2 Sheets—Sheet 1.

A. GLEASON.
Grain-Meter.

No. 213,560. Patented Mar. 25, 1879.

Fig. 1.

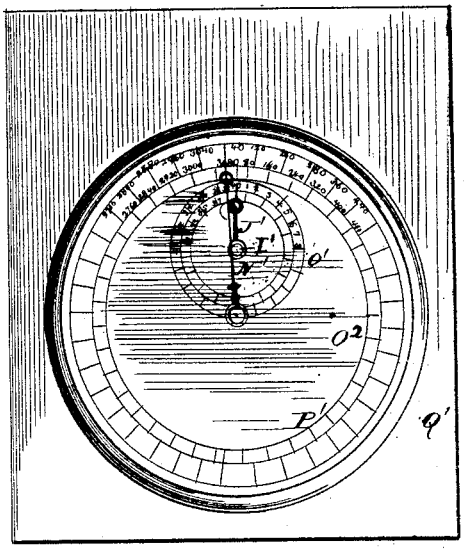


Fig. 2.

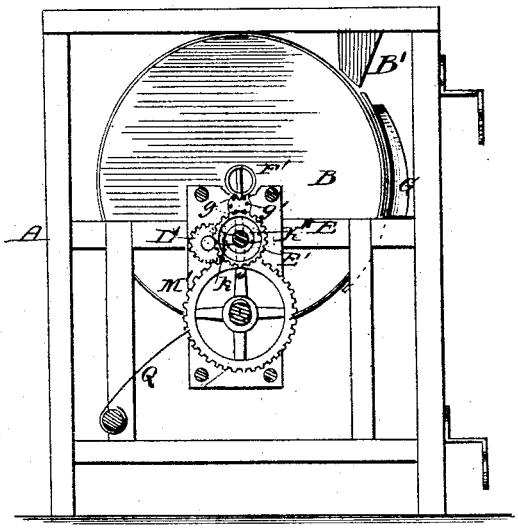
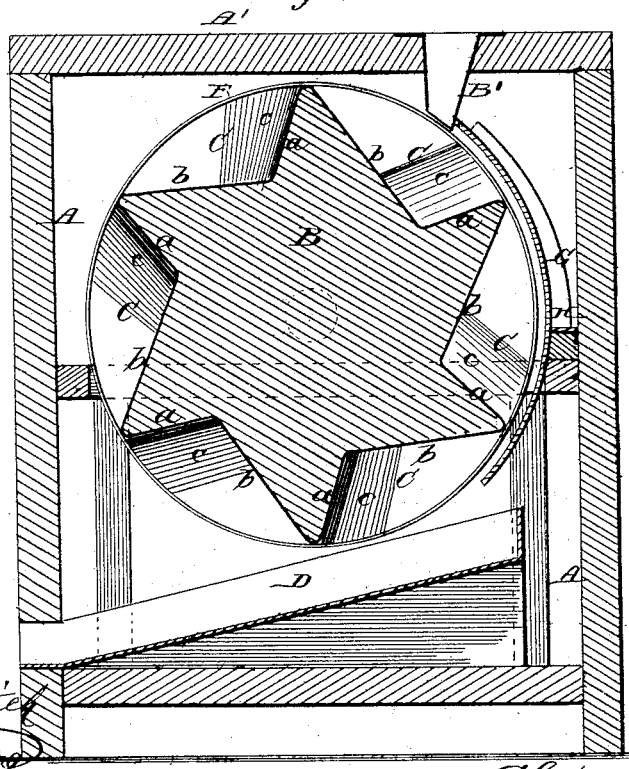


Fig. 3.



Witnesses
Reed S. Dickey
Geo. Rinkenbach

Inventor
Alexander Gleason
per C. A. Snow & Co.
attorneys.

2 Sheets—Sheet 2.

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Fig. 4.

