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C. A. J. LINDQUIST ET AL

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TUBING FOR PACKAGING PURPOSES

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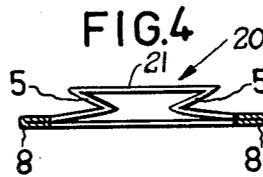
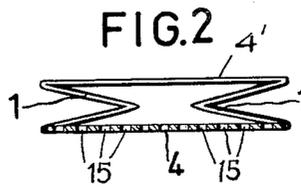
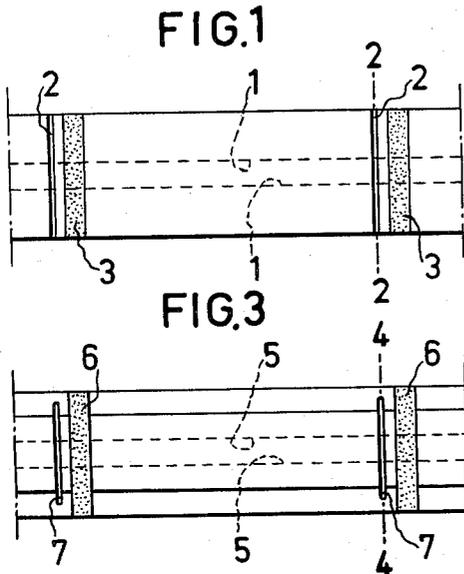


FIG. 5

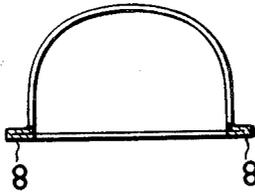


FIG. 6

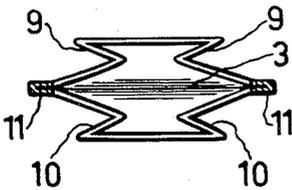
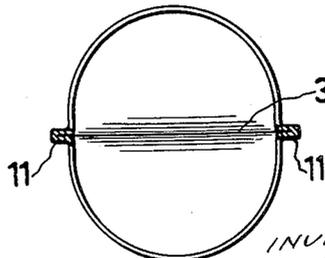


FIG. 7



INVENTORS
CURT AXEL JOHN LINDQUIST
JAN GUSTAV ARNE OHLANDER
STEN GUSTAF THULIN

BY *A. Seck*
ATTORNEY

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Curt Axel John Lindquist, Jan Gustav Arne Ohlander, and Sten Gustaf Thulin, Norrköping, Sweden, assignors to Aktiebolaget Celloplast, Norrköping, Sweden, a Swedish joint-stock company

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This invention relates to the packaging of articles and more particularly to a continuous tube-like strip of packaging material which is constructed and adapted to be divided into individual bags at the point of packaging.

An object of the invention is to provide a tubular strip of the above type which is so arranged that the individual bags may be opened and filled prior to being severed from the strip.

Another object is to provide such a continuous tube-like strip wherein the individual bags are formed by transverse seals which constitute the bottoms of the successive bags and transverse slits which extend through selected portions of the tubes adjacent the transverse seals to define the top portions of the respective bags.

Another object is to provide a construction of the above type wherein the opening of the bags for filling is facilitated.

Other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

In accordance with the present invention a packaging tube of flexible film-forming material in flattened condition is provided with longitudinal pleats and transverse slits which pass through one or more of the pleats, the distance between the slits determining the length of each individual bag. Due to the fact that the tube is provided with pleats through which the slits pass it is possible to fill the bags with the material or merchandise to be packaged therein while the packaging units are still interconnected, as the mouth of the packaging unit can be substantially fully opened up by introducing grasping members or by directing a stream of air to the mouth. As the pleats are cut off by the slits the mouth of the bag is opened and the merchandise to be packaged can be easily introduced.

According to an embodiment of the invention at least one side of the flattened tubing is provided with one or more pleats situated within the longitudinal edges of the tubing. In this case the slits extend over practically the whole width of the pleats so that the packaging units are connected with each other only at the longitudinal edges of the tubing.

The individual containers may be initially provided with a bottom by a transverse seal adjacent but spaced from each slit so that a pocket is formed. This sealing may be obtained by heat-sealing if the tubing material used is a thermoplastic material, such as polyethylene.

The tubing may be provided with two pleats or bellows folds and one half of the bellows may be narrower than the other. In this case the narrower half of the bellows is preferably wholly cut through.

The slits may be positioned only in one of the sides of the tubing but they may also be positioned in both sides, i.e. they pass through both sides.

The tubing may be provided with pleats or folds in both sides.

In the accompanying diagrammatic drawing are shown some embodiments of continuous bag tubings of polyethylene according to the invention.

FIG. 1 is a plan view of a tubing which has been divided and sealed to form interconnecting bags.

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FIG. 2 is a sectional view taken on the line 2-2 of FIG. 1, but on an enlarged scale.

FIG. 3 is a plan view of a bag tubing illustrating another embodiment of the invention.

