No. 676,906. Patented June 25, 1901.

J. MOHS.

MACHINE FOR COATING CONFECTIONS.

(Application filed Apr. 6, 1900.)

(No Model.) 4 Sheets—Sheet 1.

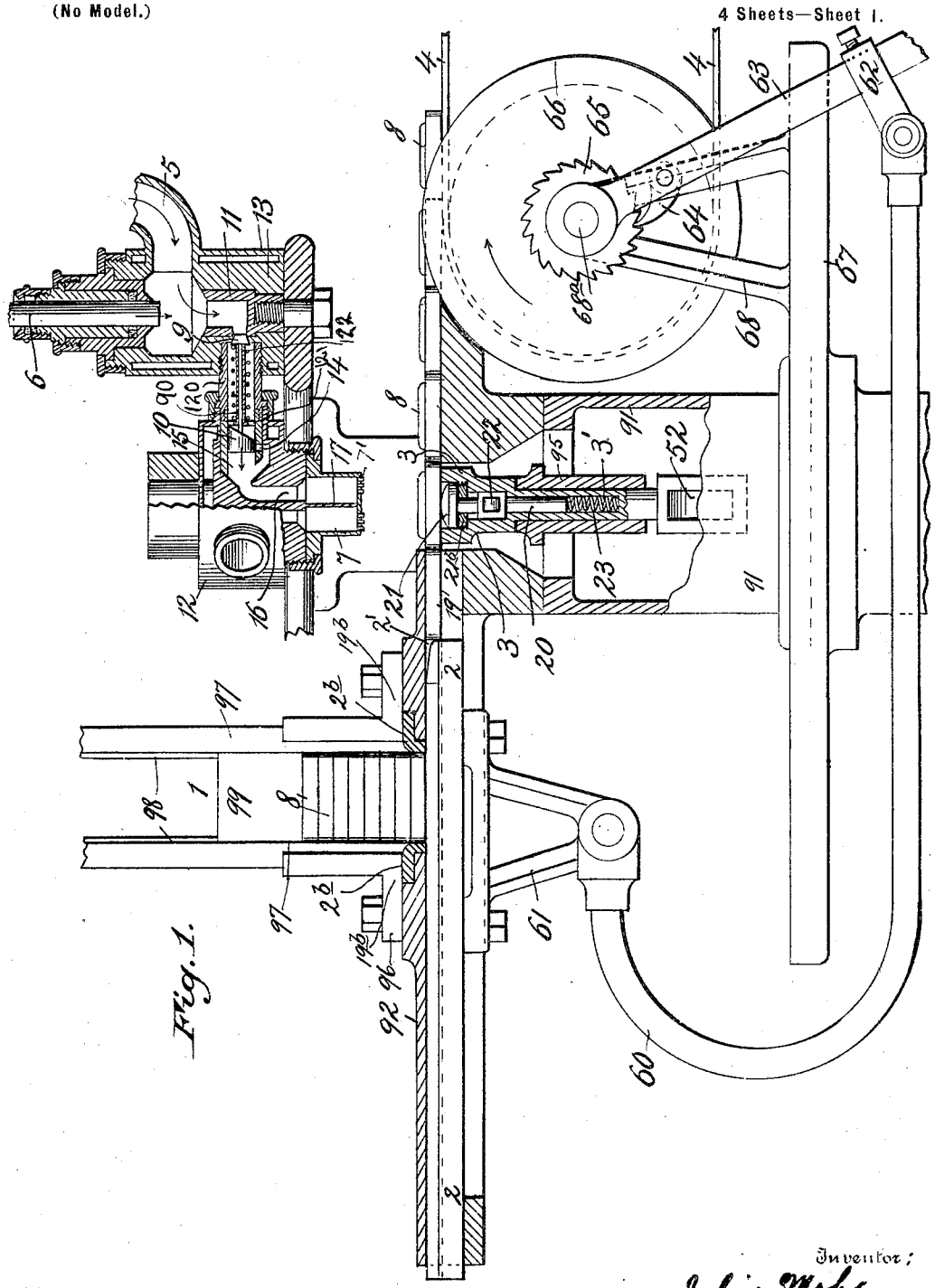

Fig. 1.

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(No Model.) 4 Sheets—Sheet 2.

Fig. 4.

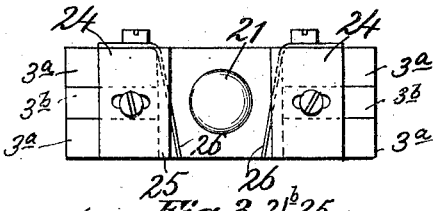


Fig. 3.

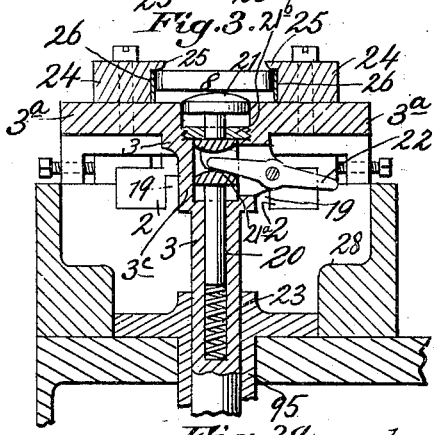


Fig. 3a.

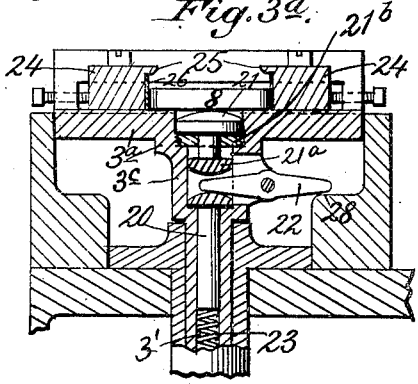


Fig. 1a.

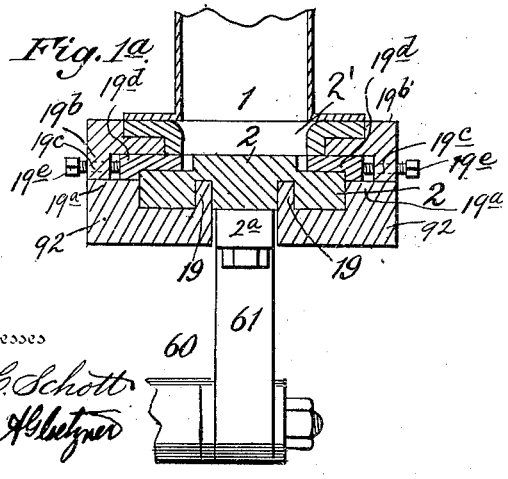


Fig. 2.

