

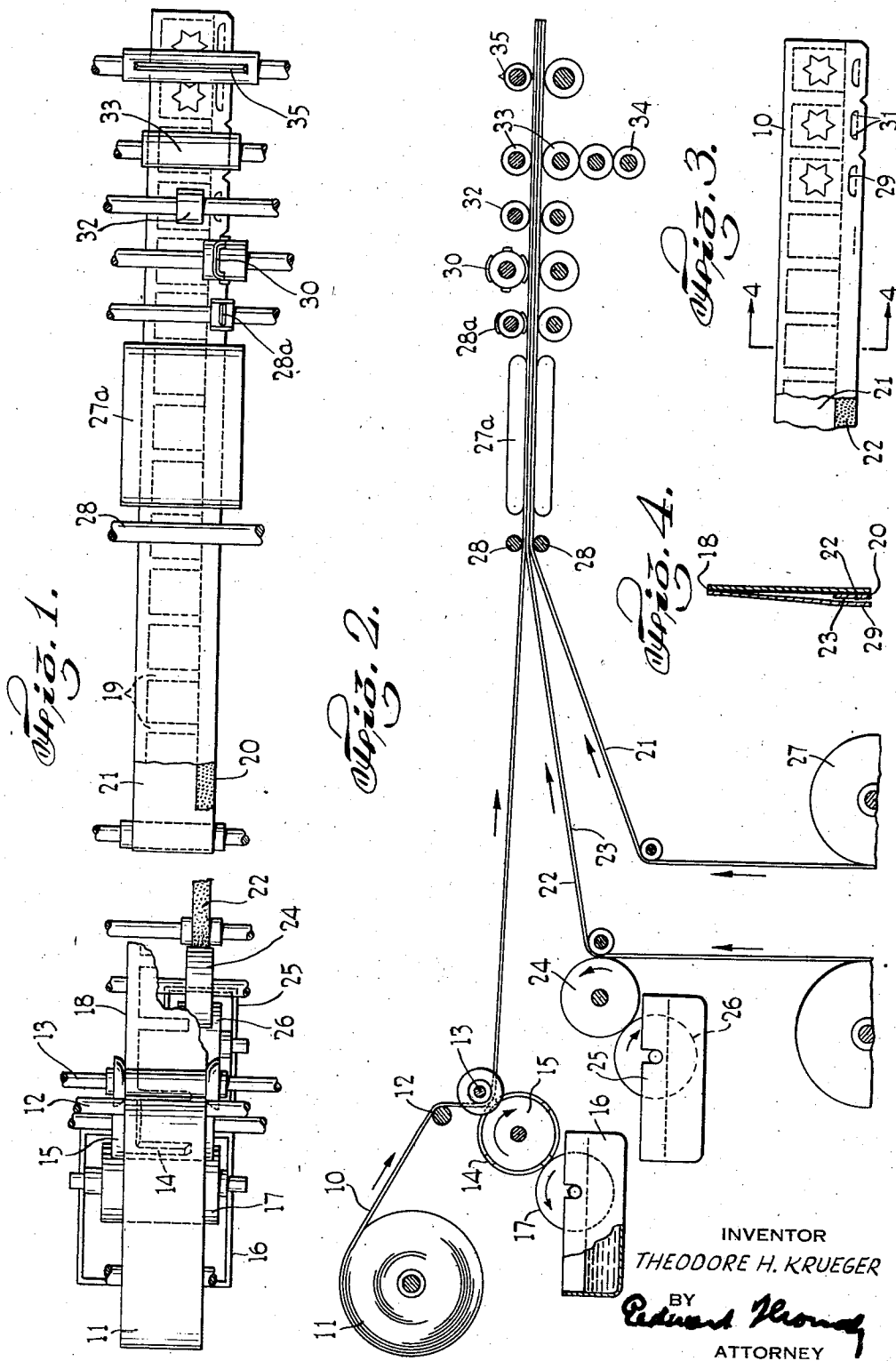
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T. H. KRUEGER

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MAKING OF BAGS AND ENVELOPES

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MAKING OF BAGS AND ENVELOPES

Theodore H. Krueger, Shelton, Conn.

