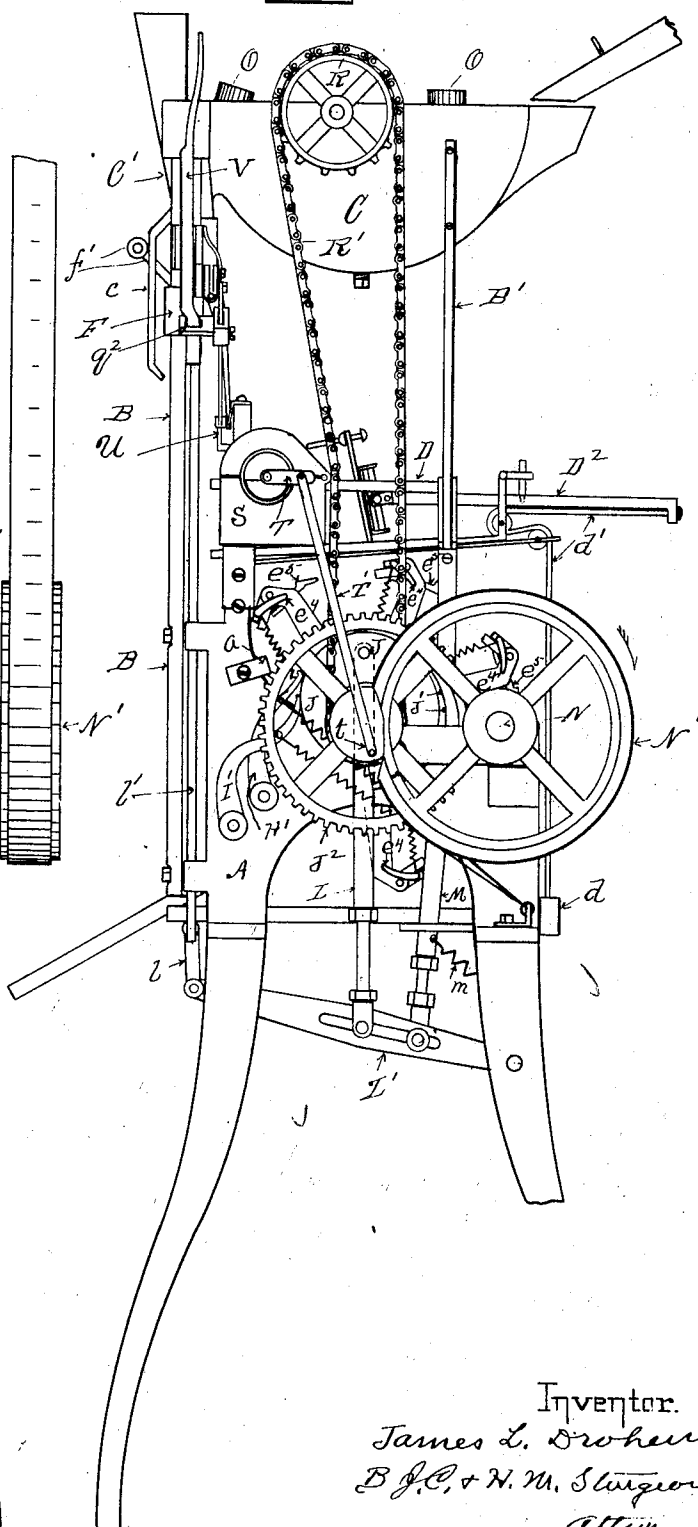


APPLICATION FILED OCT. 24, 1903. RENEWED AUG. 30, 1905.

Patented Aug. 31, 1909.

3 SHEETS—SHEET 1.

Fig. 2.



Inventor.
James L. Doherty
B. J. C. & H. M. Sturgeon
Attys.

