J. W. WEST.

ICE CREAM CONE MACHINE.

APPLICATION FILED JAN. 23, 1911.

**1,014,274.**

Patented Jan. 9, 1912.

3 SHEETS—SHEET 1.

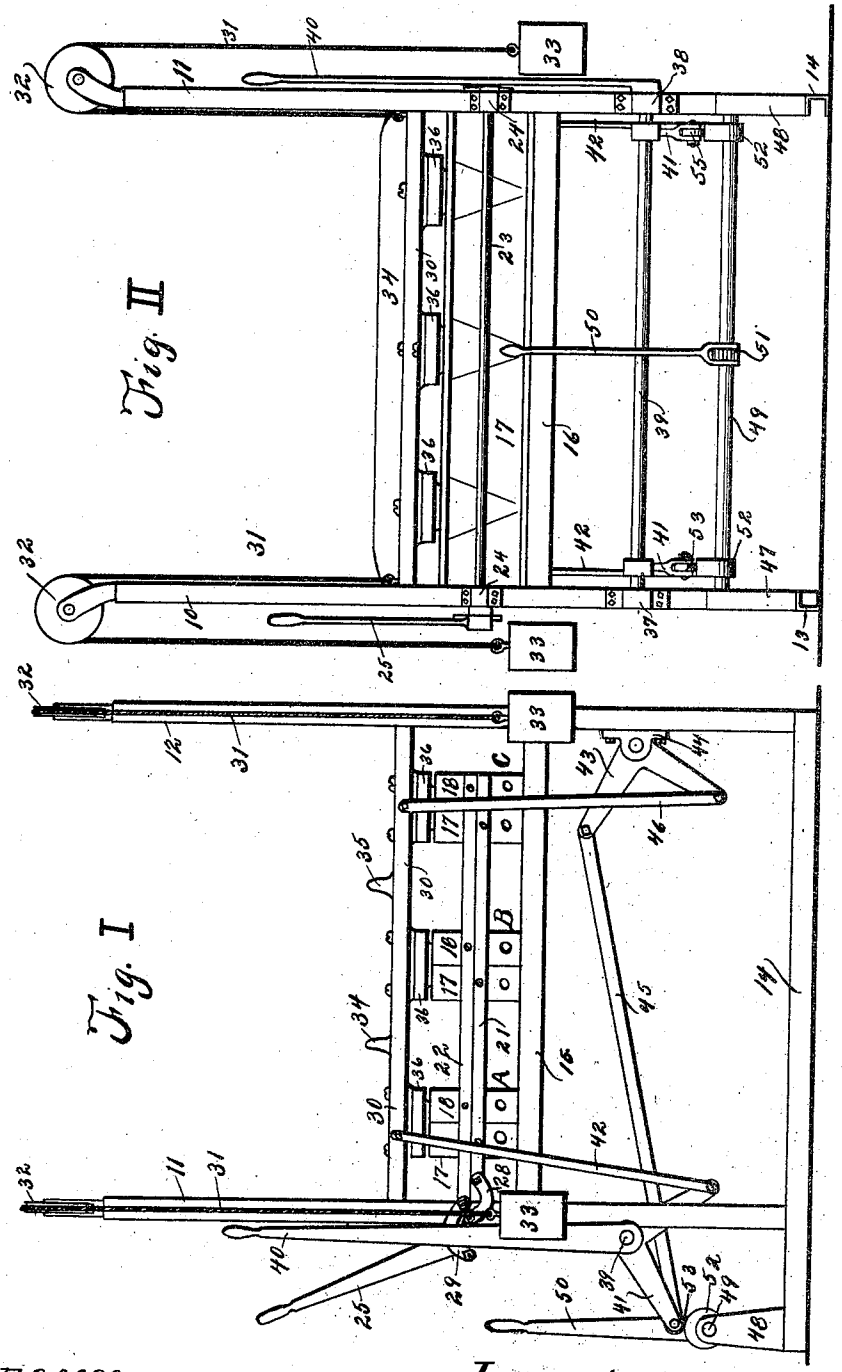

Fig. II

Fig. I

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3 SHEETS—SHEET 2.