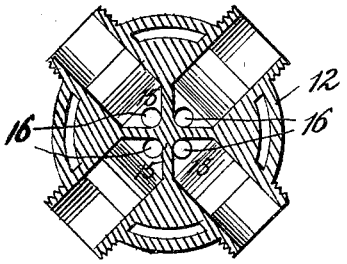


Fig. 5.

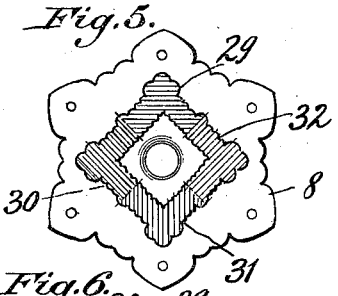


Fig. 6.

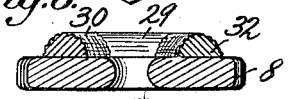
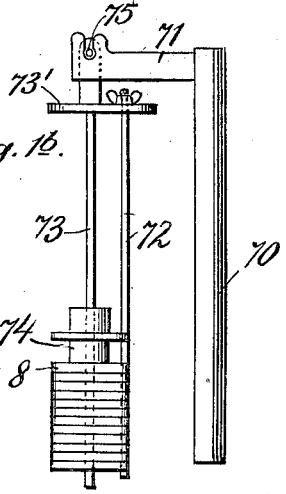


Fig. 1b.



Witnesses

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No. 676,906. Patented June 25, 1901.

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MACHINE FOR COATING CONFECTIONS.

(Application filed Apr. 6, 1900.)

(No Model.) 4 Sheets—Sheet 3.

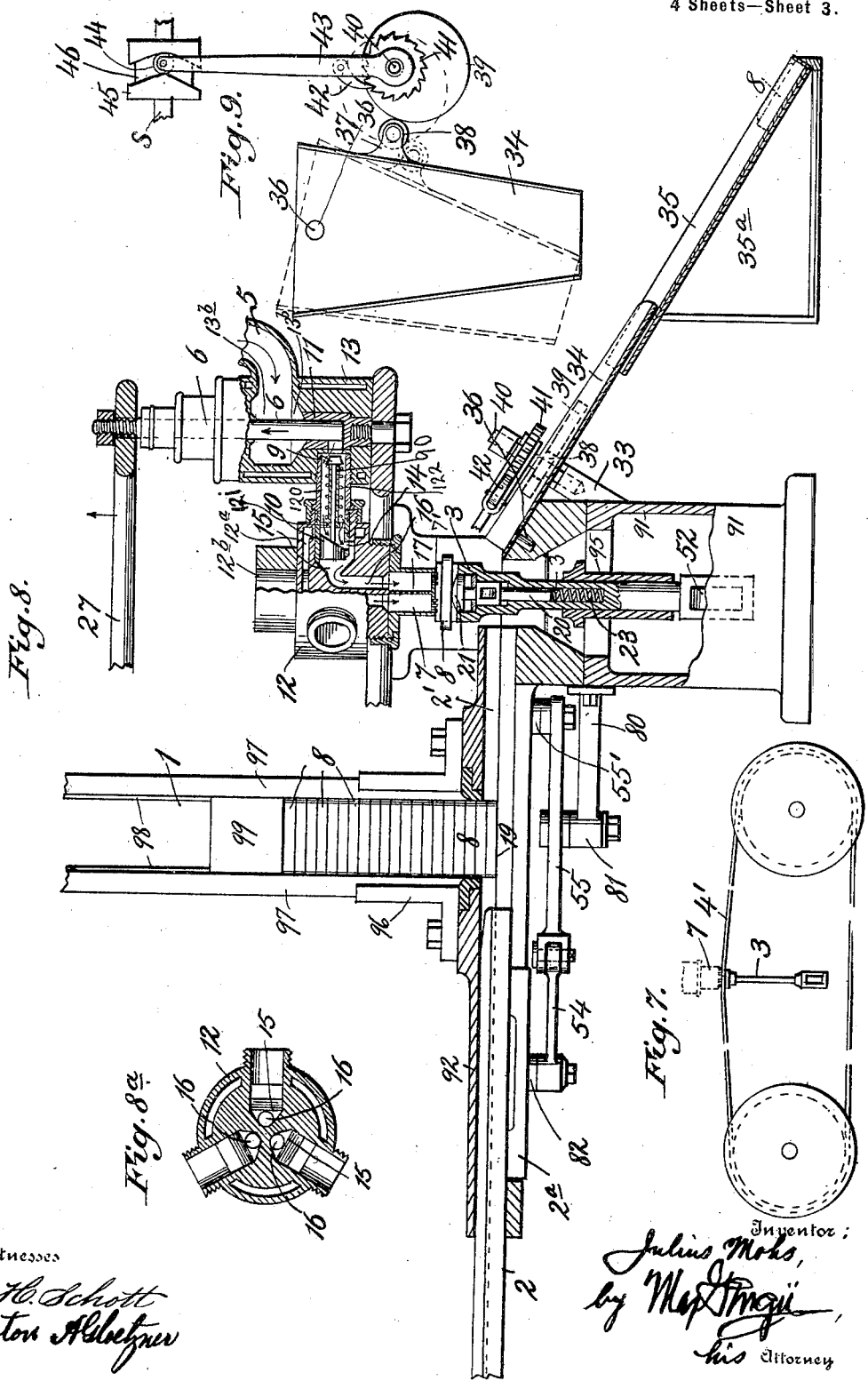

Fig. 9.

Fig. 8.

Fig. 8a.

Fig. 7.

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No. 676,906. Patented June 25, 1901.

