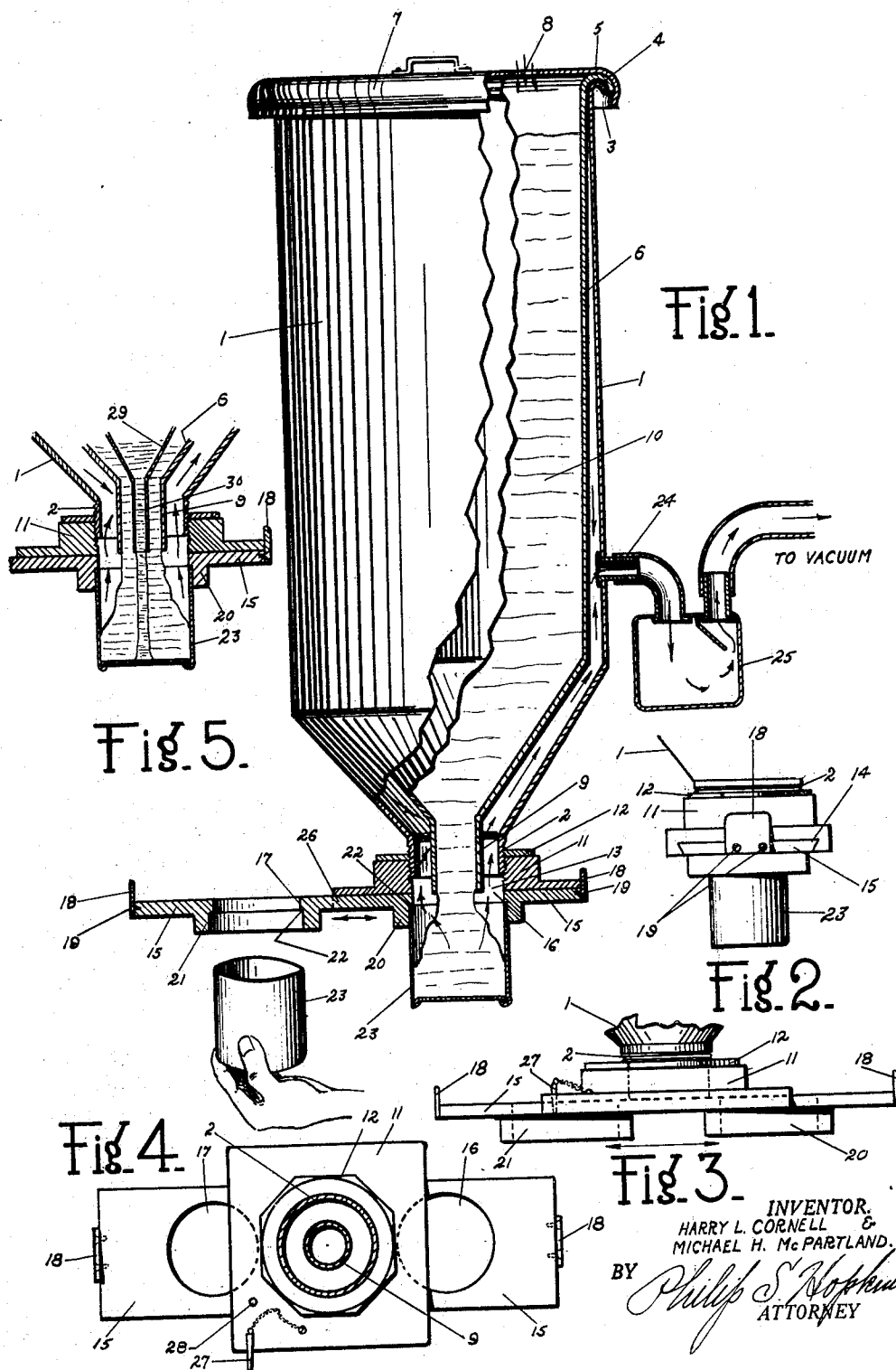


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ICE CREAM CARTONING APPARATUS

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ICE-CREAM-CARTONING APPARATUS

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Our invention relates generally to machines for handling ice cream and the like and particularly to a machine for filling cartons or boxes with ice cream. It should be understood of course that while our invention is particularly adapted for ice cream, it is not limited thereto, being equally useful in other arts.

It is the practice in this art to fill paper or card-board cartons of various convenient sizes with ice cream in semi-frozen condition, the filled cartons then being placed under refrigeration to complete the freezing operation before delivery to the users. It has been a real problem in filling these containers to exhaust the air from the containers during the filling thereof in order to permit such filling at high speed and by automatic or semi-automatic machinery. There have been various more or less complicated suction devices with telescoping parts, etc. tried out but if successful at all, have not succeeded in increasing the speed by which the containers may be filled greatly beyond that of filling by hand. The primary object of our invention is to provide an apparatus for filling cartons with ice cream at a high rate of speed, the operation of the apparatus being practically automatic.

