N. J. LANE.

PACKAGE FILLING MACHINE.

APPLICATION FILED JUNE 9, 1911.

1,006,236.

Patented Oct. 17, 1911.

2 SHEETS—SHEET 1.

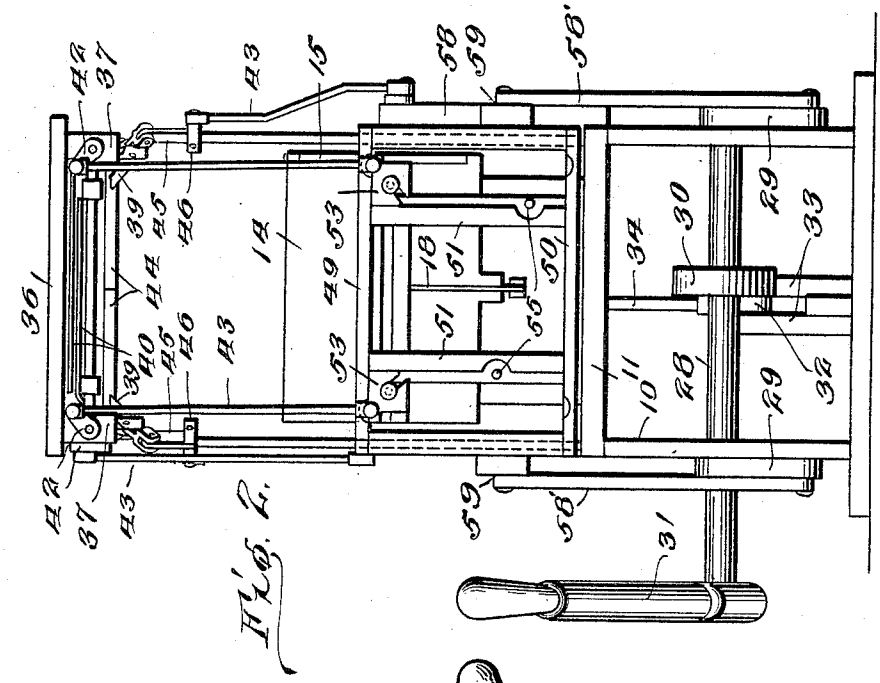


Fig. 2.

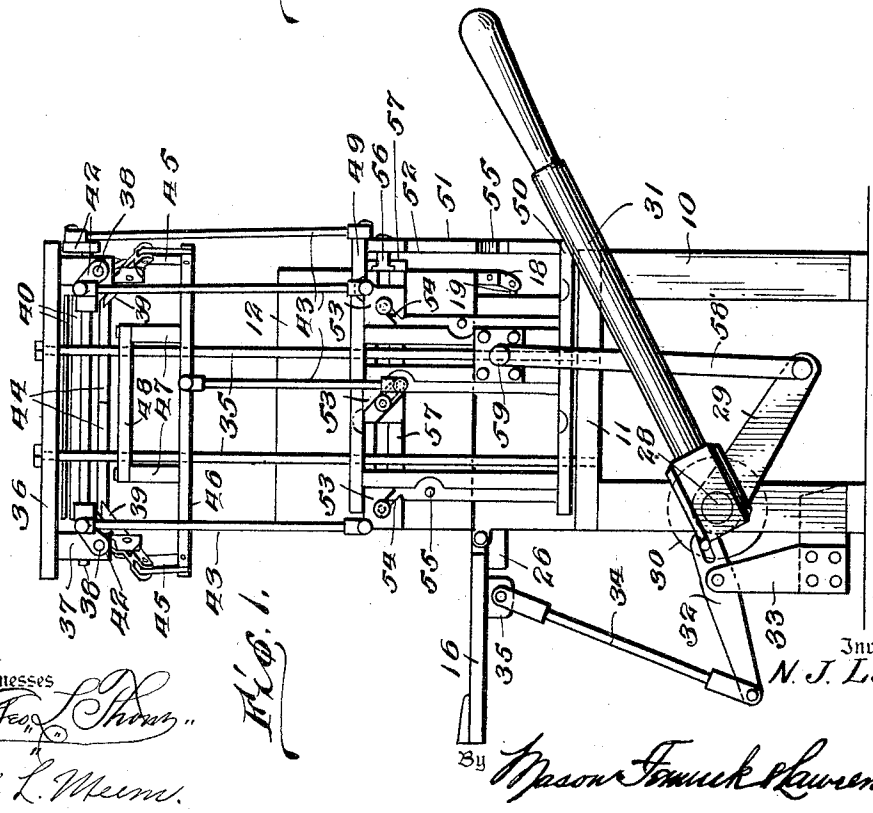


Fig. 1.

