J. WERNER.

CANDY CASTING MACHINE.

APPLICATION FILED JULY 25, 1908.

959,665.

Patented May 31, 1910.

6 SHEETS—SHEET 1.

FIG. 20.

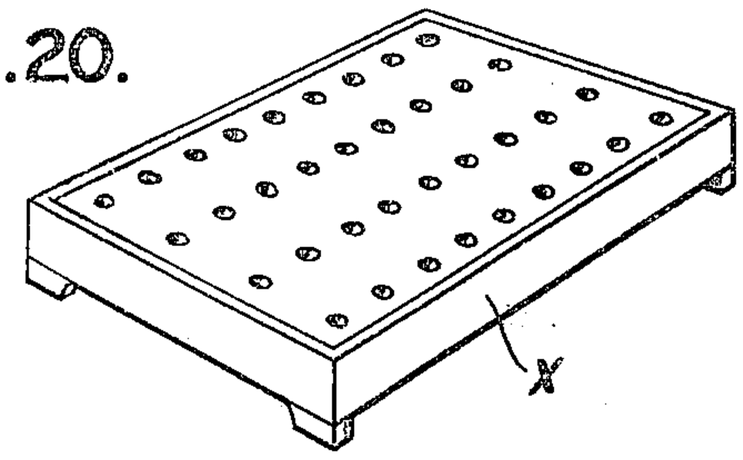
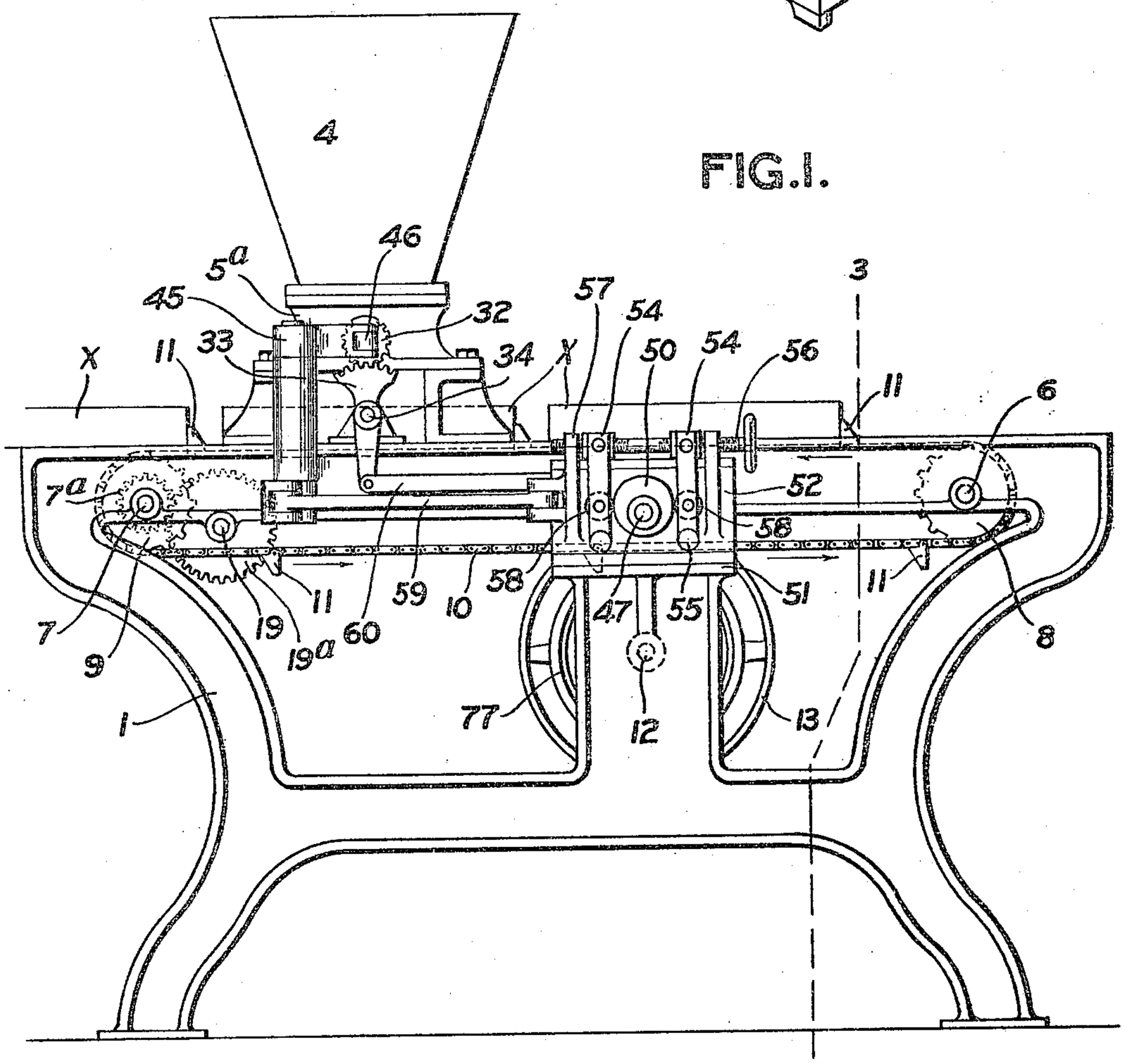


FIG. 1.



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6 SHEETS—SHEET 2.

FIG. 6.

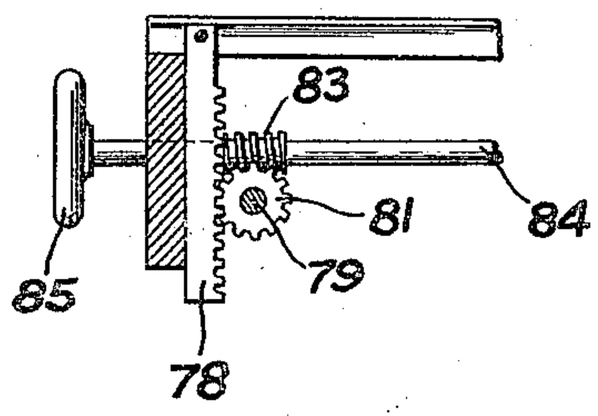


FIG. 7.

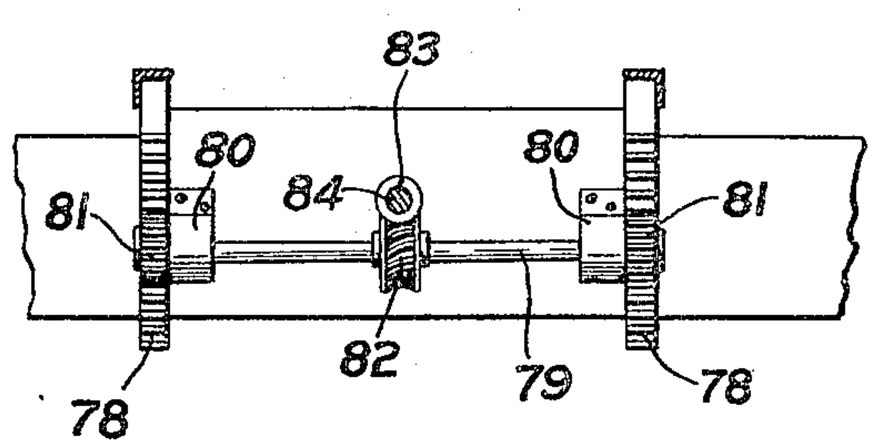
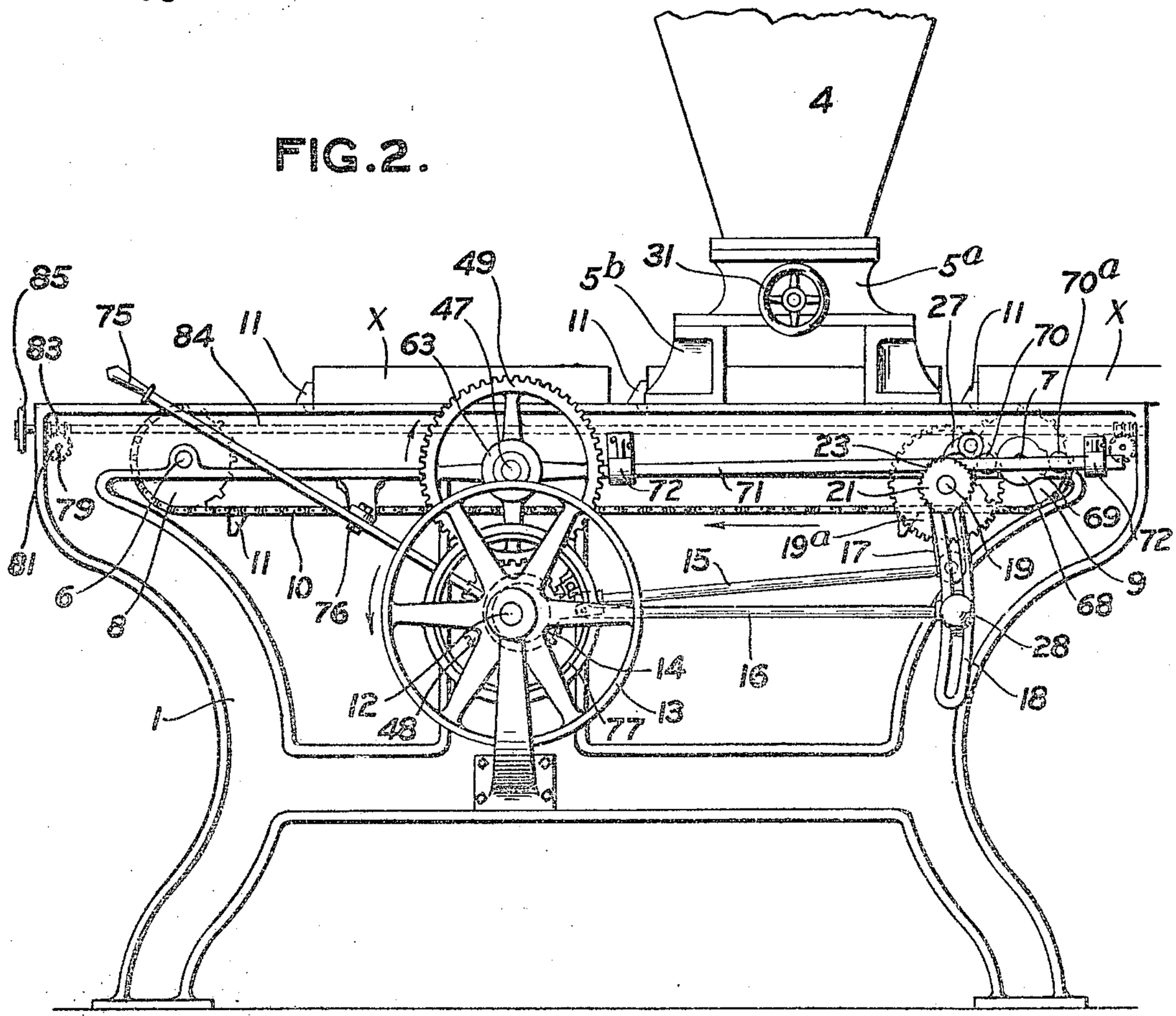


