Nov. 27, 1951 W. A. SCHOEN 2,576,542

METHOD OF PRODUCING SEALED BAGS

Filed March 22, 1948 2 SHEETS—SHEET 1

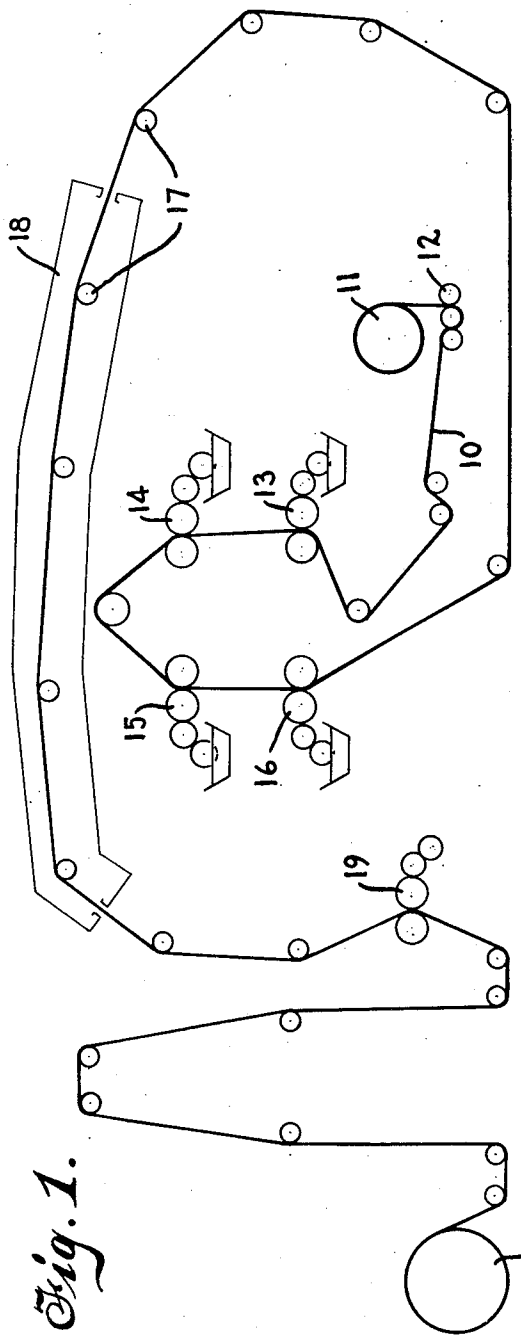


Fig. 1.

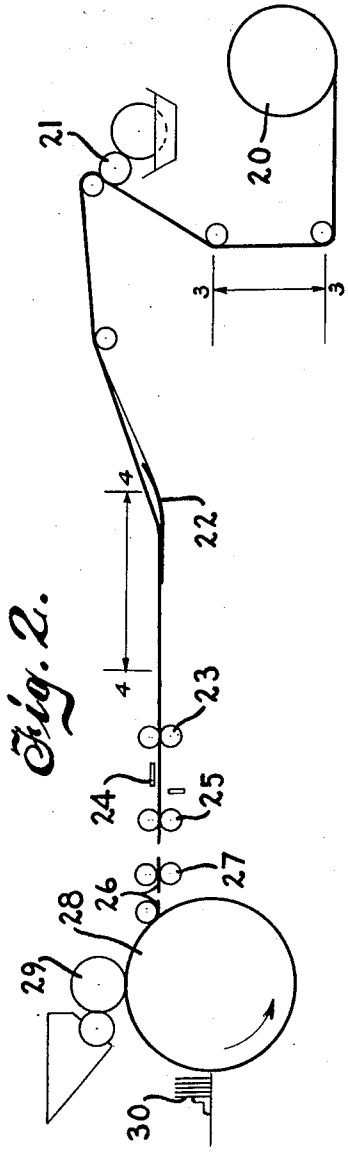


Fig. 2.

INVENTOR.
W. A. Schoen
BY
Lieber & Lieber
ATTORNEYS.

