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3,096,013

PLASTIC TUBULAR BAG

Filed Aug. 21, 1961

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

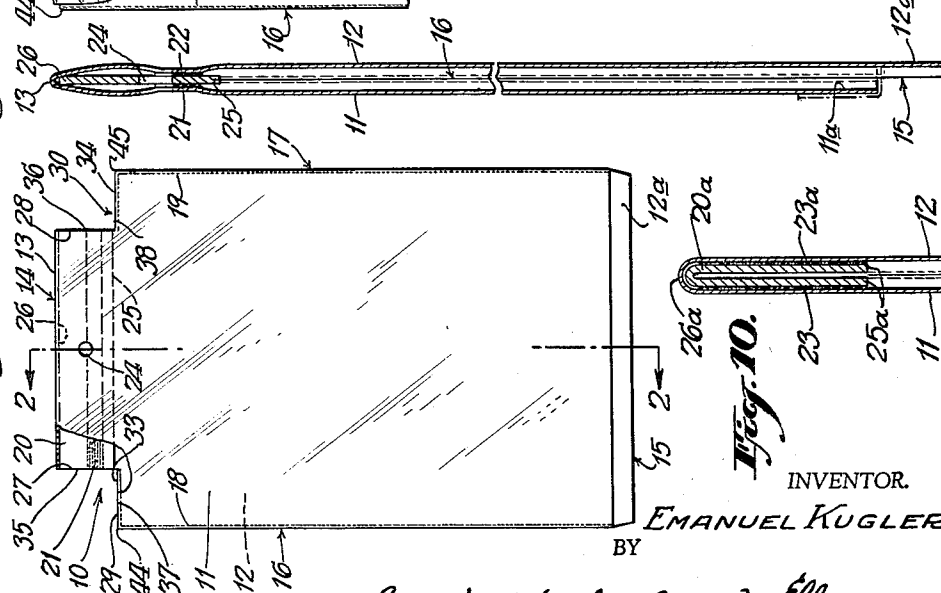
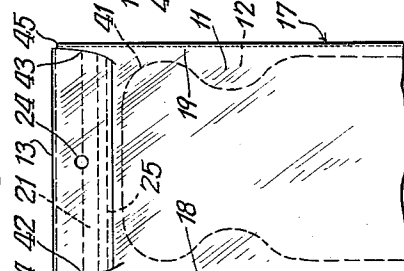
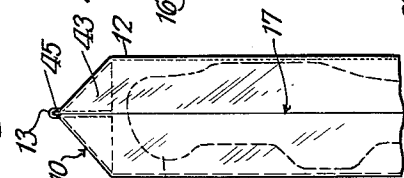
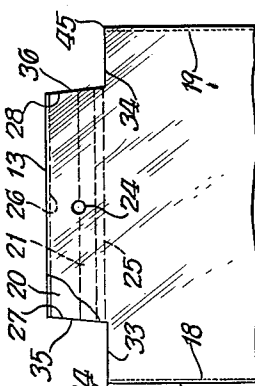


Fig. 6.

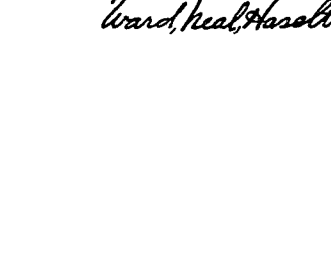
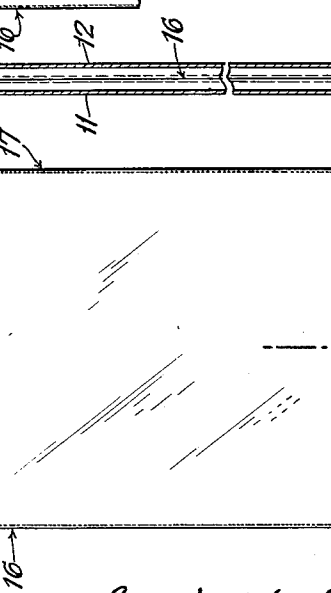
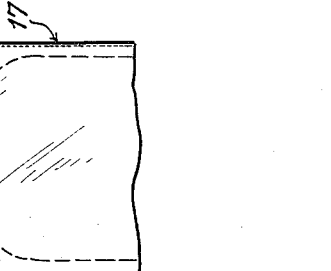
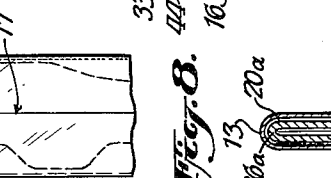
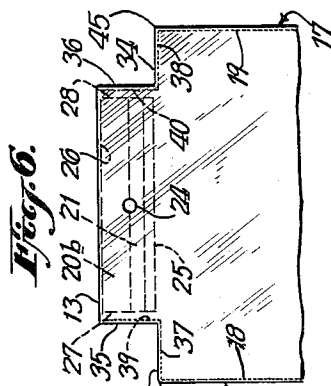