Fig. III

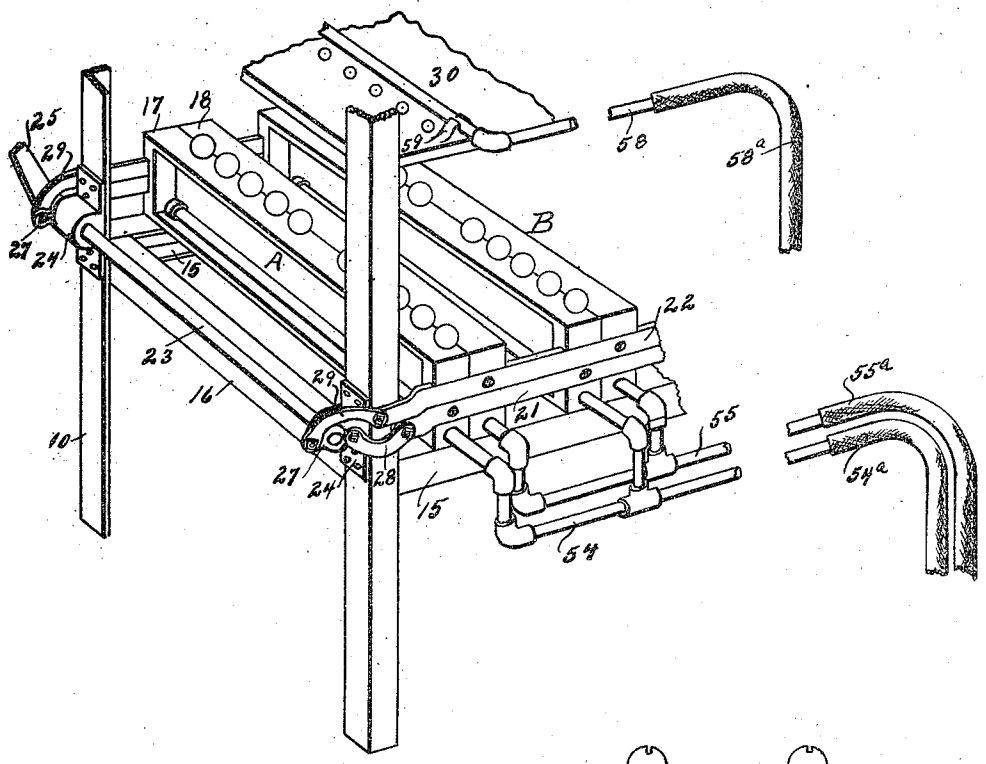
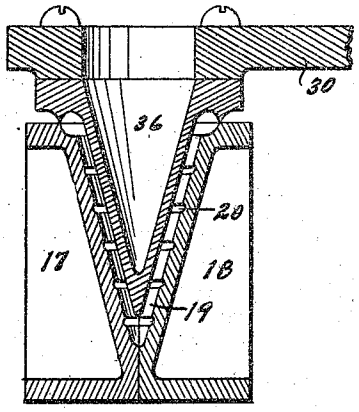



Fig IV

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3 SHEETS—SHEET 3.

