June 10, 1969 A. SCHWARZKOPF 3,448,915

TAPERED BAGS OR SLEEVES MADE FROM PLASTIC MATERIAL SHEETING AND JOINED BY TEARABLE PERFORATION LINES

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FIG.1

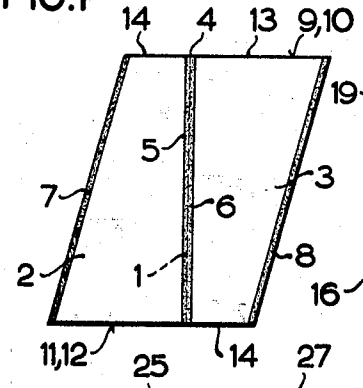


FIG.2

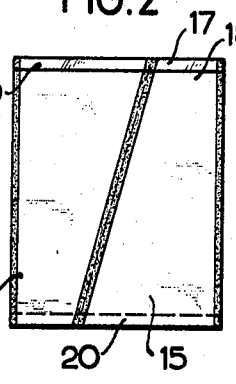


FIG.2a

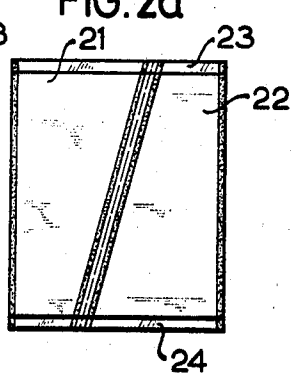


FIG.3

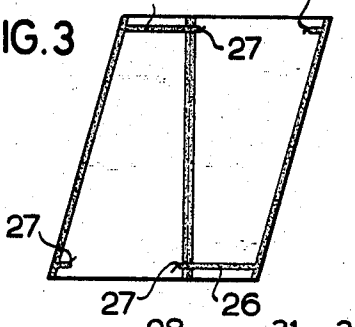


FIG.4

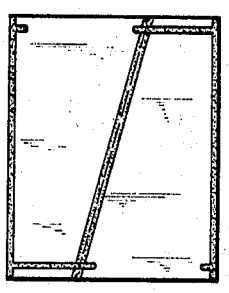


FIG.5

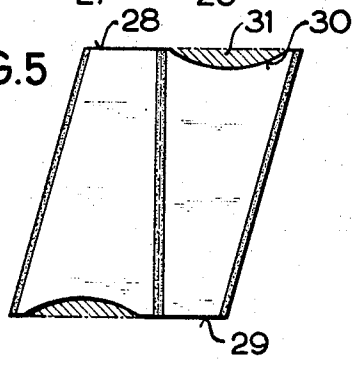


FIG.6

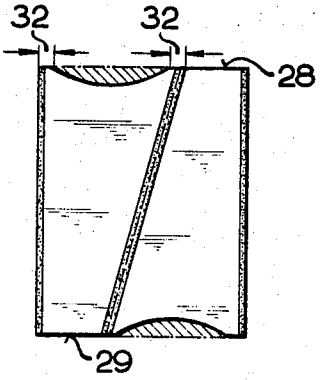


FIG.7

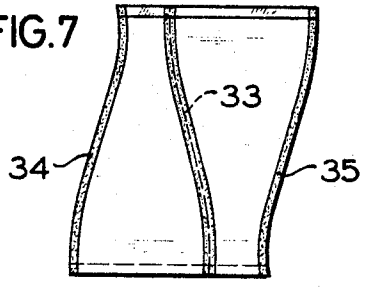
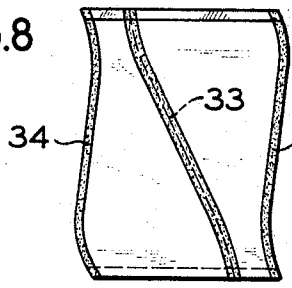


