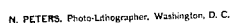


Grain Meter.

Patented April 17, 1866.



UNITED STATES PATENT OFFICE.

WILLIAM S. SAMPSON, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
THEODORE BOURNE, OF SAME PLACE.

IMPROVEMENT IN GRAIN-METERS.

Specification forming part of Letters Patent No. **54,072**, dated April 17, 1866; antedated April 10, 1866.

To all whom it may concern:

Be it known that I, WILLIAM S. SAMPSON, of the city, county, and State of New York, have invented certain new and useful Improvements in Meters for Grain, Seeds, and other Dry Substances; and I do hereby declare that the following is a full and exact description thereof.

The accompanying drawings form a part of this specification.

Figure 1 is a vertical section on the line S S in Fig. 2. Fig. 2 is a view of the edge or front of the machine. Fig. 3 is a view of the right-hand side. Fig. 4 is a view of the left-hand side, and Fig. 5 is a view of the latch on a larger scale.

Similar letters of reference indicate like parts in all the figures.

My machine is adapted to both measure and weigh at the same time, and is capable of adjustment so as to measure and weigh correctly grain which may, by reason of a difference of condition with regard to moisture or other influences, weigh more or less per bushel. It will operate as rapidly as is usually required in practice, with great accuracy, and without the violent concussions experienced in working some of the most popular grain-weighing machines.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by the aid of the drawings and of the letters of reference marked thereon.

A is a rigid frame-work, and B a revolving wheel, adapted to turn on a shaft, *b*, which is supported on a framing, A. The wheel B is provided with wings or divisions B'. A small portion of each is hinged and adapted to turn relatively to the fixed portion of the wings, as indicated by B². The extent to which the hinged portion B² may turn is limited by the stops B³ and B⁴.

B⁵ is a cam-wheel firmly fixed on the shaft *b*, and consequently compelled to turn with the wheel B. This cam-wheel has rounded projections B⁶, with rounded cavities between them, as represented.

C is a lever, hinged to the frame-work at the point *c*, but carrying a wheel, C', which

runs on the cam-wheel B⁵ and rises and sinks, as required by the form of the cam-wheel.

D is a weight which is adjustable on the lever C, so that the force with which the wheel C' is pressed down into the spaces between the projections B⁶ may be varied at pleasure.

E is a hopper or funnel-shaped receiver, adapted to receive grain through a spout or otherwise from above. E' is a spout leading down from the hopper E, as represented. E² is a stop, beveled in both directions, formed and arranged as represented. Against this stop the current of grain descending through the spout E' is checked and allowed to fall gently inward into the proper spaces within the revolving wheel B.

A' is an apron or closely-fitted portion of the framing A, which is exactly concentric to the axis *b*. It extends downward from the stop E² to a distance a little greater than the distance between the outer edges of the hinged portions B² of the wings in the wheel B.

G is a latch-piece, which is adapted to turn on the pivot *g*, which is fixed in the framing A. There is a notch in the heavy end G', also a curved slot, as represented, which contains a pin, *g'*, fixed in the framing A.

The long arm G² is lighter than the end G', and is ordinarily presented in an elevated position, but is adapted to be depressed by the contact of each pin or projection *b'*, so as to elevate the heavy end G' into the position to stop the next succeeding pin, *b*². The pins *b'* and *b*² are placed so near together that the latch G G' will not tilt by its gravity to any sensible extent, after the projection *b'* leaves the light end G², before the projection *b*² strikes into the notch in the heavy end G'. The striking of the latter arrests the motion of the wheel B. The notch in which the pin or projection *b*² thus strikes is lifted by the action of the pin *b'* on the light arm G² to a position higher than the path of *b*². It follows that the pin *b*², on striking into the notch, touches the lower side of the notch first and depresses the heavy end G' forcibly before it comes to rest. This depression of G' raises the end G², so as to prevent any possibility of the pin *b'* passing above the end G² when the recoil of the wheel occurs, which will be described below. So

soon as the projection b^2 has entered fully into the notch in G' the wheel is compelled to stop.

