

Nov. 20, 1956

T. E. PIAZZE

2,771,010

BAGMAKING

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2 Sheets-Sheet 1

Fig-1

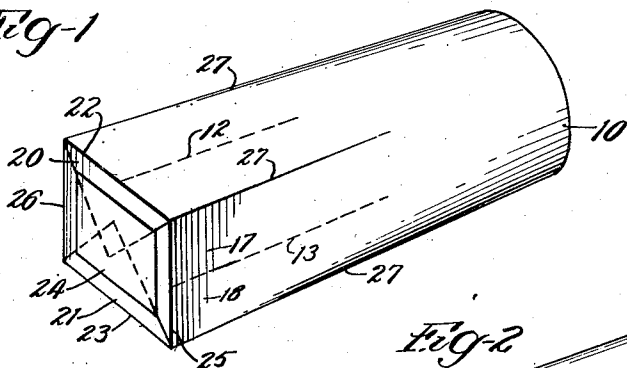


Fig-2

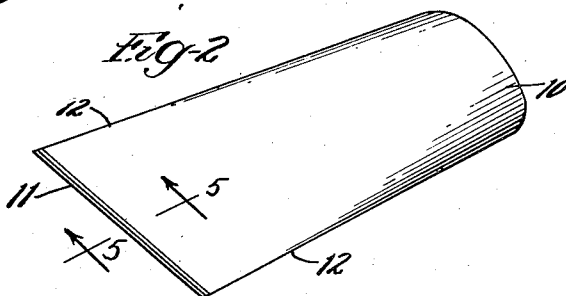


Fig-3

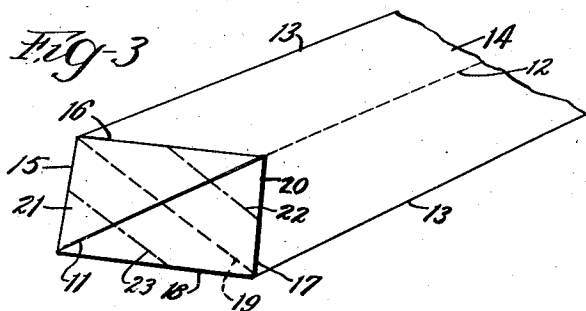
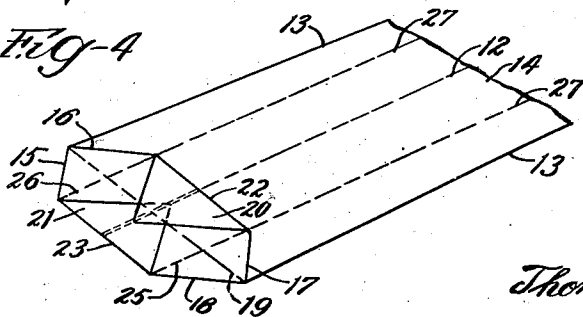