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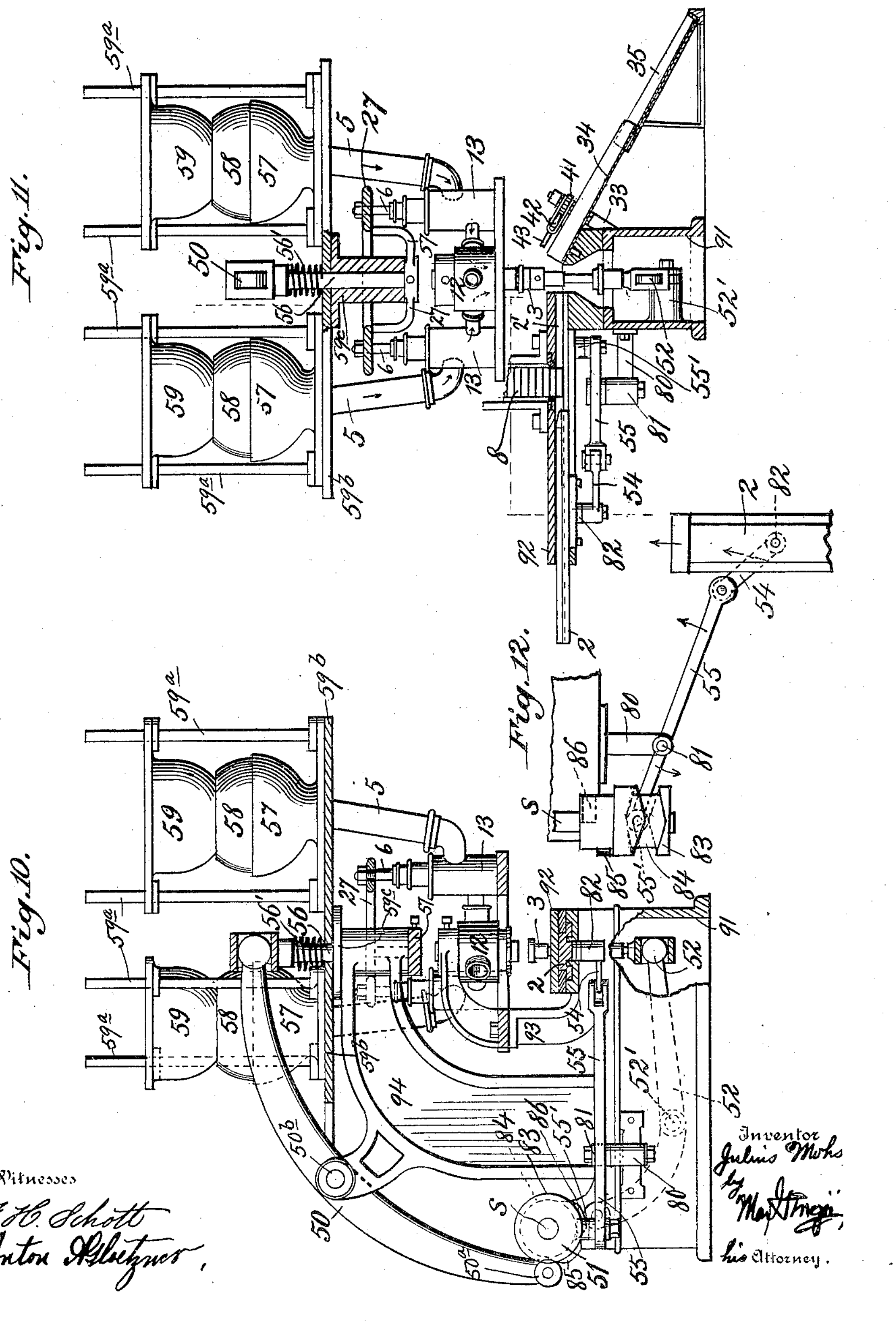
(Application filed Apr. 6, 1900.)

(No Model.) 4 Sheets—Sheet 4.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JULIUS MOHS, OF BRANDENBURG-ON-THE-HAVEL, GERMANY.

MACHINE FOR COATING CONFECTIONS.

SPECIFICATION forming part of Letters Patent No. 676,906, dated June 25, 1901.

Application filed April 6, 1900. Serial No. 11,842. (No model.)

To all whom it may concern:

Be it known that I, JULIUS MOHS, a citizen of the United States of America, and a resident of Brandenburg-on-the-Havel, Germany, have invented certain new and useful Improvements in Machines for Coating Confections, of which the following is a specification.

My invention relates to an apparatus for depositing viscous or plastic materials, and in particular to an apparatus for making decorative confections.

It has been common in the art heretofore to provide machines for depositing viscous or plastic materials, such as machines for making or decorating confections, in which the depositing device deposited one variety only of such material at a time to form one unitary pattern. It is true that it has been common also to provide a plurality of such depositing devices in one machine, and in that case each depositing device might deposit a separate variety of material, whereby a plurality of varieties of material would be deposited simultaneously, but not so as to form one unitary pattern. On the contrary, each such depositing device formed its own pattern at a point so remote from the patterns of the others as to have no connection therewith.

The object of my invention is to provide an apparatus which is capable of simultaneously depositing a plurality of varieties of viscous or plastic materials in such close proximity to each other that the various differing deposits of material coact to form one unitary decorative pattern.

With this object in view and some others which will be obvious to those skilled in the art my invention consists in the features, details of construction, and combination of parts which will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings, Figure 1 is a sectional view, partly in elevation, of a machine for applying a pattern coating, formed from a plurality of varieties of coating material, to a suitable base, such as a biscuit, a cake, or the like, the pattern of the coating usually being made up of different colors of coating material. In this view only a part of one of the depositing devices is shown. Fig. 1^a is a detail section of the pusher and its slide; Fig. 1^b, an elevation of a modified form of magazine; Fig. 2, a horizontal section of a depositing-head intended to produce a pattern from four varieties of material; Figs. 3 and 3^a, detail vertical sections, at right angles to each other, showing my preferred means for presenting the base to be coated, such as a cake, to the depositing-head; Fig. 4, a plan view of the same; Figs. 5 and 6, a plan view and section, respectively, of one form of base, such as a cake, decorated by a machine embodying my invention, the applied pattern comprising four different colors, as indicated by the different directions of the surface shade-lines. Fig. 7 illustrates a modified embodiment of one part of my invention—viz., a movable base which can be employed in connection with a depositing apparatus to form an apparatus for making confections having the desired pattern and shape, the deposited material when sufficiently set or hardened being removed from the movable base and serving as the completed or finished product; Fig. 8, a view similar to Fig. 1, showing a modified form of apparatus embodying my invention, in which apparatus the confection-removing mechanism is different from that shown in Fig. 1, and the means for operating the feeding and removing mechanism is also altered; Fig. 8^a, a horizontal section of a depositing-head arranged to produce a pattern from three varieties or kinds of depositing material, such as is used in the machines shown in Figs. 1 and 8; Fig. 9, a plan view of the confection-removing mechanism shown in Fig. 8; Fig. 10, an elevation, partly in section, of the machine shown in Fig. 8; Fig. 11, a view similar to Fig. 10, but taken at right angles thereto; Fig. 12, a detail plan view illustrating the means for operating the feeding mechanism employed in connection with the machine shown in Figs. 8, 10, and 11.

