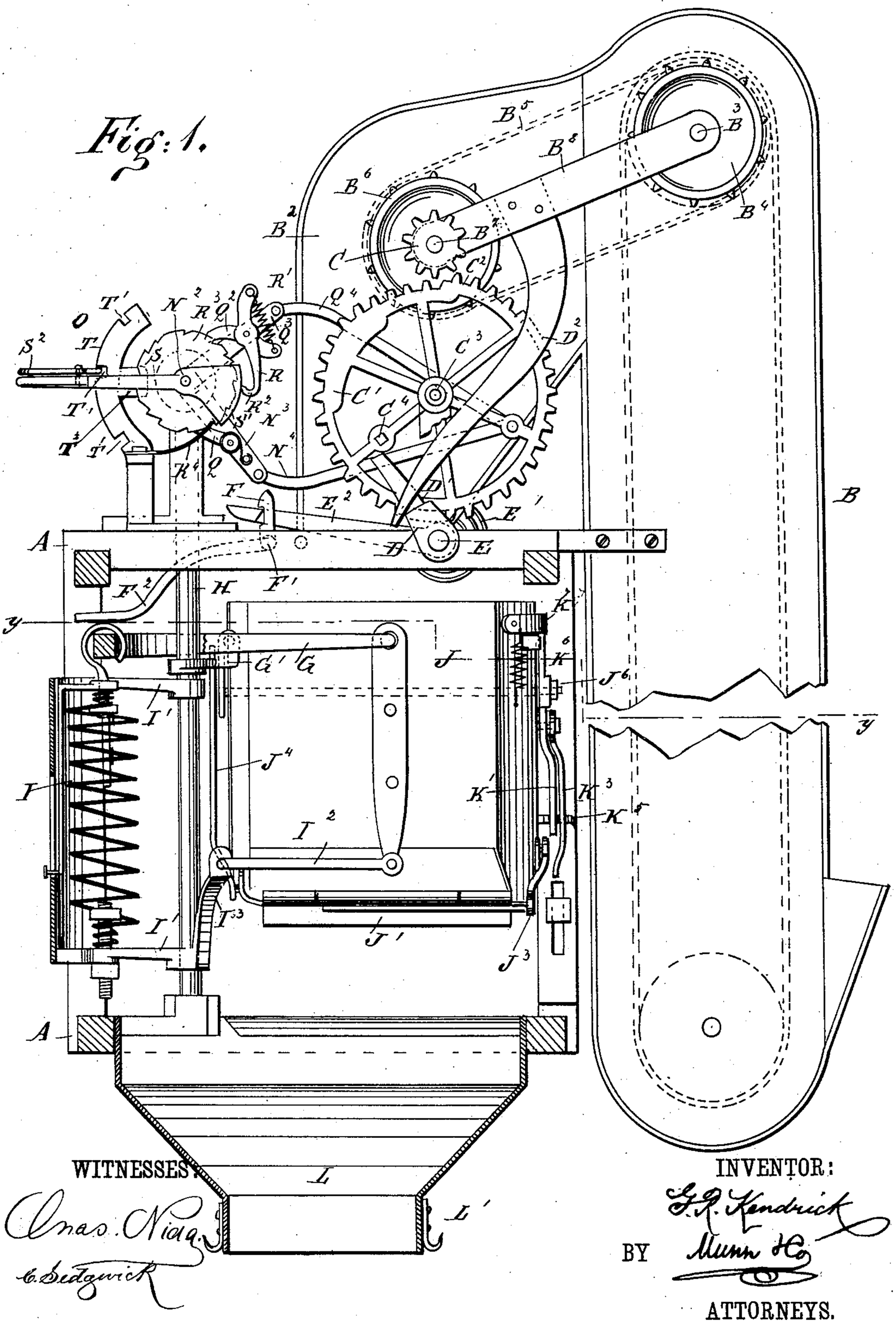
(No Model.) 5 Sheets—Sheet 1.

G. R. KENDRICK.

GRAIN WEIGHING, REGISTERING, AND BAGGING MACHINE.

No. 377,163. Patented Jan. 31, 1888.

Fig: 1.



WITNESSES:

Chas. Nichols

C. Sedgwick

INVENTOR:

G. R. Kendrick

BY Munn & Co

ATTORNEYS.

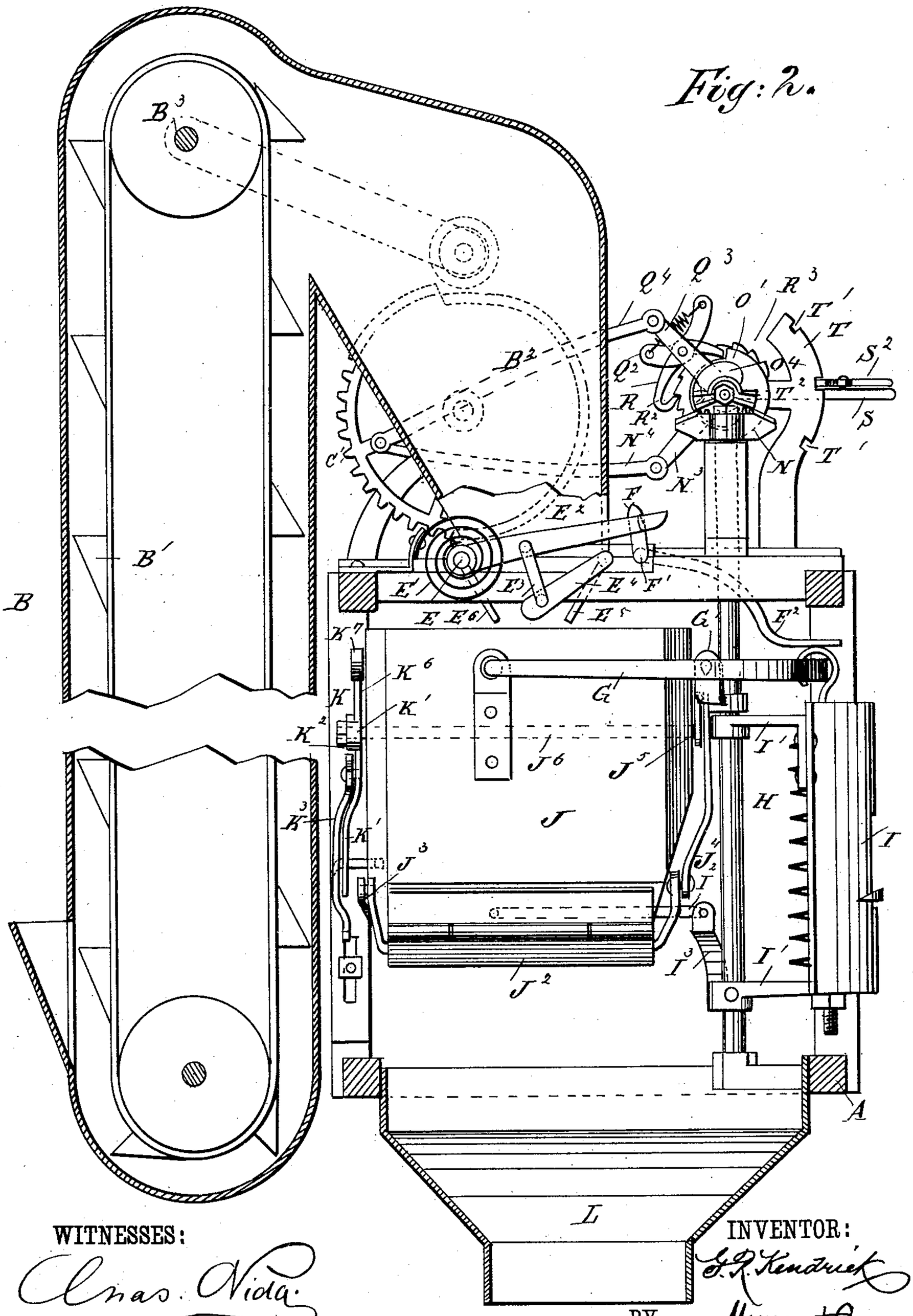
(No Model.) 5 Sheets—Sheet 2.

