May 19, 1936. G. W. POPPE 2,040,953

PROCESS OF MAKING COMPARTMENT BAGS

Original Filed March 22, 1934 3 Sheets-Sheet 1

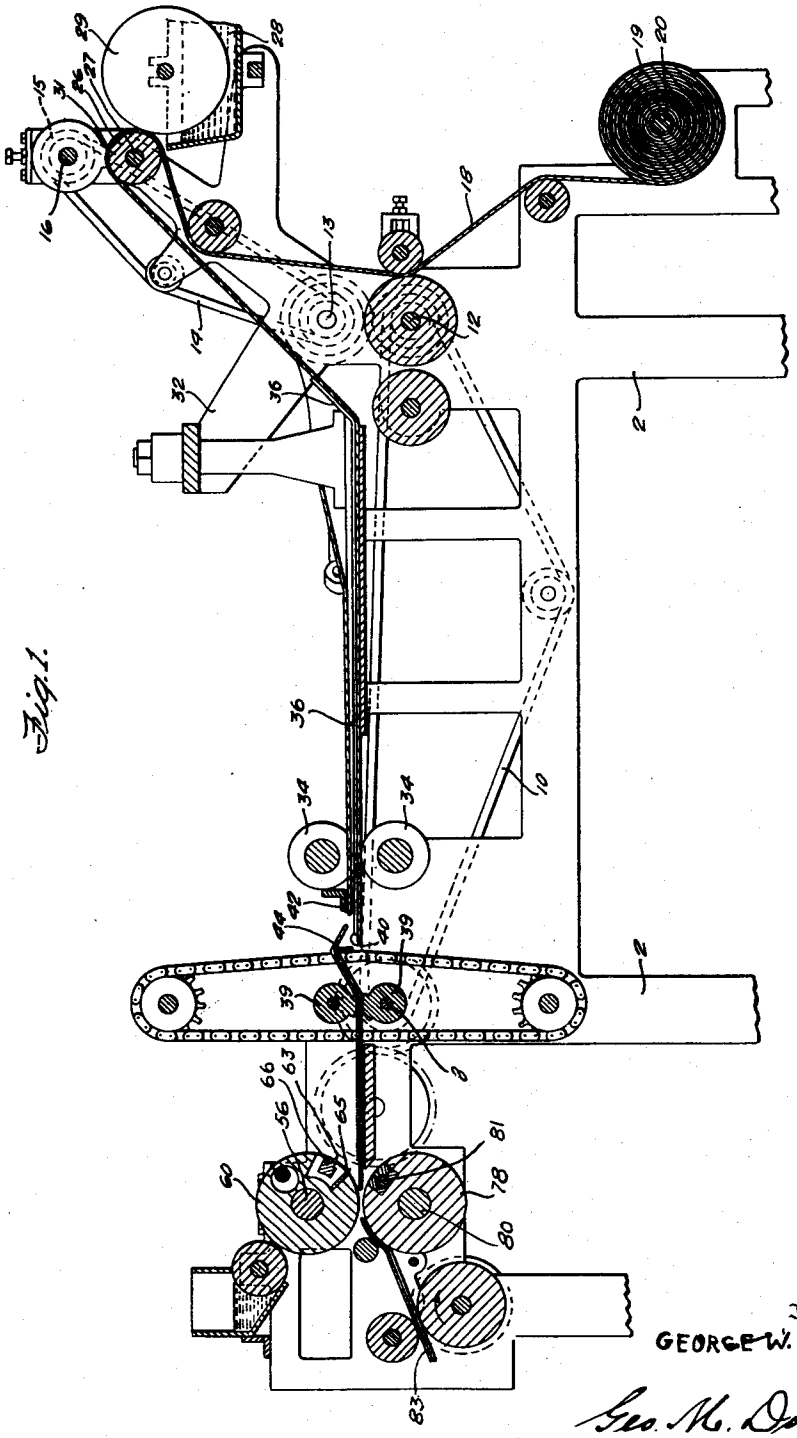


Fig. 1.