Fig-5



Fig-4



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Fig-9

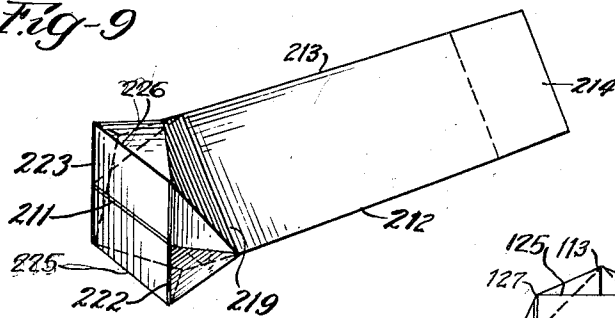


Fig-7

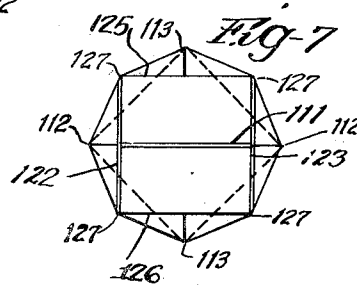


Fig-8

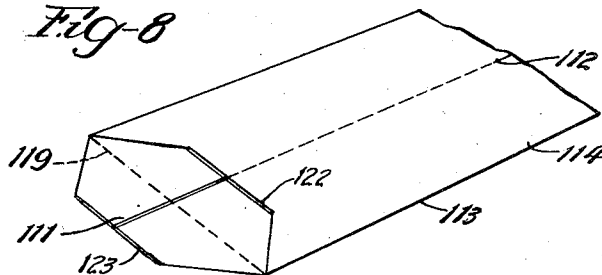
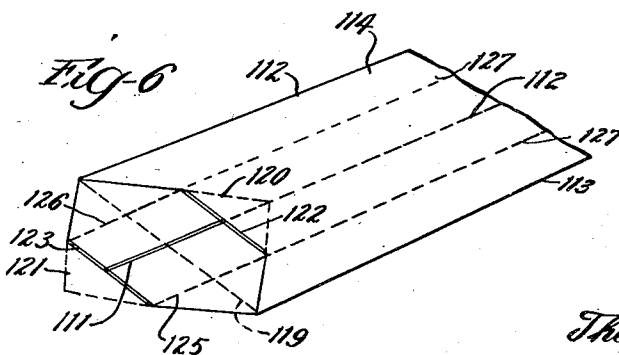


Fig-6



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2,771,010

BAGMAKING

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7 Claims. (Cl. 93—35)

This invention relates to the fabrication of bags or receptacles from flexible sheet-like wrapping materials and is more particularly concerned with the formation of a bag having a square bottom.

It is a general object of the invention to provide a bag structure and methods of forming same wherein a section of relatively flexible tubular material is closed at one end by folding and sealing operations whereby to provide therein a simple and easily opened square bottom formation.

It is a more specific object of the invention to provide a bag structure and methods of forming the same wherein a length of flattened tubular material is transversely sealed at one end and then opened up and re-folded to permit additional seals to be made in the bottom forming material whereby to provide the same with a self-opening bottom structure.

It is another object of the invention to provide a method of fabricating a bag which comprises transversely sealing one end of a length of flexible tubular material, folding the portions adjacent the transverse seal into flattened rectangular shape, then folding triangular end portions thereof along parallel transverse lines with their extremities in overlapped relation and finally securing the same to the bottom forming portions of the bag to provide the bag, when opened up, with a square bottom structure.

It is another object of the invention to provide a bag construction wherein a section of tubular material is transversely sealed across one end thereof and the adjacent end portions are folded and flattened to bring the transverse seam thus formed into a position extending longitudinally between the flattened side edges of the tubular section and centrally thereof, the triangular end portions of the flattened bottom forming members being cut transversely and sealed to provide end edges on the bottom extending at right angles to the longitudinally directed initial seam whereby when the bag is erected a square bottom is formed therein with the last mentioned seams forming opposite side edges thereof.

It is another object of the invention to provide a bag structure wherein a section of tubular material is sealed transversely at one end thereof and the end portions are thereafter folded into flattened relation with the seam extending transversely of the flattened body of the bag, triangular end portions of the bottom forming structure are severed along longitudinally extending lines and seams are opened thereon to define the side edges of a square or self-opening bottom.

It is another object of the invention to provide bag bottom structures and methods of forming the same wherein a transverse closure seam is provided by forming on one end of a section of flattened tubular material an edge seal of beadlike formation.

These and other objects of the invention will be apparent from a consideration of the bags and methods of forming the same which are shown by way of illustration in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a bag having incorporated

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therein the principal features of the invention, the bottom being in squared up condition;

Fig. 2 is a view of a section of tubular material having a transverse seam at one end which illustrates the first step in the method of forming the bag;

Figs. 3 and 4 are perspective views illustrating successive steps involved in the formation of the bag;

Fig. 5 is a cross section to an enlarged scale taken on the line 5—5 of Fig. 2;

Fig. 6 is a perspective view of a modified form of the bag;

Fig. 7 is a bottom view of the bag shown in Fig. 6;

Fig. 8 is a perspective view of the bag shown in Fig. 6 in flat folded condition; and

Fig. 9 is a perspective view of another modified form of the bag.

Referring first to Figs. 1 to 5 of the drawings, the bag which is illustrated is formed from a length or section 10 (Fig. 2) of relatively flexible heat-sealable material which is in tubular form. The preferred material is extruded polyethylene seamless tubing but other material having heat sealing characteristics which permit the use of an edge seal of bead-like formation may be employed.

The first step in the formation of the bag comprises providing the section or length 10 of tubing with a transversely extending end seal 11 which is formed on the marginal edges of the tubular section 10 by subjecting a relatively narrow end area to radiant heat sufficient to melt the material and thereafter allowing the same to cool and form thereon an integral bead-like seam.