FIG.8



INVENTOR

AUGUST SCHWARZKOPF

By Stevens, Davis, Miller & Mosher

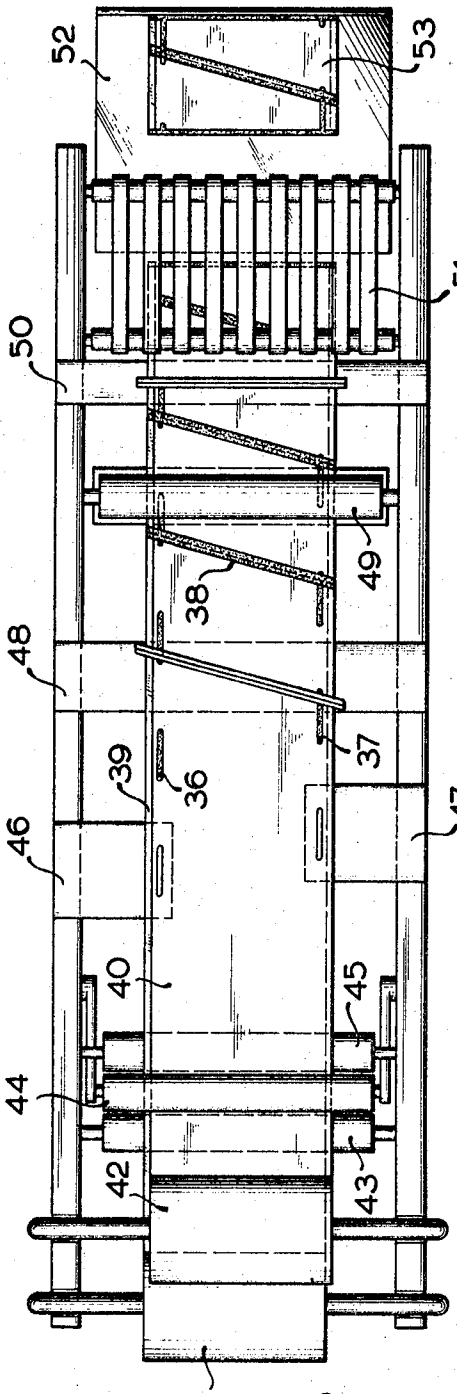
ATTORNEYS

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FIG. 9



INVENTOR

AUGUST SCHWARZKOPF

By Stevens, Davis, Miller & Mosher

ATTORNEYS

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TAPERED BAGS OR SLEEVES MADE FROM PLASTIC MATERIAL SHEETING AND JOINED BY TEARABLE PERFORATION LINES

August Schwarzkopf, Lengerich, Westphalia, Germany, assignor to Messrs. Windmoller & Holscher, Lengerich, Westphalia, Germany

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U.S. Cl. 229—56 7 Claims

ABSTRACT OF THE DISCLOSURE

Double bags or sleeves are provided, which have the configuration of a rhombus or rectangle.

This invention relates to tapered bags or sleeves which are made from plastics material sheeting and are joined by tearable perforation lines.

Tapered bags and sleeves made from plastics material sheeting are useful for many purposes. Tapered bags are used, e.g., for flowers, umbrellas, neckties etc. Tapered sleeves, which are open at both ends, may be used for flowers in pots and for protecting yarns for weaving from dust.

The known tapered bags and sleeves are either heat-sealed by hand or are mechanically made in such a manner that a tearable perforation line is provided along each of the side seams, which are alternatingly inclined to the right and left This perforation line permits of rolling up the parts which are joined by inclined heat-sealed seams without waste. In many cases, however, it is desired to avoid a tearing of such sleeves from a supply roll and to deliver the same in stacks, such as are usual with rectangular bags. The known tapered bags and sleeves would not permit of a convenient stacking because when they are made without waste their wide opening lies alternatingly on the right and left..

It is an object of the invention to provide a tapered bag which can be manufactured by machine and can be conveniently stacked.

In tapered bags or sleeves which consist of plastic material sheeting and are joined by tearable perforation lines, this object is accomplished in that the bags or sleeves form double bags or double sleeves having the configuration of a rhombus or a rectangle. The invention is based on the concept of providing two tapered bags, which complement to form a rhombus, or even a rectangle if one side seam extends at right angles to the direction of travel of the sheeting. If the sheeting web is provided in alternation with seams made by severing and heat sealing and with pre-perforated seams, the pairs of bags or sleeves which are delivered will have the form of a rhombus or rectangle and can subsequently be served individually or in a stack to form individual bags or sleeves.