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Original Filed March 22, 1934 3 Sheets-Sheet 2

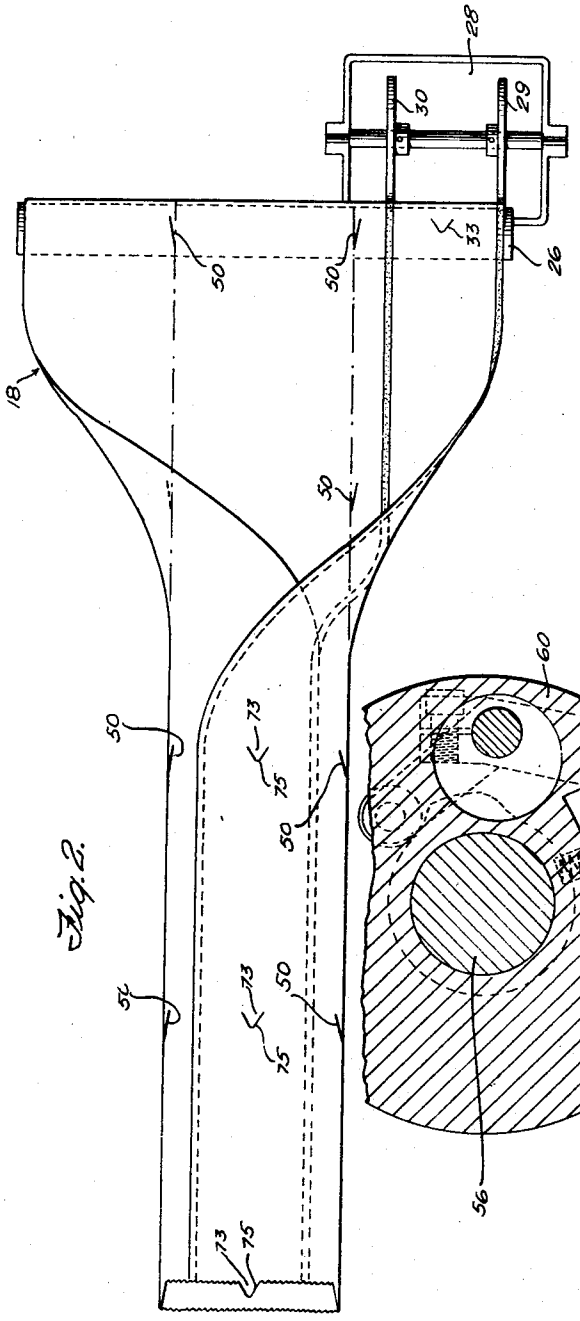


Fig. 2.

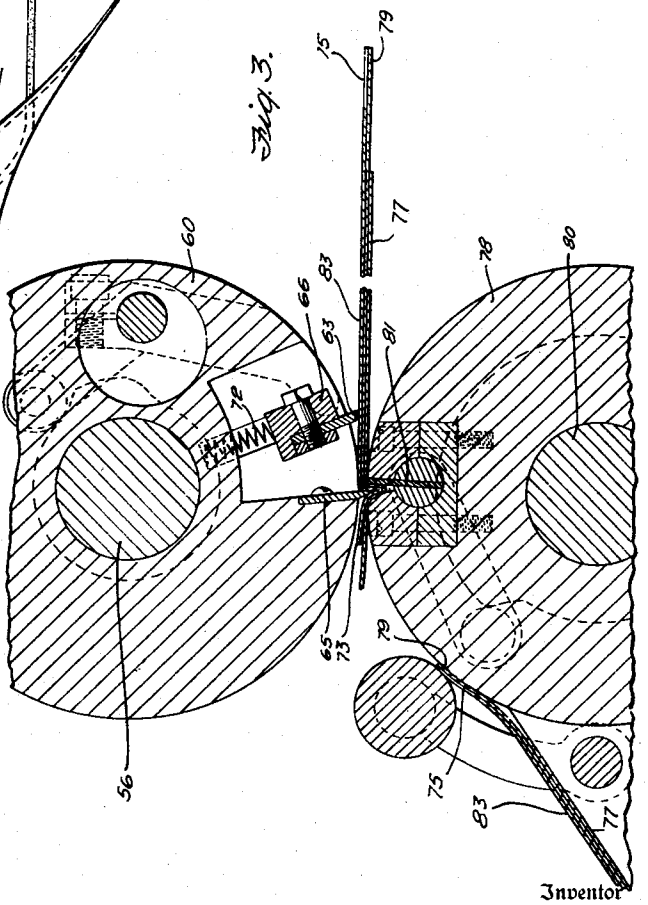


Fig. 3.

