

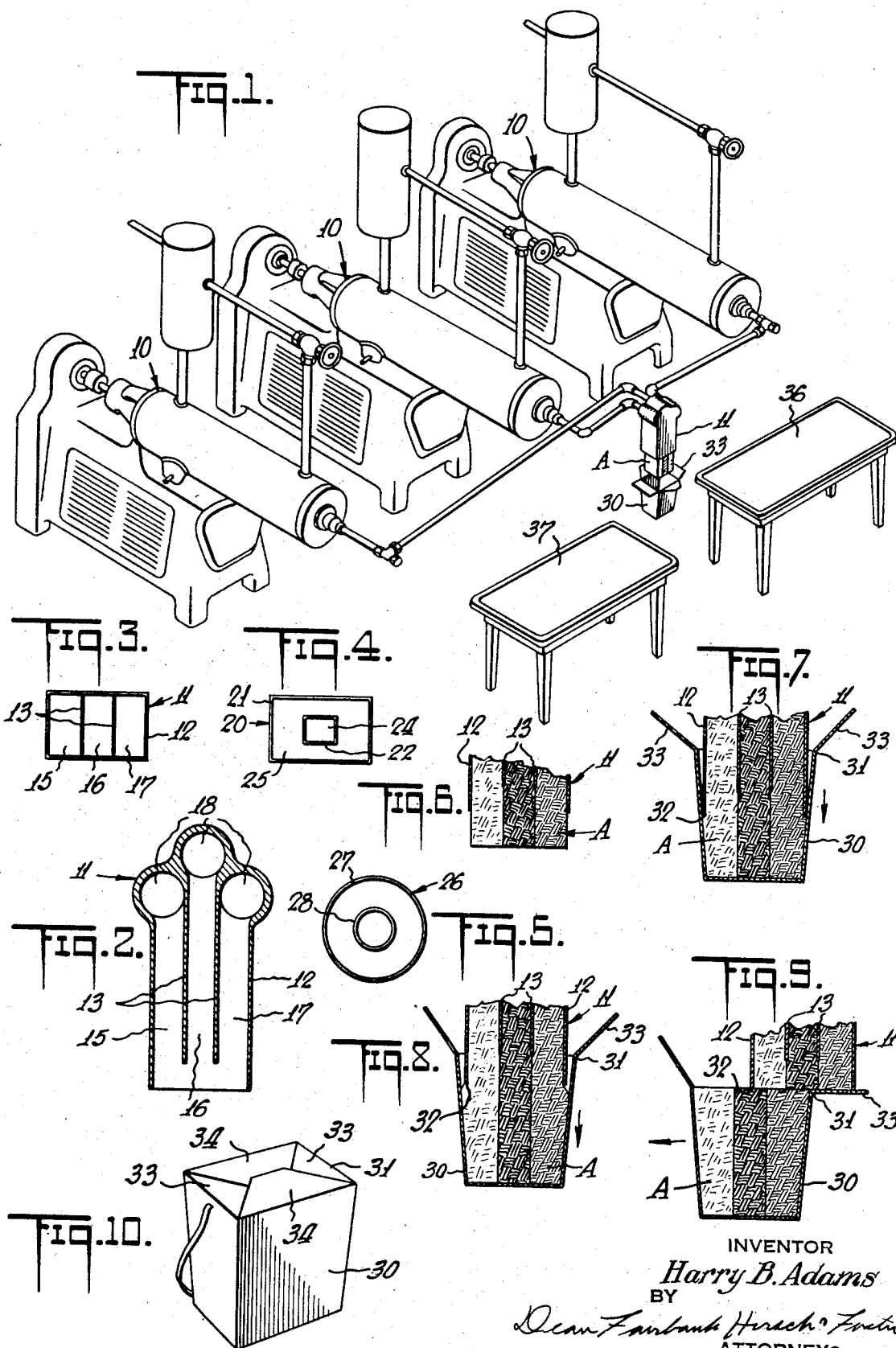
Jan. 31, 1939.

