

Nov. 24, 1936.

H. HASKELL

2,062,265

METHOD OF MAKING SEALED BAGS

Original Filed Jan. 12, 1934 2 Sheets-Sheet 1

Fig. 1.

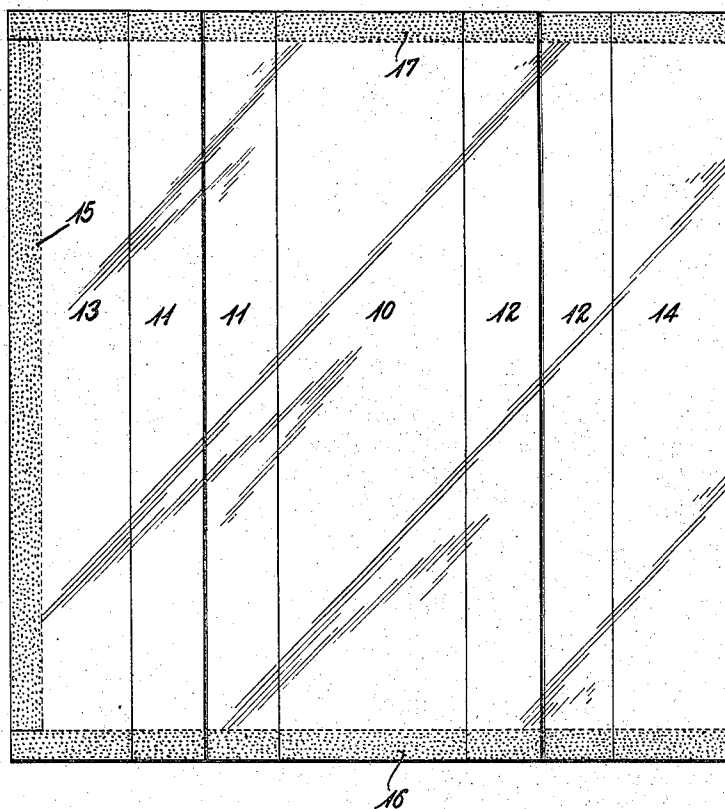


Fig. 2.

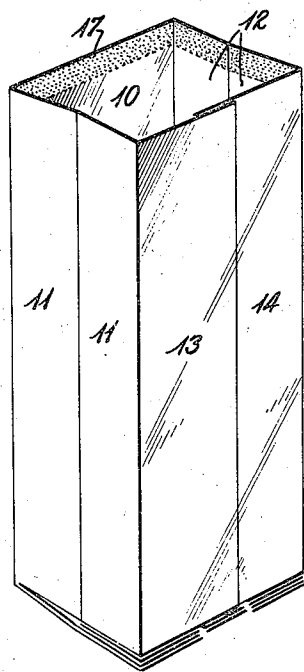
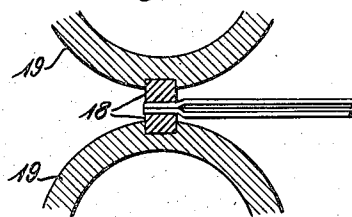


Fig. 3.



INVENTOR.

Howze Haskell

BY

Knight Bros

His ATTORNEYS

Nov. 24, 1936.

