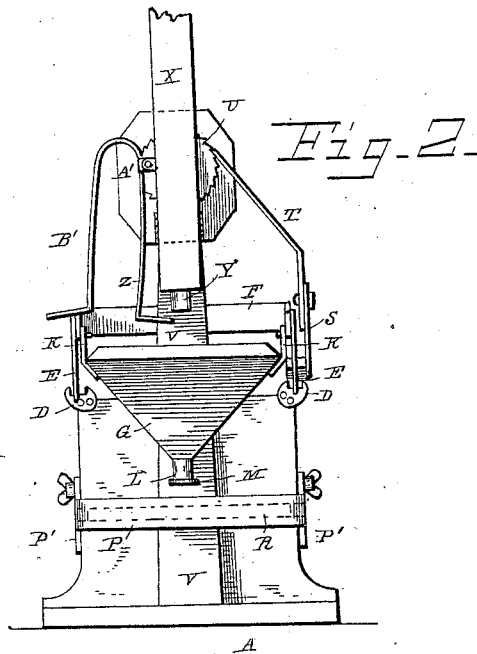
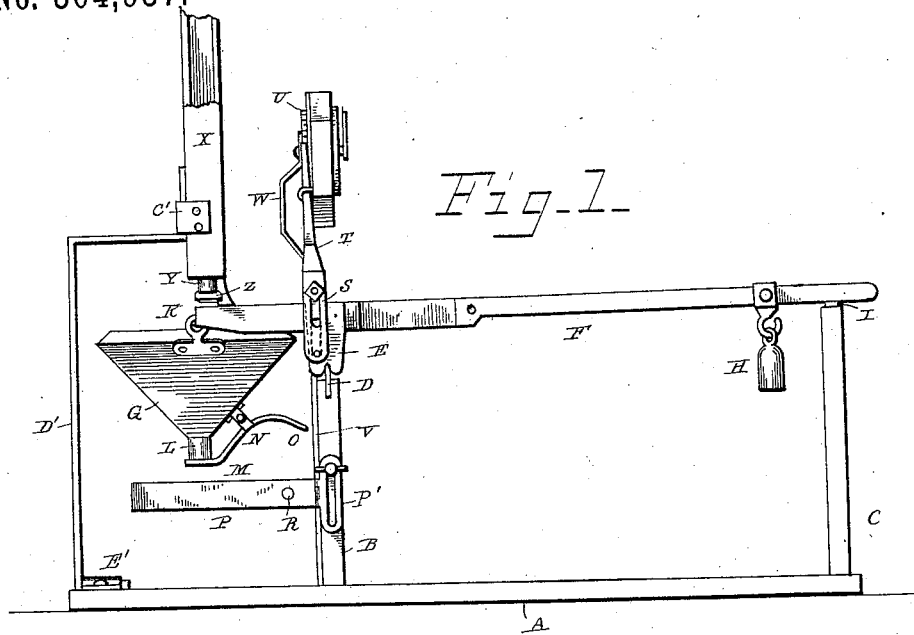


(No Model.)

J. C. KING.  
AUTOMATIC GRAIN METER.

No. 304,937.

Patented Sept. 9, 1884.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JACOB C. KING, OF YORK, PENNSYLVANIA.

## AUTOMATIC GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 304,937, dated September 9, 1884.

Application filed April 11, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB C. KING, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Grain-Meters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of weighing devices known as "grain-meters," and is designed to receive grain, &c., and automatically measure, by weight, and deliver the same; also, recording the amount that passes through the device.

The construction of the device embraces those qualities that make it simple and accurate. The parts being few and systematically arranged, it is not liable to get out of order, and requires no attention after once being regulated. Being constructed in accordance with the laws of gravity, it requires no springs or multiplicity of mechanism to produce the required result.

In the accompanying drawings, Figure 1 represents a side elevation of the device, and Fig. 2 an elevation of the same.

A represents the base of the device, and is of any desired construction. On this base are raised two standards, B and C, respectively, the one, C, being at or near one end, and the other, B, being placed more or less distant from the other, as is required.

On each side of the top of the standard B are secured the fulcrums D, which may have a knife-edge to reduce friction. On these fulcrums rest the bearing-pieces E of the lever F, the long end of which is a single piece, graduated and carrying the adjustably-secured sliding weight H. The bearing-pieces E are each recessed at their free end, said recess receiving the fulcrums D. The continuations of the pieces E on each side the said recess are rounded, as shown, so as to offer no resistance to the free working of the lever. They also serve to prevent the lever slipping from the fulcrums when in operation. The extreme end of the lever rests on the standard C, bearing against the buffer I on the same. The inner end of the long arm is divided and spreads so that the bearing-pieces E, which

are secured one to each piece of the divided lever, may rest on the fulcrums D, as shown. Each of these said pieces of the lever are continued from the fulcrum-point parallel to each other, and thus form a double short arm of the lever, as shown.

Projecting inward from the end of each of the pieces forming the short end of the lever are knife-edged bearings, on which is hung the hopper G by means of loops K. The hopper is so hung as to be perfectly balanced, and has a downwardly-projecting ventage, L. This ventage is kept normally closed by means of the lever-valve M, secured to the hopper by means of the hinge or fulcrum N, and kept in place by means of the gravity-arm O, which also serves a purpose hereinafter set forth.

