

Sept. 24, 1963

P. H. CARTER ETAL
FEEDER FOR SUGAR CONES

3,104,780

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3 Sheets-Sheet 1

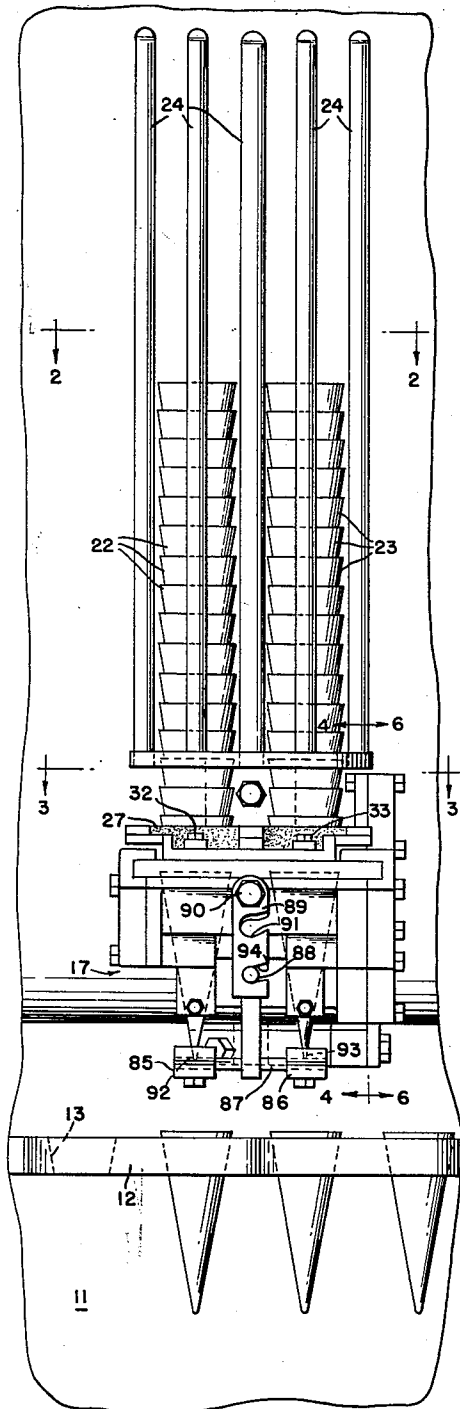


FIG. 1.

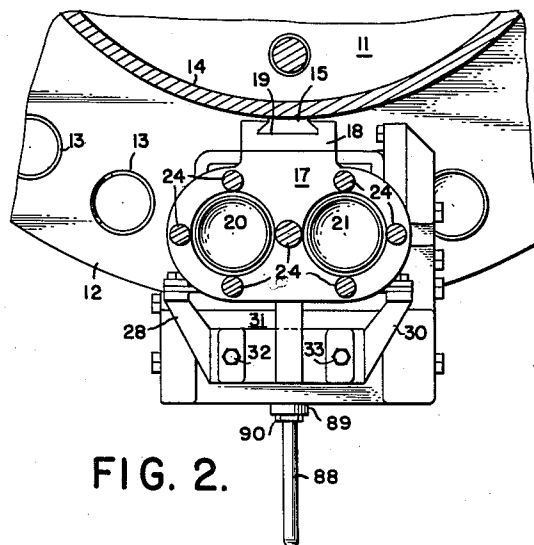


FIG. 2.

