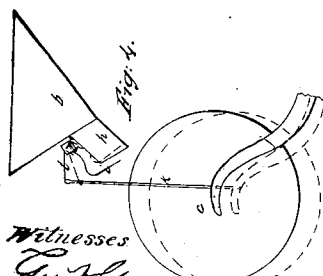
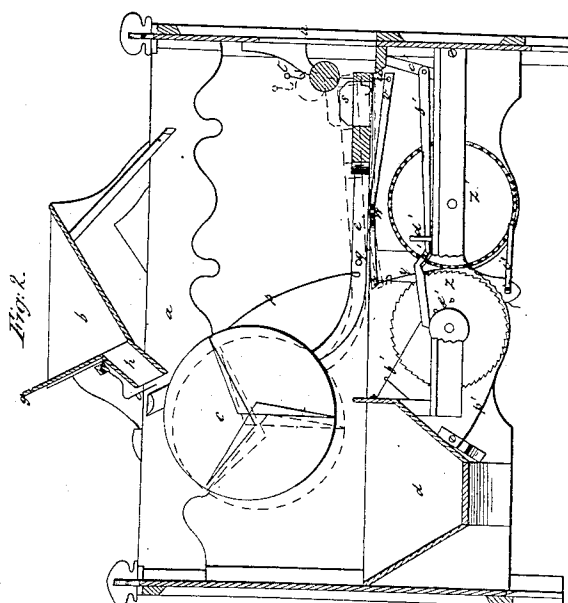
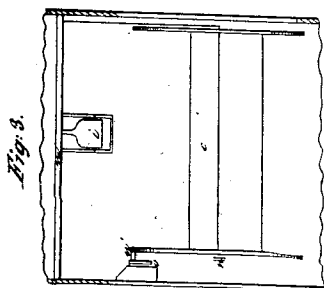
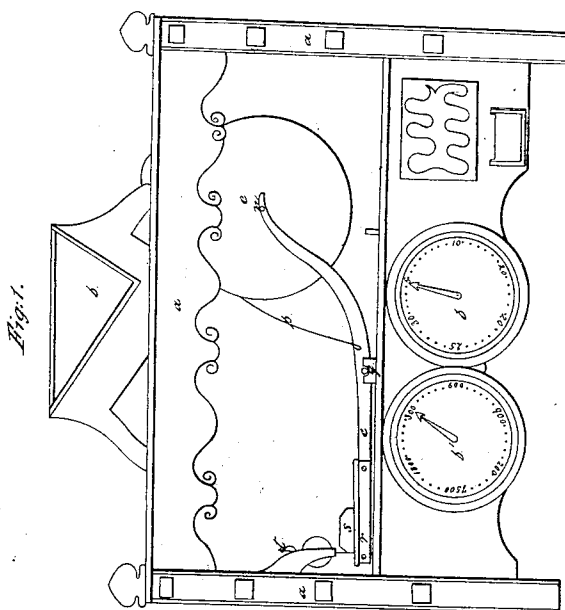


J. B. STONER.
GRAIN WEIGHER.

No. 22,900.

Patented Feb. 8, 1859.



Witnesses
Geo. H. Gregory
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Inventor:
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UNITED STATES PATENT OFFICE.

JOHN B. STONER, OF BENNINGTON, ILLINOIS.

GRAIN-WEIGHER.

Specification of Letters Patent No. 22,900, dated February 8, 1859.

To all whom it may concern:

Be it known that I, JOHN B. STONER, of Bennington, in the county of Marshall and State of Illinois, have invented certain new and useful Improvements in Grain-Weighers; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings and to the letters and marks thereon.

Of the drawings which make part of this specification Figure 1, is a side view of the machine; Fig. 2, a longitudinal sectional view; Fig. 3, an end view of a section of the machine showing more particularly the manner in which the rotating hopper is held while receiving grain; and Fig. 4 a side view of the rotating hopper showing one of its supporting levers and the means for operating the valve or gate to the chute or spout of the stationary hopper.

In each of these figures like letters indicate like parts.

My invention is designed to be used on all occasions and under all circumstances where it is desirable to ascertain the quantity of grain passed from one spot or locality to another, as in transferring it from a storehouse to a vessel, from a barn to a wagon, or from a grain cleaner to any receptacle. It is self-registering and will indicate accurately and regularly the quantity transmitted continuously for any length of time.

This weigher is made up of a frame (*a, a, a*), which gives support to the various parts of the machine; of a stationary hopper (*b*); of a rotating hopper (*c*); a discharging chute (*d*); a scale-frame (*e*); and registering indicators (*f, f'*). These several parts are constructed of any suitable material and of such dimensions as will adapt the weigher when complete to the special use for which it is intended. The hoppers will vary in size as may be necessary to fit them for the transmission of large or small quantities of grain, and they as well as the scale-frame and indicators can be so regulated as to dimensions and capacity as to weigh and indicate any given number of bushels as a hopper full or only one bushel.

The stationary hopper (*b*) is, in general, similar to ordinary hoppers of machines of this class. It is provided with a sliding door (*g*) to prevent the escape of the grain when so wished; with a chute (*h*), through which the grain passes on its way to the ro-

tating hopper, and with a flapping valve or door (*i*), to shut off the flow of the grain when the rotary hopper has received the required quantity. The flapping valve or door (*i*) is operated by one of the arms (*j*) of the scale-frame, a rod (*k*) connecting arm (*j*) to a short arm (*l*) of a rocker shaft (*m*) to which the valve or door (*i*) is affixed. Fig. 4, of the drawing shows these parts in black and in red lines in the two different positions of holding up the valve or door (*i*) from the mouth of the chute and of holding it against the mouth of the chute.