Nov. 27, 1951 W. A. SCHOEN 2,576,542

METHOD OF PRODUCING SEALED BAGS

Filed March 22, 1948 2 SHEETS—SHEET 2

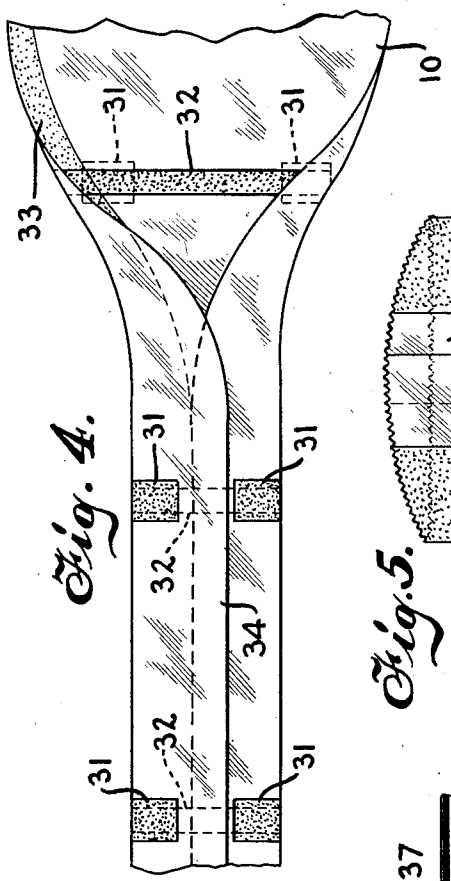


Fig. 4.

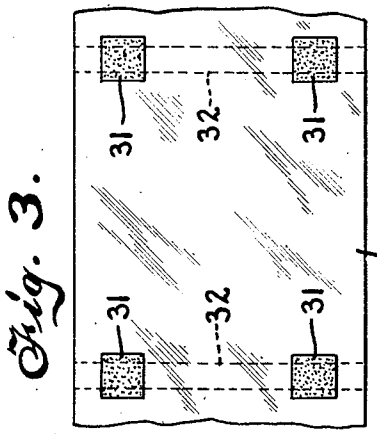


Fig. 3.

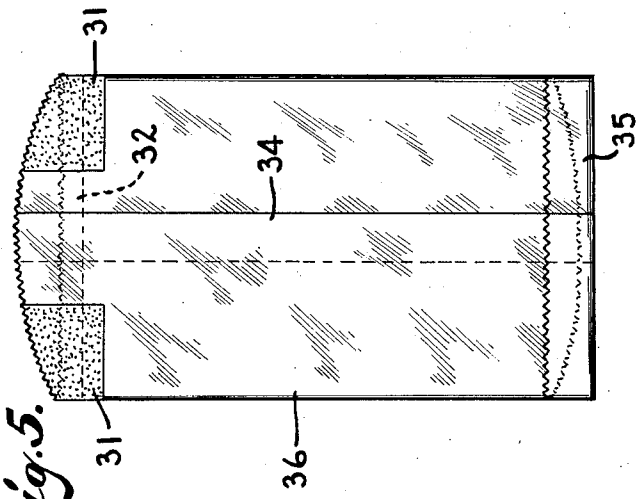


Fig. 5.

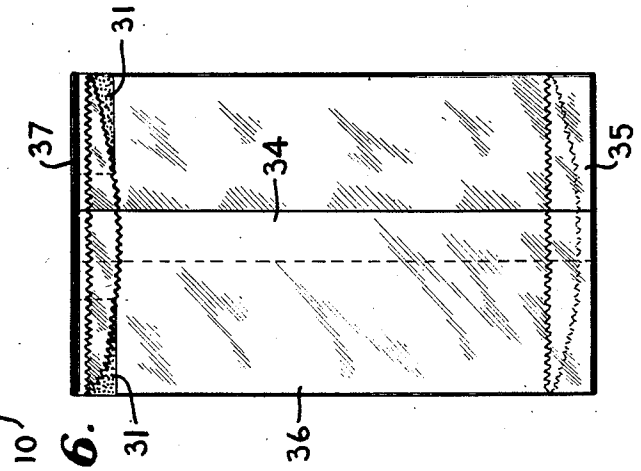


Fig. 6.

INVENTOR.
W. A. Schoen
BY
Lieber & Lieber
ATTORNEYS.

