

J. H. LIENAU & W. STEENKEN.
 AUTOMATIC STACKING OR BOXING MACHINE.
 APPLICATION FILED SEPT. 9, 1915.

1,208,803.

Patented Dec. 19, 1916.
 3 SHEETS—SHEET 1.

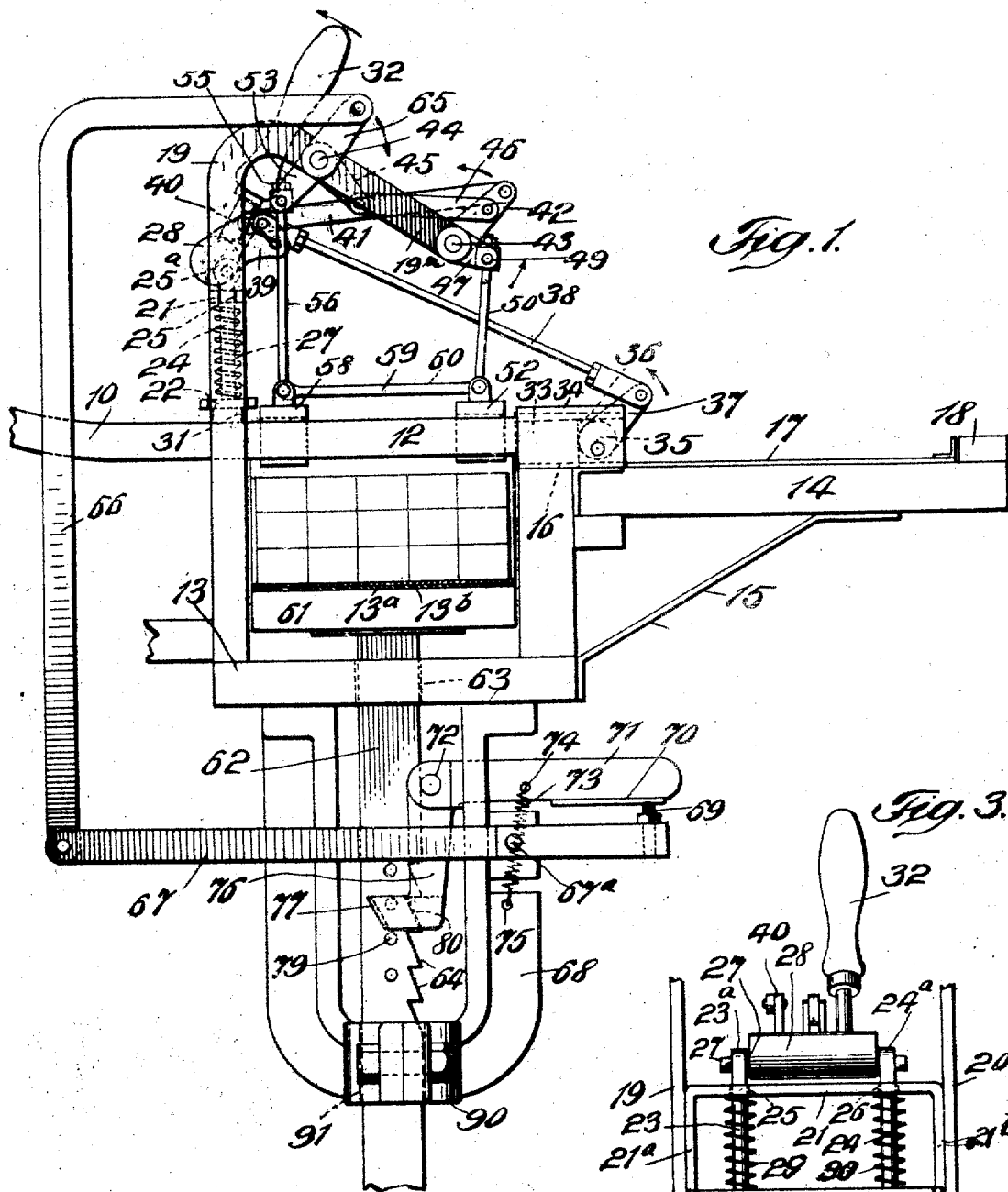


Fig. 1.