G. R. KENDRICK.

GRAIN WEIGHING, REGISTERING, AND BAGGING MACHINE.

No. 377,163. Patented Jan. 31, 1888.

Fig: 2.



WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

G. R. Kendrick

BY Munn & Co

ATTORNEYS.

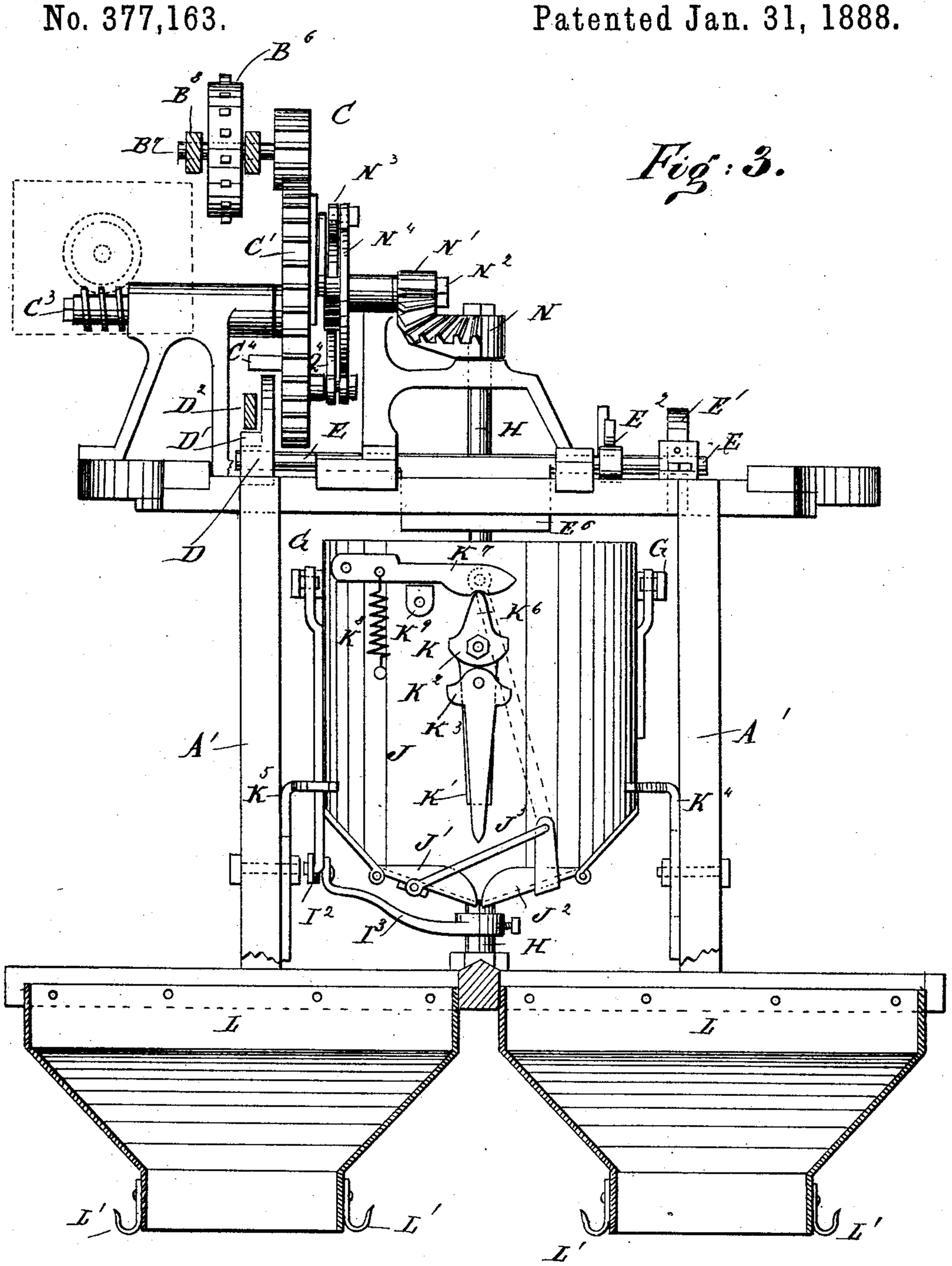
(No Model.) 5 Sheets—Sheet 3.

G. R. KENDRICK.

GRAIN WEIGHING, REGISTERING, AND BAGGING MACHINE.

No. 377,163. Patented Jan. 31, 1888.

Fig: 3.



WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

G. R. Kendrick

BY Munn & Co

ATTORNEYS.

(No Model.) 5 Sheets—Sheet 4.

G. R. KENDRICK.

GRAIN WEIGHING, REGISTERING, AND BAGGING MACHINE.

No. 377,163. Patented Jan. 31, 1888.

Fig: 7.

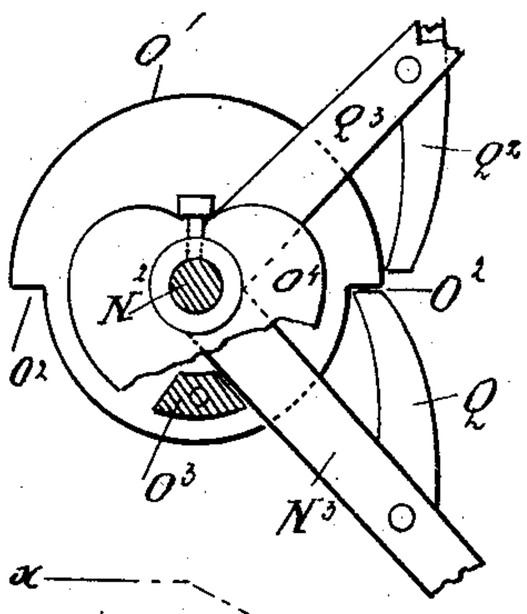


Fig: 4.