For the purpose of more readily explaining my invention I will first describe that form of apparatus shown in Figs. 8, 10, and 11. This apparatus, as shown, is designed for the purpose of producing a decorative deposit on a confection or pastry base—as, for example, a cake—a plurality of such cakes or the like being mounted on the machine in an appropriate magazine and fed therefrom at certain inter-

vals to a holding and lifting device, arranged to receive the cake and present it to the depositing mechanism with the surface of the cake which is to be decorated at a predetermined level with relation to the lower surface of the depositing means, whereupon a plurality of varieties of depositing material (in the present case three varieties) are deposited upon the cake to produce a pattern, after which the cake is removed from the holder and discharged from the machine by a removing mechanism.

Referring now to the specific construction of the apparatus shown in Figs. 8, 10, and 11, 91 is a hollow pedestal which supports the machine and within which is mounted the cake-holding device and its actuating mechanism. The said pedestal carries an arm or table 92, in which the cake-feeding mechanism is carried and on which is supported the cake-magazine. The pedestal also carries two standards 93 94, on the first of which the depositing mechanism is mounted and on the second, 94, the reservoirs for the plastic or viscous material. The depositing mechanism being the most important feature of a machine of this kind will be described in detail first. This distributing mechanism consists of a depositing-head 12, having a steam or hot-water jacket, the spaces for the steam or hot water being indicated at 12^a, while the inlet for such steam or hot water is shown at 12^b. The depositing-head 12 is provided with a plurality of recesses, in the present example three, each of said recesses comprising a discharge-orifice 16 and a chamber 15, connected therewith, into each of which chambers projects the overhanging end of a cylindrical valve-casing 120, the lower overhanging end of which is provided with a port 14. For each chamber of the distributing-head there is provided a forcing device comprising a jacketed casing 13, having a removable lining 11, above which is a receiving-chamber 13^b, connected with the corresponding reservoir by a supply-pipe 5. A plunger 6, connected to one end of a yoke 27, which is operated by mechanism hereinafter described, is arranged to pass across the receiving-chamber 13^b and down inside the removable lining 11, the latter having a port or outlet opening into the interior of the valve-casing 120, the mouth of the port where it enters said valve-casing being formed as a valve-seat, arranged to be closed by a valve 9, having a stem 90, which passes through and is guided by a spider 121, beyond which the valve-stem is provided with a piston-head 10, having its back face or wall inclined downward and outward toward the port 14, for a purpose hereinafter described. The valve-stem 90 is surrounded by a spring 122, bearing against the valve 9 and the spider 121, whereby the valve 9 is normally pressed against its valve-seat, so as to close the outlet from the forcing mechanism to the interior of the valve-casing. In this condition of the valve 9 the piston 10 will be over the port 14 and will close the same. The bottom of the receiving-chamber 13^b of the forcing mechanism and the upper edge of the lining 11 are made conical or hopper-shaped in order to conduct the material readily to the interior of said lining 11. To the bottom of the depositing-head 12 is secured a mold 7, having a plurality of compartments equal in number to those of said head 12, said compartments being formed by the partitions 17, Fig. 8. The bottom of the mold is provided with sets of perforations, one set for each compartment, as indicated at 7', these sets of perforations together forming the complete pattern which is to be assumed by the material deposited. The reservoirs each consist of a bowl or hopper 57, into whose bottom enters the supply-pipe 5, a flexible vessel or bag 58, arranged to receive the material to be deposited, being placed, mouth downward, in each bowl, while upon each bag 58 is placed a semispherical weight 59, provided with lugs having holes through which pass guide-rods 59^a, secured to a base 59^b, carried by the standard 94. Immediately below the mold 7 is located the cake holding and lifting device, which has a hollow lifter-rod 3, capable of vertical movement through a bushing 95, secured in a spider formed in the inside of the pedestal 91, the upper end of the lifter-rod having a head 3^a substantially rectangular, as shown in Fig. 4, and provided with a pair of guide-blocks 24, having a stop device formed by overhanging lips or ledges 25, the said blocks being each provided with a slot, through which passes a screw threaded into the head 3^a of the lifter-rod 3 and serving to fix the guide-blocks 24 in their adjusted positions. In order to prevent an angular movement of the guide-blocks 24 on the head 3^a, the latter is provided with ribs 3^b, Fig. 4, each of which enters a slot in the bottom of the respective guide-blocks 24. To each block is secured a spring-finger 26, lying below the lip or ledge 25 of the respective block and bent around one end of the said block, to which it is secured by a screw, as shown in Fig. 4. The upper part of the head 3^a is recessed to receive the head 21 of a holder or presser having a stem 20, which projects into the upper tubular end of the lifting-rod 3 and is yieldingly pressed upward by a spring 23. Between the head 21 and the stem 20 of the presser is located a slotted cross-head 21^a, guided in a recess in the upper enlarged part 3^c of the lifting-rod 3. Into the slot in said cross-head projects one end of a lever 22, fulcrumed to lugs or ears formed on the enlarged part 3^c of the lifting-rod 3. The free end of the said lever 22 is arranged to contact with, and thereby be moved by, a projection or abutment 28, formed on the inside of the pedestal, as will be fully explained hereinafter. That portion of the stem 20 of the presser which lies between the cross-head 21^a and the head 21 is guided in a collar 21^b, screwed into the

corresponding recess in the head 3^a of the lifter-rod. The lifter-rod is moved up and down by mechanism hereinafter described.

