(No Model.) 2 Sheets—Sheet 1.

C. & A. HERSHEY.

AUTOMATIC GRAIN WEIGHING MACHINE.

No. 351,377. Patented Oct. 26, 1886.

Fig. 1.

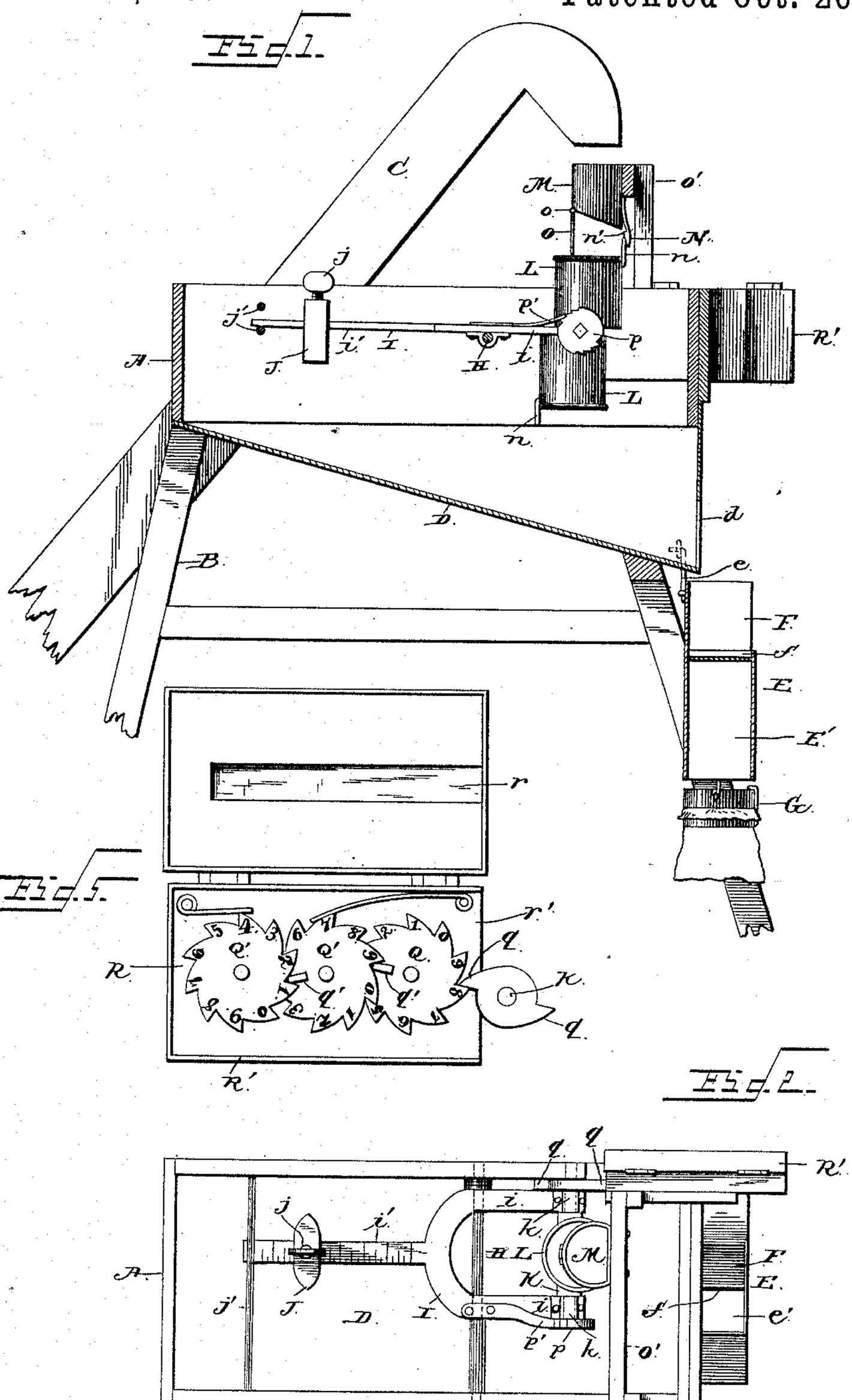

Fig. 5.