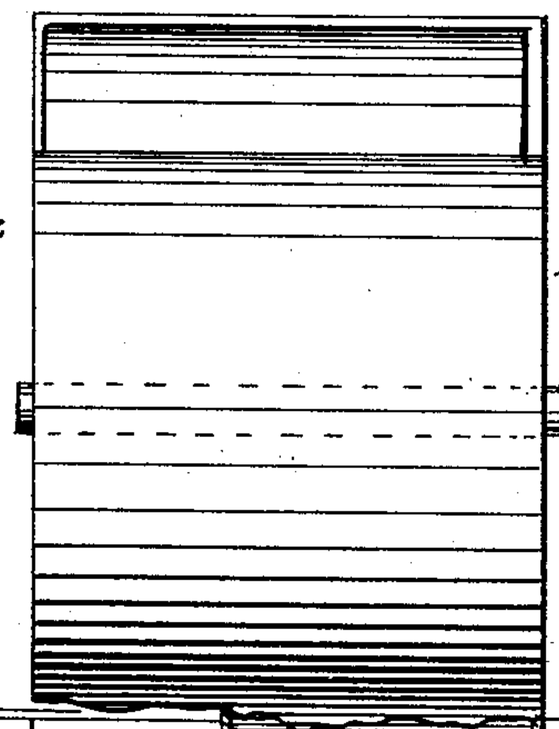
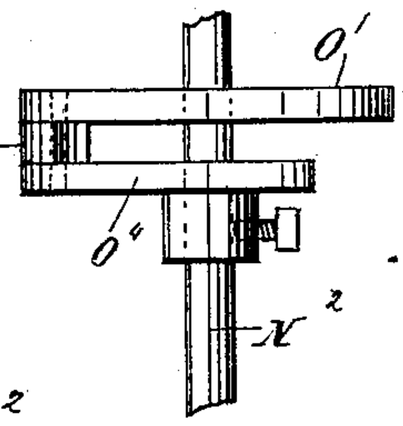


Fig: 8.



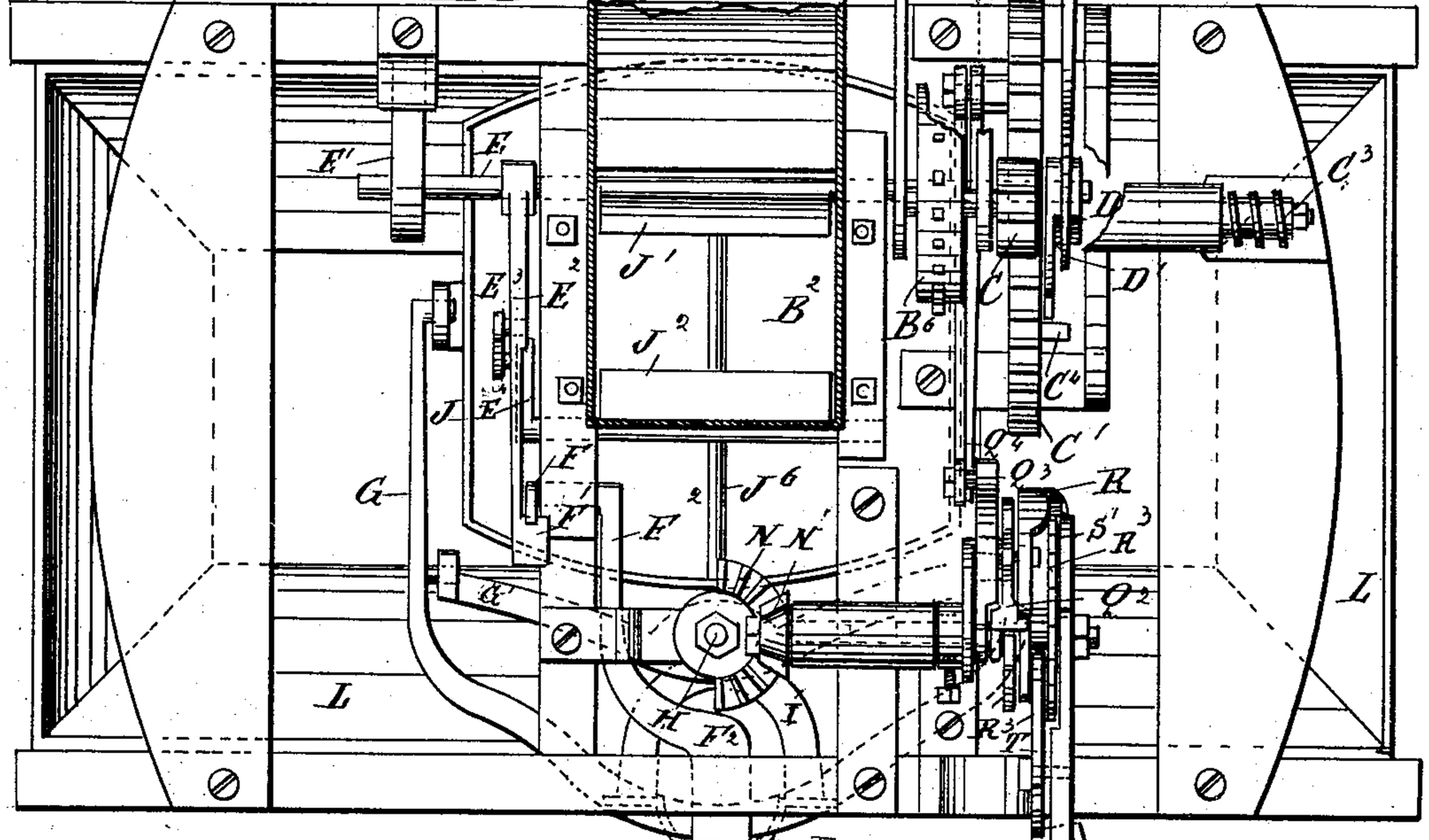


Fig: 6.

