

(No Model.)

3 Sheets—Sheet 1.

H. B. STINSON.
GRAIN METER.

No. 466,312.

Patented Dec. 29, 1891.

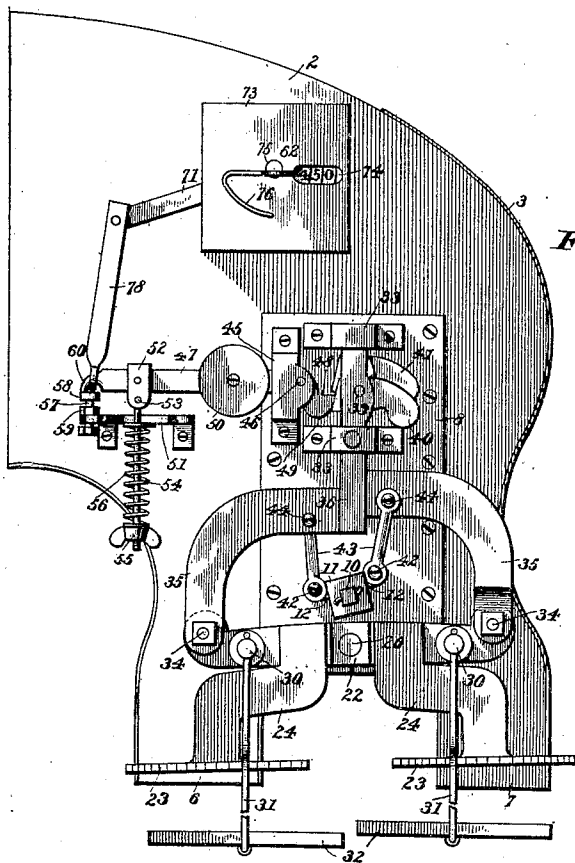


Fig. 1.

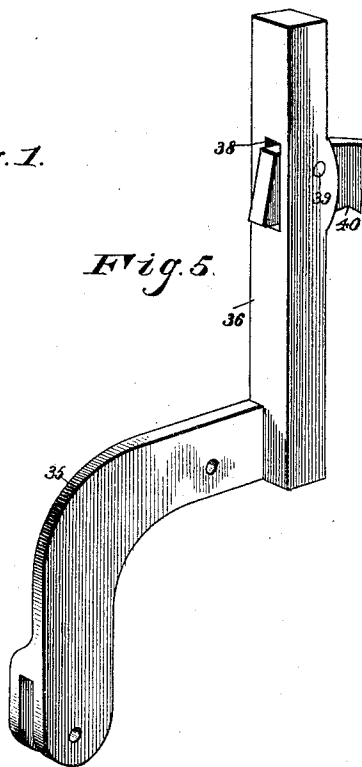


Fig. 5.

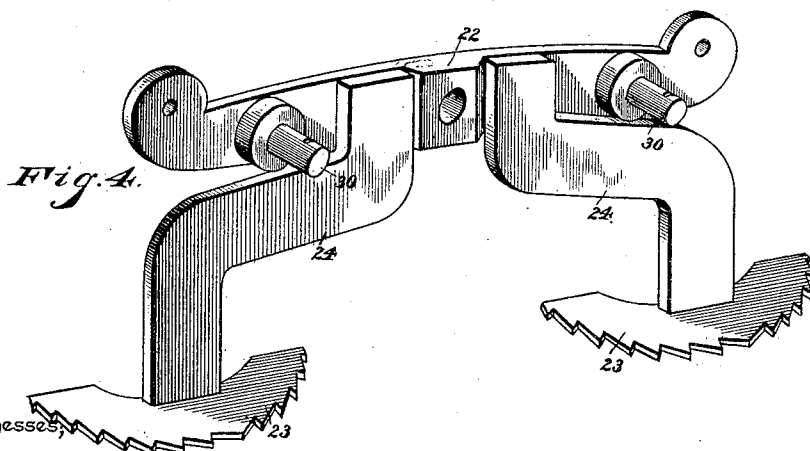


Fig. 4.

Witnesses,

Wm. L. Hume
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By his Attorneys,

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Inventor,
Hugh B. Stinson,

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Fig. 2.

