



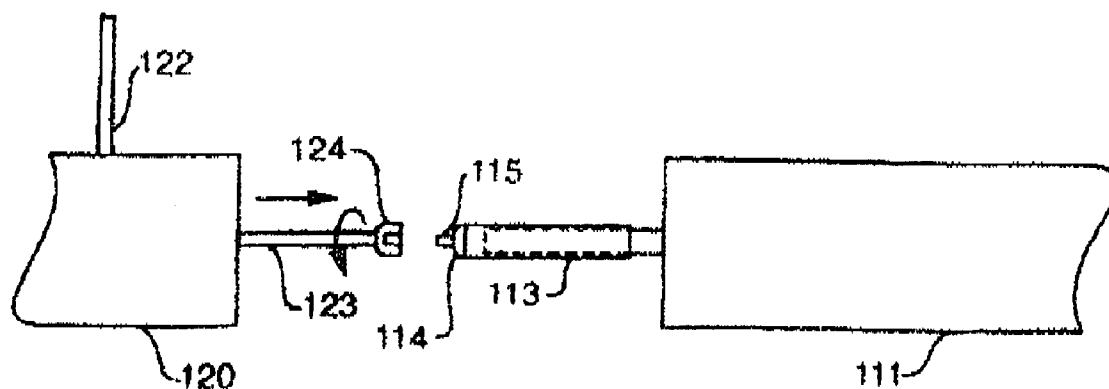
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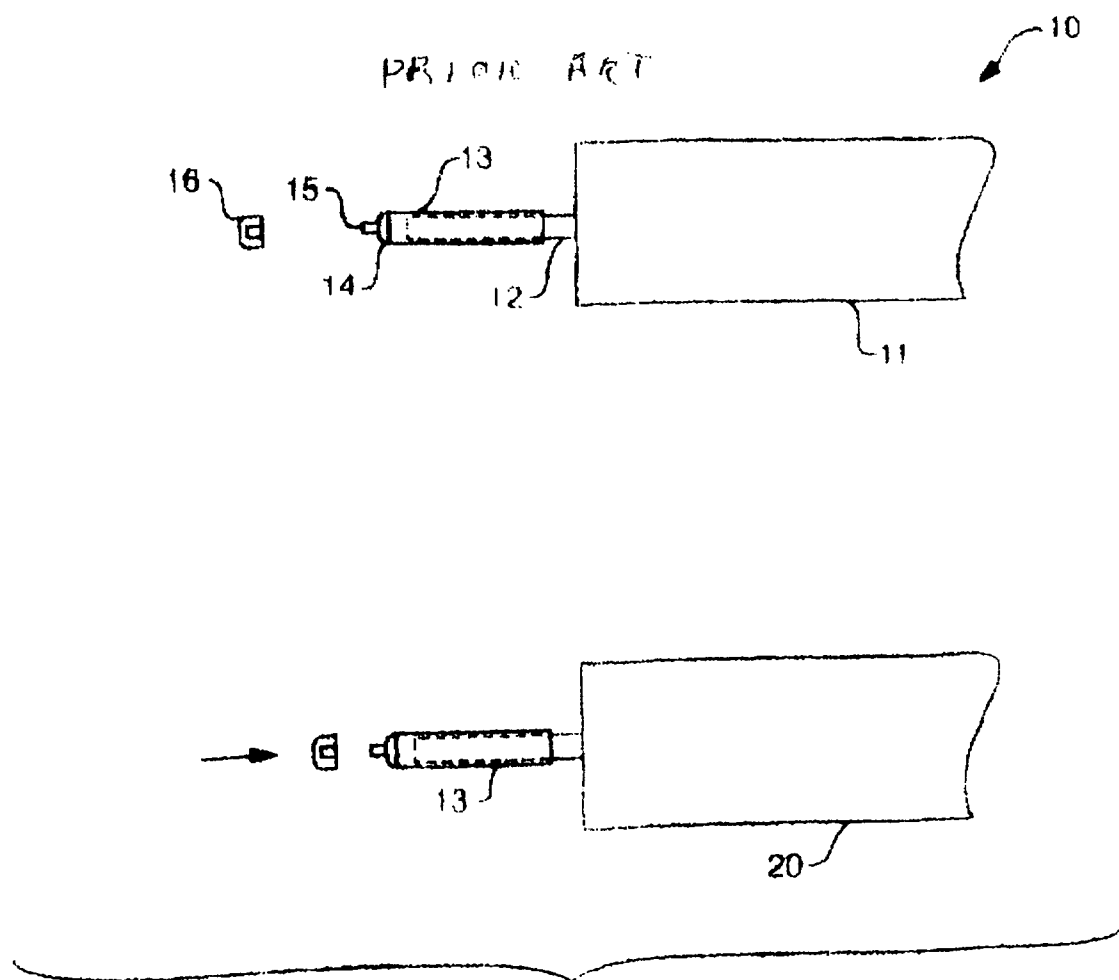
(19) **United States**(12) **Patent Application Publication**
Sassouni(10) **Pub. No.: US 2008/0236110 A1**(43) **Pub. Date: Oct. 2, 2008**(54) **METHOD FOR MANUFACTURING
FLEXIBLE TUBE CONTAINERS****Publication Classification**(51) **Int. Cl.**
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(52) **U.S. Cl.** 53/563(57) **ABSTRACT**(76) **Inventor:** **K. Jacques Sassouni**, Great Neck,
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An improved method for manufacturing collapsible tube containers for fluid materials, including the known steps of providing a hollow tube, forming an integrated compression-molded shoulder having a dispensing opening, and applying a selectively removable closure. The method includes the novel step of positioning a means for applying the closure in coaxial relation to the tube, and applying the closure while the tube is supported on a mandrel used for supporting the tube during formation of the shoulder, rather than applying the closure at another location.





