No. 794,130. PATENTED JULY 4, 1905.

E. L. SONS.

PIE MACHINE.

APPLICATION FILED NOV. 10, 1904.

5 SHEETS—SHEET 1.

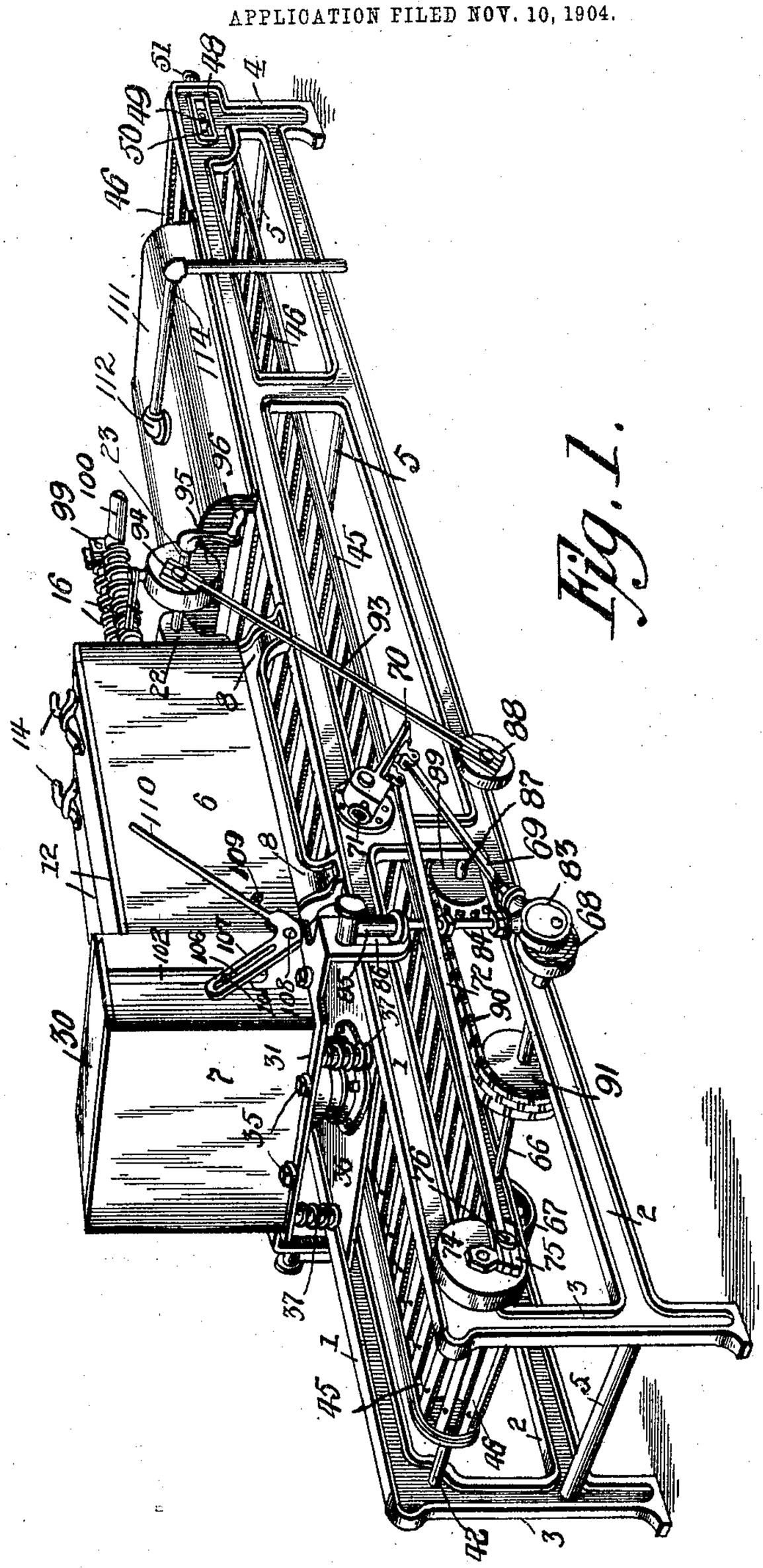

Fig. 1.

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5 SHEETS—SHEET 2.

Fig. 2.