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Fig. 4.

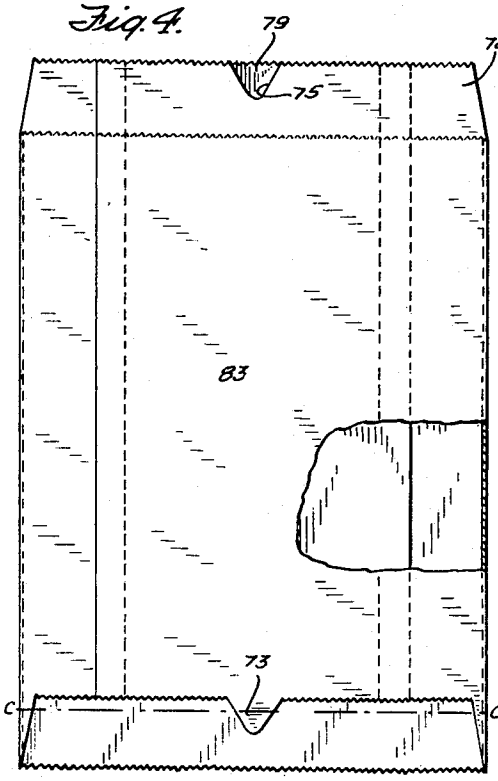


Fig. 5.

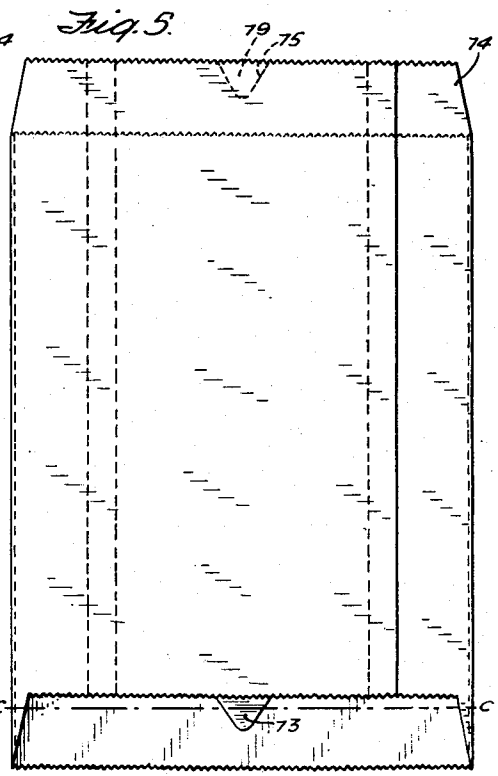


Fig. 6.

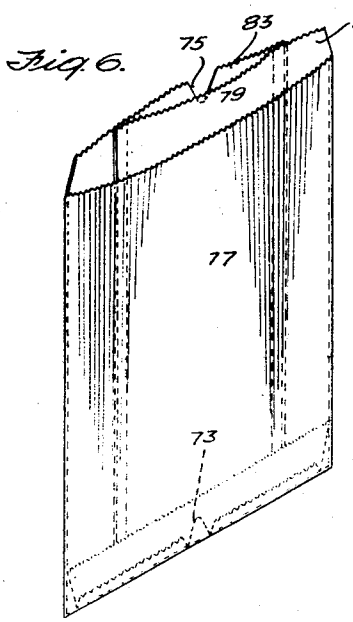
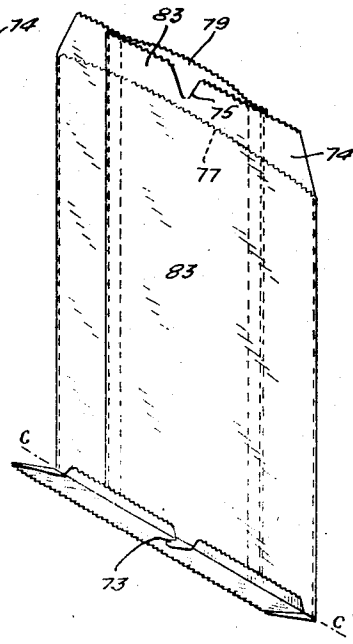


Fig. 7.