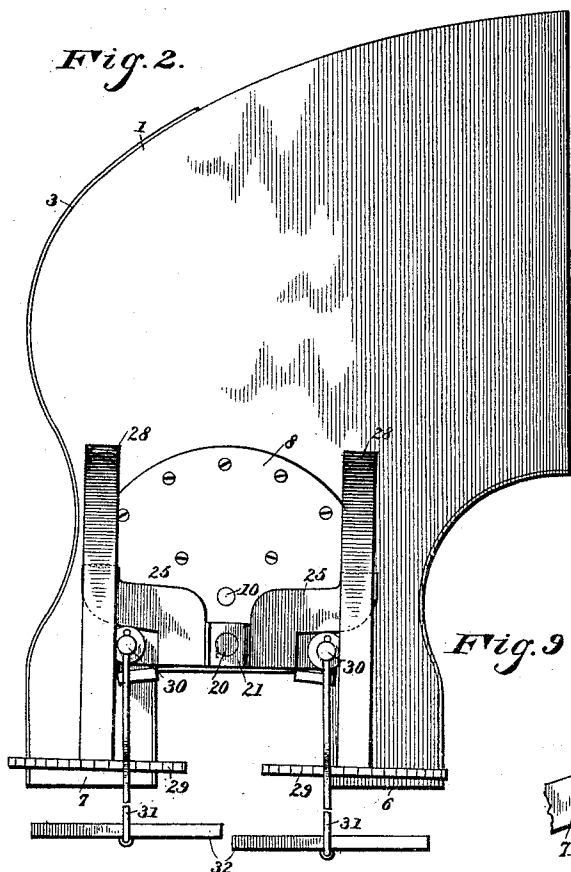


Fig. 8.

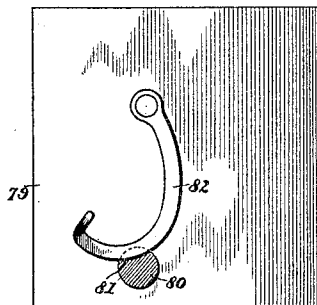


Fig. 9.

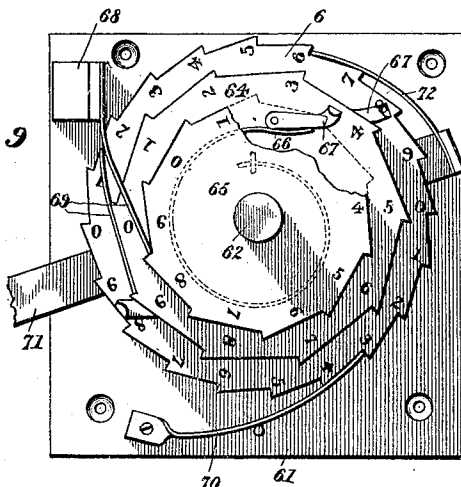
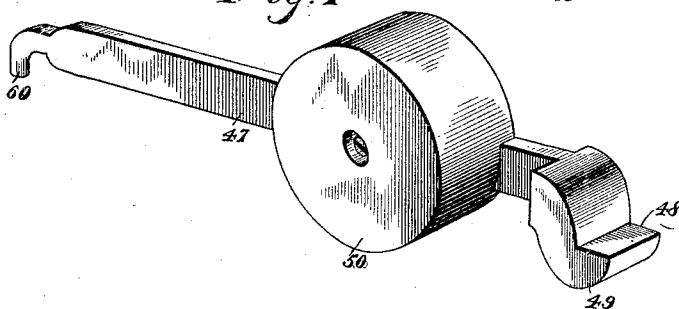


Fig. 7.



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(No Model.)

