights D, buckets B, connected to said scale-beam, the frame G, having the gates F, and the connecting-bars 2, provided with slots 3, arranged substantially as described, and for the purposes herein set forth.

16. In combination with the frame and spout constructed and arranged as herein described, the scale-beam C, pivoted to the frame and provided with the weight and stop, the buckets B, provided with their latches and their connecting-rods, the oscillating frame G, gates F, weighted levers K, plate I, and stops J, tilting frame 5, and weighted levers K′, arranged substantially as described, and for the purposes herein set forth.

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

WELLS T. BARKER.

Witnesses:
THEOD. C. DOWNING,
W. I. MARBLE.