P represents an adjustable frame secured by means of thumb-screws or the like, which pass through the slotted right-angle extensions P' to the standard B. Passing horizontally through the frame and near the said standard is a rod, R. This frame is for the purpose of limiting the fall of the hopper, and the rod engaging with the arm O through it opens the valve M, as will be readily seen.

Adjustably secured to one of the pieces E, which is slotted, is a slotted piece, S, to which is adjustably secured a pawl, T. The pawl engages with and actuates a ratchet-wheel, U, which operates an index-hand. The ratchet-wheel and the index are properly incased and supported on an upright, V, secured to the standard B. The ratchet-wheel is kept in place by means of the spring-arm W. One or more dials may be used to indicate the amount of grain weighed and measured.

X represents a chute of ordinary construction provided with a ventage, Y.

Z represents a valve adapted to close and open the said ventage Y, and is hinged to the chute at A'.

B' represents a gravity-arm attached to the valve Z, and has its lower end bent at right angles, so as to come in contact with one side of the short lever-arm, as shown. The chute has on it a bracket, C', into which is slipped one end of a standard, D', which is adapted to support the said chute, and has its lower end adapted to be secured in a bracket, E', which is secured to the base.

In operating the device, the weight is first adjusted so that a certain quantity will be received in the hopper before it will be balanced, or, more properly, overbalanced. The valve Z being normally open, the grain will descend the chute into the hopper till the same has received sufficient to overbalance the weight H. The said hopper will then begin to descend, and the arm B' disengaging with short arm of the lever, the valve Z will, by gravity, be closed, as is evident, thus shutting off the grain. As the long arm of the lever ascends, the force of gravity becomes less on the weight, and by means of the bearings E the center of gravity is so changed in favor of the hopper as to almost balance the said weight and the hopper, the weight of the grain being extra and tending to keep the hopper "down" till the said grain is all discharged. This being accomplished, the hopper, being slightly overbalanced by the weight on the long lever-arm, returns to its original position. As the said hopper descends, the gravity-arm O comes in contact with the rod R and opens the valve, as will be evident, and as the hopper returns, as above stated, the force of gravity exerted on the said arm closes the valve. The arm O is heavy enough to keep the valve closed while the hopper is filling. The base under the hopper is provided with a suitable opening, through which the grain may be conveyed to millstone for grinding, or into proper receptacles for shipping.

Having thus described my invention, what I claim is—

1. The automatic weighing and dumping device consisting of a pivoted hopper swung between the ends of a divided lever, and having an automatic retaining and dumping valve, and the lever to which the hopper is pivoted carrying an adjustable weight, and being provided with extended bearings attached to the divided portion of the lever, the free ends of the said bearings being slotted and rounded, the several parts being arranged and operating substantially as and for the purposes specified.

2. A hopper pivoted to the end of a lever and adapted to fall and rise in its operation, in combination with an outlet gravity-valve secured to the hopper, and a frame receiving the said hopper and restricting its downward tendency, the said frame having across it a rod for operating the valve, and provided with right-angle slotted extensions at its ends, through which pass thumb-screws, securing the said frame adjustably to a standard.

3. The hopper adapted to receive the grain, the gravity-valve hinged to the same and normally covering its outlet, and the frame receiving the hopper in its downward movement, and having a rod or other means that will engage with the valve and cause it to uncover the said outlet, substantially as and for the purpose specified.

4. The divided lever having at one end a weight and at the other pivotally carrying a hopper, the bearings attached to the lever and resting on suitable fulcrums, the hopper adapted to be automatically dumped, the gravity-valve attached thereto, and the adjustable frame adapted to restrict the downward tendency of the hopper, and also operate the valve on the same, as and for the purpose specified.

5. The chute detachably secured to a suitable standard, the automatically-dumping hopper hung on a lever, and the gravity-lever hinged to the chute and formed of a U-shaped arm, one end normally covering the vent in the chute and the other engaging with the lever to open the chute, and acting by its weight to close the same, substantially as and for the purpose specified.

6. The divided lever, the slotted bearing on one side of the same, the adjustable piece secured to it, and an adjustable pawl secured to the said piece, and adapted to engage with a ratchet-wheel operating suitable indices, the parts operating as and for the purpose specified.

7. The standard bearing the fulcrums, the divided lever, the bearings secured to the said lever, the automatically-dumping hopper, the gravity-valve secured to the same, the frame secured to the standard and adjustable on it, and adapted to restrict the downward tendency of the hopper, the rod in the frame adapted to operate the gravity-valve, the removably-secured chute, the gravity-valve secured to the same, the pawl adjustably secured to a plate which is adjustably secured to one of the bearings of the lever, and the ratchet-wheel secured to an upright and kept in place by a spring-arm, and adapted to operate indices, all the parts operating to automatically receive, weigh or measure, and deliver grain, as and for the purpose specified.

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

JACOB C. KING.

Witnesses:

CHAS. D. DAVIS,  
J. J. MCCARTHY.