Dec. 31, 1929. E. ROLKER 1,741,656

CONE REMOVER AND TRIMMER

Filed Jan. 16, 1925 2 Sheets-Sheet 1

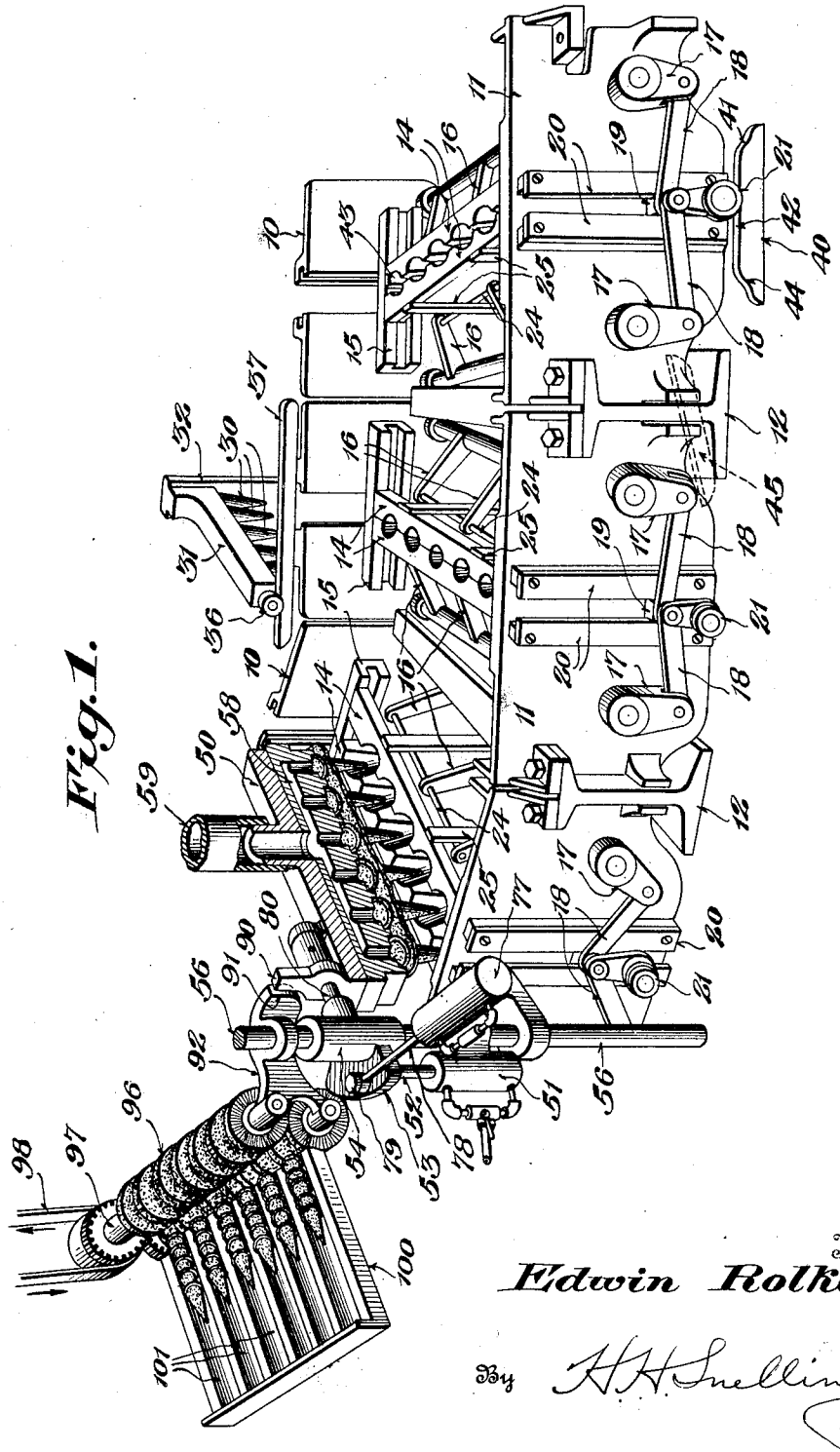


Fig. 1.

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Fig. 2.

