(No Model.) 2 Sheets—Sheet 1.

W. K. LACEY.

AUTOMATIC GRAIN WEIGHER.

No. 506,007. Patented Oct. 3, 1893.

Fig. 1.

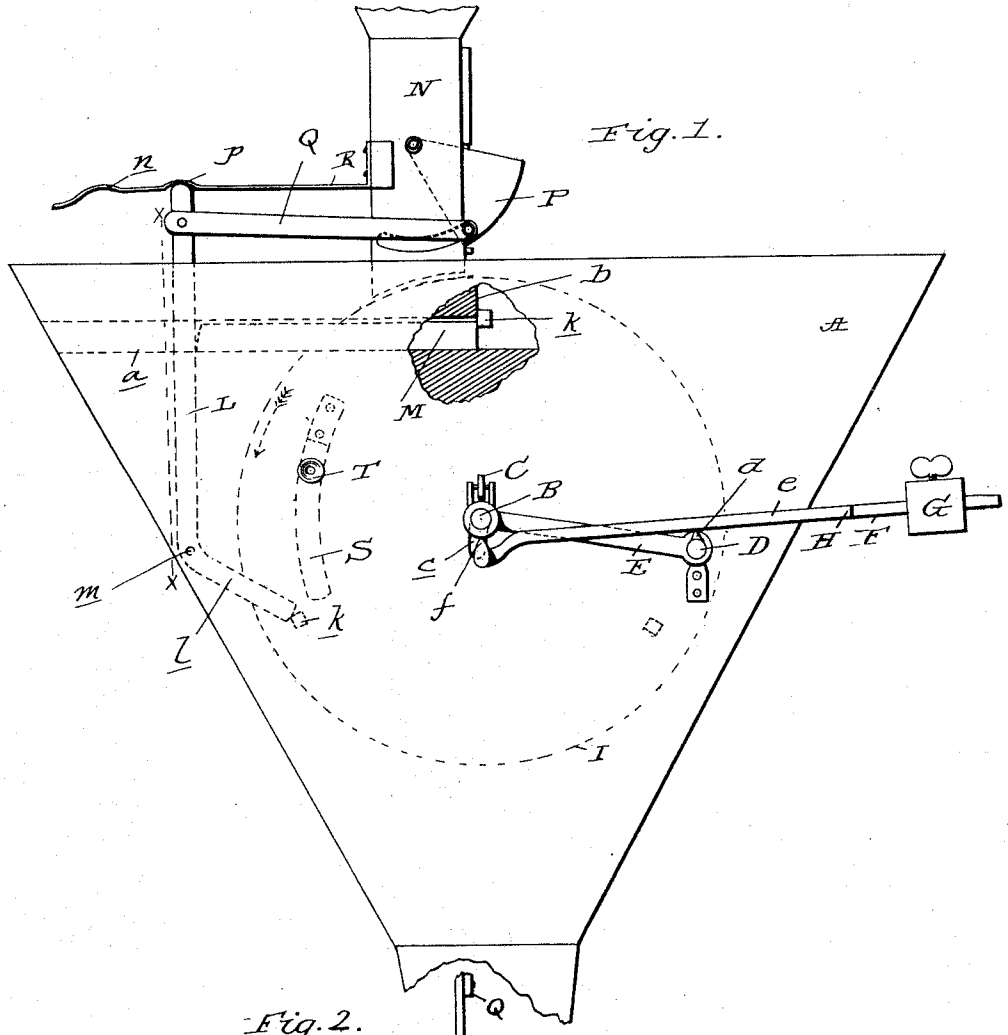
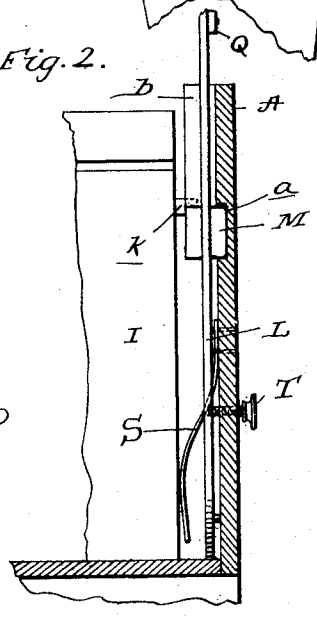