Fig. V

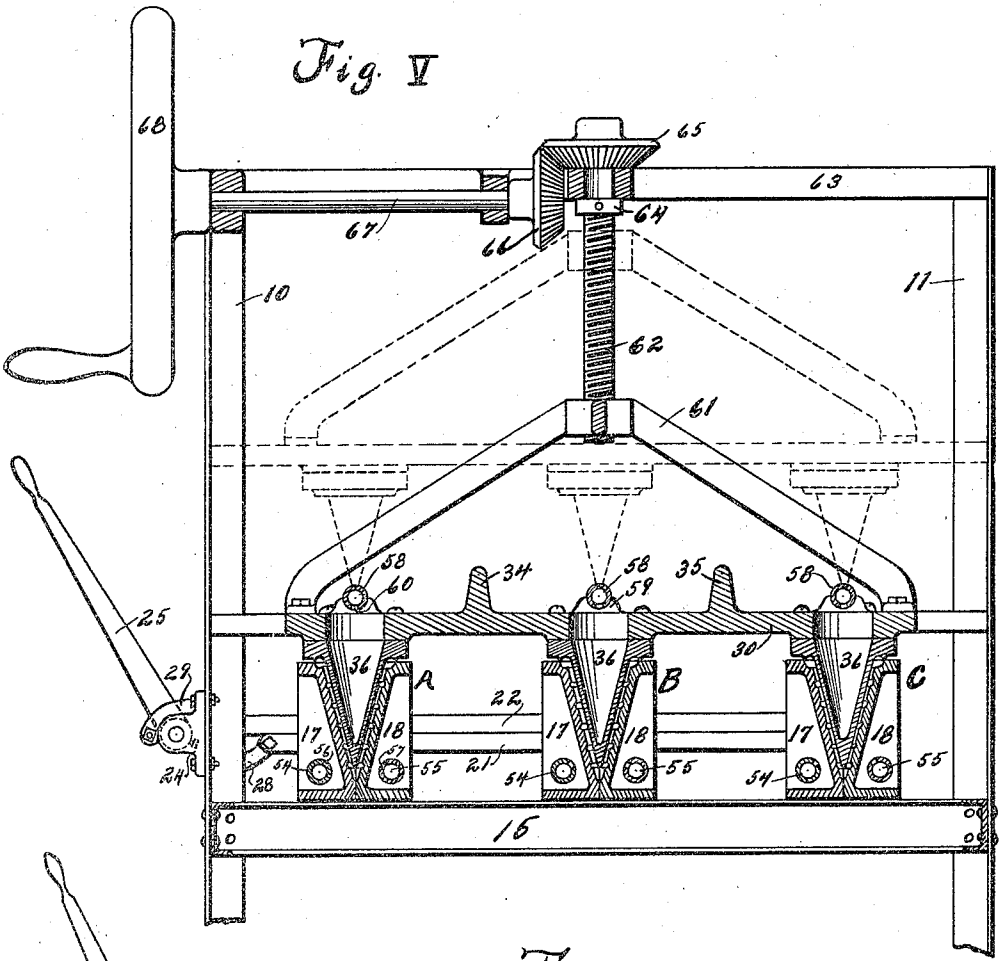
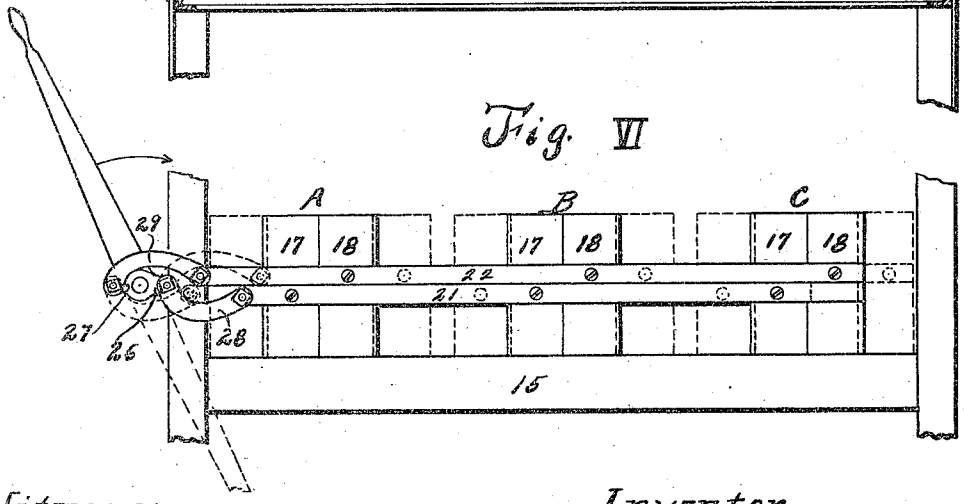



Fig. VI

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# UNITED STATES PATENT OFFICE.

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## ICE-CREAM-CONE MACHINE.

1,014,274. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed January 23, 1911. Serial No. 604,206.

*To all whom it may concern:*

Be it known that I, JAMES W. WEST, a citizen of the United States, residing in Des Moines, county of Polk, and State of Iowa, have invented a new and useful Improvement in Ice-Cream-Cone Machines, of which the following is a specification.

The object of this invention is to provide an improved construction for machines for making ice-cream cones.

A further object of this invention is to provide an improved construction for molds in an ice-cream-cone machine.

A further object of this invention is to provide an improved mold for an ice-cream-cone machine, which mold is formed with mating halves adapted to separate on a vertical line for the removal of the completed cone.

A further object of this invention is to provide means for conjunctively opening a plurality of molds for the removal of the completed cones and for conjunctively closing the same.

A further object of this invention is to provide an improved heating and baking arrangement for an ice-cream-cone machine.

