

No. 669,769.

Patented Mar. 12, 1901.

J. SMITH.

CANDY DROPPING MACHINE.

(Application filed Oct. 5, 1900.)

(No Model.)

3 Sheets—Sheet 1.

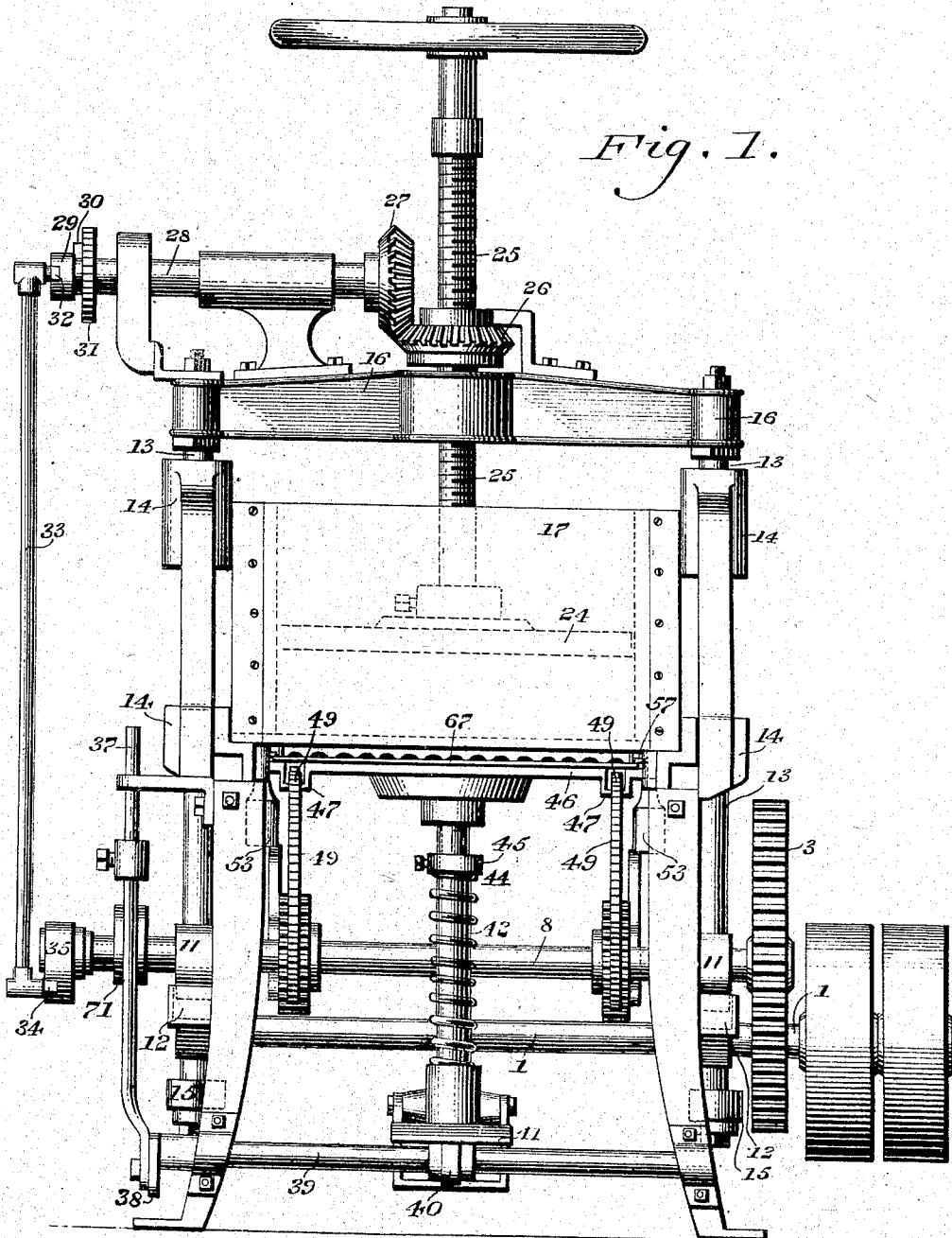


Fig. 1.