The cake-holding device just described is located at the end of a raceway which leads from the magazine to the lifting device and through which the cakes are pushed by a pusher device. The construction of this raceway and pusher device is as follows: The arm or table 92, which projects from the pedestal, has a central slot, and along each side of said slot and along the two outer edges the arm is flanged upward, these four flanges being indicated at 19 and 19^a, Fig 1^a. Upon the outer flanges 19^a is secured a raceway-cover 19^b, provided with downward-extending flanges 19^c, which rest upon the upper surfaces of the flanges 19^a, the raceway-cover being fixed in place by any suitable means. In this raceway 2′ thus formed between the arm or table 92 and the cover 19^b is located a longitudinally-movable pusher 2, provided with longitudinal grooves to receive the inner flanges 19 of the arm 92 and with rabbeted upper corners, into which enter the projecting ends of longitudinally-arranged wear strips or brasses 19^d, angle-shaped in cross-section and preferably of suitable antifriction material, these wear-strips being adjustable toward the pusher 2 in order to take up lost motion due to wear by means of set-screws 19^e, threaded through the flanges 19^a of the cover and having their heads readily accessible from the outside. The pusher 2 is provided with a downward-extending rib or block 2^a, arranged to move in the slot in the arm 92, (see Figs. 8 and 1^a,) and below this block extends a stud 82, Figs. 8, 10, and 11, to which is connected the mechanism for reciprocating the pusher 2, as will be more fully described hereinafter. The front end of the pusher is beveled at its upper edge, as shown in Fig. 8, the purposes of which will be hereinafter pointed out. An opening is formed in the raceway-cover just forward of the front end of the pusher 2 when the latter is in its outermost or rearward position, as shown in Fig. 8, this opening having a rabbeted edge, in which opening is located an annular bushing 2^b of angle shape in cross-section, said bushing having its horizontal portion fitting into the rabbeted portion of the raceway-cover while its vertical portion surrounds the edge of the opening in said raceway-cover, as will be clear from Fig. 8. Over this bushing project the horizontal bases of two angle-shaped supports 96, screwed to the raceway-cover, the vertical portions of said supports carrying standards 97, each of which has an inwardly-projecting rib 98, which ribs enter grooves in the opposite sides of a follower or weight 99. The standards form a magazine, into which may be placed a series of cakes or like articles serving as bases upon which the viscous or plastic material is to be deposited, these cakes 8, Fig. 8, being piled upon each other in the magazine and pressed downward by the follower 99, which follows the cakes downward as the latter are removed from the magazine one by one by the pusher 2, as hereinafter explained.

The removing device for delivering the cakes or the like from the machine consists in the present instance of a swinging chute which is constructed and mounted as follows: The front upper corner of the pedestal is chamfered off to form an inclined surface upon which rests the upper end of the bottom of the chute 34, Figs. 8 and 9, the chute being inclined downward and pivotally attached to the pedestal by means of a pivot-pin 36, secured to the bottom of the chute and loosely inserted in a hole in the inclined portion of the pedestal, as shown in Fig. 8. The chute 34 is so located that the upper edge of its bottom plate is substantially on a level with the top surfaces of the ribs 19 on the arm 92. The lower end of the chute discharges onto an inclined stationary table or tray 35, carried by a base 35^a and provided, preferably, with sides. The chute is swung laterally by any suitable mechanism—for example, by the mechanism which will now be described. On one side of the chute 34 is a lug 37, Fig. 9, in which is journaled a roller 38, bearing against a cam 39, journaled on a stud 40, projecting from a boss 33, Fig. 8, connected by the front of the pedestal 92, the stud 40 being at right angles to the plane of the bottom of the chute 34. On the said stud 40 and connected to the cam 39 in any suitable way, as by making it integral therewith, is a ratchet-wheel 41, engaged by a pawl 42, pivoted on a pawl-lever 43, which is fulcrumed at one end on the stud 40 and has its other end arranged to be moved by suitable mechanism, as will be more fully described hereinafter.

The operation of the mechanism thus far described is as follows, reference being made also to Fig. 1 in connection with the depositing mechanism, which in that figure does not differ from the same mechanism in Fig. 8, but is shown in a different position: The flexible vessels or bags 58 are filled with the plastic or viscous material to be deposited by first removing the followers or weights 59, taking said vessels or bags from the bowls 57, and charging them with said material through their mouths, after which said vessels are inserted, mouths downward, into the hoppers 57 and the followers or weights 59 replaced by slipping said followers onto the guide-rods 59^a. By means of these weights the material in the vessels 58 is squeezed out of said vessels into the respective supply-pipes 5 as rapidly as used by the depositing mechanism and from these pipes enters the corresponding chambers 13^b. The magazine formed by the standards 97 is filled with the bases which are to receive the deposited material—for example, with cakes, biscuits, or the like—by removing the follower or weight 99, inserting a series of said cakes or the like, and then replacing the weight 99, whereby

the lowermost cake will be caused to rest on the top faces of the ribs 19, this bottom cake sustaining the weight of the cakes above it and of the weight 99, which latter must not be heavy enough to crush any of the cakes. It is assumed that at this time the pusher 2 is fully retracted. Furthermore, the holding and lifting device is in its lowermost position, so that the upper surface of the head 3^a will be flush with the upper surface of the ribs 19, the space between the guide-blocks 24 forming a continuation of the raceway in which the pusher 2 works. At this time the presser 21 is depressed into the recess in the head of the lifter-rod 3, owing to the fact that the outer end of the lever 22 is held up by the abutment 28. The pusher 2 is now forced forward, thereby coming into contact with the lowermost cake or the like below the magazine and pushing said cake along the raceway and onto the head 3^a of the holding and lifting device, where it is held by the spring-fingers 26, which press lightly against its sides, the said cake or the like being overhung by the ledges 25 of the guide-blocks 24, which may be adjusted initially to the proper distance apart by loosening their screws, moving the blocks toward or away from each other, and then tightening the screws. This adjustment need be clamped only when a change is made in the size of the cake to be operated on. Owing to the beveled front end of the pusher 2, if the lowermost cake should be somewhat thinner than the depth of the raceway the pusher 2 will not catch the next cake above the lower one, but the latter will be pushed out from beneath the others, which will be lifted up by the inclined surface of the pusher until the next cake above the one just pushed out will rest upon the upper surface of the pusher until the latter is again retracted, whereupon said cake will ride down the said incline and will drop gently to the bottom of the raceway or, in other words, to the upper surface of the ribs 19, thus becoming in its turn the lowermost cake. By providing the beveled or inclined surface near the front end of the pusher the difficulties of operation due to small variations in the thicknesses of the cakes is avoided, and at the same time the cakes are allowed to feed down into the raceway with less shock than if dropped at once the full depth of the raceway. So soon as the pusher has forced a cake onto the head 3^a and between the spring-fingers 26 and while the said pusher is making its backward stroke the holding mechanism is lifted, the initial movement of said holding mechanism causing a removal of the lever 22 from contact with the abutment 28, whereby the spring 23 is permitted to raise the presser 20 and its head 21, thus pressing the cake upward until it is stopped by the ledges 25 of the guide-blocks 24, which ledges thus serve as a stop device. By this means the upper surface of the cake on which the material is to be deposited will always be brought into a predetermined plane, and therefore when the holding mechanism has completed its upward stroke the said upper surface of the cake is brought beneath the mold 7 and at a predetermined distance beneath the same, thus insuring that the layer of material deposited upon the cake and which extends from the mold to the upper surface of the cake will always be of the same thickness on all cakes, even though the latter vary somewhat in thickness. As the movement of the holding mechanism upward from its lowest position is a gradual one, though rapid, the free end of the lever 22 is maintained in contact with the abutment 28 by the action of the spring 23 during a portion of the upward movement of said holding device, the angle of said lever thus changing gradually until it has reached the limit of its angular movement, at which time the presser has lifted the cake to contact with the under surfaces of the ledges 25. As a consequence the lever 22 and its abutment 28 act as a controlling device for the spring 23 and prevent it from forcing the cake with a sudden shock against the ledges 25, which, if it occurred, would be likely to cause a breakage of the cake. When the base upon which the material to be deposited has arrived at the said predetermined point below the lower surface of the mold, the forcing mechanism then commences to operate, each of the plungers 6 of said forcing mechanism moving downward across its chamber 13^b, which has been filled with material flowing down the respective supply-pipe 5. Each of the said plungers 6 forces a quantity of said material ahead of it, thus pressing open the respective valve 9 against the action of its spring and at the same time moving its piston 10 from over the respective port 14, whereby the material is driven through the interior of the respective valve-casing 120, out through the corresponding port 14, into the respective chamber 15, down the throat 16, connected with it, and into its respective compartment of the mold 7 through the corresponding perforations 7′ in the bottom of said mold and onto the upper surface of the base upon which the material is to be deposited. At this moment the plungers 6 are raised, thereby releasing the pressure on the valves 9, which are at once closed by their springs 90, which also retract their corresponding pistons 10, and thereby close the ports 14, while also sucking back from the bottom of the compartments of the mold 7 the depositing material which remained therein after the base or cake was coated. Owing to the fact that the pistons 10 are operated by springs in closing, the said pistons are closed much quicker and their suction effects also are quicker than if the backward stroke of the plungers alone was relied upon to suck back the depositing material. By this means all dripping of the material in the mold-compartments onto the parts beneath the mold is avoided. The inclined face of each piston 10 serves to direct the material toward its port 14 when the same