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5 Claims. (Cl. 93—35)

This invention relates to the making of bags and envelopes and is herein disclosed in some detail as embodied in a process for making carry bags of paper.

Both bags and envelopes with glued edges to close them have been made for many years, but have been found open to many objections. The envelope has been usually sealed by moistening a strip of glue or gum which was applied in the process of manufacture along the open mouth, and the edge must be pressed down and held at least momentarily to ensure proper sealing. The gum has a decided taste, and glue has an odor and sometimes a taste in addition, both being unpleasant to many people.

These and other objections, theoretically, may be overcome by making the bag or envelope with heat-sealed seams and a heat-sealed opening, but it was found that this theoretical procedure was commercially unworkable. Most of the proposed heat-sealing adhesives required a heat high enough to scorch the paper or else required enormous and long continued pressure and heat to effect the heat-sealing, and, for those reasons, were useless commercially where retail stores required a seal which could be counted on not to scorch paper and a sealing material which made a secure seam with low pressure and momentary pressure. The utmost pressure and time allowable would be a single quick stroke of a foot operated sealing device.

The only available heat-sealing adhesives answering these low pressure and almost instantaneous sealing proved to be of such a nature that they could not be applied as adhesives always had been applied in bag and envelope making, that is by roller or by imprinting as printing is done with printing ink.

These apparently useful heat-sealing adhesives seemed to be ruled out because no machines were commercially known that could apply them for bag making.

According to the present invention the foregoing difficulties and objections are overcome and a heat sealed bag is provided which seals without substantial pressure, which can be made at high speed, and which is amply strong without reinforcing.

To enable the bag, or envelope, to be produced at a reasonable price the process of manufacturing has to be considerably modified from the processes hitherto in use, one reason being that the available heat-sealing composition, which is described below, cannot be applied successfully except by roll and doctor bar and in a continuous

coating along the whole length of the web of paper. Thus the difficulty arises that seams at right angles to each other, or even at any angle to each other cannot both be bound by the heat sealing composition.

According to the present invention there are produced bags or envelopes which are heat sealed by a trivial pressure when proper heat is present, that hold the heat-sealed seam firmly, that make a seam of any desired angle or breadth which includes any desired reinforcing material, and that yet uses a heat sealing composition which is odorless, tasteless and non-toxic.

To obtain these and other advantages the bag or envelope is shown below as made by gluing together, at the bottom and side seams of the future bag, face to face two suitable travelling webs, and applying the heat-sealing material on a separate ribbon of paper or cloth which is shown as glued along one or both inside faces of the open mouth of the future bag. Such a ribbon becomes a reinforcement of the mouth or top, and thus provides a stronger mouth or top in which handles may be cut for ease in carrying the bag.

In the form shown, which seems to provide the most rapid and economical procedure for manufacturing carry bags, the ribbon is shown as applied as a continuously fed tape running lengthwise of the continuously moving web, and automatically properly placed. The glue adhesive for the other seams is shown as applied in a conventional manner.

It is often advantageous to dust the surface of the heat-sealing composition with a suitable material such as starch to make it non-sealing under cold pressure, applying this dust before the heat-sealing surface approaches the bag forming operations.

Other features and advantages will hereinafter appear.

In the accompanying drawing,

Figure 1 is largely diagrammatically, the top view of a suitable machine for making the carry bag.

Figure 2 is a side view of the same.

Figure 3 shows the steps in producing the bag.

Figure 4 is a sectional view of the bag on a larger scale.

In these figures one web 10 is shown as drawn from an upper reel 11, over a guide rod 12, and under a supporting roller 13 so that glue may be spotted on the web by impression faces 14 of a spotting roller 15.

The roller 15 is shown above a glue fountain 16, so that a feed roller 17 dipping in the foun-

tain supplies glue to the faces 14, thereby gluing the web 10 along one edge 18, which will form the bottoms of the bags, and also gluing the web along transverse stripes 19 which will later glue the sides of the bags together up as far as the strip 20 of Figure 3, which might be on the facing web 21, but for convenience is shown on the web 10.