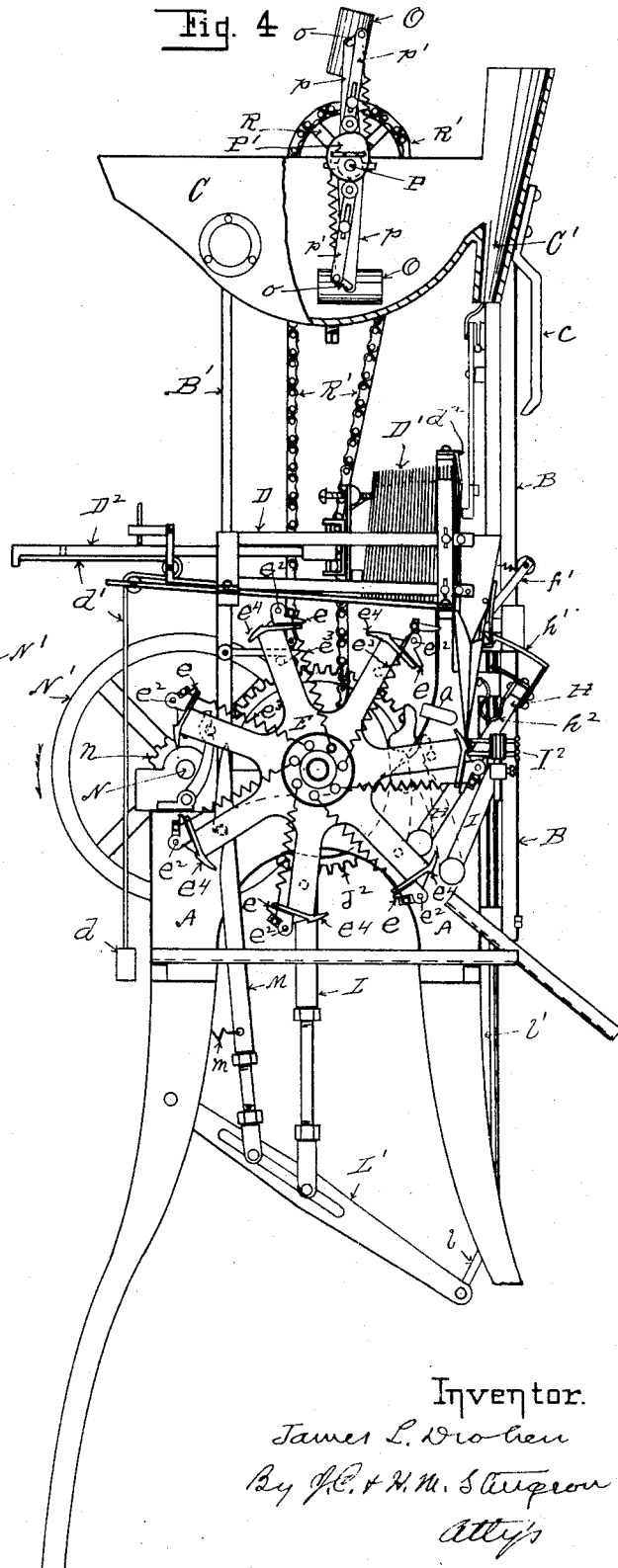
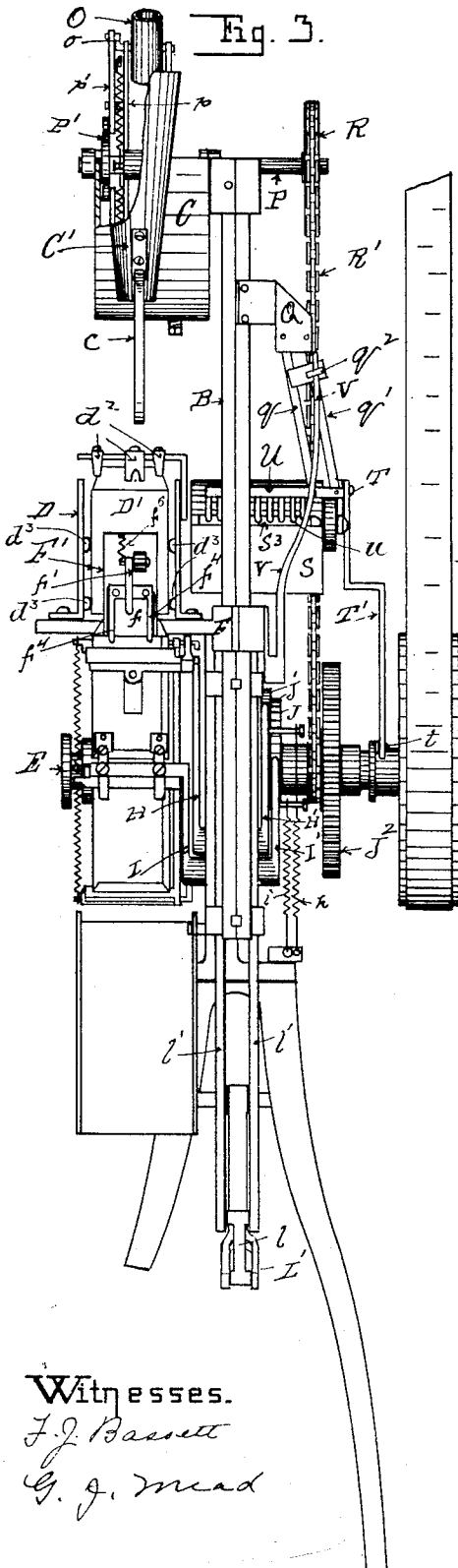
J. L. DROHEN.
BAG FILLING MACHINE.

APPLICATION FILED OCT. 24, 1903. RENEWED AUG. 30, 1905.

933,025.

Patented Aug. 31, 1909.

3 SHEETS—SHEET 2.



Witnesses.

F. J. Bassett
G. J. Mead

Inventor.