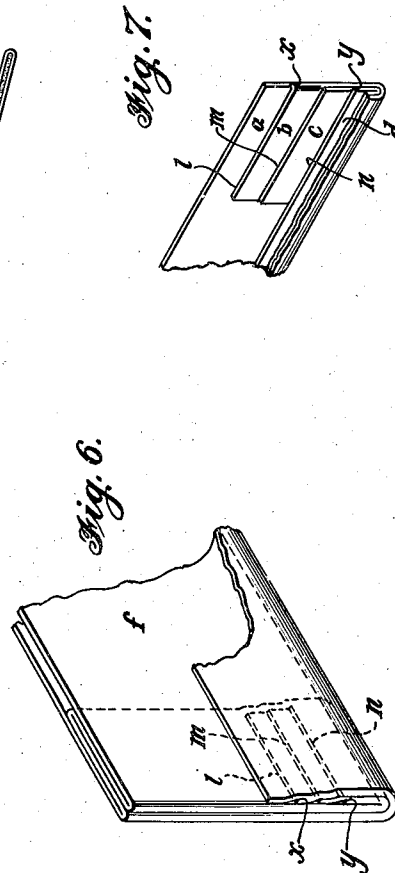
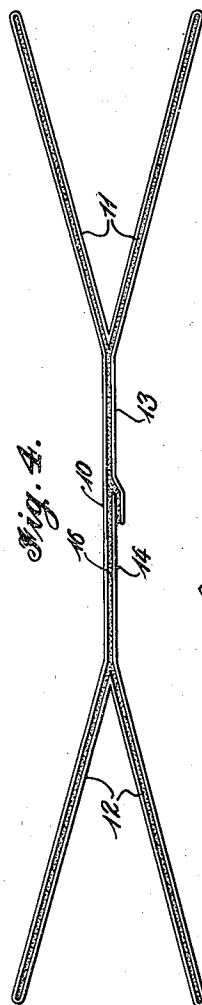
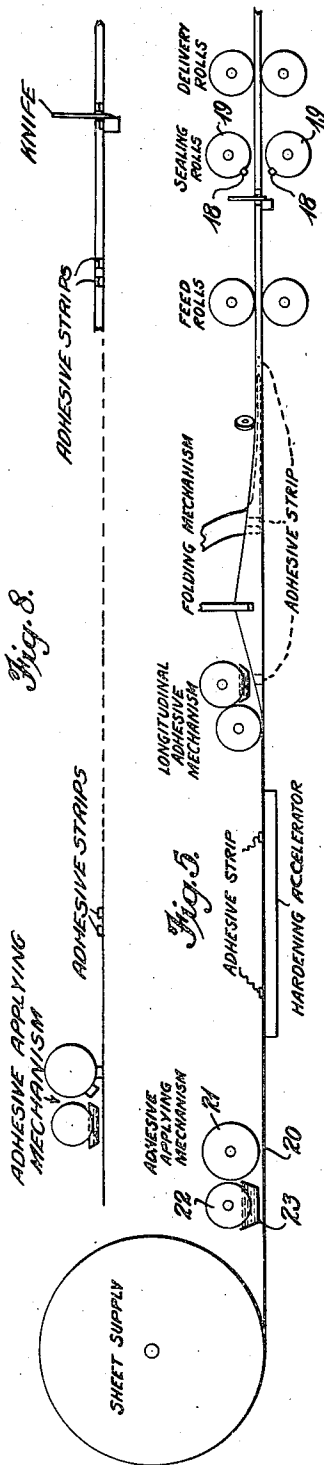
H. HASKELL

2,062,265

METHOD OF MAKING SEALED BAGS

Original Filed Jan. 12, 1934

2 Sheets-Sheet 2



INVENTOR.
Howze Haskell
 BY *Knight & Bro*
 His ATTORNEYS

UNITED STATES PATENT OFFICE

2,062,265

METHOD OF MAKING SEALED BAGS

Howze Haskell, Richmond, Va., assignor to James River Paper Products, Inc., Richmond, Va.

Original application January 12, 1934, Serial No. 706,424. Divided and this application September 22, 1934, Serial No. 745,119

4 Claims. (Cl. 93—35)

This invention relates to bags and has for its principal object to improve the closure of the bag to prevent leakage of its contents. Many schemes have been adopted to improve the tightness of closure of the bottoms and tops of bags. Some of these involve more or less complicated methods of folding the material; some only partially attain the object in view. My invention aims to make the closure perfect in a sure and simple way.

The difficulty of providing a tight closure is particularly noticeable in the square-type bags having reentrant lateral folds, since the several thicknesses of material resulting from these folds give rise to corners which are hard to seal. My invention is intended primarily to provide a perfect closure for this type of bag.