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

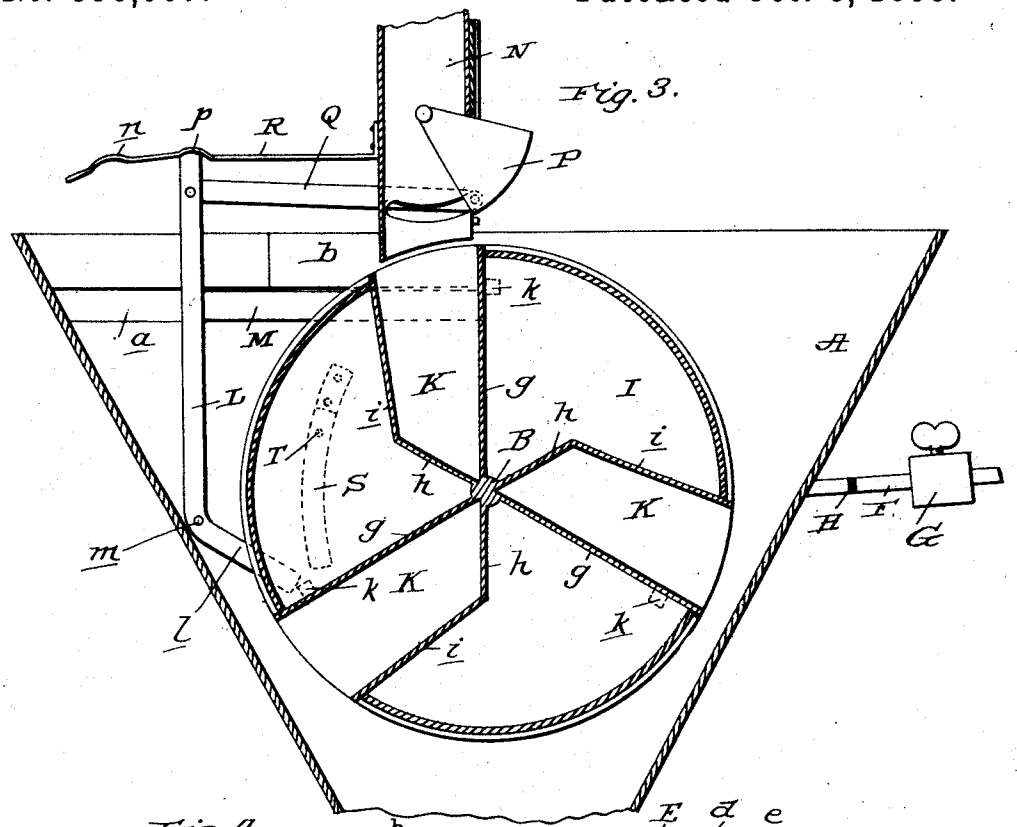
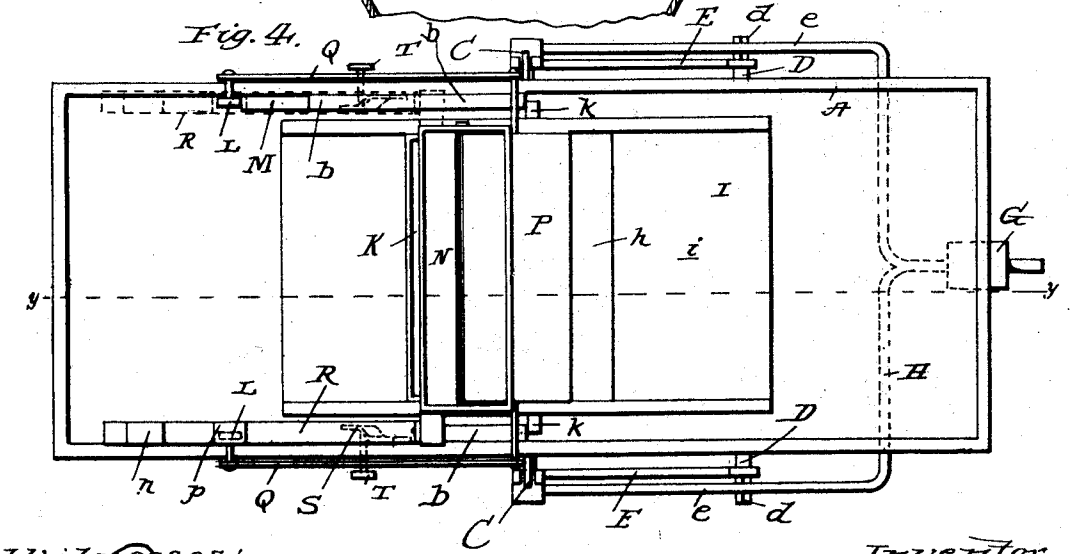


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM K. LACEY, OF NILES, MICHIGAN.