James L. Drohen
By J. C. & H. M. Sturgeon
Attys

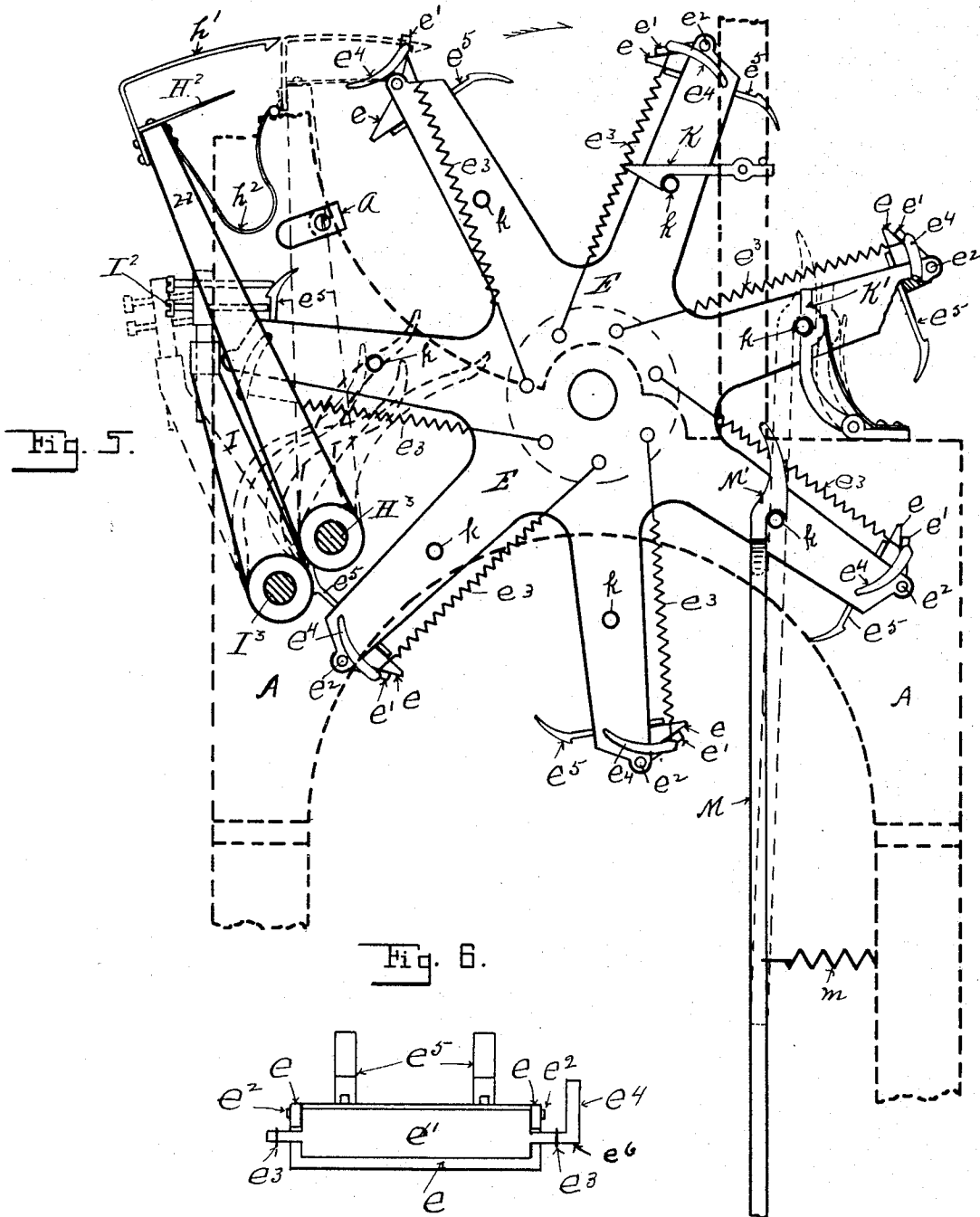
J. L. DROHEN.
BAG FILLING MACHINE.

APPLICATION FILED OCT. 24, 1903. RENEWED AUG. 30, 1905.

933,025.

Patented Aug. 31, 1909.

3 SHEETS—SHEET 3.



Witnesses.
F. J. Bassett
G. J. Mad

Inventor.
James L. Drohen
By J. C. & H. M. Sturgeon
Attys

UNITED STATES PATENT OFFICE.

JAMES L. DROHEN, OF DUNKIRK, NEW YORK, ASSIGNOR TO JOHN C. STURGEON AND HAROLD M. STURGEON, OF ERIE, PENNSYLVANIA.

BAG-FILLING MACHINE.

933,025.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed October 24, 1903, Serial No. 178,404. Renewed August 30, 1905. Serial No. 276,474.

To all whom it may concern:

Be it known that I, JAMES L. DROHEN, a citizen of the United States, residing at Dunkirk, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Bag-Filling Machines; 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to improvements in bag-filling machines, and particularly to such machines for automatically measuring and depositing predetermined amounts of seed, or other material, in flat bags, gumming and sealing the bags.

The object of my invention is the construction of a bag-filling machine in which seed or other material contained in a suitable receptacle, is measured and delivered in measured quantities to a seed-carrier which automatically opens and enters a flat bag, detaching the same from a bag holder, and deposits the seed therein in such bag, after which, the bag having been previously gummed, the seed-carrier carries the bag to, and leaves it in position to be sealed, when sealing mechanism operates to seal the flap down upon the bag; all of which steps are performed automatically, one after the other, until finally the filled and sealed bag is delivered from the machine.

In the construction of a bag-filling machine embodying my invention, I provide the machine with a suitable receptacle for holding a quantity of seed or other material, and with a measuring apparatus adapted to measure and remove predetermined quantities of seed or other material from such receptacle. I also provide a bag-holder adapted to retain a series of flat paper bags, with the open ends thereof up, and mechanism for moving said bags toward the open or delivery end of said bag-holder or guide-box. I also provide a gumming mechanism adapted to gum the outermost bag in the delivery end of the bag-holder or guide-box. Also a seed carrier is provided which reciprocates verti-

cally adjacent to the delivery end of the guide-box, which seed carrier near the uppermost part of its traverse receives seed from the measuring apparatus and in its downward traverse enters the outermost bag at the delivery end of the guide-box or bag-holder, detaches the bag from the bag-holder, deposits the seed therein in the bag and carries the bag downward and delivers it to a sealing apparatus, where mechanism is provided for turning over the bag-flap and sealing it down upon the gummed surface of the bag. I also provide a rotary carrier upon which the bags are sealed and carried around until the gum-seal sets, when mechanism provided therefor releases the bags, so that they are delivered from the machine filled and sealed. Mechanism is also provided for operating each part of the mechanism at the proper time relatively to the operation of the others, and which so operates the mechanism that one bag after another is automatically gummed, detached from the bag-holder, filled with a measured quantity of material, sealed and delivered.

The features of this invention are herein-after fully set forth and described, and illustrated in the accompanying drawings in which:

Figure 1 is a front view in elevation of the machine with the seed-carrier at the uppermost point of its traverse. Fig. 2 is a side view in elevation of the right-hand side of the machine with the seed-carrier at its uppermost point of traverse. Fig. 3 is a front view in elevation of the same with the seed-carrier at the lowermost point of its traverse. Fig. 4 is a side view in elevation of the left-hand side of the machine with the seed-carrier at the lowermost point of its traverse. Fig. 5 is an enlarged detail view of the rotary carrier, and the mechanism connected therewith. Fig. 6 is a detail view of a part of the rotary carrier mechanism.