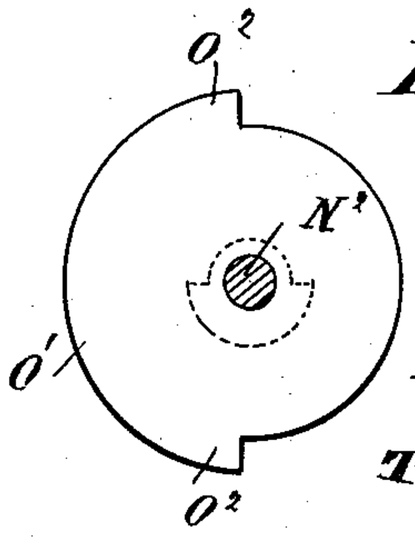
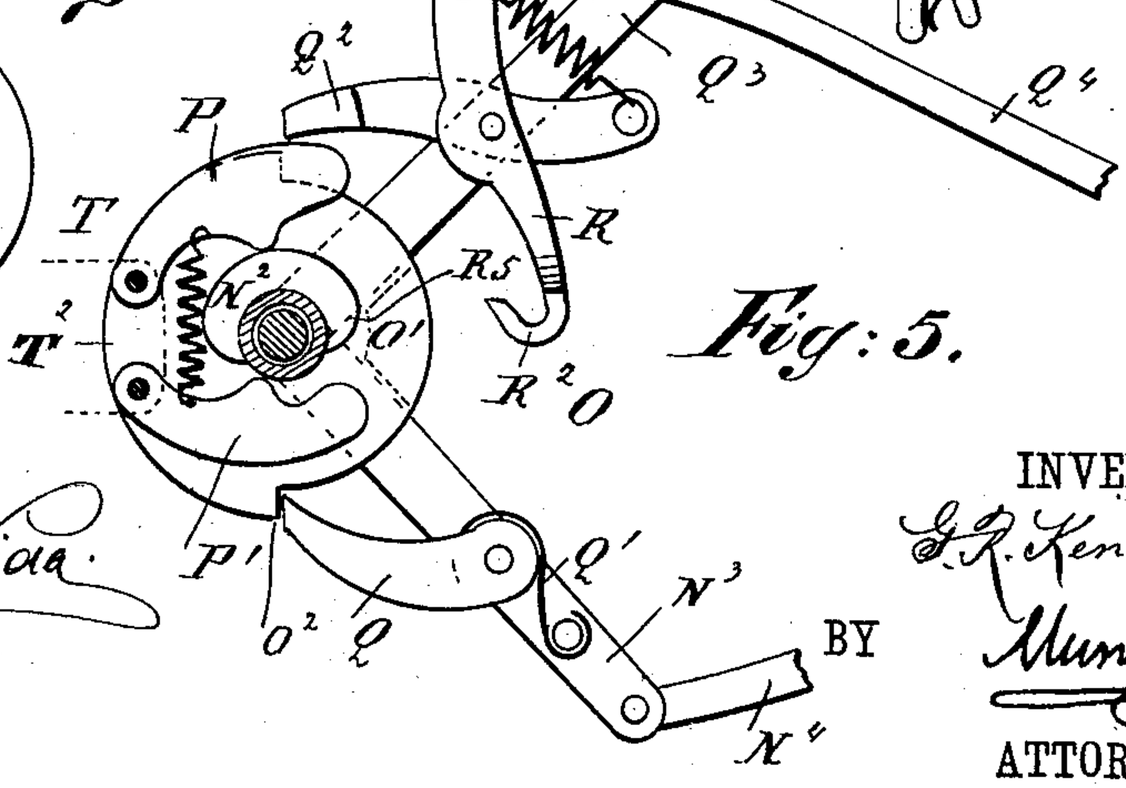


Fig: 5.



WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

G. R. Kendrick

BY Munn & Co

ATTORNEYS.

(No Model.) 5 Sheets—Sheet 5.

G. R. KENDRICK.

GRAIN WEIGHING, REGISTERING, AND BAGGING MACHINE.

No. 377,163. Patented Jan. 31, 1888.

Fig: 9.

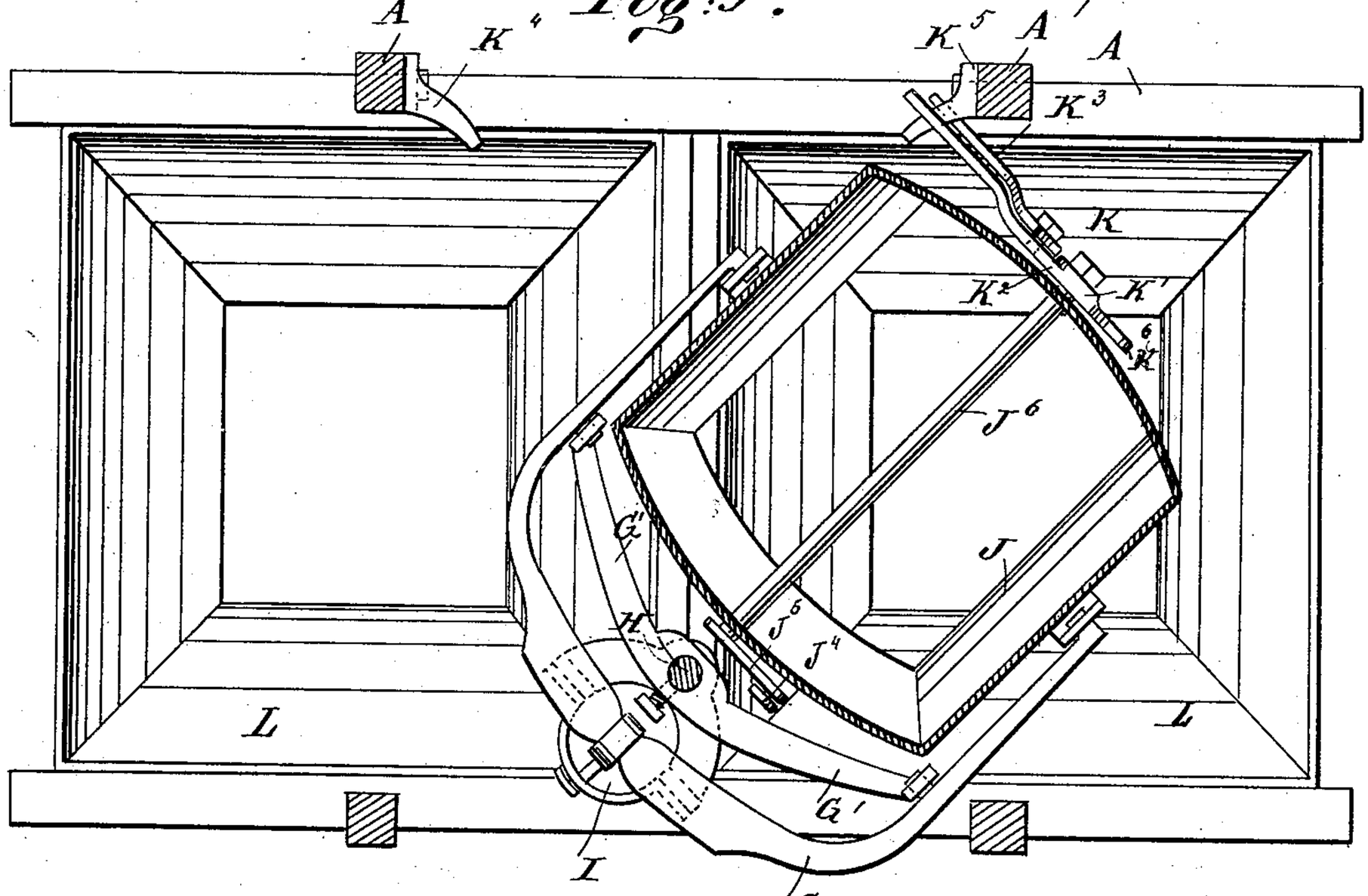


Fig: 10.