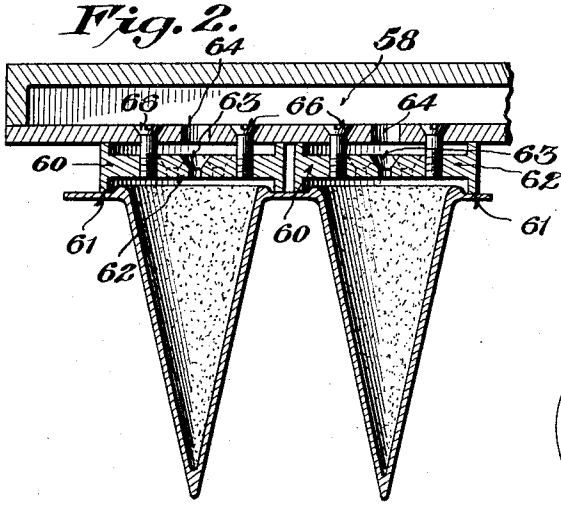


Fig. 5.

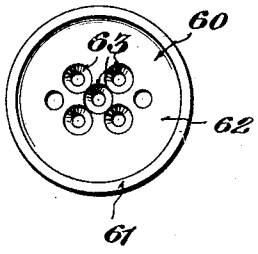


Fig. 3.

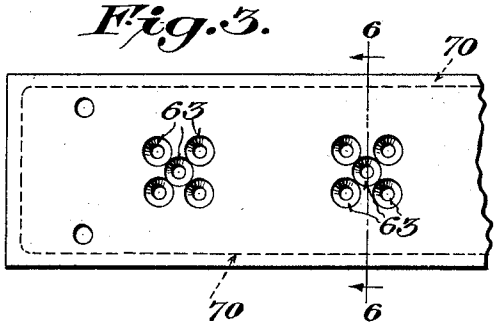


Fig. 6.

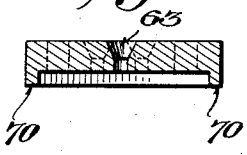


Fig. 4.

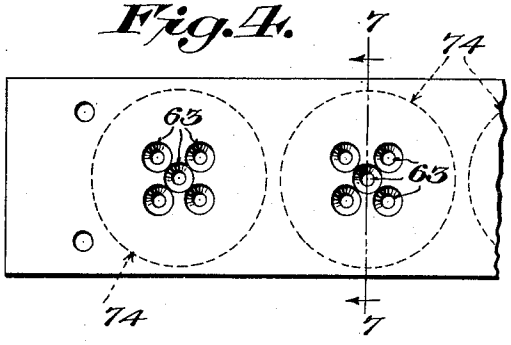
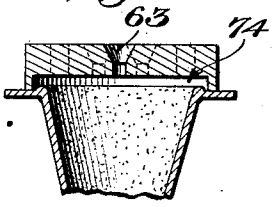


Fig. 7.



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Patented Dec. 31, 1929 1,741,656

UNITED STATES PATENT OFFICE

EDWIN ROLKER, OF BALTIMORE, MARYLAND, ASSIGNOR TO MARYLAND BAKING COMPANY, A COPARTNERSHIP COMPOSED OF ISAAC SHAPIRO AND JOSEPH SHAPIRO, BOTH OF BALTIMORE, MARYLAND

CONE REMOVER AND TRIMMER

Application filed January 16, 1925. Serial No. 2,925.

This invention relates to a machine for making ice cream cones, and has for its principal object an improvement in the means for releasing baked cones.

A further object of the present invention lies in the provision of means for opening the mold sections and closing them again after the cores have left the mold sections, but before the cones have reached the discharge position.

Further objects of the invention lie in the specific details of construction and are particularly pointed out in the claims.

In the drawings:

Figure 1 is a perspective of a portion of a cone making machine of well known type, but embodying the present invention as to the cone discharger mechanism, and also as to the cone releasing means.

Figure 2 is a partial cross section through the center line of the auxiliary core bar.

Figures 3 and 4 are modifications of the auxiliary core bar.

Figure 5 is a plan view of one of the disks.

Figure 6 is a cross section on line 6—6 of Figure 3.

