March 31, 1964 E. R. NAY 3,126,841

APPARATUS FOR MANUFACTURING SNOW CONES

Filed July 8, 1960

FIG. 1.

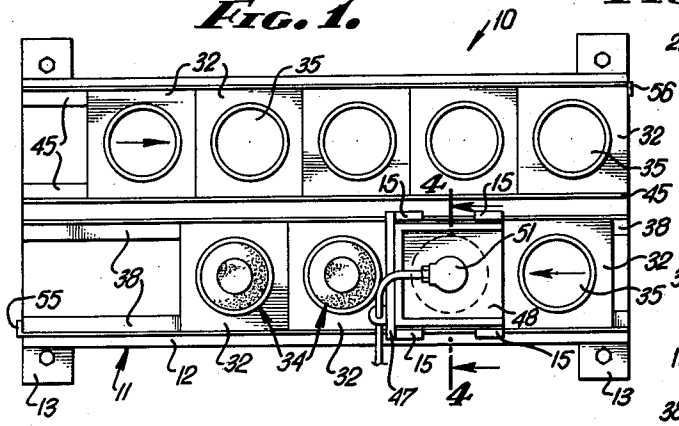


FIG. 4.

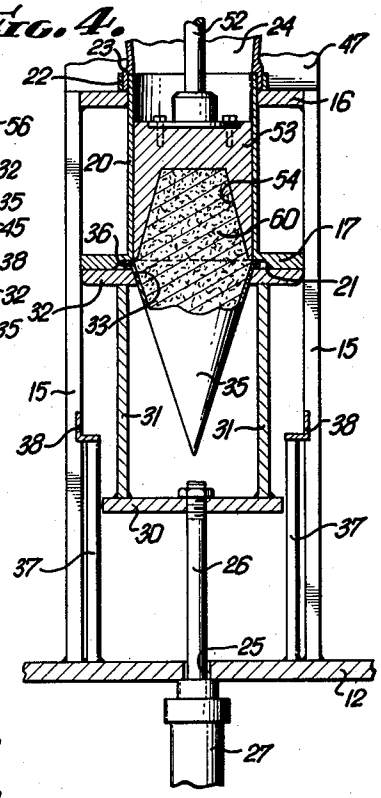


FIG. 2.

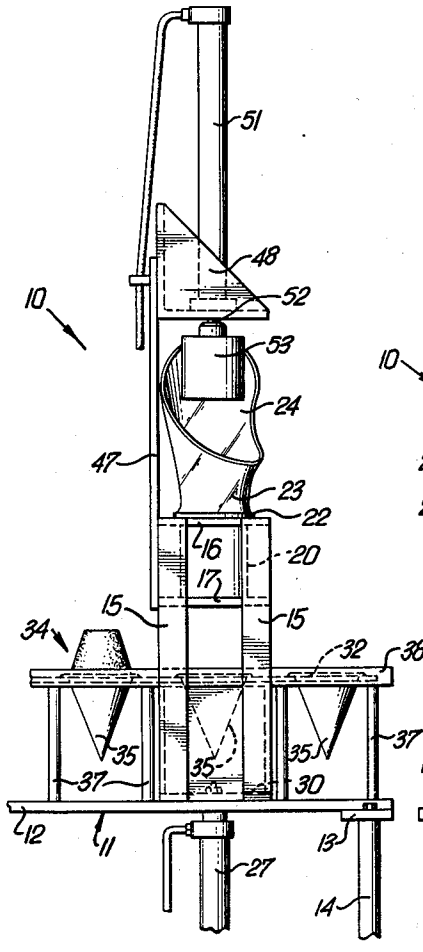


FIG. 3.