A further object is to provide an apparatus of this character which readily exhausts all the air from the container during the filling process, thereby insuring a full container.

A still further object is to provide such a device which reduces to a minimum the waste common with other machines now in use.

Still another object is to provide an apparatus of this character which is simple in construction, easy of operation and which may be operated readily by unskilled labor.

Other objects and advantages in details of construction and operation will be apparent as the description proceeds, reference now being had to the figures of the accompanying drawing wherein like reference numerals indicate like parts.

In the drawing:—

Figure 1 is a side view of our improved apparatus, certain parts being broken away and in section for clearness.

Figure 2 is a detail end view of the lower part of the apparatus.

Figure 3 is a detail side view of the lower part of the apparatus in one position of the movable part.

Figure 4 is a detail top plan view of the lower portion of the apparatus with the parts in the same position as shown in Figure 3.

Figure 5 is a detail sectional view illustrating a modified form of our invention.

The reference numeral 1 indicates an outer tank or large enclosure provided at its lower end with a threaded, restricted open end 2. The upper end of this tank 1 is curled outwardly as at 3 and the upper surface of this curled edge is provided with a backing 4 upon which is adapted to rest the upper curled edge 5 of an inner container 6, the walls of which are spaced from the walls of the tank 1 except at the point of the packing 4, where an air-tight connection prevails. A cover 7 provided with air vents 8 closes the open upper ends of the tanks. The inner container 6 is also provided with a restricted lower end 9 passing through and projecting slightly beyond the reduced end 2 of the outer tank 1 and being spaced therefrom on all sides. This inner container 6 is adapted to contain the ice cream in semi-frozen condition and when empty may be removed by lifting the same out of the outer tank 1 at the top and whereupon a full inner container 6 may be lowered into position.

Screwed onto the restricted lower end 2 of the outer tank 1 is a support 11 adapted to be locked in position on said restricted end by means of the lock nut 12. This support 11 is provided with an opening 13 through the center of which passes the restricted lower end 9 of the inner container 6.

The underside of the support 11 is provided with a dove-tail groove 14 adapted to receive a slide 15 provided with spaced openings 16 and 17 of the same size as the opening 13 in the support 11 and adapted to register therewith as the slide 15 is moved back and forth on the support 11. The ends of the slide 15 are provided with upstanding stop members 18 removably secured to the slide

as by means of the screws 19. These stop members 18 are adapted to engage the opposite edges of the support 11 and, when in engagement therewith, accurately position the opening 16 or 17 (whichever the case may be) directly in alignment beneath the opening 13 in the support 11. It will be understood also that by removing one of the stop members 18, the slide 15 may be removed entirely from the dove-tail groove 14 in the support 11, for cleaning, etc.

Projecting downwardly from the underside of the slide 15 at points around the openings 16 and 17 are hollow bosses 20 and 21. The bore of these bosses is slightly greater than the diameter of the openings 16 and 17 thereby providing shoulders 22 against which the upper edges of the cartons or containers 23 engage when inserted in the hollow bosses 20 and 21. These shoulders 22 are so positioned as to bring the upper edges of the cartons into alignment with the lower edges of the openings 16 and 17. It will be understood that the cartons 23 are of such size with respect to the hollow bosses 20 and 21 that when the same are inserted therein, they remain frictionally held in position.

It will be noted with reference to Figure 1 that the lower end of the inner container 6 stops flush with the upper surface of the slide 15 in order to permit the free movement of such slide to and fro to alternately bring the openings 16 and 17 therein in alignment with such end and with the opening 13 in the support.

Opening at a suitable point into the space between the outer tank 1 and the inner container 6 is a pipe or hose 24 leading to a suitable vacuum or suction device. Interposed in this vacuum line is a catch basin or receptacle 25 adapted to receive the deposit of foreign substances which may be drawn from within the tank 1, such as salt, dirt, or other matter which may be scraped off of the outer surface of the inner container 6 as the same is lowered into the outer tank 1.

It will be observed with reference to Figure 1 that the vacuum or suction through the pipe 24 exerts itself completely around the outer side of the inner container 6 and, due to the spacing of the restricted end 9 thereof, from the end 2 of the outer tank, includes in its affected area the openings 11 and 16 (or 17) and the carton 23, which latter, due to such suction, is firmly held against the shoulder 22 in the hollow boss 20.

Obviously this suction tends to create a vacuum within the carton 23 and around the open lower restricted end 9 of the inner container 6, resulting in pulling the ice cream 10 from such inner container into the carton 23. Obviously also, as the carton 23 fills up with ice cream, the air in the carton is displaced thereby and forced upwardly out of the carton and between the tanks 1 and 6,

where it is carried off through the suction pipe 24.

