March 18, 1969 O. E. SEIFERTH ET AL 3,432,980

METHOD AND APPARATUS FOR MAKING A CLIP AND SEAL PACKAGE

Original Filed Dec. 22, 1965

Fig. 2

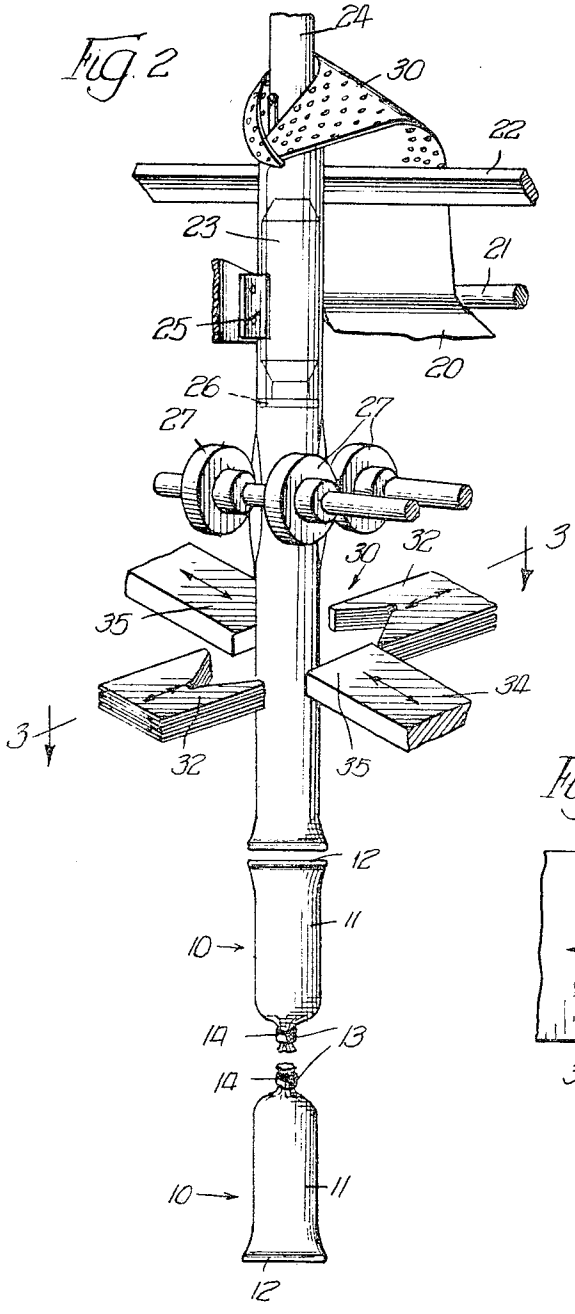


Fig. 1

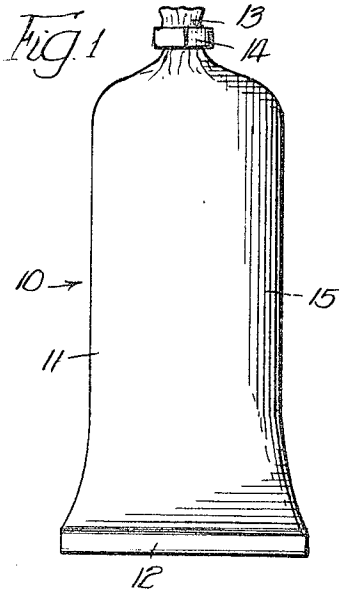
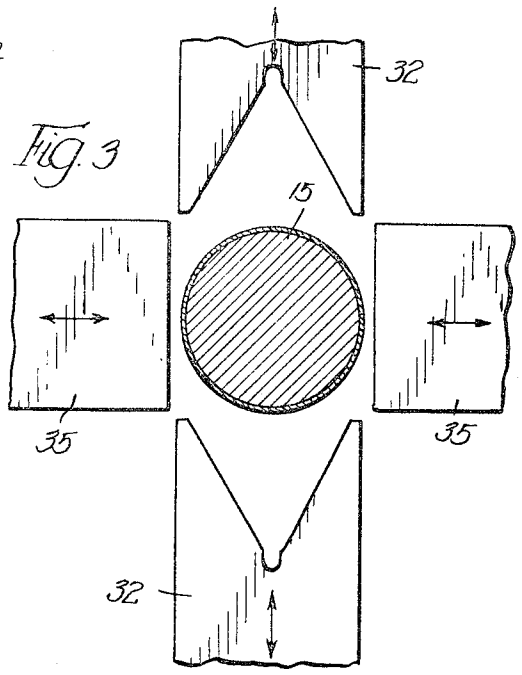


Fig. 3



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METHOD AND APPARATUS FOR MAKING A CLIP AND SEAL PACKAGE

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U.S. Cl. 53—14

6 Claims

Int. Cl. B65b 7/02, 51/04, 9/12

ABSTRACT OF THE DISCLOSURE

A method and apparatus for forming tubular packages which are closed at the bottom by a flat transverse heat seal and at the top by a wire tie closure wherein a package forming web is folded about a hollow mandrel and sealed to form a tube, a product is fed through the hollow mandrel and the tube is constricted at spaced intervals, and heat seals and wire tie members are applied to alternate constricted areas by mechanism carried on a frame which is reciprocated along the longitudinal axis of the mandrel and which also carries a knife for severing the tube in the constricted areas so as to form separate packages.