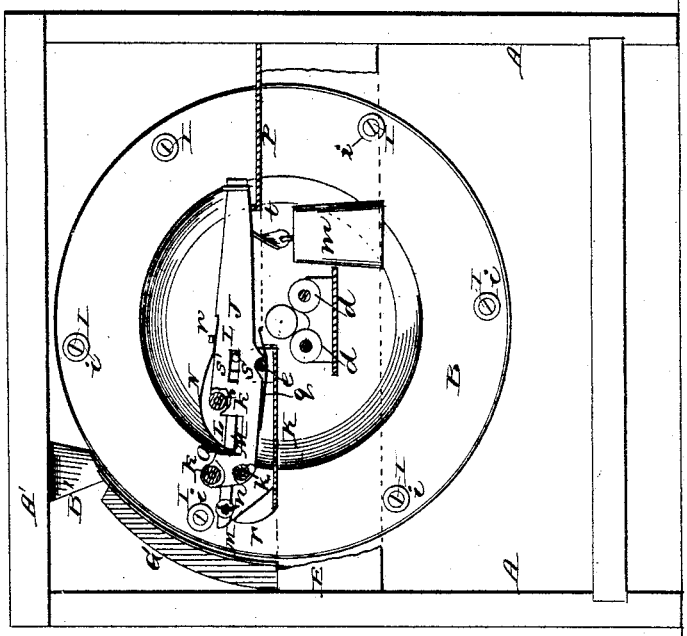
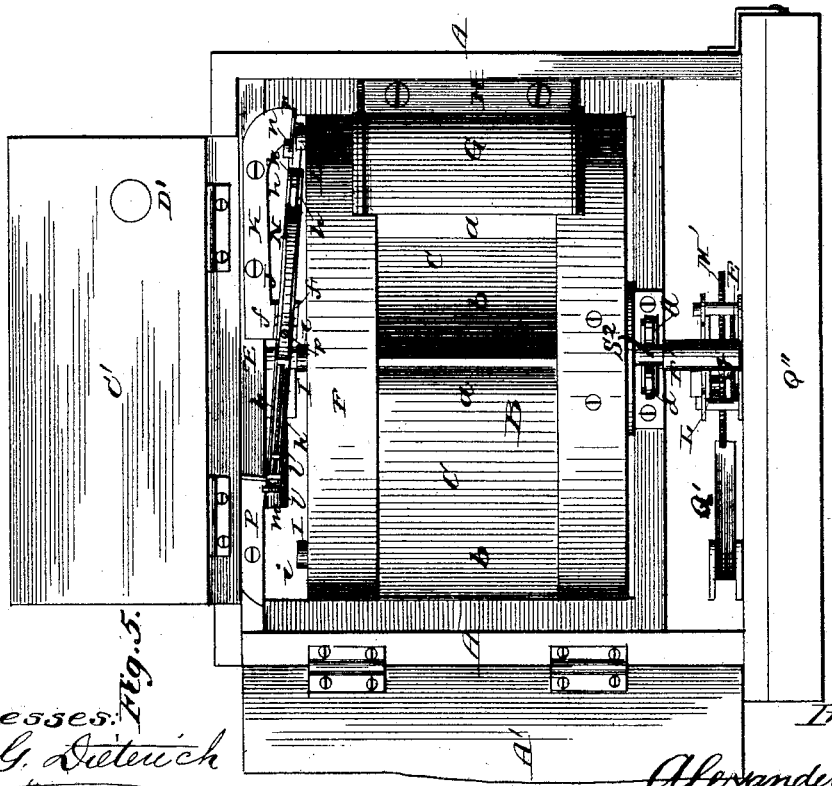


Fig. 5.



Witnesses:
Fred G. Dieterich
George Binkenburg

Inventor
Alexander Gleason,
per C. A. Snow & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

ALEXANDER GLEASON, OF GREENVILLE, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO EDDIE R. WOOD AND HENRY R. WEEKS, OF SAME PLACE.

IMPROVEMENT IN GRAIN-METERS.

Specification forming part of Letters Patent No. **213,560**, dated March 25, 1879; application filed July 19, 1878.

To all whom it may concern:

Be it known that I, ALEXANDER GLEASON, of Greenville, in the county of Montcalm, and State of Michigan, have invented certain new and useful Improvements in Grain-Meters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a front elevation, showing the dial and hands of the register. Fig. 2 is a sectional elevation, showing the dial and hands removed to show the mechanism of which the register is composed, and also an end view of the bucket-wheel. Fig. 3 is a cross-sectional view of the bucket-wheel and case, taken at right angles to the shaft of the bucket-wheel. Fig. 4 is a rear elevation of the grain-meter with that end of its case removed; and Fig. 5 is a plan view of the grain-meter, the hinged top and ends being shown open.