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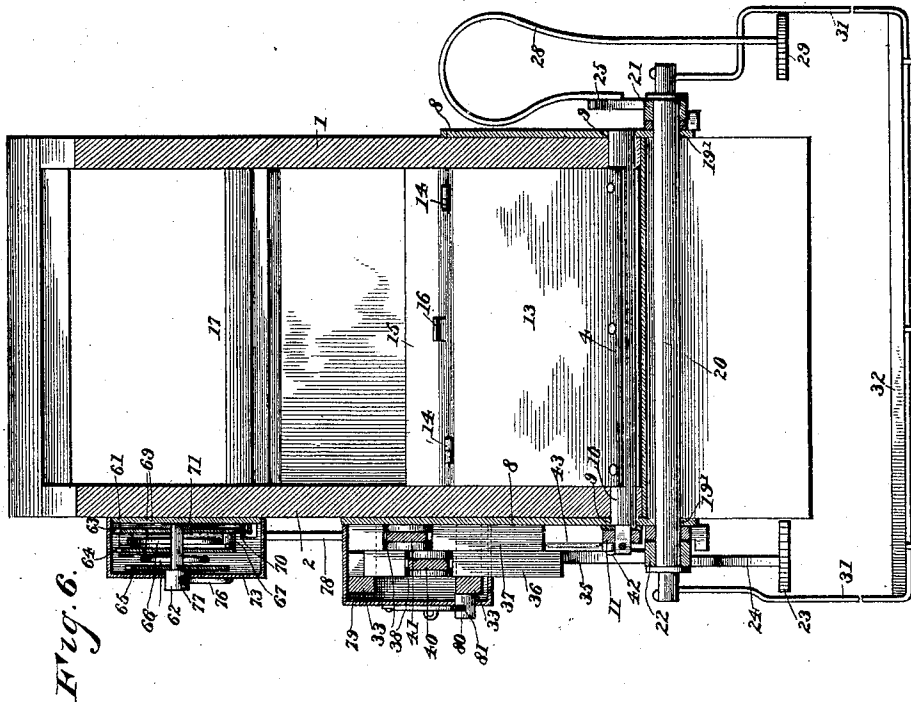
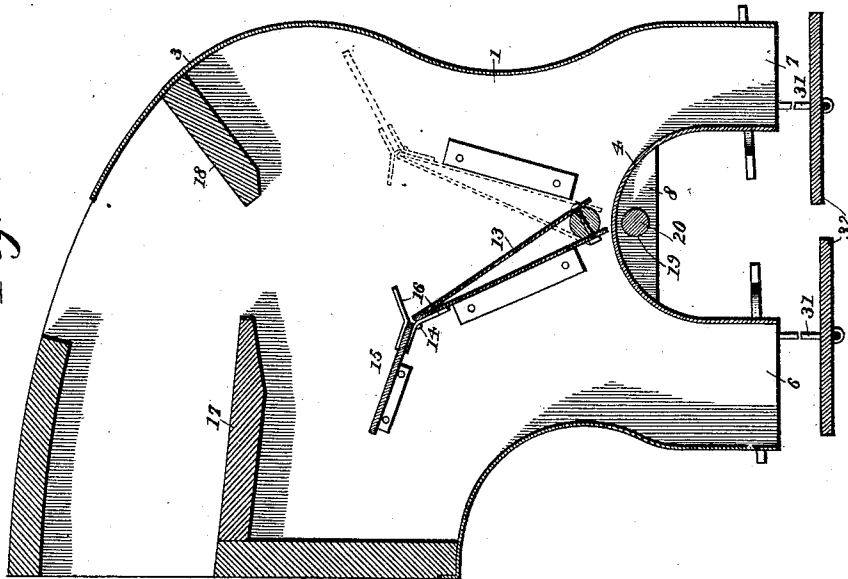


Fig. 3.



Witnesses;

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By *J. M. Withers* Attorneys,

Inventor
Hugh B. Stinson,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

HUGH B. STINSON, OF MORRIS, MINNESOTA.

GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 466,312, dated December 29, 1891.

Application filed May 23, 1891. Serial No. 393,871. (No model.)

To all whom it may concern:

Be it known that I, HUGH B. STINSON, a citizen of the United States, residing at Morris, in the county of Stevens and State of Minnesota, have invented a new and useful Grain-Weigher, of which the following is a specification.

This invention relates to grain weighing and bagging machines; and the objects in view are to provide a combined grain weighing and bagging machine adapted to be applied to the discharge of a thrashing-machine and to automatically bag and weigh in predetermined quantities grain as discharged from the thrasher.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of a grain-bagging machine constructed in accordance with my invention. Fig. 2 is a reverse side elevation. Fig. 3 is a vertical longitudinal section. Fig. 4 is a detail in perspective of the bag-holding rock-arm. Fig. 5 is a detail in perspective of one of the tripping-arms. Fig. 6 is a transverse vertical section. Fig. 7 is a detail in perspective of the weighing lever or beam. Fig. 8 is a side elevation of the trip-case. Fig. 9 is a similar view of the registering device with the case removed.

Like numerals of reference indicate like parts in all the figures of the drawings.