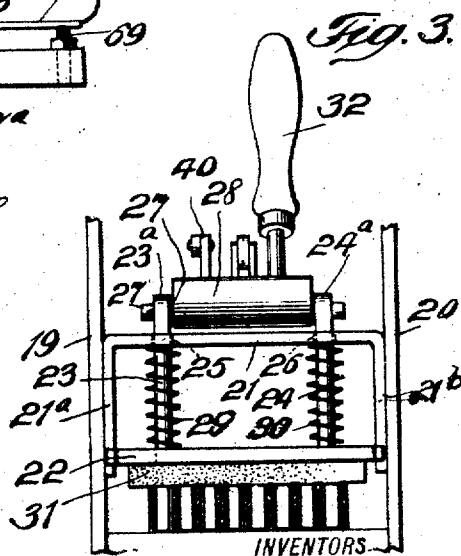


Fig. 3.

WITNESSES:
Julius H. Lienau
Edwin H. Steenken

INVENTORS
 JACOB H. LIENAU
 WILLIAM STEENKEN
 BY
Emil P. Steenken
 ATTORNEY

J. H. LIENAU & W. STEENKEN.
 AUTOMATIC STACKING OR BOXING MACHINE.
 APPLICATION FILED SEPT. 9, 1915.

1,208,803.

Patented Dec. 19, 1916.
 3 SHEETS—SHEET 2.