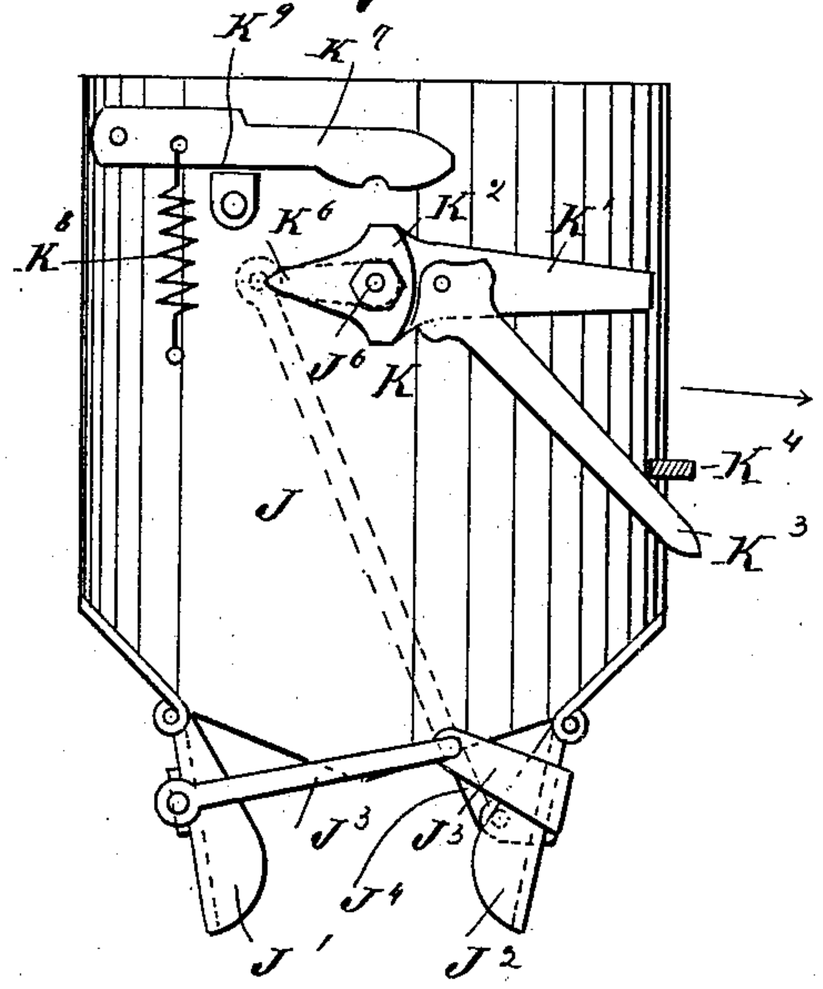
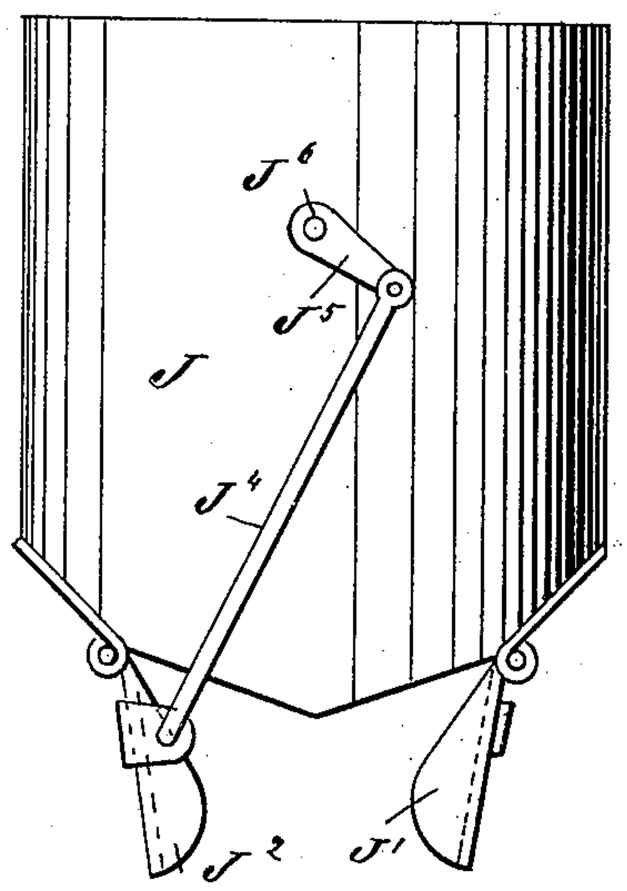


Fig: 11.



WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

G. R. Kendrick

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE R. KENDRICK, OF BRYANT, INDIANA.

GRAIN WEIGHING, REGISTERING, AND BAGGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 377,163, dated January 31, 1888.

Application filed September 8, 1887. Serial No. 249,168. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. KENDRICK, of Bryant, in the county of Jay and State of Indiana, have invented a new and Improved Grain Measuring, Registering, and Bagging Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved machine which takes the grain from the separator of the thrashing-machine, measures and registers it, and finally delivers it in measured quantities to bags.

The invention consists in the construction and arrangement of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improvement with parts in section. Fig. 2 is a side elevation of the same, showing the elevator, parts of the frame, and one hopper in section. Fig. 3 is a sectional elevation of my improvement on the line *x x* of Fig. 4, looking toward the front. Fig. 4 is a plan view of the same with the elevator-spout in section. Fig. 5 is an enlarged face view of part of the shifting mechanism for the grain-measuring receptacle. Fig. 6 is a face view of the cam of the shifting mechanism. Fig. 7 is a sectional face view of the same, showing the levers in a different position. Fig. 8 is a plan view of the same. Fig. 9 is a sectional plan view of the lower part of my improvement on the line *y y* of Fig. 1; and Figs. 10 and 11 are side elevations of the grain-measuring receptacle, showing its hinged bottom open.

In a suitably-constructed frame, A, is held an elevator, B, of any approved construction, and connected at its lower end with the separator of the thrashing-machine, so that the grain from the thrashing-machine passes into said elevator, and is raised by the buckets B′ into a spout, B^2, projecting from the upper end of the elevator-frame. The upper shaft, B^3, of the elevator carries on one outer end a sprocket, B^4, over which passes a sprocket-chain, B^5, also passing over a sprocket-wheel, B^6, secured to a shaft, B^7, mounted to rotate in a frame, B^8, fulcrumed on the shaft B^3 of the elevator. On the shaft B^7 is also secured a pinion, C, adapted to mesh into a gear-wheel, C′, which has its teeth depressed in one part of its rim, so that when said gear-wheel makes a rotation the teeth of the pinion C turn out of mesh at this point C^2, as illustrated in Fig. 1.

The gear-wheel C′ is secured on the shaft C^3, mounted to rotate in suitable bearings held on the main frame A. From the face of the gear-wheel C′ projects a lug, C^4, adapted to engage at each revolution of said wheel with an arm, D, having an offset, D′, on which rests the lower end of an arm, D^2, secured to the swinging frame B^8. The arm D is fastened on the shaft E, mounted transversely on the main frame A and carrying a spring, E′, which is fastened by one end to said shaft E and by its other end to the main frame A, so that when said shaft is turned the spring is wound up, and when said shaft is released the spring causes it to turn back to its former position. On the shaft E is also secured an arm, E^2, connected by a link, E^3, with an arm, E^4, secured on the shaft mounted transversely on the lower end of the spout B^2 of the elevator, said shaft carrying a door, E^5, which, in connection with a door, E^6, secured on the shaft E, forms the bottom for the spout B^2. When the two doors E^5 and E^6 swing toward each other until their outer ends meet, the hopper-bottom is closed and the grain discharged by the elevator accumulates in the spout B^2.