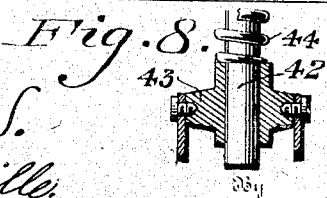


Fig. 8.

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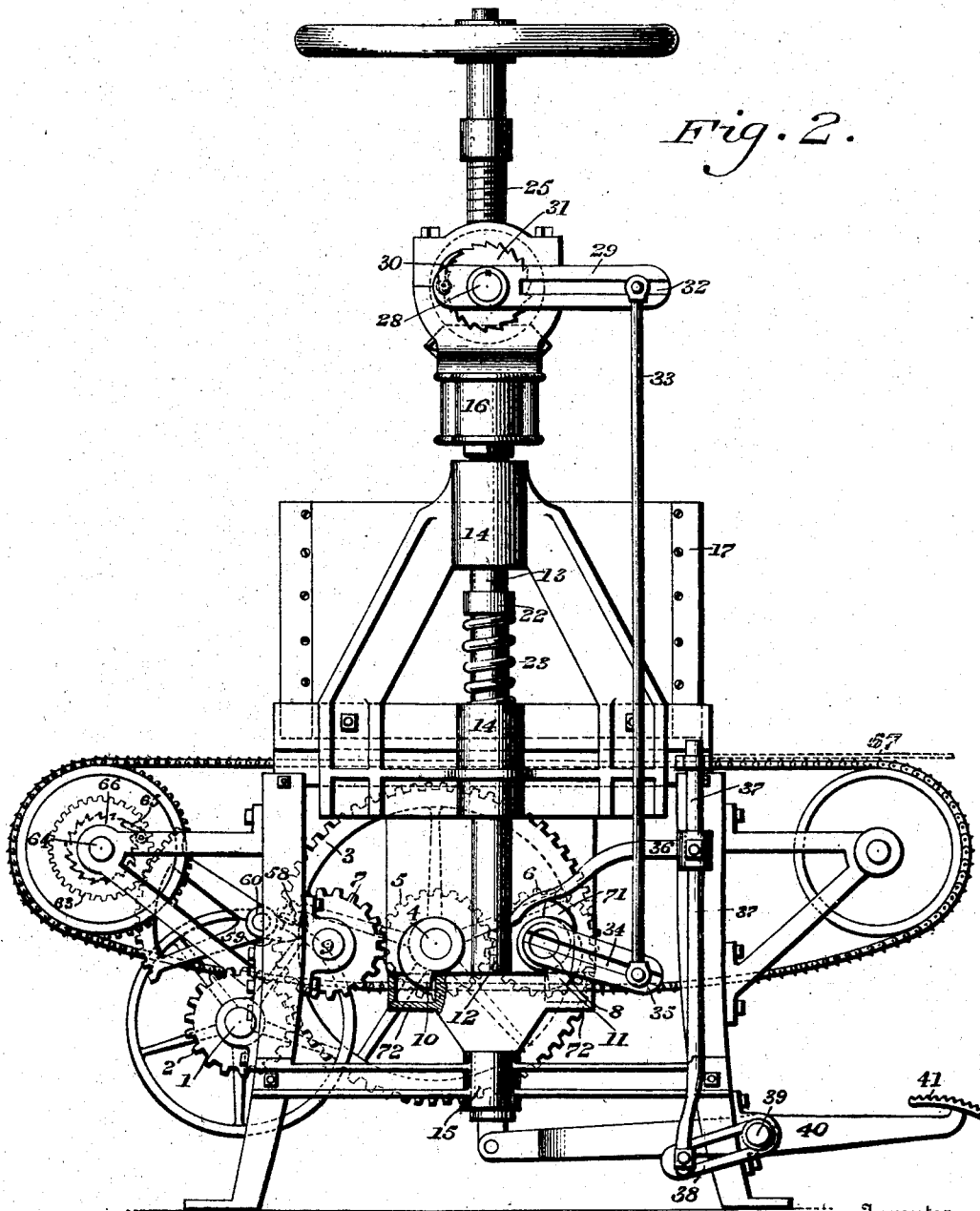


Fig. 2.