is opened. Furthermore, the enlarged chambers 15 serve as receptacles into which the surplus material is sucked from the corresponding compartment of the mold when the pistons are retracted by their springs. On the next downward movement of the plungers, which occurs after the presentation of the next base or cake to the mold, the pressure produced on each valve 9 causes the opening of the same and a movement of its piston, which piston assists in forcing the material lying against its outer face down into the mold-compartment and through onto the surface of the cake or other base, while at the same time the opening of the ports 14 also allows the pressure produced by the respective plungers 6 to come upon the material in the chambers 15 and causes the supply of material to be maintained in said chambers. As soon as a cake has received its coating the holding device is lowered by the descent of the lifter-rod 3. During the descent of the said lifter-rod the free end of the lever 22 is brought into contact with its abutment 28, and thereby forced upward gradually, whereby the presser-head 21 is lowered and the cake also lowered from its contact with the ledges 25. In this way the cake is again brought to the level of the raceway. The pusher 2 now makes another forward stroke, thereby pushing another cake from the magazine onto the holding device and at the same time ejecting the coated cake therefrom onto the chute 34, down which it slides to the tray 35. Upon this being done the chute is swung to a small extent, moving on its pivot 36, this being accomplished by the action of the cam 39, which is rotated slightly by the movement of the pawl-lever 43, acting on the pawl 42 and ratchet-wheel 41, the change in the chute causing the next cake to be delivered to one side of the preceding one, so that the said cakes will be uniformly distributed in the tray 35, from which they are removed at intervals by the attendant.

In order to operate the various parts of the machine in the sequence described hereinbefore, any suitable operating mechanism may be employed, my preferred form of such mechanism being as follows: At the back end of the pedestal 91, Fig. 10, is journaled a driving-shaft S, arranged to be driven from any suitable source of power. (Not shown.) From this shaft the various devices are driven. The forcing device is operated from said shaft in the following manner: On the shaft S is mounted a cam 86, against whose periphery rests an antifriction-roller 50^a, mounted on the end of a curved lever 50, fulcrumed at 50^b in a bracket secured to the standard 94, the said lever 50 having its upper end inserted in a slot in the head of a plunger-rod 56, which rod passes through and is movable in a boss 59^c, secured to the reservoir-platform or base-plate 59^b, the lower end of said plunger-rod 56 being connected to a yoke 27, to which are connected the upper ends of the plungers 6 of the forcing devices. A spring 56′ surrounds the plunger-rod 56, bearing against the head of the rod 56 and against the top of the reservoir-platform. When the shaft S is rotated, the cam 86 at the proper moment will move the lever 50 outward, and thereby depress the plunger-rod 56 and with it the plungers 6, whereby the depositing material will be forced out in the manner hereinbefore described. The plunger 6, the plunger-rod 56, and the lever 50 are returned to their normal position by the spring 56′ when permitted by the cam 86.

The cake-holding device is operated from the shaft S by means of a cam 85, Fig. 10, mounted on said shaft and engaging an antifriction-roller mounted on one end of a lever 52, fulcrumed at 52′ in the pedestal 91, and having its other end extending into a slot in a head formed on the lower end of the lifter-rod 3. The rotation of the cam 85 with the shaft S causes the movement of the lever 52 in a direction to elevate the cake-holding device, while the weight of the latter returns itself and the lever 52 to the normal position when the cam 85 permits it. The pusher 2 is operated also from the shaft S by means of a cam 83, having a peripheral cam-groove 84, into which enters an antifriction-roller 55′ on one end of a lever 55, fulcrumed at 81 on a bracket-arm 80, secured to the pedestal. The other end of the lever 55 is connected by a link 54, pivotally connected to a stud 82, secured to the under side of that portion of the pusher 2 which projects through the slot in the arm 92. (See Fig. 8.) The rotation of the cam 83 will cause the oscillation of the lever 55, thus reciprocating the pusher 2, whereby the cakes are fed from the magazine at the proper time.

In order to operate the chute-swinging mechanism, the pawl-lever 43 is provided with an antifriction-roller 44, arranged to enter a peripheral cam-groove in a cam 45, also fixed on the shaft S. The rotation of the cam 45 causes the pawl-lever 43 to oscillate. When said lever moves in one direction, the pawl 42 engages the ratchet-wheel 41 and moves it one tooth, thereby rotating the cam 39 to the same extent. When the pawl-lever 43 is moved in the opposite direction, the pawl 42 rides back freely over the teeth of the ratchet-wheel 41, ready to engage the next tooth upon the next forward movement of the pawl-lever. In this way the cam 39 is intermittingly operated and the chute 34 swung back and forth, the weight of the chute keeping its roller 38 in contact with the periphery of the cam 39.