The casing consists of two opposite side walls 1 and 2, the upper front corners of which are curved and connected by a curved wall 3. The lower end of the casing has its side walls at their lower edges provided with central curved recesses, and the walls of these recesses are connected by a curved bottom wall 4, so that in connection with the side walls, the front wall, and the rear wall 5 a pair of discharge-spouts 6 and 7 are formed. To the opposite side walls, immediately above the curved bottom, there is secured, by screws located at suitable points, opposite metal plates 8, and in bearings 9 formed in the opposite plates a rock-shaft 10 is mounted. The rock-shaft 10 has mounted at the side of the wall 2 a head 11, from the opposite sides of which project perforated ears 12. Within the casing

there is mounted upon the rock-shaft a vibrating cut-off 13, to the upper end of which is hinged, as at 14, a section or leaf 15, provided at opposite sides with outwardly-bent straps 16, adapted to operate as stops and permit of the leaf swinging over upon the cut-off only to a certain angle. The interior of the casing is provided with a pair of inclined walls 17 and 18, and when the leaf and cut-off are swung against the wall 17 the grain, it will be apparent, will be directed to the discharge 7, and when swung to the inclined wall 18 the grain will be directed to the discharge 6.

Below the rock-shaft 10, in bearings 19, there is mounted for oscillation a rock-shaft 20, and upon this rock-shaft, at the ends of the same and outside of the casing, are mounted cross-heads or arms 21 and 22, located adjacent to the side walls 1 and 2, respectively. From the cross-head 22, at opposite sides of the shaft 20, depend compoundly-curved arms 24, which latter terminate opposite the discharges 6 and 7 and are provided with curved bag-holding plates 23, the outer edges of which are toothed, so as to engage the bag. Arms 25 are secured to the cross-head 21 and extend upwardly from the same to points opposite the discharges 6 and 7 and are provided at their extremities with upwardly and downwardly curved or bent spring bag-holding arms 28, which at their lower ends have secured thereto curved toothed plates 29. It will be evident that bags may be connected to the plates 23 and drawn under the discharges 6 and 7, and by springing the spring-arms 28 toward the casing the serrated plates 29 may be inserted into the bags, and by the resiliency of the springs retain said bags in position, each under a discharge-spout.

Upon each of the arms 21 and 22 and near the extremities of the same are located perforated pins 30, and through the same are passed sack-supporting standards 31, terminating in or supporting at their lower ends bag-supporting platforms 32, one located under each of the discharges 6 and 7.

Projecting from the plate 8 of the side wall 2 is a pair of vertically-opposite keepers 33. The extremities of the cross-arm 22 are perforated and are pivoted by bolts 34 to the lower bifurcated ends of a pair of inwardly-

curved quadrant-shaped bars 35, said bars meeting at the center of the casing and overlapping each other, and there connected with the lower ends of integrally-formed vertically-reciprocating latch-bars 36 and 37, mounted for independent reciprocation in the keepers 33 and provided between said keepers with transverse recesses 38, in each of which there are pivoted, as at 39, weighted latches 40 and 41, the former being located in the recess of the trip-bar 36 and the latter in the recess of the trip-bar 37. These latches have their unweighted ends beveled or inclined, as shown. The perforated ears 12 of the head 11 are pivotally connected by bolts 42 to the lower ends of a pair of links 43, the upper ends of which are pivoted, as at 44, to the upper curved portions of the trip-bars 36 and 37.

In a keeper 45, projecting from the plate 8 opposite the gravity-latches 40 and 41, is pivoted or fulcrumed at 46 a scale-beam 47. The rear end of the scale-beam is provided with an L-shaped recess 48, and below the same is rounded, as at 49. At the opposite side of the keeper there is mounted upon the beam an adjustable weight 50.

An L-shaped plate 51 is secured to the wall 2, directly below the scale-beam, and is provided with a slot. A clip 52 embraces the beam, and between the terminals of the same there is pivoted, as at 53, a depending rod 54, the lower end of which is threaded and carries a thumb-nut 55, between which and the slotted plate a coiled spring 56 is interposed, the tendency of which is to resist the elevation of the scale-beam. A bolt 57 passes through one end of the plate, at one side of the slot, and terminates at its upper end in a circular head or disk 58. Upon this bolt, immediately above, the plate is mounted a set-nut 59. The outer end of the scale-beam is bent, as at 60, and is drawn by the spring 56, so as to rest upon the disk or head of the set-bolt. By a proper adjustment of the set-nut of the bolt the latter may be elevated or depressed so as to bring the opposite recessed end thereof in different adjustments with relation to the gravity-latches.