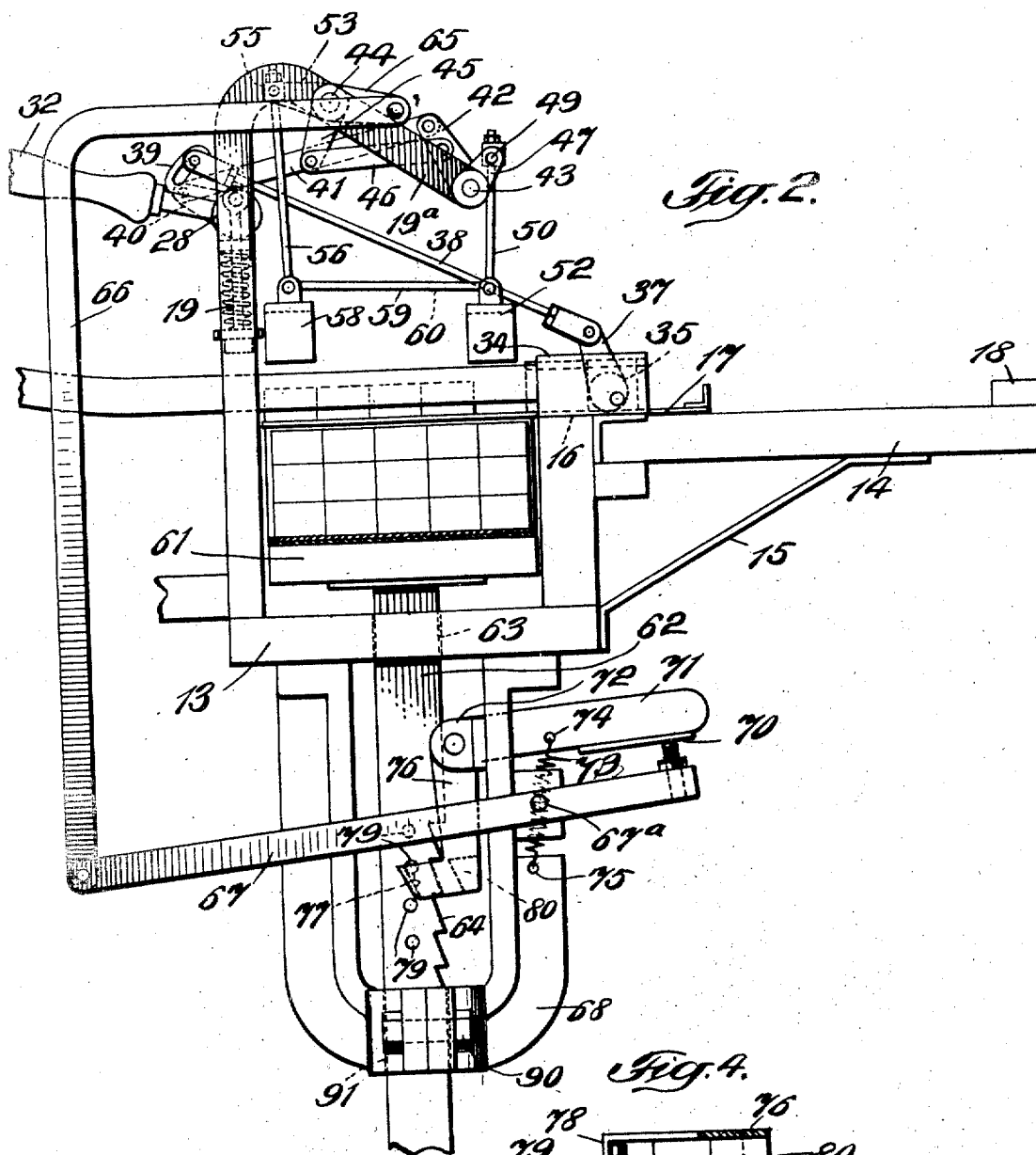


Fig. 2.

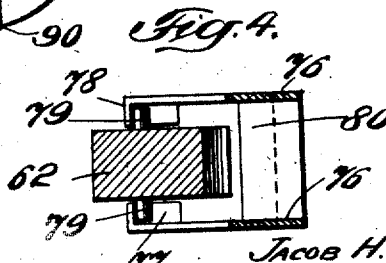


Fig. 4.

WITNESSES:
Julius H. Lienau
Edwin H. Katten

INVENTORS
 JACOB H. LIENAU
 WILLIAM STEENKEN
 BY
Carl P. Kofas
 ATTORNEY

1,208,803.

Fig. 5.