FIG. 2.



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6 SHEETS—SHEET 3.

FIG. 4.

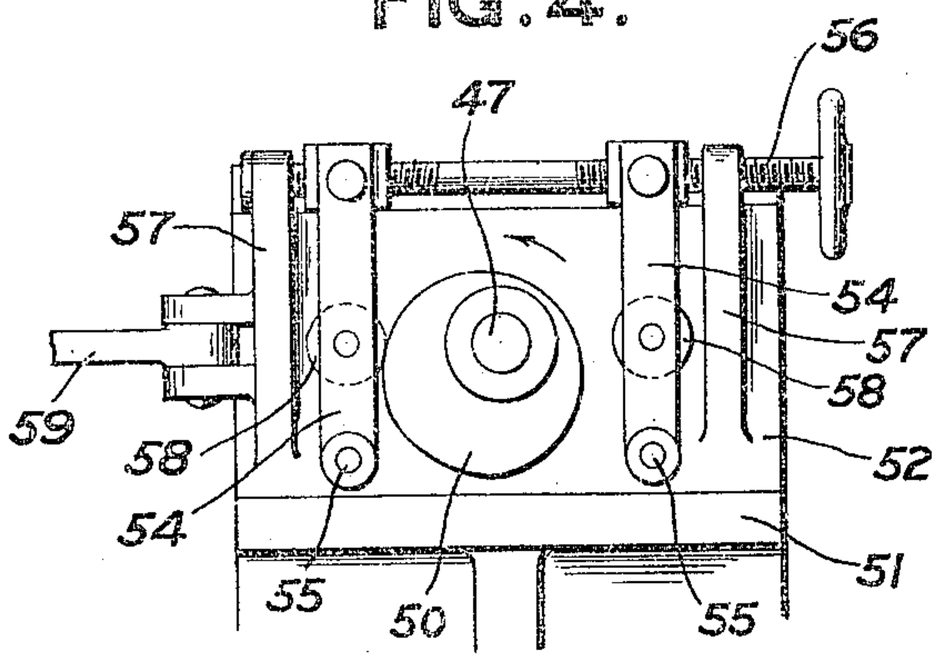
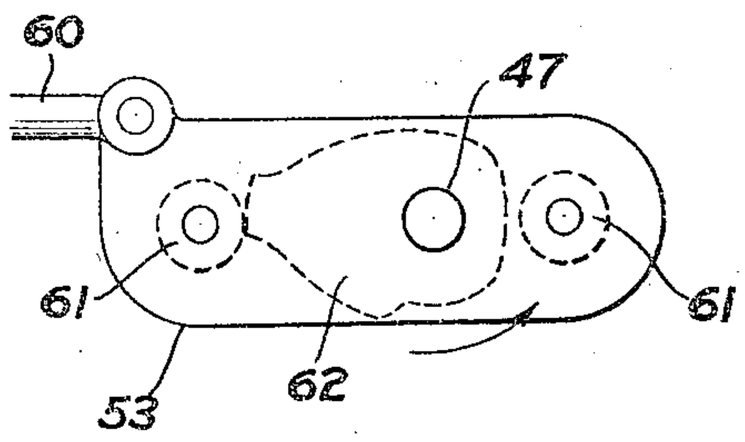
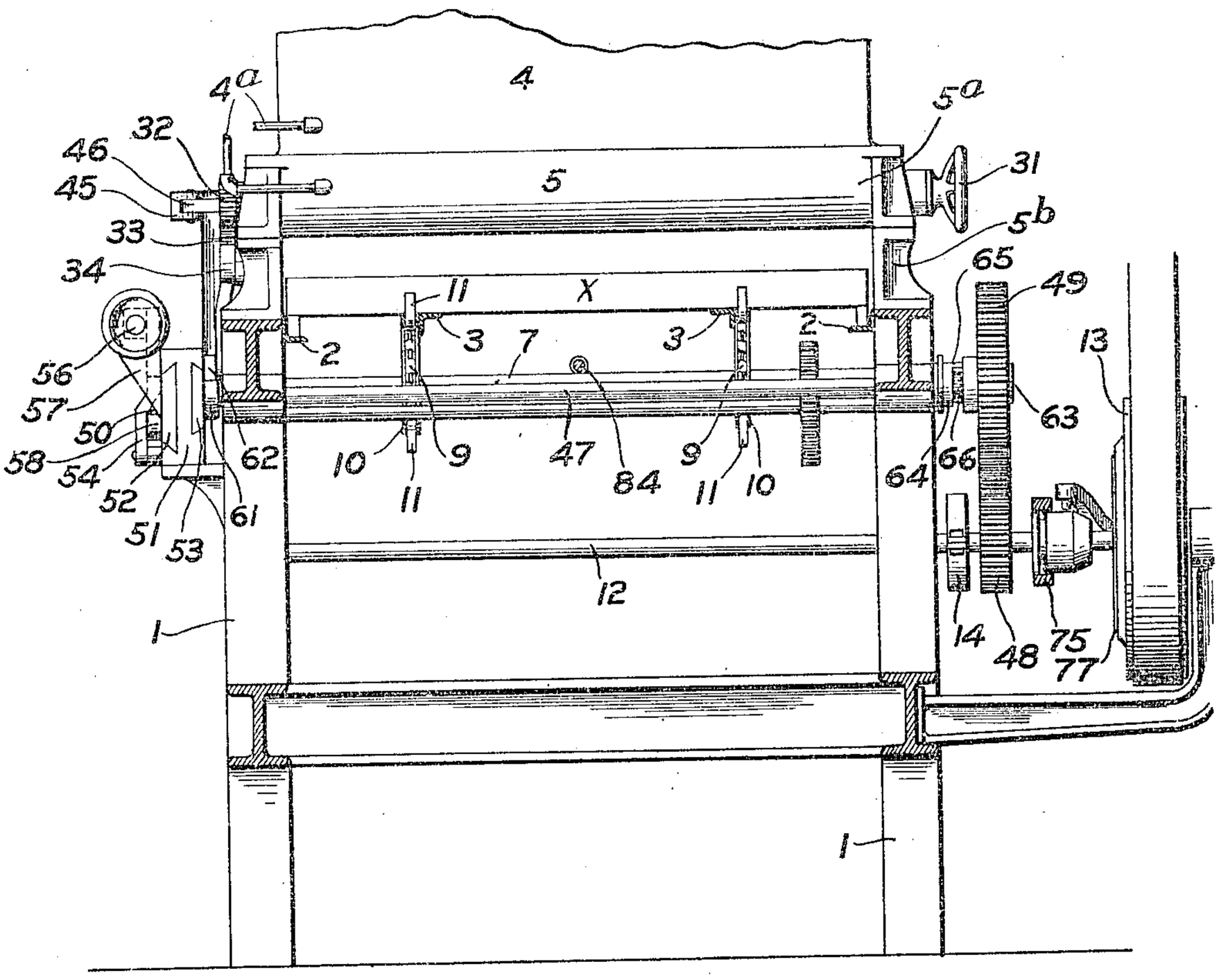


FIG. 3.

