

(No Model.)

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F. R. GRAETZ.

GRAIN WEIGHING, BAGGING, AND TALLYING MACHINE.

No. 379,273.

Patented Mar. 13, 1888.

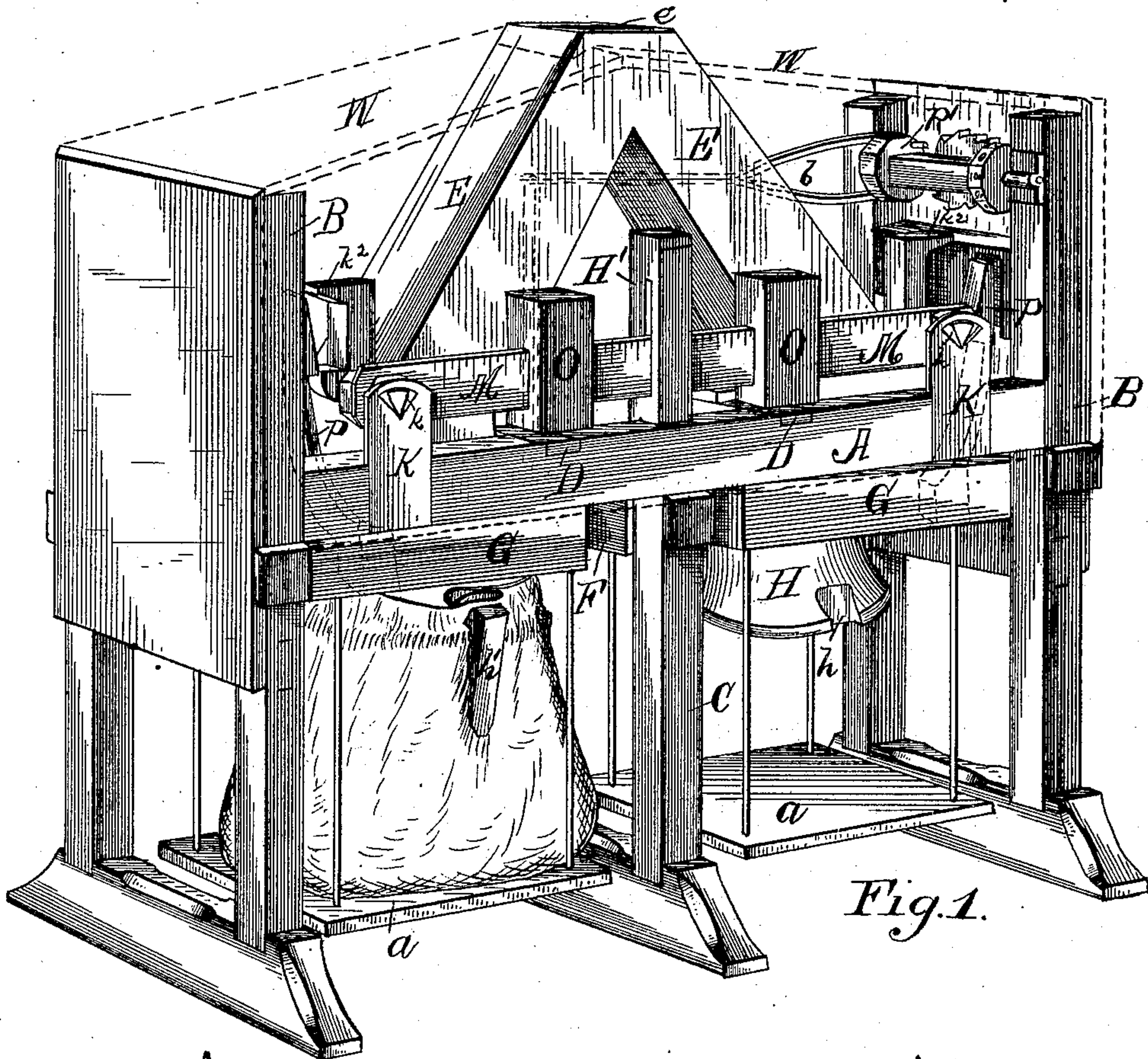


Fig. 1.

