

G. W. SHARP.
GRAIN METER.

No. 266,395.

Patented Oct. 24, 1882.

Fig. 1.

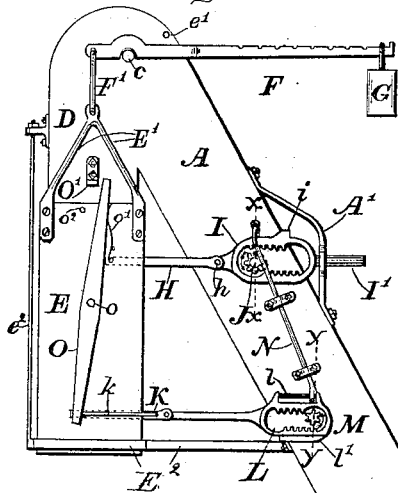


Fig. 2.

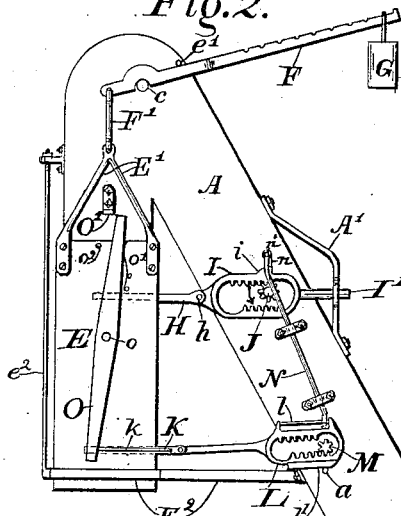


Fig. 3.

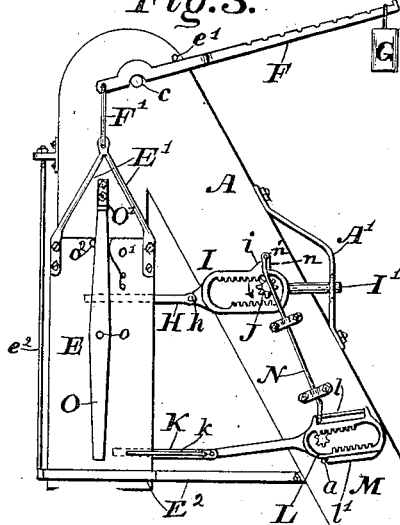
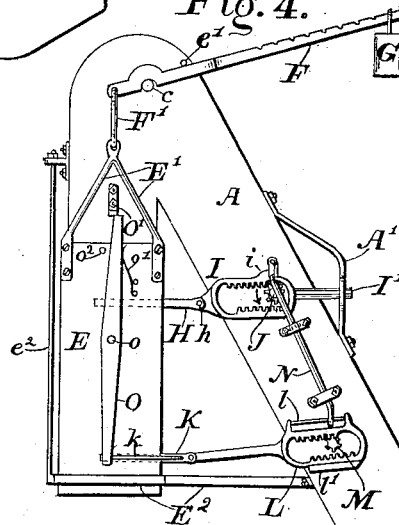


Fig. 4.