Fig. 7.

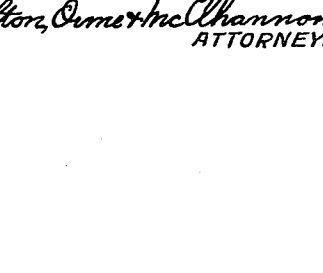
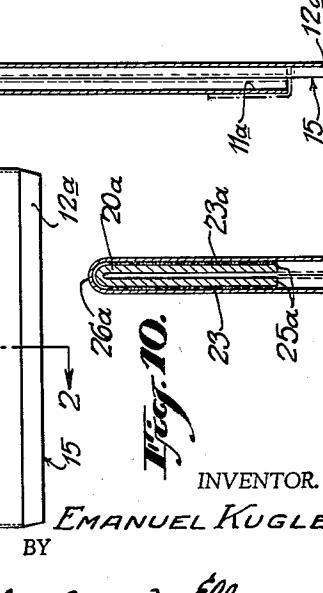
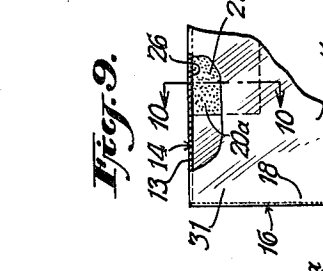
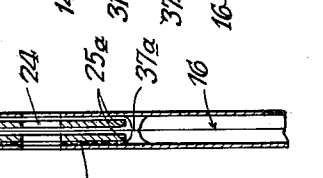
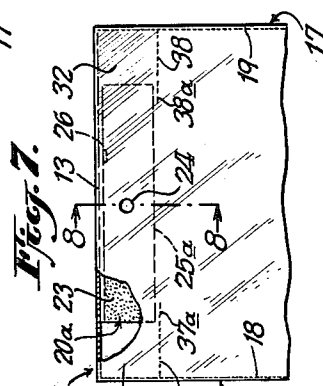
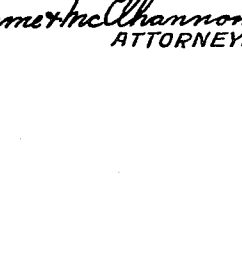
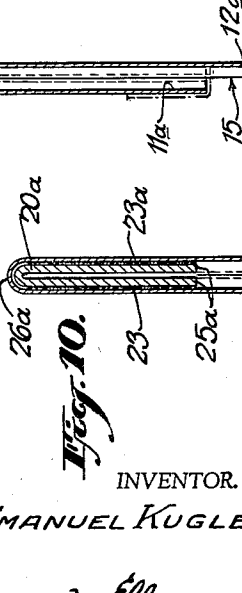
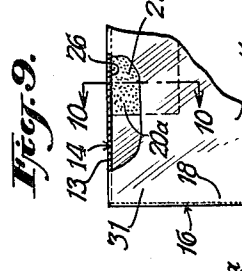


Fig. 9.



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PLASTIC TUBULAR BAG

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5 Claims. (Cl. 229—55)

This invention relates to the construction of bags and more particularly to bags made of flexible plastic, such as polyethylene, which may be conveniently adapted at the time of manufacture for receiving articles of greater or less bulk or thickness.