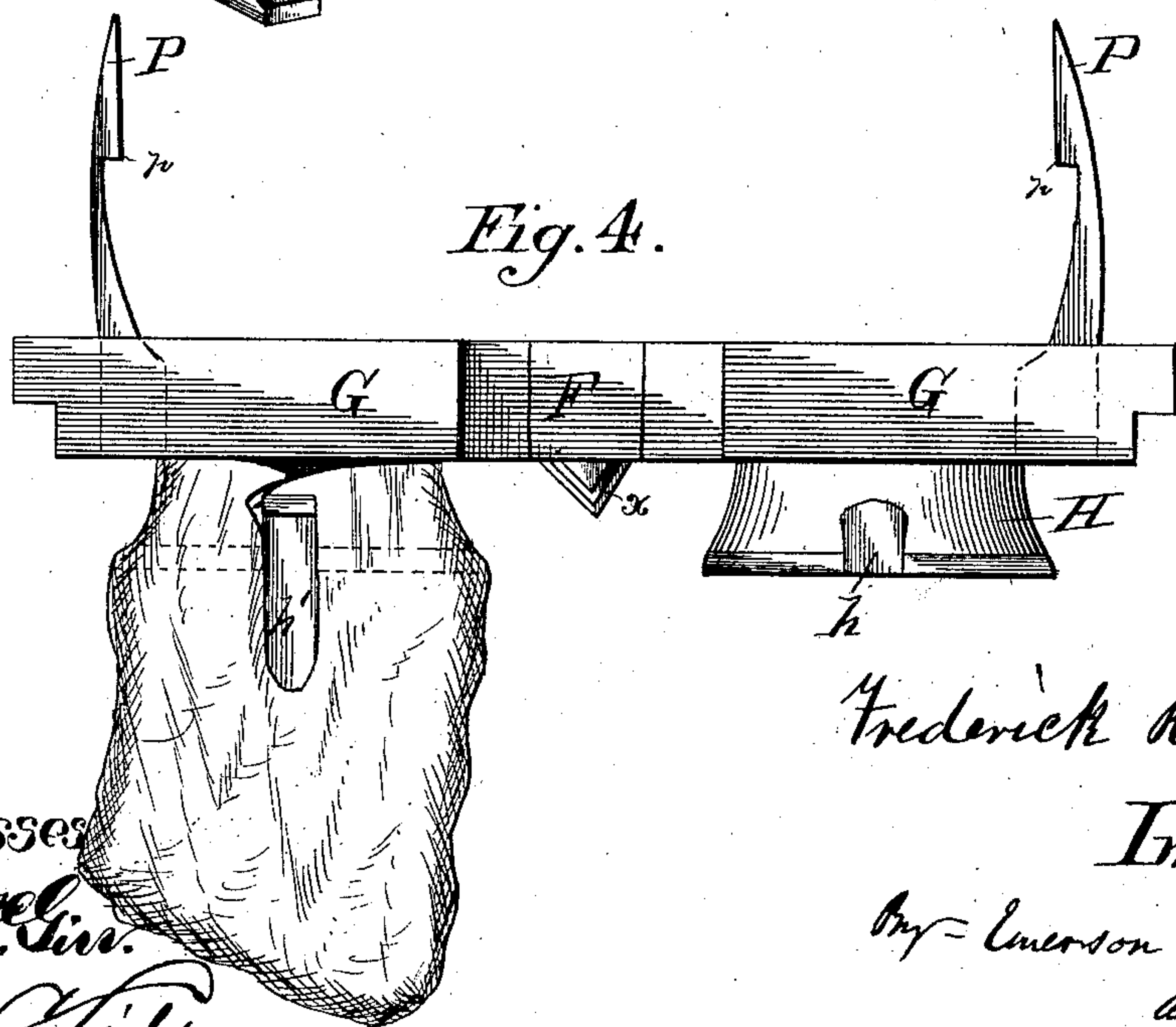


Fig. 4.

Witnesses  
J. B. McGinnis.  
A. J. Lindsey.

Frederick R. Graetz.  
Inventor  
By Emerson Hodges,  
att.

(No Model.)