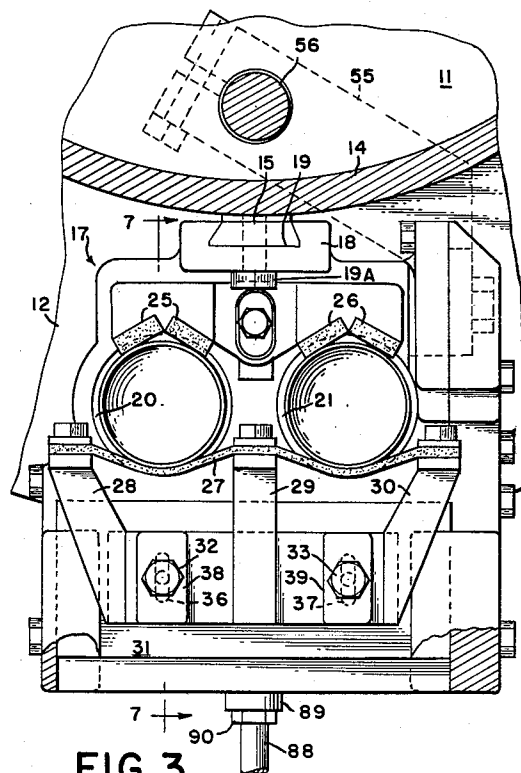


FIG. 3.

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FIG. 4.

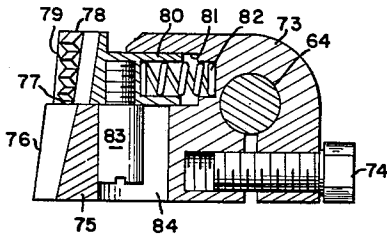
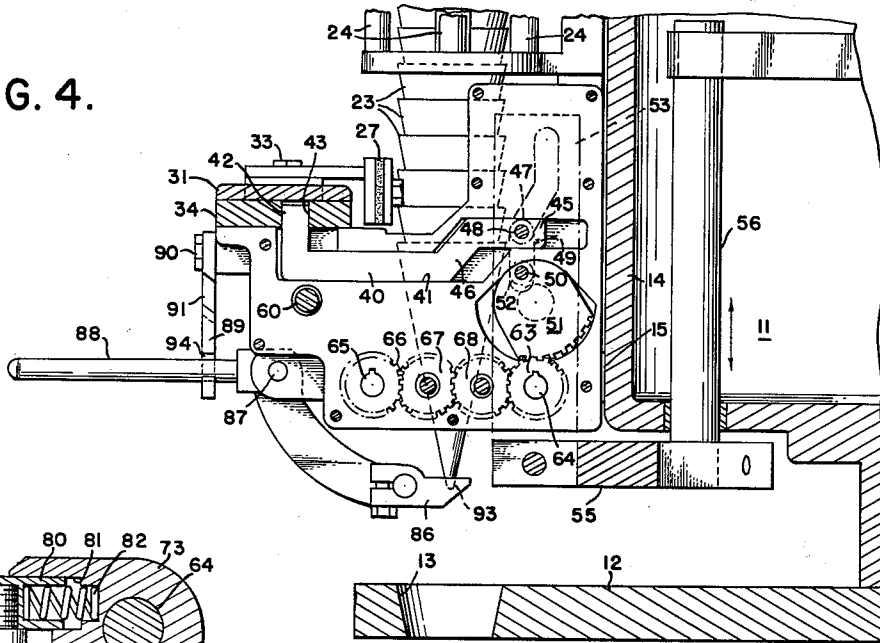


FIG. 9.