In the form shown the strip 20 is a separate ribbon 22 which carries a coating 23 of the heat seal material described below on one face and the back face is shown as coated with glue by a gluing roller 24 receiving its glue from a glue fountain 25 through a feed roller 26.

As the web 10 travels from the reel 11 and leaves the supporting roller 13, it approaches the web 21, drawn from the reel 27, and one of the webs receives the strip 22, until the webs come together between transverse rods 28, while the applied glue is still wet.

The two webs, usually with the separate strip 22, now in contact, enter a presser 27a, kept cool enough to avoid any possibility of sticking of the heat seal material 23, which may be dusted with starch by way of precaution.

The webs 10 and 21 travel out of the presser 27a glued together, and are then shown as passing below a scoring roll 28a to initially score part of the handle 29.

Next the webs are shown as passing below a handle-cutting die or punch 30 which cuts out the handle 29 and turns the corners 31.

A feed roll 32 is shown next as feeding the webs on to a printing roll 33 shown as receiving ink from inking rolls 34. Finally the webs are shown as reaching a cut-off knife 35, which severs the finished bags, with a glued bottom, glued side seams, and a stripe of heat-seal adhesive inside the still open top.

As was pointed out above the stripe 23 may be on either web 10 or 21, having been previously put on to the ribbon or tape which carries it. It was put on the ribbon or tape while still in the form of a web.

The stripe is put on by running the web of paper between a roll and doctor bar so as to suitably spread the thermoplastic adhesive obtained when paraffine wax having a melting point of 130 to 140° F. was melted and 6% to 30% of thin pale crepe rubber R. C. M. A. not more than 0.04 inch thick was quickly immersed in individual sheets at 200° F., soaked for fifteen minutes and agitated for two hours in a Warner-Pfleiderer class III type BB mixer. An age resistant, such as ½% of hydroquinone could be added. Gutta percha has been substituted for rubber and other waxes for paraffine wax.

The ingredients (other wax was usable) were preferably so adjusted that the tissue became adhesive between 150° and 180° F.

This application is a division of Serial No. 430,330, filed February 11, 1942.

Having thus described certain embodiments of the invention, what is claimed is:

1. The process of making a paper container having a heat softened adhesive strip for closing it which consists in bringing together a front mostly non-adhesive web and a back mostly non-adhesive web while still in separate webs, one of said webs carrying stripes of water softened adhesive to form seams, and one of said webs carrying a narrow continuous heat-sealing stripe lying along the line where a bag mouth will form, uniting said webs at the water softened adhesive stripe to form a bottom seal and two side seams, and severing the webs along the seams where they are united to form the containers.

2. The process of making a paper container having a heat-softened adhesive stripe for closing it which consists in bringing together a front and a back while still in separate webs, carrying between them so as to be affixed to one of them a continuous ribbon to adhere on one side and coated on the opposite side with a heat sealing stripe, uniting the webs and the adhering side of the ribbon to form bag blanks and severing the bags to form the bags.

3. The process of making a paper container having a heat-softened adhesive stripe for closing it which consists in spotting a web of paper with water softened adhesive along the bottom and side seams of the bag to be made applying to the web a separate strip having a heat-sealing adhesive on its face so that the back adheres to the web, bringing said web face to face with another web, causing said seams to adhere to form closures, and severing the bags at the seams common to adjacent bags.

4. The process of making a reinforced open top paper container which consists in spotting a travelling web of paper with water-softened adhesive along the bottom and side seams of the bag to be made, bringing a second travelling web to the face of the first web, causing the back of a reinforcing ribbon to adhere at the inside face where the mouth comes so that a heat-sealing front of said ribbon may be caused to close the bag at will, causing said seams to adhere to form closures, and severing the bags at the seams common to adjacent bags.

5. The process of making a reinforced open-top paper container which consists in spotting a travelling web of paper with water-softened adhesive along the bottom and side seams of the bag to be made, affixing within the mouth of the bag to be made the back of a ribbon bearing a heat-sealing face, by feeding the ribbon with the travelling webs, causing the water-softened adhesive to unite the webs where spotted, and severing the bags at the seams common to adjacent bags.

THEODORE H. KRUEGER.