Fig. 2.

Witnesses
M. E. Fowler
E. L. Siggers

Inventors
Carlton Hershey
Andrew Hershey
By their Attorneys,
C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

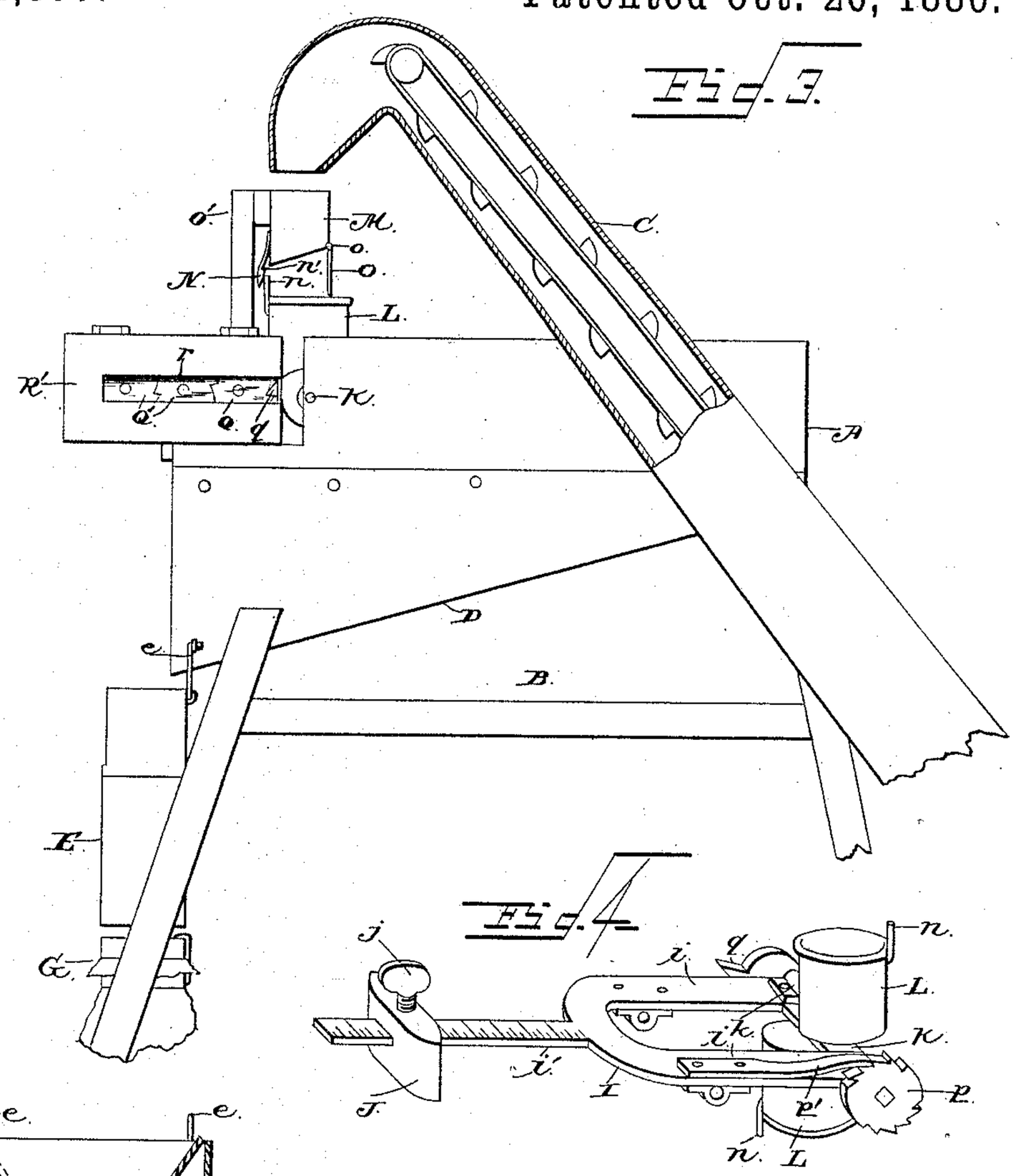


Fig. 4.

