

Jan. 22, 1935.

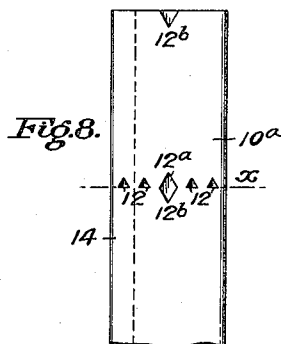
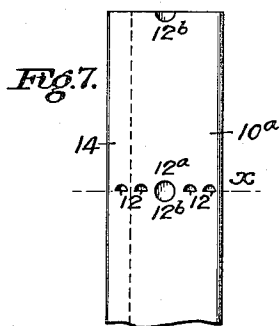
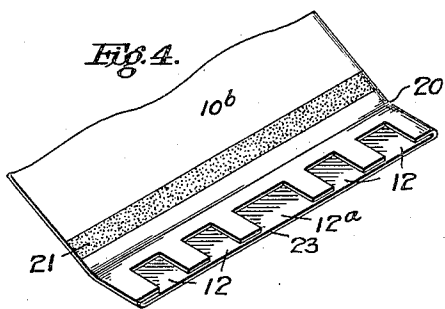
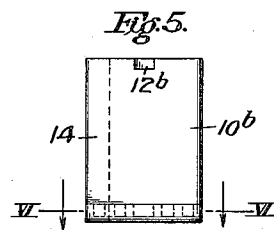
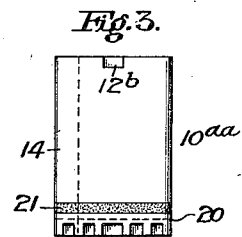
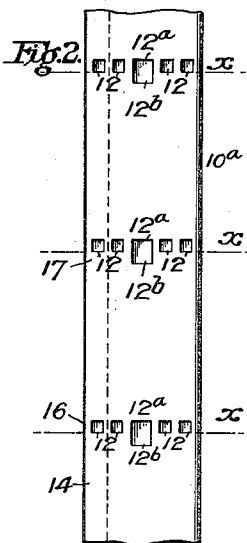
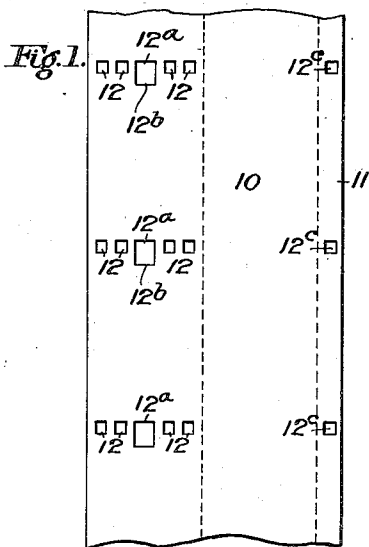
T. M. ROYAL

1,988,462

MANUFACTURE OF BAGS

Filed March 10, 1932

2 Sheets-Sheet 1



INVENTOR.

Thomas M. Royal

BY

Murray B. Cooper

ATTORNEY.

Jan. 22, 1935.