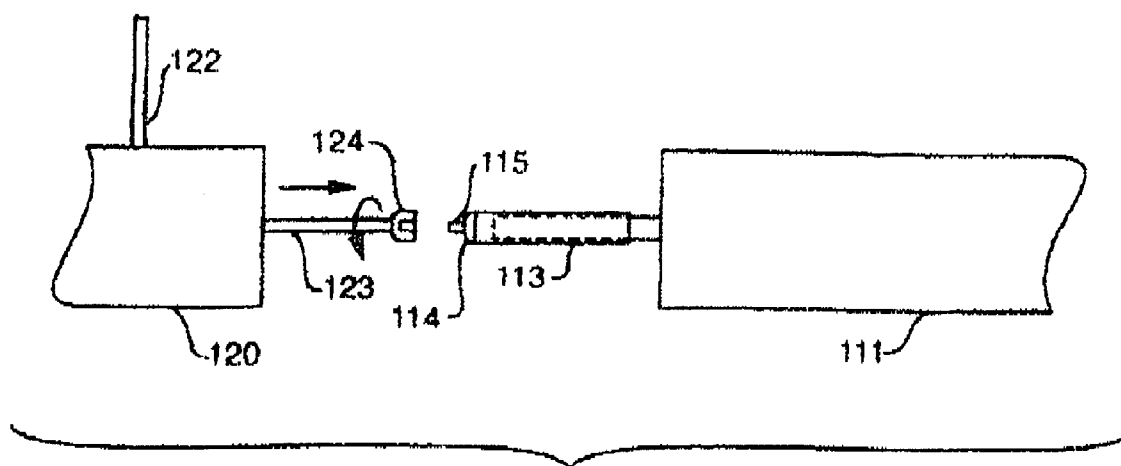


FIG. 2

METHOD FOR MANUFACTURING FLEXIBLE TUBE CONTAINERS

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to the field of manufacture of flexible tube containers for use in dispensing fluid substances such as toothpaste, ointments, topical medications, and the like, and more particularly to an improved method of manufacture thereof directed toward simplification of manufacturing steps and substantial lowering of manufacturing costs.

[0002] In the present state of the art, the manufacturing process is highly automated. It commences with a continuous extrusion of a hollow tube of required diameter. A second step is the cutting of the tube into required predetermined length to form a cylindrical body. One end of the tube is left open for the ultimate filling and sealing of the dispensable contents. The other end is provided with a transversely-extending shoulder forming the dispensing end, the shoulder forming a dispensing opening selectively covered by a removable closure, typically, a threaded cap. The shoulder is preferably formed by compression molding and integrated with the dispensing end of the tube while the tube is supported on a mandrel. A subsequent step involves the capping of the tube, so that the container is in condition for subsequent filling, usually at another location. In the present state of the art, the forming and integration of the shoulder is performed at one machine, and the application of the cap or closure is performed at another machine. This procedure requires the transport of each tube from one machine to another one using manual labor, and commonly requiring the presence of a technician at each machine. The installation of the closure which may be threadedly or otherwise engaged, involves a torquing movement and an axially-oriented movement. Following the application of the closure or cap, the device is removed from a supporting mandrel to complete the manufacturing operation. It is subsequently filled and sealed at another location.