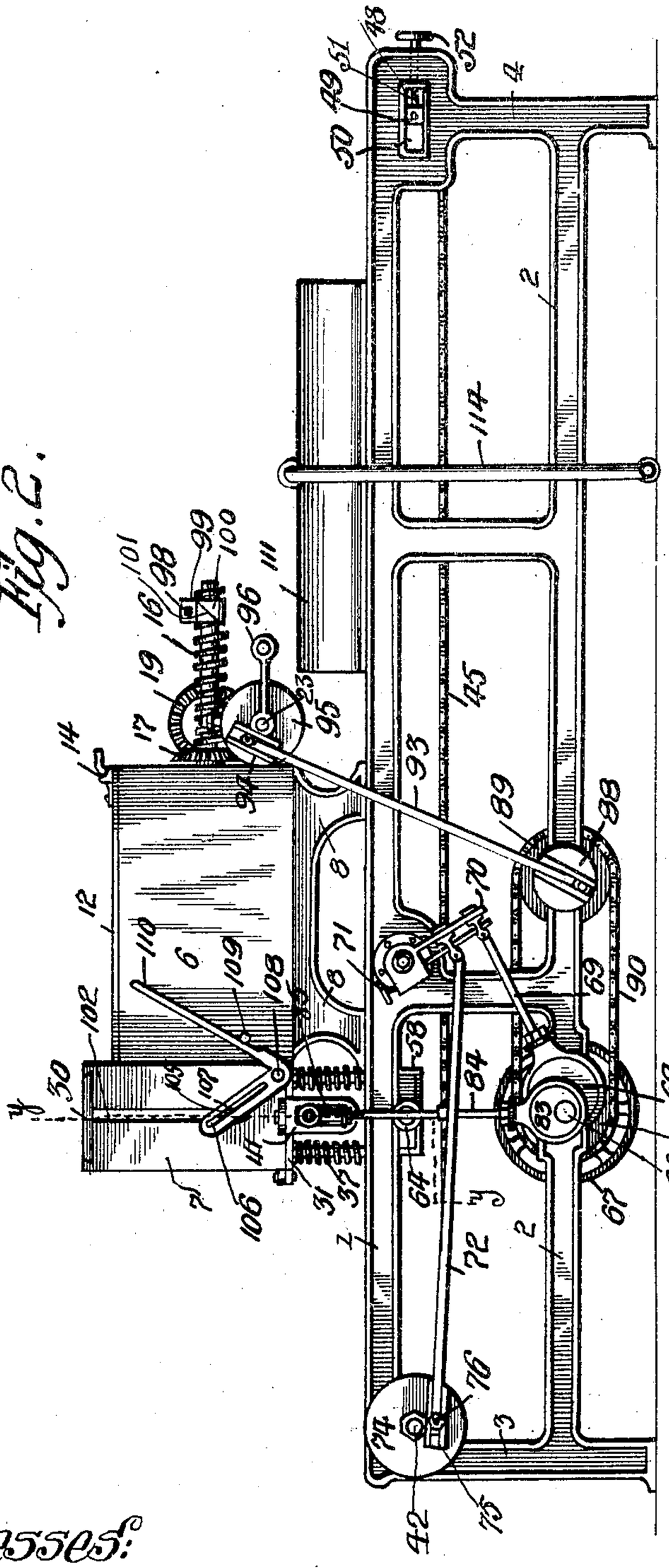
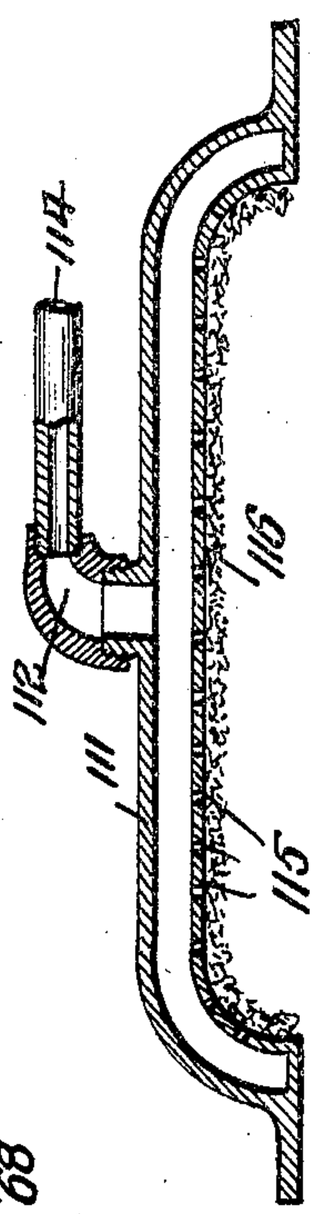


Fig. 3.



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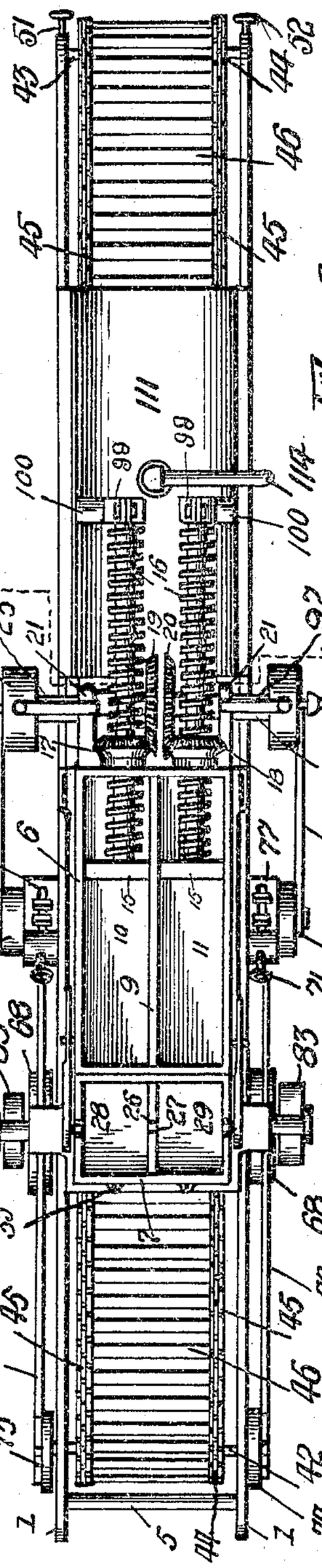

Fig. 4.

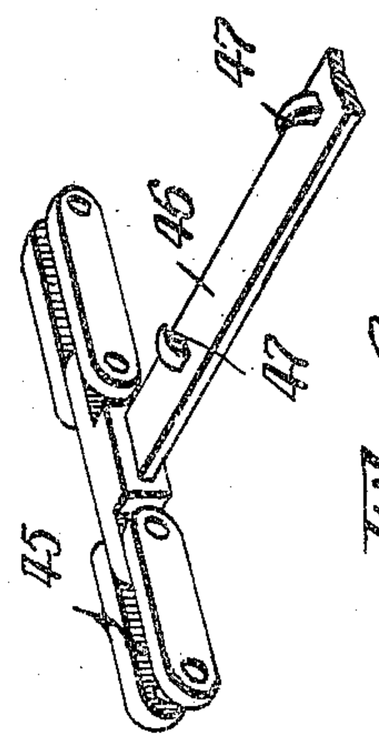

Fig. 8.

