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H. R. BEEN

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BAG MAKING

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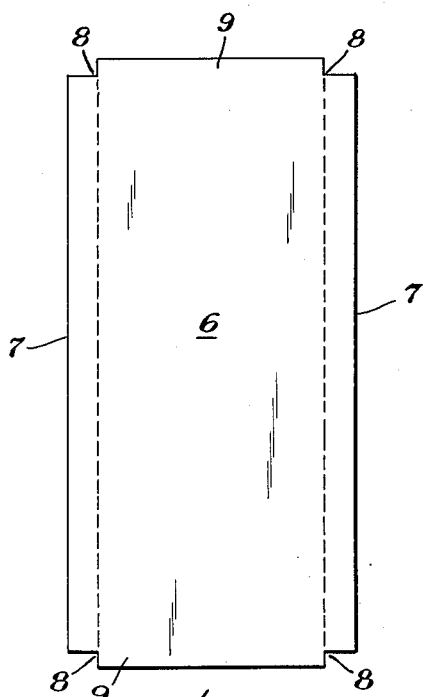


Fig. 1

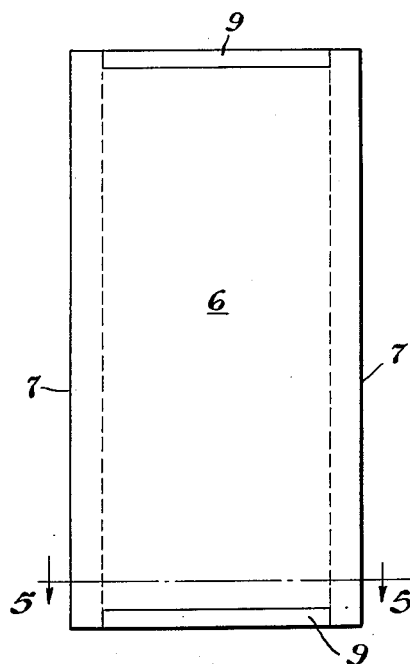


Fig. 3

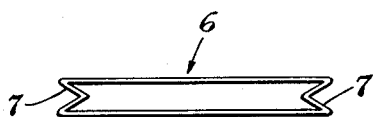


Fig. 2

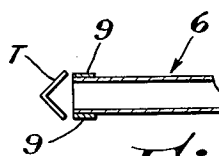


Fig. 4

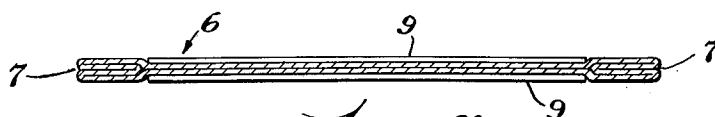


Fig. 5

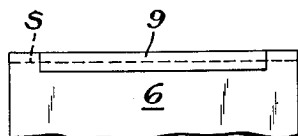


Fig. 6

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1

3,077,820

BAG MAKING

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Original application Feb. 25, 1957, Ser. No. 642,209.
Divided and this application Apr. 3, 1959, Ser. No. 803,997

4 Claims. (Cl. 93—35)

This application is a division of my application Serial No. 642,209, filed February 25, 1957, now abandoned.

My invention has to do with a container for solid particles, like salt flake or chemical powders, etc., of the kind most people would call a bag or sack except in certain parts, as in some areas of southwestern Pennsylvania or West Virginia, where they are likely to call them "pokes."

Most bags of the type in mind are made from paper stock which may be the water-proof variety of better keep the contents dry. It is a good idea, for stronger bags, to use paper stock that is reinforced with glass or other fibers. A lot of the bags I have seen are made by forming the paper into a gusseted tube which is cut cross-ways so that long enough bags can be had. The ends of the cut tube are then closed any way that may be felt best. They can be glued together all right, but most often they are sewn shut. Sometimes a paper or cloth tape is folded down the middle and laid over both sides of the closed end before the bag is sewn. When this is done, the sewing thread can also be run through the folded-over tape.

Bags made this way can be and often are a lot of trouble. When the ends are sewed shut, for instance, the thread is stitched through four layer thicknesses of the bag paper where it runs across the gussets but only two in the middle part into which the gussets do not reach. It is plain that the closed end of such a bag is not equally strong all the way across. And, I have often noticed that when bags closed up in this manner are loaded they tear out the stitches. This is not only a nuisance but costs money since the contents, if they are not ruined, have to be picked up when they spill out of the torn bag. The failure seems to come from the different stresses caused in the thread holding different numbers of paper layers together at the bag end.