The operation of my invention is as follows: The weight D is adjusted in the proper position on the lever C , according to the weight of the grain which is to be weighed. The current of grain is now admitted into the hopper E , and, descending through the thin and broad spout E' , strikes the double-beveled stop E^2 and loses its momentum, and falls inward with little velocity and in a direction which tends neither to aid nor retard the revolution of the wheel B . As the grain fills the space which is presented to it in the wheel B —that is to say, the space between one of the wings B' B^2 and the succeeding wing B' B^2 —its gravity becomes so great that it tends to turn the wheel B with sufficient force to raise the loaded lever C by the action of the projection B^6 , which acts as an inclined plane to raise the wheel C' , and consequently the lever C . The form of each projection B^6 is carefully attended to, so that the inclination of the surface which raises the wheel C' shall be exactly the same on each projection B^6 . It follows that the same weight of grain in each of the spaces in the wheel B will in each case raise the lever and allow the wheel to turn. As the wheel B performs a partial revolution the space which has been filled is carried down partially past the apron A' and the succeeding space is presented to receive the grain. In this position the wheel is suddenly brought to rest by the striking of a projection, b^2 , into the notch G' in the latch-piece G , which is properly presented at that juncture to receive it. This stoppage occurs, not at the moment the wheel C' is in the bottom of the depression between two of these projections B^6 , but as it is commencing to rise out of such depression. In other words, the weight D , acting through the lever C to depress the wheel C' into the cavity between two of the projections B^6 , does not at that moment press against both sides of such depression, but only against one side. So soon as the momentum of the parts is extinguished the gravity of the weight D , acting through the lever, as indicated, turns the wheel B a little backward, so as to allow the wheel C' to rest fairly in the bottom of the depression between two of the projections B^6 . This backward motion of the wheel B is sufficient to take the projection b^2 out of the notch G' in the latch G . So soon as this movement occurs the gravity of the latch G G' causes it to tilt or assume the position shown in red lines. This leaves the wheel B free to perform another partial revolution so soon as the next space becomes filled and the weight sufficient to again lift the weighted lever C , as before described. At each partial revolution of the wheel B a measure of grain is carried down and discharged into the spout H , through which it is conveyed away.

My machine operates very smoothly, and

may be made very durable, either of metal or wood.

The stop E^2 strikes the measure, and its peculiar form causes it to measure very accurately. It is found in practice that a flexible striker, or one permanently bent so as to present an angle or a curve which tends to divide the grain and force it outward from the center, will not measure so accurately as a striker which is straight.

I find that the double bevel represented on the stop E^2 , by tending to draw in the grain toward the center, strikes more evenly, and allows the measure to be more accurately uniform, while it divides the slight commotion produced by the striking, so as to make the motion very gentle.

In case there are any large foreign substances, such as pieces of cobs or the like, in the grain, such may be liable to be caught between the striking edge B^2 and the exterior edge of the wings of the wheel. In such case the hinged portion B^2 becomes available by turning on its hinges, and instead of resting permanently against the stop B^2 , as it usually does, it may be deflected to a sufficient extent to allow the foreign material to pass harmlessly.

It will be observed that at the time when the recoil is induced by the gravity of the loaded lever C , acting on the inclined lobes or teeth B^6 , the wheel is lightened by the discharge of the grain and recoils easily.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In combination with a meter-wheel, B , the cam-wheel B^5 B^6 , and the weighted lever C , adapted to operate substantially in the manner and for the purpose herein set forth.

2. The adjustable weight D , in combination with the lever C , wheel C' , cam-wheel B^5 B^6 , and the meter-wheel B , all substantially as and for the purpose herein set forth.

3. The tilting lever or latch G G' , in combination with the projections b' b^2 , or their equivalents, and arranged to operate substantially as and for the purpose herein set forth.

4. The hinged edges B^2 on the wings or partitions of a meter-wheel, constructed and arranged to operate in connection with a suitable striker, substantially as and for the purpose herein specified.

5. The double-beveled stop or striker E^2 , arranged, in combination with the meter-wheel B , so as to strike the substance measured in the manner substantially as herein specified.

6. The apron A' , having a width a little greater than the space between the wings of the meter-wheel, and arranged substantially in the manner and for the purpose herein specified.

WM. S. SAMPSON.

Witnesses:

K. W. STETSON,
D. W. STETSON.