The outer end of the arm E^2 is held in a downward position by a catch, F, secured to a shaft, F′, mounted to rotate in the frame A and carrying an arm, F^2, which extends over one end of the weighing-beam G, hung in suitable bearings on an arm, G′, fastened on the shaft H, mounted vertically in suitable bearings on the main frame A. The outer end of the weighing-beam G is connected with a spring-scale, I, of any approved construction, and supported by the arms I′, secured to said shaft H. The inner ends of the weighing-beam G support the grain-measuring receptacle J, of suitable size and construction, and connected at its lower end by a link, I^2, with the lever-arm I^3, secured to the shaft H, so as to prevent said grain-measuring receptacle from tipping over. The bottom of the grain-measuring receptacle J consists of two hinged doors, J′ and J^2, pivotally connected with each other by the arms J^3, so that said doors open and close simultaneously. The door J^2 is pivotally connected

by the link J^4 with a crank-arm, J^5, secured to one end of a shaft, J^6, mounted to rotate in bearings formed in the grain-measuring receptacle J and passing through the center of the same. On the other outer end of the shaft J^6 is secured a tripping device, K, which consists, principally, of a lever-arm, K′, fastened to said shaft J^6, and provided with a segmental offset, K^2, against which operates the upper end of the arm K^3, pivoted on said lever K′. The latter and the arm K^3 are operated on alternately by the studs or lugs K^4 and K^5, secured to the side posts, A′, of the main frame A, as shown in Figs. 3 and 9. The upper end of the lever K′ is pointed at K^6, and is adapted to engage a notch formed on the arm K^7, fulcrumed on the grain-measuring receptacle J, and held in any desired position by a spring, K^8. A stop, K^9, secured to the grain-measuring receptacle, limits the downward motion of the arm K^7, and holds the same in nearly a horizontal position.

The open upper end of the grain-measuring receptacle is always under the lower end of the spout B^2, so that when the doors E^5 and E^6 are opened the grain passing to the elevator B is discharged into the grain-measuring receptacle J. The grain-measuring receptacle swings with the vertical shaft H, so as to discharge alternately into the hoppers L, placed alongside of each other, as shown in Figs. 3 and 9, and each provided at its lower end with hooks L′, on which the bags to be filled are hung. The swinging motion of the shaft H is imparted by the device presently to be described and receiving its motion from the gear-wheel C′.

On the upper end of the shaft H is secured a bevel gear-wheel, N, meshing into a bevel gear-wheel, N′, secured on a horizontal shaft, N^2, mounted in suitable bearings fastened on top of the main frame A. On the shaft N^2 is held the grain-receptacle-shifting mechanism O, provided with a disk, O′, held on said shaft N^2, and having notches O^2 at opposite points in its rim, said disk also being provided on its face with a cross-piece, O^3, which connects with the disk O^4, having a hub placed directly on the shaft N and secured to the same by a set-screw or other means. On one of the notches O^2 of the disk O′ operates the pawl Q, held in contact with the rim of the disk O′ by a spring, Q′, and said pawl Q is pivoted on a lever, N^3, fulcrumed loosely on the shaft N^2 and connected by a link, N^4, with the gear-wheel C′. On the other notch O^2 of the disk O′ operates a pawl, Q^2, pivoted on a lever, Q^3, fulcrumed loosely on the shaft N^2 and connected by the link Q^4 with the gear-wheel C′ on the same crank-pin which connects the link N^4 with said gear-wheel C′. The levers N^3 and Q^3 are placed alongside of each other and extend between the disks O′ and O^4, passing on opposite sides of the cross-piece O^3. On the fulcrum of the pawl Q^2 is also held a pawl, R, connected at its outer end by a spring, R′, with the outer end of said pawl Q^2, so that the latter is pressed in contact with the rim of the disk O′, and the pawl R is pressed, with its hook R^2, in contact with the notched rim of the disk R^3, loosely mounted on the shaft N^2. The hooked end R^2 of the pawl R can be prevented from engaging the notched rim of the disk R^3 by a lever, S, loosely fulcrumed on the shaft N^2 and provided with the segmental offset S′, extending over part of the rim of the notched disk R^3.

On the outer end of the lever S is held a hand-lever, S^2, adapted to engage with its inner end one of the notches T′, formed on the segmental arm T, secured to the top of the main frame A. The return movement of the notched disk R^3 is prevented by a spring, R^4, engaging with its free end the rim of the said notched disk R^3. On an extension, T^2, of the segmental arm T are pivoted the pawls P and P′, each provided on its inner edge with a projection on which operates a cam, R^5, secured to the notched disk R^3. The pawls P P′ are connected by a spring which holds them properly for action by the cam N^2. The cam R^5 is so arranged that it presses the pawls P and P′ outward alternately, so that the respective pawl Q or Q^2 is disengaged from its respective notch O^2 in the disk O′, as shown in Fig. 5. Thus when the gear-wheel C′ rotates it moves the levers N^3 and Q^3 outward toward each other, and the respective pawl Q or Q^2 which engages its notch in the disk O′ imparts a rotary motion to the latter, whereby the shaft N^2 is turned, thus imparting by the gear-wheels N′ and N a turning motion to the shaft H, which carries the grain-measuring receptacle J. On the return-stroke of the levers N^3 and Q^3 the respective one which accomplished the shifting of the disk O′ moves the latter backward by engaging with the cross-piece O^3, so that the shaft N^2 is turned in an opposite direction and the grain-measuring receptacle J again assumes its former normal position in the center of the machine between the two hoppers L and directly under the lower end of the spout B^2.

The pawl P or P′ which disengages, respectively, either the pawl Q or Q^2, thus changing the shifting of the grain-measuring receptacle to the right or left, is changed by the cam R^5, which is governed by the position of the notched disk R^3, turned on the shaft N^2 by the pawl R; but the latter engages only part of the rim of the notched disk R^3, if desired by the operator, during its stroke, on account of the segmental arm S′, which covers some of the notches in the said disk, and is placed, according to the operation to be performed, in such relative position to the disk, by changing its hand-lever S^2 into a corresponding notch in the segmental notch T, that the hooked end R^2 of the pawl R travels through part of its stroke on the arm S′ and through the remainder of its stroke moves the disk R^3. It will be seen that by this position of the segmental arm S′ in relation to the pawl R and the disk R^3 the cam R^5 of said disk moves one-half of a revolution during a certain number of revolutions of the gear-wheel C′, and in this half-revolution changes either pawl P or P′, so that the re-

spective pawl Q or Q^2 is disengaged from the notch O^2 of the disk O'. Thus the operator can cause the grain-receptacle J to move to the left or right either by one revolution of the gear-wheel C', or by two, three, or four revolutions of said wheel, according to the amount of grain to be emptied into one hopper L at a time.