In these drawings, A is the frame of the machine, upon one side of the front of which there is a vertical upright B, to the upper end of which upright the front end of a receptacle C for seed or other material is secured; the rear end of the receptacle C being also preferably supported by an upright

B' extending upward thereto from the frame A.

The front end of the receptacle C is provided with a downwardly projecting outlet or spout C' through which material is discharged therefrom. In the upper part of the receptacle C there is mounted a transverse shaft P having arms *p* in the outer ends of which measuring cups O are pivoted, adapted to dip up seed or other material in the receptacle C when the shaft P is rotated. On the inside of one of the sides of the receptacle C, there is a stationary cam P', and on said cam P' the inner ends (provided with friction rollers) of sliding bars *p'*, the outer ends of which are pivoted to cranks *o* on the pivots of the cups O, operate in the ends of the arms *p*, so that when the cups are rotated to the lowermost portion of their traverse they are nearly transverse to the ends of the arms *p*, so that they will dip material up and become filled therewith, and as the arms *p* reach, in turn, their uppermost position, the action of the cam P' on the sliding bars *p'* operate to maintain the cups in nearly an upright position, and as they pass around over the outlet C' of the receptacle C, the cam P' operates on the sliding bars *p'* to tip the cups O, so as to discharge the contents thereof through the outlet C' of the receptacle C.

For operating the measuring mechanism the shaft P is provided with a sprocket wheel R from which a sprocket chain R' extends to a small sprocket wheel on the shaft of the gear wheel J². The sprocket wheels are of such relative size as to time the discharge of the measuring cups O, so that they will discharge their contents through the outlet or spout C' of the receptacle C just when the seed-carrier, hereinafter described, is approximately at its highest point of traverse, and the upper end thereof embracing the lower end of the spout or outlet C'.

Upon the frame A, below the receptacle C there is secured a bag-holder D for holding flat bags D' with their open ends upward. The bag-holder D is provided with a follower D² and cord and weight mechanism *d d'* operating on the follower D² for moving it toward the front or delivery end of the bag-holder D. The upper part of the front or delivery end of the bag-holder D is provided with lip-holders *d*², adapted to engage the upwardly projecting lip or flap of the outermost of the bags D', and stops *d*³ are provided in the sides of the end of the bag-holder D, adapted to engage the end of the outermost of the bags D' so that the lip-holder *d*² and stops *d*³ operate to retain the outermost bag of the series of bags D' in position to be entered by a seed-carrier and be removed thereby, as hereinafter described, when the follower D² automatically oper-

ates to bring the next bag forward into position against the lip-holders *d*² and stops *d*³.

On the frame A under the bag-holder D, I mount a rotary carrier E provided with radial arms equi-distant from each other. On the ends of the arms of the carrier E, I provide inclined faces *e*, and to ears on the ends of which I hinge bag-flap folders *e'* on pivots *e*², and provided with retracting springs *e*³ which operate to hold them open when they are turned back past the central pivot *e*², and to close them when they are turned forward past said pivot, to accomplish which I provide a tripping arm *e*⁴ on one end of the bag-flap folder *e'* adapted to engage tripping mechanism hereinafter described as the carrier E is rotated. I also secure to the backs of the parts *e* adjustable bag supports *e*⁵, these features being clearly shown in the enlarged detail Figs. 5 and 6. For operating the rotary carrier E, I provide a crank-pin J³ (see Fig. 2) on the inner face of the cam-wheel J from which a pitman extends downward to a lever L' pivoted at one end in the lower part of the rear of the frame A. To this lever L there is pivoted a hook-arm M which is provided with a retracting spring *m* extending to the rear of the frame A, and as the lever L' is raised the hook M' engages one of the studs *k* on the arms of the carrier E (see Fig. 5) and as the lever L' moves downward the carrier E is turned the distance of the traverse of the lever L' downward at the point where the hook-arm M is pivoted thereto. On the frame A there are also hook-stops K and K' (the stop K' being spring actuated) which engage the studs *k* on the arms of the carrier E, and prevent any movement of the carrier E after it has been moved to position by the hook-arm M, and when the hook-arm M is raised to its uppermost position to engage a stud *k* it operates on the spring actuated stop K' to disengage it from the stud *k*, as shown in dotted lines in Fig. 5. On the upright B an arm F is mounted so as to slide up and down freely thereon. This arm F is reciprocated by means of the lever L' hereinbefore referred to as operating the hook-arm M. To the outer end of this lever L' there is pivoted a link *l* which connects at its upper end with the rods *l'* which extend up to and connect with the arm F so that the movement up and down of the free end of the lever L' operates to move the arm F up and down on the upright B, and it will be observed that the carrier E being operated by the same lever L' is rotated during the downward movement of the arm F. To the arm F there is secured a hollow seed-carrier F' the upper end of which passes up over and embraces the lower end of the outlet or spout C' of the receptacle C when the arm F is at or near its uppermost point of traverse. The lower portion of the seed-carrier