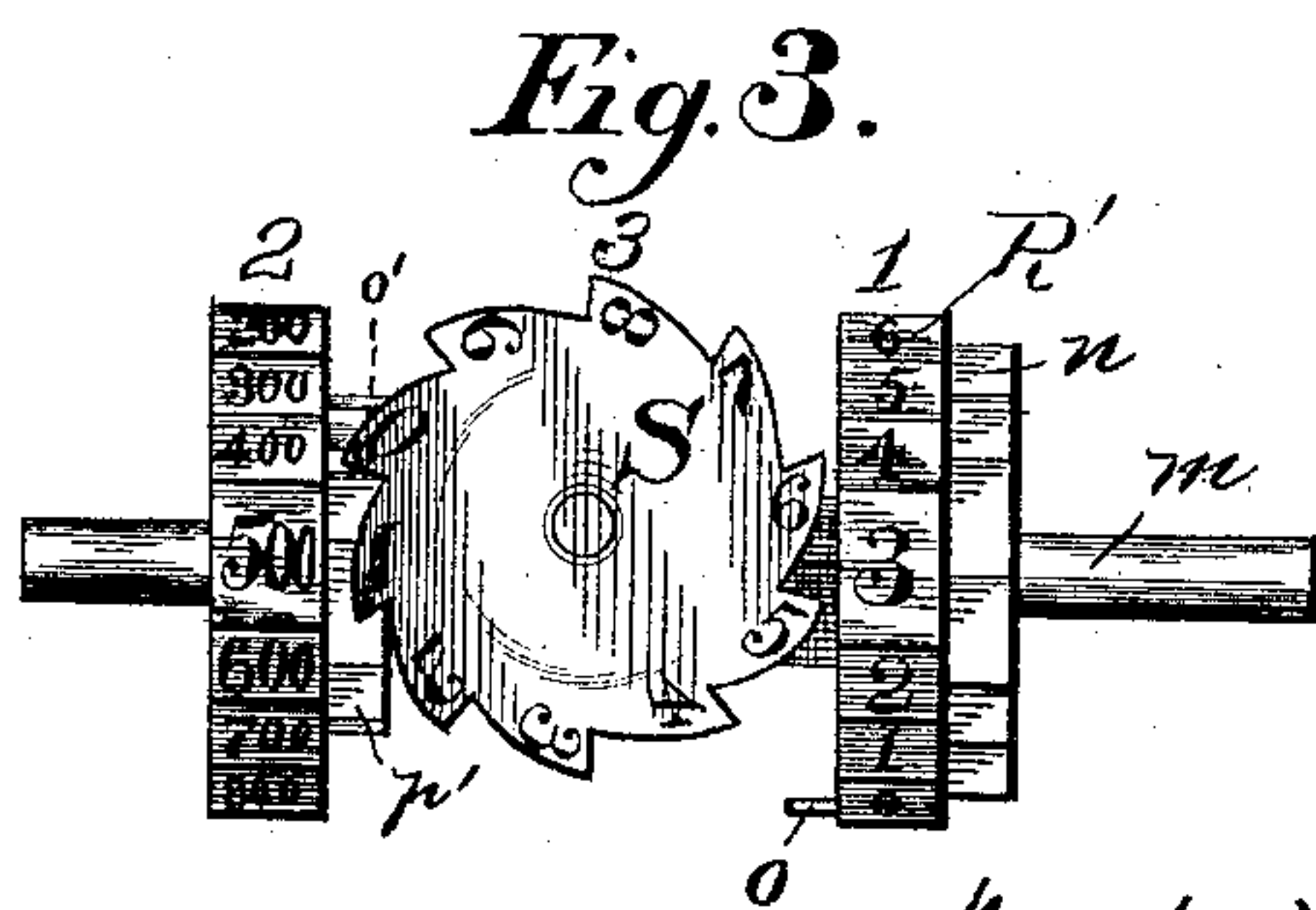
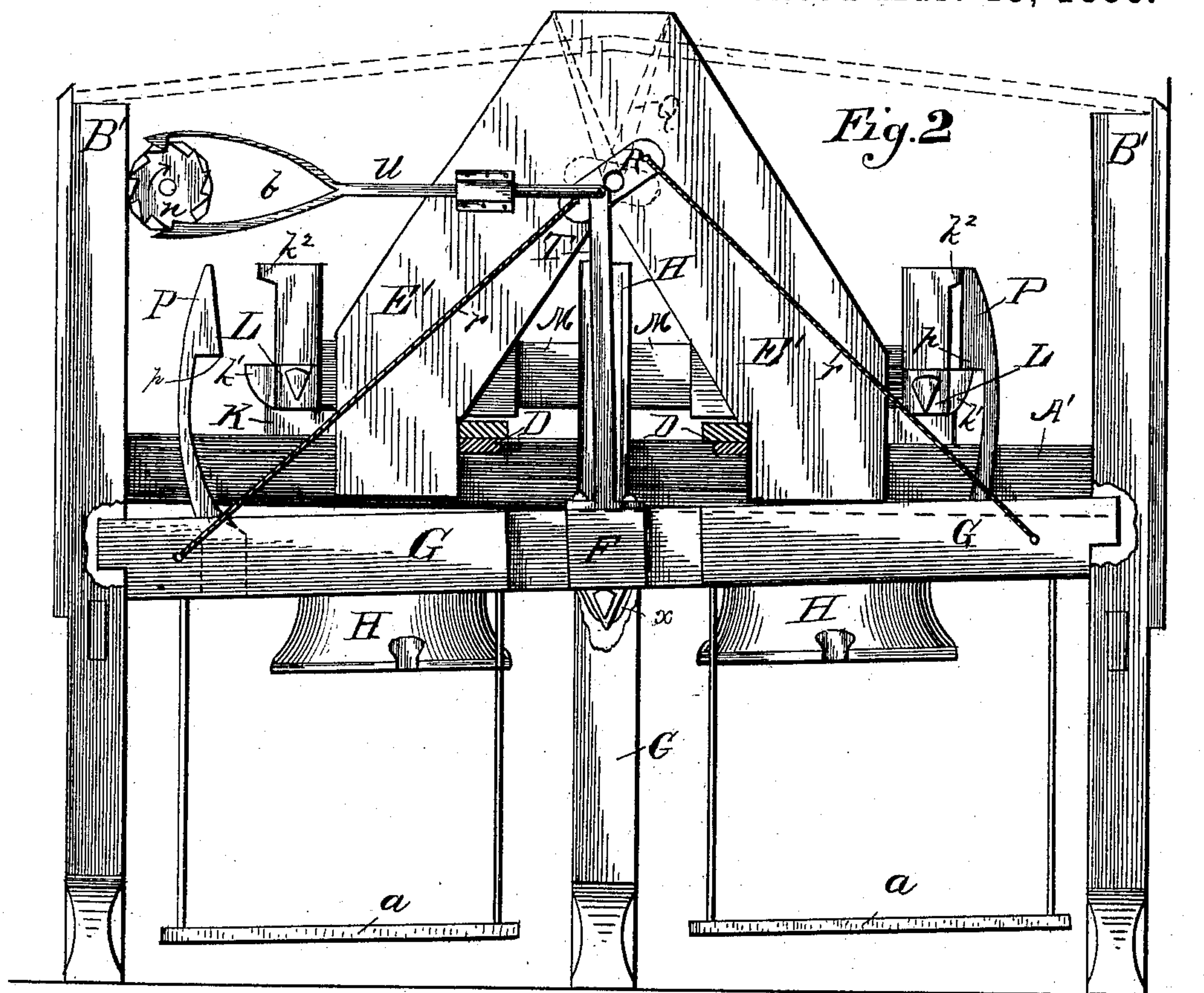
2 Sheets—Sheet 2.