By the present invention, it is intended to provide a bag which is adapted for such variety of uses during the manufacture thereof so as to facilitate large scale production. In addition, it is intended that the bag will present a pleasing appearance even after being filled with bulky articles of merchandise by substantial avoidance of distortion, wrinkles, and the like, as might otherwise occur upon filling the bags with such bulky articles.

A bag construction having a so-called "gusseted" bottom end construction for a similar purpose is described in my copending application Serial No. 132,834 filed on even date herewith. The present invention provides a different bag construction which may, under certain circumstances, be found more convenient, or better adapted, for containing bulky articles of merchandise, yet may be manufactured using conventional bag-making techniques resulting in similar economy and facility. Such is an object of the invention.

In forming a bag of the very filmy polyethylene sheet material, in some cases where the bag is to contain bulky merchandise it would be preferable to provide a "gusseted" or pleated construction at the side edges of the bag to permit expansion thereof so that, upon inserting the merchandise, the face panels of the completed package will be smooth and free from wrinkles or other undesirable distortions. Such is a requirement for "customer appeal" according to modern marketing and merchandising, recommendations, especially in instances where the filled package is to be displayed by suspending the same at its top end from a hook or upon a rod or the like. Yet, a bag having such "gusseted" construction at its side edges is not convenient or sufficiently economical of manufacture using conventional mass production techniques. Such production methods more often involve forming a continuous plurality of bags from a continuously fed length of flexible plastic material which is in longitudinally folded condition, and the introduction between the folded plastic sheet of a reinforcing member for disposition at the top end of the bag to facilitate the aforesaid suspension of the bag for display purposes. Because the successive individual bags are conventionally formed by heat sealing and severing the continuously fed length of plastic along lines extending transversely thereof at intervals corresponding to the widths of the finished bags, it would be extremely difficult to form opposed pleats at each such line of heat seal and severing, as would be necessary in such continuous manufacturing process to cause the aforementioned "side gusseted" construction to result. Accordingly, the present invention provides a bag construction which will approximate such "side gusseted" construction for all intents and purposes of end use of the bags, yet achieve the same with only slight modification of such conventional production method, which modification is negligible in cost. Of course, the bag construction to be described may be formed without regard to any particular manufacturing method.

In accordance with the invention, a tubular bag is provided which includes oppositely disposed front and back face panels preferably formed from a single sheet of the thermoplastic polyethylene material folded upon itself to

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produce a line of fold either at the top end of the bag, as described in my copending application Ser. No. 132,893 filed on even date herewith, or at the bottom end of the bag, as described in my aforementioned copending application Serial No. 132,834. The front and back face panels are heat sealed together along the side edges of the bag as will be described. A reinforcing member, such as a strip or patch of stiffening material such as cardboard or stiff paper or the like, is adhesively attached between, and preferably to each of the front and back face panels at the top end of the bag, the reinforcing member extending in length only partially across the width of the bag within the central region thereof so that each of its opposite ends is spaced away from the respective opposite side edges of the bag. The spacing between the opposite ends of the reinforcing member and the respective side edges of the bag may be apportioned according to the thickness of the merchandise to be contained. As will be seen, the spacing permits the bag to appear to have significant width when filled with merchandise since the side edges of the bag are free to move inwardly with translatory movement towards the central region of the bag upon introducing the merchandise. Where desirable, as will later become more apparent, the reinforcing member may be attached to the front and back face panels by thin lines of adhesive disposed in accordance with my aforesaid copending application Serial No. 132,893 for the purpose described therein.

In a preferred embodiment of the invention, both of the opposed top end shoulder portions of the bag, extending from each opposite end of the reinforcing member to the respective side edges of the bag along the line of imaginary extension of the lower edge of the reinforcing member, may be cut away to provide so-called "notched shoulders" of the bag at its top end. In such instance, it is also preferable to provide a line of heat seal at each side of the bag extending perpendicularly inward from the heat sealed side edge to the end of the reinforcing member and substantially coinciding with the aforesaid imaginary line of extension of the lower edge of the reinforcing member.