Another object is to provide a bag having a hardened adhesive at its mouth disposed in such a way that by reactivation after the bag is filled it can easily be made completely to seal the filling end of the bag.

My invention includes both a new process of bag making and a new product. The present application is a division of my co-pending application, Serial No. 706,424, filed January 12, 1934, which covers the bag as an article of manufacture.

The invention will be described in greater detail with reference to the accompanying drawings, in which

Fig. 1 is an elevation of a blank of sheet material from which a bag in accordance with my invention can be made;

Fig. 2 is a perspective view of a finished bag, open and ready to be filled;

Fig. 3 is a detail view of a sealing device which may be employed;

Fig. 4 is an end view of a bag made in accordance with the invention, after the end has been sealed;

Fig. 5 is a diagrammatic view illustrating a series of steps which may be followed in making bags in accordance with my invention;

Fig. 6 is a fragmentary perspective view of one corner of the bottom of a bag made according to the prior art;

Fig. 7 is a similar view of the rear side of the bottom flap of such a bag; and

Fig. 8 is a diagrammatic view similar to Fig. 5, showing a slight modification.

In making square-type bags by forming sheet material into a tube with reentrant lateral folds, cutting the tube into lengths, folding over a flap at one end of each length, and pasting the flap

to the wall of the tube, it is customary to cut off the ends of the front and rear walls and of the reentrant lateral folds at different lengths, so that when the end of the tube is folded over and pasted against one wall of a tube there will be a surface at the end of each of the front and rear walls and at the ends of the reentrant folds to be pasted against the wall of the tube. Figs. 6 and 7 illustrate this type of closure. The surfaces *a*, *b*, *c* and *d* are, respectively, the ends of the front wall, the reentrant folds, and the rear wall. In pasting the surfaces *a*, *b*, *c*, and *d* to the wall *f* of the tube either these surfaces or the wall *f* are coated with an adhesive and then the surfaces *a*, *b*, *c*, and *d* are pressed against the wall *f*. In either case the adhesive applied to the surface *a* stops at the line *l*, the adhesive applied to the surface *b* stops at the line *m*, and the adhesive applied to the surface *c* stops at the line *n*. There is therefore direct communication between the interior of the bag and the inside of the reentrant folds as far as the lines *l* and *n*. At the corners *x* and *y* there is very little standing in the way of material attempting to escape from the bag, which becomes a serious defect when the bag is filled with materials having a strong tendency to sift or leak out. If the seal is not made perfect in the beginning the corners *x* and *y* are open from the start. Even if the seal is perfect at first it is nevertheless highly vulnerable, because there is no adhesive on the faces *a* and *c* below the lines *l* and *n* and the slightest separation of the faces *a* and *c* at these lines opens the corners *x* and *y*. Furthermore, the face *d* being necessarily of the same width as the wall *f*, the slightest inaccuracy in the folding over of the bottom flap brings the corner on one side or the other of the bag beyond the wall *f* and leaves it unsealed.

The thickness of the paper is much exaggerated in Figs. 6 and 7 and it is not intended to convey the impression that there is any such gap at the corners *x* and *y* as these figures indicate. They are shown on this scale only in order to enable the parts of the bag to be distinguished and the danger spots pointed out.

My invention overcomes these defects by providing a strip of adhesive inside of the end of the bag which secures the inner surfaces of the front and rear walls of the bag to each other and to the inner surfaces of the reentrant folds. This is shown most clearly in Fig. 4. Between the inner faces of the front wall 10 and the rear wall 13, 14 is a line of adhesive 16. This line of adhesive extends outward between the inner surfaces

of the front and rear walls and the reentrant folds 12. The result is that the tube is closed by an adhesive "cork", which serves both to secure the surfaces at the end of the bag together and to plug the end of the bag.