The rotary hopper, as shown by the drawings is made up of three receivers, though, as is evident, the number may be greater or be varied as may be desirable. This hopper is suspended centrally upon the arms of the scale-frame as at (*n*). It will be noticed that the receivers of this hopper have their bottoms or faces meeting at a point somewhat in advance of the center or suspending point of the hopper. The object of this is to obtain from the grain in the receiver the power necessary to start the rotation of the hopper. When receiving the grain, and until the desired quantity has passed into one of the receivers, the hopper is kept from rotating by a pin (*n'*) which rests against an inclined stud or plate (*o*) secured to the frame bar. The hopper is also steadied by a spring (*p*), on the scale arm, the end of which fits into a notch in the edge of the hopper.

When the grain overcomes the weights of the scale and the hopper moves downward the pin (*n'*) moves along the under face of the plate (*o*) and soon passes the lower edge of this plate and allows the rotation of the hopper. It will, also, be noticed that the scale arm from the fulcrum (*q*) to the hopper has an upward inclination and is, substantially, a radial arm placed about two-thirds of the distance from a vertical line drawn through the fulcrum to a horizontal line drawn through the same. The object of suspending the hopper upon an arm at about this point is to make available the leverage toward the free and easy rotation and rapid discharge of the hopper—the point selected for the suspension of the hopper being that at which the lever is rapidly advancing toward its point of greatest power or influence.

The weights of the scale are placed upon a bar (*r*) which unites the rear ends of the

scale-bars (*e*). The weights may be placed in recesses in the corners of this bar, as shown at (*s, s*), or one weight may be suspended upon a yoke (*t*), or both may be used. If the weight be suspended from the yoke this advantage results therefrom, viz., that as the hopper descends the weight swings forward and thus aids, by its position in advance of its point of suspension, the leverage of the hopper upon its arm.

The means for operating the indicators or registers are these: To the rear end of one of the scale-arms (*e*), by a rod (*u*) is attached one end of a lever (*v*) whose point of vibration is at (*w*). The front end (*x*) of this lever has connected to it a lifting pawl (*y*) the tooth of which fits into notches on the dial or indicator-wheel (*z*). Each upward movement of the rear end of the scale-bars elevates the rear end of lever (*v*) and depresses its front end carrying downward the pawl (*y*) one notch, and when the rear end of the scale-bars descends the pawl being lifted up gives one degree's advance in rotation to the wheel (*z*). A spring (*p'*), whose end fits into the notches of wheel (*z*), holds this wheel while the pawl (*y*) is acting. Wheel (*z'*) derives its motion from wheel (*z*), it being advanced one degree for every complete revolution of (*z*). A lever (*b'*) by its rear end is attached to the frame of the weigher at (*c'*), which by a spring (*d'*) is pressed against the inner side of wheel (*z'*). The forward end of this lever (*b'*) extends over pins (*e'*) on the inner face of the wheel (*z*). As the pins (*e'*) at each revolution of wheel (*z*) come in contact with the front end of the lever (*b'*) this end of the lever is elevated and as the pins pass from underneath the lever a spring (*f'*) forces down the front end of the lever and on its downward motion an inclined flange (*h'*) comes in contact with the recesses on the face of wheel (*z'*) and moves the wheel onward one notch. A spring (*i'*) holds the wheel (*z'*) in position while the flange of lever (*b'*) is actuating it.

In using this weigher it is only necessary to so place it as to make it convenient for the grain to be passed into the stationary hopper: As for instance, supposing that the grain was to be transferred from a storehouse to a vessel, the weigher would be

placed at some point or location intermediate between the bins in the store and the hold of the vessel. The sliding door (*g*) would be kept closed until the stationary hopper (*b*) was nearly full of grain and then it would be opened to that extent which should be regarded as sufficient to allow of the flow of the grain through the chute—thus regulating the supply from the bins to the demand for it under the regular and continuous operation of the rotating hopper. As each receiverfull of the hopper is passed down to the delivery chute the wheel (*z*) will be advanced one notch and the movement indicated by the dial plate (*f*), and with each revolution of the wheel (*z*) the wheel (*z'*) will be advanced one notch which will likewise be indicated by the dial plate (*f'*), and thus the entire amount of grain passed through the weigher be duly and accurately noted.

If the weigher be used where the grain has to be fed into the stationary hopper by hand the operation of it will be the same as above stated the feed being kept up with regularity.

Having thus fully set out the construction and operation of my invention, what I claim as new in grain weighers and desire to secure by Letters Patent is,

1. The rotary hopper constructed and operating substantially as described.

2. I claim, suspending the rotary hopper upon the lever or scale-arms as herein set forth.

3. I claim the arrangement of means herein described for operating and controlling the valve or door to the chute of the stationary hopper.

4. I claim operating the indicators by means deriving their motion from the weighted end of the scale-arms in combination with the springs or their equivalents as described.

5. In combination with the suspending of the rotating hopper as described I claim the suspending of the weight as described.

This specification signed this 5 day of January 1859.

JOHN B. STONER.

Witnesses:

T. T. EVERETT,
GEO. W. GREGORY.