The outer end of the shaft C^3, carrying the gear-wheel C', is connected with a registering mechanism shown in dotted lines in Fig. 3, and being of any approved construction, so that each revolution of said shaft is indicated on said mechanism.

The operation is as follows: When the machine is in the position illustrated in Figs. 1, 2, 3, and 4, then the doors J' and J^2 of the grain-measuring receptacle J are closed, and the doors E^5 and E^6 on the bottom of the spout B^2 are opened, so that the grain elevated by the elevator B is discharged into said spout B^2, and passes over the doors E^5 and E^6 into the grain-measuring receptacle J, in which it accumulates until a certain weight to which the scale I is set is reached. The grain-measuring receptacle J then swings downward and the outer end of its scale-beam G presses against the lever F^2, which swings the catch F away from the outer end of the arm E^2, so that the latter is released, and the compressed spring E', exerting its power, turns the shaft E, whereby the doors E^5 and E^6 are swung upward, thus closing the lower end of the spout B^2. The grain from the elevator, instead of passing to the receptacle J, now accumulates in said spout B^2. The shaft E in turn, as above described, causes the arm D to swing with it, so that the lower end of the arm D^2 loses its support, the shoulder D', whereby the frame B^8, to which said arm D^2 is secured, swings downward, and the pinion C is thus thrown into mesh with the gear-wheel C'. The movement of the elevator B imparts a rotary motion to said pinion C, and as the latter is now in mesh with the gear-wheel C' said gear-wheel is also rotated, whereby the links N^4 and Q^4 cause the levers N^3 and Q^3 to swing toward the rear, and the respective pawl Q or Q^2 which engages with the disk O' turns the latter in one direction, so that the shaft N^2 is rotated, and by the bevel gear-wheels N' and N imparts a turning motion to the vertical shaft H, which, as it carries the grain-measuring receptacle J, swings the latter to one side over one of the hoppers L. The grain-measuring receptacle, on passing over one of the hoppers L, causes the arms K' and K^3 to move against the respective lugs K^4 and K^5, whereby the upper end, K^6, of the lever K' is disengaged from the notch of the spring-arm K^7, and at the same time the transverse shaft J^6 is turned, and, by its crank-arm J^7 and the link J^4, swings the door J^2 downward, so that the other door, J', is moved in the same direction by the connecting-links J^3. The grain held in the grain-measuring receptacle thus passes out into the respective hopper L and into the bag held on the hooks L' on said hopper. The amount of grain passed into the bag is known by the scale I, and the registering device connected with the shaft C^3, on which the gear-wheel C' is located, registers said amount. As soon as the gear-wheel C' has made a half-revolution, then the respective lever N^3 or Q^3 imparts a return movement to the disk O' by engaging the cross-bar O^3, so that the shafts N^2 and H are turned in an opposite direction, and the grain-receptacle J commences to swing toward its former position in the center of the machine. On this return movement of the grain-measuring receptacle the arm K^3, which by its own gravity has assumed the position shown in Fig. 10, comes in contact with the respective lug K^4 or K^5, and thereby causes the lever K' to swing into a vertical position again, so as to engage the notch in the spring-arm K^7, and at the same time impart a swinging motion to the crank-arm J^5 by its shaft J^6, so that the doors J' and J^2 again close the bottom of the grain-measuring receptacle J. The doors are held in a closed and locked position by the spring-arm K^7 engaging the lever K'. When the gear-wheel C' has nearly accomplished its last half-revolution, its stud C^4 engages the upper end of the arm D, which is swung into its former position and lifts, by means of its shoulder D', the arm D^2, so that the frame B^8 is swung upward and the pinion C is disengaged from the gear-wheel C', which has now made a half-revolution. The swinging motion imparted to the arm D causes the shaft E to turn, so that the spring E' is again compressed and the arm D^2 is swung downward and is locked in position by the catch F. The arm F^2, connected with said catch, was free to return to its former position as soon as the grain-measuring receptacle had emptied and its frame had swung upward again to its former position by the action of the spring in the scale I. This downward-swinging motion of the arm D^2 causes the opening of the doors E^5 and E^6, so that the grain accumulated in the spout B^2 is again discharged into the measuring-receptacle J, and the above operation is repeated.

If the operator desires to discharge the grain from the grain-measuring receptacle J alternately into the two hoppers L, he places the levers S in such a position that its segmental arm S' permits the pawl R to impart to the disk R^3 a half-revolution, so that the cam R^5 of said disk R^3 shifts the pawls P and P' alternately, thus throwing the pawls Q and Q^2 alternately into and out of contact with their respective notches O^2 in the disk O', whereby the shafts N^2 and H are turned alternately in opposite directions at each revolution of the gear-wheel C'.

If the operator desires to discharge the grain-measuring receptacle J successively two or three times into one hopper L before changing it to the other hopper, then he places the lever S in such a position that the pawl R travels the greater part of its stroke on the seg-

mental arm S′ and turns the disk R^3 only a short distance, so that it requires two or more revolutions of the gear-wheel C′ before the pawl R imparts a full half-revolution to the said disk R^3, which does not change the positions of the pawls P P′ or the pawls Q Q^2, respectively, by means of the cam R^5 until half the revolution has been accomplished.

It will be seen that while one bag is being filled at one of the hoppers L the operator can remove the filled bag from the other hopper and put an empty bag in its place.

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

1. The combination, with the discharge-spout and its closing mechanism, of a separate and independent receptacle under said spout, a closing or shut-off mechanism for said receptacle, and a vertical horizontally-rocking shaft, to which said receptacle is connected, substantially as set forth.

2. The combination, with the grain-receptacle, a vertical horizontally-rocking shaft, and a scale-beam on said shaft, to which said receptacle is connected, of a spout above and independent of the receptacle and its shaft, and provided at its lower end with a closing or shut-off mechanism released upon the downward movement of the receptacle, and two discharge-spouts side by side below and independent of the receptacle, substantially as set forth.

3. The combination, with the grain-receptacle, a vertical shaft, to which it is connected, of a horizontal shaft geared thereto, and an intermittently-operated gear and a pawl-and-ratchet mechanism connecting the same with the horizontal shaft to rotate it, substantially as set forth.

4. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of a grain-measuring receptacle held below said spout, a scale-beam in which said receptacle is hung, a vertical shaft carrying said scale-beam, and means, substantially as described, for imparting a swinging motion to said shaft from said elevator, as set forth.

5. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of a grain-measuring receptacle held below said spout, two hoppers placed alongside of each other below said grain-measuring receptacle, a scale-beam supporting said grain-measuring receptacle, a vertical shaft carrying said scale-beam, and a mechanism, substantially as described, for imparting a swinging motion to said vertical shaft from said elevator, so that said receptacle swings over either of the two hoppers and discharges into the same, substantially as shown and described.