SUMMARY OF THE INVENTION

[0003] Briefly stated, the invention contemplates the simplification of the above-described procedure by combining the same at a single machine following the delivery of individual mandrel-supported tubes, so that without relocation of the tube after formation of the shoulder, a preformed cap is interconnected to the tube to selectively seal the same.

BRIEF DESCRIPTION OF THE DRAWING

[0004] In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

[0005] FIG. 1 is a schematic view showing the method employed in the present state of the art.

[0006] FIG. 2 is a schematic view illustrating the disclosed method embodying the present invention.

DETAILED DESCRIPTION OF THE DISCLOSED EMBODIMENT

[0007] Referring to FIG. 1 in the drawing, the known method, generally referred to by reference character 10 includes a plurality of manufacturing stations, including a header element 11 having a plurality of mandrels, one of which is indicated by reference character 12, each supporting

a tube 13 having a previously formed and integrated shoulder 14 with an orificed member 15, as well as an integrated cap element 16.

[0008] In accordance with the known art, the header element 11 serially advances mandrels, each mounting a tube to the position shown in FIG. 1. At this point, the shoulder has already been integrated with the dispensing end of the tube and the units are serially removed from the respective mandrel for transport to a capping element 20. The capping element has its own set of mandrels, and the tube units are engaged therewith for serial advancement to a position shown at which a screw cap (16) or snap-on closure is applied using a combination of axially-directed force with accompanying torquing force. The unit is now completed, and is serially removed from its respective mandrel for packing and shipment to a site where it will be filled with a fluid, and the opposite end of the tube sealed to form a completed product.

[0009] While much of the above-described procedure is automated, there is still the necessity of employing a header element which performs the operation of forming and attaching the shoulder and its associated structure, as well as a separate capping element including means for positioning the tube units on a separate set of mandrels for the application of a screw cap or snap-on closure. Considerable mechanical manipulation is involved in the transfer from a first set of mandrels associated with the header element and the second set of mandrels associated with the capper element. Additional manual supervision is necessary along with additional mechanical maintenance.

[0010] In the present invention, much of this complication is eliminated by simplifying the application of the closure. Referring to FIG. 2 in the drawing, parts corresponding to those illustrated in FIG. 1 have been designated by similar reference characters with the additional prefix "1", therefore avoiding needless repetition.

[0011] It is noted that the capping element of the present invention is of reduced complexity, and does not include a separate set of serially advanced mandrels. Instead, the capping element 120 includes only a cap supply chute 122 and a reciprocating plunger 123 coaligned with the axis of the module of the header element so that the closure of desired type is applied to the tube unit while it is still engaged by the mandrel of the header element 111. This closure may be a simple screw cap or snap-on cap of composite type 124.

[0012] It may thus be seen that I have invented novel and highly useful improvements in a method for the capping of flexible tube containers for fluid materials in which the process is materially simplified by eliminating the presence of a separate capping machine with its accompanying set of tube-supporting mandrels as well as the necessity of removing tube units from the mandrels of an earlier heading machine where the tube units are provided with an integral compression-molded shoulder. The improved method may be used employing any known type closure.

I claim:

1. In the method of manufacturing a flexible tube container, including: the steps of:

- a) providing an extruded length of tubing forming the body of said container, said body having a principal axis;
- b) supporting said body upon a mandrel, at a first station;
- c) compression molding a shoulder integrally upon an end of said body, said shoulder including a dispensing opening;

- d) transferring said body to a second station including a second mandrel;
- e) supplying and engaging a removable closure to said shoulder, and;
- f) removing said body from said second mandrel; the improvement comprising:
- g) providing a capping element adjacent said first station having means for serially providing removable closures to a location axially-aligned with said principal axis of said body, and;

- h) said capping element including means for applying an axially-aligned force and a torquing force to successive closures whereby to apply said closures to engage said shoulder to close said dispensing opening.

2. The improvement in accordance with claim 1, having an opening communicating with said dispensing opening in said shoulder and a hingedly interconnected lid member selectively closing said dispensing opening.

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