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2,040,953

PROCESS OF MAKING COMPARTMENT BAGS

George W. Poppe, Brooklyn, N. Y., assignor to Equitable Paper Bag Co., Inc., Brooklyn, N. Y., a corporation of New York

Original application March 22, 1934, Serial No. 716,771. Divided and this application July 31, 1935, Serial No. 33,970

5 Claims. (Cl. 93—35)

This invention relates to a process for making paper bags and more particularly to bags having several compartments.

This application is a division of my application, Serial No. 716,771 filed March 22, 1934.

The object of the present invention is to produce a bag having several compartments by methods which permit a minimum amount of paper to be used to produce a bag of maximum length.

In my Patent 1,943,549, dated January 16, 1934, I have shown a machine for producing a bag having a short bottom fold, thereby economizing in the amount of paper necessary for the production of a paper bag of a given length and in said patent special mechanism is described for producing such a short bottom bag.

A feature of the present invention, therefore, relates to an improved method whereby a bag having a short bottom fold may be made without a special mechanism provided in said patent.

The invention will be better understood by reference to the following description taken in connection with the accompanying drawings in which—

Figure 1 is a longitudinal section of an ordinary bag machine similar to that shown in my said patent;

Figure 2 is a more or less diagrammatic view showing the method of applying paste lines to the paper web and the manner of folding the web to produce a compartment bag;

Figure 3 is an enlarged sectional view of the bottom forming mechanism;

Figure 4 is a bag tube section before the bottom is folded over and showing one way of folding the web to produce my improved compartment bag;

Figure 5 is a similar view but showing a different way of folding;

Figure 6 is a perspective view of the top portion of a complete bag; and

Figure 7 is a perspective view of the reverse side of the bag shown in Figure 6 and showing the bottom fold.

While the present invention contemplates a method of producing a multiple compartment bag, nevertheless, in its broader aspects some of the features of the invention are applicable to a single compartment bag.

Since in commercial production of bags of the type to which this invention is directed it is customary to make them on a bag machine, the invention will be better understood by reference to a well-known type of machine whereby my improved method is most efficiently carried out. Such machine may be of usual and well-known construction such, for instance, as that shown in my Patent No. 1,798,168 granted March 31, 1931.

Referring to Figure 1, there is the usual supporting framework 2 and running transversely between the side members thereof are a number of shafts which may be driven by a motor in a manner more fully described in my Patent No. 1,943,549 above referred to. In order that comparison between the structure shown in the present application and the structure shown in said Patent No. 1,943,549 may conveniently be made, I shall use the same reference characters for the same parts shown in said patent insofar as this is practicable.

Assuming the shaft 8 to be driven as shown in said patent, motion is transmitted therefrom to other portions of the machine by means of a belt 10 connected to a pulley on shaft 12. The shaft 12 is geared to a shaft 13 which drives a belt 14 which passes over a pulley 15 on the shaft 16. The paper in the form of a web 18 is fed from a roll 19 supported on a shaft 20 and passes over suitable guide rollers and around a reversing roller 26 supported on shaft 27. This roller reverses the direction of movement of the web and such reversal provides a convenient time for applying paste to the web. In the ordinary single seam bag the paste is applied adjacent one edge of the web. In order, however, to produce a double compartment bag I apply two lines of paste. For this purpose I provide two narrow discs 29 and 30 which dip into a paste pot 28. The disc 29 applies a line of paste adjacent the right hand edge of the web of paper as shown in Figure 2 while the disc 30 is spaced from the disc 29 and applies another line of paste to the web. This spacing of the discs may be varied to suit the width of the compartment which is to be formed in the bag tube, and hence in the finished bag. It will be understood of course that the wider the compartment desired, the greater must be the overlap and hence a wider web must be used.