The bag may be made up from a blank such as shown in Fig. 1. This blank is folded along the longitudinal lines indicated, to form a front wall 10, reentrant folds 11 and 12, and a rear wall composed of the flaps 13 and 14. The latter flaps are joined by a longitudinal strip of adhesive 15. Before the blank is folded a transverse strip of adhesive 16 is applied across the bottom end of the blank, and if the bag is to be capable of being sealed after filling, in accordance with another feature of my invention, another transverse strip 17 may be applied across the top end. The adhesive used for the transverse strips 16 and 17 should be of a rapidly hardening type, if the bags are to be made at high speed from a long strip of sheet material, so that they will be hardened before the sheet is folded. After the sheet has been folded into a tube and the longitudinal seam pasted, the end of the tube which is to form the bottom of the bag, and which bears the strip of adhesive 16, is sealed by reactivating the adhesive 16 and pressing the end of the bag. The reactivation and pressure may be accomplished simultaneously when a suitable kind of adhesive is used. For instance, if an adhesive which is made plastic by heat is used, the sealing may be performed by heated bars 18 (Fig. 3) mounted upon rollers 19. After the bottom has been sealed it may be folded over and pasted to the rear wall of the bag, in which case the finished bag, when opened out ready to be filled, will have the form shown in Fig. 2.

In the commercial manufacture of the bags the process may follow the plan illustrated in Fig. 5. In this figure the sheet material is supplied from a roll at the left end labeled "Sheet supply", from which it is drawn by the feed rolls shown near the right end of the system. As the sheet comes from the supply roll it is flat. It reaches first a mechanism for applying the transverse strips of adhesive, labeled "Adhesive applying mechanism". This may consist of a roller 21 having an applicator bar 20 extending the full width of the sheet, and a roller 22 dipping into a supply of adhesive 23 and adapted to be contacted by the bar 20 during its revolution to supply the latter with a coating of adhesive to be transferred to the sheet. A single bar 20 is shown in Fig. 5, which applies a broad transverse strip of adhesive located so as to be severed in the middle by the knife which cuts the tube into lengths, thus leaving a transverse strip of adhesive of half width upon each end of each length of tube. It is possible to have two bars 20, as shown in Fig. 8, spaced apart just far enough to leave a strip of paper between the strips of adhesive to be severed by the knife. In the process illustrated in Fig. 5, there are broad transverse strips of adhesive applied to the sheet at equal distances, whereas in the alternative process there are narrow strips of adhesive applied alternately at long and short distances apart.

After leaving the adhesive applying mechanism the sheet may travel over or through a device of any suitable kind to accelerate the hardening of the transverse strips of adhesive. The drawings show by way of example a table labeled "Hardening accelerator", which may be heated in any desired way, if the adhesive contains a

volatile thinner, or which may be chilled if the adhesive is applied hot and hardens when cooled. The sheet next comes to a mechanism for applying the adhesive to one edge to form the longitudinal seam. This mechanism is designated "Longitudinal adhesive mechanism" and may be of any of the well known kinds. Thereupon the sheet passes through the folding mechanism, which may be of the usual construction. Beyond the folding mechanism are the feed rolls which draw the tube forward and feed it to the delivery rolls. Shortly after the end of the tube has reached the delivery rolls a length is severed from it by the knife, which in Fig. 5 passes through the middle of the broad transverse strip of adhesive and in Fig. 8 passes between the two adjacent strips of adhesive. Just beyond the knife are the sealing rolls, which may be of the form shown in Fig. 3. The heated bars 18 on these rolls engage the end of the tube over the transverse strip of adhesive and press it tightly, while heating the adhesive to make it sufficiently plastic to flow into intimate contact with all of the inner surfaces of the end of the tube. The tube length is taken from the sealing rolls by the delivery rolls. Any known mechanism may be employed to fold over the bottom flap of the tube after it has been sealed. The folding over of the bottom and the sealing may also be carried out simultaneously. I have not gone into detail with reference to the sealing mechanism, but have merely shown more or less diagrammatically one device which might be used, since this application relates to the process and the product and does not cover any particular machine.

Any desired means may be employed to seal the top of the bag after it has been filled. When sealed it will have the same form as the bottom of the bag shown in Fig. 4.