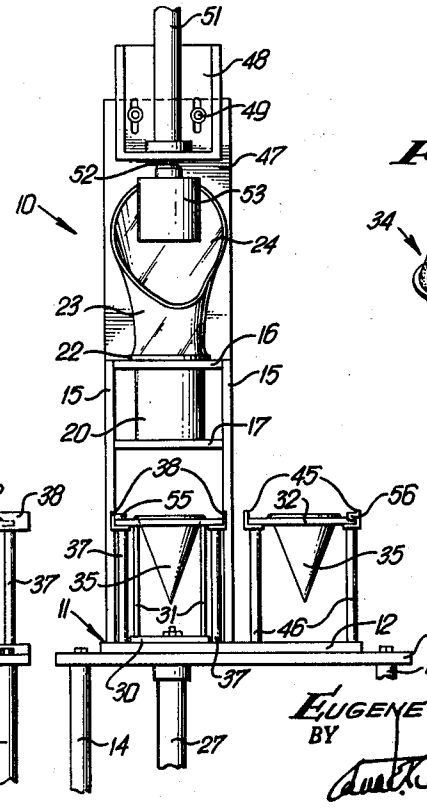
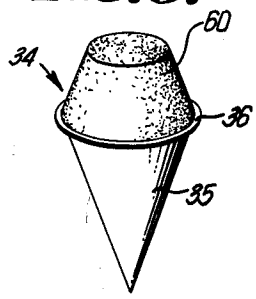


FIG. 5.



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APPARATUS FOR MANUFACTURING SNOW CONES

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This invention relates to the confectionery art and more particularly to the manufacture of the confection popularly known as a snow cone.

As previously known, snow cones have been made by hand. The method employed has been to hold a conical paper cup in one hand and then use the other hand to fill the cup with snow either natural or artificially made. The snow filling the cup is then impregnated with a confectioner's syrup, usually a sweet fruit juice and it is ready for sale. In this prior practice, the snow cones were made only as ordered by a customer.

It is an object of the present invention to provide an apparatus for the production of snow cones which will decrease the cost of this production and facilitate their profitable commercial distribution under refrigeration as a frozen confection.

The manner of accomplishing the foregoing object as well as further objects and advantages will be made manifest in the following description taken in connection with the accompanying drawings in which

FIG. 1 is a diagrammatic plan view of a preferred embodiment of the apparatus of the invention.

FIG. 2 is a fragmentary side elevational view of FIG. 1.

FIG. 3 is a front end elevational view of FIG. 2.

FIG. 4 is an enlarged vertical sectional view taken on the line 4—4 of FIG. 1 and illustrates the manufacture of a snow cone by said apparatus.

FIG. 5 is a perspective view of a snow cone manufactured in accordance with the present invention.

Referring specifically to the drawings, the invention is there shown as embodied in a snow cone making apparatus 10. This apparatus includes a frame 11 embodying a base plate 12 having cross bars 13 fixed to its opposite ends. Secured to said cross bars are legs 14 which rest on the floor and support the frame 11 at a proper working level.

Rigidly secured to the base plate 12 near a side edge of the latter and towards one end thereof are four vertical bars 15, upper portions of which are spaced apart and connected by square plates 16 and 17. These plates have circular apertures provided centrally therein which are coaxially aligned vertically and have mounted therein a tubular cylinder 20 which is open at both its upper and lower ends. An annular recess 21 is provided in the lower face of plate 17 immediately surrounding the lower end of cylinder 20.

The upper end of cylinder 20 extends a slight distance above upper plate 16. Snugly fitting said cylinder end and secured thereto by an encircling band 22, is the neck portion 23 of a transparent plastic hopper 24. The mouth of the hopper 24 opens obliquely forwardly facing the operator who stands at the right of the apparatus 10 as this is shown in FIG. 1.

The base plate 12 is provided with a hole 25 which is concentric with the cylinder 20, a piston rod 26 of an air cylinder 27 extending upwardly through said hole, said air cylinder being secured to the bottom of plate 12. The rod 26 has the usual piston (not shown) at its lower end which is slidable on the air cylinder 27 and which is actuated by the delivery of air optionally to the upper or lower end of cylinder 27 to cause vertical movement of the rod 26.

Fixed to the upper end of rod 26 is an elevator platform 30 which has side plates 31 rigidly secured thereto adjacent its opposite side edges, the upper edges of plates 31 being located at the same horizontal level.