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# GRAIN WEIGHING, BAGGING, AND TALLYING MACHINE.

No. 379,273.

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Frederick R. Gratz

*Witnesses*

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A. J. Lindsey.

*Inventor:*

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by Emerson Hodges,  
Atty -



# UNITED STATES PATENT OFFICE.

FREDERICK R. GRAETZ, OF ROCHESTER, MINNESOTA.

## GRAIN WEIGHING, BAGGING, AND TALLYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 379,273, dated March 13, 1888.

Application filed April 13, 1887. Serial No. 234,662. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK R. GRAETZ, a citizen of the United States, residing at Rochester, in the county of Olmsted and State of Minnesota, have invented certain new and useful Improvements in a Combined Automatic Grain Measuring, Bagging, and Tallying Machine; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in automatic grain measuring, bagging, and tallying devices; and the object is to provide a simple and comparatively inexpensive mechanism complete in itself and requiring but little attention and consequent employment of labor.

A further object is to provide a machine which will accurately measure the grain as it runs from a thrashing-machine separator or from the discharge-chute of any grain elevator, vehicle, or vessel, and which will distribute the grain in measured quantities of a predetermined amount into proper receptacles and accurately tally the same.

With these ends in view my invention consists in certain features of construction and combination of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved grain-measuring device, showing one of the bags in position to be filled and one removed, and the dotted lines at the top indicating the position taken by the removable covers. Fig. 2 is a rear elevation with a portion of the frame broken away to show the locking mechanism in the interior, and also the tallying mechanism. Fig. 3 is a detached view of the tally. Fig. 4 is a detached view of the balancing-beam and receptacle-holder.

