Aug. 27, 1935. J. J. SHEA 2,012,357

METHOD OF MAKING BAGS

Filed Aug. 8, 1933

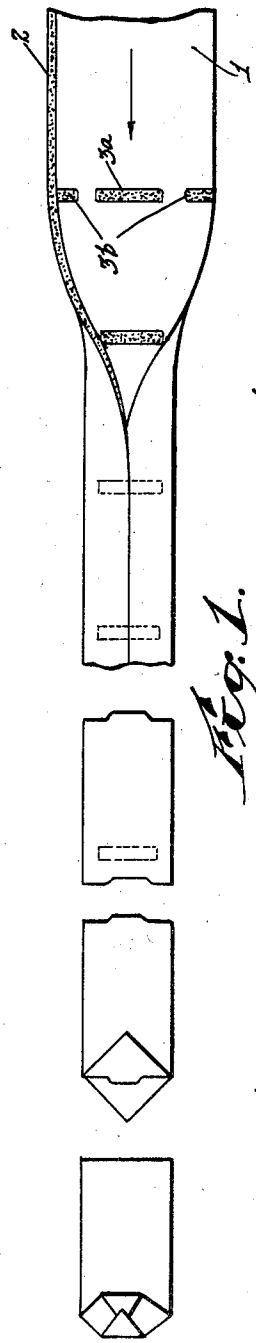


Fig. 1.

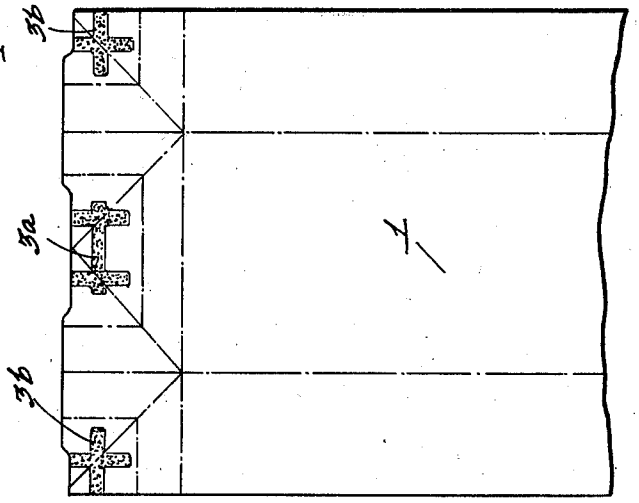


Fig. 5.

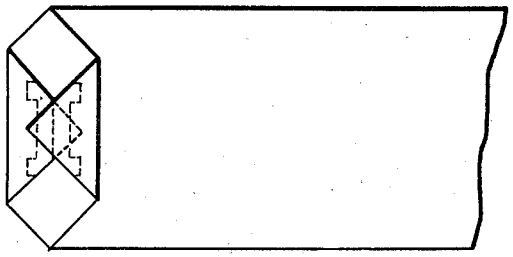


Fig. 4.

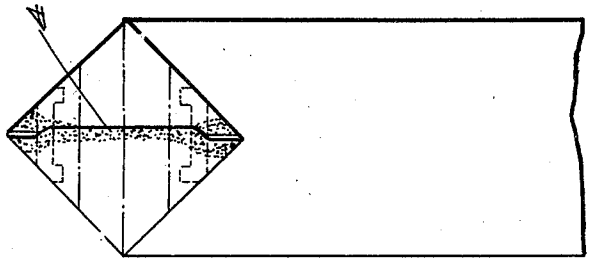


Fig. 3.

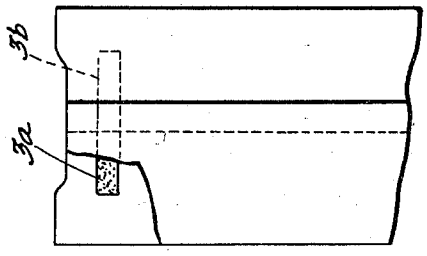


Fig. 2.

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Patented Aug. 27, 1935 2,012,357

UNITED STATES PATENT OFFICE

2,012,357

METHOD OF MAKING BAGS

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Application August 8, 1933, Serial No. 684,208

8 Claims. (Cl. 93—35)

The present invention relates to the manufacture of bags and like containers, and has for its object to provide an improved method of making bags, by the practice of which method bags may be produced which are effectively sealed at one end against the escape of fine pulverulent material.