6. In a grain-measuring machine, the combination, with a grain-measuring receptacle adapted to swing sidewise, of doors pivoted on the lower end of said grain-measuring receptacle, levers and links for controlling the opening and closing of said doors, and fixed lugs against which said levers operate for opening and closing said doors, substantially as shown and described.

7. In a grain-measuring machine, the combination, with a grain-measuring receptacle adapted to swing sidewise, of doors pivoted on the lower end of said grain-measuring receptacle, levers and links for controlling the opening and closing of said doors, fixed lugs against which levers operate for opening and closing said doors, and a spring-arm engaging one of said levers for holding the doors in a locked position, substantially as shown and described.

8. In a grain-measuring machine, the combination, with a vertical shaft, a scale-beam held on said shaft, and a grain-measuring receptacle supported on said scale-beam, of a horizontal shaft connected by gear-wheels with said vertical shaft, a notched disk held on said horizontal shaft, pawls engaging said notched disk, cams for throwing either of the pawls out of contact with said disk, levers fulcrumed loosely on said horizontal shaft and carrying said pawls, and a wheel having a rotary motion and connected by pitmen with said levers, so as to impart at each revolution of said gear-wheel a forward-and-backward motion to said horizontal shaft, substantially as shown and described.

9. In a grain measuring machine, the combination, with a vertical shaft carrying the grain-measuring receptacle, of a horizontal shaft connected with said vertical shaft, a notched disk held on said horizontal shaft, pawls engaging said notched disk, a second set of pawls operating on said first set of pawls, and a cam operating alternately on said second set of pawls, so that when one pawl is in contact with said notched disk the other is disengaged from the same, substantially as shown and described.

10. In a grain-measuring machine, the combination, with a vertical shaft carrying the grain-measuring receptacle, of a horizontal shaft connected with said vertical shaft, a notched disk held on said horizontal shaft, pawls engaging said notched disk, a second set of pawls operating on said first set of pawls, a cam operating alternately on said second set of pawls, so that when one pawl is in contact with said notched disk the other is disengaged, levers fulcrumed loosely on said horizontal shaft and carrying the first-named set of pawls, and a gear-wheel connected by pitmen with said levers and having a rotary motion, substantially as shown and described.

11. In a grain-measuring machine, the combination, with a horizontal shaft connected with a vertical shaft carrying the grain-measuring receptacle, of a notched disk secured to said horizontal shaft, pawls engaging said notched disk, levers fulcrumed loosely on said horizontal shaft and carrying said pawls, a gear-wheel connected by pitmen with said levers and having a rotary motion, a second set of pawls operating on the first set of pawls,

a cam operating on the second set of pawls, so that one throws one of the first set of pawls out of contact with the notched disk, while the other pawl of the first set remains engaged with said disk, a notched disk carrying said cam and held to rotate loosely on said horizontal shaft, and a pawl adapted to engage the notched cam-disk and fulcrumed on one of said levers, substantially as shown and described.

12. In a grain-weighing machine, the combination, with a horizontal shaft connected with a vertical shaft carrying the grain-measuring receptacle, of a notched disk secured to said horizontal shaft, pawls engaging said notched disk, levers fulcrumed loosely on said horizontal shaft and carrying said pawls, a gear-wheel connected by pitmen with said levers and having a rotary motion, a second set of pawls operating on the first set of pawls, a cam operating on the second set of pawls, so that one throws one of the first set of pawls out of contact with the notched disk, while the other pawl of the first set remains engaged with said disk, a notched disk carrying said cam and held to rotate loosely on said horizontal shaft, a pawl adapted to engage the notched cam-disk and fulcrumed on one of said levers, and an adjustable lever fulcrumed loosely on said horizontal shaft and adapted to engage the pawl operating on the cam-disk during part of its stroke, substantially as shown and described.

13. In a grain-measuring machine, the combination, with a swinging frame and a pinion mounted in said swinging frame and having a rotary motion derived from the elevator, of a gear-wheel adapted to mesh into said pinion, a stop secured to said gear-wheel, an arm having a shoulder and operated on by said stop, a shaft carrying said arm and provided with a spring, and an arm secured to said swinging frame and resting with its free end against the shoulder of said arm, substantially as shown and described.

14. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of doors hinged to the lower end of said spout and connected with each other, a shaft on which one of said doors is mounted, a spring coiled on said shaft, a swinging arm having a shoulder and secured on said shaft, a gear-wheel having a stop operating on said shoulder, a pinion adapted to mesh in said gear-wheel and having a rotary motion derived from the elevator, and a swinging arm carrying said pinion and provided with an arm resting at its free end on the shoulder of the arm secured to the shaft, substantially as shown and described.

15. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of doors hinged at the lower end of said spout and connected with each other, a shaft on which one of said doors is mounted, a spring coiled on said shaft, a swinging arm having a shoulder and secured on said shaft, a gear-wheel having a stop operating on said shoulder, a pinion adapted to mesh in said gear-wheel and having a rotary motion derived from the elevator, and a swinging arm carrying said pinion and provided with an arm resting at its free end on the shoulder of the arm secured to the shaft, and means, substantially as described, for locking said shaft in position, as set forth.

16. In a grain-measuring machine, the combination, with a scale-beam carrying the grain-measuring receptacle, of a catch operated on by said scale-beam, a lever held in a locked position by said catch, a shaft on which said lever is secured, a spring operating on said shaft, an arm having a shoulder and secured on said shaft, a gear-wheel having a stop operating on said arm, a pinion having a constant rotary motion adapted to mesh in said gear-wheel, a swinging frame carrying said pinion, and an arm secured to said swinging frame and resting with its free end on the shoulder of the arm secured to the shaft, substantially as shown and described.

17. In a grain-measuring machine, the combination, with the discharge-spout of an elevator, of a sprocket-wheel secured to the upper elevator-shaft, a second sprocket-wheel connected by a sprocket-chain with the first sprocket-wheel, a shaft on which the second sprocket-wheel is mounted, a frame fulcrumed on the upper elevator-shaft and carrying said sprocket-wheel shaft, a pinion secured to said sprocket-wheel shaft, a gear-wheel having a stop and into which said pinion is adapted to mesh, an arm having a shoulder and operated on by said stop, a shaft carrying said arm and provided with a spring and a locking mechanism, doors connected with each other and held on the lower end of the spout of the elevator, one of the doors being secured to said shaft, and an arm secured to the swinging frame and operated on by the shoulder of the arm secured to the shaft, substantially as shown and described.

18. In a grain-measuring machine, the combination, with a grain-measuring receptacle having a swinging motion, of doors pivoted on the bottom of said grain-measuring receptacle and connected with each other by links, a crank-arm connected by a link with one of said doors, a shaft mounted transversely in said grain-measuring receptacle and carrying said crank-arm, a lever secured on said shaft, an arm pivoted on said lever, a spring-arm adapted to engage said lever, and fixed lugs held on each side of the grain-receptacle, so that when the latter swings it engages said lever and its pivoted arm, whereby the doors of the grain-measuring receptacle are automatically opened and closed, substantially as shown and described.

GEORGE R. KENDRICK.

Witnesses:
DAVIS BROWN,
G. B. RUTTERS.