The invention relates also to a process of manufacturing the double bag just described. This process is characterized in that two superimposed flat sheeting webs are intermittently supplied to heat-sealing stations disposed on the right and left, respectively, a seam strip extending in the direction of travel of the sheeting webs is formed during the standstill of the sheeting webs by heat sealing at the small end of each individual bag, in the portion where the closed end of the bag is subsequently formed, a perforated heat-sealed seam is subsequently formed, which crosses each lateral heat-sealed end seam at one end thereof, and a double bag, which is joined by the perforated heat-sealed seam, is severed from the webs

by a severing and heat-sealing operation at right angles or at an acute angle to the direction of travel of the webs. To seal the end of the bag, the heat-sealed seams are preferably so long that they protrude on both sides by a small amount into the area of the subsequently formed bag openings. The pair of transverse heat-sealing jaws, which are offset from the above-mentioned lateral heat-sealing station by one or more section lengths, is at an acute angle to the sheeting web in the manufacture of rectangular double bags and is at right angles to the sheeting web in the manufacture of rhombic pairs of bags. A perforated heat-sealed seam is defined as a heat-sealed seam formed with a longitudinal perforation line. In the manufacture of tapered sleeves, those process steps are eliminated which are directed to the formation of the seam strips for closing the end of the bag.

The main feed drive for the sheeting web is disposed one or more section lengths behind the pair of transverse heat-sealed seams and inserts the previously heat-sealed sheeting webs between the severing and heat-sealing jaws, which extend also transversely. These severing and heat-sealing jaws extend either at right angles to the direction of travel of the sheeting, if the pairs of bags should be rectangular, or they are inclined to said direction, if the pairs of bags should have a rhombic configuration.

In a modification of the process of manufacturing pairs of bags according to the invention having closed ends, a tubing is used rather than two sheeting webs and the heat-sealed end seam at the closed end of the bag is replaced by the closed edge of the tubing, whereas the opening at the wider end of the bags is obtained by making a preferably arcuate cut from the middle, whereby the tubing edge is spaced to such an extent that portions of the closed end are left on both sides next to the longitudinal seams so that a cutting into the adjacent end portions of the adjacent bags will be reliably avoided.

Several embodiments of the invention will be explained by way of example hereinafter with reference to the drawing, in which

FIGS. 1, 2 and 2*a* show each a pair of tapered sleeves which are made from two flat sheeting webs and open at both ends,

FIGS. 3 and 4 show each a pair of tapered bags made from two flat sheeting webs,

FIGS. 5 and 6 show each a pair of tapered bags made from a tubing,

FIGS. 7 and 8 show each a pair of tapered sleeves having curved side edges and made from two flat sheeting webs, and

FIG. 9 is a top plan view showing a machine for carrying out the process according to the invention of manufacturing the pairs of bags or sleeves according to the invention.

Each of the pairs of bags and sleeves shown in FIGS. 1 to 8 can be divided along *a* perforated heat-sealed seam **1** into two individual bags or sleeves **2** and **3**. Each of the heat-sealed seam portions **5** and **6** on the right and left of the perforation line **4** of the perforated heat-sealed seam forms a side seam of a bag or sleeve **2** or **3**. The other side seam of each bag or sleeve is formed by a heat-sealing seam **7** or **8**, which is made by a severing and heat sealing operation. The pairs of bags or sleeves shown in FIGS. 1, 3 and 5 have a rhombic configuration and the pair shown in FIG. 7 has a substantially rhombic configuration. The pairs of bags or sleeves shown in FIGS. 2, 2*a*, 4 and 6 have a rectangular configuration. The pair shown in FIG. 8 has a substantially rectangular configuration.

The pair of sleeves **2**, **3** shown in FIG. 1 are formed from two flat sheeting webs, the edges **9**, **10** and **11**, **12** of which are respectively aligned. On the side of the open edges **9**, **10** and **11**, **12** of the flat sheeting webs, the two

sleeves **2** and **3** are formed with a wide opening **13** and a narrow opening **14**, respectively.

To facilitate the opening of the sleeves **15** and **16** in FIG. 2, the flat sheeting webs **17** and **18**, which have the same width, are relatively staggered so that a single-ply opening margin **19** and **20** is provided on each side.

In the pair of sleeves **21** and **22** shown in FIG. 2*a*, single-ply opening margins **23** and **24** are formed in that the upper flat sheeting web is narrower by both opening margins than the lower flat sheeting web.