is wedge-shaped, and one side of the lower part thereof consists of a swinging door or gate *f* swung from its upper end, and retained in a normally closed position until the seed-carrier has passed down far enough to insert the lower end thereof into a bag on the bag-holder, by an arm *f'* on the door or gate *f*, which arm carries a roller which contacts against a downwardly projecting cam-shaped arm *c* secured to the outlet or spout *C'* of the receptacle *C*, and after the lower part of the seed-carrier has entered a bag, and the roller on the arm *f'* passes off of the arm *c*, a spiral spring *f''* connecting the arm *f'* with the body of the seed-carrier operates to throw the door or gate *f* open and allow the material in the seed-carrier to pass therefrom into the bag. I do not, however, wish to confine myself to this exact mechanism for retaining the door or gate *f* in a closed position and for opening it, as the action of the cam arm *c* and of the spring on the arm *f'* may be reversed in their operation with as good results as those hereinbefore described. To the seed-carrier *F'* above the hinge on the door or gate *f* there are secured two downwardly projecting spring arms *f''* which when the lower part of the seed-carrier *F'* and the door or gate *f* thereon pass into a bag, the spring arms *f''* pass down outside of the bag and when the door or gate opens inside of the bag it clamps the side of the bag between it and the ends of the spring-arms *f''* and prevents the bag with the seed therein from falling off of the seed-carrier, and holds the bag on the seed-carrier until the bag has been carried down by the seed-carrier to, and the lower end thereof grasped by clamping mechanism hereinafter described. The lower end of the seed-carrier *F'* below the lower end of the door or gate *f* is preferably provided with a rigid tapering spike-like extension *f''* which is adapted to enter between the flap and shorter ply of the bag at the upper end of the outermost bag in the bag-holder and guides the lower end of the seed-carrier into the bag, and passes down into the bag to the bottom thereof, and operates to direct the lower end of the bag as it is moved downward by the seed-carrier, until it reaches the clamping mechanism hereinafter described, which grasps the lower end of the bag and holds it until the seed carrier has been withdrawn from the bag and the bag is operated upon by the folding mechanism hereinafter described.

In the frame *A* there is mounted a transverse shaft *I*³ on one end of which there is an arm *I* provided at its opposite end with a clamping jaw *I*² which is adapted, when the arm *I* is moved forward, to clamp the lower end of a bag against the adjustable bag supports *e*⁵ on the parts *e* on the ends of the arms of the carrier *E*. This operation

of clamping the lower end of the bag is performed just as the seed-carrier has moved the bag to its lowermost point of traverse, and as soon as the folding mechanism, hereinafter described, operates on the upper or flap-end of the bag, the arm *I* and the clamping jaw *I*² thereon recede and release the lower end of the bag. These operations of the arm *I* and clamp jaw *I*² thereon are actuated and controlled by a lever *I'* which engages a cam surface *J'* on the cam wheel *J* on the shaft of the gear wheel *J*² of the machine, (see Fig. 3), which cam surface *J'* is so shaped that as it rotates under the lever *I'* it raises and lowers it (it being kept in contact with the cam-surface *J'* by a retracting spring *i*) and the arm *I* on the opposite end of the shaft *I*³, so as to move the arm *I* forward so as to clamp the lower end of the bag against the bag supports *e*⁵, just as the lower end of the bag is brought down to said supports, and to move it back and release the bag just as soon as the folding mechanism operates. In the frame *A* there is also mounted another transverse shaft *H*³ on one end of which is mounted an arm *H* and on the other end an operating lever *H'* which engages and is operated by a cam-surface *J'* on the cam wheel *J* on the shaft of the gear wheel *J*² of the machine, and is kept in contact with the surface of said cam by a retracting spring *k* (see Fig. 3).

On the arm *H* there is a U-shaped spring *h*² which, as the arm *H* moves forward, serves to force the upper end of the bag, clamped at its lower end to the support *e*⁵, back against the inclined face *e* on the arm of the carrier *E*, and a folding-blade *H*² secured to the arm *H*, following the action of said spring clamp, engages the bag-flap at the folding line and creases it, and as the folding blade starts back the U-shaped spring *h*² remains in contact with the upper part of the bag retaining it in position on the inclined surface *e* until the hook *h'* on the arm *H* has engaged the tripping arm *e*⁴ on one end of the bag-flap folder *e'*, and as the cam surface *J'* acting through the lever *H'* moves the arm *H* back to its rearmost position the hook *h'* draws the bag-flap folder *e'* over far enough so that the springs *e*³ acting thereon turns the bag-flap folder *e'* down upon the inclined face *e* folding the bag-flap down onto the shorter ply of the bag resting thereon, and clamps the bag-flap down upon the shorter ply of the bag, which shorter ply having been gummed, as herein-after described, is thereby sealed.

In the operation of this machine it is necessary to apply paste to the shorter ply of each of the outermost bags in the bag-holder before it is removed therefrom. For accomplishing this purpose I provide a pasting apparatus, which consists preferably of a paste tank *S* mounted on the frame *A* at one

side of the front or delivery end of the bag-holder D, in which tank there is a paste cylinder S' which is intermittently rotated by means of a clutch mechanism T on the shaft thereof, operated by a crank t on the shaft of the gear wheel J². A pitman T' connecting said crank with the lever of the clutch mechanism T. In the front of the paste box there is slot S³ substantially in line with the front end of the outermost of the bags D' on the bag-holder D. Secured to the upper part of the upright B there is an arm Q to which is pivoted by means of hinged joints, parallel links q q' , and to the lower ends of these links I pivot a horizontal paste-carrier U preferably provided with rigid teeth u adapted to enter the slot S³ in the paste tank and contact with the paste roller S' therein, and adapted to be withdrawn from said slot, and swung over in front of the endmost bag in the bag-holder D and brought into contact with the shorter ply of said bag. To produce this movement I secure to the upper part of the link q' a loop q^2 , and to the arm F I secure a vertically extending cam-shaped arm V, which passes upward through the loop q^2 and operates the lines q q' , as the arm moves upward, to withdraw the paste-carrier U from the slot S³ and move it laterally until it is opposite the outermost bag in the bag-holder D and then bring it into contact therewith, and as the arm F moves downward the operation of the links q q' is reversed and the paste-carrier U is returned to the slot in the paste tank as before. It will be observed that this operation of the paste-carrier U is so timed in relation to the movement of the arm F and the seed-carrier F' carried thereby that the paste-carrier U deposits paste on the outermost bag in the bag-holder just when the seed-carrier F' is at its highest point of traverse, and immediately as the seed-carrier starts to move downward the paste carrier U is withdrawn and starts back on its traverse to the paste tank.