Patented Nov. 27, 1951

2,576,542

UNITED STATES PATENT OFFICE

2,576,542

METHOD OF PRODUCING SEALED BAGS

Walter A. Schoen, Milwaukee, Wis., assignor to Milprint, Inc., Milwaukee, Wis., a corporation of Wisconsin

Application March 22, 1948, Serial No. 16,333

3 Claims. (Cl. 93—3)

1

My present invention relates generally to improvements in the art of manufacturing bags or bag-like receptacles and relates more particularly to an improved sealed bag provided with an external end pocket and to an improved method of and apparatus for producing the improved structures.

A primary object of the invention is to provide an improved commodity receiving bag which is extremely simple and durable in construction and which may be quickly and easily produced and effectively sealed in accordance with an improved method.

It has heretofore been proposed to provide a sealed commodity receiving bag formed with an external pocket in one end thereof providing a convenient means for easily applying the bag to a hook upon a display rack in stores or the like where the commodities are merchandised. Since the commodities thus packaged are frequently edible food products, it is desirable to provide these bags with seals which are as tight and durable as possible. Furthermore, these bags are generally sold in large lots and in empty unsealed condition by the bag manufacturer to the producer of the commodity who performs the final packaging and sealing operation, and it is therefore also desirable to provide bags of unitary construction which may be readily and effectively sealed in a simple manner by novices without need for special expensive equipment. One of the more successful bags of this general type heretofore proposed has an external pocket formed directly in the sealed bottom end of the bag between the folded back end portion or bottom closure flap and the bag itself, the sealing being performed by application of heat and pressure to the folded end portion while a medial portion of the end flap is maintained separated or spaced from the adjacent outer wall of the bag by a special tongue or the like to form the pocket. However, although commodity receiving bags of this type have enjoyed some commercial success, it has heretofore been found necessary to employ special relatively expensive equipment for the heat-sealing operation of the end closure of the bags in order to provide a suitable external pocket, since it was necessary in the prior structures to maintain the pocket-forming portion of the flap entirely separated from the adjacent bag wall during the sealing operation. Furthermore, this use of special equipment required considerable care by more or less experienced operators of heat sealing devices to insure proper placement of the separating tongue,

2

and the operation was accordingly time-consuming, tedious and expensive.

It is therefore a more specific object of the present invention to provide an improved commodity receiving bag which may be readily provided with an external pocket in a heat-sealed end thereof in accordance with an improved method of production which obviates the disadvantages of prior methods.

Another specific object of my invention is to provide an improved method of producing a sealed commodity receiving bag having an external end pocket which may be provided simultaneously with the heat-sealing of the bag end without requiring the use of special equipment.

Another specific object of this invention is to provide an improved bag which may be readily manufactured in large quantities and at minimum cost in accordance with my present method, and which may be quickly and easily filled with a desired commodity and heat-sealed by a novice with an external hook-receiving pocket being automatically provided at the sealed end during the sealing operation without necessitating separation of the end flap from the adjacent bag wall.

A further specific object of my present invention is to provide an improved unitary heat sealed commodity receiving bag having an external end pocket and a method of economically and rapidly producing the same from a web of sheet material with a minimum number of simple operations.

An additional specific object of the present invention is to provide improved simple and highly efficient apparatus for effecting automatic utilization of the present bag producing method, and for manufacturing the improved bags in an expeditious and reliable manner.

These and other specific objects and advantages of the invention will be apparent from the following detailed description.

A clear conception of the various features constituting the present improvement and of the several steps involved in the improved method of producing the new heat-sealed bags and of typical apparatus for effecting commercial exploitation of the method, may be had by referring to the drawings accompanying and forming a part of this specification, wherein like reference characters designate the same or similar parts in the various views.

Fig. 1 is a diagrammatic side view of a portion of a typical installation adapted to accomplish the initial steps of printing and application of

heat-sealable material to the continuous web of sheet material;

Fig. 2 is a similar diagrammatic side view of the portion of the installation adapted to perform the remaining steps in producing the empty bags from the web of material;

Fig. 3 is a plan view of a fragment of the web with some of the heat-sealable material applied thereto, the view being taken in the zone marked 3—3 in Fig. 2;

Fig. 4 is a similar plan view of a fragment of the web as it passes the tube former, the view being taken in the zone marked 4—4 in Fig. 2;

Fig. 5 is a plan view of one of the completed empty bags produced by the apparatus shown in Figs. 1 and 2 in accordance with the improved method; and

Fig. 6 likewise is a plan view of one of the completed bags, showing the same in final completely sealed condition after insertion of the commodity.