FIG. 5.





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ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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6 SHEETS—SHEET 4.

FIG. 9.

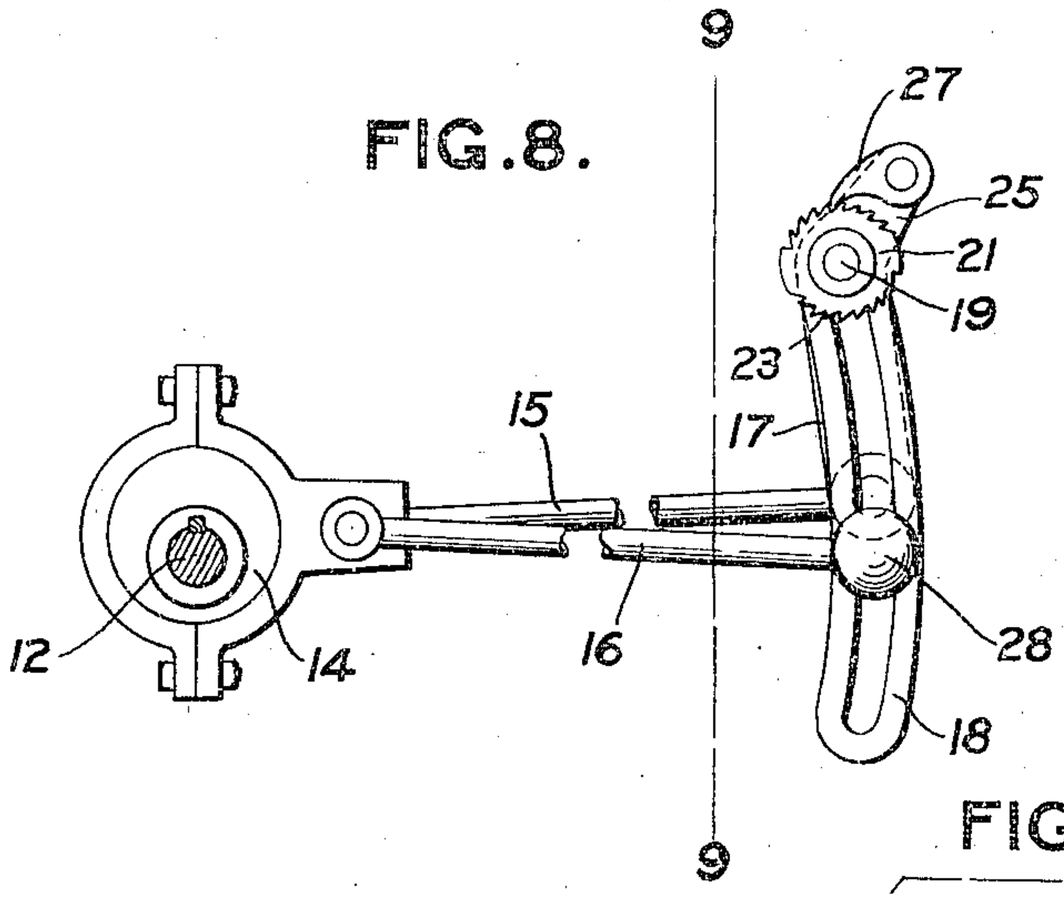


FIG. 8.

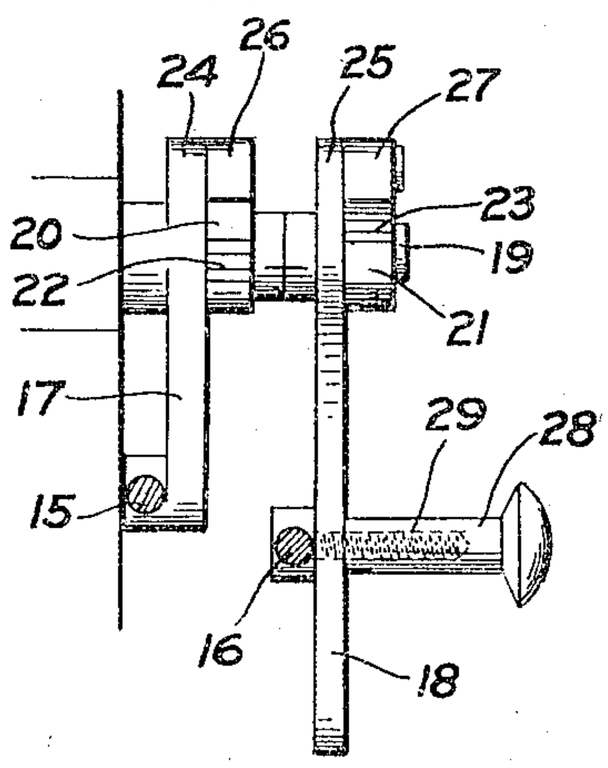


FIG. 8a.

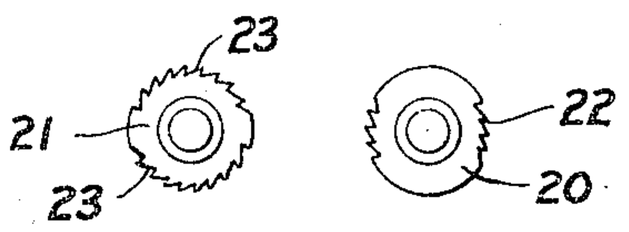
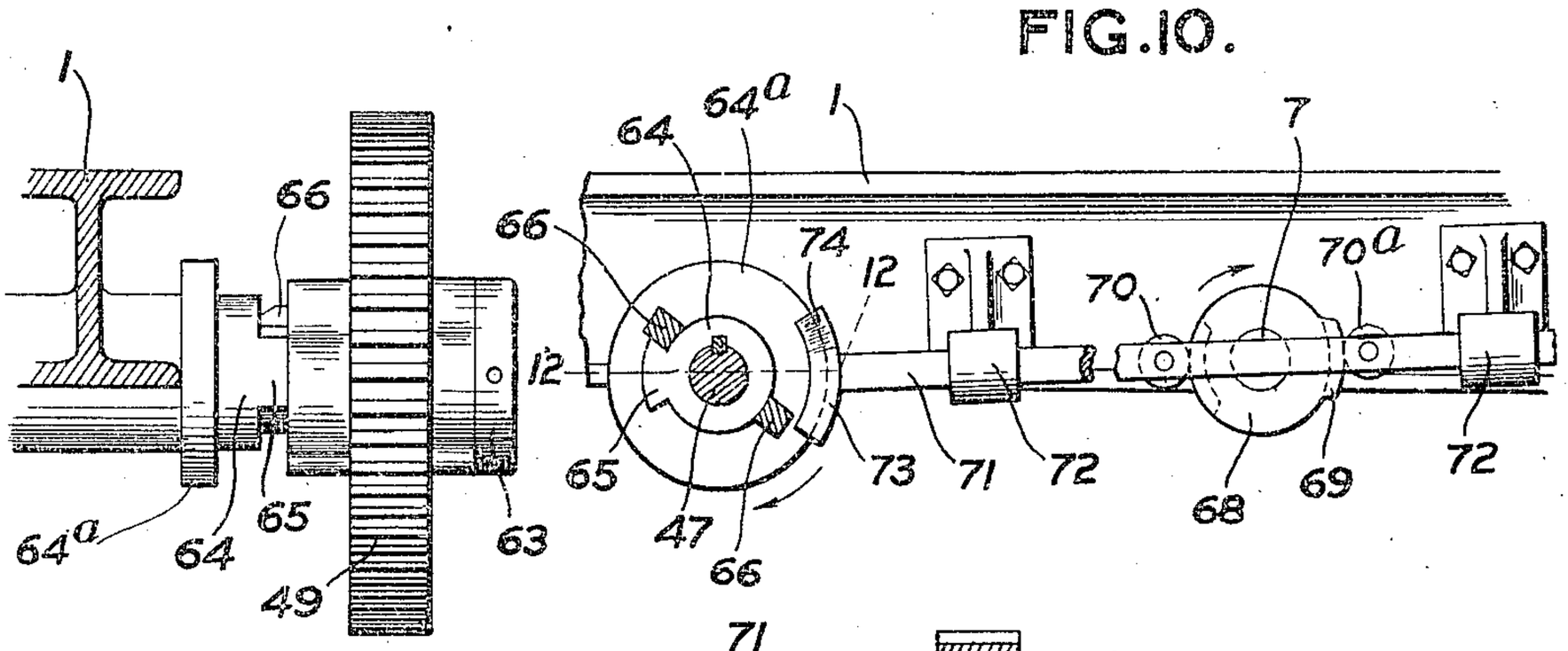


FIG. 11.