For operating the mechanism hereinbefore described there is a driving wheel N', on the shaft N of which there is a gear pinion n which intermeshes with the large gear wheel J².

In operation when seed or other material is placed in the receptacle C and bags D' placed in the bag-holder D with their flap ends up and with their shorter plys toward the delivery end of the bag-holder and in contact with the lip-holder d^2 and studs d^3 at the delivery end of the bag-holder, the driving wheel N' is rotated in the direction of the arrow, and when the seed-carrier F' reaches the uppermost point of its traverse, one of the cups O discharges its contents through the outlet or spout C' of the recep-

tacle C, and at the same time the paste-carrier U contacts with the shorter ply of the endmost bag in the bag-holder and deposits paste thereon. The seed-carrier then moves downward and the rigid projection thereon enters the endmost bag in the bag-holder between the flap and the shorter ply thereof and guides the wedge shaped lower end of the seed-carrier F' into the bag and nearly simultaneously therewith the bag is removed by the seed-carrier F' from the bag-holder, and the door or gate f thereof opened and the material in the seed-carrier deposited in the bag, the open door or gate f at the same instant clamping the shorter ply of the bag between it and the spring arms f^4 f^4 . Meanwhile the seed-carrier F' continuing its downward traverse brings the lower end of the bag into contact with the bag-supports e^5 on the rotary carrier E, which rotary carrier E has been moved forward during the downward traverse of the seed-carrier F', to the proper position therefor. As soon as the lower end of the bag has reached the bag-supports e^5 the clamping mechanism I² clamps it against the bag-supports e^5 and then the seed-carrier F' starts on its upward traverse and is thereby withdrawn from the bag, and as soon as the seed-carrier has passed upward a sufficient distance to be out of the way of the folding blade, the arm H moves forward and the U-shaped spring thereon contacting with the upper part of the bag presses it over upon the inclined surface e on the arm of the rotary carrier E, and the folding-blade H² on the arm H following it creases the bag-flap at the fold line thereof; meanwhile the hook-arm h' on the arm H has engaged the arm e^4 of the bag-flap folder e' and at this instant the arm H begins its backward movement by which the hook-arm h' turns the bag-flap folder e' sufficiently so that the spring e^3 acting thereon turns the bag-flap folder e' down and closes the bag-flap down upon the shorter ply of the bag, and clamps it in that position, and the clamp I² at the lower end of the bag having meanwhile been released the rotary carrier E is ready to be moved forward another space to receive another bag in like manner as has hereinbefore been described. The filled and sealed bags are thus carried on around until the tripping arm e^4 of the bag-flap folder e' contacts with a fixed stop a on the frame A which raises and turns back the bag-flap folder e' and releases the filled and sealed bag held thereby so that it will drop away from the machine.

I have thus described a preferred construction of the several parts of the mechanism of my invention. I am aware however that the construction and arrangement of many of the parts thereof may be considerably modified by others skilled in the art to

which this invention appertains without departing from the spirit of my invention. Therefore

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

1. The combination in a bag-filling machine of a bag-holder, a vertically reciprocating hollow seed-carrier, a rigid spike-like extension on the lower end of the seed-carrier to enter the endmost bag on the bag-holder, direct the seed-carrier into said bag, contact with the bottom thereof and carry it down to a position to be sealed, substantially as set forth.

2. The combination in a bag-filling machine, of a bag-holder, a vertically reciprocating hollow seed-carrier, a rigid spike-like extension on the lower end of the seed-carrier, a rotating measuring mechanism to deliver seed into the seed-carrier, a hinged door on the seed-carrier, means for reciprocating the seed-carrier to cause the spike-like extension thereon to enter the endmost bag on the bag-holder and direct the seed-carrier into the bag, contact with the bottom thereof and carry it to a position to be sealed and means for operating the door on said seed-carrier after it has entered the bag, substantially as set forth.

3. The combination in a bag-filling machine, of a bag-holder, an intermittently rotary-carrier under the bag-holder, a gumming mechanism to gum the endmost bag on the bag-holder, a vertically reciprocating seed-carrier, a tapering spike-like extension on the lower end of the seed-carrier to enter the endmost bag in the bag-holder, direct the seed-carrier into the bag, pass down therein to the bottom thereof and convey the bag down upon the rotary carrier, clamping mechanism to clamp the bag to the rotary carrier, and flap-folding mechanism on said rotary carrier to fold down the bag-flap and seal it, substantially as set forth.

4. The combination in a bag-filling machine, of a seed-receptacle, a rotary measuring mechanism therein, a bag-holder, a reciprocating hollow seed-carrier to receive measured quantities of seed from the measuring mechanism, a spike-like extension on the lower end of the seed-carrier to enter the endmost bag on the bag-holder and direct the seed-carrier therein, a door on the lower end of the seed-carrier, and means for opening said door after the seed-carrier and door are within the bag, substantially as set forth.

5. The combination in a bag-filling machine, of a measuring mechanism, a bag-holder, a rotary carrier below the bag-holder, bag-flap turning and sealing mechanism on the rotary carrier, mechanism for depositing paste on the shorter ply of the endmost bag in the bag-holder, a hollow seed carrier reciprocating vertically adjacent to the de-

livery end of the bag-holder and adapted to receive seed from the measuring mechanism at its uppermost point of traverse, a door on said seed-carrier, a rigid spike-like extension on the lower end of the seed-carrier to enter the endmost bag on the bag-holder, direct the seed-carrier therein, detach the bag from the bag-holder, and carry it down upon the rotary carrier to be sealed, means for opening the door on the seed-carrier after it is within the bag, means for operating the seed-carrier, and means for intermittently operating the rotary carrier, substantially as set forth.