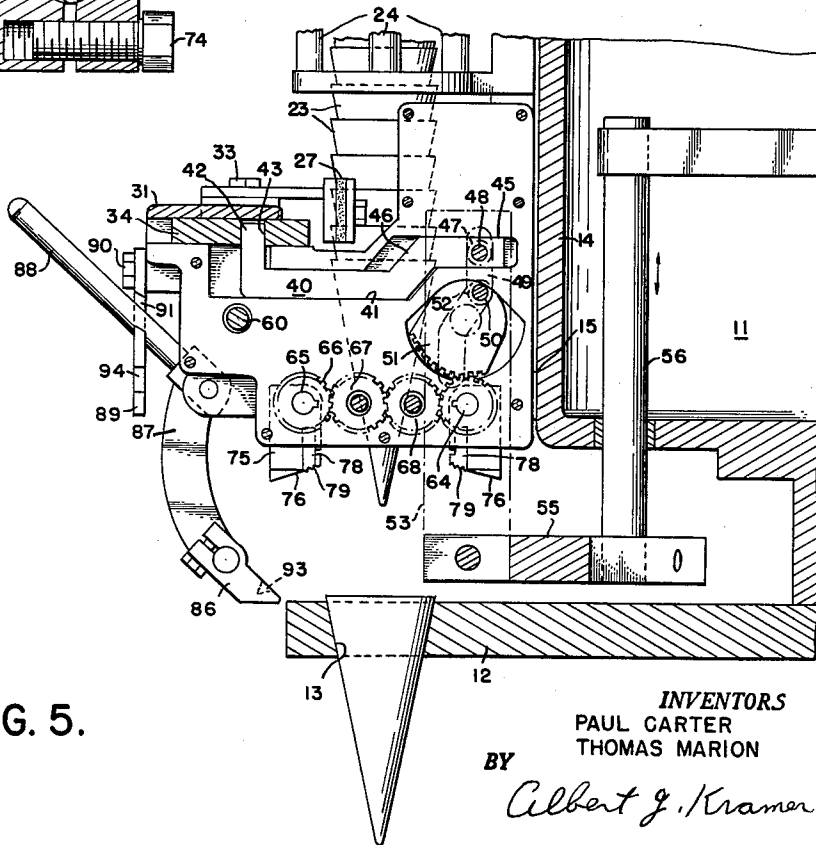


FIG. 5.

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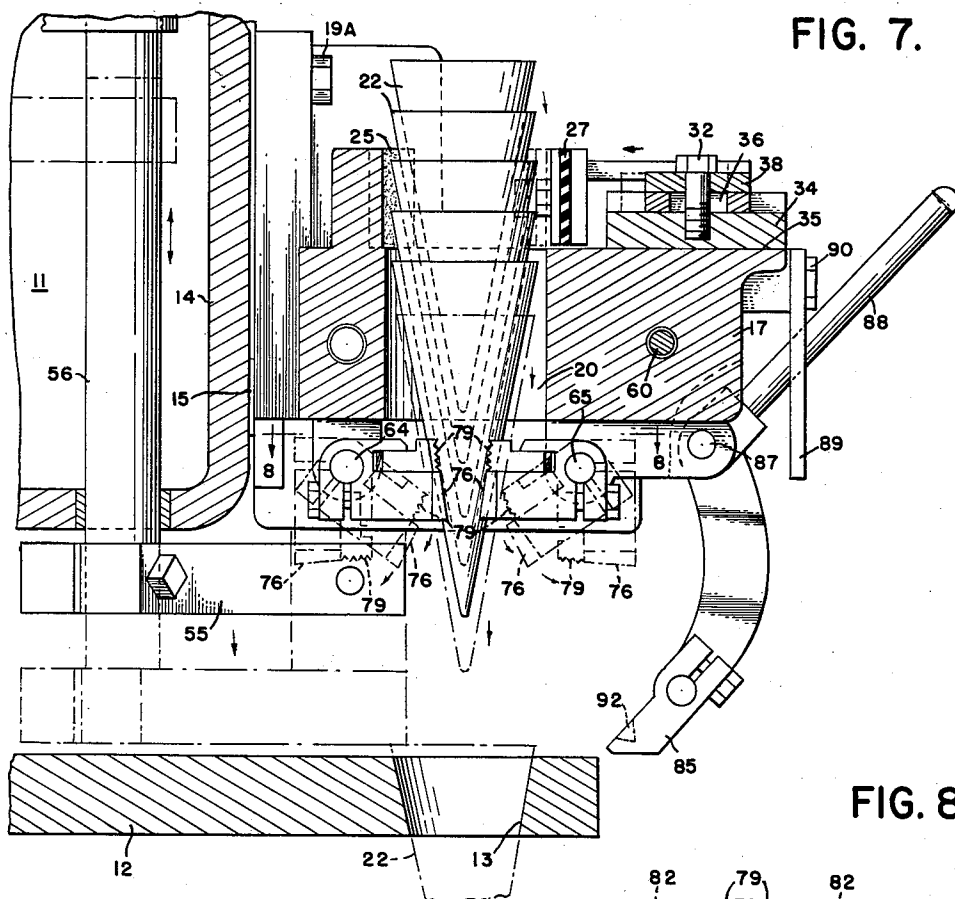


FIG. 7.