When made of suitable sheet material bags in accordance with my invention are adapted to hold many commodities which have not been packed in bags heretofore because they would leak out. For example, by using grease-proof sheet material, such as regenerated cellulose sheeting, these bags can be used for packing various greasy commodities which have heretofore required tin packages.

Having described my invention,

I claim:

1. The process of making a bag from sheet material, which comprises applying to the sheet at intervals transverse strips of an adhesive adapted to harden rapidly, the intervals between said strips of adhesive being alternately relatively long and short; applying a strip of adhesive adjacent a longitudinal edge of said sheet; after said transverse strips of adhesive have hardened, folding said sheet into a tube with said transverse strips of adhesive on the inside; sealing said longitudinal strip of adhesive; severing the tube between the relatively close transverse strips of adhesive; and reactivating and sealing each alternate one of said transverse strips of adhesive, thereby forming an impervious closure of one end of each severed section of tube and leaving the other end with an inner sealing ring to be sealed after the bag is filled.

2. In the process of making a bag from sheet material by folding the sheet to form a tube with the edges of the sheet overlapping and joined by a longitudinal seam of adhesive, severing the tube into sections, and closing one end of each section to form the bottom of the bag; the improvement which comprises applying to the

sheet, before it is folded, discrete transverse strips of a rapidly hardening adhesive, said transverse strips being continuous across the complete width of the sheet and on only one side of the sheet; and located so as to form complete rings of adhesive inside of said tube adjacent each end of each tube section; then hardening said adhesive strips; the folding of each part of said tube bearing a transverse strip of adhesive being carried out after the transverse strip of adhesive thereon has hardened; and thereafter reactivating the transverse strip of adhesive located at the end of each tube section which is to form the bottom of the bag and sealing the same by pressing on opposite sides of the tube while it is in flat condition; the transverse strip of adhesive at the other end of each tube section being left unsealed and being adapted to be sealed after the bag is filled, to form an impervious closure.

3. In the process of making a bag from sheet material by folding the sheet to form a bellows fold tube with the edges of the sheet overlapping and joined by a longitudinal seam of adhesive, severing the tube into sections, and closing one end of each section to form the bottom of the bag; the improvement which comprises applying to the sheet, before it is folded, discrete transverse strips of a rapidly hardening adhesive, said transverse strips being continuous across the complete width of the sheet and on only one side of the sheet, and located so as to form complete rings of adhesive inside of said tube adjacent each end of each tube section; then hardening said adhesive strips; the folding of each part of said tube bearing a transverse strip of adhesive being carried out after the transverse strip of adhesive thereon has hardened; and thereafter reactivating the transverse strip of

adhesive located at the end of each tube section which is to form the bottom of the bag and sealing the same by pressing on opposite sides of the tube while it is in flat condition with its bellows folds folded inward; the transverse strip of adhesive at the other end of each tube section being left unsealed and being adapted to be sealed after the bag is filled, to form an impervious closure.

4. In the process of making a bag from sheet material by folding the sheet to form a tube with the edges of the sheet overlapping and joined by a longitudinal seam of adhesive, severing the tube into sections, and closing one end of each section to form the bottom of the bag; the improvement which comprises applying to the sheet, before it is folded, discrete transverse strips of a rapidly hardening adhesive, said transverse strips being continuous across the complete width of the sheet and on only one side of the sheet, and located so as to form complete rings of adhesive inside of said tube adjacent each end of each tube section; then hardening said adhesive strips; the application of the longitudinal seam of adhesive and the folding of each part of said tube bearing a transverse strip of adhesive being carried out after the transverse strip of adhesive thereon has hardened; and thereafter reactivating the transverse strip of adhesive located at the end of each tube section which is to form the bottom of the bag and sealing the same by pressing on opposite sides of the tube while it is in flat condition; the transverse strip of adhesive at the other end of each tube section being left unsealed and being adapted to be sealed after the bag is filled, to form an impervious closure.

HOWZE HASKELL. 40