Secured to the wall 2 is the base-plate 61 of a register mechanism which I may employ in connection with this apparatus. There extends from this plate a stud 62, upon which are mounted three disks, designated as the "inner units-disk" 63, the "central tens-disk" 64, and the "outer hundreds-disk" 65. The two outer disks each have ten ratchet-teeth, while the inner disk, which is considerably larger, is provided with twenty. The teeth of each disk are numbered in regular order. A bow-spring 66 presses a pivoted lug or pawl 67 outwardly from the rear face of the two inner disks. A bracket 68 extends from the plate of the register, and a pair of flat springs 69 extend downwardly from the bracket, said springs at their free ends engaging with the teeth of the two outer ratchet-disks. The

flat springs prevent said disks from retrograding, and a similar flat spring 70, secured to the lower side of the base, performs a similar function for the large inner ratchet 63. A pawl-lever 71 is mounted for oscillation upon the stud 62 and at the outer end of the same carries a spring-pawl 72, which engages with the teeth of the large ratchet. Over the mechanism thus described is fitted a registered box or case 73, having a sight-opening 74, through which the numerals of the disks as they pass the opening may be viewed. The case is also provided with a perforation 75, through which protrudes the end of the stud 62. A bowed spring 76 has its lower end pivoted to the box or casing immediately below the stud, and is compressed until its upper terminal removably engages with a notch 77 formed in the under side of the stud. By means of the spring the box is locked in a removable manner over the mechanism, said spring by its own resiliency locking itself in position. The outer end of the lever 71 is connected loosely by a connecting-rod 78 to the outer or free end of the scale-beam, so that each movement of said scale-beam as caused by mechanism heretofore described, and in a manner to be hereinafter described, causes a vibration of the pawl-lever 71, and at each vibration of said pawl-lever the pawl 72 thereof causes the inner or units disk to be operated one tooth. As the spring-pressed lug of the units-disk passes under the flat spring that engages with the tens-disk the same is pressed by said spring into engagement with said tens-disk and the latter operated until it passes beyond the influence of the flat spring and is thrown out of engagement with the ratchet 64 by its own spring. The distance of the engagement is that of one tooth. The lug of the tens-disk operates in a similar manner in connection with the disk 65 and its spring. In this manner it will be apparent that the movements of the scale-beam which indicate a predetermined amount of grain passing into the bags will be correctly and positively registered by the register, which may at any time be inspected by the operator. 79 designates a box or case for the upper ends of the gravity-latches, and the same is provided with a perforation near its lower end for the passage of a stud 80, projecting from the lower keeper of the plate 8. This stud is provided upon its upper side with a notch 81, and above the perforation in the box there is pivoted a curved lever 82, the curved or cam edge of which is designed to be swung into the recess of the stud, and thus lock the box in position.

The operation is as follows: The bags, two in number, are mounted in position upon the bag-supports, as heretofore described, their mouths being held distended under the discharges 6 and 7 of the apparatus. The cut-off being swung to one side or the other directs the grain from the discharge of the thrasher through one of the discharges 6 or 7—

for instance, the discharge 6—and continues to flow therethrough until a sufficient quantity has passed into the bag to counterbalance the weight 50 of the scale-beam, which weight, it will of course be understood, has been previously adjusted. When this has taken place, the cross-bar 22 is depressed at that end thereof at which the arm 24 is located, and also the cross-bar at the opposite end of the shaft 20. Such movement upon the part of the shaft causes a downward movement upon the part of the curved arm 35 and its trip-bar 36, said trip-bar by means of its gravity-latch tilting the scale-beam. As the scale-beam is tilted the same, through the medium of the connecting-bar 78, oscillates the pawl-bar 71 of the register, and thus said register is operated in a manner heretofore described. As the trip-bar 36 ascends, it, through the medium of the connections 43, oscillates or rocks the shaft 10 and swings the cut-off to the opposite side of the casing, thus directing the grain to the opposite discharge 7, where a duplicate operation takes place. The spring 56 of the scale-beam serves to return the pawl-bar 71 and thus operate the ratchets of the register. By the lowering of one arm 24 the opposite arm is elevated and the trip-bar of said arm brought to such a point that its gravity-latch will engage with the end of the scale-beam, so that when said trip-bar is drawn down the scale-beam will be operated.