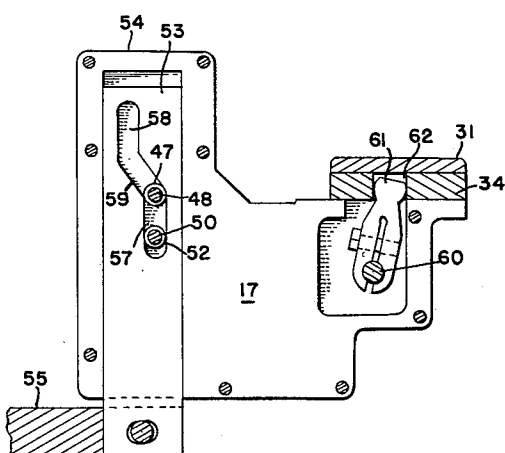


FIG. 6.

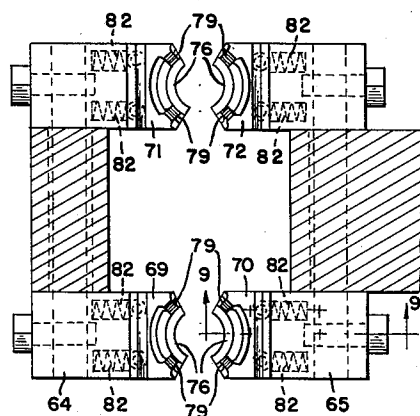


FIG. 8.

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FEEDER FOR SUGAR CONES

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4 Claims. (Cl. 221-223)

This invention relates to feeding devices and it is more particularly concerned with a mechanism for feeding so-called "sugar cones" or "rolled cones" from a nested stack or stacks of such containers to a machine or place for filling them with a material or materials, such as ice cream.

Conventional sugar cones or rolled cones, sometimes also referred to as "honeycones" have certain physical characteristics which make it difficult to provide a feeding mechanism therefor when they are stacked in nested relation. The surfaces of the cones, both inside and outside, are not smooth. They are somewhat rough from the pattern of the grid irons on which the wafers are made prior to being rolled into the shape of the cone. This causes adjacent cones of the stack to stick to each other and makes it difficult to separate them. Prior types of feeding mechanisms apply pressure downwardly against the top or rim of the cone to be separated from the rest of the stack, namely, the lowermost cone of the stack. This results in frequent breakage.

We have discovered that the breakage resulting from the application of downward pressure on the top of the cone to be removed is due to the fact that the wall of the cone is thinner there and the edge is somewhat uneven.

Accordingly, one of the objects of the invention is the provision of a mechanism for dispensing such cones which does not utilize a downward pressure at the rim edge of the cone.

We have also discovered that the strongest part of the cone is at the apex and hence another object of the invention is the provision of a mechanism for effecting such dispensing action where the separating force is applied to the apex section of the cone, rather than to the rim of the cone.

A further object of the invention is the provision of a feeder of the type mentioned which can be mounted on a machine for filling the cones with confectionary materials and which can be actuated in synchronization with the action of the filling machine to feed the cones from a stack thereof and deposit them at a receiving station of the machine.

A still further object of the invention is the provision of such a feeder that is positive in its operation, rugged in construction and easy to install and to maintain in service.

A still further object of the invention is the provision of such a feeder which is constantly connected to a source of power in synchronized relation to the filling machine, but which can be arrested while the filling machine is in operation and again actuated in full synchronization with the filling machine.

These and still further objects and advantages and features of the invention will appear more fully from the following description and from the accompanying drawing which together describe and illustrate an embodiment of the invention by way of example and not by way of limitation.

In the drawing:

FIG. 1 is a front elevational view of an embodiment of the invention attached to a filling machine, the latter being shown only fragmentarily.

FIG. 2 is a top plan sectional view along the line 2-2 of FIG. 1.

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FIG. 3 is a plan sectional view along the line 3-3 of FIG. 1.

FIG. 4 is a vertical sectional view along the line 4-4 of FIG. 1 showing the unit in its arrested position.

