(No Model.)

E. N. WILLIAMSON.

AUTOMATIC GRAIN METER.

No. 342,854. Patented June 1, 1886.

Fig. 1.

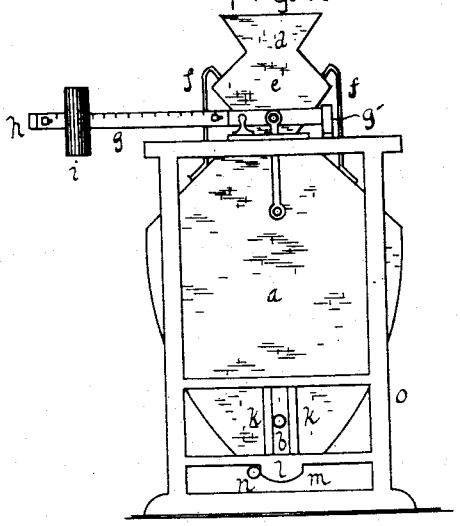


Fig. 2.

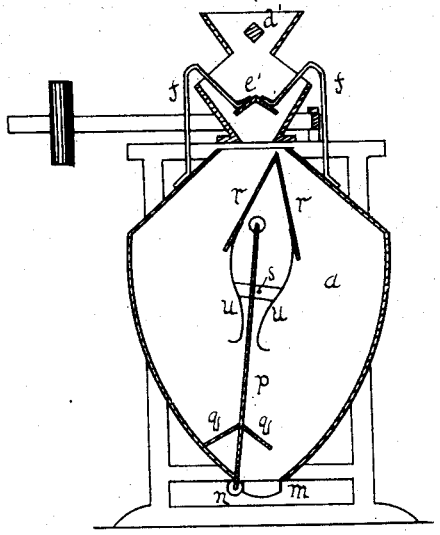
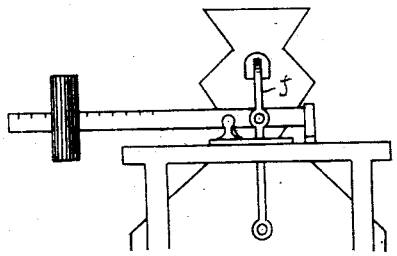


Fig. 3.



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AUTOMATIC GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 342,854, dated June 1, 1886.

Application filed January 18, 1886. Serial No. 188,903. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD N. WILLIAMSON, a resident of Lodge, in the county of Piatt and State of Illinois, have invented certain new and useful Improvements in Automatic Grain-Meters, of which the following is a specification.

In grain-meters as heretofore constructed no provision has been made for the grain that falls in a compartment after the contents thereof have been weighed and a cut-off effected.

It is not practicable to operate a meter when the weighing-compartment is entirely filled, and as the cut-off is necessarily located above the bucket there is always a quantity of grain falling in a compartment after the contents thereof have been weighed. Usually the flow of grain to a meter is variable in quantity; but unless the portion that falls in a previously-weighed compartment is invariable no compensation can be made therefor, and the weighing will consequently be inaccurate.

It is the object of my invention to provide means whereby the fall of grain in previously-weighed compartments shall be invariable in quantity, and to generally improve the construction of the meter, as hereinafter set forth and claimed.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side view of my device. Fig. 2 is a vertical section of the same; and Fig. 3 is a side view of the upper portion of the meter, illustrating a modification of the hopper-valve supports.

a is a bucket suspended from a scale-beam, and provided with a limited amount of vertical motion.

b is one of a pair of anti-friction rollers that, located one on each side of the bucket, prevent oscillating motion therein.

c is one of a pair of bars that extend from the scale-beam on opposite sides of the bucket, and suspend said bucket from said scale-beam.

d is the upper portion of the hopper, provided with rigid obstruction *d'*.

e is the lower portion of the hopper, provided with valve *e'*.

f f are supports for valve *e'*, extending from the bucket *a*.

g h is the scale-beam, constructed in a manner hereinafter set forth.

g' is a catch that limits the motion of the scale-beam.

i represents a weight on the scale-beam.

k are vertical guides for roller *b*.

l is a catch provided with shoulders *m m*.

n represents anti-friction rollers on the bottom of the bucket-valve, that engage the shoulders *m m* on catch *l*.

o is a frame on which hopper *d e* rests and scale-beam *g h* pivots.

p is a swinging valve pivoted in the bucket at *t*, and provided with inclined terminations *q q*.

r represents a gable-formed cut-off pivoted in the bucket at *s*, and provided with operating-arms *u u*.