Having described my invention, what I claim is—

1. In an apparatus of the class described, the combination, with the casing having the opposite grain-discharges, of the rock-shaft journaled between the discharges, a cut-off mounted on the rock-shaft, a second rock-shaft located below the first and having bag-supports, connections between the bag-supports and the first-mentioned rock-shaft, a scale-beam, and means for temporarily connecting and supporting the said connections with the same at one side of its fulcrum, substantially as specified.

2. In an apparatus of the class described, the combination, with the casing having the opposite discharges, the intermediate rock-shaft, and the cut-off mounted thereon, of a lower rock-shaft, cross-arms mounted on the same at its opposite ends, rigid bag-supporting arms depending from one of the cross-arms at opposite sides of the rock-shaft, spring bag-supporting arms secured to the opposite cross-arm, and connections between one cross-arm and the upper rock-shaft, substantially as specified.

3. In an apparatus of the class described, the combination, with the casing having the opposite grain-discharges, the rock-shaft journaled between the same, and the swinging cut-off mounted thereon, of a lower rock-shaft, cross-arms mounted on the ends of the same, rigid bag-supporting arms depending from one of said cross-arms and having curved

serrated holding-plates, spring-arms bent upon themselves and secured to the opposite cross-arm and having serrated bag-holding plates at their opposite ends, and loose connections between one of said cross-arms and the upper rock-shaft, substantially as specified.

4. In an apparatus of the class described, the combination, with the casing having the opposite discharges, the rock-shaft located between the same, the cut-off mounted on the rock-shaft and adapted to be swung across either of said discharges, of a lower rock-shaft, cross-arms at the ends of the same, connections between the cross-arms and the upper rock-shaft, studs perforated and extending from the cross-arms, standards depending from said perforations, and bag-supporting platforms mounted in the lower ends of the standards, substantially as specified.

5. In an apparatus of the class described, the combination, with the casing having the opposite discharges, of the rock-shaft mounted between the same and provided at one end with a head, a lower rock-shaft, cross-arms on the same, terminating in curved arms pivoted to the head, bag-supports depending from the cross-arms, and a swinging cut-off mounted upon the upper rock-shaft, substantially as specified.

6. In an apparatus of the class described, the combination, with the casing having the opposite discharge-spouts, of the rock-shaft located between the same, the vertically-reciprocating trip-bars, bag-supports connected with the trip-bars, gravity-latches in each of said bars, keepers for the bars, a scale-beam located at one side of the gravity-latches and at that end adjacent to the latches provided with a recess for engaging with the latches, substantially as specified.

7. In an apparatus of the class described, the combination, with the casing having the opposite discharges, the rock-shaft mounted between the discharges and terminating at one end in a head, a second rock-shaft located below the first and having bag-supporting devices, of keepers mounted above the two rock-shafts, independent trip-bars mounted for sliding in the keepers and terminating at their lower ends in arms connected with the lower rock-shaft, connections between the head of the upper rock-shaft and the curved arms, gravity-latches mounted in the trip-bars, a scale-beam fulcrumed at one side of the bars and carrying an adjustable weight and at its inner end rounded upon its under side so as to ride over the beveled faces of the latches and recessed upon its upper side to engage with the latches, substantially as specified.

8. In an apparatus of the class described, the combination, with the casing having the opposite discharges, the pivoted cut-off between the same, the vertically-reciprocating independent trip-bars, connections between the same and cut-off, and bag-supporting devices, connected with the trip-bars, of gravity-

pawls mounted in said bars, a scale-beam fulcrumed at one side of the same, a register secured to the casing, an arm for operating the register, and a rod connecting the register-arm with the scale-beam, substantially as specified.

9. In an apparatus of the class described, the combination, with the casing, the independent and vertically-reciprocating trip-bars having gravity-pawls, the swinging cut-off located between the opposite discharges of the casing, connections between the same and cut-off, and bag-supports connected to the trip-bars, of the scale-beam fulcrumed at one side of the trip-bars and having its rear end beveled upon its under side and provided with a recess for engaging the latches, a slotted plate secured to the casing, a rod loosely con-

nected with and depending from the scale-beam and through the slotted plate, a thumb-nut mounted upon the lower end of the rod, a coiled spring interposed between the plate and nut, a register, a lever for operating the same, a rod connecting the lever with the outer end of the scale-beam, a bolt threaded in a perforation in the slotted plate and terminating at its upper end in a head upon which bears the end of the scale-beam, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HUGH B. STINSON.

Witnesses:

CHAS. H. STINSON,
S. A. FLOHER, Jr.