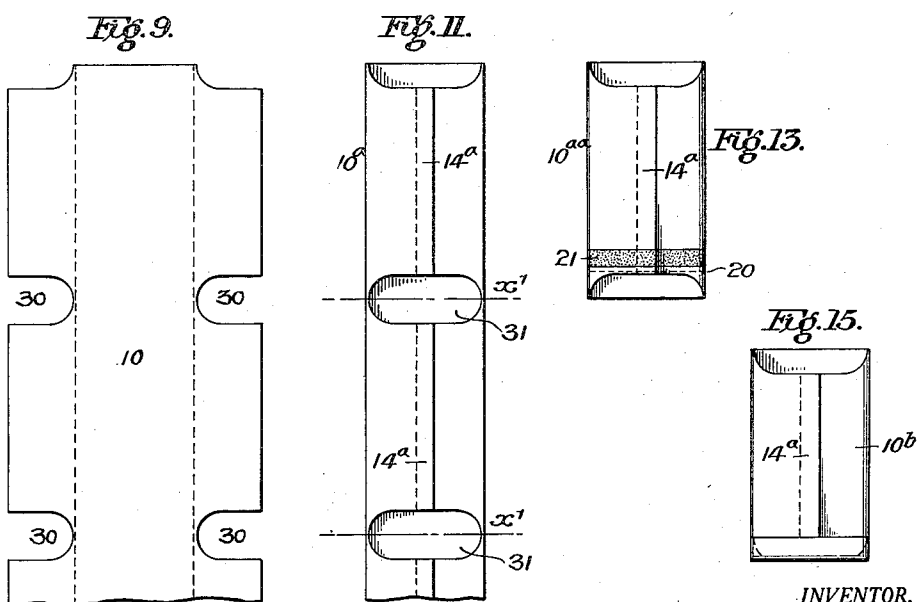
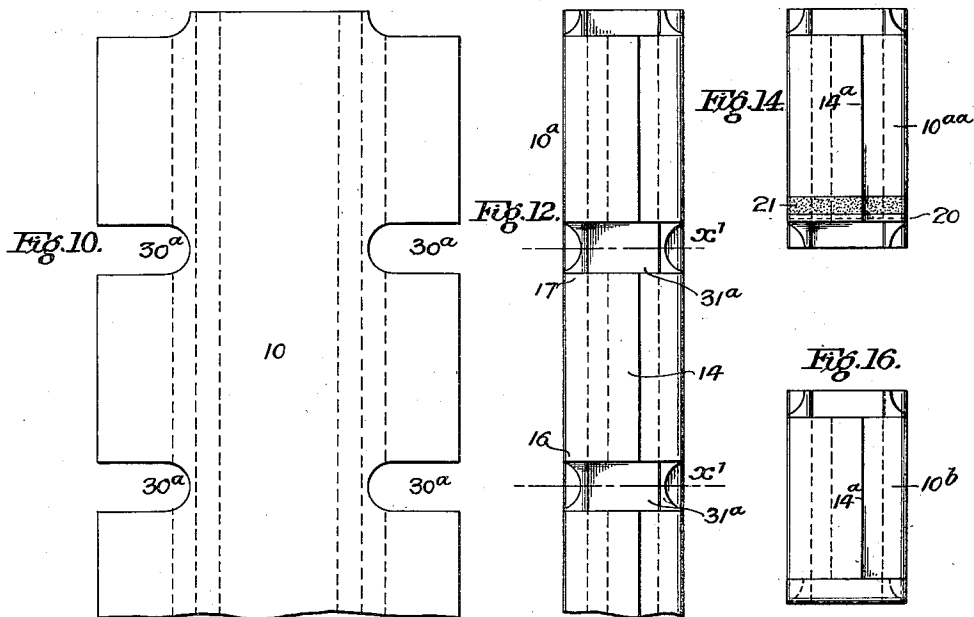
T. M. ROYAL

1,988,462

MANUFACTURE OF BAGS

Filed March 10, 1932

2 Sheets-Sheet 2



INVENTOR.

Thomas M. Royal
BY Murray B. Boye
ATTORNEY.

UNITED STATES PATENT OFFICE

1,988,462

MANUFACTURE OF BAGS

Thomas M. Royal, Philadelphia, Pa.

Application March 10, 1932, Serial No. 597,950

7 Claims. (Cl. 93—35)

My invention relates to a novel method of making bags from paper, "cellophane", glassine, and other similar material, and to an improved bag which results from the carrying out of my novel method.

My method, broadly speaking, comprises the formation of a plurality of transverse openings spaced lengthwise of a web of bag forming material in regular order; formation of such apertured web into a tube after the formation of the openings, the openings in the web having been so positioned that they occur but in one face only of the tube; severing the tube transversely thereof on a line adjacent to or through the openings and in a straight line to form bag blanks; folding one end of each blank upon itself; and applying adhesive in such position that it will contact with the inner side of the opposite wall of the blank through said openings.

With this method I form a bag, in which I am not only able to sever the tube into bag blanks by cuts along a straight line, but also to provide a bag having at its open end a notch which facilitates its use.

Heretofore in making bags it has been customary to first form a tube from a web of unperforated bag material, then to sever the tube into bag blanks, and thereafter to form the bag proper.

In order to make a bag having a closed end or bottom in which it is not necessary to fold one end of the tube more than once and thus save the material which would be wasted were the double fold used, it has been customary to sever one face of the tube in a substantially semicircular line, the arc of which is transversely of the bag, and to fold over the face of the bag having the concave cut therein against itself and paste the opposite face, through the opening provided by such cut against the wall in which such cut has been made. The opposite portion of the bag presenting the convex cut is at the open end of the bag and provides means for readily opening the bag to insert its contents.

No successful means heretofore have been devised for making a smooth, semicircular cut, and the edge of the cut has been serrated. This serrated edge is particularly undesirable in bags made of such materials as "cellophane" or glassine, as the serrated edge permits ready tearing of the bag when opening or filling it.