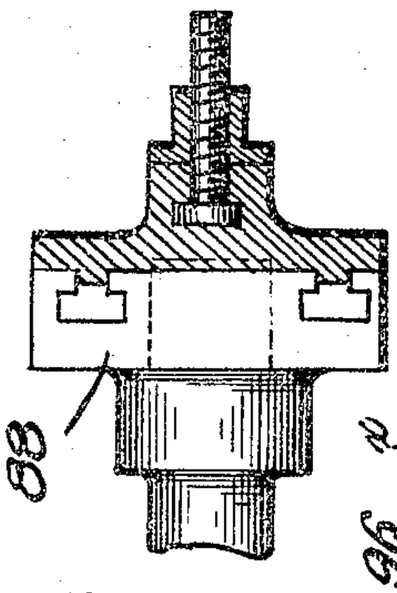

Fig. 6.

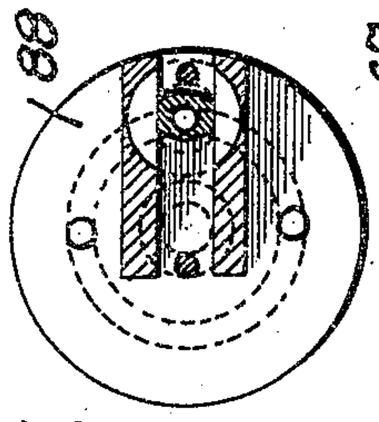

Fig. 5.

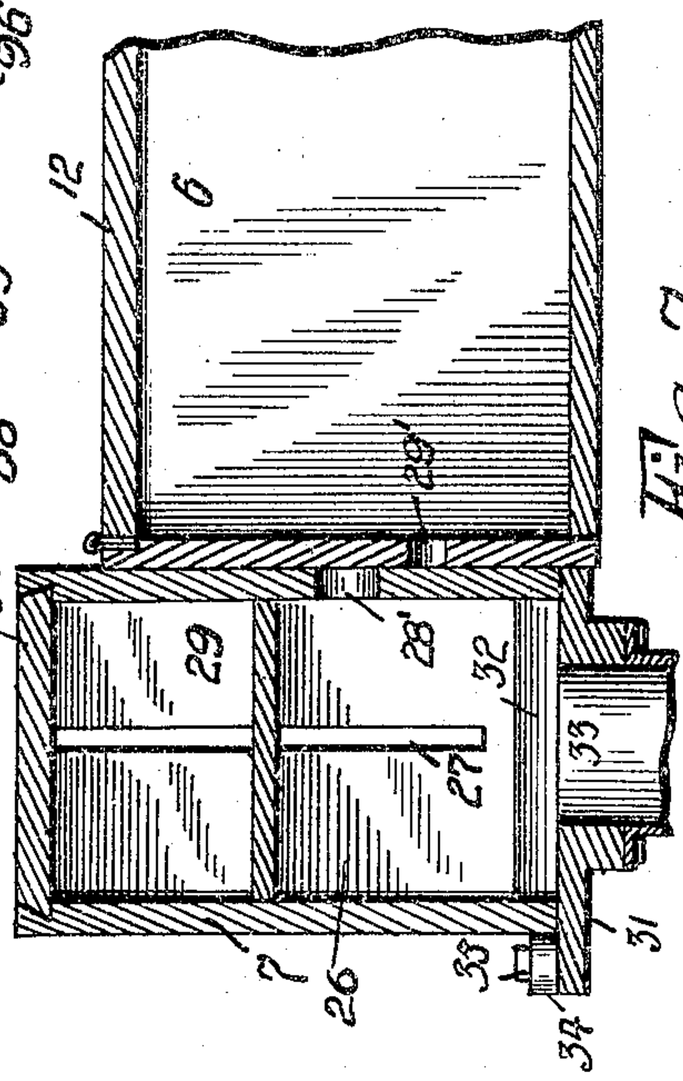

Fig. 7.

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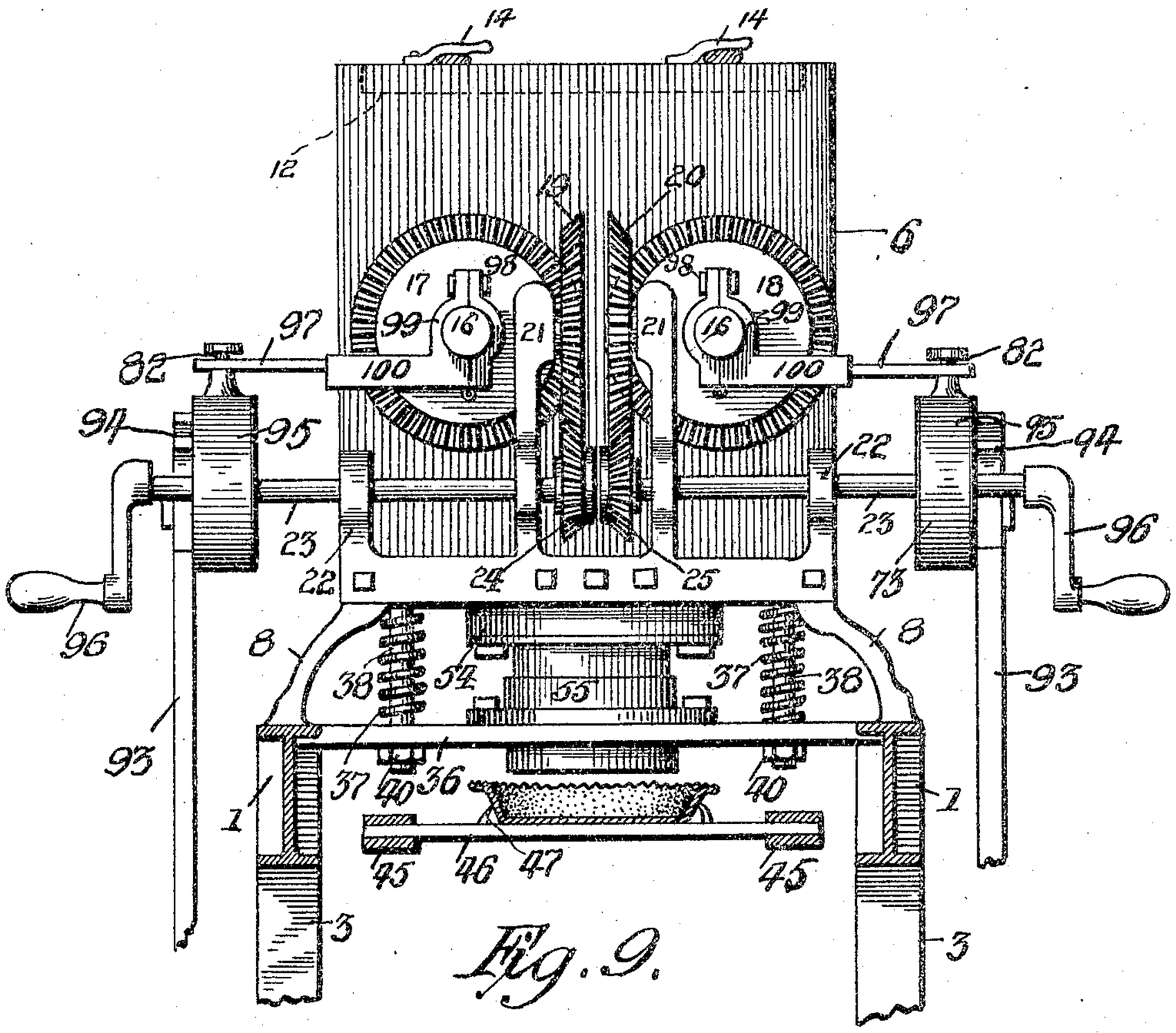