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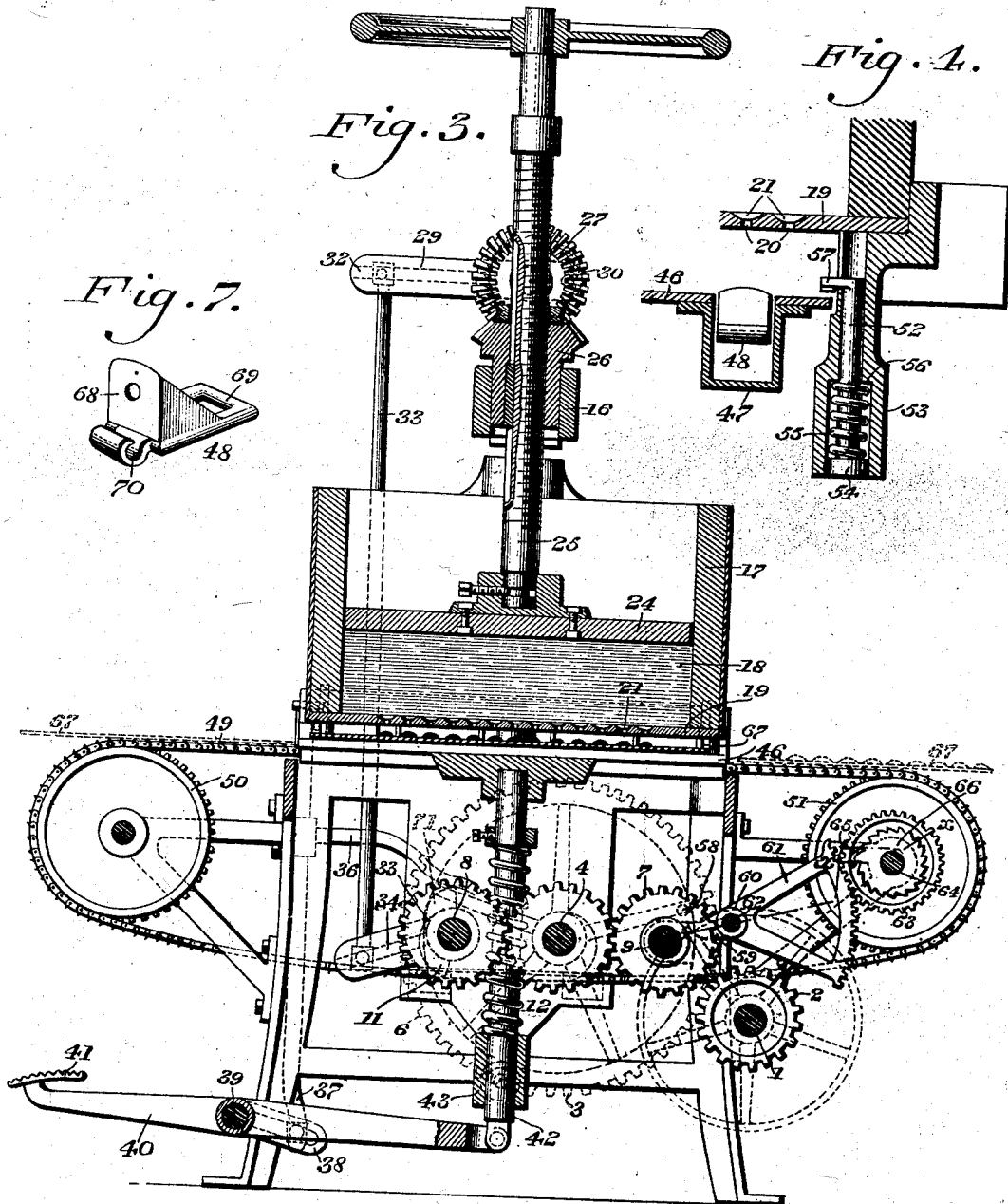
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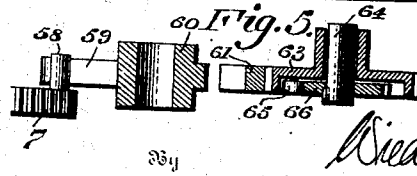
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JOHN SMITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HENRY BRANDLE, OF SAME PLACE.