This is a division of application Ser. No. 515,629 filed Dec. 22, 1965.

This invention relates to packaging and is more particularly concerned with improvements in a package of the type in which the product is encased in a tube of thin pliable film material with closure means at opposite ends and in a method and apparatus for forming the same.

One form of package which has been used extensively in commerce for packaging various materials including meat products, cheese and other foods, is produced by continuously forming a tube on a hollow filling mandrel, feeding the material to be packaged through the mandrel and into the tube, and dividing the filled tube into a series of packages by constricting the tube at intervals, applying pairs of closure forming wire ties or metal clips about the constricted tube portions and cutting or severing the tube between the same. Such a package and the method and apparatus for forming the same is disclosed in Eberman and Jensen Patent No. 2,831,302, dated Apr. 22, 1958. Another form of this package has long been employed in the marketing of a variety of products which is produced in a similar manner with the filled tube being flattened at intervals and the closures formed by applying transverse heat seals to the flattened tube areas. This form of package is disclosed in Zwoyer Patent No. 1,986,422, dated Jan. 1, 1935 and Stokes Patent No. 2,257,823, dated Oct. 7, 1941. While both of these packages have enjoyed substantial commercial success, the use thereof has been confined to a limited number of products primarily because neither type of package has been considered appropriate for products of the character which makes it highly desirable to market them in a package which may be more readily opened than either of the packages referred to. In the marketing of some materials it is highly desirable to be able to open the package without breaking through the walls of the container which is generally necessary in opening the two conventional forms of this type package. It is also desirable to be able to leave part of the product in the container and to close the same so as to protect the remaining product. Accordingly, it is an object of the present invention to provide a package of tube-like or pillow-like form which is closed at its opposite ends by flat and gathered seals, respectively, with the seal at the gathered end being preferably operable without rupturing

adjoining wall portions so as to permit closing thereof after removal of the package contents or a portion thereof.

A more specific object of the invention is to provide a package wherein one end of a tubular container body is closed by a flat, transverse heat seal of a permanent nature while the other end is gathered and closed by a clip or tie member preefrably of a material which will permit of its removal without destruction of the adjoining material in the container body.

A still more specific object of the invention is to provide a package and a method and apparatus for forming the same wherein a web of relatively thin, pliant, heat sealable film is formed into a tube about a filling mandrel, the tube is filled with a product fed through the mandrel and the filled tube is constricted and closed at intervals to provide a series of packages with alternate closures comprising flat transverse heat seals extending transversely of the longitudinal axis of the tube and wire clips or ties encompassing gathered portions of the tube which are axially spaced relative to the transverse seals so as to form the mouth of the package with the latter being openable by removal of the associated closure clip when the gathered tube portions are cut so as to free the packages.

These and other objects and advantages of the invention will be apparent from a consideration of the package, and the method and apparatus for forming the same which are shown by way of illustration in the accompanying drawings wherein:

FIGURE 1 is a side elevation of a package which incorporates the principal features of the invention;

FIGURE 2 is a perspective view, with portions broken away, illustrating an apparatus for forming the package; and

FIGURE 3 is a cross section taken on the line 3—3 of FIGURE 2, to an enlarged scale and with portions broken away.

Referring to the drawings, there is illustrated in FIGURE 1 a package **10** embodying the principal features of the invention. The package **10** comprises a tubular body **11** formed or relatively thin pliable sheet material which is heat sealable and which is closed at the bottom forming end by a flat heat seal **12** extending transversely of the longitudinal axis of the tube **10**. The other end **13** of the package is gathered and closed by a closure forming member which is preferably a metal clip **14** of a character which can be removed without the use of tools so as to leave the mouth forming end of the package free for reclosing when only part of the product **15** is removed therefrom.

The preferred method of forming the package **10** and apparatus suitable for carrying out the same is illustrated in FIGURES 2 and 3. The packages **10** are formed by the machine in a continuous connected string or series of predetermined size or length and separated by severing between pairs of end closures applied thereto. The machine illustrated in Jensen and Eberman Patent No. 2,831,302 may be employed with modifications hereinafter referred to in the manufacture of the package and details of the machine not described herein will be found in the aforementioned patent.

