

(No Model.)

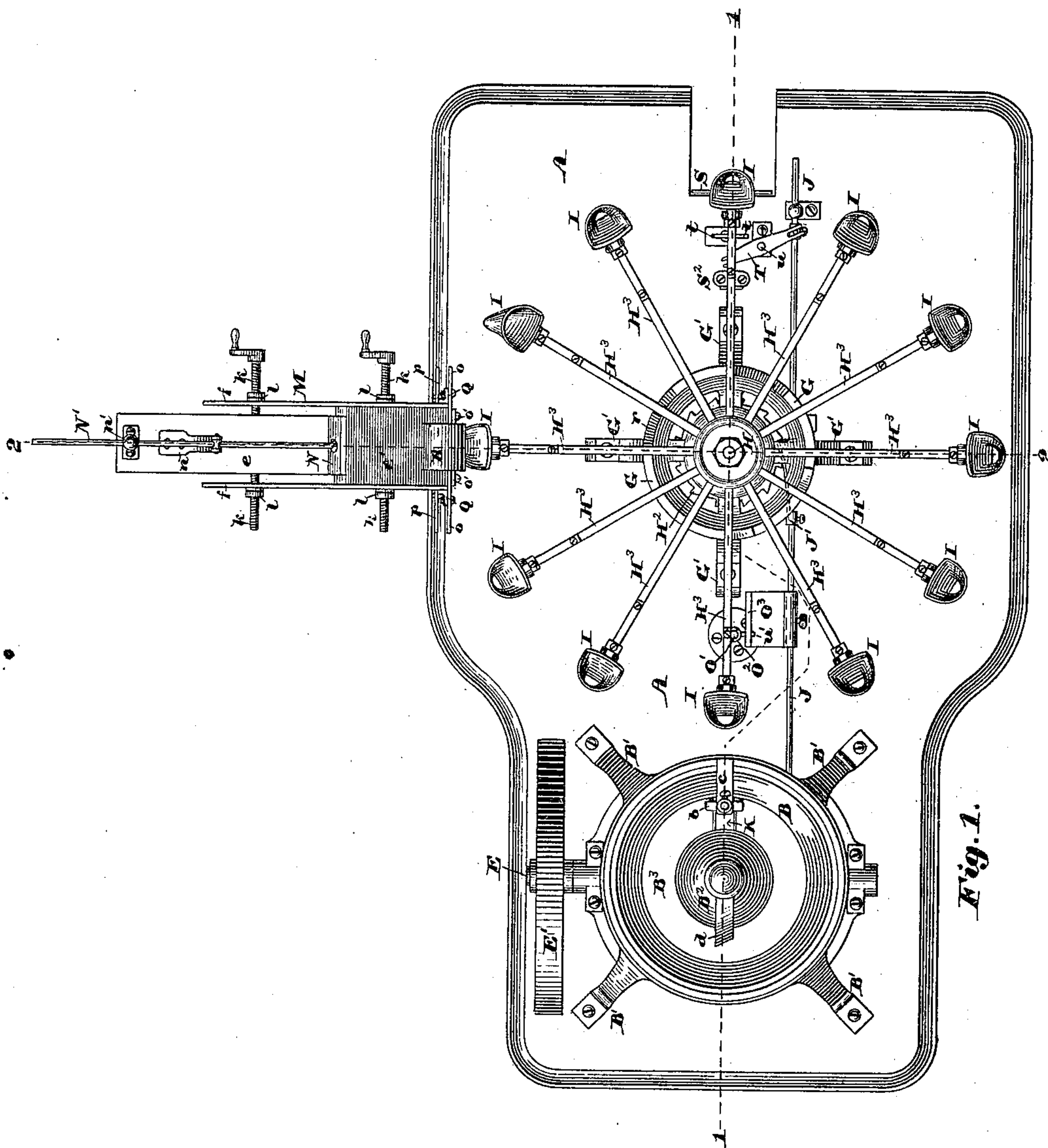
2 Sheets—Sheet 1.

J. C. BROWN.

MACHINE FOR MEASURING AND PACKAGING SEEDS.

No. 354,094.

Patented Dec. 14, 1886.



Witnesses:
Walter E. Lombard.
K. V. Jernon

Inventor:
Joseph C. Brown,
by N. B. Lombard
Attorney.