It will be understood that during the filling of one carton 23, for instance in the hollow boss 20, another carton 23 may be inserted in the hollow boss 21 and when the first one has been filled, the slide 15 is pushed to the right in Figure 1, to bring the second carton into position for filling. While this one is being filled, the loaded one is removed and an empty one put in its place. It has been found by actual experience that the cartons 23 become filled by this apparatus almost instantaneously. Therefore, the speed of the apparatus is limited only by the speed of the operator interchanging empty cartons for full ones and moving the slide 15 back and forth in the dove tail groove 14 on the support 11. The engaging surfaces between the support 11 and the slide 15 are of course machined smooth and to a perfect sliding fit so that there can be no leakage between these two elements.

The space 26 between the two openings 16 and 17 in the slide 15 is slightly greater than the diameter of such openings so that when the slide is moved to a position such as shown in Figures 3 and 4, the opening 13 in the support 11 is sealed as is the lower end 9 of the inner container 6. The slide 15 may be locked in said position, if desired, by means of a pin 27 engageable through registering openings 28 in the support 11 and slide 15.

It is sometimes desired to fill these cartons with two kinds of ice cream and the modification shown in Figure 5 illustrates how this can be accomplished with our apparatus. In this figure, the same parts are shown as in Figure 1 and are indicated by the same reference characters. In addition, there is provided a second inner container 29 adapted to contain a different kind or flavor of ice cream than that contained in the container 6. This innermost container 29 likewise has a restricted lower open end 30 passing through the end 9 of the container 6 and terminating flush with the lower end of such container. Obviously, therefore, in operation, the suction above described, will cause the ice cream from both the inner containers 6 and 29 to be discharged into the carton 23, the ice cream from the container 6 surrounding that from the container 29.

From the foregoing, it will be clear that we have devised a simple and efficient apparatus for filling cartons with ice cream at great speed and with minimum waste.

Of course, changes may be made in details of construction and arrangement of parts without departing from the spirit and scope of our invention. We do not limit ourselves, therefore, to the exact form herein shown and described other than by the appended claims.

We claim:—

1. A carton filling apparatus for ice cream comprising a container having a discharge opening, below which a carton is positioned for receiving ice cream from said opening, and constant vacuum means for exhausting the air from said carton and drawing the ice cream from said container into said carton, and means for removing the filled carton and inserting an empty in position for filling without interrupting said vacuum. 70
2. A carton filling apparatus for ice cream comprising a container having a discharge opening, a movable carton carrier associated therewith for successively presenting empty cartons in position to be filled from said opening, and constant vacuum means exhausting the air from said cartons and comprising the sole means for drawing ice cream from said container into said cartons when so positioned. 75
3. A carton filling apparatus for ice cream comprising a container having a discharge opening, a movable carton carrier associated therewith for successively presenting empty cartons in position to be filled from said opening, and constant vacuum means exhausting the air from said cartons and comprising the sole means for drawing ice cream from said container into said cartons when so positioned, and means on said carrier for properly positioning said cartons with respect to said opening. 80
4. A carton filling apparatus for ice cream comprising a container having a discharge opening, a movable carton carrier associated therewith for successively presenting empty cartons in position to be filled from said opening, and constant vacuum means exhausting the air from said cartons and drawing ice cream from said container into said cartons when so positioned, said carrier during its movement between cartons to present an empty carton for filling, cutting off the flow of ice cream. 85
5. A carton filling apparatus for ice cream comprising a container having a discharge opening, a movable carton carrier associated therewith for successively presenting empty cartons in position to be filled from said opening, and constant vacuum means exhausting the air from said cartons and drawing ice cream from said container into said cartons when so positioned, said carrier during its movement between cartons to present an empty carton for filling, cutting off the flow of ice cream and means for locking said carrier in such position intermediate said cartons. 90
6. A carton filling apparatus for ice cream comprising a tank, an ice cream container therein and having an air tight connection with said tank at its upper end, the walls of said tank and container being spaced apart, the lower ends of said tank and container being open and spaced, a movable carton carrier closing said open ends, openings in said carrier for receiving cartons to be filled from said container, and constant vacuum means affecting the space between said tank and container, and said carton, whereby the air is exhausted from said carton and ice cream drawn from said container into said carton. 95
7. A carton filling apparatus for ice cream comprising a tank, an ice cream container therein and having an air tight connection with said tank at its upper end, the walls of said tank and container being spaced apart, the lower ends of said tank and container being open and spaced, a movable carton carrier closing said open ends, openings in said carrier for receiving cartons to be filled from said container, and constant vacuum means affecting the space between said tank and container, and said carton, whereby the air is exhausted from said carton and ice cream drawn from said container into said carton, said carrier comprising a slide adapted to successively present empty cartons for filling from said container. 100

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