H. B. ADAMS

2,145,240

METHOD OF PACKAGING PLASTIC COMESTIBLES

Filed Aug. 1, 1936



INVENTOR

Harry B. Adams

BY

Dean Fairbanks Herach, Foster
ATTORNEYS

UNITED STATES PATENT OFFICE

2,145,240

METHOD OF PACKAGING PLASTIC COMESTIBLES

Harry B. Adams, Chicago, Ill., assignor to Cherry-Burrell Corporation, Wilmington, Del., a corporation

Application August 1, 1936, Serial No. 93,768

6 Claims. (Cl. 226—93)

The present invention relates to the filling of containers with plastic comestible material, particularly ice cream or the like, to form packages.

One object of the present invention is to provide a new and improved method for packaging plastic comestibles, which is simple and expeditious, which may be easily carried out by hand, and which may be employed for filling containers from a stream of plastic material of form-retaining hardness continuously extruded from a nozzle. By means of my improved method, the cross-sectional shape or pattern of the extruded comestible is not substantially disturbed. This is particularly desirable in cases where the extruded stream is formed by combining two or more sub-streams of different flavors or materials in parallel arrangement.

In carrying out the method of the present invention, the plastic material is continuously extruded from a depending nozzle and is of such hardness or stiffness that as it passes beyond the end of the nozzle it will retain its form and the exposed section will not break off or become materially attenuated for a distance equal to at least one-half of the carton to be filled.

The carton or container has a cross-sectional shape and size substantially the same as the cross-section of the extruded plastic stream, so that an empty carton may be slipped up onto the depending exposed end of the stream or extruded bar and partway onto the nozzle. It may then be lowered at the rate of continuous flow of the stream until the top of the carton or container comes flush with the end of the nozzle, at which instant the carton may be moved laterally rapidly and the edge of the carton wall will cooperate with the edge of the nozzle wall to sever the bar with the carton completely filled.

In the accompanying drawing, there are shown for the purpose of illustration, an apparatus and various forms of nozzles which may be used for carrying out the present invention, the parts being shown in the various positions which they may occupy in the successive steps of the improved method. In the drawing:—

Fig. 1 is a perspective view of a series of freezers for delivering ice cream or similar material of different flavors to a depending nozzle from which a stream of ice cream having a plurality of contiguous and merged layers of different flavors is extruded.

Fig. 2 is a vertical section taken through a form of nozzle which may be employed,

Fig. 3 is an end view of the nozzle shown in Fig. 2,

Figs. 4 and 5 are end views of other forms of nozzles which may be used,

Figs. 6, 7, 8 and 9 are vertical sections through the discharge end of the nozzle of Fig. 2, and show successive steps of my improved method, and

Fig. 10 is a perspective view of a completed package.

In the specific apparatus illustrated, ice cream of two or more flavors is delivered in plastic form-retaining condition from a series of continuous freezers 10. These continuous freezers may be of the general type disclosed and claimed in Patent 1,783,864 issued Dec. 2, 1930, in which the mix and air are continuously forced into the freezer, frozen under pressure, and extruded as a comparatively stiff bar or rod of the aerated ice cream. Other means for forming and continuously extruding the ice cream of the desired stiffness may be employed. These freezers may be supplied with different kinds or flavors of ice cream mix. In carrying out my invention, all of the freezers or other sources of supply deliver their respective products under pressure to a downwardly directed extrusion nozzle 11. This nozzle 11, in the specific form shown in Figs. 2 and 3, comprises an outer tubular casing 12 of substantially rectangular cross-section connected to all of the freezers and divided by a pair of spaced partitions 13 defining three parallel passageways 15, 16 and 17 having separate inlets 18 connected to the outlets of the several freezers 10. Thus ice cream of different flavors is forced by the three freezers respectively, and delivered in distinct layers, through said passageways.

The outer ends of the partitions 13 may be spaced inwardly from the discharge end of the casing 12 so that the various contiguous layers of the mix, as they move beyond the outlet ends of the partitions 13, come together and coalesce into a single multi-layered bar A.

In Fig. 4 is shown another form of nozzle which may be used in conjunction with two freezers 10, and which comprises an outer casing 21 having a discharge end of substantially rectangular form, and a smaller inner conduit 22 also of rectangular form extending centrally of said casing to form a pair of concentric passageways 24 and 25. These passageways have suitable inlets (not shown) connected respectively to the outlets of two freezers or similar sources of supply to form a bar of ice cream having a central rectangular core section surrounded by a rectangular layer of a different flavor or material.