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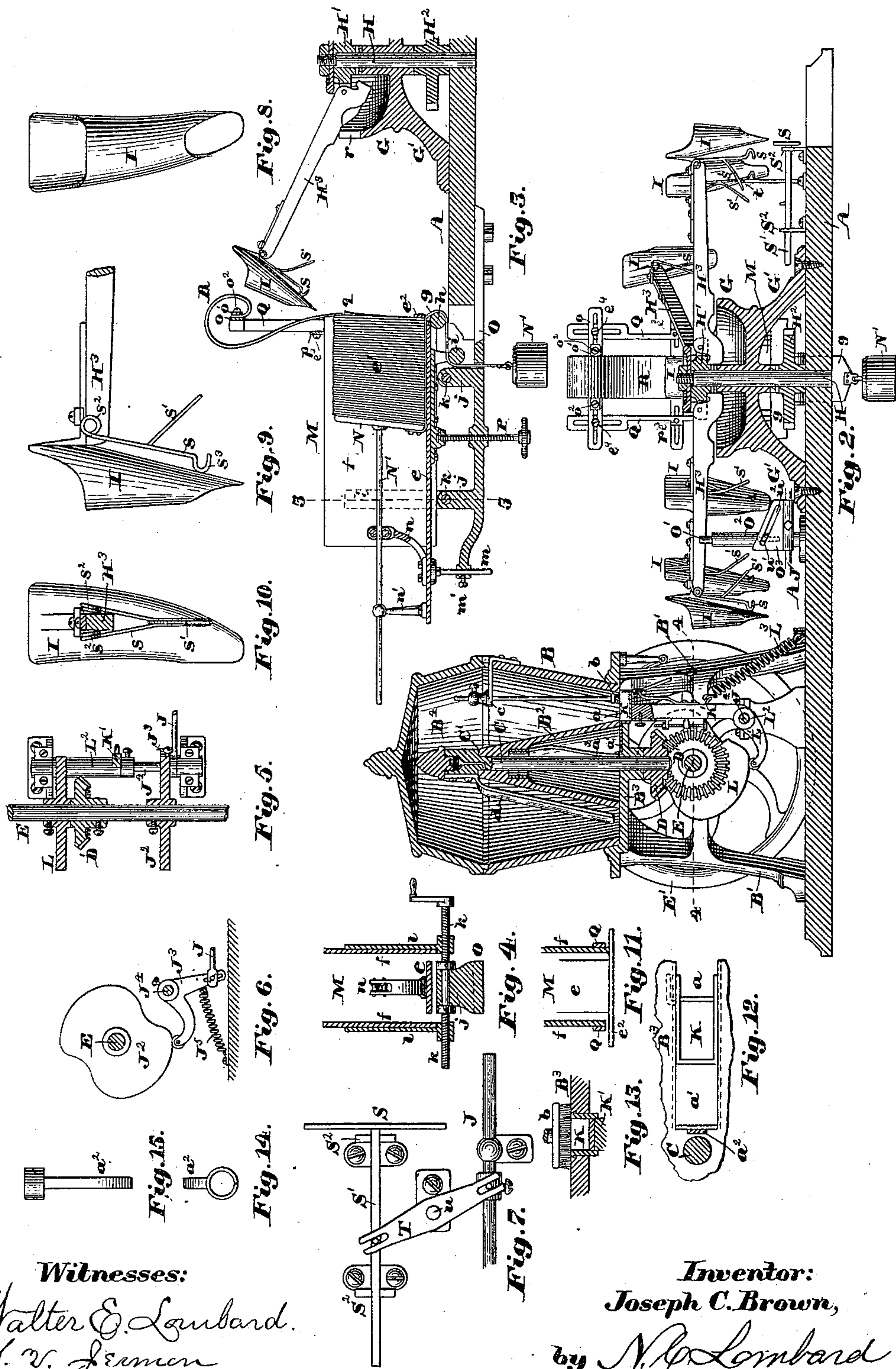
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UNITED STATES PATENT OFFICE.

JOSEPH C. BROWN, OF BURLINGTON, VERMONT.

MACHINE FOR MEASURING AND PACKAGING SEEDS.

SPECIFICATION forming part of Letters Patent No. 354,094, dated December 14, 1886.

Application filed February 1, 1886. Serial No. 190,506. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. BROWN, of Burlington, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in Machines for Measuring and Packaging Seeds and other Substances, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to machines for measuring and packaging seeds or granulated substances, and is an improvement upon the invention described in the Letters Patent No. 319,672, granted to me June 9, 1885; and it consists in certain novel constructions, arrangements, and combinations of devices which will be best understood by reference to the description of the drawings, and to the claims to be hereinafter given.