Witnesses

Jos. L. Thomas

N. L. Means.

Inventor

N. J. Lane.

By Mason Fenwick & Lawrence

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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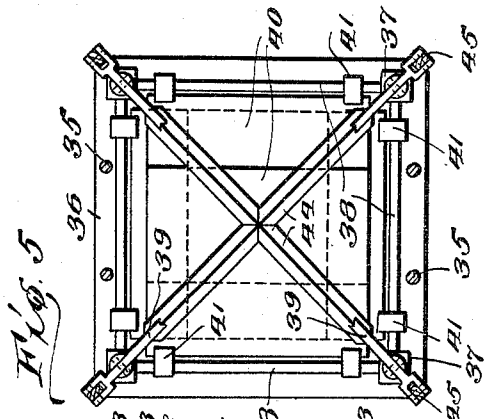


Fig. 5.

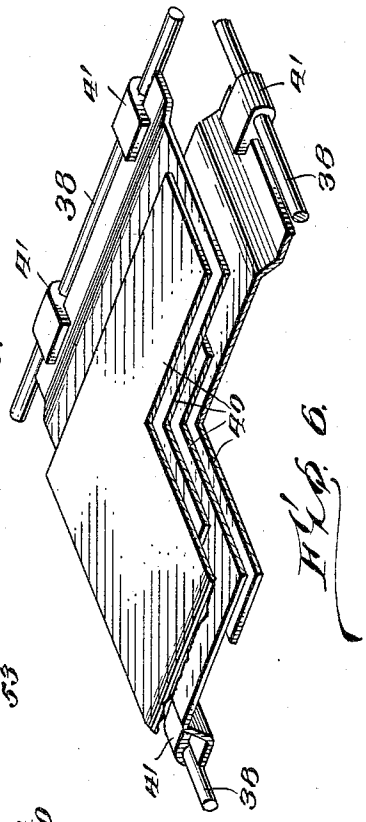


Fig. 6.

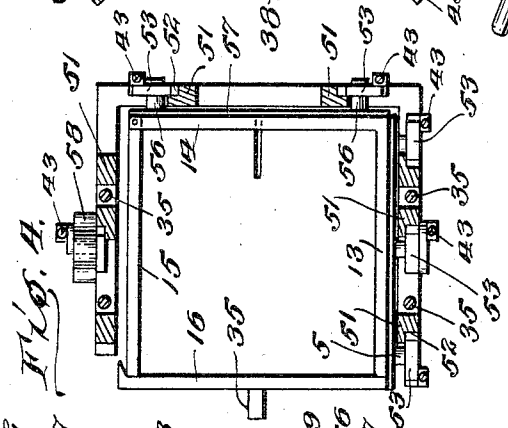


Fig. 4.