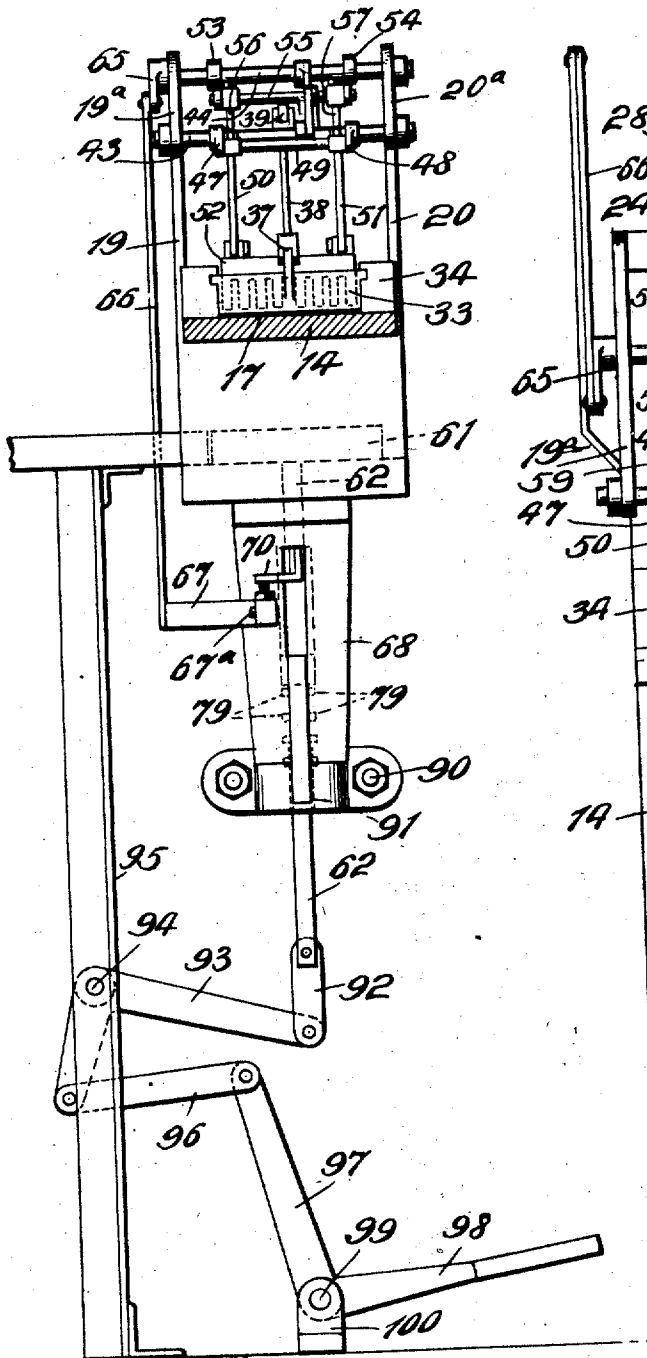
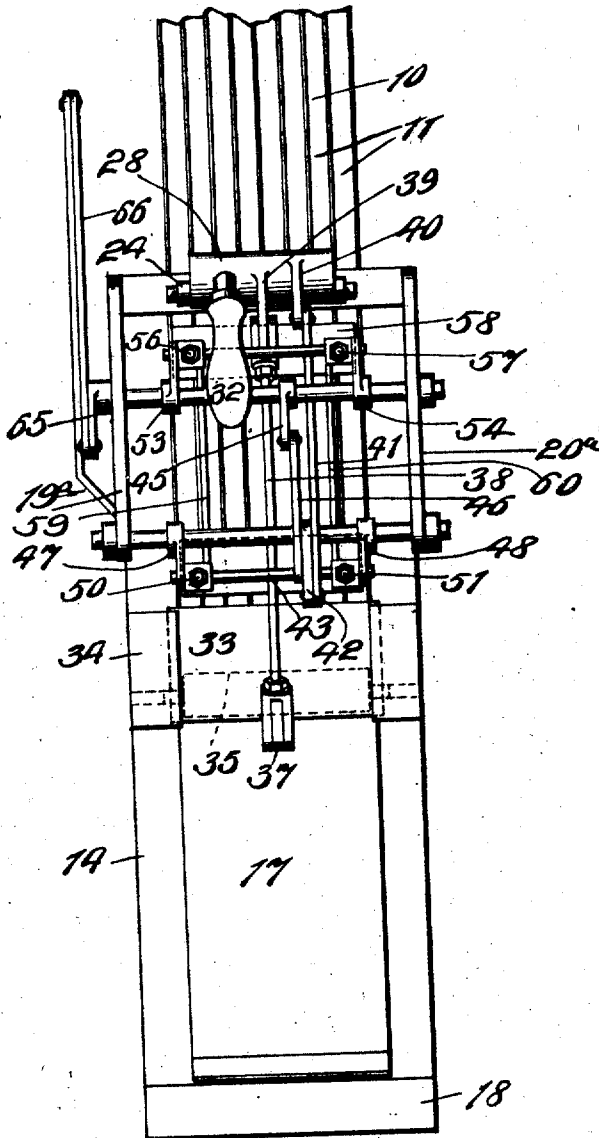


Fig. 6.



WITNESSES:

John H. Lienau

William Steenken

INVENTORS
 JACOB H. LIENAU
 WILLIAM STEENKEN
 BY
Emil P. Fischer
 ATTORNEY

UNITED STATES PATENT OFFICE.

JACOB H. LIENAU AND WILLIAM STEENKEN, OF NEW YORK, N. Y.; SAID LIENAU
ASSIGNOR OF HIS ONE-HALF TO THE NATIONAL SUGAR REFINING CO. OF NEW
JERSEY, A CORPORATION OF NEW JERSEY.

AUTOMATIC STACKING OR BOXING MACHINE.

1,208,803.

Specification of Letters Patent.

Patented Dec. 19, 1916.

Application filed September 9, 1915. Serial No. 49,699.

To all whom it may concern:

Be it known that we, JACOB H. LIENAU and WILLIAM STEENKEN, citizens of the United States of America, and residents of the borough of Manhattan, county and State of New York, and the borough of Queens, county of Queens, and State of New York, respectively, have invented certain new and useful Improvements in Automatic Stacking or Boxing Machines, of which the following is a specification.