Fig. 9.

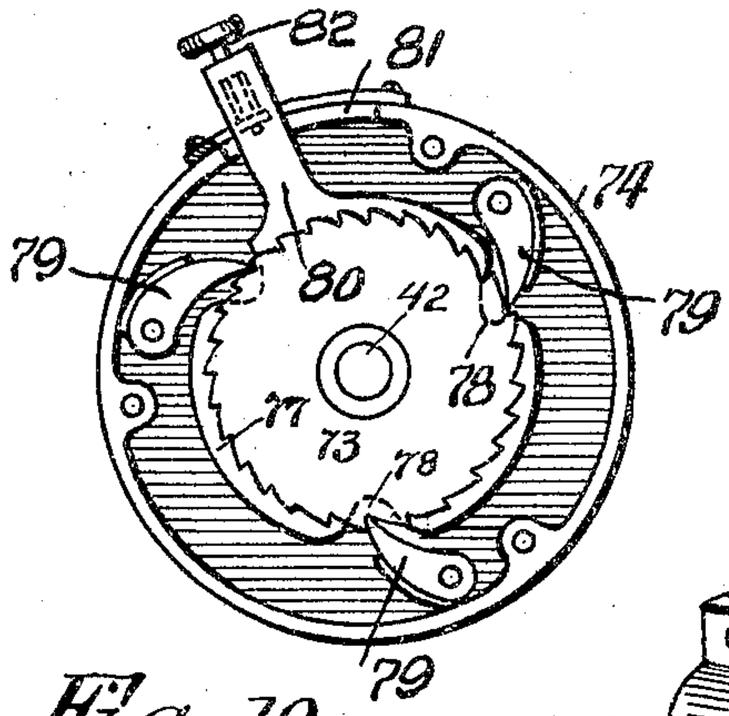

Fig. 10.

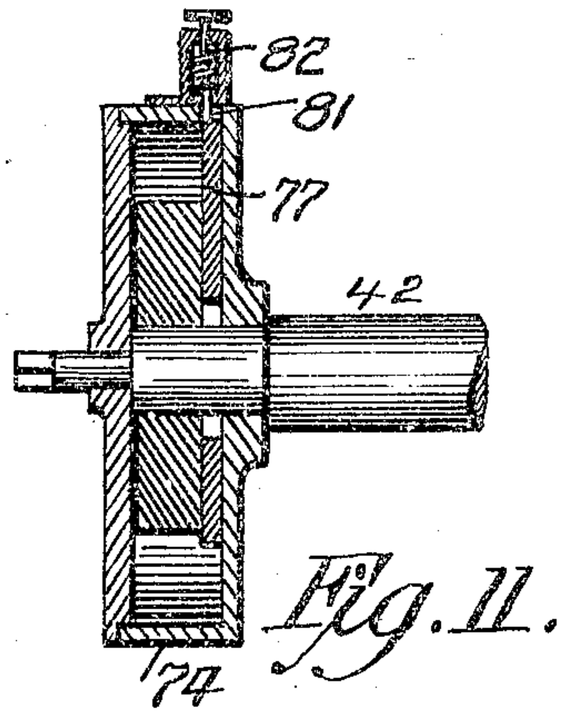

Fig. 11.

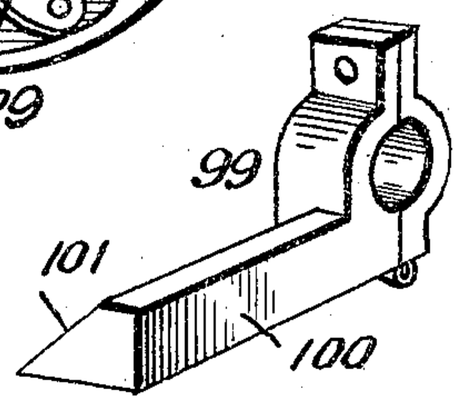

Fig. 12.

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5 SHEETS—SHEET 5.