This invention has relation to grain-meters; and consists in the improvements in the construction of the same hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings similar letters of reference indicate like parts in the several figures.

A represents the casing containing the mechanism, which is to be placed in the spout between the grain and the burrs.

B is a bucket-wheel, containing six buckets or compartments, C, having one short and one long inclined side, *a b*, as shown. The ends of these buckets C incline inwardly for a portion of their length, as shown at *c*, to guide the grain into the chute D.

The shaft S^2 of bucket-wheel B has permanent bearings upon the friction-rollers *d d*, mounted upon the frame-work E within the case A.

Bands F encircle the bucket-wheel at each end, and their inner edges come in line with the junction of the short inclined side *b* with inclined ends *c c* of the buckets C.

A curved shield or guide-plate and cut-off, G, is secured to the frame-work E at one side of the bucket-wheel B. The curve of the plate G is the same as that of the periphery of the bucket-wheel B, and their curved surfaces are so nearly together that the grain cannot pass between the edges of the buckets C and the face of the plate G. This plate G extends nearly one-third of the distance around the bucket-wheel B, as shown, and strengthening-flanges H are cast upon the back of the same.

Studs I upon the rear end of the bucket-wheel B, six in number, or one for each bucket C, are provided with friction-rollers *i*, and are located above the bottoms of the buckets C, about one-third of the distance between the upper and lower edges of the buckets, as shown.

At the rear end of the bucket-wheel B a scale-beam, J, is balanced upon a pivot, *e*, in bearings *f*, resting upon a cross-piece, K, secured upon the frame-work E.

The scale-beam J consists of the parallel arms *h h*, secured by rivets at the front and rear ends. The rivets at the rear end of the beam J carry friction-rollers *k k*, and at the front side of a recess, L, in said beam J, another friction-roller, *k'*, is provided.

A rod, M, carrying a friction-roller, *n*, at its side, quite near its rear end, passes between the arms *h h*, also between the friction-rollers *k k*, and under the friction-roller *k'*, and is provided with a pin, *o*, which acts as a stop for the rod M in the recess L, and also furnishes a bearing for a flat curved spring, N, secured to the upper edge of the beam J.

The tension of the spring N is regulated by the screw *p*, by tightening or loosening the latter.

A spring, *q*, secured to the under side of the beam J, passes beneath the rivet *e*, and is designed to prevent the beam J from being lifted from its balancing-point by a backward movement of the bucket-wheel B.

An upwardly-inclining arm, *r*, is secured

upon the cross-piece K at the rear side of the bearing *f*, and the friction-roller *n*, upon the rod M, works upon the inclined arm *r* when the scale-beam J is operated by the bucket-wheel B.

A pin, *s*, (shown in the slot *s'*,) limits the distance to which the rod M may be driven forward within the beam J.

A plate, P, is secured to the frame-work at the front of the scale-beam J, and has an upwardly-projecting flange, *t*, upon which the front end of the scale-beam J rests when drawn down by the weight *m*.

A rod, *l*, having hand-piece *l'* and screw-threads, has the weight *m* attached thereto, in order that the weight may be longitudinally adjusted to adapt the scales to weighing either wheat, corn, or oats, as may be required.

It will be noticed that the bucket-wheel cannot revolve without causing the friction-rollers *i* to strike the end of the rod M and drive it forward.

The top A' of the case A is hinged and provided with the hopper B', the discharge end of which is beveled to permit the bucket-wheel B to revolve.

The rear end of the case A is provided with a door, C', through which the scale may be examined and the weight *m* adjusted when desired. A stud or arm, D', upon the inner side of the door C', projects inwardly when the door is closed, and comes over the rear end of the beam J to prevent it from being pushed forward by a backward turn of the bucket-wheel B.

On the front end of shaft S^2 an adjustable sleeve, F', having a tooth, *g*, is arranged to engage at each revolution of the bucket-wheel B with a pinion, *g'*, immediately below it, which in turn engages with the teeth of the wheel E', the shaft I' of which is provided with the hand J'. The wheel E' has forty teeth.