This invention relates to automatic stacking or boxing machines, especially for the packing of sugar tablets or other such uniformly shaped articles, in predetermined quantities.

An object of the invention is to provide automatic means whereby such articles may be accurately, speedily and effectually packed in uniform piles of a predetermined number, the various operations being controlled by a single movement of the operator.

A further object is to provide such a device by which the sugar will remain in a clean and sanitary condition, and which will be simple in construction and inexpensive to manufacture.

With these and other objects in view, our invention is shown in the accompanying drawings, and will be hereinafter more fully described with reference thereto, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a side sectional view of our improved machine in one position of movement; Fig. 2 is a similar view showing the other position of movement, the machine being in position to receive the sugar from the chute; Fig. 3 is a rear view showing the operating handle and tension device; Fig. 4 is a detail sectional view of the tripping device; Fig. 5 is an end view of the machine; and Fig. 6 is a top plan view thereof.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, and more particularly to Figs. 1 and 2 thereof, our improved device is arranged at the lower end of a chute 10, which is divided into a plurality of guides, runs or gutters 11 by means

of strips 12, and down which the sugar is fed from a suitable hopper at the upper end thereof (not shown). The said chute is preferably arranged at an angle of 45° more or less, and at its discharge end it gradually changes its inclination and lies in a horizontal plane, the guiding strips 12 continuing across the top of the pile forming box portion 13. A platform 14 is secured at the side of the said box portion by means of a bracket 15, the upper surface of the platform being flush with a slotted portion 16 in the side of the box, a horizontal plate 17 being supported thereon, which is adapted to be slid through the said slot beneath the strips 12 during the filling operation, as indicated in Fig. 2. A block 18 at the end of the platform limits the outward movement of the plate 17.

The sugar is received in the pile forming box portion 13 within a removable holder comprising two sections 13^a and 13^b, which fit together and form a metallic box open at both ends and the top. This holder is placed in the pile forming box through the open side thereof, and is positioned on a follower or false bottom 61. Supporting members 19 and 20 are provided extending upwardly from the said box portion at the side adjacent the lower end of the chute, the end portions of the same being bent downwardly, as at 19^a and 20^a. A cross bar 21 having its downwardly extending arms 21^a and 21^b engaging the sides of the said supporting member is supported in position between the said members. An arrester or stop member 22 is reciprocally supported beneath the said cross bar 21 by means of plunger rods 23 and 24 extending through holes 25 and 26 in the said bar, the enlarged ends 23^a and 24^a of the said rods being provided with bearings in which are journaled the ends of the eccentric axis 27 of an eccentric cam member 28. Expansion springs 29 and 30 are arranged on the said rods 23 and 24 between the cross bar 21 and the member 22, which continually hold the eccentric member 28 in engagement with the cross bar, so that by movement of the same the stop member 22 is raised and lowered, in its lowered position engaging by means of its friction surface of soft rubber or the like 31 the lowermost row of sugar in

the chute to arrest the flow of the remaining sugar therein, during the lowering operation of the sugar in the pile forming box, as will be hereinafter more fully described.

5 An operating handle 32 is provided on the said eccentric member, which upon movement from the position shown in Fig. 1 to that shown in Fig. 2 releases the stop member 22 from the sugar and permits

10 the same to flow from the chute into the pile forming box. The foremost tablets of the various streams strike a movable abutment 33, which is guided in a block 34 at the outer end of the strip 12, and is

15 moved by rotation of an eccentric cam 35, which engages squared portions 36 of the said movable abutment. For operating the said cam an arm 37 is provided thereon, which is connected by the adjustable rod 38

20 to a slotted arm 39 provided on the eccentric cam member 28. In the thrown-back position of the operating handle 32 shown in Fig. 2, the said abutment member is moved inwardly and the sugar within the pile

25 forming box is held compactly against the abutment. During the first part of the movement of the said operating handle forwardly to the position shown in Fig. 1, the slotted arm 39 permits the stop or arresting member 22 to descend upon the foremost

30 row of sugar in the chute, as above pointed out, and arrests the flow of the sugar therein. As the handle is moved farther forwardly, the end of the slot in the said arm 39 engages the end of the rod 38 moving the same