It is an object of my invention to provide a method of making a bag in which I may, while preserving the advantages of the single fold for closing the bottom of the bag, eliminate at the

open end the serrated edge with its attendant disadvantages.

A further object of my invention is to provide a method of forming bags in which, after the tube has been formed, only a transverse cut, preferably straight, is necessary in order to sever the tube into bag blanks.

Another object of my invention is to provide a novel bag having the bottom made from a single fold and in which the serrated edge is eliminated from the upper end.

Other objects and advantages will be apparent from the following specification and from the drawings, in which:

Figure 1 is a plan view of a web or ply of bag-forming material prepared for the manufacture of bags in accordance with my present invention; such web having been apertured at regular intervals transversely of the longitudinal axis of the same.

Fig. 2 is a plan view of a section of tube formed from a web of the type shown in Fig. 1.

Fig. 3 is a blank formed from the tube shown in Fig. 2.

Fig. 4 is a perspective view of the bottom end of a bag made from a blank of the type shown in Fig. 3, before the same is finally folded.

Fig. 5 is a plan view of a flat bag made from the blank shown in Fig. 3.

Fig. 6 is a fragmentary sectional view taken on the line VI—VI, Fig. 5.

Figs. 7 and 8 are views similar to Fig. 2, illustrating tubes made from webs with modified forms of apertures for use in the making of bags in accordance with my invention.

Fig. 9 is a plan view of a further modification, showing a web of bag-forming material with notches or indentations in the marginal edges of the same.

Fig. 10 is a similar view, showing a web which may be used for making bags of the square or bellows-folded type.

Figs. 11 and 12 are plan views of tubes formed from the webs shown in Figs. 9 and 10.

Figs. 13 and 14 are views of blanks formed from the respective tubes shown in Figs. 11 and 12, and

Figs. 15 and 16 are views of finished bags made from blanks such as shown in Figs. 13 and 14.

The accompanying drawings, illustrating various modifications or embodiments of my invention, are illustrative only, and it will be apparent from the following description that various modifications may be made in the embodiments illus-

trated without departing from the spirit of the invention.

In carrying out my invention a web of bag-forming material, such as paper, "cellophane", or the like may be used. If a flat bag is to be made the web may have a width slightly greater than twice the desired width of the bag so that edges of the web may be properly overlapped and connected to form a tube. If a square or other shaped bag is desired the width of the web may be suitably proportioned. Such a web may have a plurality of sets of openings formed therein, and disposed transversely of the web. Such openings may be of the types indicated in Figs. 1, 2, 7, or 8, or of any other preferred and suitable shape.

Referring particularly to Figs. 1 and 2, illustrating one type of opening in a web and tube suitably shaped for forming the flat bag illustrated in Fig. 5, the portion of the web illustrated at 10 is part of a continuous section which may be developed into blanks, subsequently formed into bags which may have a greater length than width; the width of the web being greater than twice the width of the bags to be formed by the amount of the margin indicated at 11. Openings 12, transversely arranged, may be, with the exception of one, 12^a, of substantially similar size and shape and preferably with portions of each aligned along a cutting line *x* normal to the edge of the web and along which the tube 10^a formed from the web is severed to form bag blanks. It is not essential that the openings 12 and 12^a be in alignment, but only that the openings 12 be formed in the portion of the web which will be the folded bottom end of one face of the bag blank.

The exceptional opening 12^a is preferably larger than the remaining openings 12, and extends across the cutting line *x*. The lower portion 12^b of the opening 12^a, after the bags are formed from the severed blanks will, therefore be adjacent the open end of a succeeding bag and will serve as means for facilitating opening of the bag; permitting engagement of the end of the opposite wall by the thumb and finger. There will be many instances where it is not desirable or necessary that there be a notch in the top of the bag and in such cases the opening 12^a need not cross the cutting line *x* and may be identical in size and shape with the openings 12.

Numerous types of seams may be provided in the web to form blanks. If, for instance, a tube is formed as indicated in Fig. 2, with a seam 14 at one edge of the same, the openings, with the exception of the opening 12^c formed in the margin 11, should all be formed on one side of the median line of the web exclusive of such margin. If, however, the bag is formed with a seam along or adjacent to the median line of the bag, the openings should be centered from the median line. Obviously, the seam may be formed in other places in which event the openings should be positioned in other portions of the bag, so that such openings, when the web is formed into a tube, will be in one face only of the tube as clearly indicated in the drawings. Means for forming the openings are not within the purview of my present invention since the openings may be formed by hand or punched or cut with any well known and suitable type of machinery, and such operation is performed before the web 10 is fed to the bag-making machine.