Closed end, or so-called satchel bottom bags, as heretofore constructed have been open to the objection that fine pulverulent material such as flour, or other substances in powdered or fine granular form, tend to sift out of the bottoms of the bags. This defect is largely due to the fact that in producing such a bag on existing bag making machinery it has been customary to apply adhesive only to the outside surfaces of the partially folded portions of the bag tube; consequently, when the folds of the bottom are turned over in the final folding operation into overlapping relation, there is no adhesion to the areas constituting the inside of the bottom of the bag, and fine material therein tends to sift through.

According to the present invention, there is provided an improved manner of making substantially sift-proof bags of the above indicated character on existing bag making machinery, bags made by the practice of my invention having their bottom folds adhesively connected on the inside, so that fine material cannot sift through the bag bottoms. Briefly stated, the invention contemplates the application of adhesive to the web of bag material prior to, or just as, the web is formed into a tube which is subsequently operated upon by the tube opening and folding instrumentalities to form the bag bottoms in the usual manner. The adhesive so applied prior to the formation of the web into a tube is thus disposed within the tube, the subsequent tube opening and folding operations mentioned above serving to break a preliminary bond between the gummed areas within the tube and causing contact of these internally gummed areas with other ungummed inside areas of the bottom folds so as to effectively seal the bottom of the bag from within. The above described inside gumming of the bag tube in accordance with my invention is entirely independent of and supplemental to the usual outside gumming of the folded ends of the tube accompanying the formation of the bag bottom on existing bag making machinery, all as will hereinafter appear from the following description with reference to the accompanying drawing, in which:—

Fig. 1 is a diagrammatic view illustrating the manner of making bags in accordance with the invention.

Fig. 2 is a plan view on an enlarged scale of a portion of the bag tube and showing the location of the web gumming just after the tube has been formed.

Fig. 3 is a view on an enlarged scale illustrating the location of the inside web gumming after the tube has been opened and subjected to the first bottom folding operation.

Fig. 4 is a view on an enlarged scale similar to Fig. 3, further illustrating the location of the web gumming in a completed bag.

Fig. 5 is a view showing a portion of a bag unsealed and flattened to further illustrate the final distribution of the inside web gumming in the completed bag.

Like reference characters refer to like parts in the different figures.

Referring first to Fig. 1, a web 1 of paper, or any other suitable flexible bag material, is fed in the direction of the arrow, and subjected to the operation of suitable instrumentalities too well known to require detail description herein, whereby the web 1 is formed into a tube. The formation of this tube, as shown, involves the application of adhesive at 2 along one longitudinal edge of the web 1, such adhesive serving to seal the tube longitudinally as the edges of the web are disposed in overlying relation by the formation of the tube and the latter is subjected to the action of rolls which convey the tube to the bottom forming instrumentalities hereinafter referred to.

Prior to, or simultaneous with, the formation of the web 1 into a tube, the web has applied thereto on the same side as the gumming 2 other areas of gumming 3*a* and 3*b*. These gummed areas 3*a* and 3*b* are applied to the web at predetermined intervals in accordance with the lengths of the bags which it is desired to make from the tube, and the gummed areas 3*a* and 3*b* are so disposed with reference to each other that they are in complete register and in contact with each other when the web is formed into the tube. Therefore, as the tube passes through the bag forming machine in the usual manner, the walls thereof are temporarily held together at intervals by the registered gummed areas 3*a* and 3*b*, as indicated in dotted lines in Figs. 1 and 2.

As the tube with the inside gummed areas in contact continues its progress through the bag forming machine, it is subjected to suitable mechanism whereby the tube is opened and its ends folded back, as indicated on an enlarged scale in Fig. 3. This opening of the tube serves to break the bond between the still pliant and

fluid gum of the previously contacted areas 3*a* and 3*b*, and it will also be apparent from Fig. 3 that the tube opening and folding operations cause previously ungummed areas within the tube to be contacted with the wet gum of the areas 3*a* and 3*b*, such areas then being disposed on opposite sides of the tube axis. Furthermore, with the usual manner of folding the tube along lines diagonal with respect to the tube axis, the gummed areas 3*a* and 3*b* are disposed in shallow U-shaped form as indicated in dotted lines in Fig. 3, owing to the fact that the original length of the gummed areas 3*a* and 3*b* measured transversely to the tube axis is sufficient to intersect the diagonal lines of folding to which the tube end is subsequently subjected.