Figure 7 is a cross section on line 7—7 of Figure 4.

In Figure 1, the cone baking machine is of the present well known and generally used type, including a large wheel which supports all of the mold sections between the inner ring 10 of plates and the outer ring 11 of plates, these plates being bolted together and to the channel arms 12, which extend radially from the main wheel in accordance with established practice.

The molds are each of two half sections 14 freely slidable in guides 15 on the two rings, and the half mold sections are pushed together to complete the mold and are withdrawn one from the other to separate the molds by means of the crank arms 16, which extend through the plates of the rings 10 and 11 and carry on their outer ends the regulation cranks 17, each connected by a link 18 to a stud carrier 19 movable vertically up and down between a pair of guides 20 secured to each plate of the outer ring 11.

The two links 18 with the stud of the carrier 19 form a toggle, which is opened and closed by a track (not shown), this track raising the roller 21 on the carrier 19 to open the molds and bearing down on the roller 21 to close the molds, the closing of the molds being accomplished through a direct pressure of the arm 16 on the half mold sections 14 while the opening of the molds is accomplished through a small rod 24 fast to the arms 16 and engaging a pair of relatively small bars 25 secured to the top and bottom extended edges of the half mold sections.

The cores 30, the same in number as the pockets of the mold sections, preferably six, are carried on a core bar 31 bolted to the top of the core carrier 32, each at its lower end having the customary roller (not shown) operating on a standard core operating track. I prefer to provide a second roller for operating the cores and mount this roller 36 on the free end of the core bar 31, and allow it to travel on a trackway 37 adjacent the periphery of the wheel as formed by the plates 11. All of the structure so far described is old and has been been covered in prior applications and patents, and no claim, therefore, is made to it in this application save in combination with the elements about to be described.

When using a greater percentage of sugar in the making of the cones than has been used in the past, the cones are found to stick to the molds, and I find that by slightly opening and closing the molds after the cores have been withdrawn, I have relieved the stickiness to a very considerable extent, and in many cases, have eliminated by this simple means the difficulty. I accomplish this desired result by a very simple means, namely, by the placing in the path of the roller 21 a cam to elevate the roller 21 and carrier 19 a small portion of the distance required to open the mold sections. This cam is preferably in the shape of a small block 40 secured to a permanent and non-movable part of the machine and sloping as at 41 to engage the roller 21 when it is in its down or mold-closing position.

The roller 21 rides upwardly on this slope 41 and remains open for the distance of the

flat portion 42 of the cam 40 and upon reaching the downwardly sloping edge 44, the mold will normally close by gravity.

In all machines upon which this device has been placed, the molds will close of their own accord, largely due to gravity, and somewhat due to the jarring of the machine, these machines normally being of intermittent type with a dwell between each of the positions usually in excess of 30. In order to insure closing of the mold, however, I may place a small auxiliary cam 45 in the path of the roller 21 in case it is not lowered to full closing position.

In the ordinary sequence of the baking operation including the devices just described the molds after discharge of the baked product remain open for one period or position, and in this position, a "safety-first" ejector passes between the open molds, and insures that no portion of a baked cone remains between the mold sections. At the next position, the molds close, and after closing, a small amount of batter is deposited in each one of the mold cavities and at the next stage or position, the cores 30 are lowered into the closed molds and the baking operation proceeds through the next 25 or 30 positions, or just so long as to give a perfectly brown and thoroughly baked cone. This brings the cones to the position just to the right of the portion of the machine shown in Figure 1, and in the first position shown, which position is number 30, the molds are slightly open, and in the next position 31, the molds are closed, which brings us to the final position, which as illustrated is the thirty-second position. When the machine first arrives at this final position, the molds are closed with the baked cones in the cavities, but these cones have already been loosened from one or both sides of the molds by the opening of the mold sections at position 30. An auxiliary core arm 50 is in position above this stage 32, and when the device first comes to rest in this position, this auxiliary core bar is raised, but is immediately lowered into the baked cones by means of a piston in cylinder 51. This piston has a rod 52 carrying a roller at the top and engages a shelf 53 on a sleeve 54 secured to a vertical shaft 56, the cylinder 51 being mounted on a stationary part of the frame.