After the formation of an apertured web, in accordance with the above-described method, such web is formed into a tube, as by any of the

well known and suitable tube forming mechanism associated with bag-making machines, or such tube may be made by hand by attaching the margin 11 of the web to the opposite margin thereof by adhesives to form a seam 14, as shown in Fig. 2. As previously pointed out, the seam may be located at any desired portion of the tube transversely of its width, provided care is taken that the openings 12 are located so that they occur substantially across one face of the tube and do not appear in the other face.

Upon completing the formation of the tube, it may be severed into blanks along the cutting lines *x*, indicated in Fig. 2, and the portion of the tube indicated at 16 will then form the bottom of one bag and the portion indicated at 17 forms the top of the preceding second bag. Thus the lower part 12^b of the opening 12^a will form a notch in the open end of one bag and the upper part of the opening 12^a will form part of the means permitting formation of the bottom of another.

It will be noted that the severing line is straight; is substantially at right angles to the longitudinal edges of the tube, and that the tube is cut through completely. By cutting completely through the tube I may make the cutting line straight and am thus enabled to use well known means for cutting the tube in a straight line and thus provide a smooth end instead of the serrated end which was heretofore common, and apparently necessary, in making bags having a single fold at the bottom.

After the tube has been severed into bag blanks, the blanks are passed to bottoming mechanism where they are folded along the line 20; adhesive having been previously applied as at 21, so that the portion of the bottom of the bag blank having the openings 12 therein, when folded along the line 20, will come into contact with the adhesive. It will be apparent that a portion of the adhesive will adhere to the bottom portion at the side of the bag, and other parts of adhesive will pass through the openings 12 and 12^a and into contact with the wall 23 on the opposite side of the bag and thus cause not only one wall to be firmly affixed to itself after the bottom portion has been folded but the opposite wall to be similarly affixed to it so that the bag will have a substantial and tight bottom.

It is within the purview of my invention that openings other than the square ones indicated in Fig. 1 may be formed in the web from which the tubes are produced. For example, round or semi-circular openings such as are indicated in Fig. 7, or diamond-shaped openings such as are indicated in Fig. 8, may readily be used. In these drawings the reference characters refer to parts similar to those shown in Figs. 1 to 5, inclusive. Obviously, these openings, like the openings shown in Figs. 1 and 2, should be so located that they will appear in one face only of the tube from which the bag is to be manufactured.

A further embodiment of my invention is shown in Figs. 9 to 16, inclusive. In this embodiment notches are formed transversely of the web at the edges thereof instead of a plurality of openings (shown in preceding figures) in alignment. As shown in Fig. 9, the web is formed with notches 30 at the sides thereof and substantially aligned along a cutting line *x'* normal to the edge of the bag. As indicated, the cutting line *x'* is substantially the median line of the opening, although this may be readily varied somewhat to make the opening at the bottom or indentation at the top of greater or less size as desired. These notches,

when the web is formed into a tube, unite to form single openings 31, as clearly shown in Fig. 11.

Fig. 11 illustrates a tube formed from a web of the type indicated in Fig. 9. As shown, it illustrates a modification which might be equally well applied to a tube formed with the openings of the type or character shown in Figs. 1, 2, 7 and 8, with the seam in the tube located adjacent the median line of one face of the bag, as indicated at 14^a. The position of this seam, of course, may be varied and the depth of the notches 30, in the web, on one side or other made greater or less, as may be necessary to center the opening 31 formed thereby in one face or wall of the tube as indicated in Fig. 11. This tube may be formed into bags in a manner precisely similar to the formation of bags from the tube shown in Fig. 2; a bag of such type made from a tube such as shown in Fig. 11, being illustrated in Fig. 15.

Obviously, the same principle and method of bag making may be applied to what is known in the art as square bags, from material folded to provide bellows-folded sides, as indicated in Figs. 10, 12, 14 and 16, in which the figures are substantially the same as those shown in Figs. 9, 11, 13 and 15. In view of the foregoing, the manner of forming notches or openings 30^a transversely thereof prior to the formation of the web into a tube to obtain the desired results, will be obvious.

By following the above described methods I provide a bag which has but a single fold at its bottom and thus saves considerable bag making material over the types of bags having a double fold at the bottom, and also a bag which at its upper end may be substantially straight transversely thereof and which may or may not have, as preferred, a notch to facilitate opening. I thus eliminate the serrated paper end which caused tearing in filling the bag and at the same time retain the feature of having a bag with its bottom made of a single fold of the material.

Various departures may be made from the above described embodiment of my invention without departing from the spirit and scope thereof as set forth in the following claims.