CANDY-DROPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 669,769, dated March 12, 1901.

Application filed October 5, 1900. Serial No. 32,074. (No model.)

To all whom it may concern:

Be it known that I, JOHN SMITH, of the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Candy-Dropping Machines, which improvement is fully set forth in the following specification.

My invention relates to candy-dropping machines; and it consists of a novel construction of devices whereby the operation of the machine is rendered automatic and provision is made for restoring the parts to their normal positions for the next successive operation.

To the above ends my invention consists of novel means for intermittently forcing the candy material through the apertures in the bottom of the box in which said material is contained.

It also consists of a bed having means for automatically raising and lowering the same, said bed being also provided with channels for the reception of sprocket-chains and having spring-pressed plungers adjacent thereto for locking the trays to the bed.

It also consists of a novel construction of sprocket chains and wheels therefor, said chains being intermittently propelled and carrying plates therein which receive the candy.

It also consists of novel means for intermittently adjusting the plunger employed.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a front elevation of a candy-dropping machine embodying my invention. Fig. 2 represents a side elevation of the same. Fig. 3 represents a vertical sectional view of the upper portion of the machine, the lower portion of the latter being shown in elevation. Fig. 4 represents, on an enlarged scale, a sectional view showing a portion of the machine seen at the right of Fig. 1, showing a portion of the bed and perforated bottom of the box in which the material is placed, showing also the means for locking the tray or pan to the bed. Fig. 5 represents, on an enlarged scale, a broken sectional view taken on the line *x-x* of Fig. 3. Fig. 6 represents, on an enlarged scale, a sectional view showing the relative position of certain parts seen at the lower right-hand portion of Fig. 3. Fig. 7 represents, on an en-

larged scale, a perspective view of a link of the sprocket-chain employed. Fig. 8 represents a vertical sectional view of a portion of the mechanism shown in Fig. 1.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a main shaft to which power is applied in any suitable manner, said shaft carrying the pinion 2, which meshes with the gear 3, which is mounted on the shaft 4, which is journaled in suitable bearings.

5 designates a pinion mounted on the shaft 4 and in mesh with the pinions 6 and 7, which are mounted on the shafts 8 and 9, respectively. The shafts 4 and 8 are provided with the sets of cams 10 and 11, which are preferably located exterior of the housing of the machine and will be understood from Figs. 1 and 2, said cams being adapted to contact and depress the heads 12, which are located in proximity thereto. The heads 12 are attached to the upright rods 13, said rods being provided with the head 22, between which and the guide 14 are interposed the springs 23, said rods being guided in the ways 14 and 15, which are seen in Figs. 1 and 2. To the upper portion of said rods 13 is secured the cross-head 16, which is located above the boxes or receptacles 17, within which the material for making the candy is placed. The box 17 is provided with a base or bottom 19, in which are a series of perforations 20, each of the latter being provided on its upper portion with the concavity 21.

24 designates a plunger which is located in the receptacle 17 and has swiveled thereto the feed-screw 25, which passes through the cross-head 16 and has the beveled gear 26 splined thereto, said gear being rotatably mounted in said cross-head and in mesh with the beveled gear 27, which is mounted on the shaft 28, which revolves in suitable bearings.