Fig. 6.

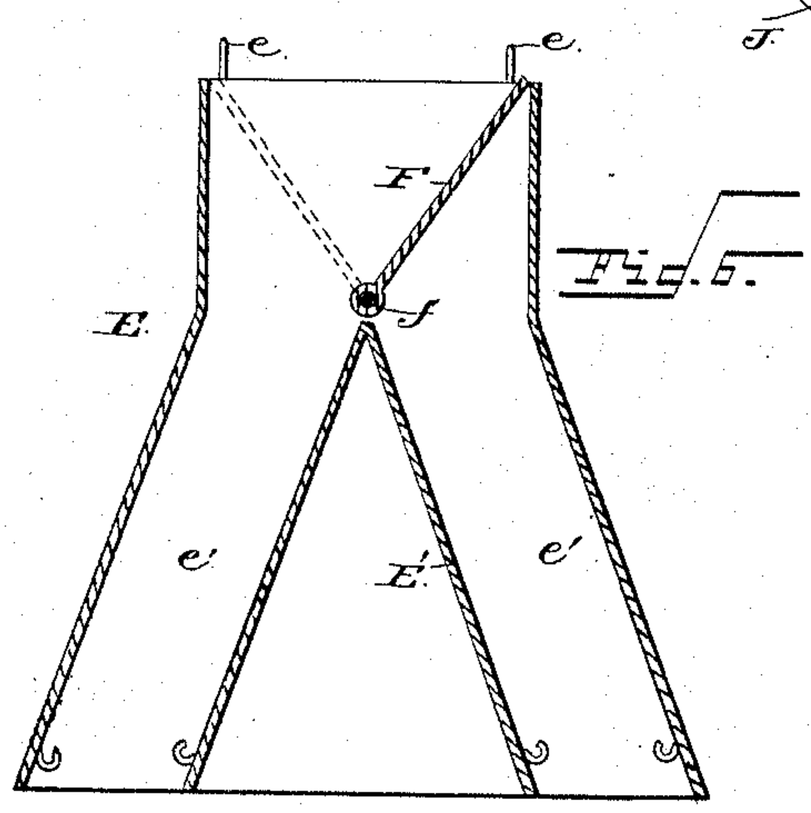
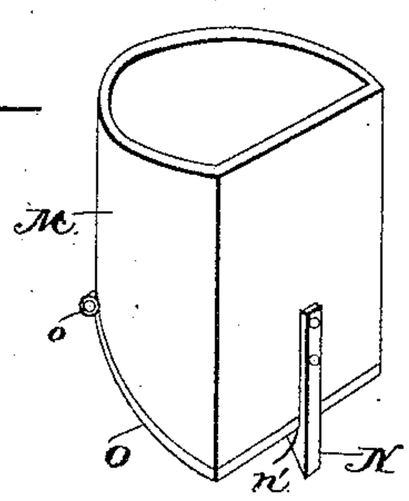


Fig. 7.



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UNITED STATES PATENT OFFICE.

CARLTON HERSHEY AND ANDREW HERSHEY, OF ALLENDALE, ILLINOIS.

AUTOMATIC GRAIN-WEIGHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 351,377, dated October 26, 1886.

Application filed May 28, 1886. Serial No. 203,558. (No model.)

To all whom it may concern:

Be it known that we, CARLTON HERSHEY and ANDREW HERSHEY, citizens of the United States, residing at Allendale, in the county of Wabash and State of Illinois, have invented a new and useful Improvement in Automatic Grain-Weighing Machines, of which the following is a specification.

Our invention relates to an automatic grain-weighing machine; and it consists of the peculiar combination and novel construction and arrangement of the various parts for service, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

The object of our invention is to provide a machine for automatically weighing and measuring grain as it is delivered thereto from a thrashing-machine, which shall be simple and strong in its construction, and thoroughly effective and reliable in operation.