Material for forming the package **10** preferably is supplied in the form of a continuous web or film **20** from a suitable supply roll (not shown). Film such as Saran, Pliofilm, polyethylene or similar material which will form a thin pliant skin-like casing is suitable. The tube forming film **20** is fed beneath a guide bar **21** and over a cross bar **22**, both of which extend transversely of the long axis of a vertically disposed hollow filling mandrel **23** the latter having a suitable extension **24** for connection with a product supply line. The web **20** is guided

over a forming plate **30** which is cut and shaped to form a collar around the mandrel **23** and which reverses the direction of the web **20** and guides the edges thereof downwardly into overlapping tube forming relation around the mandrel **23**. The forming plate **30** may be secured on the cross bar **22**. The web **20**, guided by the plate **30**, forms a continuous tube with overlapping edges which are sealed by a sealing mechanism indicated at **25**. The particular type of sealing mechanism will be dictated by the sealing characteristics of the web **20** and it may be an electronic sealing apparatus when a film such as "Saran" is employed or it may be a straight heat sealing bar when polyethylene or similar film material is employed.

The bottom end of the filling mandrel **23** terminates at a ring **26** which is of sufficient diameter to frictionally engage the interior surface of the tube and to form a barrier against upward pressure of the material being packaged. The tube is drawn down from the end of the mandrel by a pair of feed rollers **27** supported on transverse shafts **28** which are connected with the drive mechanism (not shown) for the machine. The tube, after passing the barrier ring **26**, tends to flatten out with the rollers **27** being engaged in paired relation at oppositely disposed side portions of the walls of the filled tube and gripping flat folds on opposite sides of the tube, thereby positively feeding the tube continuously downward to a tube constricting or gathering and sealing head **30** which is mounted for vertical reciprocation below the feed rollers **27**.

The sealing head **30** carries two sets of tube constricting and sealing mechanisms which are operative in paths at right angles to each other and which are arranged for alternate engagement with the tube so as to provide two different types of seals at predetermined spaced intervals relative to the longitudinal axis of the tube. One set of sealing mechanisms **31** may be of the same character as disclosed in Patent No. 2,831,802 comprising reciprocating pairs of co-operating tube gathering plates **32** and associated mechanism for gathering the tube and applying pairs of wire clips or sealing elements **14** in the same manner as set out in the aforesaid patent. The other set of sealing mechanisms **32** comprises a pair of heat sealing bars **35** disposed on opposite sides of the tube and adapted to be reciprocated towards each other to flatten the tube and apply transverse heat seals **12** in the manner described in Patent No. 2,257,823. The seal forming mechanisms **31** and **34** may be carried by a single reciprocating head structure or they may be mounted on separate structures which are operated so that the seals are applied to the tube alternately as illustrated and the packages may be separated by tube severing elements carried by the sealing mechanisms or the severing may be accomplished subsequent to the seal forming operations.

We claim:

1. Apparatus for fabricating a package which is characterized by a flowable product encased in a tubular container which is formed of relatively thin, pliant, heat sealable film material with the bottom forming end being closed by a flat, transverse heat seal and the mouth forming top end of said container being closed by marginal side wall portions which are gathered into tightly compacted relation and encompassed by a removable tie member for holding the gathered tube portions in tightly closed relation, said apparatus comprising a supporting frame and a hollow filling mandrel, means for applying to the mandrel a tube formed of thin, pliant heat sealable film material, means for filling the tube with a product through the hollow mandrel, means for engaging the filled tube to constrict the same, said tube constricting means being reciprocable in a path along the longitudinal axis of the tube and having associated means operable to apply to alternate constricted areas flat transverse heat seals and seal forming tie members, respectively, and means to sever the tube in the constricted areas thereof so as to separate the packages thus formed.

2. Apparatus as claimed in claim **1**, and said tube constricting means and said means to apply said heat seals and said tie members being supported on a common carriage forming frame which is mounted for reciprocation in a path along the longitudinal axis of the tube.

3. Apparatus as claimed in claim **1**, and said tube constricting means having associated means for severing the tube in the constricted areas thereof so as to leave a seal forming area on each side of the line of severance.

4. A method of forming packages of the type which are characterized by a flowable product encased in a tubular container formed of relatively thin, pliant, heat sealable film material with the bottom forming end of the container being closed by a transverse heat seal and the mouth forming top margins of the container being gathered into a tightly compacted neck encompassed by a removable tie member, said method comprising feeding a continuous tube of relatively thin, pliant heat sealable film along a hollow filling mandrel, filling the tube with a flowable product delivered through the mandrel, constricting the filled tube at predetermined, longitudinal spaced intervals and applying to alternate constricted tube areas, closure forming transverse heat seals and removable tie members, respectively, thereby to close the bottom and top forming ends, respectively, of adjoining packages, and severing the tube in the constricted areas to separate the same into a series of individual packages each with a heat seal at the bottom end and a tie member at the top end.

5. A method of forming packages as claimed in claim **4**, and said heat seals and time members being applied to the constricted areas so as to permit the tube to be severed in the constricted areas and provide seal forming portions on each side of the line of severance.

6. A method of forming packages as claimed in claim **4**, and applying tie members to said alternate constricted areas of the tube which are in the form of bendable wire clips, said wire clips being applied so as to encompass the neck forming constricted tube portions.

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U.S. Cl. X.R.

53—138, 182