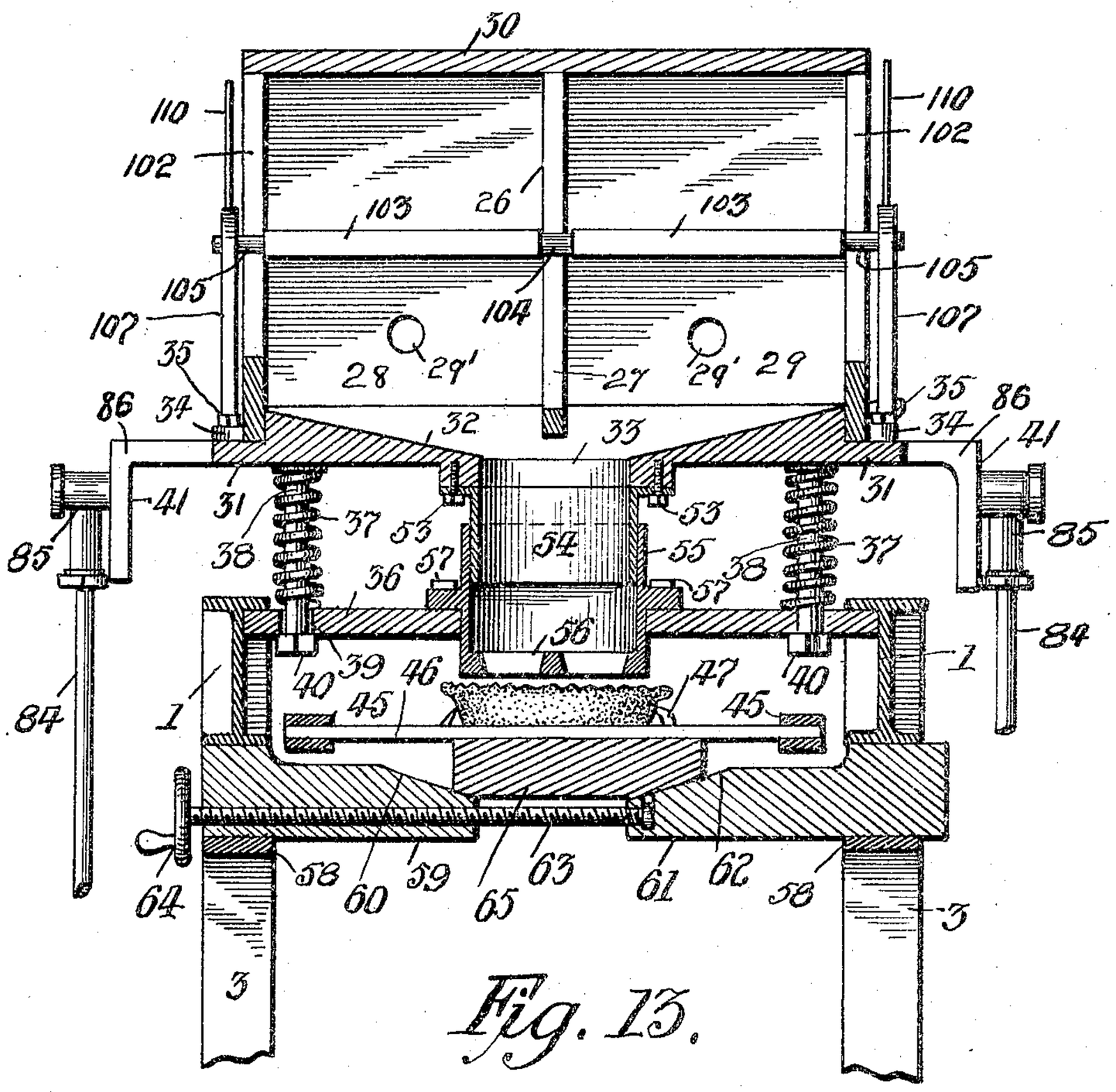

Fig. 13.

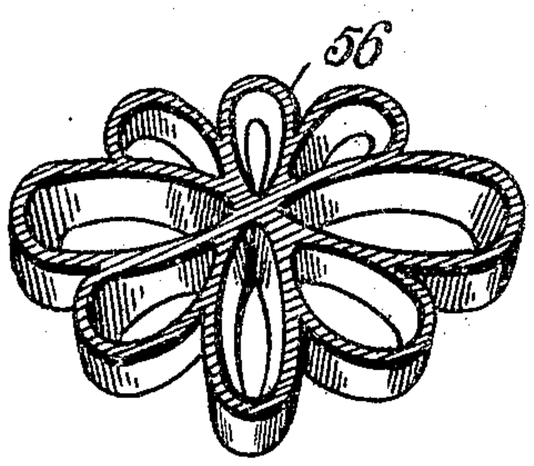

Fig. 14.

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No. 794,130. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

ERNEST L. SONS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM SANGL, OF PITTSBURG, PENNSYLVANIA.

PIE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 794,130, dated July 4, 1905.

Application filed November 10, 1904. Serial No. 232,188.

To all whom it may concern:

Be it known that I, ERNEST L. SONS, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Pie-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in pie-machines, and more particularly to a machine adapted to supply pies with meringue and the like substance after they have been baked.

The primary object of the invention is to provide a machine of the above type wherein novel means is employed for automatically feeding pies under a suitable receptacle adapted to contain meringue to be deposited upon the pies.

Another object of this invention in the above connection is the employment of novel means for automatically feeding and depositing meringue upon pies, and I employ novel dies for giving the deposited meringue any desired configuration and a suitable oven whereby the meringue may be slightly baked or browned before being discharged from the machine.