In Fig. 5 is shown still another form of nozzle in which the outer casing 27 is round and has

a concentric round pipe 28 in the interior thereof to form an ice cream bar having a round core section surrounded by an annular layer of different material or flavor.

In all of the forms of nozzles shown, a comparatively stiff bar of ice cream is extruded downwardly in a continuous stream from the discharge end of the nozzle with a substantially predetermined cross-sectional form and with the various contiguous layers or sections merged and arranged in predetermined pattern.

In carrying out my improved method, it is important that the delivery of the mix from the freezers or other source of mix to the nozzle, be so controlled that the various layers or sections of the extruded bar will be discharged from said nozzle at the same speed.

As the ice cream is extruded from the nozzle, it hangs downwardly from the discharge end of said nozzle as shown in Fig. 6. At this phase, an empty carton 30 of cardboard or similar rigid material and of the same cross-sectional form as the bar and but slightly larger than the bar, is moved upwardly over the extruded end of the ice cream bar and to a certain extent over the discharge end of the nozzle until the bottom of said carton contacts the lower end of the extruding bar, as shown in Fig. 7. As the extruding of the bar continues, said carton is lowered at a speed no greater than the speed of flow of the extruding bar as shown in Fig. 8, and the carton is progressively filled until the mouth of said carton reaches the plane of the discharge end of the nozzle. At that instant the filled carton is moved laterally of the nozzle, so that the mouth edge 31 of the carton 30 and the discharge edge 32 of the nozzle will coact as a cut-off to shear the extruded portion of the ice cream bar flush with the top of said carton as shown in Fig. 9.

The cartons 30 are successively filled from the continuously extruded bar of ice cream, and during the interval between the shearing off of one section thereof in one carton, the placing of the filled carton on a table, conveyer or other support, and the picking up of another carton, another substantial portion of the bar will have been extruded below the discharge end of the nozzle and will hang suspended for the telescoping of the next carton thereon as shown in Fig. 7. In order to deliver the ice cream into the carton in substantially predetermined and unbroken form, the extruded ice cream is stiff enough so that it will be form-retaining when it is extruded from the nozzle, and will have sufficient tensile strength so that an extruded portion of the bar of substantial length will be sustained without breaking off or becoming attenuated. In this manner, the predetermined arrangement of the variously flavored layers or sections of the ice cream will not be substantially disturbed as it is delivered to the carton.

The cross-section of the carton 30 is similar in shape to that of the extruded bar, and is substantially of the same size so that the bar of predetermined shape as it is delivered into a correspondingly shaped carton does not become distorted or deformed to any considerable extent. In the specific form shown, the sides of the carton 30 are slightly tapered, and the bottom of the carton is of the same size and shape as the cross-section of the extruded bar. This type of carton permits the easy telescoping of the carton onto the depending end of the extruded bar, and also serves to center the carton 30 with respect to the end of the extruded bar as said car-

ton is moved upwardly. Since the cross-section of the carton above the bottom thereof is slightly larger than the cross-section of the extruded bar, the carton must be moved downwardly at a speed which is slow enough to permit a slight lateral flow of the plastic material forming the bar so as to insure the complete filling of the carton. This lateral flow is not sufficient to alter the predetermined pattern of the various flavored layers of the ice cream. Obviously, the lateral movement to cut off the bar should be as rapid as practical.

The top of the carton 30 is shown as provided with a pair of opposed closure flaps 33 and a pair of opposed closure flaps 34. One of the flaps 33 extending from the shearing edge 31, besides serving as a closure flap, serves to impart to said edge the rigidity necessary to cut off the extruded bar of ice cream as shown in Fig. 9. The flaps 33 also serve as guide members to center the carton 30 with respect to the end of the extruding bar as said carton is moved over said bar into the position shown in Fig. 7.

The operator who fills these packages may be provided with tables 36 and 37 as shown in Fig. 1, on opposite sides of the nozzle 11, one table serving to hold the empty cartons and the other serving to receive the cartons after they are filled. The operator takes the empty cartons successively from the table 36, fills them as already described, and places them upon the table 37 where another operator may close the flaps of the cartons as shown in Fig. 10, so that they will be ready for delivery to a refrigerated storage room where they may be hardened.