FIG. 10.



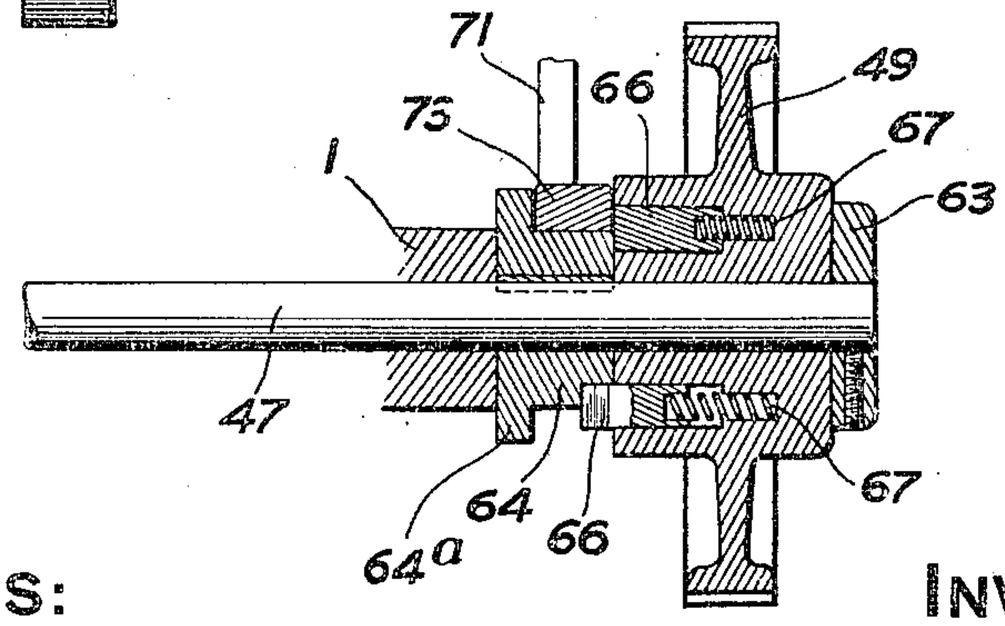


FIG. 12.

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6 SHEETS—SHEET 5.

FIG. 13.

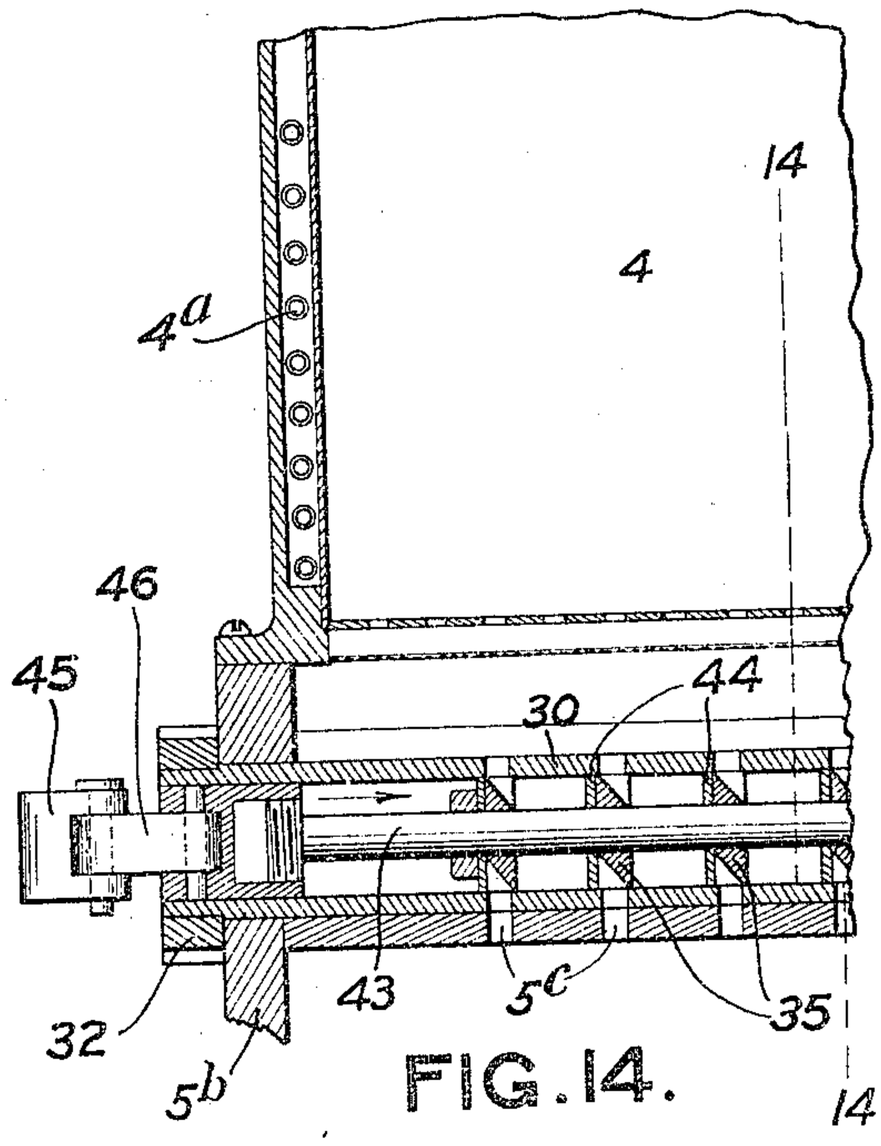


FIG. 14.