While the improvements have been specifically shown and described herein as being advantageously applicable in the production of flat commodity receiving bags of a particular type having portions thereof coated with thermoplastic and sealed by application of heat and pressure and with the external pocket formed in the top end portion thereof, it is not my desire or intention to thereby unnecessarily limit the scope or utility of the invention; since the improvements might be advantageously applied to bags of other types and other forms of sealing materials may also be utilized with provision being made for the pocket at either or both ends of the bag.

In accordance with my present improved method of producing the new bags, I initially print and apply local laterally-spaced spots of adhesive such as thermoplastic to one face of a continuous ribbon or web of relatively thin and flexible sheet stock. Then, I dry the continuously moving ribbon by subjecting the same to a controlled heat and apply transverse strips of thermoplastic material to the opposite surface of the ribbon at approximately the same areas as the local thermoplastic spots, after which the ribbon may be rolled up. Next, the roll of initially printed and thermoplasticized sheet material is reversed and a longitudinal adhesive strip is continuously applied to an edge portion of the ribbon which may then be folded over to form a tube and simultaneously sealed along the overlapping longitudinal edge portion thereof. Thereafter, the tube may be severed into the desired lengths in proximity to the thermoplastic transverse strips and local spaced spots so that these strips and spots are located at one open end of each tube length or section. Finally, transverse strips of glue or thermoplastic may be applied to the end of each of the tubular sections remote from the initially applied thermoplastic spots and strips, and this remote tube end may then be folded and sealed to provide a closed bottom for the completed empty bag. After subsequent insertion of the commodity within the bag, the open end, having an inner transverse strip and adjacent outer local spots of thermoplastic, need merely to be folded over upon the adjacent bag wall and heat and pressure applied thereto to seal the same and simultaneously provide a pocket between the spots of laterally spaced thermoplastic and the fold and outer adjacent surface of the bag wall.

In carrying on commercial exploitation of my

improved bag producing method, an installation substantially as shown diagrammatically in the drawings may preferably be utilized to rapidly, automatically and effectively construct the successive bags, illustrated herein as being of a particular type on which indicia is printed in three different colors. Referring particularly to Figs. 1 and 2 of the drawings, the initial thin and flexible ribbon 10 of any suitable relatively durable sheet stock may be supplied from a rotatably supported roll 11 from which the ribbon 10 may be continuously withdrawn by a set of draw rolls 12 and printed successively on one side thereof with indicia of different colors by the respective sets of printing rolls 13, 14, 15, with local laterally-spaced spots of thermoplastic or other adhesive being applied to the same side of the ribbon by a set of rolls 16. To dry the printed material and the adhesive spots in a fairly rapid manner and within a confined space, the ribbon 10 may be continuously advanced over a series of rollers 17 or the like through an oven 18 wherein the advancing ribbon is subjected to a controlled heat; and after leaving the oven 18, the ribbon 10 is supplied with transverse strips of thermoplastic or other adhesive on the opposite side thereof and at approximately the same areas as the thermoplastic spots by means of rolls 19, the ribbon 10 then being rolled up as indicated at 20. The roll 20 of initially printed and thermoplastized sheet material may then be reversed as shown in Fig. 2 and continuously supplied to a center seam glue wheel 21 where a longitudinal adhesive strip is applied to an edge portion of the ribbon 10, the ribbon being drawn over a tube-forming unit 22 by a set of draw rolls 23 for conversion into a constantly advancing flat tube having a longitudinal glued seam at the overlapped ribbon stock edges. The tube may thereafter be continuously drawn past a cut-off knife assembly 24 by another set of draw rolls 25, the knives 24 severing the continuous tube into successive tube sections 26 in proximity to the thermoplastic inner transverse strips and the exterior local laterally-spaced spots so that these strips and spots are located at one open end of each tube section 26. The successive tube sections 26 are then delivered by a set of accelerating rolls 27 from the severing zone to the upper rear portion of the periphery of a rotating bag blank conveying and bottom forming clamp cylinder or rotor 28 having a bottom adhesive-applying and tucker cylinder 29 associated therewith, the cylinder 29 functioning to apply transverse strips of glue or thermoplastic to the end of each tubular section 26 remote from the initially applied thermoplastic spots and strips and folding and sealing such end to provide a closed bottom for each of the completed empty bags which are finally successively stacked as at 30.