FIG. 5 is a view similar to FIG. 4 on a somewhat larger scale showing the unit in its operating position.

FIG. 6 is a section along the line 6-6 of FIG. 1.

FIG. 7 is a vertical sectional view along the line 7-7 of FIG. 3 showing by dotted lines different positions of the mechanism and the stacks of cones.

FIG. 8 is a section along the line 8-8 of FIG. 7 with the cones removed.

FIG. 9 is a section along the line 9-9 of FIG. 8.

Referring with more particularity to the drawing in which like numerals designate like parts, the embodiment is illustrated in the drawing in reference to a container filling machine 11 having a rotatably mounted horizontal loading wheel 12 provided with apertures 13 for receiving the containers to be filled. The filling machine alone, however, forms no part of the instant invention.

A stationary wall 14 of the filling machine adjacent the wheel 12 is provided with a dovetail mounting lug 15 opposite the space between a consecutive pair of the apertures 13 when the loading wheel 12 is in its stationary or resting phase between intermittent rotational movements. The location of the lug 15 is in advance of the filling station (not shown) of the filling machine or of the initial filling station, if there are more than one, such as where a plurality of materials are to be loaded into each container successively.

A block 17 comprises the base of the embodiment and it is provided with a mounting bracket 18 at the rear side having a dovetail slot 19 complementary to the lug 15. The block 17 is locked to the lug 15 by means of a bolt 19A.

The block 17 extends outwardly from the wall 14 and it is provided with a pair of vertical openings 20 and 21 vertically aligned with a pair of adjacent apertures 13, 13 when the loading wheel is in the resting phase of its cycle of operation. The apertures 20 and 21 comprise passageways through which the cones pass from a pair of nested stacks of cones 22 and 23, respectively.

These cones are laterally supported in stacked position by means of a group of vertical guide rods 24 set about the openings 20 and 21.

At the rearward sides of the openings 20 and 21 there are provided a pair of rubber blocks 25, 25 and 26, 26, respectively, for contacting the upper parts of several cones of each stack immediately above the lowermost cone. Across the opposite sides of the openings there is disposed a rubber strip 27 which is mounted on three spaced prongs 28, 29 and 30 projecting from a plate 31 mounted for reciprocation to and from the rubber blocks 25 and 26. In its inwardmost position the strip 27 cooperates with the rubber blocks to grip the penultimate cones of the stack, during which time the lowermost cone of each stack is removed. When the strip 27 is in the outermost position this grip is released and the stack falls into position for the removal of the next cone.

The plate 31 is adjustably secured by bolts 32 and 33 to a cross head 34 which is slidably carried on a horizontal surface 35 of the block 17. The adjustability is effected by means of slots 36 and 37 in the plate 31 through which the bolts 32 and 33, respectively, pass. Friction washers 38 and 39 are disposed between the heads of the bolts and the plate.

The cross head 34 is reciprocated through a horizontal link 40 slidably disposed on a supporting surface 41 and having an upturned finger 42 at the outer end to engage an opening 43 in the crosshead 34 for coreciprocation therewith.

The opposite end portion 45 of the link 41 is upwardly offset through a diagonal connecting portion 46 which carries a roller 47 on a stub shaft 48. A link 49 connects the stub shaft 48 to a stub shaft 50 at an eccentric point on an oscillating gear segment 51, vertically below the stub shaft 48. A second roller 52 similar to the roller 47 is mounted on the stub shaft 50.

A vertical cam plate 53 is slidably mounted for vertical reciprocating movement on the side wall 54. The lower end of the plate 53 is connected to and supported by an arm 55 extending horizontally from a vertically reciprocating member 56 of the filling machine 11 operated by a source of power (not shown).

The cam plate 53 is provided with a vertical zig-zag slot, the lower part 57 of which is forward of the upper part 58 and connected by a diagonal portion 59. The rollers 47 and 52 are disposed in the zig-zag slot so that when the plate 53 is moved to its lower position (see FIG. 5), the rollers 47 and 52 are moved inwardly, the upper roller 47 being moved slightly in advance of the lower roller 52. The movement of the roller 47 inward carries the link 41 rearward to, in turn, pull the crosshead 34 and with it the rubber strip 27 against the stacks of cones 22 and 23.