In order to form a top flap of sufficient length to permit it effectively to close the mouth of the bag I use the method described in my Patent No. 1,798,168 for forming such closing flap. This method consists in making slits in the web, indicated at 50, as the same passes over the roller 26. The particular mechanism whereby these slits are formed is not shown in detail in the present ap-

plication but is shown in Figure 2 of said Patent No. 1,798,168 and in Figure 12 of Patent No. 1,943,549. These slits are made by dies which are carried or supported by the shaft 16.

In the present invention, however, in addition to the dies for making the slits 50 I provide an additional die also mounted on the shaft 16 and indicated by the reference character 31, Figure 1. This die is so shaped as to make a somewhat V-shaped incision in the web indicated at 33, Figure 2, of the present application.

The paper web, after passing over the roller 26 and having been cut by the dies which form the slits 50, is delivered to the usual former mechanism which folds the web into a bag tube. This mechanism includes a former plate 36 supported by arms 32 extending forwardly and upwardly from the frame members of the machine.

The web of paper passes under the former and is folded over onto it as indicated in Figure 2. In making my improved compartment bag it is to be noted, that while a single ply of paper passes underneath the former the web is so folded over on to the former as to provide a two-ply bag wall on the upper side of the former. This is clearly indicated in Figure 2.

The folded tube then passes between feed rollers 34, Figure 1, which feed rollers operate in the manner described in said Patent No. 1,943,549. Beyond the feed rollers the tube is momentarily retarded by the rotary members 39 known in the art as pinch bars. These are in fact rollers having segments set into a short portion of their periphery and geared together to rotate in opposite directions but at a peripheral speed which is less than that of the feed rollers 34.

The left end of the former as viewed in Figure 1 is provided with a serrated edge 40 which constitutes means for severing the under or single ply tube wall. There is also provided a so-called lip knife 42 also having a serrated edge. When the tube is retarded by the pinch bars as indicated in Figure 1 and slack in the tube is created, a striker bar 44 supported by sprocket chains as described in my aforesaid patents gives the tube a sharp blow from underneath and the lower wall of the tube is severed by the edge 40 and the upper two-ply wall is severed by the edge 42 of the lip knife. As described in my aforesaid patents and particularly in Patent No. 1,798,163, the slits 50 are made at bag length intervals apart and it will be seen that the incisions 33 are likewise located at the same intervals so that when the striker bar severs the bag tube the transverse cut is made across the entire width of the bag tube by the former edge 40. The upper portion of the tube, however, is severed along a line connecting the ends of the cuts 50 and meets the ends of the incisions 33. The result of this method of severing the tube is to produce a tab 73 in one of the plies of the seam wall while producing a corresponding notch 75 in the edge of the flap of the preceding bag section. A bag section so severed and before the bottom is closed to form a finished bag is well illustrated in Figure 4. The notch 75 appears in the outer ply of the seam wall and furnishes ready means of access to the compartment formed between the paste lines. It will be also noted by reference to Figure 6 that the closing flap 74 is a two-ply flap between the paste lines and extends above the top edge of the front wall 77 and thereby provides ready access to the compartment formed by the front wall 77 and the ply 79. On the other hand, the notch 75 in the edge of the double-ply flap 74 provides ready access to the compartment formed between the ply 79 and the ply 83. It is of course to be understood that the width of the compartment depends upon the distance separating the paste lines.

In Figure 5 a slight modification is shown in which the ply 79 is folded on top of the ply 83. The notch 75, it will be recalled, was formed in the ply 83 and at the same time the tab 73 is formed at the bottom of the seam ply, which tab 73 is cut out of the top of the preceding bag tube and forms a notch 75 in the closing flap thereof. No extra paper is needed to produce the tab 73 and the notch 75 nor is there any waste of paper whatever in the production of the completed bag.

In the present invention I utilize the tab 73 in a manner which enables me to produce a short bottom without resorting to the use of a presserfoot such as is shown and described in my Patent No. 1,943,549.