During normal operation of the bag producing equipment hereinabove described, the draw rolls 12 are operating to constantly withdraw flat ribbon stock 10 from the supply roll 11, the successive printing rolls 13, 14, 15 are functioning to apply colored indicia to one side of the advancing ribbon, and the roll 16 is functioning to apply local laterally spaced spots of adhesive to the same side of the ribbon 10 as the printed indicia, these local spots being illustrated on the ribbon 10 by means of numerals 31 in Fig. 3. The printed material and adhesive spots 31 are thereafter dried while the ribbon 10 is subjected to controlled heat as it is continuously advanced

through the oven 18; and the roll 19 functions to apply transverse strips of adhesive, illustrated by means of numerals 32 in Fig. 3, to the opposite side of the dried ribbon 10 at approximately the same areas as the thermoplastic spots 31. The ribbon is then reversed on the roll 20 and the roll or wheel 21 functions to continuously apply an adhesive strip, shown at 33 in Fig. 4, to a longitudinal side edge portion of the advancing ribbon, while the forming unit 22 folds the ribbon 10, as it is drawn therethrough by the rolls 23, and converts the same to a continuous elongated flat tube having a central seam 34, as illustrated in Fig. 4, the local thermoplastic spots 31 being located on the exterior surface of the tube and the thermoplastic strips 32 being located interiorly of the tube by virtue of the reversal of the ribbon 10. The knives 24, herein illustrated as producing a serrated cut, sever the tube into sections 26 as it is drawn by the rolls 25 past the knives, the tube being severed in proximity of the thermoplastic spots 31 and transverse strips 32 so that each tubular section 26 is provided, at one open end thereof, with a pair of these exterior laterally-spaced adhesive spots 31 and an adjacent interior transverse adhesive strip 32 as shown in Fig. 5. The tube sections are then successively supplied by the rolls 27 in an accelerated manner to the cylinder 28 where the roll or cylinder 29 functions to apply adhesive and fold and seal the opposite end of each section 26 as shown at 35 in Figs. 5 and 6, thus completing the empty bags which may be stacked as shown at 30 in Fig. 2.

It is apparent that the improved bag producing method may thus be carried on continuously, efficiently and automatically with the aid of relatively simple equipment to rapidly and successively provide improved bags 36, such as shown in Fig. 5, which may be quickly and easily supplied with a commodity and finally effectively sealed at the open end thereof by a novice by merely folding the end portion, as at 37 in Fig. 6, and applying heat and pressure entirely across the folded portion, thereby providing a sealed end having an external pocket formed between the fold and the adjacent bag wall and between the laterally spaced adhesive spots 31. The improved bag 36 comprises, in general, a flat tubular body having a longitudinal adhesively-united seam 34, one end of the tubular body being sealed as at 35 and the opposite end thereof being open, the open end of the tubular body being provided with external laterally-spaced spots 31 of adhesive and an internal transverse adhesive strip 32 adjacent the spots 31 so that when the open end is folded and sealed the tubular body will be closed entirely across the interior of the latter end and the folded portion of this end will be united to the exterior of the body only at laterally-spaced spots to provide an external suspension pocket.

From the foregoing detailed description, it will be apparent that my present invention provides an improved sealed bag adapted to be manufactured from relatively inexpensive stock and provided with an external pocket adjacent one or both of the sealed ends thereof to provide suspension means for the bag. The improved commodity receiving bag is extremely simple and durable in construction and may moreover be quickly and easily produced in accordance with my improved method. By utilizing the improved method in the manufacture of these bags, the speed or rate of production may be enhanced to a maximum at a minimum cost; and the apparatus diagrammatically shown and described herein is highly efficient and reliable in operation and may obviously be modified and adjusted to produce bags of various shapes and sizes. Bags manufactured in accordance with my improved method may be readily sealed with an external hook receiving end pocket being automatically formed during the sealing operation without necessity of utilizing special equipment, and these bags may therefore be quickly and easily filled with the commodity and heat-sealed by a novice. The invention has, in fact, gone into extensive and highly successful commercial use, and commercial bags produced in accordance with the method have proven very satisfactory for purposes of packing and merchandising diverse commodities. The bags may be produced in accordance with my improved method from a web of suitable sheet material in a rapid and economical manner with a minimum number of simple operations without necessitating use of positive means for separating the end flap from the adjacent bag wall during the sealing operation to form the external pocket; and the improved bags may obviously be decorated by printing or otherwise applying suitable indicia in various colors.