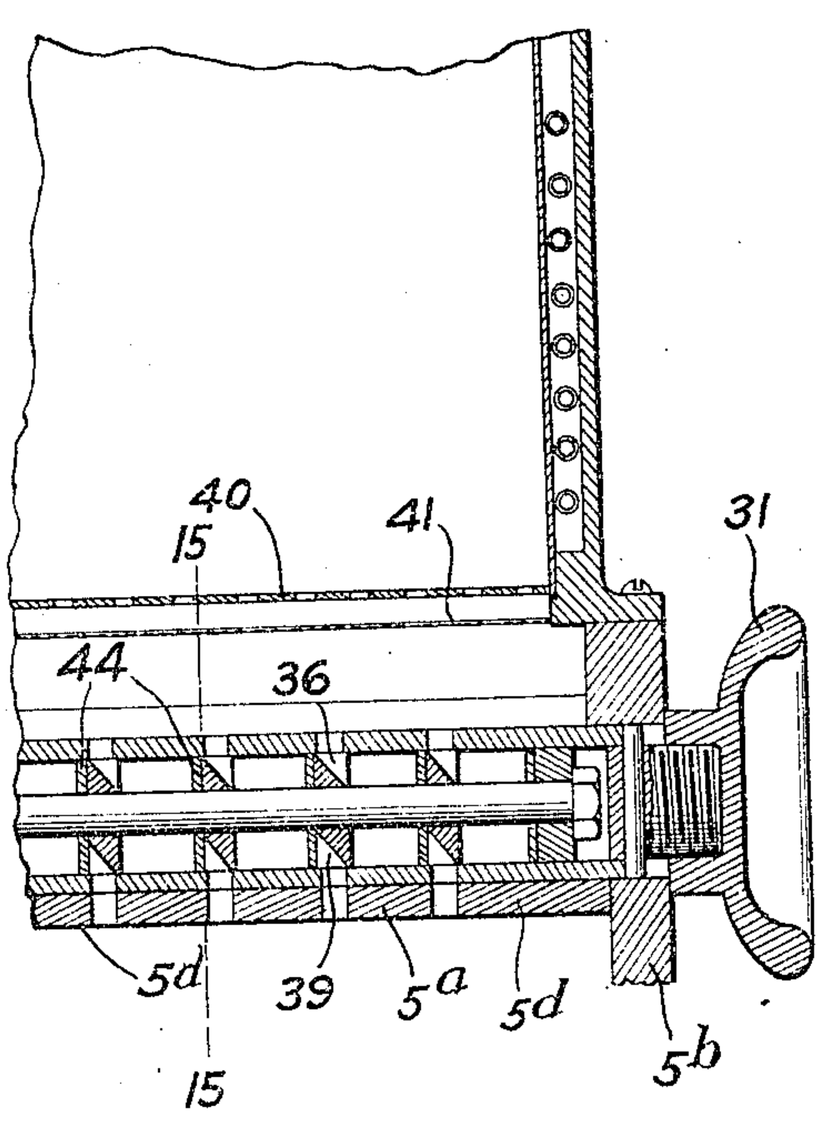
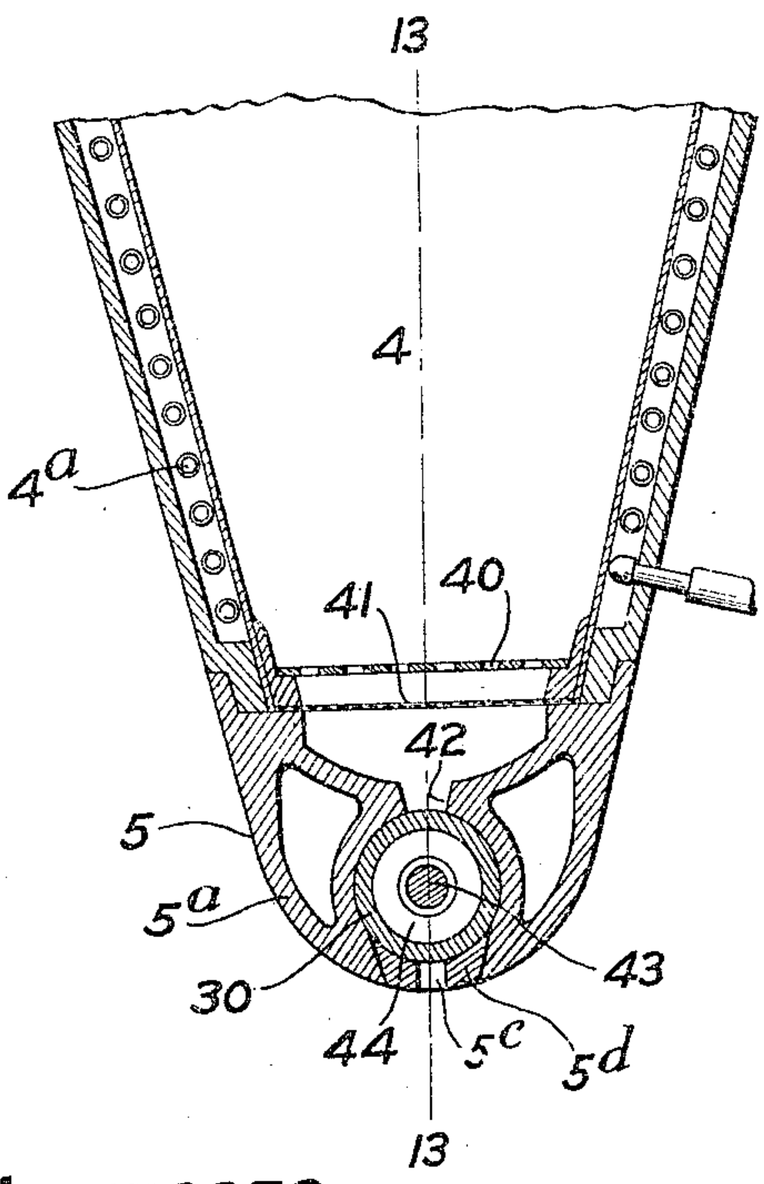


FIG. 15.



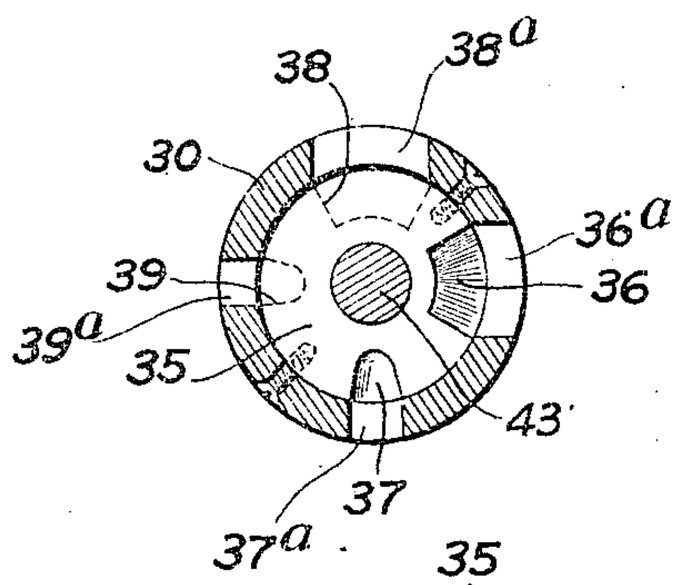


FIG. 16.

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6 SHEETS—SHEET 6.

FIG. 17.

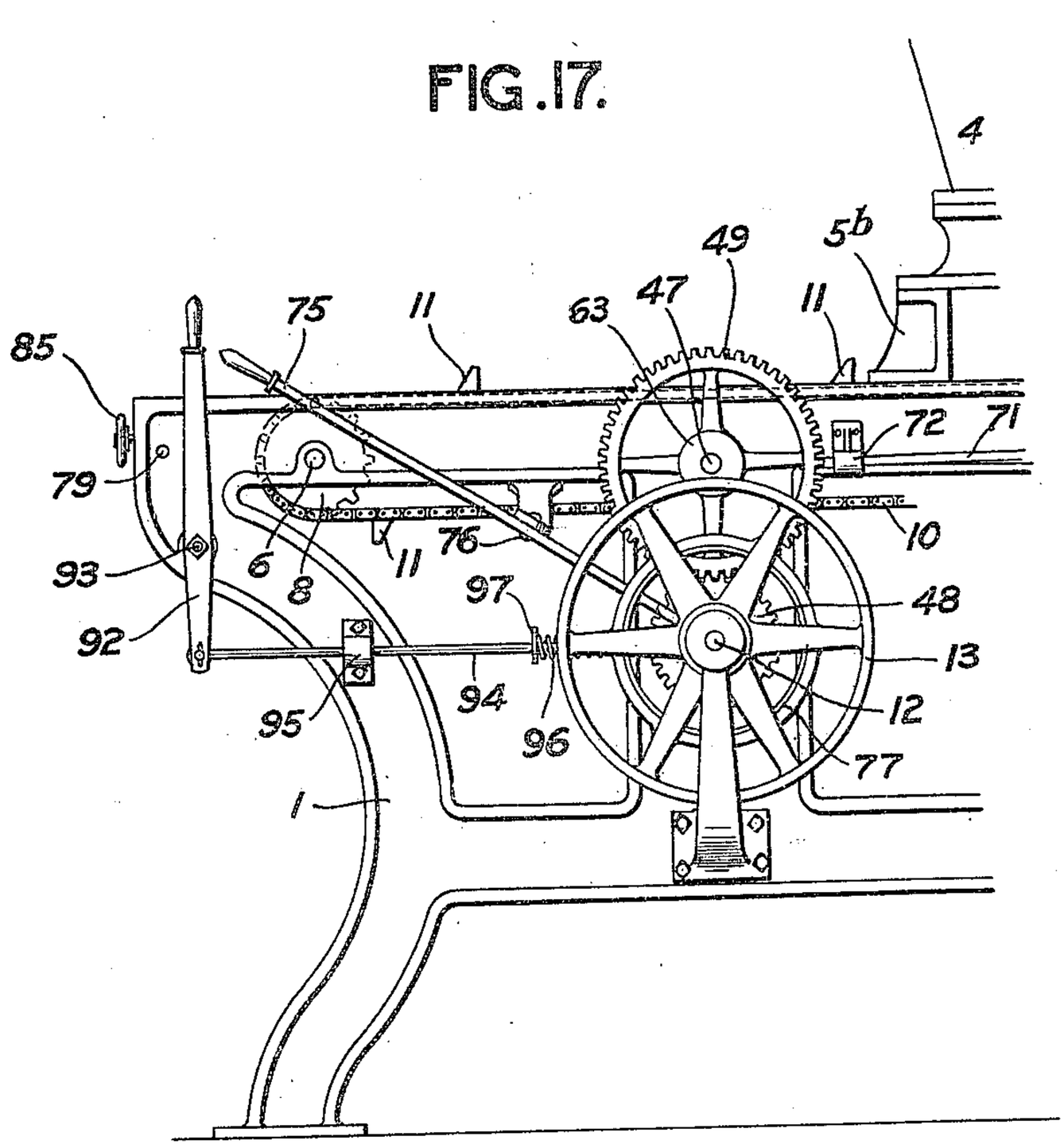


FIG. 18.