In bag machines generally and in this application likewise, the bag tube, after having been severed from the main tube, as indicated in Figure 1, passes between rollers which form the bottom and this is done by means of a clamp and tucker blade. Prior to the construction described in said Patent No. 1,943,549 it was necessary to fold the bag along the line *a*—*a*, Figure 14 of said patent, so that the upper or seam wall of the bag was engaged by the clamp. In said patent I have described mechanism whereby the bag bottom could be folded along the line *b*—*b*, Figure 15, and thereby obtain a longer bag with the same amount of paper but insofar as I am aware, prior to the construction shown in said Patent No. 1,943,549, difficulty was experienced if an attempt were made to fold along the line *b*—*b* because the upper or seam wall of the bag not being held by the clamp there was a tendency for the upper wall to follow the paste bar as the same was withdrawn after applying the paste line for sealing the bag bottom.

In the present invention I am enabled to fold the bottom along the line indicated by *c*—*c*, Figures 4 and 5, by reason of the presence of the tab 73, which tab is caught in the clamp and holds down the seam wall and I do not need to provide a presserfoot mechanism described in said Patent No, 1,943,549.

Referring to Figure 3, the shaft 56 carries the cylinder 60 to which is secured the tucker blade 65. The paste bar 63 is secured to a bar 66 urged radially outward by springs 72 and moved radially in proper timed relation to the progress of the bag tube by mechanism which is old and well-known and which is described in detail in said last-mentioned patent. The lower cylinder 78 is mounted on the shaft 80 and carries a clamp indicated generally by 81 which is also operated in a well-known manner and is likewise fully described in said last mentioned patent. In Figure 3 the tab 73 is shown as being tucked into the clamp by the tucker blade, thereby holding down the wall of the bag at the time that the paste bar is withdrawn, thereby overcoming any tendency of this wall of the bag to follow the paste bar during its withdrawal. When the bottom flap is folded over and pasted the tab 73 is included within the bottom fold. The bag section, after leaving the rollers 60 and 78, passes on to the bottom closing mechanism shown at the extreme left of Figure 1, which mechanism is of usual and well-known construction. When the bottom flap is pasted to the seam wall the tab 73 is included

within the bottom fold as clearly illustrated in Figure 7. The utilization of the tab 73 in the manner above described is advantageous whether the bag is made as a multiple compartment bag or as one having a single compartment. In a multiple compartment bag, however, the tab 73 not only enables me to make a shorter bottom fold but the recess or notch 75 which is complemental to the tab and which is formed in the same wall as the tab serves to give ready access to one of the bag compartments.

What I claim is:

1. The process of forming a compartment paper bag which consists in applying a line of paste adjacent one edge of a web of paper and another paste line separated therefrom a distance equal to the desired width of the compartment, folding said web to form a tube, severing the tube transversely into bag lengths in such a manner as to form complementary flaps at its respective ends and closing one end of the bag length to form a bag bottom.

2. The process of forming a compartment paper bag which consists in applying a line of paste adjacent one edge of a paper web and another line of paste separated therefrom a distance equal to the desired width of the compartment, folding said web to form a tube having a single ply front wall and a double ply seam wall, making a substantially V-shaped incision in the web substantially midway between the paste lines, severing the tube transversely into bag lengths in such manner that such incision results in a tab at one end of a ply and a notch at the other end of the same ply and closing the bag length to form a bag bottom.

3. The process of forming a compartment paper bag which consists in applying a line of paste adjacent one edge of a paper web and another line of paste separated therefrom a distance equal to the desired width of the compartment, folding said web to form a tube having a single ply front wall and a double ply seam wall, making a substantially V-shaped incision in the web substantially midway between the paste lines, severing one wall of the tube transversely along a line adjacent the base of said incision and severing the other wall completely across the bag tube.

4. The process of forming a compartment paper bag which consists in applying lines of paste to one side of a paper web which lines are separated a distance equal to the desired width of the compartment, forming incisions in the said web substantially midway of the paste lines and at bag length intervals apart, folding said web to form a tube having a single ply front wall and a double ply seam wall, severing said tube along one seam wall in such a manner as to leave a tab projecting from the lower portion of said wall and a notch at the upper portion of the same wall and folding the bottom of the bag to include the tab of said seam wall within the fold.

5. The process of forming a paper bag which consists in folding a web to form a tube, said tube having a front wall and seam wall, forming a tab at the lower portion of the seam wall and folding the front wall over on to the seam wall to form the bag bottom, said fold being so located as to include only said tab within the fold but no other portion of the seam wall.

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