Figure 1 of the drawings is a plan of a machine embodying my invention with the cover of the receiver removed. Fig. 2 is a vertical longitudinal section on line 1 1 on Fig. 1. Fig. 3 is a partial vertical transverse section on line 2 2 on Fig. 1. Fig. 4 is a vertical transverse section through the envelope-feed box on line 3 3 on Fig. 3. Fig. 5 is a partial sectional plan, the cutting-plane being on line 4 4 on Fig. 2, and showing the arrangement of the cams for operating the turn-table and the vibrating measuring-receptacle. Fig. 6 is an elevation of the cam and lever for imparting motion to the pawl-carrying rod for operating the turn-table and the plunger for packing away the filled packages. Fig. 7 is a plan of the plunger for packing away the filled packages, a portion of the pawl-carrying rod, and the lever connecting said rod and plunger. Figs. 8, 9, and 10 are respectively a front, side, and rear elevation of the envelope-carrying funnel and clamping-spring; and Figs. 11, 12, 13, 14, and 15 are detail views to be hereinafter referred to.

In the drawings, A is the bed or main table of the machine, designed to be supported upon suitable legs, (not shown,) and upon which are mounted all the working parts of the machine.

B is a hopper or receiver supported at the desired elevation above said bed or table upon the legs B', said hopper consisting of an an-

nular chamber having inclined walls, as shown in Fig. 2. The inner wall of said annular chamber is composed of a hollow frustum of a cone, B², secured in a fixed position to the bottom B³ of the hopper or receiver B.

C is a shaft having its bearings in the upper end of the cone B² and in the bottom B³, and provided with the shoulder C' at its upper end, and having secured to its lower end the bevel gear-wheel D, with which the bevel gear-wheel D', mounted upon the horizontal shaft E, engages, to impart to the vertical shaft C a rotary motion, motion being imparted to the shaft E by means of the fly-wheel or pulley E' and a suitable belt leading thereto from any prime mover; or the wheel or the pulley E' may be revolved by hand.

G is an annular cam supported in a fixed position above the table A by the legs G', which meet in the center of said cam and form a central hub, in which is formed a bearing for the vertical shaft H, having mounted upon its upper end the spider like head H' and upon its lower end the ratchet-wheel H², having a series of teeth as shown. The spider-head H' has pivoted thereto a series of radial arms, H³, corresponding to the number of teeth in the ratchet-wheel H², each of said arms resting upon the upper edge of the annular cam G and carrying at its outer end a funnel, I, as shown.

An intermittent rotary motion is imparted to the head H' and arms H³ by means of the rod J and pawl J', mounted thereon, to which a reciprocating motion is imparted by means of the cam J², mounted upon the shaft E, acting upon one end of the elbow-lever J³, the opposite end of which is pivoted to the rod J, as shown in Fig. 6.

K is a measuring-box which receives the seeds or other substances from the receiver through the opening *a* in the bottom of the hopper and conveys the same to and discharges it into the funnel I, said box being mounted upon the upper end of the arm K', and being provided with an adjustable bottom and a pivoted gate at its outer end.

So far the mechanism described is constructed and operates substantially like that shown and described in my before-cited patent; but the gearing for operating the vertical

shaft C in said prior patent was located in the upper part of the receiver, which was very objectionable on account of the liability of particles of iron, scale, and other impurities becoming mixed with the material being mixed and packaged. In this case I have placed the gears below the receiver, where they can be oiled without danger of injuring the material being packed.

10 In my prior patent the head H' and arms H³, termed in the description of the figures in the first part of this specification the "turn-table," were rotated and the measuring-box K was vibrated by one and the same cam, 15 which was mounted upon and carried by the vertical shaft C, and the plane of rotation of which was at right angles to the plane of movement of the lever upon which said cam operated, the result of which was an unnecessary 20 amount of friction, due to the pressure imparted to said lever in a direction at right angles to the plane of movement of said lever. Another objection to the arrangement above referred to is that the labor of operating the 25 turn-table and packing-away plunger was thrown upon a cam having a somewhat abrupt or hard throw, when these parts might be operated by an easier cam. To overcome these objections, I place two cams upon the 30 shaft E, one cam, J², acting upon the elbow-lever J³, secured to the rocker-shaft J⁴, for the purpose of reciprocating the rod J and pawl J', and another cam, L, which acts upon the lever L', mounted upon one end of the sleeve-shaft L², to the other end of which is secured 35 the arm K', said sleeve-shaft L² being mounted upon and oscillated about the rocker-shaft J⁴, as shown in Figs. 2 and 5.