29 designates a crank-arm loosely mounted on the shaft 28 and having attached to one end thereof the pawl 30, which is adapted to engage the teeth of the ratchet-wheel 31, which is fast on the shaft 28.

32 designates a slot in the arm 29, which is engaged by a pin or projection on the upper portion of the rod 33, the lower portion of

said rod engaging the slot 34 of the crank-arm 35, which is carried by the shaft 8.

36 designates arms whose ends are in contact with the working faces of the cams 71, carried by the shaft 8, said arms being carried by the rod 37, which is guided in suitable bearings and has its lower portion pivotally connected to the rock-arm 38, which is mounted on the shaft 39, which carries the lever 40, the outer portion 41 of said lever being adapted to serve as a treadle, while the inner portion of said lever is suitably connected to or in engagement with the centrally-located rod or post 42, which is provided with a sleeve 43, which is adapted to move on said post 42 and against which contacts one end of the spring 44, the other end of the latter contacting with a collar 45, which is adjustable on said post 42, said post 42 carrying the bed 46, which is located below the perforated bottom 19 of the receptacle 17 and rises and falls at the proper intervals, as will be hereinafter explained. The bed 46 is provided near its edges with channels 47, as will be understood from Figs. 1 and 4, whereby provision is made for enabling the links 48 of the sprocket-chains 49 to travel there-through, said sprocket-chains passing over the sprocket-wheels 50 and 51, to which latter power is applied at the proper intervals, as will be explained.

52 designates plungers which are mounted in the ways 53, located at the sides of the bed 46, said plungers having on their lower portions the head 54, against which abuts one end of the spring 55, the other end of said spring contacting with the shoulders 56, while the upper extremity of said plungers is provided with the laterally-extending projection or nose 57, which extends through a slot in the walls of the ways 53, the said walls forming a stop for said plunger, so that a free space exists between the nose 57 and the bed 46 when the latter is in normal position.

The mechanism for intermittently actuating the sprocket-wheel 51 and the sprocket-chain 49 will now be described, reference being had to the right-hand portion of Figs. 3, 5, and 6.

58 designates a crank-pin which projects from the gear 7, said pin being adapted to contact with the arm 59, which is attached to the hub 60 of the quadrant 61, which is loosely mounted on the shaft 62.

63 designates a gear which is loosely mounted on the shaft 64 and in mesh with the teeth of the quadrant 61. The gear 63, which is actuated by the quadrant 61, is recessed at its side and has pivotally attached thereto the pawl 65, which is adapted to engage the teeth of the ratchet-wheel 66, which is fast on the shaft 64, said shaft also having the sprocket-wheel 51 fast thereon, wherefrom it will be seen that an intermittent motion will be imparted to the sprocket-wheels 51 and the chains 49.

67 designates a pan or tray which is adapted

to be placed upon the bed 46 and at the proper intervals to be actuated by the shoulders 68 on the links of the sprocket-chain, the construction of said links being indicated in Fig. 7, wherein 69 designates the frame of the links, the latter being provided with the lip or eye 70, above which projects the shoulder 68 aforesaid, said eye 70 being adapted to engage with the frame 69 of the next adjacent link.

72 designates pockets or recesses in the heads 12, into which the cams 10 and 11 are adapted to revolve, said pockets being adapted to contain oil, so that the parts will be properly lubricated.