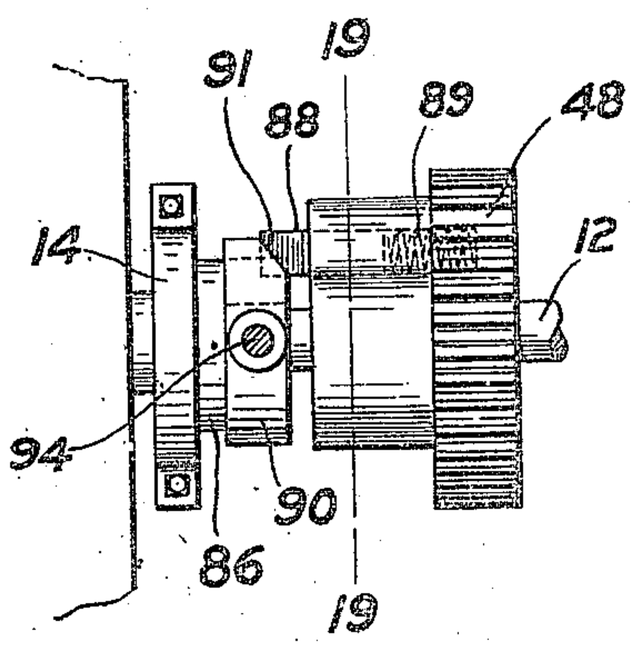
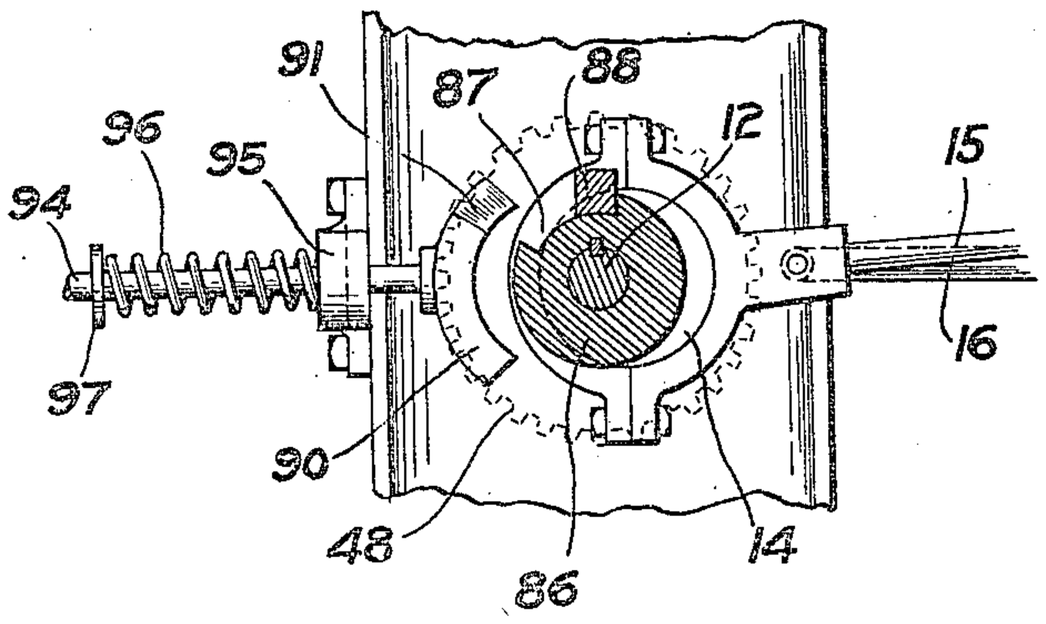


FIG. 19.



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UNITED STATES PATENT OFFICE.

JOHN WERNER, OF ROCHESTER, NEW YORK.

CANDY-CASTING MACHINE.

959,665. Specification of Letters Patent. **Patented May 31, 1910.**

Application filed July 25, 1908. Serial No. 445,416.

To all whom it may concern:

Be it known that I, JOHN WERNER, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Candy-Casting Machines, of which the following is a specification.

This invention relates to candy casting machines, and the object is to produce a machine for dropping candy syrup, in any desired amount, into separate molds of any size.

In the drawings:—Figure 1 is an elevation of the left side of the complete machine; Fig. 2 is an elevation of the right side thereof; Fig. 3 is a front end elevation; Fig. 4 is a side elevation of the drop-regulating mechanism; Fig. 5 is a view of parts which lie behind those shown in Fig. 4; Fig. 6 is a side view of a detail; Fig. 7 is a front elevation of the same detail, complete; Fig. 8 is a side elevation of certain regulating devices; Fig. 8ª is a side elevation of a ratchet wheel; Fig. 9 is a cross-section on the line 9—9 in Fig. 8, looking toward the right in the latter figure; Fig. 10 is a side elevation with some parts in section of the clutch mechanism for the syrup-depositor; Fig. 11 is an enlarged front elevation of the same; Fig. 12 is a section on the line 12—12 of Fig. 10, but showing the parts in the position which they take when the shoe presses a plug back into its socket; Fig. 13 is a longitudinal section of the dropping mechanism, taken on the line 13—13 of Fig. 14; Fig. 14 is a cross-section thereof on the line 14—14 of Fig. 13; Fig. 15 is an enlarged cross-section of the depositor sleeve taken on the line 15—15 of Fig. 13; Fig. 16 is a perspective view of a detail; Fig. 17 is a partial side elevation of the machine embodying an alternative construction of certain parts; Fig. 18 is an enlarged elevation of said parts viewed from the left side of Fig. 17; Fig. 19 is a section on the line 19—19 of Fig. 18; and Fig. 20 is a perspective view of a tray containing molded starch.

The machine illustrated in the drawings has a pair of side-frames 1, 1, suitably braced, the top edges of which are horizontal. Extending lengthwise of the frames 1, 1, and fixed thereto, are angle-pieces 2, 2 (Fig. 3), which constitute guides for the sides of trays X that carry starch having impressed molds of any desired form. Between the guides are inverted angle-pieces 3, 3, so placed that the bottoms of the trays may rest thereon (Fig. 3).

Near the rear end of the machine is a hopper 4, adapted to contain molten candy-syrup, and connected to the bottom of the hopper is a casing 5 (Figs. 3, 13 and 14), extending the full width of the machine. Within the casing is mechanism whereby the syrup is drawn from the hopper 4 in predetermined quantities at regular intervals, and is dropped into molds contained in the trays X, as the latter pass under the hopper.

At each end of the machine are transverse shafts 6 and 7, carrying sprocket wheels 8, 8, and 9, 9, respectively. Chains 10, 10 run upon the sprocket wheels, in the direction indicated by arrows in Figs. 1 and 2, and carry a series of outwardly projecting dogs 11 at equal intervals. The chains are so placed in the machine that the dogs 11 strike the end of a tray placed upon the guides 2 and 3, thereby moving said tray along toward the rear end of the machine. The molds are usually impressed in parallel rows equally spaced, and extending both lengthwise of, and across, the trays X. It is requisite, therefore, that the trays be held stationary at the moment the depositing mechanism in the casing 5 operates, and as soon as the deposit is completed, and the syrup cut off, that the next row of molds in the tray be brought into line with said mechanism, and the tray again be held stationary for a moment to receive the next deposit.

As before stated, a tray may contain any number of transverse rows of molds, and obviously a tray which contains twelve rows of molds must be advanced a shorter distance at each step than a tray which contains only eight rows. But as all the trays are of the same length, and the dogs 11 are equally spaced along the chains 10, it follows that the distance between any two trays, or rather the distance between the last row of molds in one tray, and the first row of molds in the next, must remain constant. Therefore, to carry the trays under the depositor

in a series of equal steps, and to compensate for the space between any two trays (which space may not be a multiple of the space between two molds) the mechanism shown in Figs. 8 and 9 is provided.

A transverse shaft 12, driven by means of a pulley 13, has keyed upon it an eccentric 14, Figs. 2 and 8. From the strap of the eccentric extend two rods, 15 and 16, the rear ends of which are pivoted to an arm 17 and a slotted link 18, respectively. Both of the latter are hung free upon a shaft 19 which is geared to the shaft 7 (Figs. 1 and 2) by means of gears 7^a and 19^a.

A pair of ratchet disks 20 and 21 (Fig. 9) are keyed upon the shaft 19, in proximity to the arm 17 and the link 18, respectively. The periphery of the disk 20 is smooth except for two small portions, diametrically opposite, in each of which is cut a set of four ratchet teeth 22 (Fig. 9). The disk 21, on the contrary, has ratchet teeth 23 throughout the greater part of its periphery, and is smooth in the portions which lie in line with the ratchet teeth 22 of the disk 20 (see Fig. 8). The disk 21 is constructed so that it may be readily removed and one with a different number of teeth substituted therefor.

The arm 17 and the link 18 have extensions 24 and 25, respectively, above the shaft 19, upon which are pivoted pawls 26 and 27. The pawl 26 engages a tooth 22 of the disk 20, and as the eccentric 14 revolves, swinging the arm 17, said pawl revolves said disk, and therefore the shaft 19, the space of one tooth. The link 18 is at the same time swung by the movement of the rod 16, but the disk 21 is not affected by the pawl 27, as the latter at this time rests upon the smooth part of the periphery of the said disk.