The above are some of the primary objects and elements used in connection with my improved machine, and the details, together with the many advantages derived from the same, will be hereinafter more fully described, and then more particularly pointed out in the claims, and referring to the drawings accompanying this application like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a perspective view of my improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse sectional view of an oven used in connection with my improved machine. Fig. 4 is a top plan view of the machine as constructed in accordance with my invention. Figs. 5 and 6 are detail views of a disk-crank used in connection with the machine. Fig. 7 is a vertical sectional view of a portion of the meringue-receptacles. Fig. 8 is a detail perspective view of a portion of the traveling chain. Fig. 9 is a vertical sectional view of my improved machine, taken on the line *x x* of Fig. 4, the lower portion being broken away. Fig. 10 is a detail view of a ratchet, showing the outer plate thereof removed. Fig. 11 is a central vertical sectional view of said ratchet. Fig. 12 is a detail perspective view of a clamp employed in connection with my improved machine. Fig. 13 is a transverse vertical sectional view of my improved machine, taken on the line *y y* of Fig. 2; and Fig. 14 is a detail sectional view of one of the dies that may be used in connection with my improved machine.

To put my invention into practice, I provide a suitable supporting-frame, which I have shown as embodying the top rails 1 1, the lower side rails 2 2, supporting-legs 3 3 and 4 4, and tie-rods or braces 5 5, connecting the supporting-rails and forming a rigid frame.

In describing the invention in detail reference will first be had to the particular construction of the meringue-receptacles, which form the essential features of my invention.

In order that the invention can be clearly understood, I deem it essential that a brief resumé of the meringue be set forth. The meringue or "frosting," as it is commonly called, is made from eggs and other ingredients, which are beaten to a stiffness, and is commonly placed upon pies and browned. Heretofore this meringue has been placed upon pies by hand, and the machine as constructed by me is adapted to automatically deposit the meringue upon bottom pie-crusts which are fed through the machine. To this end I employ the meringue-receptacles 6 and 7, both of which are located above the frame and in close proximity to one another. The main receptacle 6, which serves the function of a reservoir, is supported by the legs 8 8 from the top side rails 1 of the frame. This receptacle or reservoir is provided with a central partition 9, dividing the receptacle into two compartments 10 and 11. Each compartment is provided with a suitable hinged lid 12, which may be secured in a closed po-

sition by any suitable means, such as the clamps, (designated by the reference-numerals 14 14.) In the compartments 10 and 11 are mounted the plunger-heads 15 15, which carry screws 16 16, that pass through the end of the receptacle 6. These screws are provided with pinions 17 and 18, which mesh with beveled gears 19 and 20, respectively, supported in the brackets 21 21, carried by the end of the receptacle 6. In these brackets and the lugs 22 22, which are carried by said brackets, are journaled the shafts 23 23, which upon their inner ends are provided with beveled gears 24 and 25, that mesh with the beveled gears 19 and 20. The shafts 23 23 extend outwardly upon each side of the frame, and the mechanism used in connection with these shafts will be hereinafter more fully described.

Reference will now be had to Figs. 1, 7, and 13 of the drawings, wherein the receptacle 7 is clearly illustrated, and this receptacle, which receives the meringue from the receptacle 6 and deposits the same upon the pies, will be hereinafter termed a "depositing-receptacle." The receptacle is provided with a central partition 26, having a vertical slot 27 formed therein, this partition forming compartments 28 and 29. The receptacle in its entirety is mounted adjacent to one end of the receptacle 6, and is adapted to be normally held in engagement with said receptacle. The end of each of the compartments 10 and 11 of the receptacle 6 is provided with an opening 28′, and the end of the receptacle 7 bearing against this end of the receptacle 6 is provided with openings 29′ 29′, which at predetermined times are adapted to aline with the opening 28′, whereby the contents of the compartments 10 and 11, which in this instance are meringue, can pass into the compartments 28 and 29 of the depositing-receptacle 7. The receptacle is provided with a slidable lid or cover 30 and with a removable bottom 31, the inner side of which tapers, as indicated at 32, to a central flanged opening 33. The lower edges of the receptacle are provided with lugs 34, whereby the removable bottom may be secured to the receptacle by the screws 35. The receptacle 7 is supported upon a plate 36, mounted upon the upper side rails 1 1, said receptacle being mounted upon springs 37, which surround the depending rods 38, carried by the bottom of the receptacle 7. The rods 38 extend through openings 39, formed in the plate 36, and have their lower ends provided with nuts 40 to limit the upward movement of the receptacle, and when it is desired to remove the receptacle from the frame the nuts are removed. The bottom of the depositing-receptacle is provided upon its sides with the depending slotted arms 41, to which a mechanism is attached which will vertically reciprocate the depositing-receptacle. Secured by the bolts 53 53 to the flanged opening 33 of the depositing-receptacle 7 is the downwardly-extending chute 54, which is telescoped by the casing 55 of the die 56. The die 56 extends through an opening formed in the plate 36 and is secured therein by the screws 57. Different forms of dies may be used for producing desired configurations of the meringue, and in Fig. 14 of the drawings I have illustrated one form of die which may be used in connection with the depositing-receptacle.

In each end of the frame is mounted a shaft 42 and 43, carrying sprocket-wheels 44 44, over which pass the sprocket-chains 45 45, these chains, together with the slats 46, forming an endless apron, upon which the pies are supported and carried beneath the receptacles just described. Each slat is provided with means for supporting a pie, such as the upwardly-extending pins 47, which are adapted to engage the pie-crust and retain the same upon the slat during its travel. A suitable compensating appliance, as indicated by the reference-numeral 48, is employed to compensate or provide for the stretching of the apron. This compensating appliance consists of mounting the shaft 43 in the blocks 49, slidably mounted in the slots 50, formed in the frames at one end of the machine, and these blocks are adjusted by screws 51, which pass through the end of the frame and are operated by the hand-wheels 52. The lower edges of the upper side rails 1 adjacent to the depositing-receptacle are provided with the hangers 58 58, and in one of said hangers is mounted a stationary block 59, having a beveled surface 60. In the opposite hanger is adjustably mounted a block 61, having beveled surfaces 62, and to this block is connected a screw 63, which passes through the block 59 and carries upon its outer end a hand-wheel 64. Mounted upon the beveled surfaces 60 and 62 of the blocks 59 and 61, respectively, is a block 65, which is adapted to engage the under faces of the slats 46 at predetermined times. These beveled blocks are employed for raising the apron into close proximity to the die 56, which at times may be necessary in order that a perfect formation of the meringue is obtained upon the pie-crust. In Fig. 13 of the drawings I have illustrated a pie as being carried by the apron and located directly beneath the die, and it will be observed that by rotating the hand-wheel 64 the central block 65 can be raised to elevate the pie into close engagement with the die.