I have found a fine way to make all-around better bags of the type mentioned. In order to make my bags, I take regular bag stock or stock of any suitable kind and form it into a flattenable, gusseted tube. Usually, I use paper, which can be a multi-layer kind. But, I can also make my better bags with cloth or other satisfactory stock. Then I cut the gusseted tubes (best handled flat while making the bags) across their width so that the bags will have a proper length. To this point, everything is the same as when many of the ordinary bags are made. After this, however, it is different since I then notch all the corners of the cut length of gusseted tube by cutting a section from each end of the gusset or side wall portion to leave a flap in the center of each front and rear wall (between the gusseted sides) at each end of the bag. The flap which is left should be about as long as the middle, two-layer thickness part of the front and rear wall of the bag that lies between the gussets when the bag is folded. The section removed should be cut straight in the direction of the bag width, i.e., parallel with the edge of the bag at its end. Each notch is usually a rectangle of equal size whose length is parallel to the edge of the bag. Of course, it can be a square, or a rectangle whose width parallels the end of the bag, if really big flaps are wanted. I then fold each of the protruding flaps back over against the bag wall from which it juts to straighten the edge of the bag end. This is best done by folding them out and

2

back, but they can also be folded within the bag. I never fold the flaps in my bags across to the opposite walls as is done in some of the bags I have seen. The flaps in my bags are always folded over so as to lay against the wall from which they are cut out. I prefer to glue the folded-over flaps to the bag wall, but this is not necessary. Likewise, I like to use a creased strip of paper or cloth tape over the bag ends in the usual manner but this too is not necessary. I then close up the bag ends by any suitable sealing means. They can be glued together, if this is wanted. However, it is usually best to sew them up which holds them together nicely.

As can be seen, when stitching is used in my bags, the sewing thread runs uniformly through four layers of bag paper or other stock all the way across the closed ends. This lets the stress in all the stitching be about the same, even when the bag is loaded. Also, when fiber reinforced paper or like material is used for the bag stock, the folded over flaps, when stitched, create an interlock between the glass or other fiber reinforcement in the walls of the bag and the stitches of the bag sewing thread. Besides this, the folded over flaps let the head of any sewing machine go over a uniform thickness all the way across the end of the bag when it is stitched shut. My bags are very strong since they actually have double strength at their sewn or otherwise closed ends. On top of this, they handle nicely and more easily than ordinary bags when used with and placed upon filling machines in order to be loaded.

Of course, my bags can be and are best made with bag making machinery of the usual type but changed enough, as can be done by any ordinary good mechanic, to operate in the way I have described. Naturally, though it is best to close both ends of the bag as above, I would consider a bag that would have only one of its ends made as described to be one of mine. I have shown several views of my bag, especially as it is being made, in the drawing, FIGURE 1 being a front wall plan view of the notched gusseted tube; FIGURE 2 looking at it from its end; FIGURES 3 and 4 showing one way to fold over the flaps (the latter being a section to show a part of the bag at its end); FIGURE 5, drawn to a little bigger scale, showing the end of the bag when closed as seen in section along the line 5—5 in FIGURE 3; and FIGURE 6, a fragmentary view, showing an end of the bag sewed shut.

The cut-to-length gusseted tube 6, with the side gusset portions 7, that is used to make my bag is notched at the corners, as can be seen in FIGURE 1, to leave the middle flaps 9 sticking up from the front and rear bag walls. The notched-out portions 8 are cut to leave an ample flap for the purposes of folding over. The flaps 9 are usually best when wide enough, say at least half-an-inch or so, and better yet, at least an inch, to permit their being sewn or glued in a strong and easy way to and with the bag walls after they have been folded over, as in FIGURES 3 and 4. FIGURE 4 also shows how the usual creased tape T can be started to be laid about both sides over the folded and closed end of the bag to help in its being glue or sewn shut. FIGURE 5 shows the even layer thicknesses that my bags have all the way across their closed ends and helps explain why they are so good, particularly at holding the stitches and not bursting when loaded. To prove this point, I have dropped by bags (made from glass fiber reinforced laminated multi-ply paper stock testing at about 100 pound strength) with 100 pound loads for more than fifteen times on the same stitched edge without having them burst. I can drop the same bag flat from the same height for two hundred and fifty times without its failing.

A sewn bag end having stitching S for holding it closed

3

is shown in FIGURE 6. A generally moisture-proof seal can be made easily when the bag is sewn or otherwise held together at the ends, especially if a creased tape is glued on over the bag end prior to sewing.

The actual performance and use of my bags has been quite pleasing, especially with such fillings as flake and pelleted calcium chloride salt and the like.

What I claim and also desire to secure by United States Letters Patent is:

1. A process of making bags which comprises forming a gusseted tube of bag stock that is adapted to be flatly disposed; cutting notches from each of the corners of said tube across its gusseted portions while it is flatly disposed so as to completely remove all of the gusseted material from said corners and leave notched-out corners at each of the sides of said bag and a flap extending from the center of each non-gusseted wall in said tube; folding each of said flaps over on the portion of the tube wall from which it extends so as to lie between the gussets on

4

the outside of said tube wall and form an open bag; and closing the ends of said bag shut by sealing its ends with suitable means while said flaps are folded over and laid back on said walls.

2. Making bags as in claim 1, and including the step of gluing said folded over flaps to said walls.

3. Making bags as in claim 1, wherein said flaps are folded over out and back on said walls.

4. Making bags as in claim 1, wherein said bag ends are closed shut by being stitched with bag sewing thread across the ends of said bag through said folded over flaps.

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