I claim:

1. The method of forming a bag which comprises forming a plurality of cutting sections at spaced intervals longitudinally of a web of bag material, forming the web into a tube having substantially flat and parallel sides, cutting the tube transversely of its length and directly adjacent one marginal edge of a plurality of said cut out sections to form bag blanks, folding one end of each blank upon itself once to form a bottom for said bag, and connecting said folded portion by adhesive applied between the fold; the transverse cuts being so positioned that a plurality of notches will be provided in the web in such a position that when the bag blank is folded upon itself to form a bottom such notches will be in one wall only of said bags whereby adhesive may contact with the other wall through said notches.

2. The method of forming a bag which comprises forming a series of groups of apertures at spaced intervals longitudinally of a web of bag material; the apertures of each group of the series being substantially along a straight line normal to the median line of the web, folding and connecting the edges of said web to form a flattened tube having said apertures in one wall only thereof, severing said tube transversely thereof adjacent one marginal edge of a plurality of said apertures to form blanks having notches at the end of one wall of the same, folding one end of each of said

blanks with the wall having the notches therein folded upon itself, and applying adhesive to said wall between the fold in such location that a portion of the adhesive will pass through said notches and come into contact with the opposite wall.

3. The method of forming a bag which comprises forming a series of groups of apertures at spaced intervals longitudinally of a web of bag material; the apertures of each group of the series being located in a predetermined portion of said web, folding and connecting the edges of said web to form a flattened tube having said apertures in one wall only thereof, severing said tube transversely thereof adjacent one marginal edge of a plurality of said apertures to form blanks having notches in one end wall of the same, folding the end of the wall having the notches therein upon itself and applying adhesive to said wall between the fold in such location that it will pass through said notches and come into contact with the opposite wall of said blank.

4. The method of forming a bag which comprises forming a series of groups of apertures at spaced intervals longitudinally of a web of bag material, folding and connecting the edges of said web to form a flattened tube having said apertures in one wall only thereof, severing said tube transversely thereof adjacent to a marginal edge of a plurality of apertures of each group to form bag blanks having notches at the end of one wall of the same, folding one end of each of said blanks upon itself with the wall having the end notches therein folded upon itself and applying adhesive to said wall between the folded portions in such location that it will pass through said end notches and come into contact with the opposite wall.

5. The method of forming a bag which comprises forming a plurality of cut out sections at spaced intervals longitudinally of a web of bag material; one of such cut out sections having an area materially larger than the others, forming the web into a tube having substantially flat and parallel sides, cutting the tube transversely of its length and directly adjacent one marginal edge of a plurality of said cut out sections and through the larger cut out section to form bag blanks, folding one end of each blank upon itself once to form a bottom for said bag, and connecting said folded portion by adhesive applied between the fold; the transverse cuts being so positioned that a plurality of notches will be provided in the web in such a position that when the bag blank is folded upon itself to form a bottom such notches will be in one wall only of said bags whereby adhesive may contact with the other wall through said notches; the larger of said cut out sections providing a notch at the open end of the preceding bag.

6. The method of forming a bag which comprises forming a series of groups of apertures at spaced intervals longitudinally of a web of bag material; the apertures of each group of the series being substantially along a straight line normal to the median line of the web and one of said apertures being materially larger than the others, folding and connecting the edges of said web to form a flattened tube having said apertures in one wall only thereof, severing said tube transversely thereof adjacent one marginal edge of a plurality of said apertures and through the larger aperture to form blanks having notches at the end of one wall of the same, folding one end of each of said blanks with the wall having the notches therein folded upon itself, and ap-

plying adhesive to said wall between the fold in such location that a portion of the adhesive will pass through said notches and come into contact with the opposite wall; the larger of said apertures providing a notch at the open end of the preceding bag.

7. The method of forming a bag which comprises forming a series of groups of apertures at spaced intervals longitudinally of a web of bag material; the apertures of each group of the series being substantially along a straight line normal to the median line of the web with a central aperture of materially greater size than the other apertures, folding and connecting the edges of said web to form a flattened tube having said

apertures in one wall only thereof, severing said tube transversely thereof adjacent one marginal edge of a plurality of said apertures and intermediate marginal edges of the larger central aperture to form blanks having notches at the end of one wall of the same, folding one end of each of said blanks with the wall having the notches therein folded upon itself, and applying adhesive to said wall between the fold in such location that a portion of the adhesive will pass through said notches and come into contact with the opposite wall; the larger central aperture providing a notch at the open end of the preceding bag.

THOMAS M. ROYAL. 15