The mechanism which is employed for operating the different parts of my improved machine will now be described, and reference will be had to Figs. 1 and 2 of the drawings, wherein the operating mechanism is most clearly shown. The reference-numeral 66 designates the main power-shaft, which is located approximately below the depositing-receptacle and mounted in the lower side rails 2 2. The outer end of the shaft is provided with a belt-wheel 67, over which a suitable

belt passes to transmit power to the machine. Upon the opposite end of the shaft 66 is mounted an eccentric 68, which is adjustably connected by a rod 69 to a rocking lever 70. The rod 69 is adjustable by means of an adjusting-screw 71, whereby to shorten or lengthen the throw of the rod. The rocking lever is mounted upon one of the upper side rails 1, and a similar connecting-rod 72 is adjustably attached to the ratchet-wheel 73, mounted upon one end of the shaft 42. This ratchet is illustrated in detail in Figs. 10 and 11. A mechanism similar to that just described—namely, an eccentric, connecting-rods, locking-lever, and ratchet—is employed upon the opposite side of the machine, and each ratchet is arranged in a casing or box 74. Each ratchet is identical in construction. Therefore I deem it only necessary to describe one of said ratchets. Each casing is provided on its outer face with flanged guides 75, which adjustably hold the wrist-pin 76, to which the connecting-rods 72 are attached at their upper ends. Arranged within the casing or box 74, being loosely mounted upon the end of the journal of the shaft 42, is a disk 77, provided with notches 78, forming cam-surfaces by means of which the spring-pressed pawls 79 are moved away from and held out of engagement with the ratchets 73, whereby, when desired, the driving mechanism of the machine may be permitted to continue in operation without imparting movement to the shaft 42. The disk 77 is provided with an extension 80, forming a handle which projects through a slot 81 in the periphery of the casing or box 74, the disk being held so as to maintain the pawls 79 out of engagement with the ratchet-wheel or in position to permit the engagement of said pawls with the ratchet-wheel by the spring-held locking bolt or pin 82. Upon the shaft 66 are also mounted eccentrics 83 83, which are connected by the adjustable rods 84 to the boxes 85, mounted in the slots 86 of the depending arms 41. A shaft 87 is mounted in the lower side rails 2 2, the ends of said shaft protruding without the frame of the machine and carrying disk-cranks 88 88. Upon the shaft 87, between the side rails of the frame, is mounted a sprocket-wheel 89, over which a sprocket-chain 90 passes, that also passes over a sprocket-wheel 91, mounted upon the shaft 66, to impart a rotary movement to the shaft 87 when the shaft 66 is rotated. The disk-cranks 88 are connected by rods 93 93 to the flanged guides 94 of the ratchets 95, carried upon each end of the shafts 23. These ratchets are identical in construction to the ratchets 73, heretofore described, with the exception that the shafts 23 extend through the ratchets and carry on their outer ends detachable crank-handles 96, the object of which will be hereinafter described. The spring-held locking bolts or pins 82 of the ratchets 95 are provided with inwardly-extending arms 97, and adjustably secured by the bolts and nuts 98 upon the screws 16 are the clamps 99, one of said clamps being clearly shown in Fig. 12 of the drawings. The clamp consists of two hinged members, and one of said members is provided with an outwardly-extending arm 100, having a beveled face 101, and this beveled face is adapted to engage the arm 97 of the ratchet 95 for a purpose which will be presently described.

The sides of the depositing-receptacle 7 are provided with vertical slots 102, which transversely aline with the slot 27 of the central partition 26. In the compartments 28 and 29 of the receptacle 7 are mounted vertically-reciprocating plates 103 103, which are connected together by a pin 104, which passes through the slot 27, and the outer edges of the plates 103 are provided with pins 105, which extend through the slots 102 of the receptacle and into the slots 106 of the bell-crank lever 107, that is pivoted, as indicated at 108, to the bottom 31 of the depositing-receptacle. The sides of the receptacle or reservoir 6 are provided with pins 109, and the arm 110 of each bell-crank lever is adapted to engage said pins.

The reference-numeral 111 designates an oven which is mounted upon the upper side rails 1 1 of the machine, this oven being preferably located at one end of the machine and in close proximity to the receptacle 6. The oven is substantially arc-shaped in form and consists of a casing having a gas-inlet port 112, to which a gas-supply 114 is connected, and the inner face of the casing is provided with a plurality of apertures 115. This inner face is also provided with an asbestos lining 116, the oven in its entirety forming a gas-burner which will brown the meringue deposited upon the pie-crusts as the pies pass through said oven.

Operation: The meringue which has been previously prepared is placed within the compartments 10 and 11 of the receptacle 6, and upon the lid 12 having been closed the machine is started. Prior to starting the machine the pie-crusts are placed upon the slats 46, and when the machine is started the apron will carry the pie-crusts beneath the depositing-receptacle 7. As the shaft 66 is rotated the depositing-receptacle is vertically reciprocated through the medium of the eccentric 83. A rotary movement is imparted to the shaft 87, which, through the medium of the crank-disk 88, connecting-rods 93, and ratchets 94, imparts an intermittent or spasmodic movement to the shafts 23 23, and these shafts, through the medium of the gears 24, 25, 19, 20, 17, and 18, impart a revoluble inwardly-traveling movement to the screws 16. As these screws carry the plunger-heads 15 15 the meringue will be forced to the ends of the compartments 10 and 11, having the open-