The operation is as follows, attention being called to the fact that I will first describe the raising and lowering of the plunger in the receptacle, the adjustment of the plunger and the raising and lowering of the bed, and the insertion and removal of the trays, it of course being understood that the parts operate in unison and in proper sequence: First, with respect to the plunger, material having been placed in the receptacle, power is applied to the main shaft 1, which gives motion through the gears 2, 3, 5, and 6 to the shafts 4 and 8. These latter carry the cams 10 and 11, which in their revolution force down the heads 12, and this depresses the rods 13, which carry the cross-head 16, which supports the plunger 24, which is thus depressed in the receptacle 17, which forces a predetermined portion of the material therefrom through the perforations 20, and when the cams 10 and 11 enter the pockets 72 the springs 23 force up the rods 13 and with them the heads 12, cross-head 16, and the plunger 24. As now some of the material has been forced from the receptacle it is necessary to adjust the plunger with respect to the cross-head 16, and this is accomplished in the following manner: As the shaft 8 revolves it carries with it the crank-arm 35, which carries with it the rod 33, the latter causing the arm 29 to be raised and lowered. This causes the pawl 30 to engage with the ratchet-wheel 31 at the proper time and revolve the shaft 28, this turning the gear 27, which meshes with the beveled gear 26 and turns the same, whereby the feed-screw is depressed, carrying with it the plunger 24 to an extent equal to the space occupied by the material which has been forced from the receptacle, it being noticed that this movement takes place after the material has left the receptacle.

In order to raise the bed 46 with the tray 67 thereon to receive the material forced through the openings 20, the following operation takes place: As the shaft 8 revolves it turns the cam 71, which strikes the arm 36 rod elevates the same. This carries up the rod 37, which elevates the rock-arm 38. This turns the shaft 39, to which the lever 40 is secured, the end of which is thus raised, forcing up the post 42, which carries the bed 46, which is also raised with the tray 67 there-

on, which receives the material, it being seen that this takes place as the plunger descends. The spring 44 allows for any excess of pressure, since the collar 43 is loose on the said post 42 and is connected to the lever 40. The parts descend to their normal positions as soon as the cam releases the arm 36.

In order to remove a tray 67 after it has received the material, it will be noticed that the edge of the same is engaged by the shoulder 68 on one of the links of the chain and an intermittent movement is imparted to the chain in the following manner: As the gear 7 revolves the crank-pin 58 engages with the arm 59 and depresses the same. This moves the quadrant 61, the teeth of which engaging with the gear 63 turns the same. The pawl 65 thereon engages with the ratchet 66, which turns the shaft 64, to which the sprocket-wheel 51 is secured, which is turned thereby, thus moving forward the chain and the tray to the position seen in dotted lines to the right of Fig. 3, the operator meanwhile placing an empty tray, as seen in dotted lines to the left of Fig. 3, which tray is thereby carried to the proper place beneath the receptacle 17 and ready to receive the next supply of material, the operating parts returning to their normal positions when the pin has passed or released the arm 59, the pawl riding over the teeth of the ratchet, and thus not moving the chain, it being noticed that this action takes place after the plunger 24 has been elevated and the bed 46 returned to its normal position, the chain not being moved, as the recesses 47 permit movement of the bed without disturbing the said chains.

In order to lock the trays to the bed as the latter is elevated, I provide the plunger 52 with the nose 57 thereon, which latter engages with the said tray and pinches the same between it and the bed. The nose 57 and plunger are carried up by the bed, and when the latter descends the spring 55, which has been compressed, returns the said plunger and nose to their normal position, the stop which I provide for the same preventing the plunger and nose from descending too far and forming a space between said nose 57 and bed 46, in which space the tray is adapted to enter.

I have provided various means to adjust all the working parts, it being evident that all the movements take place in such rotation and in such relation to each other that the machine is automatic in its action.

It will of course be evident that slight changes may be made by those skilled in the art which will come within the scope of my invention, and I do not therefore desire to be limited in every instance to the exact construction herein shown and described.

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

1. In a machine for dropping candy, a receptacle having a perforated bottom, a plun-

ger therein, means for raising and lowering said plunger, a bed adapted to receive a tray beneath said receptacle, a post supporting said bed, a lever connected with said post, a rod pivotally connected with said lever and a cam adapted to raise and lower said rod, whereby said bed is raised and lowered.