As soon as the eccentric 14 has swung the arm 17 a number of times corresponding with the number of teeth on the disk 20, the first tooth 23 on the disk 21 is brought into position for engagement with the pawl 27. The pawl 26, thus rendered inoperative by reason of the blank portion of the disk 22 lying under it, swings idly back and forth, and the shaft 19 is turned the space of one tooth 23 at each revolution of the shaft 14. As before mentioned, the disk 21 may be replaced by one having a different number of teeth. When this is done, the swing of the link 18 must be adjusted to correspond with the length of the teeth. A convenient method of adjustment is to have a hand-nut 28 in engagement with a stud 29 that projects through a slot 30 in the link, the stud being set in the rod 16. By loosening the nut 28, the end of the rod 16 may be placed at any desired position on the link 18, and held at that point by tightening the nut again. Any desired amount of throw may thus be given to the pawl 27.

The parts are so proportioned that each time the disk 21 is advanced one tooth, the tray X is moved a distance equal to the space between two adjacent rows of molds therein, and each time that the pawl 26 turns the disk 20 through the space of a set of the teeth 22 on the latter, the tray is carried out from beneath the depositor 5 and the first row of molds in the next succeeding tray is placed under it.

The depositing mechanism is illustrated in Figs. 13 to 16. The hopper 4 is jacketed, and the syrup contained therein is maintained in a molten condition by means of a steam or hot water coil 4^a. The hopper rests on a base 5^a, which is in turn supported on brackets 5^b. The base 5^a may also be water-jacketed, as shown in Fig. 14.

In the center of the base 5^a is a cylindrical sleeve 30, slightly tapered, and having at the right-hand end a take-up nut 31 whereby the sleeve may be maintained in close contact with its socket as it becomes worn. Upon the opposite or left-hand end of the sleeve 30 is fixed a pinion 32, meshing with a segmental gear 33 that is pivoted to the frame 1 at 34.

Within the sleeve 30, at regular intervals throughout its length, are fixed partitions or plates 35 (Figs. 13 and 16). The plates have on one side a wide notch 36 and a narrower notch 37, set 90 degrees apart, and on the other side a wide notch 38, and a narrow notch 39, set 90 degrees from the notches 36 and 37, respectively (Fig. 16). In the sleeve 30 are orifices 36^a, 37^a, 38^a, and 39^a, which register with said notches, respectively (see Fig. 15), and permit syrup to run from the hopper 4 into the sleeve. Suitable screens 40 and 41 are fixed in the bottom of the hopper to prevent any unmelted lumps of candy from entering the slot 42 and becoming caught in the openings in the sleeve.

Extending through the center of the plates or partitions 35 is a plunger rod 43, and fixed thereon are pistons 44 which closely fit the interior of the sleeve 30. The pistons correspond in number with the plates 35, and are equally spaced upon the rod 43. The rod and pistons are moved longitudinally in the sleeve by means of a horizontally-swinging bell-crank 45, which is connected to one end of the rod through a link 46.

The mechanism for reciprocating the rod 43 and rocking the sleeve 30 through an arc of 90 degrees is shown in Figs. 1, 4 and 5.

A countershaft 47, parallel to the shaft 12, is driven by the latter through gears 48

and 49 (Fig. 2). On the left end of the countershaft is a cam 50 (Fig. 4). On the frame 1 is a bracket 51, in which are slidably mounted and guided, plates 52 and 53. The plate 52 lies close to the inside face of the cam 50 and carries a pair of arms 54, 54, that are pivoted to the plate at 55, 55, (Fig. 4), and are movable toward and from each other at their upper ends by means of a right-and-left screw 56 that is revoluble in supports 57 on the plate 52. Rollers 58 adapted to be struck by the edge of the cam 50 are pivoted in line with the latter upon the arms 54. As the cam revolves, it strikes first one of the rollers 58 and then the other, thereby moving the plate 52 alternately backward and forward. A rod 59 connects the said plate with one arm of the bell-crank 45, and the latter is thus swung about its pivot, drawing the plunger rod 43 and the pistons 44 in and out. The extent of this motion may be regulated as desired by means of the screw 56. By turning it so that the rollers 58 are brought closer together, a greater movement is given the pistons, and the latter have less movement, if the rollers are moved farther apart.

The plate 53 (Fig. 3), which is slidably mounted on the rear or inner face of the bracket 51, is connected to the segmental gear 33 by a rod 60 (Fig. 1). Said plate carries a pair of rollers 61, 61, that are in line with a cam 62 (Fig. 5) on the shaft 47. As the cam 62 rotates, the said rollers are struck alternately thereby, and the plate 53 is moved forward and backward, rocking the segmental gear 33, which in turn revolves the pinion 32. The sleeve 30 is thus turned one-quarter of a revolution and back again each time that the shaft 47 rotates, and the plunger rod 43, during the same interval, makes one in-stroke and one out-stroke.

In Fig. 13 the plunger rod 43 and the pistons 44, which are rigidly fixed thereto, are shown at the end of the in-stroke. The sleeve 30 is at this time filled with syrup which has run through the notches 36 in the plates 35. The sleeve is then turned through 90 degrees of arc, bringing the notches 37 in line with the corresponding orifices 5^c in the bottom of the base 5^a. The plunger rod 43 then moves outward, or contrary to the arrow in Fig. 13, and the syrup is squeezed through the notches 37 and the orifices 37^a and 5^c by the action of the pistons 44, and more syrup is drawn through the notches 38 (which are then in line with the slot 42, Fig. 14), into the vacua formed behind the pistons. On the completion of the out-stroke of the plunger rod 43, the sleeve 30 is turned back to its former position, thus bringing the notches 39 and orifices 39^a into line with the discharge-orifices 5^c, and the notches 36 and orifices 36^a again into line with the slot 42. The plunger rod 43 then begins its in-stroke, and the syrup on the right hand side of the pistons 44 is squeezed out through the notches 39, orifices 39^a and 5^c into the tray beneath, while more syrup is drawn into the spaces to the left of the pistons, through the notches 36.

The mechanism is so timed that the trays X move one step while the sleeve 30 is turning. At this time the plunger rod 43 is stationary. As soon as the tray comes to a stop, with a row of molds in line with the discharge-orifices 5^a, the sleeve 30 stops, with one lower row of its orifices in register with the discharge-orifices 5^c, and the plunger rod 43 moves inward or outward and squeezes the syrup contained in the sleeve into the molds.

By means of the adjusting screw 56, the stroke of the plunger rod 43 may be varied as aforesaid, and, as the amount of syrup drawn from the hopper varies in exact proportion to said stroke, drops of any desired size may be formed.

In order to prevent the deposit of syrup between any two trays, mechanism is provided which automatically disconnects the shafts 12 and 47 at the instant the last row of molds in a tray is filled, thus rendering the depositing mechanism inoperative until the first row of molds in the following tray is moved into line with the depositor, as has been previously described, and then the shafts are automatically connected again and the depositing proceeds.

The gear 49 is loose upon the shaft 47 (Fig. 12), and is held thereon by a collar or similar device 63. Between the gear and the frame 1 is keyed a cylinder 64 having a radially-projecting abutment 65. Plugs 66 are set in the hub of the gear 49, and are pressed against the end of the cylinder 64 by means of springs 67. Either of the plugs is adapted to engage the abutment 65, and thereby to transmit motion from the gear 49 to the shaft 47, when said gear is revolved (in the direction of the arrow) by reason of its connection with the gear 48 on the drive-shaft 12.

On the right-hand end of the shaft 7 is a disk 68 (Figs. 2 and 10), having upon its periphery a cam portion 69 which is adapted, as it revolves, to strike either of two rollers 70, or 70^a, that are pivoted on a bar 71. The latter is slidably mounted in guides 72, 72, and has upon its front end a shoe 73 (Fig. 10) that coöperates with the plugs 66. The upper part of the shoe on the side toward the gear 49 is beveled at 74. As the disk 68 rotates, the cam portion 69 thereon strikes the roller 70 and carries the bar 71, and the

shoe 73 toward the shaft 47. The shoe then lies in the path of the plugs 66. As the gear 49 continues to rotate, each plug 66 strikes the beveled part 74, and is forced back into its socket against the spring 67, and disengaged from the abutment 65. The gear 49 continues to rotate, being in constant engagement with the gear 48, but the shaft 47 is disconnected therefrom until the shoe 73 is withdrawn to its former position. This latter movement is accomplished by the cam 69 striking the roller 70[a] which takes place just before the first row of molds in any tray is moved into line with the depositor. By the time one of the plugs 66 has again engaged the abutment 65, thus starting the depositing mechanism, the pawl 26 has engaged the last tooth of one series of the teeth 22, and the first row of molds is brought into position to receive a deposit just as the plunger rod 43 begins to move.