35 forwardly and through the cam 35, causing the abutment member to be moved outwardly and loosening the contact between the sugar within the box. Without the said

40 abutment, the tablets within the box would be clamped between the front wall of the same and the tablets held arrested by the member 22. An arm 40 is also provided on

45 the eccentric member 28, which is connected by means of a link 41 with an upwardly extending arm 42 provided on a shaft 43 supported at the ends of the members 19 and 20, so that by movement of the eccentric member by the handle forwardly or backwardly,

50 corresponding rotary movement is imparted to the said shaft. A second shaft 44 is supported between the said members 19 and 20 at a point above the shaft 43, and a downwardly extending arm 45 is provided thereon, which is connected by means of a link

55 46 with the arm 42 of the shaft 43, so that as the said arm is moved in one direction by movement of the shaft 43, rotary movement in the opposite direction is imparted to the shaft 44. At each side of the shaft 43

60 and extending forwardly therefrom there are provided lifting arms 47 and 48, which are connected by a rod 49, which supports by means of the rods 50 and 51 a pusher

65 block 52, which is comb-shaped or slotted, as

shown in Fig. 5, to permit movement of the same between the strips 12 at the outer end of the chute.

Lifting arms 53 and 54 are provided on the shaft 44 extending rearwardly therefrom, and between which is supported a rod 55, which supports by means of rods 56 and 57 a second comb-shaped pusher block 58 at the inner end of the pile forming box adjacent the arresting device 22. The said

75 pusher blocks are connected by means of rods 59 and 60, so that as they are raised and lowered by the motion of the lifting arms they will remain in the same relative position with respect to the ends of the pile

80 forming box.

The follower or false bottom 61 is supported upon a pillar 62 operating through an opening 63 in the bottom of the pile forming box and provided with ratchet teeth

85 64, and is lowered step by step as the layers are filled into the box, each step, it will be understood, being equal to the height of a tablet. For bringing about this movement, a rocker arm 65 is provided on the end of

90 the shaft 44, which is caused to be moved upwardly when the handle 32 is thrown forwardly from the position shown in Fig. 2 to that shown in Fig. 1. An angular bar

95 66 is pivotally secured to the said arm, and at its lower end is connected to a lever 67 pivoted at 67^a to the U-shaped frame 68, and an adjustable contact pin 69 on the outer end of the same engages beneath a plate 70

100 of an elbow lever 71 pivoted to the supporting lugs 72 arranged on the inner side of the said frame. A tension spring 73 is arranged between the point 74 of the said lever and the point 75 of the frame. The downwardly

105 extending arm 76 of the said lever is formed of two parallel strips of sheet metal, as shown in Fig. 4, the lower ends thereof being bent forwardly and the outer edges inclined and bent inwardly, as at 77 and 78. These turned-in edges 77 and 78 engage a

110 series of pins 79, in one position of movement, extending at each side of the pillar 62, and which are arranged in relative position to the notches 64. At the other position

115 of movement, and after the platform or follower has dropped one space, a toothed member 80, spaced from the inclined edges 77 and 78, and provided between the two parallel strips forming the arm 76, engages the

120 teeth 64, thereby preventing further downward movement of the said follower. The operation of this device in lowering the follower is as follows: When the handle 32 is in the position shown in Fig. 1, the rocker

125 arm 65 is in its uppermost position, and the outer end of the lever 67 is in its lowered position, thereby causing the toothed member 80 of the elbow lever 71 by force of the spring 73 to engage one of the teeth 64. As the handle 32 is moved rearwardly to the

130

position shown in Fig. 2, the rocker arm is lowered, causing the outer end of the lever 67 to be lifted, and the toothed member 80 is gradually moved out of engagement with the ratchet teeth 64, and at the same time the turned-in inclined edges 77 and 78 move toward the pins 79, so that at the moment the tooth 80 is disengaged from the ratchet teeth the said inclined edges engage the pins 79 and retain the follower in supported position. When the handle 32 is again thrown forwardly, the rocker arm 65 is raised and the arm 76 of the elbow lever 70 is moved inwardly, the inclined edges 77 and 78 permitting the follower to lower by its own weight, the tooth 80, as above pointed out, being free of the ratchet teeth. As this movement is continued the toothed member 80 moves inwardly toward the next ratchet tooth, and at the end of the movement engages the same, stopping the downward movement of the follower, after the same has fallen for a distance equal to the height of the tablets of sugar.