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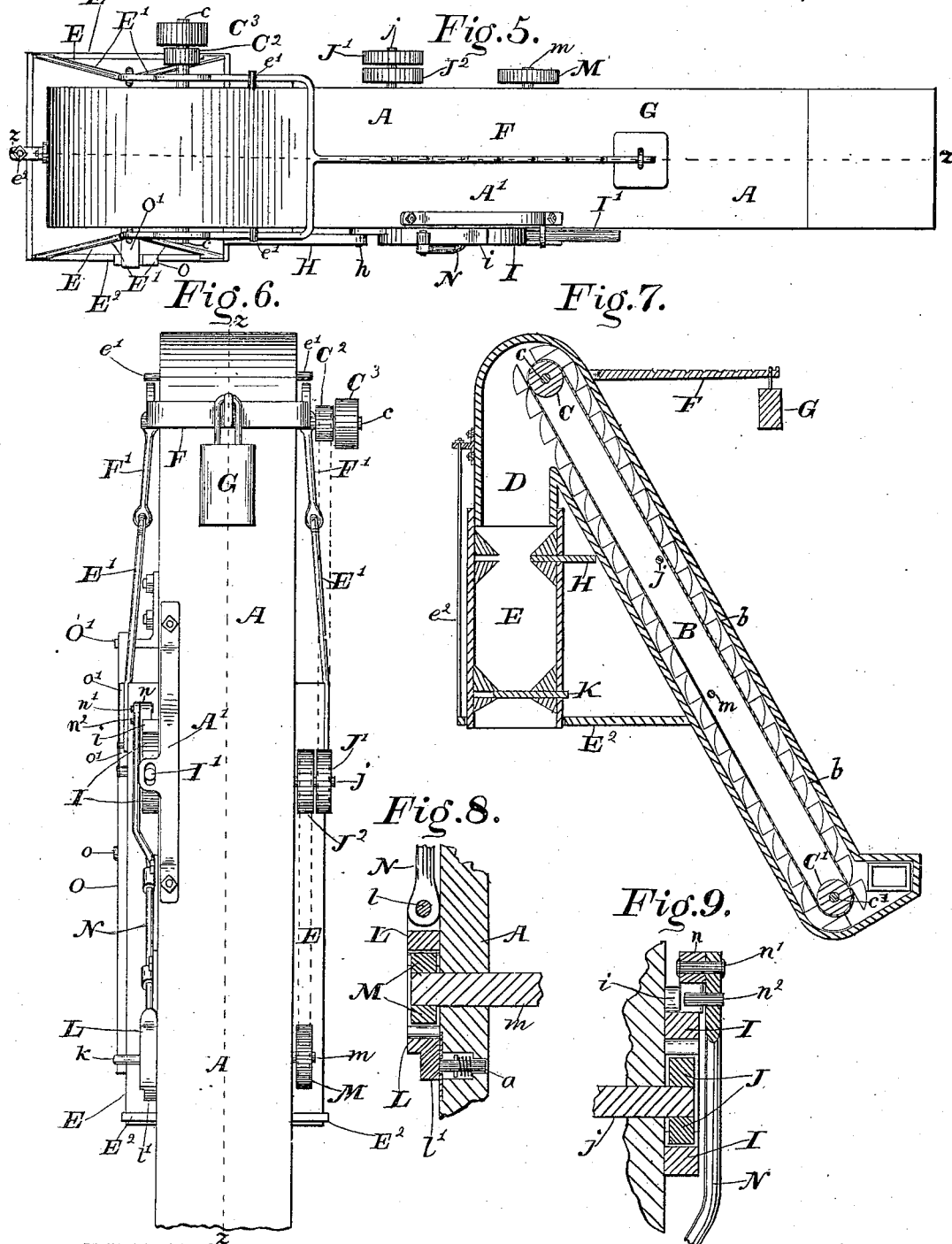
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WITNESSES.
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Chas. L. Thurber.

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UNITED STATES PATENT OFFICE

GEORGE W. SHARP, OF CRAWFORDSVILLE, INDIANA.

GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 266,395, dated October 24, 1882.

Application filed May 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SHARP, of the city of Crawfordsville, county of Montgomery, and State of Indiana, have invented certain new and useful Improvements in Automatic Grain-Measurers, of which the following is a specification.

The object of my said invention is to produce an automatically-acting device for measuring grain; and it consists in the combination, with an elevator or other grain-spout, of a measure hung upon a beam similar to a scale-beam, and provided with sliding doors and mechanism for driving said doors back and forth when the measure is filled or otherwise. The details of this mechanism and the means of operating the same will be hereinafter particularly described.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of the device when at rest and in position to receive grain; Fig. 2, a similar elevation when filled, the receptacle tipped down, the upper sliding door forced in, and the lower door just starting out; Fig. 3, a similar elevation after the grain has been discharged and the lower door is just starting on its return to a closed position; Fig. 4, a similar view when the lower door is just completing its last-described movement; Fig. 5, a top or plan view of Fig. 1 on an enlarged scale; Fig. 6, a rear elevation of the same; Fig. 7, a central vertical section of said figure on the same scale on the dotted line *z z*; Fig. 8, a detail sectional view on a still larger scale, looking to the left from the dotted line *y y* in Fig. 1; and Fig. 9, a similar view, looking to the right from the dotted line *x x* in said figure.