The valve *p* divides the bucket into two equal compartments, and the grain is fed into each compartment alternately. When a quantity of grain sufficient to overbalance the scale-beam has accumulated in a compartment the bucket will descend, release the rollers *n* from the catch *l*, and permit the valve to swing to the opposite side of the bucket and discharge the grain. The opening of the bottom of one compartment closes the bottom of the other, and in all cases the rollers *n* rest against catch *l* and secure the valve from motion until the bucket descends. While a compartment is filling the valve *e'* occupies a position that permits the free passage of the grain; but at each descent of the bucket, just previous to the operation of the valve, the hopper is closed to a certain extent, and the flow of the grain limited to a uniform quantity that, once determined, can always be accurately considered in adjusting the weight of the scale-beam. It might be considered possible that by limiting the flow of the grain into the bucket just as the scale-beam is beginning to descend the motion would be retarded and the accuracy of the operation affected; but this is not so, for the reason that the retarded grain will pile up on the valve and force the bucket down.

By means of the cut-off *r*, pivoted as shown, a small degree of motion in valve *p* will shift the flow of grain from one compartment to the other, the valve and cut-off acting as a compound lever fulcrumed to increase speed.

The scale-beam is composed of two parts, one of which, *h*, is fulcrumed on the frame *o*,

and the other of which, *g*, is constructed to shift longitudinally with reference to the fulcrum. The part *g* is graded in the customary manner and provided with slots, through which the bolts pass that secure it to part *h*. By means of this arrangement the scale-beam may be very accurately adjusted, and any variation in the weight of the bucket be readily compensated for.

The obstruction *d'* in hopper *d* breaks the force of the falling grain, and the surface of valve *e'* exposed to the pressure of the grain compensates in part for the grain that falls in a compartment after the weighing thereof is completed. While it is generally more convenient to support the hopper-valve from the bucket, as shown, it will be seen that the connections may be made with the ends of the scale-beam in a manner that will enable the said valve to operate perfectly. In Fig. 3 the supports *f* for valve *e'* are connected with the end of the scale-beam, and the ends of the hopper have openings to permit the passage and free operation of said supports.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In grain-meters, a weighing-receptacle supported from a scale-beam, a stationary hopper over the receptacle, and a valve in the hopper supported from the receptacle or from the receptacle-supporting ends of the scale-beam, and adapted to partake of the vertical motion of the same, all in combination, for the purpose set forth.

2. The combination, in grain-meters, of a bucket suspended in a scale-beam, an oscillating valve in the bucket, a stationary hopper over the bucket, and a valve in the hopper supported from the bucket, as and for the purpose set forth.

3. The combination, with bucket *a*, suspended in a scale-beam, of valve *p*, pivoted at *t*, and cut-off *r*, pivoted at *s* and provided with operating-bars *u u*, as and for the purpose set forth.

4. The combination of bucket *a*, suspended from a scale-beam in a suitable frame, means for preventing oscillating motion in said bucket, oscillating valve *p*, having terminations *n*, and rigid catch *l*, having shoulders *m m*, as and for the purpose set forth.

5. The combination of bucket *a*, suspended in a scale-beam and provided with oscillating valve *p n*, rigid catch *l*, having shoulders *m m*, upper hopper, *d*, having obstruction *d'*, and lower hopper, *e*, having valve *e'*, supported from the bucket, as and for the purpose set forth.

6. The combination, in grain-meters, of a scale-beam, a grain-receptacle suspended in the scale-beam and provided with an upper receiving-opening and a lower discharge-opening, a partition-valve in said receptacle composed of two parts pivoted on a vertical line and proportioned and arranged to operate in the manner of a compound lever fulcrumed to increase speed in the upper end of its upper part, and means whereby the lower end of said valve may be held in contact with a side of the receptacle while said side is filling, and be released by the downward motion of the loaded receptacle, as and for the purpose set forth.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

ELWOOD N. WILLIAMSON.

Witnesses:
OSCAR E. HARRIS,
R. A. LEMON.