The pair of bags shown in FIG. 3 are similar to the pair of sleeves shown in FIG. 1 with the difference that each of the narrow openings is closed by a heat-sealed seam **25**, **26**. For reasons of safety, in order to ensure a complete sealing of the bag at this end even in the case of small manufacturing inaccuracies, these heat-sealed seams cross the heat-sealed seams on the sides and extend on both sides to a small extent at **27** into the wide opening of the adjacent bag, where this protruding seam does not disturb.

FIG. 4 shows the same arrangement as FIG. 3 with a pair of bags which is rectangular rather than rhombic.

FIGS. 5 and 6 show pairs of bags of rhombic or rectangular configuration and made from a tubing which extends in the direction of the edges **28** and **29**. The edges **28** and **29** are closed side fold lines of the flattened tubing. To provide an opening at one end of the bags, concave cuts **30** are made, according to the invention, whereby a waste portion **31** is removed so that the side fold line is removed to a large extent and the two walls of the tubing are separated in this portion. A filling opening is thus obtained. To reliably avoid a cutting into adjacent bags at the closed ends thereof, the arcuate cut **30** terminates shortly before the side edges of the bag, as is indicated at **32** in FIG. 6.

The pairs of sleeves shown in FIGS. 7 and 8 having two open ends are similar to the embodiment of FIG. 2, where two relatively offset flat sheeting webs having the same width are employed, but the perforated heat-sealed seam **33** and the lateral seams **34** and **35** formed by severing and heat-sealing are curved for a more pleasing appearance.

In rhombic pairs of bags or sleeves, the perforated heat-sealed seam is at right angles to the edges of the webs or tubing and the seams formed by severing and heat sealing are inclined to said edges. In rectangular pairs of bags or sleeves, the seams formed by severing and heat-sealing extend at right angles to the edges of the webs or tubing whereas the perforated heat-sealed seam is inclined to said edges. These remarks apply only generally to the embodiments of FIGS. 7 and 8 because the curved design results in small deviations from the right angle.

Flat film sheeting webs **39** and **40** from the relatively staggered supply rolls **41** and **42** are brought together by the deflecting roller **43** and supplied around a dancer roller **44** and a second deflecting roller **45** to the lateral heat-sealing stations **46** and **47**, where heat-sealed end seams **36** and **37** are formed, which correspond to the heat-sealed end seams **25** and **26** of FIG. 3. The double film then passes through the inclined transverse heat-sealing station **48**, which can be adjusted to extend at right angles for making rhombic pairs of bags. In this transverse heat-sealing device, an inclined perforated heat-sealed seam **38** is made, which crosses the heat-sealed end seams **36** and **37**. The double film moves then through the rolls of the main feeding station **49**, which determines the length of the steps in which the film is withdrawn. The feeding station **49** inserts the prepared double film into the second transverse heat-sealing station **50**, which can be inclined for the manufacture of rhombic pairs of bags. This heat-sealing station **50** is provided with severing and heat-sealing jaws, which make a cut and join the cut edges by heat sealing.

The finished pairs of bags are conveyed by the delivery belts **51** to the delievry table **52**, where they accumulate to form a stack **53**.

What is claimed is:

1. An envelope of thermoplastic material, comprising two sections having front and back panels of tapered configuration, the small end of one section lying adjacent the large end of the other section so that both ends of said envelope are of equal width, at least the large end of each tapered section comprising an opening, the two sides of said tapered sections being defined by continuous heat-sealed seams, the heat-sealed seam lying between said sections comprising a weakening line so as to allow said sections to be separated from each other to form two individual tapered envelopes.

2. An envelope according to claim **1**, wherein the small end of each tapered section is closed by a heat-sealed seam, said heat-sealed seam crossing said side-defining heat-sealed seams.

3. An envelope according to claim **1**, wherein one of said front and back panels of said tapered sections protrudes over the other at least one end thereof.

4. An envelope according toc laim **1**, wherein the small end of each section is closed by a fold integral with said front and back panels.

5. An envelope according to claim **4**, wherein said opening is in the form of a segment of a circle provided in both said panels of each section.

6. An envelope according to claim **1**, wherein said envelope has the configuration of a rhombus, and said weakening heat-sealed seam is at an acute angle to said side-defining heat-sealed seams.

7. An envelope according to claim **1**, wherein said envelope has the configuration of a rectangle and said weakening heat-sealed seam is at an acute angle to said side-defining heat-sealed seams.

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DAVID M. BOCKENEK, *Primary Examiner.*

U.S. Cl. X.R.

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