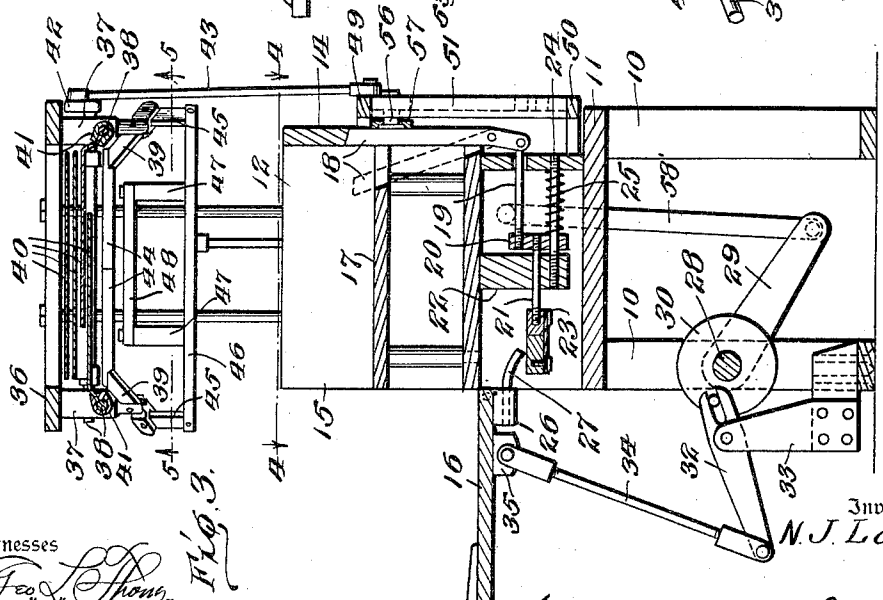


Fig. 3.

Witnesses

Geo. L. Thorne

N. L. Mann

Inventor

N. J. Lane.

By Mason Fenwick & Lawrence

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

NATHANIEL J. LANE, OF NEW YORK, N. Y.

PACKAGE-FILLING MACHINE.

1,006,236. Specification of Letters Patent. Patented Oct. 17, 1911.

Application filed June 9, 1911. Serial No. 632,224.

To all whom it may concern:

Be it known that I, NATHANIEL J. LANE, a citizen of the United States, residing at 200 West Seventy-ninth street, in the county of New York and State of New York, have invented certain new and useful Improvements in Package-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.

This invention relates to box filling apparatus, and more particularly to that type intended for use in filling powder boxes, which are made of a body portion of substantial material to fulfil the demand and which have a paper or other wrapper about the body portion, intended to be folded over the box when filled and serve as a cover.

The object of this invention is to provide a means for taking the box as above described and swing members within the paper wrapper so as to present a continuous passage from above to the body portion of the box.

Another object is to provide a device provided with a receiving chamber adapted to receive a box or carton, a set of spreaders adapted to swing within the box and cause the sides to be drawn taut, and a set of guards to swing within the box which with the spreaders, form a passage from a receiving and packing device to the box.

A further object of the invention is to provide means for properly actuating the several parts in timed relation to one another.

Other objects will be apparent from the following specification, appended claims and drawings thereof, in which:

Figure 1 is a side elevation of the device. Fig. 2 is a rear elevation of the device. Fig. 3 is a central vertical sectional view through the device. Fig. 4 is a horizontal sectional view through the device as on the line 4—4 of Fig. 3, parts of the device having been moved in opposite position to that shown in Fig. 3. Fig. 5 is a horizontal sectional view as on the line 5—5 of Fig. 3, with parts of the frame removed for the sake of clearness. Fig. 6 is a perspective view of the guards, parts being broken away for the sake of clearness.

At present the results intended by my device are partially accomplished by the use of a funnel or riser having the inside dimensions of the plunger used in compressing the powder which works to satisfaction after the same has been applied to the box to be filled, but the time and labor consumed in placing the riser and the number of boxes destroyed by the process are objectionable. To overcome the destructive and wasteful conditions existing in the above method, I provide a chamber to receive the box to be filled, then a set of spreaders swing from horizontal position above the box to vertical position within the corners of the box and draw the sides of the box taut, then a set of guards swing from a horizontal plane above the spreaders to a vertical position between the spreaders so that in conjunction with the spreaders they form a complete passage to receive the contents for the box.

Referring more specifically to the drawings, there is shown a base comprising the vertical standards 10 supporting a bed 11 and to which the several parts of the device are secured. Rising from the bed plate is a support which carries the box receiving chamber 12 composed of the fixed sides 13 and 14 and the yielding sides 15 and 16. The yielding side 15 moves in a horizontal path and is mounted between lugs extending from the end of the side 14, the purpose of such construction to be hereinafter described, while the yielding side 16 swings in a vertical path, the inner edge thereof having hinged connection with the side walls of the support for the receiving chamber.