The section of material 10 having the end closed by seam 11 is then opened up and re-folded into the condition illustrated in Fig. 3. The original side edges 12 of the section 10 may be initially creased by flattening the section 10 before or during the formation of the seam 11. After the formation of seam 11 the section 10 is re-folded and the edges 12 are flattened out so that they are located, as indicated in dotted line in Fig. 3, in the longitudinal center of the flattened section, new side edges 13 being formed by flattening body portion 14 of the closed tubular section. The closed bottom portions of the tubular section 10 adjacent the transverse seal 11 are folded and flattened to provide a generally rectangular bottom forming portion defined by the edge forming fold lines 15, 16, 17 and 18, with the seam 11 extending diagonally of the squared bottom formation and longitudinally and centrally of the body 14 of the flattened tube section. In this position the seam 11 is substantially in alignment with the initial side edges. The bottom forming portions are connected to the body portion 14 along the side edges 15, 16, 17 and 18 and when the bottom portions of the material are folded and flattened as indicated, a transverse fold is formed along the line 19 in one side wall of the body portion 14.

The triangular end portions 20 and 21 formed at the opposite ends of the seal 11 are folded over toward each other on the parallel fold lines indicated at 22 and 23 to bring the extremities of the end portions 20 and 21 into overlapping relation in the center of the bottom forming portions of the bag with the triangular portions 20 and 21 completely covering the initial end seam 11. The overlapping extremities of the triangular portions 20 and 21 are then adhered together by a suitable adhesive. Alternatively they may be adhesively secured to the central bottom forming portion of the bottom structure or they may be secured together and to the bottom forming portion of the bottom structure by a patch or label 24 which may be secured to the same by a pressure sensitive adhesive or the like.

When the bag is opened up for use the bottom opens out at right angles to the longitudinal axis of the body 14 of the bag with the edge folds 22 and 23 forming one

pair of parallel side edges while the adjoining side edges are formed generally along the lines indicated at 25 and 26 with the body 14 of the bag being generally round but tending to fold and form vertical edges along the lines indicated at 27, these edges not being clearly defined due to the flexible nature of the material.

Referring to Figs. 6 to 8, there is illustrated a modified form of bag construction in which the bag is provided with a bottom formation which opens out into the generally square shape which is desired when the bag is erected for the filling operation. In fabricating this form of bag a length of seamless tubing of the same character as the tube section 10 in Fig. 2 is provided with a transversely extending seam of the same character as seam 11. The central portion of this initial seam is shown at 111 in Figs. 6 to 8. After the one end of the tube section is closed by the initial cross seam the body 114 of the closed tube section is re-folded and generally flattened to form the side edge folds 113 and to bring the initial side edge folds 112 into the longitudinal center of the body 114 with the bottom portions adjacent the transverse seam 111 flattened into the plane of the flattened body 114 along the transverse line 119. Triangular end sections 120 and 121 at the ends of the seam 111 are removed or cut away and edge or bead seals 122 and 123 are formed transversely of the initial cross seam 111 along the cut edges to complete the formation of the bottom structure of the bag. When this form of the bag is erected the bottom formation opens out at right angles to the body of the bag with one pair of parallel side edges being defined by the bead seams 122 and 123 and the other pair of side edges being defined by folding of the material generally along the lines indicated at 125 and 126. The body 114 of the bag tends to form side or corner edges along the lines indicated at 127 and the flattened edges 113 open out into the parallel side walls of the bag with the initial edges 112 being located in opened out relation in the opposite pair of side walls of the bag.

Referring to Fig. 9 of the drawings, there is illustrated a further modification of the bag in which a bottom structure is provided which includes an initial end edge seam 211 extending transversely of the body 214 of the bag and side edge seams 222 and 223 which extend at right angles across the ends of the center seam 211. This form of the bag is fabricated in the same manner as the form shown in Figs. 6 to 8 except that when the bottom seams 211, 222 and 223 are completed the bag is re-folded to bring the initial edge folds 212 of the body portion 214 back to their original position with the bottom forming portions folded flat into the plane of the body 214 of the bag about the transversely extending fold line 219. This re-folding operation repositions the bottom edge seams 211, 222 and 223 relative to the flattened body portion 214 of the bag and brings them into a position which is at right angles to the corresponding seams in the modification shown in Figs. 6 to 8. When this form of the bag is erected the bottom is square, being defined by the parallel side edge seams 222 and 223 and the adjacent folded edges 225 and 226. The body 214 of the bag tends to square up in the same manner as described with reference to the bag shown in Figs. 6 to 8.