For convenience in starting and stopping the machine, a lever 75 (Fig. 2) is pivoted to the frame 1 at 76. Said lever may operate a suitable device, such as the movable part of a friction clutch 77 between the main driving pulley 13 and the shaft 12.

As it is sometimes desirable to elevate the trays X, to prevent extremely large deposits from splashing in the molds, the guides 3, 3 are made adjustable. At each end of each angle-piece 3, 3, is fixed a rack 78 (Figs. 6 and 7) that is guided in suitable ways in the ends of the frame 1 of the machine. A transverse shaft 79, supported in bearings 80, carries pinions 81 that engage the racks and move them up or down. In the center of each shaft 80 is a worm-gear 82 that meshes with a worm 83 on a rod 84. Said rod is supported in the frame 1 and extends from end to end of the machine (Fig. 2). On its front end is a hand-wheel 85 which may be turned as desired by the operator. The guides 3, 3 may thus be raised or lowered, and during such movement are maintained level by reason of the duplicate racks, pinions and worms at each end of the machine.

In Figs. 17, 18 and 19 is illustrated a device which may be incorporated in the machine if desired. Said device is for the purpose of disconnecting the dropping mechanism from the driving mechanism instantly at the will of the operator. This is of considerable advantage, as, for instance, if an imperfect row of molds is noticed in any tray, the operator may watch it and disconnect the dropping mechanism just as the said molds are about to pass under the center of the hopper 4. The syrup which would have been cast in that row is thus saved. The device aforesaid comprises a clutch mechanism similar to that illustrated in Figs. 10, 11 and 12. On the main shaft 12, outside the eccentric 14, is keyed a collar 86, in which is a notch 87. In the hub of the gear 48 is a plug 88, pressed toward the notch 87 by a spring 89, and the plug normally enters the notch and engages the collar 86. The gear 48 is loose upon the shaft 12, and therefore is revolved only when the plug 88 rests in the notch 87.

To remove the plug 88 from the notch 87, and thus stop the movement of the gear 48, a shoe 90 is provided, which may be moved into the path of said plug. The latter is beveled on its projecting end, and a corresponding bevel 91 on the shoe coöperates therewith and forms a wedge-face whereby the plug 88 is easily moved out of the notch 87 and into its socket against the pressure of the spring 89.

Means for moving the shoe 90 comprise a lever 92 that is pivoted to the frame at 93, and has a horizontally-movable rod 94 attached to its lower end. The shoe 90 is fixed to one end of the rod, and the latter is guided in suitable bearings 95. A spring 96 presses against a collar 97 on the rod and against one of said bearings, and tends to return the rod 94 to the normal position when the lever 92 is released, thus removing the shoe 90 from the path of the plug 88 and permitting the latter to engage the collar 86 again.

As the gears 48 and 49 are always in mesh, and as the latter is keyed to the shaft 47 that operates the dropping mechanism, it is obvious that said mechanism is immediately rendered inoperative whenever the gear 48 is disconnected from the shaft 12 in the manner just described.

To adapt the depositor for filling molds requiring a greater or smaller number of discharge-orifices than the structure shown in Fig. 13, the bottom plate 5[d] (Fig. 14) is made removable, so that another one containing a different number of discharge orifices 5[c] may replace it. Of course, at the same time, different sleeves 30 and plungers or pistons 44, and dividing partitions to correspond with the new bottom plate 5[d], are inserted in the machine.

What I claim is:

1. In a candy casting machine, the combination of means for depositing candy-syrup in regulated quantities; automatic means for moving a succession of mold-trays with reference to the depositing means step by step; driving means for said parts; and automatic means for disconnecting the depositing means from the driving means during the change from one tray to another.

2. In a candy-casting machine, a container for candy-syrup; a casing having an inlet connection with the container, and a series of discharge-orifices; a rotary valve sleeve

within the casing having inlet and discharge-orifices adapted to register with corresponding orifices of the casing; a series of spaced pistons in the valve sleeve adapted, respectively, to reciprocate between said orifices for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; and means for operating the pistons.

3. In a candy-casting machine, a container for candy-syrup; a casing having an inlet connection with the container, and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing; a series of pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; means for operating the pistons; stopping means operating at predetermined intervals for stopping the movements of the valve sleeve and of the pistons for predetermined times; and tray moving mechanism operating alternately with said stopping means.

4. In a candy-casting machine, a container for candy-syrup; means for depositing syrup therefrom in regulated quantities, consisting of a casing having an inlet connection with the container and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the corresponding orifices of the casing; a series of pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; means for operating the pistons; and manual means for instantaneously stopping the valve sleeve and the pistons.

5. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a removable plate having a series of discharge-orifices; a removable valve mechanism consisting of a rotary sleeve within the casing having two series of inlet and discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; and means for reciprocating the pistons.

6. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; means for reciprocating the pistons; and means operating at predetermined intervals for stopping the movements of the valve sleeve and of the piston valve for predetermined times.

7. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; means for reciprocating the pistons; means operating at predetermined intervals for stopping the movements of the valve sleeve and of the piston valve for predetermined times; and tray-moving mechanism operating alternately with said stopping mechanism.

8. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a removable valve mechanism consisting of a rotary sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; means for reciprocating the pistons; and manual means for instantaneously stopping the operating of the valve mechanism.

9. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a removable plate having a series of discharge-orifices; a removable valve mechanism consisting of a rotary sleeve within the casing having two series of inlet and discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for directing syrup in the sleeve from either space on opposite sides of a piston through the same discharge-orifice; means for turning the valve sleeve; and means for reciprocating the pistons.

10. In a candy-casting machine, a container for candy-syrup; a casing having a

series of inlet orifices connected with the container, and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; means for directing syrup in the sleeve from either space on opposite sides of a piston through the same discharge-orifice; means for reciprocating the pistons; and means operating at predetermined intervals for stopping the movements of the valve sleeve and of the piston valve for predetermined times.

11. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup therefrom into and forcing the syrup therefrom; means for turning the valve sleeve; means for directing syrup in the sleeve from either space on opposite sides of a piston through the same discharge-orifice; means for reciprocating the piston; means operating at predetermined intervals for stopping the movements of the valve sleeve and of the piston valve for predetermined times; and tray-moving mechanism operating alternately with said stopping mechanism.

12. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a removable valve mechanism consisting of a rotary sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for directing syrup in the sleeve from either space on opposite sides of a piston through the same discharge-orifice; means for turning the valve sleeve; means for reciprocating the pistons; and manual means for instantaneously stopping the operating of the valve mechanism.

13. In a candy-casting machine a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a removable plate having a series of discharge-orifices; a removable valve mechanism consisting of a rotary sleeve within the casing having two series of inlet orifices and discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup therefrom into and forcing the syrup therefrom; a series of diaphragms in the sleeve having guide passages for directing syrup from either space on opposite sides of the diaphragm through the same discharge-orifice; means for turning the valve sleeve; and means for reciprocating the pistons.

14. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; a series of diaphragms in the sleeve having guide passages for directing syrup from either space on opposite sides of the diaphragm through the same discharge-orifice; means for reciprocating the pistons; and means operating at predetermined intervals for stopping the movements of the valve sleeve and of the piston valve for predetermined times.

15. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a rotary valve sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the inlet and discharge orifices of the casing, and a series of reciprocating pistons in the valve sleeve for drawing syrup thereinto and forcing the syrup therefrom; means for turning the valve sleeve; a series of diaphragms in the sleeve having guide passages for directing syrup from either space on opposite sides of the diaphragm through the same discharge-orifice; means for reciprocating the pistons; means operating at predetermined intervals for stopping the movements of the valve sleeve and of the piston valve for predetermined times; and tray-moving mechanism operating alternately with said stopping mechanism.

16. In a candy-casting machine, a container for candy-syrup; a casing having a series of inlet orifices connected with the container, and a series of discharge-orifices; a removable valve mechanism consisting of a rotary sleeve within the casing having two series of inlet orifices and two series of discharge-orifices adapted to register with the

inlet and discharge-orifices of the casing, and a series of reciprocating pistons in the sleeve for drawing syrup thereinto and forcing the syrup therefrom; a series of diaphragms in the sleeve having guide passages for directing syrup from either space on opposite sides of the diaphragm through the same discharge-orifice; means for turning the valve sleeve; means for reciprocating the pistons; and manual means for instantaneously stopping the operating of the valve mechanism.

17. In a candy casting machine, the combination of means for depositing candy-syrup in regulated quantities; automatic means for moving mold-trays with reference to the depositing means, comprising alternately acting ratchet mechanism, one of which comprises a disk smooth as to its periphery except for separated oppositely placed portions, in each of which is cut a set of ratchet teeth, and the other of which ratchet mechanisms comprises a replaceable disk having ratchet teeth throughout part of its periphery, but which is smooth in the portions that lie in line with the ratchet teeth on the other said disk.

JOHN WERNER.

Witnesses:
CHARLES H. BAILEY,
L. THON.