For accommodation to different sized boxes, that is boxes having different depths, I provide a removable false bottom 17 and to assist in removing the boxes from the chamber, I provide an ejecting lever 18 which is pivoted in lugs extending below the rear wall of the chamber adapted to receive the box for packing, the end of the lever extending below the pivot point having connection with the longitudinally sliding rod 19 which works through an opening in the rear wall of the support for the receiving chamber and is secured to the block 20, to which the second rod 21 is secured, said rod passing through the supporting bracket 22 and has the tripping mechanism 23 secured to the free end thereof. The mechanism 23 is composed of two parts secured to one another as by a leaf spring, as shown in Fig. 3 of the drawings, one of the parts being secured rigidly to the rod

21 and the other being carried by the first one by the spring secured to the bottom of each of the two parts. It is obvious that strain exerted upon the end of the member 23 will slide the same longitudinally and strain exerted upon the top of the spring carried member will cause the member to swing downwardly until released of the strain. A guide bar 24 is mounted in the bracket 22 and rear wall of the support and said bar is intended to assist in supporting the block 20. About the bar 24 and in compression between the rear wall of the support and the member or block 20 is a coiled spring 25, the purpose of which is to return the several parts to normal position when free. The side 16 carries a block 26 adjacent its inner edge and adjustably mounted in this block is a tripping arm 27 which is adapted to engage the tripping member 23 when the side 16 is swung from vertical to horizontal position.

Mounted in bearings in two of the standards 10 is a horizontal shaft 28 which carries the crank arms 29, one adjacent the outer face of each of the standards, a crank wheel 30 having a wrist pin secured to one of its faces, and an operating lever 31 secured to one end thereof. A lever 32 which is fulcrumed in a bracket 33 carried by the frame of the device, is provided with a slot in one end which slot is adapted to receive the wrist pin carried by the crank wheel 30, and the other end having connection with side 16 as by the link 34 which is connected to the bearing block 35 secured to the outer face of said side. When the lever 31 is swung from oblique to vertical position, the shaft and crank wheel thereon are rotated, which through the medium of the wrist pin, operates the lever 32, which raises the link 34 and side 16.

Secured to the bed plate and rising beside the box receiving chamber are the uprights 35 which serve as guides for frames to be hereinafter mentioned and explained, and mounted upon the upper ends of the uprights is a rectangular frame 36 which has depending brackets 37 which are intended to support cross shafts 38 and diagonally disposed levers 39. The cross shafts 38 are arranged in pairs and in different planes, also they are arranged perpendicular to one another, that is the upper set crosses the lower set, and a guard or deflecting plate 40 is carried by each of the shafts. The guards 40 are secured to collars 41 which in turn are mounted upon the cross shafts 38, and the guards mounted upon the oppositely disposed shafts are bent adjacent to their secured ends so that one will lie in a plane above the other. One end of each of the cross shafts carries a crank 42 to which is secured one end of a link, the other end thereof being secured to a mechanism to be hereinafter described, and the mechanism adapted to operate the links 43 and shafts 38 is timed so that the bottom guard swings to vertical position, when it has moved sufficiently far as to provide clearance, the second guard swings to vertical position and so on until all four guards have been swung from horizontal to vertical position.

The diagonally disposed levers mounted in the lower ends of the brackets 37 carry at one end, a V-shaped spreader 44 which assumes a diagonal position across and under the guards 40 and there is one supported by each of the four corners, so that when the four spreaders 44 are swung to their horizontal position, the inner ends thereof meet as shown in Fig. 5 of the drawings. The opposite end of each of the levers 39 is bifurcated and secured between the branches thereof is one end of a link 45, the other end of which being secured to a vertically slidable frame 46, slidable upon the uprights 35, which frames are constructed of a cross piece having the vertical members 47 and the top cross piece 48 for the purpose of stability.