The U-shaped frame 68 is jointed at 90, the pillar 62 operating through an opening 91 therein. The lower end of the pillar is connected by means of a link 92 with one arm of an elbow lever 93 pivoted at 94 to the standard 95, the other end thereof being connected by means of a link 96 with the upwardly extending arm 97 of a pedal member 98 pivoted at 99 to a supporting lug 100. When the follower 61 reaches its lowermost position and it is desired to again raise the same, this pedal member 98 is depressed, causing the follower to move to its uppermost position, the teeth 64 of the pillar 62 riding over the toothed portion 80.

The operation of our improved device is as follows:—Referring to Fig. 1, in which the mechanism is shown in the position at the end of packing three layers of sugar, the follower 61 having at the beginning of its operation been at the upper extremity of its movement flush with the chute 10, is successively lowered three spaces. For receiving the fourth layer, the horizontal plate 17 is moved into position within the pile forming box, being now supported upon the third layer of sugar, and the handle 32 is thrown back to the position shown in Fig. 2, causing the movable abutment member 33 to move inwardly, the pusher blocks 52 and 58 to be raised out of the path of the channels 11, the arresting device 22 to be lifted out of engagement with the first row of sugar in the chute, and the follower actuating mechanism to assume the position shown in Fig. 2, the follower remaining fixed. The sugar then slides into the channels 11 within the pile forming box, by the weight of the sugar in the chute, the foremost row engaging the movable abutment 33 and stopping the flow, whereupon

the horizontal plate 17 is removed and the top layer of sugar is ready to be lowered out of the path of the next succeeding layer. The handle 32 is moved forwardly, causing the arresting device 22 to descend upon the first row of sugar in the chute, the movable abutment is moved out of engagement with the foremost row of sugar in the box by movement of the cam 35 in the block 34, thereby loosening the contact between the sugar in the box, the follower is dropped one space upon being released by the lever 71, and the pusher blocks 52 and 58 are forced downwardly upon the end rows of sugar in the box, and the upper layer drops upon the third layer. The horizontal plate 17 is again placed in the box and the handle thrown back, whereupon the machine is ready to receive the next layer of sugar. When the box is filled, the removable holder comprising the members 13^a and 13^b is slid out of the box, and the sugar tablets placed in a suitable box. The said removable members are replaced on the follower, and the pedal 98 is depressed, causing the follower to move to the top again in position for receiving the next pile of tablets. The pusher blocks 52 and 58, it will be understood, prevent any tendency the end rows of sugar may have to stick.

We have illustrated and described preferred and satisfactory forms of our invention, but it is obvious that changes may be made therein within the spirit and scope thereof, as defined in the appended claims.

We claim:—

1. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of said articles from the said chute, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting means to engage the lowermost row of articles in the chute to arrest the flow of the remaining articles therein during removal of a layer of said articles from the path of the next layer, abutment means adapted to engage the foremost row of articles in the said pile forming mechanism, means for moving said abutment means out of engagement with the said foremost row of sugar, a slotted arm on said means for actuating the arresting means, and means connecting said slotted arm with said means for actuating the abutment means for causing the same to be actuated after the actuation of the said arresting means.

2. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of

said articles from the said chute, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting means to engage the lowermost row of articles in the chute to arrest the flow of the remaining articles therein during removal of a layer of the articles from the path of the next layer, abutment means adapted to engage the foremost row of articles in the said pile forming mechanism, means cooperating with said means for moving said abutment means out of engagement with said foremost row of sugar after the arresting means has been actuated, pusher blocks supported above the tablets in the said pile forming mechanism, raising and lowering means adapted to move the same upwardly and downwardly in the said pile forming mechanism, and to engage the end rows of sugar therein to cause the same to be lowered, and means connecting the said raising and lowering means with the said means for actuating the arresting means, to cause the said raising and lowering means to be actuated by movement of the said means for actuating the arresting means.

3. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of said articles from said chute, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting means to engage the lowermost row of articles in the chute to arrest the flow of the remaining articles therein during removal of a layer of said articles from the path of the next layer, pusher blocks supported above the tablets in the said pile forming mechanism, raising and lowering means adapted to move the said pusher blocks upwardly and downwardly in the said pile forming mechanism and to engage the end rows of tablets therein to cause the same to be lowered, and means connecting the said raising and lowering means with the said means for actuating the arresting means to cause the said raising and lowering means to be actuated by movement of the said means for actuating the arresting means.

4. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of articles to be packed from said chute and provided with channels in which streams of the said articles are guided, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting means to engage the lowermost row of articles in the chute to

arrest the flow of the remaining articles therein during removal of a layer of said articles from the path of the next layer, pusher blocks supported above the articles in the said pile forming mechanism and provided with a plurality of projections adapted to engage the channels thereof, raising and lowering means adapted to move the said pusher blocks upwardly and downwardly in the said pile forming mechanism to engage the end rows of tablets therein to cause the same to be lowered, and means connecting the said raising and lowering means with the said means for actuating the arresting means to cause the said raising and lowering means to be actuated by movement of the said means for actuating the arresting means.

5. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of said articles from the said chute, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting means to engage the lowermost row of articles in the chute to arrest the flow of the remaining articles therein during removal of a layer of the articles from the path of the next layer, abutment means adapted to engage the foremost row of articles in the said pile forming mechanism, means cooperating with said means for moving said abutment means out of engagement with said foremost row of sugar after the arresting means has been actuated, pusher blocks supported above the tablets in the said pile forming mechanism, raising and lowering means adapted to move the same upwardly and downwardly in the said pile forming mechanism, and to engage the end rows of sugar therein to cause the same to be lowered, and means connecting the said raising and lowering means with the said means for actuating the arresting means, to cause the said raising and lowering means to be actuated by movement of the said means for actuating the arresting means, and a follower in said pile forming mechanism adapted to be lowered step by step as the said means for actuating the said arresting means is operated.

6. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of said articles from said chute, said articles adapted to flow in an unbroken line from said chute to said pile forming mechanism, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting

means to engage the lowermost row of articles in the chute to arrest the flow of the remaining articles therein during removal of a layer of said articles from the path of the next layer, a follower in said pile forming mechanism adapted to support the layers of articles therein, means for lowering the same step by step, and means for actuating the said lowering means adapted to be actuated by the operation of the said means for actuating the arresting means.

7. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of said articles from said chute, said articles adapted to flow in an unbroken line from said chute to said pile forming mechanism, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting means to engage the lowermost row of articles in the chute to arrest the flow of the remaining articles therein during removal of a layer of said articles from the next layer, a follower in said pile forming mechanism adapted to support the layers of articles therein, means for lowering the same step by step, and means for actuating the said lowering means adapted to be actuated by the operation of the said means for actuating the arresting means, and means for raising the said follower at the end of its downward movement.

8. A device of the character described, comprising a stationary chute for guiding in regular order articles to be packed, a pile forming mechanism at the lower end of said chute adapted to receive successive layers of said articles from said chute, arresting means at the entrance end of said pile forming mechanism, means adapted to be operated to actuate the said arresting means to engage the lowermost row of articles in the chute to arrest the flow of the remaining articles therein during removal of a layer of the said articles from the path of the next layer, a follower in said pile forming mechanism adapted to support the layers of articles therein, a pillar supporting the said follower and provided with ratchet teeth and pins, a pawl provided with a tooth adapted to engage said ratchet teeth in one position of movement, and inclined surfaces adapted to engage the pins in the other position of movement when the said tooth is disengaged from the ratchet teeth, and means for operating the said pawl actuated by the movement of the said means for actuating the arresting device to lower the said follower step by step.

In testimony that we claim the foregoing as our invention, we have signed our names in presence of two subscribing witnesses.

JACOB H. LIENAU.
WILLIAM STEENKEN.

Witnesses:

D. LEWIS MATTERN,
JOS. BISBANO.