The apparatus illustrated is for a multi-flavored bar of ice cream, but by the term "ice cream" I intend to include water ice, sherbet, and all other analogous frozen confections. Instead of forming one or more of the bar sections of ice cream, it may be formed of any other kind of confection such as flavored gelatin or the like, which will be form-retaining and easily severed at the temperature of ice cream. Obviously, the bar may be all of one flavor or all come from the same freezer or other source in which case there need be no partitions in the nozzle.

By means of my improved method, the ice cream is delivered directly from the freezer into the package without any intermediate handling or the necessity for the usual packing and compressing. The container is completely filled without void and with uniform density and without change in overrun. Any fruit, nuts or other edible solids in the ice cream remain uniformly distributed without tendency to concentrate at the top, bottom or sides. Multi-flavored bricks may be formed ready for delivery to the customer and by the simple action of forming the package. No tools, cutters, packers, or other implements are required. All of the packages made with any particular nozzle and sources of supply of ice cream, will be uniform in character and of definite and uniform pattern in the container. Other advantages will be apparent.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The method of forming a package of a plastic comestible, which includes the steps of continuously extruding a plastic comestible of form-retaining hardness from a downwardly directed nozzle to form a depending self-sustaining bar, moving a container upwardly to telescope it onto the exposed end of said bar projecting below the

end of the nozzle, and moving said container laterally in respect to said nozzle at the instant said container is filled to shear off the portion of extruded bar extending into the container beyond the discharge end of said nozzle.

2. The method of forming a package of a plastic comestible, which includes the steps of continuously extruding said comestible from a downwardly directed nozzle, said comestible having a consistency which will permit a substantial portion of the plastic comestible to extend unsupported beyond the end of the nozzle without rupturing under tension, telescoping a container upwardly over the extruded portion of said comestible until the bottom of the container contacts the end of the suspended portion of the comestible, lowering said container as it progressively fills until its mouth edge is in the plane of the discharge end of the nozzle, and moving said container laterally to shear off the portion of extruded material beyond the discharge end of said nozzle.

3. The method of forming a package of a plastic comestible, which includes the steps of extruding a bar of plastic material from a depending nozzle, said comestible being of a substantially form-retaining stiffness, telescoping a carton having substantially the same cross-sectional shape and size as the extruded bar onto the exposed depending end of the bar, and rapidly moving said carton laterally of the direction of extrusion of the material, whereby the edge of said carton coacts with the end of the nozzle to shear off the portion of said extruded material beyond the discharge end of said nozzle.

4. The method of forming a package of a plastic comestible, which includes the steps of forming a continuously advancing stream of plastic material comprising a plurality of parallel sections of different flavors, continuously extruding said stream from a depending nozzle to form a bar of substantially form-retaining stiffness, telescoping a carton having substantially the same cross-sectional shape and size as the extruded bar onto the exposed end portion of the bar, lowering said carton as the extruding continues, until the upper end of the carton is in the plane of the

end of the carton and said carton is filled, and moving said carton laterally from said latter position to cause one wall to shear off the portion of the extruded material beyond the discharge end of said nozzle and in said carton said carton having a cover flap extending outwardly from said wall to reinforce the shearing edge of the carton.

5. The method of packaging ice cream or the like, which includes the steps of continuously extruding the ice cream in substantially form-retaining stiffness from a depending nozzle of a predetermined cross-section, moving a carton having substantially the same cross-sectional shape and size as the extruded bar and having slightly tapered sides over the exposed end of the downwardly moving bar and in part over the discharge end of said nozzle, moving said carton downwardly as said material is extruded until said carton is in end to end position in respect to said nozzle, and moving said carton from said latter position laterally of the direction of flow of the ice cream to cause the upper edge portion of one wall of said carton to shear off the ice cream across the end of said nozzle.

6. The method of preparing and packaging ice cream and other frozen comestibles, including continuously forcing a liquid mix and a gas in predetermined relative proportions into and through a processing chamber, cooling said chamber to partially freeze the liquid constituents to form a plastic product of form-retaining stiffness, extruding said product from a depending nozzle whereby the product is delivered as a bar extending downwardly below the end of the nozzle and is suspended therefrom, telescoping a container upwardly over the extruded portion of said product until the bottom of the container contacts with the end of the suspended bar portion of the product, lowering said container as it progressively fills until the mouth edge is in the plane of the discharge end of the nozzle, and moving said container laterally to shear off the portion of the extruded material beyond the end of said nozzle.

HARRY B. ADAMS.