The auxiliary core arm 50 is provided with an air chamber 58 in communication by a pipe 59 with an air-pump, causing alternate pressure and suction in the air chamber 58, which communicates with the center cavity of each of the baked cones, and when the auxiliary bar 50 is in its lowered position, it rests against the smooth plane top of the mold sections and presses against the excess batter which joins together the six cones of each set or series. The preferred form of this auxiliary bar is preferably in the form shown in Figure 2, the bar being rectangular in cross section and carrying a plurality of circular plates 60, each having an annular peripheral flange 61 rising slightly above a circular plate 62 carrying a number of perforations 63 communicating with the central orifice 64 of the auxiliary bar and leading to the air-chamber 58. The disks 60 are secured to the auxiliary bars 50 by any preferred means, preferably by simple screws 66. I prefer that the circular ring or flange 61 bound by these disks shall be of just sufficient size to engage snugly the waste immediately at the edge of the cone proper. In other words, I prefer that these circular ridges shall just free the cone itself.

In the modified form shown in Figures 3 and 4, the auxiliary bar is slightly changed. In Figure 3, the bar is plane throughout its extent, save for the slight marginal flange 70, which forms a frame for the main portion. In this modification, the air-chamber is that portion of the bar bounded by the continuous flange 70, and this flange is of sufficient size to receive snugly the six baked cones and just free the slight rim at the top, engaging the waste only. In Figure 4, the bar is again modified, this time by providing a very large surface to engage the waste and by counterboring the bar itself to provide a recess to receive the top edge of the cone. In this modification, the air chamber is the space 74 within the counterbore. Here, again, the auxiliary bar does not at any time touch the baked cones, engaging solely the waste just surrounding the top edges of the six cones.

As previously stated, on reaching the thirty-second position, the molds are closed. The bar 50 then descends and seats itself, no matter which modification is used, firmly on the waste, and it presses the waste against the top of the molds. The molds now by means of well known mechanism start to open. The baked cones are prevented from following either mold section by means of the pressure exerted by the auxiliary bar 50, the friction of this bar against the top of the mold being always considerably in excess of any possible friction between the cone and mold. At this time, that is just before the molds open, air is withdrawn from the chamber 58 through the pipe 59, and this causes the six cones together with their integral waste usually formed altogether in a single piece to stick to the auxiliary bar 50 as it rises by movement of the piston in cylinder 51. This cylinder 51 is fixed, and upward movement of the rod 52 causes upward movement of the shaft 50 and the sleeve 54, which moves upwardly with it, but which is formed to move angularly about the shaft. When the sleeve 54 reaches its uppermost position, it is oscillated by means of a piston within the cylinder 77, movement being imparted through a piston rod 78 having its free end pivotally con-

nected as at 79 to the shelf 53. The piston 77 is secured to the shaft 56 and has no movement except in connection therewith, so that movement of the piston within the cylinder 77 will cause movement through an angle of approximately 90° of the sleeve 54. This sleeve carries a shaft 80 on which the auxiliary bar 50 is mounted, and on which it is free to turn through an angle of 360° except as limited by other mechanism.

The auxiliary bar 50 carries an upstanding lug 90 which engages the curved cam surface 91 on a bracket 92 loosely receiving the shaft 56 and secured to a stationary part of the mechanism. As the sleeve 54 is rotated, the lug 90 engages the cam 91 and throws the auxiliary bar 50 through an angle of 90°, changing the axes of the thereby carried cones from vertical to horizontal, and swinging the baked cones with their waste into the path of a series of brushes 96 carried on a shaft 97 receiving motion through the belt 98. These brushes remove all the waste from the cones, and at this time, the suction caused in the air chamber 58 is changed, by mechanism timed with the molds, to pressure, and this pressure forces the six cones through the brushes and on to the receiving table 100, preferably having channels such as 101 to receive one each of the cones of each series thereby stacking the cones in position to facilitate their removal to the packaging machine. The auxiliary bar 50 by reverse movement of the piston in the cylinder 77 is now restored to radial position about the molds, and by gravity is restored to vertical position as soon as the lug 90 is freed from the cam surface 91 and the parts remain in this position until the large wheel again comes to rest in position 32, whereupon the first movement is the lowering of the auxiliary bar 50, and with it the sleeve 54 and the cylinder 77, both of these always moving with the shaft 56.