A A' represent a pair of parallel stringers supported, preferably, by the rectangular frames B B' at their ends, the latter resting on suitable legs or other supports. Midway from their ends the parallel stringers are further supported on the intermediate legs, C. Transverse bars D are secured to the stringers a little to one side of their middle, and to these trans-

verse bars D the diverging grain-chutes E E' are rigidly affixed. The chutes E E' are extended considerably above the stringers, and provided with an opening, e, at their upper or intersecting ends, from which point they gradually diverge, preferably to a position just beyond the transverse bars D, whence they are extended downward until approximately flush with the lower face of the stringers A A'. This construction is not necessary; but experience has proved it desirable.

A transverse rocking bar, F, has knife-blade bearings x, either in the stringers A A' or in the intermediate legs, C, and rigidly secured to this rocking bar, or formed integral therewith, is the balancing-beam G. This beam is formed with both ends of precisely equal size, weight, and form, so as to exactly balance. The ends are extended outwardly and terminate within the rectangular frames B B', the lower ends of which prevent them from tipping too far when weight is applied to either of the arms.

Depending outwardly-flaring circular flanges or collars H extend from the lower face of the balancing-beam directly beneath the lower opening of the diverging grain-chutes, and on them the grain-bags are secured. In the flaring portion of the collars H a slot, h, is formed, preferably of U shape, and when the bag is placed around the flaring collar, it being somewhat larger than the latter, it is lapped over the slot until as much slack as possible is taken up, when the wedge or key h' is placed in the slot over the lapped portion of the bag, thus fastening the latter securely and quickly in position to receive the grain from the chute.

Platforms, a, for the bag or other receptacle to stand upon, are to be suspended from each end of the balancing-beam by iron rods, cords, ropes, or chains. Two pairs of brackets, K, project upwardly from the stringers A A', near the ends of the latter, and each of these brackets is provided with a triangular-shaped slot, k. The brackets constituting each pair are located opposite each other, and extending across the frame, with knife-blade bearing in the slot k, are the fulcrum-bars L of the scales.

A graduated scale-beam, M, projects from each of the fulcrum-bars, preferably in the same longitudinal plane and toward each other,



terminating in close proximity to each other in the slots of the guard-standard H. On each of these beams the proper and customary weight, O, is loosely mounted in sliding relation and adapted to be adjusted forward or backward, according to the quantity of grain to be deposited in each bag or receptacle.

The hooks P are rigidly affixed to the balancing-bar near its ends, and are formed, substantially as shown in the drawings, with a nose, *p*, thereon, adapted to engage an outwardly-projecting shoulder, *k'*, on the fulcrum-bar at the desired intervals.

The hooks extend above the nose *p* for a short distance, and at a corresponding distance above the shoulder *k'* a projection, *k<sup>2</sup>*, is located, against which the upper ends of the hooks P impinge when the noses are in engagement with the shoulders *k'*, said projections serving to disengage the nose *p* from the shoulder *k'* when sufficient grain to raise the scale-beam has entered the bag or receptacle, as when the weight is raised the scale-bar is tilted, thus causing the projections *k<sup>2</sup>* to strike against the upper end of said hooks and disengage the nose *p*.

A valve, Q, is pivotally secured at the intersecting point of the diverging grain-chutes, and an operating-arm, R, secured to this valve, is located outside of the chutes, with its ends loosely connected to the ends of the balancing-beam by any suitable connection, *r*, so that the operation of the valve is made simultaneous with the motion or rock of the balancing-beam.

A tallying device is located in one end of the frame. This device consists of a shaft or axle, *m*, rigidly secured to the frame, preferably between the stringers A A', and having near either end a loosely-mounted polygonal wheel, R', the several faces of which are numbered in the one case from 1 to 10 and in the other from 100 to 1,000. Between these wheels a third wheel, S, is pivoted on the shaft, said wheel being numbered from 10 to 100 and having a toothed periphery. For convenience, these wheels are numbered 1, 2, and 3 in the order described, and to the first of these a ratchet-toothed wheel, *n*, is rigidly secured or formed integral. An upright, T, projects at right angles from the axis of the balancing-beam, and the laterally-extending arm U, preferably made of steel, is loosely joined to its upper end. The outer end of this arm U is bifurcated and forms a kind of double spring-pawl, *b*, the detents of which are so formed as to engage diametrically-opposite teeth on the ratchet-wheel *n* of the tally.