FIG. 4 is a section taken along the line 4-4 of FIG. 3, but on an enlarged scale.

FIG. 5 is a cross section of a bag according to FIG. 3 showing the bag in opened condition.

FIG. 6 is a cross sectional view illustrating a further embodiment of the bag tubing; and

FIG. 7 is a bag made from the tubing of FIG. 6 in opened condition.

The tubing shown in FIGS. 1 and 2 is folded to form a back panel 4 and a front panel 4' and is provided with two longitudinal inturned bellows folds 1, extending from the edges of the tubing towards the middle thereof. At longitudinally predetermined spaced intervals slits 2 are formed in the front panel 4' of the tubing. Said slits extend over the whole width of the tubing to the longitudinal edges thereof and pass through the bellows folds 1 but not through the underlying rear panel 4. Adjacent to and parallel with each slit 2 heat seals 3 are provided forming the bottoms of the individual bags. As appears from FIG. 2 the individual bags are connected with each other only by means of the rear panel 4 of the tubing. The rear panel 4 may be provided with transverse perforations or a slit 15 in order to facilitate the tearing off of the bag.

According to the embodiment shown in FIGS. 3, 4 and 5 the front panel 4' is provided with two longitudinal inturned bellows folds 5, said folds forming pleats 20 having a front wall 21 when the tubing is flattened as shown in the drawing. This front wall 21 does not extend over the whole width of the tubing. The pleats are thus situated within the outer longitudinal edges of the tubing. The tubing is provided at longitudinally spaced intervals with transverse heat-seals 6 forming bottoms in the individual bags. Close to each seal 6 slits 7 are provided which pass wholly through the tubing but in the transverse direction terminate some distance from the outer edges of the tubing to leave connecting tabs 8. The pleats 20 are thus wholly cut through and the bags are connected to each other only by means of the narrow strips 8 at the outer edges of the tubing.

Packaging of merchandise by using the bag tubing according to the invention is preferably carried out by advancing the tubing preferably on a flat support with the heat sealing at the leading end of each of the individual bags and the slit forming the mouth of the bags at the trailing ends thereof. If the mouth of the bag is opened such as by means of mechanical grasping members or preferably by blowing a stream of air in the same direction as the tubing is advanced, the air passing through the slit into the bag will open the bag, so that it will assume the shape illustrated in FIG. 5. The undersides of the bag (the rear panel 4 FIG. 2) is kept close to the support due to the fact that it is connected with the remainder of the bags by means of the strips 8 and the upper folded panel 4' is blown up so that the cross section of the bag assumes an arcuate line, the form of which is dependent upon the number and depth of the pleats. When the total sum of the pleats is large, the arcuate line will become higher, and when the total sum of the pleats is small, the arcuate line will become straighter. Thereafter, it is easy to introduce the merchandise to be packaged into the bag and to tear off the bag from the tubing and to seal it in a suitable way.

In the embodiment shown in FIGS. 6 and 7 both sides of the tubing have been provided with pleats 9 and 10. The tubing is further provided with transverse seals in

the same manner as the tubing according to FIGS. 3 to 5. The slits pass wholly through the tubing and each individual bag is connected to the adjacent bags only by means of the longitudinal strips 11. In opened up condition the cross section of the bag may have the appearance as shown in FIG. 7, provided that the tubing during the blowing up operation does not rest on a flat support but is suspended, for instance vertically.

It is not necessary to provide the transverse seals in the tubing initially but said seals may be provided after the filling of the bag. The closing of the bags may be carried out in other ways, such as by means of an adhesive.

In order to facilitate the separation of the bag from the tubing, perforations may be provided in the prolongation of the slits.

The tubing according to the present invention may be manufactured of such plastic film materials as polyethylene or polyvinyl chloride but cellophane, paper and similar packaging material may also be used.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A flexible tubing of thermoplastic material for packaging purposes, said tubing being folded in flattened condition and having front and back panels and having at least one longitudinal intumed bellows fold, said tubing having a series of transverse slits, spaced longitudinally to form a series of article receiving packaging units therebetween, said slits extending entirely through said front

panel and through said bellows fold, but terminating at their ends to leave at least portions of said back panel connecting successive units, said tubing having a transverse heat seal closely adjacent one side of each slit thereby closing the adjacent end of each of said units, each unit thereby having a slit at one end and a transverse seal at the other end, said units being adapted to be opened to receive an article for packing, said connecting portions being adapted to be subsequently severed to form individual packages.

2. A tubing as set forth in claim 1 in which said slits extend through only one of said panels and the other of said panels is provided with perforations to facilitate separation of the units.

3. A tubing as set forth in claim 1 wherein said bellows fold is formed in one of said panels and is spaced inwardly from the side edges of said panels to form a pleat having a front wall narrower than said panel and said slits extend entirely through said pleat and said front and back walls but terminate at points within the confines of said walls to leave connecting strips at the side edges of said walls.

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