In Fig. 9 I have shown the pawl-lever 43 as arranged parallel to the length of the chute in order to show all the parts on a large scale, and in Figs. 8 and 11 I have shown the said pawl-lever 43 and pawl 42 also in the same position as indicated in Fig. 9 in order to show them clearly. However, owing to the location of the shaft S, which carries the cam

45, the pawl-lever 43 is normally in a position at right angles to the longitudinal axis of the chute 34. Furthermore, as the pivot of the pawl-lever—viz., the stud 40—is not at right angles to the shaft S it is necessary that the antifriction-roller 44 on the end of the pawl-lever 43 shall be somewhat longer than usual in the direction of its axis in order to allow it to stay in engagement with the sides of the cam-slot while the cam makes its complete rotation.

The various operating-cams on the shaft S are so proportioned and so arranged relative to each other that they will actuate their respective mechanisms at the proper time and for the proper duration, so that the various functions of the devices will be performed in proper sequence.

Many modifications may be made of the various parts of a machine embodying my invention without essentially departing from the spirit of such invention. For example, the depositing-head, instead of being subdivided into three chambers for producing a tripartite pattern of depositing material on the cake or other base, may have four such compartments, as indicated by the cross-section in Fig. 2, whereby the pattern deposited on the cake or other base will be in four parts, as shown in Fig. 5, in which the different directions of the shade-lines of the pattern are intended to indicate different varieties of depositing material—for example, different colors of melted sugar or the like.

Another feature of my invention consists in making the magazine readily detachable from the machine, so that a plurality of interchangeable magazines may be used with the machine, whereby one magazine may be on the machine supplying cakes to the latter while another is being charged or filled by the operator, thus permitting the rapid substitution of a filled magazine for the one on the machine when the latter has been emptied, thereby avoiding the delay in production which would result from the stoppage of the machine for the purpose of refilling a fixed magazine. One form of such a removable magazine is shown in Fig. 1^b, in which 70 indicates a standard fixed to the arm 92 of the machine and provided with a crane-arm 71, whose free end is slotted and provided with a notch facing upward. The removable magazine consists of a hanger 73, whose upper end is arranged to enter the slot in the crane-arm and is provided with a pin 75, arranged to enter the notch in said crane-arm, whereby the hanger is supported. The said hanger 73 has a bracket in the form of a disk 73', from which depends a guide in the form of a rod 72, held to the disk 73' by a nut. Upon the hanger 73 is mounted a movable weight or follower 74. In order to detach such a magazine from the machine, the hanger is lifted from the crane-arm and the hand of the operator is kept on the weight or follower 74 to prevent the latter from dropping off the hanger. As soon as the magazine has been removed from the machine it is inverted and the cakes or other bases, which with this form of magazine must have an opening in them, are slipped over the lower end of the hanger until the desired number has been placed thereon, the guide 72, which is intended for use with cakes having an ornamental indented edge, lying in the homologous indentations of the various cakes, and thus insuring that they will always be presented in the proper position to the pusher and to the depositing-mold.

To insert a filled magazine, as is usually done at the time of removing an empty one, one hand of the operator is kept upon the lowermost cake (at that time the uppermost) and the magazine reverted to its normal position and placed over the opening to the raceway, the upper end of the hanger being put in place in the crane-arm 71, after which the hand of the operator is removed from the lowermost cakes, whereupon the latter are free to enter the raceway, as required, being assisted in their descent by the follower 74.

In place of the removing device shown in connection with the machine illustrated in Figs. 8, 10, and 11, I may substitute another form of removing device—such, for example, as that shown in Fig. 1—which is constructed as follows: The pedestal 91 is provided with a support 67, Fig. 1, in the nature of a projecting circular plate, upon which are mounted stand-journals 68, carrying a shaft 68^a, to which are secured a drum 66 and a ratchet-wheel 65. On said shaft is fulcrumed a pawl-lever 63, provided with a pawl arranged to engage the ratchet-wheel 65. Over the drum 66 passes an apron or belt 4, arranged to pass over another drum (not shown) at some distance from the drum 66 and in line therewith, the upper surface of the upper portion of the apron being on a level with the bottom of the raceway in order to receive the cakes or other bases as the latter are pushed from the holding device one by one. The ratchet-lever may be operated by any suitable mechanism and in turn may be used to operate the pusher—as, for example, by connecting the pusher by a hanger 61 and connecting-rod 60 to the pawl-lever 63, this connection being made by pivoting the connecting-rod 60 to the hanger 61 and to a clamp 62, adjustable along the pawl-lever 63 and capable of being fixed at any desired point on said lever by means of a screw, as shown in Fig. 1, whereby the throw of the pusher relative to the movement of the pawl-lever may be varied within certain limits. It is clear that as the pawl-lever 63 is oscillated by suitable means (not shown) the ratchet-wheel 65 and drum 66 will be intermittingly rotated and the apron 4 advanced from time to time, thus carrying the completed cakes away from the machine to a point where they can be removed from the apron by the attendant, the coatings deposited on the cakes thus having an oppor-

tunity to dry or become set, the time allowed for this depending upon the length of the apron and the rate of travel of the same.

While the machine and its modifications hereinbefore described have been such as are intended for the depositing of material upon a base, such as a cake, where the said base forms a part of the finished product, it is obvious that a depositing mechanism embodying my improvements may be used for depositing the material in a pattern upon a base which is not intended to form a part of the finished product, but from which base the deposited material when suitably set or hardened is to be removed, the said material thus in itself forming the finished product—for example, an ornamental candy or the like. When it is desired to accomplish this result, a movable base mechanism is preferably provided and the magazine, the pusher, and the cake-removing mechanism omitted. This movable base mechanism may be in the form of an endless belt or apron, as shown at 4′ in Fig. 7, said apron passing around two drums moved intermittingly by suitable means (not shown) and located so as to pass beneath the depositing-mold 7. The apron is flexible and passes over a lifter mechanism constructed similar to the cake holding and elevating mechanism shown in Figs. 1, 10, and 11, whereby at the proper time the flexible apron or base is lifted up by the lifter 3 to the required amount, so as to be at a predetermined distance below the mouth of the mold, when it then receives the deposit, after which it is lowered by the descent of the lifter 3 and is moved forward a short distance in order to bring a fresh portion of the apron in position to receive a new deposit of material, the confections or the like formed by these deposits of material being intermittingly advanced by the travel of the apron, which is made of sufficient length so that the said confections or the like will have become set or hardened by the time they reach the end of the apron, where they can be removed by an attendant.

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

1. The combination, with a depositing-mold having a plurality of independent compartments, of a plurality of independent forcing devices for supplying separate varieties of depositing material under pressure to the said compartments, and means for simultaneously operating all of said forcing devices.