6. In a bag-filling machine a rotary carrier, radial arms thereon equi-distant from each other adapted to receive the ends of a bag, spring-actuated bag-flap-folders on said arms, and cam actuated hooked-lever mechanism operating to close said bag-flap folders, cam mechanism for engaging and opening said bag-flap folders, bag supports on the rotary carrier and cam actuated mechanism operating intermittently to clamp the lower ends of the bags to bag-supports, substantially as set forth.

7. In a bag-filling machine, a bag-holder, a rotary carrier under the bag-holder, radial arms equi-distant from each other on said carrier, studs on said arms adapted to engage latches on the machine frame, crank, lever and hook mechanism adapted to intermittently rotate said carrier, bag-flap folding and bag supporting mechanism on the ends of said arms, springs on said carrier for actuating the bag-flap folders, mechanism for closing and opening the bag-flap-folders, substantially as set forth.

8. In a bag-filling machine, a bag-holder, means for moving bags toward the discharge end thereof, a rotary carrier under said bag-holder, spring actuated bag-flap folding mechanism on said carrier, a vibrating hook for engaging and turning the bag-flap folders to fold down a bag-flap, means for reversing the movement of the bag-flap folders, a hollow reciprocating seed-carrier adapted to enter the endmost bag on the bag-holder, detach it therefrom, deposit a measured quantity of seed in the said bag and carry it down upon the rotary carrier, mechanism for clamping the lower end of the bag upon the rotary carrier, a seed receptacle above the bag-holder, a rotating measuring mechanism therein adapted to deliver measured quantities of seed into the seed-carrier when it is in its uppermost position, and means operating said mechanisms in such time, each with the other, that they will coöperate, substantially as set forth.

9. In a bag-filling machine, a bag-holder, a reciprocating seed-carrier a rigid tapering spike shaped extension thereon, adapted to enter the endmost bag in the bag-holder,

pass down into the bag and detach it therefrom, a door or gate on the seed-carrier which is retained in a closed position until the seed-carrier enters the bag, means for opening the gate or door after the seed-carrier has entered the bag, and means for closing it after the seed-carrier has been withdrawn from the bag, substantially as set forth.

10 10. In a bag-filling machine seed-carrier, a hollow body wedge-shaped at its lower end, a door or gate forming one side of the wedge shaped portion thereof, means for retaining said door or gate in a normally
15 closed position, downwardly extending spring arms secured to the seed-carrier above the door or gate, and an extension on the seed-carrier extending downward from the lower end of the hollow part thereof,
20 substantially as set forth.

11. In a bag-filling machine, a rotary carrier, bag-supports thereon, a rock-shaft mounted in said machine frame, an arm secured thereto and adapted to operate inter-
25 mittently, clamp mechanism thereon adapted to clamp the lower end of a bag against the bag-supports on the rotary carrier, a lever on said rock-shaft, and a rotary cam for actuating said lever and thereby operat-
30 ing said clamp mechanism, substantially as set forth.

12. In a bag-filling machine, a rotary carrier, an inclined face and a bag-flap turner thereon, an arm secured to a rock-shaft
35 mounted in the machine frame, a lever on the opposite end of said shaft engaging and intermittently operated by a rotary cam, a spring clamp on said arm adapted to press the upper end of a bag against the inclined
40 surface of the rotary carrier, a folding blade on said arm to crease the flap of a bag after it has been clamped against the inclined face on the rotary carrier during the forward movement of the arm, and a hooked
45 arm on said arm to engage and turn a bag-flap turner during the backward movement of said arm, substantially as set forth.

13. In a bag filling machine, the combination with a funnel, a closure for the funnel
50 located at the discharge end or spout thereof, bag presenting means, means to effect a relative movement of the funnel and bag presenting means thereby to carry the funnel
end into and out of the bag, means directly
55 co-acting with and to operate the closure independently of the funnel contents to permit the discharge of the funnel contents, substantially as set forth.

14. In a bag filling machine, the combination with a funnel, a closure for the funnel
60 located at the discharge end or snout thereof, bag presenting means, means to effect a relative movement of the funnel and bag presenting means thereby to carry the
65 funnel end into and out of the bag, means

co-acting externally of the funnel with and to operate the closure to permit the discharge of the funnel contents, substantially as set forth.

15. In a bag filling machine, the combination with a funnel, a closure for the funnel
70 located at the discharge end or snout thereof, bag presenting means, a bag opener to enter in advance of the funnel and open the bag to be filled, means to effect a relative
75 movement of the funnel and bag presenting means thereby to carry the funnel end into and out of the bag, means directly co-acting with and to operate the closure independently of the funnel contents to permit the
80 discharge of the funnel contents, substantially as set forth.

16. In a bag filling machine, the combination with a funnel, a closure for the funnel
85 located at the discharge end or snout thereof, bag presenting means, a bag opener to enter in advance of the funnel and open the bag to be filled, means to effect a relative movement of the funnel and bag presenting means
thereby to carry the funnel end into and out
90 of the bag, means co-acting externally of the funnel with and to operate the closure to permit the discharge of the funnel contents, substantially as set forth.

17. In a bag filling machine, the combination with a funnel, a closure for the funnel
95 located at the discharge end or snout thereof, means for lowering and raising the funnel to carry it into and out of the bag, means directly co-acting with and to operate the
100 closure independently of the funnel contents to permit the discharge of the funnel contents, substantially as set forth.

18. In a bag filling machine, the combination with a funnel, a closure for the funnel
105 located at the discharge end or snout thereof, means for lowering and raising the funnel to carry it into and out of the bag, means co-acting externally of the funnel with and to operate the closure to permit the discharge of
110 the funnel contents, substantially as set forth.