What I claim is:

1. A device of the character described, a plurality of mold sections, a plurality of core sections fitting within said molds, means for removing the cores from the molds, means for discharging the baked cones, and means located between the point where the cores rise and the point at which the cones are discharged for moving both mold sections to free the baked cones from one or both of the mold sections.

2. In a device of the character described, a plurality of mold sections, a plurality of cores cooperating therewith, means for opening the mold sections to discharge the baked cones, and means located adjacent the discharge position for slightly opening the mold sections to free the baked cones from one or both mold sections prior to their discharge from the mold sections, and means for raising the cores out of the mold sections prior to the operation of the last mentioned means.

3. In a device of the character described, core sections, means for raising said core sections, mold sections, means for opening and closing the mold sections, and means spaced from and independent thereof for slightly opening and closing the mold sections after removal of the core sections from the baked cones and just before the discharge of the baked cones to free the cones from one or both of the mold sections, and means cooperating with the mold sections for thus freeing the baked cones.

4. In a device of the character described, a mold consisting of a plurality of sections, a ring adapted to rest upon the waste product immediately adjacent the baked cone to hold said waste firmly against each of the mold sections while said sections are being separated.

5. In a device of the character described, a plurality of series of half mold sections, an auxiliary bar adapted to press against the two sections of each mold in turn to engage the waste between adjacent cones and to hold the waste while the mold sections are opened to free the cones.

6. In a device of the character described, an auxiliary bar adapted to rest on the waste adjacent the baked cones in a mold, having cavities therein to form open chambers, and means for intermittently causing a suction in said chamber to hold the baked cones against the auxiliary bar.

7. In a device of the character described, a plurality of pairs of half mold sections, a transferring device adapted to rest on each pair of sections in turn, means to cause adherence of the baked cones to the bar, means for raising said transferring means together with the adhering cones and to move said cones to one side of the mold, and means for restoring the transferring means to normal position.

8. In a device of the character described, a plurality of pairs of mold sections, a plurality of cores cooperating therewith, means for opening and closing the mold sections of each pair to permit discharge of a baked cone and to place the molds in condition to receive batter, additional means for moving both sections of each pair of mold sections, to hold the mold sections slightly open for a predetermined period after the batter has been baked into a cone, and additional means for closing the mold sections.

9. In a device of the character described, a plurality of mold sections, an arm adapted to raise and to lower into engagement with the surplus baked batter extending from the baked cones in a mold section, and means for causing said surplus batter to adhere to said arm so that the baked cones may be lifted from the mold sections upon raising movement of said arm.

10. In a device of the character described, a plurality of half mold sections, means for opening and closing said sections, means adapted to move downwardly into contact with the waste material and for transferring such waste material together with the baked cones to a position above the molds, means for trimming said cones and means for transferring the cones from the position above the mold to the trimming means.

11. In a device for discharging baked cones, a hollow arm, means for raising and lowering said arm into contact with the surplus baked material extending from the series of baked cones in each of the mold sections, in turn, means for swinging the arm about an axis, trimming means, and means for discharging the baked cones from said bar and through said trimming means.

12. In a device of the character described, an auxiliary cone discharging member consisting of a hollow box providing a suction chamber in communication with each cone of a series of cones in a mold, means for raising and lowering said auxiliary member and means for swinging said member about an axis.

13. In a device of the character described, an auxiliary cone discharging member consisting of a hollow box providing an air chamber in communication with each cone of a series of cones in a mold, means for raising and lowering said auxiliary member and means for swinging said member about an axis, and means for tilting said arm about an axis at an angle to said previously mentioned axis.

14. In a machine for baking ice cream cones, a member having an air chamber therein in communication with a fluid suction and discharge means, mechanism for raising said member, mechanism for swinging said member about vertical axis, and means for swinging said member about a horizontal axis while said device is being swung about said vertical axis.

In testimony whereof I affix my signature.

EDWIN ROLKER.