Immediately in the rear of the wheel E', and upon the same shaft, is a sleeve, K'', having a single tooth, *k''*, which engages with the teeth of an intermediate wheel, L', which in turn engages with the large wheel M', having seventy-eight teeth, and which is provided with the hand N' and the spring Q' for preventing a backward movement of the wheel M' from any accidental cause.

A dial, O^2, is graduated, as shown, the smaller circle *o'* indicating from one to forty, every forty being registered upon the larger circle P', until thirty-one hundred and twenty bushels have been registered. A door, Q'', having a glass front, opens to the dial O^2, to permit the hands on the dial to be set or reset when a bin shall have been emptied and it is desired to register anew.

The operation of the invention is as follows: The grain from the bin is fed to the hopper in a constant stream, and, falling into one of the buckets C, carries the wheel B around until one of the friction-rollers *i* corresponding with the bucket C into which the grain is falling, rests upon the end of the rod M, at which time the space between the upper edge of the curved plate G and the upper edge of the bucket C into which the grain is then falling is exactly equal to the discharge-opening in the hopper B', and all the grain is directed into that bucket C. When a sufficient amount of grain has fallen into the bucket C to overbalance the weight *m*, the friction-roller *i* will bear upon the rod M, tip the beam J, push the rod M forward, and slip over the end of the rod M, permitting the bucket-wheel B to revolve until the next friction-roller *i* rests upon the rod M, which will in turn be carried forward by the action of the grain in the manner just described.

The grain that has been weighed, as just described, is discharged before the grain fills the next bucket C; but it remains long enough in its bucket to exert a sufficient force upon the shaft S^2 to cause the tooth *g* upon the sleeve F' to register the revolution of the bucket-wheel B upon the dial. The sleeve F' is purposely so adjusted as to cause the grain that has been weighed to operate the register; otherwise the force necessary to register the grain would be taken from the grain while being weighed, thus rendering the scales inaccurate.

It is not necessary that the buckets C should receive precisely the same amount of grain, and unless they were precisely similar in weight they could not do so.

The compartments themselves are not registered. Only the revolutions of the wheel B itself are registered.

Although there are six buckets C, each supposed to contain ten pounds more or less before tipping the beam J, which would mark one bushel for each revolution of the wheel B, it may be stated that one compartment may receive a little more and another a little less than ten pounds, and the wheel B may yet be caused to register precisely one bushel of grain. To do this it is necessary that several bushels of wheat previously actually weighed upon the scales should be run through the grain-meter, and the scales should, from actual observation, be adjusted so that an exact bushel of wheat or other grain will run through the meter in one revolution.

The scale having been once properly adjusted and marked for wheat will always be accurate. The same method must be pursued with relation to corn or oats. In these adjustments particular attention should be given to the tension of the flat curved spring N, as its tension has to be overcome by the weight of the grain before the beam J can be tipped.

This meter is an accurate automatic weigher, measurer, and register; is cheap and simple, and is not likely to get out of order, and is adapted to weigh wheat, corn, and oats.

Having thus described my invention, what

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

1. In a grain-meter, the combination of the bucket-wheel B, having buckets C and friction-rollers *i*, and secured in permanent friction-bearings, as shown, with the stationary curved plate G and the scale-beam J, having friction-rollers *k k k'*, rod M, and weight *m*, constructed and operating substantially as and for the purposes set forth.

2. In combination with a bucket-wheel for grain-meters, the scale-beam J, consisting of the arms *h h*, riveted as shown, and provided with the friction-rollers *k k k'*, rod M, having friction-roller *n* and pin *o*, spring N, having regulating-screw *p*, the weight *m*, and spring *q*, all constructed, arranged, and operating, substantially as and for the purposes set forth.

3. In a scale-beam for grain-meters, the combination of the beam J, screw-rod *l l'*, and adjustable weight *m*, constructed and operating substantially as and for the purposes set forth.

4. In a grain-meter, the bucket-wheel B, having the sleeve F′ upon its shaft, so adjusted that the tooth *g* thereon will be caused to actuate the register from the force exerted by the grain that has been passed through the meter, substantially as described, for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ALEXANDER GLEASON.

Witnesses:
WM. BAGGER,
GEO. F. GRAHAM.