In said drawings, the portions marked A represent an ordinary elevator-casing; B, the elevator-belt; C C', the pulleys over which it runs; D, the spout or mouth of the elevator; E, a receptacle, the upper end of which surrounds said mouth; F, an arm similar to a scale-beam, to which said receptacle is suspended; G, a weight thereon; H, a sliding door, by which the inlet to the receptacle E may be closed; I, a double rack-bar, by which said door is operated; J, a pinion, which drives said rack-bar; K, a door, by which the outlet to the receptacle can be closed; L, a rack-bar,

by which it is operated; M, a pinion, which operates said rack-bar; N, a rod connecting the rack-bars I and L, whereby their movements are caused to have a certain relation to each other; and O a catch-bar, whereby the receptacle E is held down while the grain is being discharged therefrom.

The casing A, belt B, with its buckets *b*, pulleys C C', and mouth D are each of any ordinary or approved form and construction for elevators of moderate capacity, and need no special description.

The receptacle E is formed to hold a specified amount of grain, (for instance, two bushels,) and is suspended by means of the rods E' F' to the arm F. It is constructed tapering toward each end inside, so that it shall be filled completely full by the grain flowing into it, and shall completely discharge all the grain therein when opened. It is held in place laterally and guided at its lower end by the guide E², which is attached to the casing A and to a suspensory rod, *e*². It is prevented from rising until the proper time when in down position by the catch-bar O.

The arm F is similar in form to the ordinary steelyards-arm. It is pivoted on the shaft *c* near its forward end, where the rods I' are attached. When the wheat in the receptacle E overcomes the weight of this arm and the weight thereon it tips down until its further progress is arrested by some suitable means, as the stop *e*¹.

The weight G corresponds to the ordinary scale-weight. Its position and weight are determined with reference to overcoming the weight of the receptacle E and the grain therein, it being sufficient to hold said receptacle suspended in its highest position until it is filled entirely to and somewhat past the sliding door H. The object in this is to insure full measure at all times irrespective of weight.

The sliding door H is adapted to cut off the orifice by which the grain enters the measuring-chamber in the receptacle E. It is driven back and forth at the proper times by the pinion J acting on the double rack-bar I, as will hereinafter be described.

The double rack-bar I is attached to the side of the elevator-casing A, and is driven back and forth at the proper times by the pinion J, and is guided in its movements by the rod I' thereon and the bracket A', through which said

rod passes. It is attached to the door H or to a rod thereon by a pivot or other joint, *h*.

The pinion J is mounted in bearings in the sides of the casing A, and runs continuously in the direction of the arrows, being driven by a belt running from the pulley C² on the shaft *c* to the pulley J', which is mounted on the shaft *j*, on which this pinion is also mounted. It drives the rack-bar I forward when said rack-bar is lowered, so that its upper rack comes into engagement therewith, and backward when said rack-bar is raised, so that its lower rack comes into similar engagement.

The door K, rack-bar L, and pinion M are constructed and operate similarly to the parts H, I, and J. Such differences as exist will be understood from the description of the operation hereinafter given. An arm, *k*, is attached to the projecting part of the door K and operates, as said door comes forward, to disengage the catch-bar O and allow the receptacle E to rise.

The rod N is a means whereby, when the rack-bar I moves forward, it is enabled, through a projection, *i*, thereon and a trip, *n*, on said rod, to lift the rack-bar L and bring it into engagement with the pinion M. The trip *n* is pivoted to the upper end of this rod by the pivot-pin *n'*, and is held from moving in the direction of the receptacle E by the stop-pin *n''*. As soon as the projection *i* passes the trip *n*, however, the latter drops down past said projection, and during the return movement of the rack-bar I swings loosely on its pivot, and permits the projection *i* to pass without affecting the position of the rod N. The rack-bar L is permitted to make its movements without disturbing the position of this rod N by the use of the rod *l* on said rack bar, which passes through a hole in the rod N, and thus forms a sliding attachment between said rod and said rack-bar.

The catch-bar O is pivoted to the receptacle E by the pivot *o*, and serves to hold said receptacle down in its lowered position while the grain therein is being discharged, and until said catch-bar is released from abutting contact with the catch O' on the mouth D. A spring, *o'*, is preferably employed to insure that the catch-bar shall engage with the catch, and a stop-pin, *o''*, to prevent it from passing said catch. The catch-bar is disengaged just as the rack-bar L is completing its stroke by the arm *k*.