It should be understood that it is not desired to limit this invention to the exact steps of the method disclosed or to the precise details of construction of the bags, herein shown and described, for various modifications within the scope of the appended claims may occur to persons skilled in the art to which this invention pertains; and it is also contemplated that specific descriptive terms used herein be given the broadest possible interpretation consistent with the disclosure.

I claim:

1. The method of producing bags from a web of sheet material, which comprises, initially applying local laterally-spaced spots of heat-sealable material to one face of a continuous web of sheet stock inwardly of the side edges thereof, continuously advancing the web and applying transverse strips of heat-sealable material to the opposite face thereof and entirely thereacross at approximately the same areas as said local spots, thereafter applying a continuous adhesive strip to a longitudinal edge portion of the web and folding the web to form a tube adhesively united along the longitudinal edge portion to form a longitudinal seam and with said local spots on the exterior surface of said tube on opposite sides of the seam, severing said tube in proximity to each set of said local spots and transverse strip to provide tube sections each having a set of exterior laterally-spaced spots of heat-sealable material and an interior transverse heat-sealable strip adjacent one end thereof, closing and sealing the end of each tube section remote from said spots and strip to provide a bag, and finally supplying the bag with commodity and folding the open bag end back upon itself with said local spots located interiorly of the fold and applying heat and pressure thereto entirely across the fold to produce a seal at the transverse strip and an external suspension pocket between the local spots.

2. The method of producing bags from a web of sheet material, which comprises, initially applying local laterally-spaced spots of adhesive to one face of a continuous web of sheet stock inwardly of the side edges thereof, continuously advancing the web and applying transverse strips

of adhesive to the opposite face thereof at approximately the same areas as said local spots, thereafter forming the web into a longitudinally seamed tube with said local spots on the exterior surface thereof on opposite sides of the seam, severing said tube in proximity to each set of said local spots and transverse strip to provide tube sections each having a set of exterior laterally-spaced spots of adhesive and an interior transverse adhesive strip adjacent one end thereof, closing and sealing the end of each tube section remote from said spots and strip to provide a bag, and finally supplying the bag with commodity and folding the open bag end back upon itself with said local spots located interiorly of the fold and applying sealing pressure thereto entirely across the fold to produce a seal at the transverse strip and an external suspension pocket between the local spots.

3. The method of producing bags from a web of sheet material, which comprises, initially applying local laterally-spaced spots of adhesive to one face of a continuous web of sheet stock inwardly of the side edges thereof, continuously advancing the web and applying transverse strips of adhesive to the opposite face thereof at approximately the same areas as said local spots, thereafter forming the web into a longitudinally seamed tube with said local spots on the exterior

surface thereof on opposite sides of the seam, severing said tube in proximity to each set of said local spots and transverse strip to provide tube sections each having a set of exterior laterally-spaced spots of adhesive and an interior transverse adhesive strip adjacent one end thereof, folding the bag end containing said local spots back upon itself with said local spots located interiorly of the fold and sealing the folded end along said transverse strip and local spots, and finally closing and sealing the end of each tube section remote from said spots and strip to complete a bag.

WALTER A. SCHOEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,983,291	Haskell	Dec. 4, 1934
2,048,122	Howard	July 21, 1936
2,060,451	Steen	Nov. 10, 1936
2,146,308	Maxfield	Feb. 7, 1939
2,146,831	Maxfield	Feb. 14, 1939
2,339,304	Von Haase	Jan. 28, 1944
2,409,621	Geimer et al.	Oct. 22, 1946
2,439,584	Shumann	Apr. 13, 1948