A further object of this invention is to provide improved means for removing and replacing cores relative to molds of ice-cream-cone machines and for applying pressure to said cores.

My invention relates to an improvement in cone machines in which a bed of molds, or a plurality of such beds, are formed in mating, laterally separable halves and a core plate is suspended above and adapted for vertical reciprocation with respect to said molds; lever devices being provided for reciprocating the mating halves of the molds, and pressure devices being provided to act upon the core plate; and heat producing medium is conducted and applied to said molds for producing the finished product.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure I is a side elevation of the complete machine, partly in section. Fig. II is a front elevation of the same. Fig. III is a perspective of a portion of a machine equipped with a larger number of mold beds, illustrating flexible heating connections therefor. Fig. IV is a vertical section, on an enlarged scale, of a mold employed in the machine, said mold being shown in closed position and containing a core. Fig. V is a central longitudinal section, on a slightly enlarged scale, of the machine equipped with a modified form of pressure-applying devices, portions being broken away to economize space. The dotted lines indicate some of the parts in elevated position. Fig. VI is an elevation of beds of molds and means for laterally reciprocating the mating halves thereof relative to each other, dotted lines showing such halves in extended positions.

In the construction of the machine as shown a frame is provided and said frame may be constructed of channel and angle bars as shown or of any other suitable material. Posts 10, 11, 12 (and another not shown) rise at the respective corners of the frame and are suitably connected to each other as by sills 13, 14 at their bases, longitudinal bars 15 and cross-bars 16 spaced above said sills. A plurality of mold beds A, B, C (in this instance three in number) extend laterally of the frame, the ends of said beds being slidingly mounted on the longitudinal bars 15. Each mold bed A, B, C is formed of mating members 17, 18 which members are substantially channel shaped in cross-section and placed with their closed sides toward each other. Each mold bed is formed with a series or row of inverted cone-shaped molds 19 (see Fig. IV) throughout its length, half of each mold being in each member of its mold bed. The interior of each mold 19 is formed with a plurality of annular grooves 20 spaced from top to bottom of its periphery. The upper groove 20 is at the very top of the mold and is materially deeper than the others. Reciprocating bars 21, one at each side of the frame, extend across the ends of the mold beds A, B, C and are fixed to the ends of each forward member 17 of such beds. Reciprocating bars 22, one at each side of the frame, extend across the ends of the mold beds and are fixed to the respective ends of each rear member 18 thereof. A rock shaft 23 is journaled transversely of the forward end of the frame in bearings 24 and a lever 25 is fixed to one end of said shaft and is adapted for manual actuation to oscillate said shaft. The rock shaft 23 is formed with oppositely projecting ears 26, 27 on each end and curved links 28 pivotally connect the ears 26 to one end of the reciprocat-

ing bars 21 while curved links 29 pivotally connect the ears 27 to one end of the reciprocating bars 22. Thus when the lever 25 is moved to the rear (toward the machine) the shaft 23 will be rocked and the bars 21, 22 will be reciprocated in opposite directions, carrying with them and moving apart the members of the mold beds. An opposite movement of the lever 25 will have the effect of bringing together the members 17, 18 of each mold bed.

A core plate 30 is provided and is mounted between the corner posts of the frame and adapted for vertical reciprocation. The core plate may be supported and moved up and down in any desired manner. In Figs. I and II I have shown the core plate suspended by ropes 31 fixed to the corners thereof at one end and passing upwardly and over pulleys 32 suitably journaled at the top of the frame. Weights 33 are fixed to the opposite ends of the ropes 31 and counterbalance the weight of the core plate 30. The core plate 30 may be provided with reinforcing ribs such as 34, 35 on its upper surface if desired. The core plate 30 is formed with a plurality of downwardly projecting cores 36 arranged in rows to correspond with the number and location of the molds of the beds A, B, C, one core being provided for and adapted to enter each mold 19. The cores 36 are of inverted cone-shape and are hollow, the interiors thereof opening to the top of the plate 30.