40 In order to adapt the machine to the measuring and packaging of seeds, I place in the receiver the brush b, extending across the outer portion of the throat or opening a, in close proximity to the outer wall of the receiver, and supported by the arm c, secured to the said 45 outer wall, as shown in Fig. 2, the lower ends of the bristles of said brush being on a level with the upper surface of the bottom plate of the receiver and serving the purpose of wiping off the seeds level with the top of the box 50 K as it is moved from beneath the receiver, without danger of bruising the seeds. A flat metal arm, d, is secured by its upper end to the upper end of the shaft C, and extending downward parallel with but somewhat removed from the inclined side of the cone B², 55 the sides of said arm being oblique to its line of motion about the cone, or, in other words, having its inner surface at one edge farther from its axis of motion than the other edge, 60 the object of said arm being to move the seed around the cone and prevent their becoming packed upon that side of the cone opposite to the opening a. Whenever it is desired, the receiver may be closed at the top by the 65 cover B⁴.

In my prior patent the envelopes were placed upon the funnels I by hand, and they were

held in position thereon by spring-actuated fingers, upon which the bottoms of the envelopes rested.

70 A prominent object of my present invention is to devise means for automatically feeding the envelopes to the funnels and clamping them thereto, and to that end I provide a rectangular receptacle, M, composed of a bottom, e, and 75 two sides, ff, said sides and bottom being preferably made adjustable, to adapt the receptacle to different sizes of envelopes; but said sides and bottom may be non-adjustable, different-sized receptacles being provided for 80 different sized envelopes, without departing from the main principles of my invention, said receptacle having placed therein a considerable number of envelopes, e', with the flaps at their open ends unfolded and their open ends 85 upward, which envelopes are fed toward the inner end of the receptacle by the follower N, actuated by the weight N', connected thereto by a flat band, g, which passes from said follower along the bottom of the receptacle be- 90 neath the envelopes, and partially around the pulleys h and i, as shown in Fig. 3.

The receptacle M is supported in the desired position by the bracket or arm O, secured by one end to the bed A, and provided 95 with two upwardly-projecting ears, jj, in bearings, in which are mounted the screw-shafts k k in such a manner that they may be revolved therein, but cannot be moved endwise in said bearings. Each of said screw-shafts is pro- 100 vided with a crank secured upon one end thereof, by which it may be revolved, and has thereon right and left hand screw-threads, which work in correspondingly-threaded bearings in the lower ends of upright bars ll, to 105 which the sides ff of the receptacle M are secured, so that a revolution of said screw-shafts will cause an equal movement of each of the sides ff toward or from each other.

P is a vertical screw-shaft fitted to a threaded 110 bearing in the arm O, and connected to the bottom e of the receptacle M by a swivel-joint, and provided at its lower end with the hand-wheel, by which it may be revolved to raise or lower the bottom e, said bottom being fur- 115 ther guided and steadied in its up and down movements by the guide-rod m, working through a bearing in the outer end of the arm O, which may be secured in any desired position by the set-screw m' when properly ad- 120 justed.

The follower N rests upon the bottom e, and is further guided in its forward and rearward movements by the rod N', secured thereto and having bearings in the stands n and n', mounted 125 upon the bottom e. The pulleys h and i are also supported by the bottom e, so that when the bottom is adjusted the follower and all the parts pertaining to its operation move with it, and always bear the same relation thereto. 130

It is obvious that if the sides ff are adjustable, as described, the bottom e can be no wider than the narrowest envelope to be used, and that the screw-shafts must be of sufficient

length to permit the sides ff to be adjusted to a distance apart equal to the width of the widest envelope to be used. The inner end of the bottom e has secured thereto the upwardly-projecting stop plate or lip e^2 , which limits the movement of the lower ends of the envelopes e' toward the inner end of the receptacle M . The sides ff have secured to their inner ends the upwardly-projecting arms Q —one to each side—which are connected together at their upper ends by the bar or plate o , and at or near the upper edges of the sides ff by the bar or plate p , both of said plates, o and p , being slotted at both ends to receive the clamping-bolts e^1 or e^3 , and permit the adjustment of said sides, as shown in Fig. 2.