The operation of my said invention is as follows: The elevator is driven by a belt running from a pulley on any convenient shaft to the pulley C³ on the shaft *c*. A belt running from the pulley C² on said shaft *c* to the pulley J' on the shaft *j* drives the pinion J, and a belt running from the pulley J² on said shaft *j* to the pulley M' on the shaft *m* drives the pinion M. The positions of these two last-named belts are indicated by dotted lines in Fig. 6. As before explained these pinions revolve continuously in one direction, (as indicated by the ar-

rows in Fig. 1,) and drive the rack-bars forward when the upper rack is brought into engagement therewith, and backward when the lower rack is brought into engagement. As also before explained, the measuring-chamber in the receptacle E is constructed to hold a specified quantity of grain by measure, and the weight G is arranged so as to a little more than overbalance said receptacle when its chamber is filled with grain. The grain is discharged from the elevator through its mouth D into the receptacle E. When the chamber therein is filled and the grain begins to fill the space above the mouth of said chamber the weight thereof overbalances the arm F and weight G and moves the receptacle E down the prescribed distance, where it is caught and held by the catch-bar O. This throws the top rack of the rack-bar I into engagement with the pinion J, which forces said rack-bar and the door H forward, the latter of which closes the mouth of the chamber in the receptacle E. When this movement is nearly completed the projection *i* engages with the rod N, drawing the rack-bar L up until its lower side engages with the pinion M, which withdraws the door K, thus permitting the contents of the chamber of the receptacle E to escape to whatever has been provided to receive them. A spring-pin, *a*, prevents the rack-bar L and pinion M from becoming disengaged until this operation is completed, as will be best understood by an examination of Figs. 2 and 8, said pin during this movement resting against the under side of the flange *l'*. When this movement has been completed and said flange has passed said pin (see Fig. 3) said rack-bar will drop, and as the bar L moves forward the flange *l'* (see especially Fig. 8) will pass over said pin, the front end of said flange being beveled underneath, so as to crowd said pin back as it passes over it. Meanwhile the rising to position of the receptacle E (which was permitted by the discharge of its contents and the disengagement of the catch-bar O) throws the lower rack of the bar I against the pinion J, which pulls the door H back, and the parts are returned to their original positions, as illustrated in the drawings.

It will be seen that the action of this device is entirely automatic. As the grain fills the measuring-chamber its weight starts into operation mechanism which opens and closes cut-off doors in the proper manner to empty said chamber, and, when emptied, to restore it to proper condition for being again filled, without any attention whatever on the part of the operator except to see that the emptied grain is properly removed.

My invention has been designed principally for use in connection with thrashing-machines and corn-shellors, to which it is peculiarly adapted; but it may be used in connection with any elevator where it is desired to measure the grain discharged.

When this device is attached to thrashing-

machines pivots or hinges are employed as a means of attachment, so that it can be readily folded up against the machine for convenience in transporting it from place to place.

5 I intend to use some suitable form of registering apparatus with this invention; but as such apparatus is old and well known, I do not deem it necessary to show or describe it particularly.

10 Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a grain-measurer, of a receptacle suspended to a weighted arm, and
15 provided with two cut-off doors, and mechanism consisting essentially of continuously-revolving pinions and double rack-bars, whereby said doors are opened and closed, substantially as shown and described, and for the purposes
20 specified.

2. The combination of the receptacle E, weighted arm F, doors H and K, rack-bars I and L, and pinions J and M, substantially as set forth.

25 3. The combination of the grain-receptacle, its doors, the rack-bars, the pinions, and the

connecting-rod N, arranged and operating substantially as shown and specified.

4. The combination, with the grain-receptacle, its doors, and the mechanism for operating
30 the same, of the flange *l'* on one of the rack-bars of said mechanism, and the spring-pin *a*, projecting from the surface over which said rack-bar moves, substantially as shown and described, and for the purposes specified. 35

5. The combination, in automatic measuring apparatus, of the catch-bar O, catch O', and the arm *k* for operating said catch-bar, substantially as set forth.

6. The combination of the rod N, having trip
40 *n* and the two rack-bars I and L, the upper one being provided with the projection *i*, and the lower with the rod *l*, forming a sliding attachment, substantially as set forth.

In witness whereof I have hereunto set my
45 hand and seal, at Indianapolis, Indiana, this 4th day of May, A. D. 1882.

GEORGE W. SHARP. [L. s.]

In presence of—

C. BRADFORD,

CHAS. L. THURBER.