When the core plate 30 is suspended as above described the following means is provided for raising and lowering said plate: Bearings 37, 38 are fixed to the posts 10, 11 below the level of the mold beds and a rock shaft 39 is journaled in said bearings and extends transversely of the front of the frame. A lever 40 is fixed to and rises from one end portion of the rock shaft 39 and is adapted for manual actuation to oscillate said shaft. Bell-crank levers 41, one at each side of the machine, are fixed by their angles to and depend from the shaft 39. A rod 42 is pivotally connected at one end to the rear arm of each bell-crank lever 41 and extends upwardly therefrom to a point of attachment to the forward portion of the core plate 30. Bell crank levers 43 (one of which is shown in Fig. I) are fulcrumed to bearings 44 on opposite sides of and extend forwardly from the rear end of the frame. A rod 45 is pivotally connected at its forward end to the forward arm of each bell-crank lever 41, extends rearwardly through the frame and is pivotally connected at its rear end to the upper arm of a bell-crank lever 43. A rod 46 is pivotally connected to the lower arm of each bell-crank lever 43 and extends upwardly therefrom to a point of attachment to the rear portion of the core plate 30, one on each side. Thus the bell-crank levers 41 are arranged for oscillation with the shaft 39 and conjunctively oscillate the bell-crank levers 43 through the medium of the rods 45 to raise or lower the core plate 30 through the medium of the rods 42 and 46. The forward ends of the sills 13, 14 preferably project beyond the front posts 10, 11 and standards 47, 48 are formed on and rise from forward end portions thereof. A rock shaft 49 is journaled in upper end portions of the standards 47, 48 and extends transversely of the frame. A hand lever 50 is pivotally connected at its lower end to the shaft 49 and is adapted to be clutched thereto by ratchet and pawl devices 51 for oscillating said shaft rearwardly (toward the machine). Disks 52 are mounted eccentrically on and fixed to the shaft 49 and are adapted at times to engage rollers 53 on extremities of the forward arms of the bell-crank levers 41. Thus when the core plate 30 is lowered by operation of the lever 40 and the bell-crank levers 41 are extended downwardly, rearward oscillation of the shaft 49 by means of the lever 50 and connections will cause the eccentrics 52 to engage the rollers 53. Continued oscillation will cause the rollers 53 to ride up on and to the highest points of the eccentrics 52 and move the forward arms of the bell-crank levers 41 upwardly a slight distance. This will apply a downward pull on the rods 42, 46 and core plate to apply desired pressure of the cores 36 into the molds 19, and will also have the effect of locking the core plate and cores in lowermost position. When the clutch devices 51 are released manually the rollers 53 will ride down off the eccentrics 52 and the core plate 30 and cores may be raised by operation of the lever 40.

For supplying heat to the machine pipes 54, 55 lead from a source of supply (not shown) preferably of gas, and said pipes are formed with branches which enter and traverse the mating members 17, 18 of the mold beds, passing in close proximity to each mold 19. The pipes 54, 55 are formed with flexible portions $54^a$, $55^a$ to permit some freedom of movement when the members of the beds of molds are reciprocated. The pipes 54, 55 are adapted to conduct inflammable substance such as gas and are formed with ports 56, 57 (see Fig. V) opposite each core 19 whence said substance may escape and be ignited. A similar supply pipe 58 conducts heat producing medium to the core plate 30 and is formed with branches leading across the top of said plate above the respective rows of cores 36. The pipe 58 is provided with a flexible portion $58^a$ to allow of vertical reciprocation of its branches with the core plate. The branches of the pipe 58 may be held in place on the top of the plate 30 by means of pairs of fingers 59 on the upper surface of said plate and em-

bracing said branches at intervals. The pipe 58 is formed with a port 60 (see Fig. V) above and directed toward each core 36 so that flame may be directed downwardly into and heat said core.

In the operation of the machine as described the core plate and cores are raised as described and a box or pan (not shown) containing suitable batter is inserted beneath them and resting above the beds of molds. The plate 30 is then lowered until the cores 36 dip into said batter when it is again raised and the box or pan of batter is removed, a quantity of batter adhering to each core. Then the plate 30 is again lowered and each core 36 enters its mold 19 and is pressed down therein as described, causing some batter to enter and fill the grooves 20. Heat is then applied to the molds and cores through the medium of the supply pipes 54, 55 and 58 until the batter is sufficiently baked to form the commercial "cones." Then the plate 30 is raised a slight distance to free the cores 36 from the cones, which are held in the molds by the annular grooves 20 which have been filled to form ribs on the cones. The plate 30 is again lowered, but not with pressure, so that the cores 36 fill a considerable portion of the cones, after which the lever 25 is actuated to reciprocate the bars 21, 22 and separate the members 17, 18 of the various beds of molds conjunctively, the interposed cores 36 preventing the cones from adhering to and following either member of the molds. When the members of the molds have been separated a sufficient distance the completed cones will drop down between them and may be received into suitable receptacles provided therefor. The operation may then be repeated as often as desired.