The motion of the crosshead 34 is stabilized at the ends by means of a rocker shaft 60 mounted in the block 17 and a pair of rocker arms, one at either end of the crosshead, such as the rocker arm 61 (only one shown) secured to the shaft 60 at one end, the other end of the arm engaging a corresponding aperture 62 in the crosshead 34. A similar rocker arm and aperture (not shown) is at the opposite end.

The inward movement of the lower roller 52 under the action of the cam plate 53 follows the movement of the upper roller 47, and causes the oscillating gear segment to turn clockwise, as viewed in FIG. 5. When the cam plate is moved upward to the position shown in FIG. 4, the reverse operation is effected, namely, the gear segment is counter rotated slightly in advance of the forward movement of the roller 47, link 41 and rubber strip 27 which has the effect of releasing the stacks of cones.

The oscillating gear segment 51 is meshed with a spur gear 63 fixed for rotation with a shaft 64. The shaft 64 is rotatably mounted in the block 17 on the inner side of the stack of cones and a countershaft 65 is likewise rotatably mounted on the block on the outer side of the stack of cones. The countershaft 65 is also provided with a spur gear 66. The two spur gears are connected together through idling gears 67 and 68, whereby rotation of the spur gear 63 in one direction results in simultaneous rotation of the spur gear 66 in the opposite direction an equal amount.

The shaft 64 and the countershaft 65 are provided with two pairs of jaw members 69, 70 and 71, 72 one pair for each of the stacks of cones. Each pair of jaw members cooperate to grip the apex section of the lowermost cone of its corresponding stack and pull it downward away from the rest of the cones in the stack.

Each jaw, as typically shown in FIG. 9, comprises a block 73, a portion of which comprises a bifurcated clamp and which is secured to the shaft 64 by means of the clamping bolt 74. The inner end of the block 73 is in the general shape of a quarter of a circle. The lower part 75 is solid with the block and outer edge 76 is sloped to form, with the corresponding part of the opposite block, a seat on which the lowermost cone of the stack rests before being removed from the stack. (See FIG. 7.)

The lower part 75 has a smooth upper edge 77 upon which there is slidably mounted an arcuate segment 78 having a toothed shape edge 79 normally aligned with the edge of the lower part 75 that forms the seat.

Projecting rearwardly from the segment 78 are hollow tubular members 80 which are slidably disposed in cor-

responding openings 81 and which are constantly urged to a protracted position by springs 82. A limit screw 83 threadedly engages each of the segments 78 through an enlarged aperture 84 thereby permitting the retraction and protraction of the segment within definite limits.

From the above it will be understood that rotation of the oscillating gear 51 clockwise, as viewed in FIGS. 4 and 5, causes the shaft 64 and countershaft 65 to rotate in opposite directions and to force the jaw members 69, 70 and 71, 72 down. If a cone is disposed between any opposite pair of the jaw members during this action, it is firmly gripped by the teeth 79 and prevented from breaking thereby due to the yieldability of the teeth segments, whereupon the cone is loosened from the bottom of the stack while the stack thereabove is being held between the rubber strip and the corresponding blocks. In the position shown in FIG. 5, the loosened cone drops through onto the loading wheel 12 and the cycle of operation is repeated. The action described is also illustrated by the dotted lines in FIG. 7.

Should it be desired to arrest temporarily the feeding of the cones to the filling machine for any particular purpose while the filling machine is in operation, it is only necessary to elevate the stack of cones slightly to keep them out of contact with the jaw members. This is accomplished by means of a pair of holding arms 85 and 86 connected each at one end to a pivoted bar 87 carried by the block 17. A handle for rotating the bar is secured to the bar 87 at any convenient place adjacent a double notched bar 89 which is pivotally secured to the block 17 by a shoulder bolt 90.