A further object of our invention is to provide the device with a hopper having means for discharging its contents when one of the measuring-vessels arrives in proper position beneath the same; to provide an indicating or registering apparatus which is automatically operated when the measuring-vessels rotate to discharge their contents, and thus keep a tally of the number of times the measuring-vessels rotate, and as the measuring-vessels are capable of receiving a given quantity of grain which will operate the same—as, for instance, a bushel—the registering apparatus will register the number of bushels weighed or measured and passed through the apparatus, and to provide means for delivering the grain to either one or two of a number of bags or receptacles that are to be suspended from the apparatus.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of our improved grain-weighing apparatus, showing the elevator for delivering the grain to the hopper from the thrashing-machine. Fig. 2 is a top plan view of our invention, the elevator being omitted. Fig. 3 is a side elevation thereof. Fig. 4 is a detail perspective view of the scale-beam and the measuring-vessels carried thereby. Fig. 5 is a detail view of the registering mechanism. Fig. 6 is a like view of the delivery-spout. Fig. 7 is a similar view of the receiving-hopper.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the case or receiver of our improved automatic grain weighing and measuring apparatus, which is supported upon a frame-work, B, that is suitably secured thereto. The receiver is arranged in close proximity to the delivery end of a grain-thrashing machine, and the grain from the thrashing-machine is delivered into the receiver by an elevator, C, of any suitable or preferred construction, the elevator shown herein consisting of an inclosing-casing and the usual endless belt having the buckets thereon; but we would have it understood that we do not intend to confine ourselves to the peculiar form of this device, as any class of elevator can be employed.

The receiver is provided with an inclined or sloping bottom, D, that is preferably made of sheet metal, to facilitate the delivery of the grain therefrom, and one end of the receiver is provided with an exit or escape port or opening, *d*, for the passage of the grain therefrom into the conducting tube or spout E, which is suspended or hung from the lower edges of the receiver by means of hooks *e;* but any other preferred means may be employed to suspend the delivery-spout. The upper end of the delivery-spout is made straight or tube-like in form, while the lower end thereof is flared or enlarged, as shown. The flared end of the delivery or conducting spout is provided with an inverted-V-shaped partition, E′, the walls of which diverge or extend in opposite directions and parallel with the walls of the flared end of the conducting tube or spout, to provide the delivery or conducting passages *e′*, through which the grain is passed from the receiver into the bags that are suspended from the lower edges of the passages, as will be readily understood.

It will be observed that by means of inverted-V-shaped partition we provide two grain-passages which are isolated or separated from each other, and the grain can be directed into either one of the passages, but not both at the same time, by means of a hinged or oscillating deflector, F, that is hinged at its lower end to the apex of the inverted-V-shaped partition, as at *f*, and is adapted to be moved or

swung laterally by the operator at its free end, so that the grain from the exit-opening *d* can be directed into either one of the grain-passages *e'*. The lower ends of the inclined grain-passages have bag-holding devices G suspended therefrom and detachably connected thereto, and these holders suspend the bags or other like receptacles from the delivery-spout. When one of the passages *e'* is in use to conduct the grain to one of the bags, the filled bag from the other grain-passage can be removed and an empty bag substituted therefor, and so on. We do not, however, lay any claim to the bag-holder shown herein, as the same does not form a part of our present invention.

The grain is weighed and measured by mechanism, which we will now proceed to describe, before it is delivered from the elevator C into the receiver A.