AUTOMATIC GRAIN-WEIGHER.

SPECIFICATION forming part of Letters Patent No. 506,007, dated October 3, 1893.

Application filed May 15, 1893. Serial No. 474,230. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. LACEY, a citizen of the United States, residing at Niles, in the county of Berrien and State of Michigan, have invented certain new and useful Improvements in Automatic Weighing-Machines; and I do 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.

This invention has relation to an improvement in automatic weighing devices, and the novelty will be fully understood from the following description and claims when taken in connection with the accompanying drawings, in which—

Figure 1, is a side view of my improved machine with parts broken away and parts in section. Fig. 2, is an enlarged sectional view, taken in the plane indicated by the dotted line *x*, *x*, on Fig. 1. Fig. 3, is a vertical, central, sectional view taken in the plane indicated by the dotted line *y*, *y*, on Fig. 4, with parts broken away, and Fig. 4, is a plan view with one of the springs or yielding arms R, illustrated in dotted lines so as not to hide the parts beneath it.

Referring by letter to said drawings—A, indicates a frame or casing, which may be of approximately hopper shape, having a discharge spout at its lower end. This casing is provided in its side walls near their upper edges with horizontal recesses or ways *a*, and above these ways beginning in the longitudinal center of the casing, are abutments *b*, for a purpose which will be presently described. The casing is furthermore provided at opposite points in its side walls with vertical slots *c*, for the passage of a shaft B, which is journaled at opposite ends in suitable bearings, and these bearings are provided with vertically-disposed friction rollers C, which are designed to bear against the outer opposite sides of the casing, as will be hereinafter more fully described.

D, indicates trunnions; there being one extending laterally from the outer walls of the casing A, on opposite sides. Journaled at one end on these trunnions, are lateral arms E, in the opposite ends of which, the bearings for the shaft B, are supported. The outer upper sides of these arms E, are provided with knife edge bearings *d*.

F, indicates a scale beam carrying a pea G, thereon. This beam F, has formed integral with it or fixed thereto, a yoke-frame H, the lateral arms *e*, of which bear at a suitable point in their length upon the knife edge bearings *d*, of the arms E, and the inner ends of the arms *e*, of the yoke-frame terminate in upwardly-directed knife-edges *f*, and furnish a bearing for the boxes or supports for the shaft B.

I, indicates the rotary measure. This measure is secured to the shaft B, so as to rotate therewith, and carries measuring buckets or pockets K. These buckets are of a peculiar construction, having one longitudinal wall *g*, radiating from the shaft or pivotal point to the periphery of the wheel, while the wall *h*, is of less length and radiates from a similar point so as to form the bottom of the measure and connects at its outer end with the lower end of the short longitudinal wall *i*, so that each pocket or bucket will be arranged off of the center of the wheel or rotary measure. The rotary measure is provided on its outer side walls, and at points contiguous to the walls *g*, of each bucket, with a stop or lug *k*, designed to contact with the abutment *b*, when said measure has been raised upwardly as will be presently described.

L, indicates a vertically disposed lever. This lever has an angular toe or branch *l*, and is pivoted at its angle, as shown at *m*, within the casing, and its vertical or long branch intersects the recess or way *a*.

M, indicates a plunger, arranged in the way or recess *a*, of the casing, and is designed to contact at one end with the stops or lugs *k*, and at its opposite end with the pivoted angle lever, as shown.

N, indicates a feed chute. This chute is vertically disposed above the casing in the center thereof, and at a point where the buckets or measures will come when brought vertically and raised to receive the material. This chute is provided with a pivoted valve or cut-off P, and is connected with the upper portion of the pivoted angle lever L, by means of an arm or connection Q, so that as said lever has been reciprocated, it will open and close the valve or lower end of the chute.

R, indicates a spring or yielding arm, which is secured at its inner end to the chute or other suitable support, and is provided at certain points near its outer end, with bends or recesses *n*, and *p*, which are designed to receive the upper end of the long branch of the pivoted angle lever, and afford a certain amount of resistance to the pivotal movement of the latter; the recess or bend *p*, receiving said lever when the chute has been opened, and the contents are being discharged into the measures or buckets, while the bend or recess *n*, will receive said lever when the supply has been cut off through the movement of the valve in the chute. While I have described the plungers, pivoted levers, and their connecting devices on but one side of the wheel or rotary measure, yet I have shown them and in practice, use them on both sides for the purpose of better results, but I do not wish to be understood as limiting myself to the two sets, or to the use of the one set alone.