The employment of the edge or bead seal type of seam in the fabrication of the bottom structure of the bag permits the bag to be formed with a simple bottom construction from a minimum of material. The bead type seam involves a minimum of material, permitting the bottom to be collapsed with simple folding arrangements and when properly formed provides a leak-proof bottom closure.

While specific materials and details of construction have been referred to in describing the various forms of applicant's bag construction it will be understood that other materials and other details of construction may be resorted to within the spirit of the invention.

I claim:

1. A method of fabricating a bag from preformed tubular material which is capable of having juxtaposed edges joined by a bead seam upon application of heat thereto, which method comprises transversely sealing with a bead seam one end of a length of said material, folding the length of material to bring the body thereof into flattened condition with the portions adjacent said bead seam being flattened into the plane of the flattened body portion by folding about a transverse line at right angles to said bead seam, folding triangular end portions of the bottom formation at opposite ends of said bead seam toward each other to bring end portions thereof into overlapping relation and securing said triangular end portions to each other and to the adjoining bottom forming portions of the bag.

2. A method of fabricating a bag from tubular material which is capable of having juxtaposed edges joined by a bead seam upon application of heat thereto, which method comprises transversely sealing with a bead seam one end of a length of said material, folding the length of material to bring the body thereof into flattened condition with the portions adjacent said bead seam being flattened into the plane of the flattened body portion by folding about a transverse line extending at right angles to said bead seam, folding triangular end portions of the bottom formation at opposite ends of said bead seam toward each other and securing said triangular portions to the adjoining bottom portions of the bag.

3. A method of fabricating a bag from tubular material which is capable of having juxtaposed edges joined by a bead seam upon application of heat thereto, which method comprises transversely sealing one end of a length of said material, folding the length of material to bring the body thereof into flattened condition with the portions adjacent said transverse seal being flattened into the plane of the flattened body portion by folding about a transverse line extending at right angles to said transverse seal, folding triangular end portions of the bottom formation at opposite extremities of the transverse seal toward each other to bring the same into overlying relation with intermediate portions of the bottom formation and securing said triangular portions to said bottom portions.

4. A method of fabricating a bag from tubular material which is capable of having juxtaposed edges joined by a bead seam upon application of heat thereto, which method comprises transversely sealing one end of a predetermined length of said tubular material with a bead seal, cutting off triangular portions of the material adjacent the ends of said bead seal, sealing the cut edges with a bead seal to provide spaced parallel oppositely disposed bottom side edge formations and folding the tubular material into flattened relation with the bottom forming portions substantially in the plane of the body portion thereof.

5. A method of forming a bag which comprises forming a transverse edge seal across the bottom end of a length of tubular material, folding the body of the length of material into flattened relation with the portions thereof adjacent the edge seal flat folded into the plane of the body portion and with the bottom edge seal extended in the direction of the longitudinal axis of the body of the bag, removing triangular sections of the bottom forming portions of the bag at opposite ends of the bottom edge seal and providing edge seals extending at right angles to said bottom edge seal which form opposite side edges of the bottom of the bag when in erected condition.

6. A method of fabricating a bag from plain tubular material which is capable of having juxtaposed edges joined by a bead seam upon application of heat thereto, which method comprises transversely sealing with a bead seam one end of a length of said material, folding the length of material to bring the walls of the body thereof into flattened superimposed relation with the portions adjacent said bead seam being flattened into the plane of

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the flattened body portion by folding about a transverse line at right angles to said beam seal, dividing off triangular end portions of the bottom formation at opposite ends of said bead seam along spaced parallel lines extending at right angles to said bead seam, and providing bottom edge portions along said last mentioned lines whereby when said bag is opened up the bottom edges are in the form of a rectangle.

7. A method of fabricating a bag which comprises forming a transverse edge seal across the bottom end of a section of plain tubular material which is flattened adjacent said bottom end, opening up the flattened and sealed bottom end and folding the tubular section to bring the bottom forming portions adjacent said edge seal into flattened relation and into substantially the same plane as the folded body forming portion of said tubular section, and forming beaded bottom end seals transversely of said edge seal and in inwardly spaced relation to the extremities of said edge seal, said bottom end seals defining opposite side edges of the bottom of the bag when in erected condition.

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