It will be observed from the formation of these pawls that immediately on the upright T rocking toward the tally the lower pawl, abutting against one edge of a tooth on the ratchet-wheel, tends to force that portion of the wheel backward with it the distance of one tooth, when the upper spring-pawl is sprung slightly upward or outward from the

lower pawl, sliding over the inclining face of the tooth with which it is normally in contact until it drops over the point of this tooth, in which engagement it rests until the upright T rocks with the balancing-beam in the opposite direction, which, when the upper pawl, from its engagement with a tooth on the ratchet-wheel *n*, continues to rotate the wheel the distance of another tooth, the lower pawl simultaneously sliding over the inclining face of the tooth with which it is in contact, finally springs into engagement with the edge of the tooth. Thus two predetermined quantities of grain—bushels, it may be—have been measured and indicated by the figure 2 being uppermost on the wheel 1.

When as many bushels have passed the machine as this wheel will register—ten, for example—a lug, *o*, on its side engages one of the teeth on wheel 3, turning it from 0 to 10, and so on until this operation has continued ten times, when the wheel 3 will register 100, and at that moment said wheel operates to turn wheel 2 by the engagement of a lug, *o'*, on its lower face with a tooth of the ratchet-wheel *p'*, affixed to wheel 2, from 0 to 100, the other wheels assuming their first position. In this particular case each wheel turns ten times to a single turn of the adjacent wheel, and it is obvious that the arrangement might be varied and different numbers placed on the wheels without altering my principle.

Removable covers W are placed about the machine to protect it from dust and other foreign substances. After once adjusting the weights on the scale-beams, these covers may remain on the machine until the thrashing is complete. Different forms of covers might be used or they might be dispensed with altogether.

The operation is simple. My improved machine or device may be placed under the spout of a thrashing-machine separator or any other grain-discharging apparatus, the grain entering the opening at the top and passing down one chute until the bag on that side of the scales is filled sufficiently to weigh the desired amount—saysixty pounds—when the end of the balancing-beam is depressed, the valve in the chute simultaneously closing that chute which was previously open and immediately directing the grain into the opposite chute, when the same result follows on the other side of the machine. This seesaw motion continues and the entire operation of my improved mechanism is automatic. While said mechanism is in operation a man can take the filled bag or other receptacle from the platform and adjust another in its place while the bag on the other side is filling.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself to the particular construction herein set forth; but,



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

1. In a grain-measuring device, the combination, with a supporting-frame and a balancing-beam having hooks secured thereto, of a fulcrum-bar having a shoulder and a projection thereon, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

2. In a grain-measuring device, the combination, with a supporting-frame and a balancing-beam having hooks secured thereto and depending platforms suspended therefrom, of a fulcrum-bar having a shoulder and a projection thereon, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

3. In a grain-measuring device, the combination, with a supporting-frame and a balancing-beam having hooks secured thereto, scale-platforms depending therefrom, and bag-holders formed on the lower side of the balancing-beam, of a pair of fulcrum-bars, each having a shoulder and a projection thereon, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

4. The combination, with a supporting-frame, a balancing-beam mounted thereon, and an upwardly-projecting hook secured on the ends of each beam, of a pair of graduated scale-beams and their fulcrum-bars, said scale fulcrum-bars having a shoulder and a projection, the former to receive the hook and the latter by its abutment to remove it, substantially as set forth.

5. A balancing-beam having enlarged ends and depending therefrom a flaring slotted collar, and a wedge or key adapted to enter said slot, for the purpose substantially as set forth.

6. A balancing-beam having enlarged ends, a flaring circular slotted collar depending from each end, and a slot located in the edge of said collar, a wedge or key adapted to enter the slot over a bag, and depending platforms secured to the ends of the balancing-beam, substantially as set forth.

7. The combination, with a supporting-frame, a pair of diverging grain-chutes, and a balancing-beam mounted in the frame, said beam having a rigid hook projecting upwardly from either end, of a pair of fulcrum-bars, graduated scale-beams secured thereto, weights loosely mounted on the beams, and shoulders projecting from the fulcrum-bars, with which the hooks engage, substantially as set forth.

8. The combination, with a supporting-frame, balancing-beam, bag-holders, and platforms depending from the ends of said beams, and a hook projecting upwardly from each end of the beam, of the fulcrum-bars, a shoulder and projection thereon, the former to engage the detent and the latter to disengage said detent, and graduated scale-beams and movable weights thereon, substantially as set forth.

9. A tallying device consisting, essentially, of an axle, a polygonal wheel loosely mounted near either end of the axle, a ratchet-wheel secured to each of said wheels, one having a depending lug, and an intermediate toothed wheel located in a plane parallel with the axle and having a lug thereon, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK R. GRAETZ.

Witnesses:

H. A. ECKHOLDT,  
EDWIN DEACON.