The apparatus 10 includes a substantial number of square cup trays 32 which comprise aluminum plates having circular holes 33 with beveled edges formed centrally therein, the bottom edges of said trays being rounded for a purpose which will be made clear hereinafter.

The trays 32 are identical in dimensions and each of these just slidably fits in the space bounded by the vertical bars 15 so that when one of said trays is inserted directly between said bars so as to rest on upper edges of elevator plates 31, the hole 33 in said tray is in coaxial alignment with the cylinder 20.

The apparatus 10 is designed to form a snow cone 34 in a conical paper cup 35 of a particular standard size, the cup trays 32 being made so that when one of these cups is inserted in the hole 33 thereof, it neatly occupies this hole with an annular bead 36 of said cup resting on the upper face of said tray.

Recessed in inner faces of bars 15 as shown in FIG. 4 and supported on standards 37 rigidly mounted on plate 12 is a pair of metal-angle tray conveyer tracks 38. These tracks are located at a level which is just above the upper edges of elevator plates 31 when the elevator 30 is in its downwardmost position as shown in FIGS. 2 and 3. The tracks 38 are thus adapted for slidably conveying trays 32 into position over the elevator 30 and away from over this elevator during the intervals between snow cone forming operations of the apparatus 10.

A similar pair of metal angle conveyor tracks 45 are disposed at the same level as and parallel with and close to the conveyer tracks 38 and are supported on the plate 12 by vertical standards 46. The purpose served by tracks 45 will be made clear hereinafter.

Rigidly secured to outer edges of the leftward pair of bars 15 (FIGS. 1 and 2) is a mounting plate 47, and a bracket 48 is rigidly secured to said plate by bolts 49 so as to permit vertical adjustment of said bracket on said plate. Mounted on bracket 48 and extending upwardly therefrom is an air cylinder 51 which is adapted to reciprocate a piston rod 52 which extends concentrically downwardly therefrom and has mounted on its lower end a die plunger 53. This plunger is preferably formed of a plastic sold under the trademark Teflon and comprising polytetrafluorethylene resin and is shaped to be provided with a deep upward recess 54 in its lower end as shown in FIG. 4.

Suitable air supply means (not shown) connects with upper and lower ends of cylinder 51 so as to permit the ready control of this cylinder by the operator for the vertical reciprocation of the plunger 53 as will be presently described. The plunger 53 has an outside diameter which causes this to be slidably received within the tubular cylinder 20 when this plunger is lowered by actuation of the air cylinder 51.

Provided on the rear end of one of the conveyer tracks 38 and on the front end of one of the conveyer tracks 45, respectively, are stop lugs 55 and 56.

OPERATION

The apparatus 10 is designed for operation by a crew of two men one of which will be referred to as the operator and the other as the assistant. It is also designed for use in association with a machine for shaving ice to produce a ready supply of artificial snow which is located close to the right end of the apparatus 10 where it may be reached by the operator who stands facing the right end of said apparatus. Suitable valves (not shown) for

controlling the air cylinders 27 and 51 are located close to the left hand of the operator when he stands in this position so he may actuate these air cylinders to raise or lower the elevator 30 or to lower or raise the plunger 53 at will.

A dispenser for paper cups 35 is mounted in a convenient position to be reached by the assistant who stands facing the left end of apparatus 10. Behind the assistant and located within his ready reach are racks for receiving snow cones 34 after these have been manufactured by the apparatus 10 and pans filled with confectioner's syrup for use in flavoring the snow cones 34 after these are made. A series of the trays 32 are employed with the apparatus 10, at least of the number shown in FIG. 1 where nine such trays are illustrated, and at the start of the operation of apparatus 10 all of these trays are furnished with empty cups 35 resting in the holes 33 in said trays.