2. The combination, with a depositing-mold having a plurality of independent compartments and openings therefrom forming a pattern, of a forcing device for simultaneously supplying a plurality of varieties of depositing material under pressure to said compartments, whereby a pattern deposit is produced.

3. The combination, with a depositing-head having a plurality of chambers, of a mold secured to the depositing-head and provided with a plurality of compartments, each of which is in communication with its respective chamber of the depositing-head, said mold having perforations forming a pattern extending beneath all the compartments, and means for simultaneously supplying a plurality of varieties of materials to the respective chambers of the depositing-head.

4. The combination, with a depositing-head having a plurality of chambers, of a mold secured to the depositing-head and provided with a plurality of compartments, each of which is in communication with its respective chamber of the depositing-head, said mold having perforations forming a pattern, extending beneath all the compartments, and means for simultaneously forcing a plurality of varieties of materials into the respective chambers of the depositing-head.

5. The combination, with a mold having its bottom perforated to form a pattern-opening, of partitions in said mold dividing it into a plurality of compartments above the perforations, a depositing-head provided with a plurality of chambers each of which communicates with the respective compartments of the mold, and a plurality of means for forcing different varieties of depositing material under pressure to the respective chambers of the depositing-head, and mechanism for simultaneously operating all of said forcing means.

6. The combination, with a forcing device for supplying depositing material to a suitable base, of a pressure-controlled suction device arranged to be operated by the pressure on the depositing material, and to suck back the surplus of depositing material.

7. The combination with a mold, of means for supplying material under pressure to said mold, and a pressure-controlled suction device arranged to be operated by the pressure on the depositing material and to cut off communication between said supplying means and the mold and to suck back any surplus material in the mold.

8. The combination, with a mold, of means for supplying material under pressure to said mold, and a spring-operated suction device arranged to cut off communication between the said supplying means and the mold and to suck back any surplus depositing material in the mold.

9. The combination, with a mold, a forcing device having an outlet, and a conduit between the outlet of the forcing device and the mold, of a valve arranged to cut off communication between the outlet and the conduit, a piston located in said conduit and connected to the valve, and means for yieldingly closing the valve, whereby the latter will be opened by the pressure produced by the forcing device.

10. The combination, with a forcing device having an outlet, a valve arranged to close said outlet, a valve-casing inclosing the valve, said valve-casing having a port, of a piston

arranged to close the port when the valve is closed, a connection between the valve and piston, and means for operating said valve and piston to close the valve and port.

11. In a device for holding cakes or other bases, the combination with a stop device, of yielding means for forcing such a base against said stop device, and positive mechanism for retracting said yielding means.

12. The combination with a mold, and means for supplying the mold with material to be deposited, of a lifting device arranged to lift a base to the mold, to receive a deposit of material, and yielding means for lifting said base with relation to the lifting device, and positive mechanism for retracting said yielding means.

13. In a device for lifting and holding a cake or the like, the combination with a lifter-rod having a stop device, of a presser, yielding means for forcing said presser toward said stop device, a lever engaging said presser, an abutment against which the end of the lever may contact, and means for operating the lifter-rod.

14. The combination, with a raceway, and a magazine arranged to supply suitable bases to said raceway, of a pusher located in the raceway and having a beveled front end, and means for operating the pusher.

15. In a magazine for perforated articles, the combination with a standard having an arm, of a hanger detachably connected to the standard and arranged to be inserted through the perforations in the articles, a follower device arranged to bear against one of the said articles, and a guide device connected to the hanger and arranged to guide the articles.

16. The combination of a pivoted chute, a cam bearing on the side of said chute and arranged to oscillate it, and means for operating said cam.

17. The combination of a pivoted chute, a lug on one side of said chute, a roller journaled in said lug, a cam bearing on said roller and arranged to oscillate said chute, and means for operating said cam.

18. The combination of a pivoted chute, a lug projecting from one side of said chute, a roller journaled in said lug, a cam bearing on said roller and arranged to oscillate said chute, a ratchet-wheel attached to said cam, a lever mounted concentric with said cam, and a pawl pivoted to said lever and engaging said ratchet-wheel.

19. The combination of a pivoted chute, a lug projecting from one side of said chute, a roller journaled in said lug, a cam bearing on said roller and arranged to oscillate said chute, a ratchet-wheel attached to said cam, a lever mounted concentric with said cam, a pawl pivoted to said lever and engaging said ratchet-wheel, a driving-shaft, a drum on said shaft having a cam-groove in its periphery, and a roller on the free end of said lever engaging the walls of said cam-groove and thereby rocking said lever.

20. The combination, with a hopper, a supply-pipe connected to the hopper, and a bag located in the hopper and arranged to receive a plastic or viscous material, of means for compressing the bag to squeeze said material into the supply-pipe.

21. The combination, with a hopper, a supply-pipe connected to said hopper, and a bag located in the hopper and arranged to receive a plastic or viscous material, of guides, and a weight movable along said guides and arranged to bear on the bag, whereby the material is squeezed into the supply-pipe.

22. The combination with the forcing devices, and the plungers therefor, of a plunger-rod, a yoke connected to said rod, and to the said plungers, said rod containing a slot, a pivoted lever having one end entering the slot, a driving-shaft, a cam on said shaft engaging the other end of said lever and thereby moving said plungers in one direction, and a spring surrounding said rod and arranged to move said plungers in the opposite direction.

23. The combination of a pusher, a pivoted lever, a driving-shaft, a drum on said shaft having a cam-groove in its periphery, a roller on one end of said lever arranged to enter the cam-groove and thereby rock said lever, and a link connecting the other end of said pivoted lever with said slide.

24. The combination of a lifter-rod, means for moving said rod, a head on the upper end of said rod, and a pair of oppositely-disposed guide-blocks on said head, each of said blocks having projecting ledges on the opposing sides at their upper portions.

25. The combination of a lifter-rod, means for moving the rod, a head on the upper end of said rod, a pair of oppositely-disposed guide-blocks on said head, said blocks having projecting ledges on the opposing sides at their upper portions, and a spring-finger extending along each of said opposing sides beneath said ledges.

26. The combination of a lifter-rod, means for moving the rod, a head on the upper end of said rod, a pair of oppositely-disposed guide-blocks on said head, said blocks having projecting ledges on the opposing sides at their upper portions, said lifter-rod having an axial bore located between said blocks, a presser-rod located in said bore, and means for moving said presser.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 15th day of March, 1900.

JULIUS MOHS.

Witnesses:
OTTO STRUENSEE,
OSCAR BRECENDORFF.