19. In a bag-filling machine, the combination with a funnel, a closure for the funnel
located at the discharge end or snout thereof, a bag opener to enter in advance of the funnel
115 and open the bag to be filled, means for lowering and raising the funnel to carry it into and out of the bag, means directly co-acting with and to operate the closure independently of the funnel contents to permit
120 the discharge of the funnel contents, substantially as set forth.

20. In a bag-filling machine, the combination with a funnel, a closure for the funnel
located at the discharge end or snout thereof,
125 a bag opener to enter in advance of the funnel and open the bag to be filled, means for lowering and raising the funnel to carry it into and out of the bag, means co-acting externally of the funnel with and to operate
130

the closure to permit the discharge of the funnel contents, substantially as set forth.

21. In a bag filling machine, the combination of a funnel, a closure for the funnel located at the discharge end or snout of the funnel, means to enter and open a bag, means for raising and lowering the funnel, and devices for operating the closure to permit the discharge of the funnel contents into a bag to be filled, substantially as set forth.

22. In a bag filling machine, the combination of a funnel, a closure for the funnel located at the discharge end of the funnel, a bag opener projecting beyond the end or snout of the funnel to enter and open a bag, means for raising and lowering the funnel, and devices for operating the closure to permit the discharge of the funnel contents into a bag to be filled, substantially as set forth.

23. In a bag filling machine, the combination of a funnel, a closure for the funnel hinged to the discharge end or snout of the funnel, means to enter and open a bag, means for raising and lowering the funnel, and devices for swinging the closure on its hinges to permit the discharge of the funnel contents into a bag to be filled, substantially as set forth.

24. In a bag filling machine, the combination of a funnel, a closure for the funnel hinged to the discharge end of the funnel, a bag opener projecting beyond the end or snout of the funnel to enter and open a bag, means for raising and lowering the funnel, and devices for swinging the closure on its hinge to permit the discharge of the funnel contents into a bag to be filled, substantially as set forth.

25. In a bag filling machine, the combination of a funnel, a closure located at the lower end of the funnel and normally obstructing discharge of material therefrom, means for raising and lowering the funnel, a bag opener movable in advance of the funnel to enter and open the bag to be filled, and means operable on the downward movement of the funnel for actuating the closure to permit discharge of the funnel contents into this bag, substantially as set forth.

26. In a bag filling machine, the combination of a funnel, a measuring device for supplying measured quantities of material to the funnel, a closure located at the lower end of the funnel and normally obstructing discharge of material therefrom, means for raising and lowering the funnel, a bag opener movable in advance of the funnel to enter and open the bag to be filled, and means operable on the downward movement of the funnel for actuating the closure to permit discharge of the funnel contents into this bag, substantially as set forth.

27. In a bag filling machine, the combination of a funnel, a closure located at the lower end of the funnel and normally ob-

structing discharge of material therefrom, means for raising and lowering the funnel, closure operating devices located externally of the funnel, and means for controlling the action of said devices to cause them to move the closure when the funnel enters the bag to be filled, substantially as set forth.

28. In a bag filling machine, the combination of a funnel, means for raising and lowering the funnel, a closure located at the lower end of the funnel and normally obstructing discharge of material therefrom, a bag opener movable in advance of the funnel to enter and open the bag to be filled, an arm for moving said closure and a projection or cam for operating said arm on the downward movement of the funnel to permit the contents of the funnel to be discharged into the bag, substantially as set forth.

29. In a bag filling machine, the combination of a funnel, means for raising and lowering the funnel, a closure normally obstructing discharge of material therefrom, and comprising a hinged cover for the lower end or snout of the funnel, a bag opener movable in advance of the funnel to enter and open a bag to be filled, an arm for moving said closure and a projection or cam for operating said arm on the downward movement of the funnel to permit the contents of the funnel to be discharged into the bag, substantially as set forth.

30. In a bag filling machine, the combination of a funnel, means for raising and lowering the funnel, a closure normally obstructing discharge of material therefrom, said closure comprising a hinged cover for the end or snout of the funnel having a projecting portion, a bag opener having its end movable in advance of the funnel for entering and opening a bag, and a fixed cam or projection operating through the projecting portion of the hinged cover on the downward movement of the funnel for opening the end or snout of the funnel for the discharge of the funnel contents, substantially as set forth.

31. In a bag filling machine, the combination of a funnel, means for raising and lowering said funnel, a cover or closure for the lower end or snout of the funnel and normally obstructing the discharge of material therethrough, a bag opener movable in advance of the end or snout of the funnel to open the bag for entrance of the said closed end or snout of the funnel, a stationary projection or cam, means movable with the funnel and adapted for engagement with said projection or cam to operate the cover or closure as the funnel moves to its lower position, substantially as set forth.

32. In a bag filling machine, the combination of a funnel, a closure for the funnel located at the discharge end or snout of the

funnel, means to enter and open a bag, means for raising and lowering the funnel to carry its end or snout within the bag, and devices for operating the closure to permit
5 the discharge of the funnel contents after the end or snout has entered the bag to be filled, substantially as set forth.

33. In a bag filling machine, the combination of a funnel, a closure located at the
10 lower end of the funnel and normally obstructing the discharge of material therefrom, means for raising and lowering the funnel to carry the lower end of the funnel within the bag, a bag opener movable in

advance of the funnel to enter and open the 15 bag to be filled, and means operable on the downward movement of the funnel when the lower end of the funnel has entered the bag for actuating the closure to permit discharge of the funnel contents into the bag, substantially as set forth. 20

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

JAMES L. DROHEN.

Witnesses:

H. M. STURGEON,

F. J. BASSETT.