R is a scroll-like leaf-spring secured by one end to the plate o by means of the clamping-plate o' and the screws o^2 o^2 , with its other end resting against the open flap of the envelope and serving as a yielding stop to limit the inward movement of the upper or open ends of the envelopes, as shown in Fig. 3. By this arrangement of the envelope-receptacle and the devices for feeding the same towards the inner end of said receptacle the envelope that is in the advance is presented at the end of the receptacle with its unfolded flap pressed slightly back by the spring R , so as to partially open the envelope, as indicated at q in Fig. 3, at which time said advance envelope is in a position to be moved sidewise past the inner end of the side f of the receptacle M , the bottom e , to which the stop-plate e^2 is secured, projecting beyond the inner end of the side f of the envelope-receptacle towards the seed-receiver B , to permit said removal, as shown in Fig. 11.

In the machine described in my before-cited Letters Patent the annular stationary cam G was provided upon its front side with a series of throws, which in succession raised each funnel-carrying arm as the head H' was revolved, and allowed them to drop again to insure the discharge of any powder that might adhere to the funnels and deposit it in the envelope, and finally to discharge the filled envelope from the funnel.

To carry out my object of automatically applying the envelopes to the funnels, I form an additional cam-throw, r , upon said cam G , to raise each arm H^3 to the position shown in Fig. 3 just before its funnel I reaches a position directly in front of the pack of envelopes in the receptacle M , at which time the arm H^3 passes off from the throw r and falls to its normal or horizontal position, in doing which the thin point or lower end of the funnel I strikes and presses slightly backward the lower end of the spring R , and as it passes therefrom it comes in close contact with the rear portion of the envelope and enters between the front and rear portions, and as it descends into the envelope the spring-arm s yields to allow the short side of the envelope to pass between it and the funnel, where it is held by the pressure of said arm until its pressure is removed by the arm s' coming in contact with the rod t at

the point where the filled envelope is to be deposited, as shown in Figs. 1 and 2.

In order to insure the envelope being carried bodily out of the envelope-receptacle, I form the funnels I as shown in Figs. 8, 9, and 10—that is, with their lower ends slightly in advance of their upper ends upon the side toward which they move in conveying the envelope, so that as said funnel is moved by the rotation of the head H' and the arm H^3 , after the funnel has entered the envelope, it shall maintain the envelope in an upright position by bearing against its forward fold for a considerable portion of its height. The funnels I , instead of rising and falling in a curved path, as shown, may be arranged to rise and fall in a right line without departing from the principles of my invention.

S is the packing-off plunger, mounted upon the bar S' , having bearings in the stands S^2 S^2 , and connected by the lever T , pivoted at u to the rod J , which imparts thereto a reciprocation in an obvious manner, all as shown in Fig. 7. The rod J is moved in one direction by the cam J^2 , and in the opposite direction by the spring J^3 , and the measuring-box K is moved in one direction by the cam L , and in the other direction by the spring L^3 . When the measuring-box is moved from beneath the receiver to discharge its contents into the funnel I , as in my prior patent, the throat a is closed by the plate a' , which is fitted to a dovetailed slide in the bottom of the receiver, as shown in Figs. 12 and 13, so as to be moved back beneath the cone B^2 by the box K when in position beneath the receiver, and to be moved outward to close the throat a by the tension of the spring a^2 , secured to the interior of the cone B^2 , as shown in Fig. 2, the construction of said spring being shown in Figs. 14 and 15. The spring-clamp s is formed of a piece of wire doubled upon itself at its middle and soldered together at the point where the arm s' is soldered thereto, above which point the two wires diverge and have formed at their upper ends two coils, s^2 , and near the lower end of the doubled portion of the clamp is formed the bend s^3 , the convex side of which rests against the envelope to clamp it to the funnel I , all as shown in Figs. 9 and 10. The cams J^2 and L each have two throws, so that the rod J and the measuring-box K are both moved to and fro twice to each revolution of the shafts C and E .

Instead of making the bottom of the envelope-receptacle adjustable, it may be secured in a fixed position, and the spring may be raised or lowered on the uprights Q Q , by means of the slots formed in said uprights and the screw-bolts e^1 , as shown in Fig. 2.