2. In a machine for dropping candy, a receptacle having a perforated bottom, a plunger therein, a bed adapted to receive a tray beneath said receptacle, means for raising and lowering said bed, a plunger and a nose carried by said plunger which is adapted to engage said tray and lock the same to said bed when the latter is elevated.

3. In a machine for dropping candy, a receptacle having a perforated bottom, a plunger therein, a bed adapted to receive a tray beneath said receptacle, means for raising and lowering said bed, a plunger, a nose carried by said plunger which is adapted to engage said tray and lock the same to said bed when the latter is elevated, and means for returning said last-mentioned plunger to its normal position.

4. In a machine for dropping candy, a receptacle having a perforated bottom, a plunger therein, a bed adapted to receive a tray beneath said receptacle, means for raising and lowering said bed, a plunger, a nose carried by said plunger which is adapted to engage said tray and lock the same to said bed when the latter is elevated, means for returning said last-mentioned plunger to its normal position, and a stop for said last-mentioned plunger so arranged as to hold said nose that a space is formed between said nose and said bed.

5. In a machine for dropping candy, a receptacle having a perforated bottom, a bed adapted to receive a tray beneath said receptacle, means for raising and lowering said bed in a vertical line, whereby the bed is level at all times, a plunger in said receptacle and means for automatically raising and lowering said plunger, whereby a predetermined amount of material is forced through said perforated bottom.

6. In a machine for dropping candy, a receptacle having a perforated bottom, a bed beneath said receptacle and adapted to raise and lower in a vertical direction whereby the bed is always level, a plunger, and means for raising and lowering said plunger, the plunger automatically being lowered as the bed is raised.

7. In a machine for dropping candy, a receptacle, a plunger therein, a cross-head through which said plunger passes, means for raising and lowering the said cross-head, and with it said plunger, and means for automatically adjusting the said plunger through said cross-head.

8. In a machine for dropping candy, a receptacle having a perforated bottom, means adapted to move vertically for receiving ma-

terial that is forced through said bottom, a plunger in said receptacle, means for raising and lowering said plunger and means for adjusting the stroke of said plunger.

5 9. In a machine for dropping candy, a receptacle having a perforated bottom, a bed adapted to move vertically, whereby it is always level, a plunger therein means for raising and lowering said plunger, and means for
10 depressing said plunger whereby the stroke of said plunger will descend farther into said receptacle at each successive stroke.

15 10. In a machine for dropping candy, a receptacle having a perforated bottom, a plunger therein, a cross-head through which passes said plunger, means for raising and lowering said cross-head, a gear carried by said cross-head having a screw connection with said
20 plunger, and means for imparting an intermittent motion to said gear whereby said plunger is adjusted.

11. In a machine for dropping candy, a receptacle having a perforated bottom, a plunger therein, a cross-head through which passes
25 said plunger, means for raising and lowering said cross-head, a gear carried by said cross-head and having a screw connection with said plunger, a beveled gear connecting with said first-mentioned gear and mounted on a
30 shaft, a rod suitably connected with said shaft, a pawl and ratchet suitably connected with

said shaft and said rod and means for imparting motion to said rod.

12. In a machine for dropping candy, a receptacle having a perforated bottom, means
35 for forcing material through said bottom, a bed beneath said receptacle adapted to receive a tray, and a chain adapted to engage with said tray to place it on said bed and remove it therefrom, said bed moving vertically
40 without said chain.

13. In a machine for dropping candy, a receptacle having a perforated bottom, means
45 for forcing material through said bottom, a bed beneath said receptacle adapted to receive a tray, a chain adapted to engage with said tray to place it on said bed and remove it therefrom, and means for imparting intermittent motion to said chain, said bed moving
50 vertically without said chain.

14. In a machine for dropping candy, a receptacle having a perforated bottom, a bed,
55 means for raising and lowering said bed without said chain beneath said receptacle, sprocket-wheels suitably supported, chains adapted to pass around said sprocket-wheels, and a quadrant to which motion is imparted in order to move said sprocket-wheels.

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