With the handle in the upper position, as shown in FIG. 5, the outer end of the arms 85 and 86 are lowered away from the stacks of cones. It is retained in this position as long as desired by placing the handle 88 in the upper notch 91. When it is desired to stop the operation of the feeder, the handle is removed from the notch 91 and lowered to bring the outer ends of the arms 85 and 86 up against the bottom of the stacks of cones an amount sufficient to disengage the lowermost cone from the jaw members as shown in FIG. 4. To avoid slippage of the cones on the outer ends of the arms 85 and 86, conical depressions 92 and 93, respectively, are provided therein to receive the apices of the bottom cones. The device can be held in this inoperative position as long as desired by engaging the handle with the lowermost notch 94. (See FIG. 1.)

Having thus described our invention, we claim:

1. A device for feeding frangible ice cream cones from a nested stack of such objects comprising a block having a vertical aperture therethrough for the passage of the cones, a yieldable abutment carried by the block on one side of the aperture and a flexible band on the opposite, a movable member supporting said band on the block, said member being mounted for reciprocating movement relative to the said abutment in an amount to alternately grip and release said stack at a point just above and exclusively of the lowermost cone of the stack, means for reciprocating said member including a reciprocating link, a pair of oscillatable coaxing jaw members below said abutment and band having teeth adapted to grip the apex section of the lowermost cone of the stack when said movable member is in gripping relation with the stack, a pair of oscillatable shafts supporting said jaw members, a train of gears connecting said shafts for oscillation of the jaw members in opposite directions, an oscillatable gear segment engaging said train of gears, a first cam follower, and a second cam follower eccentrically carried by said gear segment, a cam engaging said cam followers and means for actuating said cam to reciprocate the first cam follower and oscillate the second cam follower.

2. A device for feeding frangible ice cream cones one at a time from a nested stack of such cones comprising a block member having a vertical aperture therethrough

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for the passage of the cones, a soft resiliently yieldable stationary abutment carried by the block on one side of the aperture, a soft resilient shiftable abutment on the opposite side of the aperture facing the stationary abutment, said shiftable abutment being adapted to movement toward and from the stationary abutment, said abutments being adapted to coact to grip and hold the stack at the position of a cone next above the lowermost cone of the stack when the shiftable abutment is moved toward the stationary abutment and to release the stack when it is moved in the opposite direction, means for actuating the shiftable abutment to alternately cause the stack of cones to be gripped and released between the abutments, and means for engaging the lowermost cone of the stack below the abutments moving it downwardly to separate it from the remaining cones of the stack when said abutments are in gripping relation.

3. A device for feeding frangible ice cream cones one at a time from a nested stack of such cones comprising a block member having a vertical aperture therethrough for the passage of the cones, a soft resiliently yieldable stationary abutment carried by the block on one side of the aperture, a soft resilient shiftable abutment on the opposite side of the aperture facing the stationary abutment, said shiftable abutment being adapted to movement toward and from the stationary abutment, said abutments being adapted to coact to grip and hold the stack at the position of a cone next above the lowermost cone of the stack when the shiftable abutment is actuated toward the stationary abutment and to release the stack when it is moved in the opposite direction, means for actuating the shiftable abutment to alternately cause the stack of cones to be gripped and released between the abutments, and means for engaging opposite sides of the apex section of the lowermost cone of the stack below the abutments and moving it downwardly to separate it

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from the remaining cones of the stack when said abutments are in gripping relation.

4. A device for feeding frangible ice cream cones one at a time from a nested stack of such cones comprising a block member having a vertical aperture therethrough for the passage of the cones, a soft resiliently yieldable stationary abutment carried by the block on one side of the aperture, a soft resilient shiftable abutment on the opposite side of the aperture facing the stationary abutment, said shiftable abutment being adapted to movement toward and from the stationary abutment, said abutments being adapted to coact to grip and hold the stack at the position of a cone next above the lowermost cone of the stack when the shiftable abutment is actuated toward the stationary abutment and to release the stack when it is moved in the opposite direction, means for actuating the shiftable abutment to alternately cause the stack of ice cream cones to be gripped and released between the abutments, and rubber fingers for engaging opposite sides of the apex section of the lowermost cone of the stack below the abutments and moving it downwardly to separate it from the remaining cones of the stack when said abutments are in gripping relation.

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