The uprights 35 carry a second slidable frame which surrounds three sides of the receiving chamber and consists of the upper and lower U-shaped members 49 and 50 which are connected by the vertical stays 51, some of which stays are recessed as shown in Fig. 4 of the drawing so as to provide a groove 52 in which bear the edges of the intermittent gears 53 and in the path of the slot 54 in each of the gears 53 is a pin 55 which is integral with the stay carrying the same. The stay is further recessed in proximity to the pin 55 to permit the gear to make a portion of a revolution. The gears are carried by members 56 slidable horizontally in guides 57 carried by the sides 13 and 14 of the receiving chamber, and the gear upon the side of the chamber opposite to the side 13 is carried by a standard 58 rising from the bed plate 11. The pins carried by the stays 51 are positioned so as to affect the gears successively so that the gear affecting the frames which control the spreaders is operated first, then the gear controlling the lowest guard, then the second guard and so on until all the guards have been lowered, and with reference to the drawings it will be seen that links connected to the cranks 42 and the frames 46 are connected at their other ends to one or another of the gears 53.

This device is particularly adapted for filling boxes of the character described but may be used in filling any style boxes, and it may be stated that numerous variations in the constructions in the shape of the spreaders may be made without departing from the spirit of my invention, also I can operate the guards and spreaders in unison

with the receiving chamber by means other than the showing in the drawings but the form which I have shown is preferable.

The operation of the device as disclosed by the drawings is as follows: The box to be filled is placed within the chamber adapted to receive the same, then by the operation of the lever which rotates the shaft 28 carrying the crank wheel 30 and crank arms 29, which arms have connection with the vertical sliding frame as by the links 58′, which are secured to arms 29 and frame at 59, the frame is raised and as one or another of the pins carried by the frame engage and rotate the gears, the links connected to the gears transmit motion to cranks through the medium of the links, and as the cranks are rotated, the guards are swung from horizontal to vertical position. The intermittent gears are timed to actuate the several parts successively so that each part is free to move when desired and the side 16 of the chamber is timed to assume the vertical position before the packing process is commenced. The purpose of mounting the side 15 yieldable is to permit easy removal of the packed box which is of greater dimension than an empty box and to hold and cause the yieldable side to assume the proper position, I provide a cam lug which is carried by the side 16 so that as the side 16 is swung to proper position, the cam face engages the free edge of the side 15 and swings it into position and holds it there until the side 16 is swung free.

Having described my invention, I claim:

1. In a packing machine, a chamber adapted to receive a box to be filled, and means for forming a communication thereto by a plurality of normally horizontally disposed guards.

2. In a packing machine, a receiving chamber, a plurality of normally horizontally disposed guards, and means for forming a communication to said chamber of said guards.

3. In a packing machine, guards carried by the frame thereof, a receiving chamber and means for forming a communication thereto by swinging said guards from one plane to another perpendicular thereto.

4. In a packing machine, a set of arms adapted to swing from one plane to another perpendicular thereto, and a set of guards adapted to be swung from a position above and parallel to said arms to another, perpendicular thereto and between said arms.

5. In a packing machine, comprising a base, a box receiving chamber carried thereby, a frame above said chamber, a plurality of guards and spreaders carried by said frame, and means carried by said base to operate the several parts successively.

6. In a packing machine comprising a base, a box receiving chamber carried thereby, a frame above said chamber, parallel supports for said frame, longitudinally slidable frames on said supports, a plurality of guards and spreaders carried by said first mentioned frame, means actuated by said longitudinally slidable frames for operating the spreaders and each of the guards in timed relation to one another.

7. A packing machine comprising a base, a box receiving chamber, a frame above said chamber, parallel supports from said base to said frame, a set of spreaders and guards carried by said frame, other frames slidable on said supports, means carried by said base for actuating said frames, and means carried by said frames for actuating the spreaders and guards respectively in timed relation.

8. A packing machine comprising a base, a rock shaft carried thereby, a box receiving chamber carried by said base, some of the walls of said chamber having yielding connection with the others, a frame above said chamber, a set of guards and spreaders carried by said frame, parallel supports connecting said base and frame, other frames slidable on said supports, connection from said rock shaft to one of said second mentioned frames, gears carried by said chamber and base, means carried by said second mentioned frame for actuating said gears, connection from said gears to said guards and other slidable frames and connection from said rock shaft to one of said yielding sides.

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

NATHANIEL J. LANE.

Witnesses:

HUGO MOCK,

GEORGE L. THORN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."