H designates a shaft that is rigidly secured in the side walls of the receiver A, near the end thereof, in which the discharge-opening *d* is located, and on this shaft is journaled or pivoted the oscillating scale-beam I. This scale-beam is provided with two parallel arms, *i*, which are connected together at the rear ends thereof, and the scale-beam is further provided with an arm, *i'*, that is arranged centrally of the beam and extended rearwardly therefrom, the said arm having a scale indelibly stamped or otherwise inscribed thereon with the suitable subdivisions that are usual in this class of devices. The arm is further provided with a sliding weight, J, that is adjustable longitudinally thereon and rigidly clamped at any desired point by means of a binding or set screw, *j*, that is carried by the weight, and the rear end of the arm is limited in its movements by means of parallel-spaced rods or bars *j'*, that are secured in the walls of the receiver A. The front ends of the arms *i* of the oscillating scale-beam are provided with bearings *k*, in which are journaled the extremities of a rotating shaft, K, on which are secured the measuring-vessels L of the apparatus. These vessels are of any desired form or shape, and they are made of a size sufficient to contain one bushel of grain, or sixty pounds; but they may be made to hold only one-half of that quantity, or even less, as may be desired or preferred. The measuring-vessels are secured to the rotating shaft in any suitable manner, and they are carried thereby to cause them to assume the positions necessary to discharge and receive the grain delivered thereto from the hopper M of the apparatus. The measuring-vessels are arranged on the shaft so that their longitudinal or vertical axes are arranged out of line or the same plane with each other, and when one of the measuring-vessels lies uppermost the greater part or area thereof lies to one side of the longitudinal axis of the lower vessel, so that the grain therein will counterbalance the weight of the other vessel and tilt the receptacle when it has been filled with the necessary or a given quantity of grain. The measuring-vessels thus project from the rotating shaft on opposite sides thereof, and as they rotate they successively assume an upright and an inverted position to receive and discharge the grain, the weight of which in the filled receptacle causes the latter to tilt and discharge the grain. Each of the receptacles is provided with a projecting pin or detent, *n*, that is adapted to open the swinging bottom of the hopper M after it has been closed by the edge of the rotating receptacle acting against the said bottom, the said detent striking the beveled free end of a spring latch or catch, N, that is provided with a shoulder, *n'*, that fits beneath and retains the free edge of a swinging bottom, O, of the hopper in place. The hopper M is suspended or supported above the revolving measuring-vessels by a supplemental frame, O', of any suitable construction, and the bottom thereof is hinged to the lower edges of the inclosing-walls, as at *o*, so that the said bottom is free to swing downwardly, when the latch is released therefrom, to discharge the grain in the hopper into the measuring-vessels as they assume the proper position beneath the hopper. The spring-latch is of any preferred or desired construction, and it is normally arranged in the path of movement of the revolving measuring-vessels.

One end of the rotating shaft K of the measuring apparatus is provided with a ratchet-wheel, *p*, that is engaged by a pawl, *p'*, that is carried by the scale-beam, and this pawl prevents any retrograde movement of the rotating shaft; and the other end of the shaft carries two cams or arms, *q*, which are curved longitudinally on their outer edges and project from opposite sides of the shaft. These arms *q* are successively engaged with one of a series of teeth on one of the indicating-wheels Q of an indicator or register, R, and this register comprises two or more toothed wheels, Q', which are provided with the usual rows of figures and with a pin, *q'*, that is adapted to engage a tooth of one of the other wheels to actuate the wheel a given distance. These wheels of the indicating or registering apparatus are secured on suitable shafts which are journaled in the inclosing-case R' of the register. The case is provided with a viewing-opening, *r*, that is protected and covered by a transparent material—as, for instance, a piece of glass—so that the number of bushels measured by the apparatus can be readily ascertained; and the case is further provided with a slot, *r'*, through which works the arms or cams that actuate the gear-wheel Q, and thus sets the register in operation. As the shaft K rotates the arms or cams are carried with it, and move the wheel Q one notch each time one of the vessels empties its contents, and when the shaft is rotated a certain number of times, to indicate that a certain number of bushels have been passed through the apparatus, the pin *q'* of the wheel Q actuates or engages a tooth on a similar wheel, Q', adja-

cent thereto, and so on, to register the number of bushels that are weighed and measured by the apparatus. This being the construction of our invention, the operation thereof is as follows:

The weight on the oscillating scale-beam having been first adjusted or set on the arm *i'* of the beam, and the measuring-vessel being adjusted in proper position beneath the hopper, the vessel operates the latch of the hopper-bottom, and allows the latter to fall or open, and thus discharge the grain of the hopper into the vessel. When the desired quantity of grain has passed or accumulated in the measuring-vessel—as, for instance, a bushel, which is the preferred quantity to which the apparatus is adjusted—the preponderance or heaviness of the grain will tilt the receptacle to force the other vessel in an upright position while it assumes an inverted position, and discharges the grain onto the inclined bottom of the receiver, from whence it passes through the opening *d* into the delivery-spout, and passes through one of the passages *e'* therein into the bag or receptacle suspended therefrom or placed beneath the same. When the shaft K rotates, one of the arms or cams thereon actuates the wheel Q, and rotates the latter one notch, to indicate that one bushel has been measured and weighed by the apparatus, and when the contents of the receptacle or vessel are discharged the scale-beam is oscillated or returned to its normal position, the said beam being depressed at its front end when the desired or necessary quantity of grain has accumulated in the measuring-vessel, and simultaneously with the tilting movement of the said vessel the other vessel or receptacle is elevated to an upright position, and as the front side of the vessel passes the latch it releases the latter to open the bottom of the hopper and discharge the grain therefrom to the measuring-vessel; and this operation is continued and carried on automatically, and without the operator adjusting any of the parts after the apparatus has been once set in motion, the operator only removing and securing the bags to be filled to the bag-holders at the extremities of the grain-passages *e'*. The grain from the elevator C is delivered into the hopper continuously, and the bottom thereof is closed by the side of the measuring-vessel opposite the pin or detent *n*.

We do not confine ourselves to the exact details of construction and form and proportion of parts herein shown and described as an embodiment of our invention, as we are aware that changes therein can be made without departing from the principle or sacrificing the advantages of our invention.

It will be readily understood that the pins or detents *n* can be reversed in their positions on the rotating receptacles to close the bottom of the hopper, after it has been opened, by one edge of the said rotating vessel striking against the latch thereof.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an automatic grain-weighing machine, the combination of a receiver, an oscillating scale-beam journaled in the receiver and having a regulating-weight at one end, a shaft journaled in the opposite end of the scale-beam and carried thereby, and having a pawl at one end and the cams or arms at the opposite end, the measuring-vessels carried by the shaft with their longitudinal axes out of line with each other, a pawl carried by the scale-beam and engaging the ratchet of the shaft, and registering mechanism arranged at one end of the shaft and having a toothed wheel adapted to be actuated by the arms of the shaft, substantially as described, for the purpose set forth.

2. The combination, in an automatic grain-weighing machine, of a receiver, a scale-beam journaled therein, the rotary receptacles carried by the scale-beam and each having a detent projecting from its edge, a hopper arranged above the receptacles and having a swinging bottom arranged in the path of the said receptacles when opened, and a latch for retaining the swinging bottom in a closed position, substantially as described, for the purpose set forth.

3. In an automatic grain-weighing machine, the combination of a receiver having an inclined bottom and the outlet-opening, the scale-beam journaled therein, the rotary vessels carried by the beam, and a conducting-spout suspended from the receiver immediately beneath the discharge-opening therein and having the diverging independent passages, and the swinging cut-off located at the point of juncture of the passages, substantially as described, for the purpose set forth.

4. The combination of a receiver, an oscillating scale-beam journaled therein and having an adjustable weight, the bars for limiting the movement of the free end of the beam, a hopper suspended over the receiver and having a swinging bottom, and a latch for retaining the free end of the bottom in place, a rotating shaft journaled in the scale-beam and having the ratchet engaged by a pawl and the cams or arms, the registering device having a wheel, Q, actuated by the arms of the shaft, the measuring vessels or receptacles carried by the shaft and having their longitudinal axes arranged out of line with each other, and having the projecting detents, and a conducting-spout having the independent grain-passages and a swinging deflector adapted to deliver the grain from the receiver into either one of the passages of the spout, all arranged and combined substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

CARLTON HERSHEY.
ANDREW HERSHEY.

Witnesses:
WM. BIRKETT,
N. C. BURNS.