In Fig. V I have illustrated a different means of raising and lowering and applying pressure to the core plate 30. A yoke 61 is fixed at its ends to the upper surface of the core plate 30 and a vertical screw 62 is threaded into the upper or closed portion of said yoke. The upper portion of the screw 62 is journaled in a vertical bearing in a cross-member 63 in the upper portion of the frame. The screw 62 is provided with a collar 64 below and a bevel gear 65 above the cross member 63. The bevel gear 65 meshes with a bevel gear 66 on the inner end of a horizontal shaft 67 journaled for rotation in the top of the frame. A crank wheel 68 is fixed to the outer end of the shaft 67 and is adapted for manual rotation thereof to turn the screw 62 for the purpose of raising or lowering the yoke 61 and core plate 30, or of applying pressure to the lowered plate.

In Fig. III I have shown a machine equipped with beds of molds containing ten molds each, and the number of such molds, as well as the number of beds, may be varied as desired.

I do not desire to be limited to the precise construction and arrangement of parts shown and described as various means may be employed for raising and lowering the core plate, for reciprocating the mold members, and for supplying heat thereto, without departing from the spirit of my invention.

I claim as my invention—

1. An ice cream cone machine, comprising a frame, a plurality of mold beds each formed of mating members slidingly mounted on said frame; said mating members substantially channel shaped in cross-section and disposed with their closed sides in juxtaposition, upwardly opening cores in said mold beds and formed one-half in each member thereof, a core plate mounted for vertical reciprocation in said frame, said core plate formed with downwardly projecting cores adapted to enter said molds, reciprocating bars fixed to opposite ends of the forward member of each mold bed, reciprocating bars fixed to opposite ends of the rear member of each mold bed, a rock shaft journaled for rotation in said frame, links pivotally connecting said reciprocating bars to said rock shaft, and a hand lever fixed to said rock shaft.

2. In an ice cream cone machine, a frame, a plurality of mold beds each formed of mating members slidingly mounted on said frame, reciprocating bars fixed to opposite ends of the forward member of each mold bed, reciprocating bars fixed to opposite ends of the rear member of each mold bed, a rock shaft journaled in said frame, oppositely extending ears at each end of said rock shaft, curved links pivotally connecting the first reciprocating bars to one set of said ears, curved links pivotally connecting the latter reciprocating bars to the other set of said ears, and a hand lever on said rock shaft, whereby opposite lateral movement may be imparted conjunctively to the forward and rear members of all of said mold beds.

3. An ice-cream-cone machine, comprising a frame, molds mounted on said frame and formed with open tops, a core plate suspended in said frame and adapted for vertical reciprocation, said core plate formed with downwardly projecting cores adapted to enter said molds, bell-crank levers fulcrumed on said frame, a rod connecting one arm of each bell-crank lever to said core plate, and means for oscillating said bell-crank levers conjunctively to raise and lower said core plate.

4. An ice cream cone machine, comprising a frame, molds mounted on said frame and opening upwardly, a core plate suspended in said frame and adapted for ver-

tical reciprocation, said core plate formed with downwardly projecting cores adapted to enter said molds, bell-crank levers fulcrumed on said frame, a rod connecting one arm of each bell-crank lever to said core plate, means for oscillating said bell-crank levers conjunctively to raise and lower said core plate, and an eccentric latch on said frame adapted to hold said core plate in lowermost position.

5. An ice cream cone machine, comprising a frame, upwardly opening molds mounted on said frame, a counter-balanced core plate suspended in said frame and adapted for vertical reciprocation, said core plate formed with downwardly projecting cores adapted to enter said molds, bell-crank levers fulcrumed on said frame and connected to said core plate, lever mechanism on said frame adapted to oscillate said bell-crank levers conjunctively and raise and lower said core plate, friction rollers on some of said bell-crank levers, a rock shaft journaled in said frame and formed with eccentric latches adapted to engage said rollers, and a lever on said rock shaft.

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