O' is a vertically-movable rod, mounted in the tubular stand O^2 , and provided with the radially-projecting pin u' , with which the inclined slot u^2 in the cam-plate O^3 engages, so that as the rod J is moved to the right to move the turn-table a step in its revolution the rod O' is moved upward, so as to stop the arm H^3

at the proper point to accurately register the funnel I in the proper position to receive the contents of the measuring-box K, the movement of the rod J to the left preparatory to another movement of the turn-table or head H causing the rod O to be withdrawn from the path of the arm H³, so that it may pass over the stop, which is again raised before the next arm reaches it.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a machine for measuring and packaging seeds and other substances, provided with a series of intermittingly-movable funnels, each arranged and adapted to receive and hold an envelope and convey it to the place for filling the envelope, and then to the place for discharging the same, a rectangular receptacle for receiving and holding a large number of envelopes arranged with their open ends upward, in combination with a fixed stop to arrest the forward movement of the bottoms of said envelopes, a yielding stop arranged to press against the unfolded flap of the forward envelope and limit its forward motion, a follower for moving said envelopes forward, and a weight connected to said follower and arranged to press the same against the mass of envelopes and move them toward the point of delivery, substantially as described.

2. The combination, in a machine for measuring and packaging seeds and other substances, of an envelope-receptacle, an automatically-movable follower, a fixed stop at bottom of the delivery end of said receptacle, a yielding stop arranged to press against the unfolded flap of the forward envelope and limit its forward movement, and a funnel having a thin flat lower end, and arranged to be moved downward into the forward envelope in said receptacle, and then to be moved horizontally to withdraw said envelope from the receptacle and convey it to the place for filling the same, substantially as described.

3. The combination of an envelope-containing receptacle, an automatically-movable follower, fixed and yielding stops to limit the forward movement of the mass of envelopes, a funnel having a thin flat knife-like lower end, mechanism for raising said funnel and causing it to descend into the interior of the forward envelope, a spring-clamp for clamping said envelope to the funnel, and mechanism for moving said funnel and envelope from said receptacle to the place for filling the same, substantially as described.

4. The combination of the receiver B, provided with the opening *a*, the measuring-box K, the intermittingly-revolving head H¹, the radius-arm H³, the funnel I, the spring-clamp *s*, the envelope-receptacle M, the fixed stop *e*², the spring-stop R, the follower N, and weight N', all arranged and adapted to operate substantially as and for the purposes described.

5. The combination of the bracket or arm O, provided with the ears *j j*, the right and left threaded screws *k k*, the side plates, *f f*, provided with threaded bearings to fit said screws, the bottom plate, *e*, and the screw P, for adjusting said bottom vertically, substantially as described.

6. The combination of the bracket or arm O, the screw P, fitted to a threaded bearing in said arm, the bottom plate, *e*, connected to said screw by a swivel joint, and the pulleys *i* and *h*, the follower-guides *n* and *n'*, and the guide-rod *m*, all mounted upon and adjustable with said bottom plate, *e*, substantially as described.

7. The funnel I, having its lower end smaller than its upper end and curved to one side, so that the forward side of its lower end shall be slightly in advance of the forward side of its upper portion, substantially as described.

8. The combination, with the tapered funnel I, of the spring-clamp *s*, provided with the arm *s'*, the two coils *s*², and the bend *s*³, all arranged and adapted to operate substantially and for the purposes described.

9. The combination of the envelope-receptacle M, the follower N, the band *g*, attached by one end to the lower edge of the follower and extending therefrom to the front end of the receptacle, along the upper surface of the bottom of said receptacle, the pulleys *h* and *i*, and the weight N', all arranged and adapted to operate substantially as described.

10. The envelope-receptacle M, provided with two movable sides and right and left hand screws for adjusting said sides toward and from each other, in combination with a bottom to support the envelopes and a yielding stop to limit the forward movement of the upper end of said envelopes, said bottom and yielding stop being constructed and arranged to be adjusted one toward the other to adapt the receptacle to envelopes of different lengths.

11. In a machine for packaging seeds and other substances, the combination of a receiver to contain the seeds or other substance, a vibrating measuring-box, a turn-table provided with a series of radiating arms, each carrying at its end a funnel to receive the material to be packaged, mechanism for imparting to said turn-table and arms an intermittent rotary motion, a vertically-movable stop for limiting the movement of said turn-table, and a reciprocating slotted cam-plate for moving said stop, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 9th day of September, A. D. 1885.

JOSEPH C. BROWN.

Witnesses:

GEORGE F. HARVEY,
FRED MENGES.