S, indicates tension springs. These springs are arranged one on each side of the rotary measure. The outer ends of the springs are secured to the inner side walls of the casing, and their opposite ends bear against said measure, as shown; set screws T, being employed for the purpose of increasing or diminishing the frictional contact of the springs against the measure, and the set screws have their bearings in the walls of the casing as shown.

In operation, the pea is moved along the beam to a point according to the quantity of material desired to be measured, and the wheel turned so as to bring a bucket or pocket beneath the chute N, when the bucket being raised by the weight of the pea, will bring one of the stops or lugs *k*, against the abutment *b*, as shown in Fig. 1, of the drawings. During this movement the stop or lug contiguous to the wall *g*, of said bucket will also engage the inner end of the plunger; the stop or lug on the previous or advanced bucket of the wheel having struck the angular toe of the pivoted lever L, will move said lever and by means of the connection Q, will open the valve P, in the chute, and allow the material to discharge into the bucket or pocket beneath. When the desired quantity of grain has been let into the bucket or pocket, the shaft B, will bear down in the slots *c*, of the casing, and with it the wheel and its buckets, so that the lugs *k*, will be lowered from engagement with the abutments *b*, and pushing back the plunger M, against the pivoted angle lever, will through the medium of the connection Q, reciprocate the valve P, and close the discharge end of the chute; the measure being allowed to make a partial rotation when its lug *k*, will contact with the angular toe of the lever L, by the time the next bucket has been brought beneath the chute and raised as before described, when said lever and the connection will open the valve and allow the material to deposit into the bucket. It will be observed that after the bucket is filled, the wheel falls, or rather its shaft, to which the wheel is fixed, in the slots of the casing, and after each discharge, the wheel rises until another bucket has been filled or a sufficient quantity received therein, to allow the lug to disengage from the abutment *b*. It is obvious that by the manipulation of the sliding pea, any desired quantity of material can be measured, and the operation, is rendered continuous and automatic.

It should be observed that by the time the rotation of the measure has been partially completed, the material in the pocket or receptacle, will be partly or completely emptied, so much so that the weight G, will raise the wheel and allow the next lug *k*, to engage the abutment *b*, as soon as said lug reaches the point of the abutment.

Having described my invention, what I claim is—

1. In a weighing device, the combination with the casing, of a rotatable and vertically movable measure, carrying stops as described, a plunger adapted to contact with said stops, a pivoted angular lever also adapted to be engaged by the stops, and be struck by the plunger, a feed chute, a valve or cut-off arranged therein, and a connection for the pivoted lever and valve, whereby said valve may be operated by the rotary movement of the wheel, or measure, substantially as specified.

2. In a weighing device, the combination with a casing having the vertical slots in its side walls, and also having a way or recess in one of said walls to receive a plunger and an abutment above said way or recess; of the rotary measure secured to a shaft, the arms connected at one end with the shaft and their opposite or outer ends journaled on trunnions and having upwardly-disposed knife-edge bearings, the yoke frame having knife-edge bearings on the ends of its lateral branches arranged in engagement with the under side of the bearings for the measure shaft, a scale beam fixed to the yoke-frame, a slidable pea thereon, an angle lever pivoted in the casing, a cut-off valve pivoted in a feed chute, and an arm connecting said valve with the pivoted lever, and a plunger arranged in the way of the casing and adapted to be engaged by the pivoted lever at one end and by the lugs on the measure at the opposite end, all adapted to operate, substantially as and for the purpose specified.

3. The improved automatic weighing device described, comprising the hopper shaped casing, having the vertical slots in its opposite side walls, and also having the plunger guide, and an abutment above the same, the rotary measure, secured to a transverse shaft, and having the buckets K, and the lugs *k*, the trunnions secured to the outer side walls of the casing, the arms having knife-edge bearings at one end, and journaled on the trunnions, and connected with the bearings of the

measure shaft at their opposite ends, the friction rollers carried by said bearings, the yoke-frame supported upon said knife-edge bearings, and having its inner ends terminating in knife-edge bearings, which bear against the under side of the bearings for the measure shaft, a scale beam secured to the yoke frame, a slide pea arranged on said beam, a vertically-disposed hopper or spout, a pivoted valve arranged therein, an angular lever pivoted in the casing, and adapted to be struck by the lugs or stops on the measure, an arm connecting one end of said lever with the valve in the chute, a plunger arranged to engage said pivoted lever, and also engage the stops of the measure, and the spring arm for engaging the upper end of said lever, substantially as specified.

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

WILLIAM K. LACEY.

Witnesses:
LEANDER J. MORGAN,
F. C. SMITH.