ings 29′ formed therein, and as the depositing-receptacle 7 is vertically reciprocated the openings 29′ of said receptacle will travel past the openings 28′ and will receive a charge of meringue which is being forced through the openings 29′ 28′ by the plungers 15. When the meringue has been placed within the compartments 28 and 29 of the depositing-receptacle, a downward movement of said receptacle causes the plates 103 to travel faster than the movement of the box, this being accomplished through the medium of the bell-crank levers 107. As the depositing-receptacle travels downwardly, carrying with it the chute 54, the meringue is deposited and forced through the die 56 upon the pie-crust, which has been conveyed beneath the die by the apron of my improved machine. The return movement of the depositing-receptacle is facilitated by the springs 37 37. The pie-crusts having received the meringue are carried under the oven 111, where the meringue is browned, and the pies are removed from the endless apron at the end of the machine. When the screws 16 have traveled inwardly and plunger-heads 15 15 have reached the ends of the compartments, the beveled faces 101 of the arms 100 strike the arms 97 and raise the locking bolts or pins 82 of the ratchets 95 and permits the continuous operation of the machine without effecting the movement of the screws 16 16. The plunger-heads 15 are then returned to the forward part of the compartments 10 and 11 by rotating the crank-handles 96 96, this being accomplished through the medium of the shafts 23, gears 24, 25, 19, 20, 17, and 18, and the compartments can be refilled with meringue. I may employ other means than the clamps 100 for releasing the ratchets 95 from operating the screws 16 16, also other means for vertically reciprocating the depositing-receptacle.

My improved machine may be readily used in connection with cakes for depositing other substances than meringue, and I do not care to confine myself to the specific construction shown, but may make various changes in the details of construction without departing from the general spirit and scope of the invention.

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

1. In a machine of the type described, the combination of a frame, a reservoir mounted thereon and having openings in its forward end, plungers operating in said reservoir to force the substance contained in the reservoir through the openings in said end, a vertically-movable depositing-receptacle coacting with the reservoir and having openings to register at predetermined times with the openings in the reservoir, means for intermittently conveying pie-crusts underneath the depositing-receptacle, means in the depositing-receptacle for ejecting the substance contained therein simultaneously with the positioning of the pie-crusts underneath the receptacle, and an oven mounted on the frame and through which the pies are moved during their travel on the intermittently-operating conveying means.

2. In a machine of the type described, the combination with an intermittently-operating conveying means, and means for actuating the same, of a reservoir divided into compartments and having an opening in the forward end of each compartment, plungers working in unison in said compartments, a vertically-movable depositing-receptacle divided into compartments and each compartment having an opening to register with the openings in the reservoir at predetermined times in the movement of the receptacle, and means within the receptacle operative with the descent thereof for discharging the material therefrom.

3. In a machine of the type described, the combination with an intermittently-operated endless apron, and means for actuating the same, of a reservoir divided into compartments and having a discharge-opening in the forward end of each compartment, plungers operating in said compartments, a depositing-receptacle mounted to reciprocate against the forward end of the reservoir and divided into compartments each of which has an inlet-opening, adapted, during the descent of the receptacle, to register with the discharge-openings of the reservoir-compartments, presser-plates in said receptacle, and means for operating said presser-plates to discharge the contents of the receptacle.

4. In a machine of the type described, the combination with an intermittently-operated endless apron, and means for actuating the same, of a reservoir divided into compartments and having a discharge-opening in the forward end of each compartment, plungers operating in said compartments, a depositing-receptacle mounted to reciprocate against the forward end of the reservoir and divided into compartments each of which has an inlet-opening, adapted, during the descent of the receptacle, to register with the discharge-openings of the reservoir-compartments, presser-plates in said receptacle, means for operating said plates to discharge the contents of the receptacle, and an oven mounted above the endless apron, as and for the purpose described.

5. In a machine of the type described, the combination with an endless conveying-apron, means for operating the same, and an oven mounted above the apron, of a reservoir having a discharge-opening in the front thereof, a plunger operating in the reservoir, a vertically-reciprocatory depositing-receptacle having a tapering bottom and central discharge-opening, said receptacle having an inlet-opening, adapted to register at certain times with the discharge-opening of the reservoir, the end walls of said receptacle being slotted, a presser-plate in said receptacle having pins

projecting through said slots, and means connected to said pins for operating the presser-plate.

6. In a machine of the type described, the combination with an endless conveying-apron, and means for intermittently moving the same, of a depositing-receptacle vertically movable above the apron, and having slotted end walls, a presser-plate in said receptacle, and having pins projecting through the slots, and means connected to said pins for actuating the plate to discharge the contents of the receptacle.

7. In a machine of the type described, the combination with an intermittently-movable endless conveying-apron, having means for holding pie-crusts, means for actuating the apron, and an oven mounted above the apron, of a reservoir having a discharge-opening in the forward end, and having pins projecting outwardly from opposite side walls thereof, a plunger operating in the reservoir, a depositing-receptacle having a central discharge-opening in the bottom, a presser-plate within the depositing-receptacle having pins projecting through slots in the end walls of said receptacle, and bell-cranks pivotally connected to the receptacle with one arm of each crank slotted to receive the pins of the presser-plate and the other arm of each crank engaged by the pins carried by the reservoir-walls, as and for the purpose described.

8. In a machine of the type described, the combination of an intermittently-movable endless conveying-apron, having means for holding pie-crusts, means for actuating the apron, a reservoir mounted above the apron and having a discharge-opening in the forward end thereof, a plunger-head in said reservoir, connected to a screw extending through the rear end of the reservoir, means for actuating said screw including a ratchet having a locking-bolt, an arm carried by said locking-bolt, an arm adjustably mounted on the rear end of the screw and having an inclined face to engage the arm carried by the locking-bolt, a vertically-operating depositing-receptacle receiving substance for depositing from the reservoir, and means for discharging the substance from the depositing-receptacle to pie-crusts carried by the endless apron, substantially as described.

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

ERNEST L. SONS.

Witnesses:
W. SANGL,
K. H. BUTLER.