The production of snow cones 34 starts with the actuation by the operator of air cylinder 27 to cause this to lift the conveyer 30 and the tray 32 supported thereon upwardly until the bead 36 of the paper cup 35 resting in said tray is pressed into the annular recess 21 in the lower face of plate 17 as shown in FIG. 4. The operator, leaving the air pressure on in the lower end of cylinder 27, then scoops up with a suitable measuring cup (not shown) exactly the right amount of artificial snow to form a snow cone and delivers this into the hopper 24. This snow gravitates downwardly from the hopper into the cylinder 20. The operator then actuates the air cylinder 51 to lower the plunger 53 to the position in which this is shown in FIG. 4. This operation compacts the charge of snow in the cylinder 20 so as to form a compact body of this snow in the cup 35 and also produce an upward extension 60 of compacted snow which extends upwardly from the snow in the cup 35 and is integrally bonded therewith by the pressure applied from the plunger 53.

The operator now actuates in quick succession the air cylinder 51, to lift the plunger 53 to its uper position, as shown in FIGS. 2 and 3, and the air cylinder 27, to lower the elevator 30. This returns the tray 32 resting on this elevator and in which a snow cone 34 has just been formed downwardly until this tray comes to rest on the conveyer tracks 38 while still located within the vertical bars 15. The operator then pushes rearwardly on the tray 32 which is located adjacent the operator and resting on the forward portions of the tracks 38, so as to push the tray 32 in which the snow cone has just been formed rearwardly on the tracks 38 and introduce the tray thus engaged by the operator's hand into coaxial alignment with the cylinder 20 of the apparatus. The assistant at the same time lifts the rearmost tray 32 from the tracks 38 and transfers this to the tracks 45 while the operator lifts the tray 32, nearest him on the tracks 45, and delivers this onto the front end portions of the tracks 38 on which a space has just been cleared to receive this tray.

The snow cone making operation just described is now repeated until all of the trays 32 resting on tracks 38 excepting the tray at the extreme forward end of these tracks has been provided with a snow cone 34. The assistant then starts removing two of the trays 32 at a time from the rear end of the tracks 38 delivering the snow cones from these trays into the racks provided to receive the same, flavoring these snow cones with suitable syrup, placing empty paper cups 35 in these emptied trays and then returning these trays onto tracks 45 and pushing these trays along these tracks until the foremost tray engages the top 56 thus filling these tracks with trays having empty cups ready for use by the operator in the continued operation of the apparatus 10.

I claim:

1. An apparatus for making snow cones comprising a tubular cylinder approximately fully open at both ends; a hopper associated with one end of said cylinder for delivering a charge of snow thereto; means for holding the mouth of a paper cup against the other open end of said cylinder; and a cylindrical plunger means having a pressure face and being mounted outside said one end of said cylinder for rectilinear axial reciprocation towards, into and out of said cylinder to press a charge of snow delivered from said hopper into said cylinder compactly into said cup; said plunger means having a deep recess in said pressure face producing a correspondingly shaped mass of compacted snow extending outwardly from the mouth of said cup, and being integral with the compacted snow in said cup.

2. A combination as in claim 1 in which said cylinder is mounted vertically and said cup holding means comprises a cup supporting tray, and an elevator for lifting said tray coaxially with said cylinder to apply the mouth of said cup to the lower open end of said cylinder, and then for lowering said tray and said cup after snow has been pressed into the latter as aforesaid.

3. A combination as in claim 2 in which conveyor means are provided for discharging a tray from over said elevator following a snow pressing operation as aforesaid, and feeding another tray supporting an empty cup over said elevator.

4. A combination as in claim 3 in which said conveyer means includes a pair of angle tracks on which trays are slidably supported on their edges in an edge-to edge line of trays, the entire line being moved by the introduction of a tray onto one end of said pair of tracks.

5. A combination as in claim 4 in which a second similar conveyor means is provided parallel with and close to the first conveyer means aforesaid and on the same level therewith for receiving trays, after these have been taken from the discharge end of said first recited conveyer means, and the snow cones formed therein replaced by empty cups, and feeding said trays back close to the receiving end of said first recited conveyer means.

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