Prior to the performance of the tube opening and folding operations illustrated in Fig. 3, the tube is severed to provide the desired length of envelope body, the line of severance being such that it is near the internally gummed areas 3*a* and 3*b* in the tube. That is to say, the tube severing means and the means for applying the gummed areas 3*a* and 3*b* are in timed relation, so that these areas always bear the same relation to the advancing end of the tube as it is subjected to the tube opening and folding means.

Following the opening and folding of the bag end in the manner indicated in Fig. 3, the flattened surfaces of the tube are further gummed at 4, as indicated by the stippling in Fig. 3, after which the projecting ends are folded over as shown in Fig. 4, to cause adhesion between these outside gummed surfaces and to complete the bag bottom, the finished bag then appearing as shown in Fig. 4. Obviously, the above described procedure is carried out with respect to each tube end, so that completed bags formed as shown in Fig. 4 are formed as long as the web 1 is fed.

Referring now to Fig. 5, the completed bag of Fig. 4 is shown as having been unsealed and spread out in flat condition so as to further illustrate the manner in which the inside gummed areas 3*a* and 3*b* of the tube are finally distributed with reference to inner ungummed surfaces of the bag bottom with which these areas are contacted in the final formation of the bag bottom. It is evident from a consideration of Figs. 3 and 5 that the bottom of the bag is substantially siftproof, owing to the fact that the gummed areas 3*a* and 3*b* and the surfaces in contact therewith effectively prevent fine material inside the bag from sifting through to the end folds of the bag, which are only secured by outside gumming. This effective sealing of the bag bottom against fine material sifting through is largely due to the fact that the inside gummed areas intersect and extend between the diagonal lines of folding in the bag bottom, such lines of folding being indicated in dot and dash in Fig. 5.

I claim,

1. The herein described method of making bags, which consists in continuously forming a flat tube with opposed portions of its walls internally gummed at intervals and then opening the partially sealed end of said tube for folding into a closed bottom with said internally gummed tube areas in contact with previously ungummed tube areas.

2. The herein described method of making bags, which consists in continuously forming a flat tube with opposed portions of its walls internally gummed at intervals, then severing said tube at intervals corresponding to the spacing of said internally gummed areas and then opening the partially sealed end of a severed tube portion for folding into a closed bottom with the internally gummed tube areas in contact with previously ungummed tube areas.

3. The herein described method of making bags, which consists in continuously forming a flat tube with opposed portions of its walls internally gummed at intervals, then opening the partially sealed end of said tube for folding into a closed bottom with said internally gummed tube areas in contact with previously ungummed tube areas and then externally gumming and folding over said bottom folds to complete the bag bottom.

4. The herein described method of making bags, which consists in continuously forming a flat tube with opposed portions of its walls internally gummed at intervals, and then opening the partially sealed end of said tube for folding into a closed bottom with lines of bottom folding extending diagonally with respect to the tube axis passing through said internally gummed tube areas.

5. The herein described method of making bags, which consists in continuously forming a flat tube with opposed portions of its walls internally gummed at intervals transversely to the tube axis, then opening the end of said tube to break the seal between said internally gummed areas and then folding the opened end of said tube into a bottom with lines of bottom folding extending diagonally with respect to the tube axis through said internally gummed areas then in contact with previously ungummed tube areas.

6. The herein described method of making bags, which consists in providing a flat tube with opposed portions of its walls internally gummed and then opening the partially sealed end of said tube for folding into a closed bottom with said internally gummed tube areas in contact with previously ungummed tube areas.

7. The herein described method of making bags, which consists in providing a length of bag material in the form of a flat tube with opposed areas of the tube wall internally gummed and then opening the partially sealed end of said tube for folding into a closed bottom, with said internally gummed tube areas in contact with previously ungummed tube areas.

8. The herein described method of making bags, which consists in providing a length of bag material in the form of a flat tube with opposed areas of its walls internally gummed, then opening the partially sealed end of said tube for folding into a closed bottom with said internally gummed tube areas in contact with previously ungummed tube areas and then externally gumming and folding over said bottom folds of the tube to complete the bag bottom.

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