The actual notching of the top end shoulders may be omitted, as will be shown in another embodiment, in which case it is preferable to continue the lines of heat seal at the respective side edges of the bag all the way to the top end thereof. In certain applications, the benefits of the invention may be thereby substantially obtained.

One or more apertures are provided at the top end of the bag, passing through the reinforcing member, whereby it may be suspended as aforesaid for display purposes. Preferably, the bag will be transparent for visual display of the articles or merchandise therein, but the bag may also be opaque or have printed indicia thereon which may obstruct the view of the contained articles either wholly or in part.

These and other objects, features and advantages of the invention will be apparent from the following detailed description thereof, when taken with reference to the accompanying drawings which form a part of this specification and illustrate, by way of example, certain embodiments of the invention.

In the drawings:

FIGURE 1 is a plan view of a bag made in accordance with the invention, certain portions being cut away to more clearly illustrate its features;

FIGURE 2 is an enlarged sectional view of the bag shown in FIGURE 1, the section taken at line 2—2 thereof;

FIGURE 3 is a fragmentary plan view of the bag shown in FIGURE 1 as it would appear when filled with bulky merchandise;

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FIGURE 4 is a side view of the bag as shown in FIGURE 3;

FIGURE 5 is a fragmentary plan view showing the top end of a bag embodying a modified form of the invention, certain portions being cut away to more clearly illustrate its features;

FIGURE 6 is a fragmentary plan view showing the top end of a bag embodying another modified form of the invention;

FIGURE 7 is a fragmentary plan view showing the top end of a bag embodying still another modified form of the invention, certain portions being cut away to more clearly illustrate its features;

FIGURE 8 is an enlarged sectional view of the bag shown in FIGURE 7, the section taken at line 8—8 thereof;

FIGURE 9 is a fragmentary plan view, partially cut away, showing a portion of the top end of a bag embodying still a further modified form of the invention; and

FIGURE 10 is an enlarged sectional view of the bag shown in FIGURE 9, the section taken at line 10—10 thereof.

Referring first to FIGURES 1 and 2, a tubular bag made in accordance with the invention is generally indicated by reference numeral 10. The bag is made of thin and highly flexible transparent thermoplastic material, such as polyethylene, and has a front face panel 11 which merges with an oppositely disposed and generally coextensive back face panel 12 along a line of fold 13 at the top end of the bag which is generally indicated by reference numeral 14. As are also generally indicated by the respective reference numerals, the bag 10 may be considered as having a bottom end 15, and side edges 16 and 17.

In its initially manufactured condition, the bag will lie in flattened condition with the oppositely disposed front and back face panels 11 and 12 in substantial contact with each other throughout the height of the bag. Although other forms of bag access openings and closures may be provided, the bag in its embodiment as shown in FIGURES 1 and 2 has been provided with an open bottom end 15 through which the merchandise to be contained will be inserted. Back face panel 12 has been made somewhat longer than front face panel 11 to provide a suitable closure flap portion 12a thereof at the bottom end of the bag, which flap portion will be folded as indicated by dotted lines into overlapping relation with the bottom end 11a of front face panel 11 and sealed thereto by adhesive, adhesive tape, or a line of heat seal (not shown) to fully enclose the contained merchandise.

At each of the opposite side edges 16 and 17 of the bag, the front and back face panels are attached together, as by lines of heat seal 18, 19, respectively.

Referring now to the top end 14 of the bag 10, a reinforcing member 20 is disposed between the front and back face panels 11, 12 within and adjacent to the line of fold 13. The reinforcing member 20 is made of cardboard, stiff paper, or the like. In FIGURES 1-6 of the drawings, the reinforcing member 20 is indicated as being of a single strip of cardboard, whereas in FIGURES 7 through 10 the reinforcing member 20a is indicated as consisting of a longitudinally folded sheet of stiff paper. The reinforcing member is attached to one, or preferably both, of the front and back face panels 11 and 12 as by thin lines of adhesive 21, 22, or by full adhesive securement to only one of the face panels as indicated at 23 in FIGURES 7 and 8, or by full adhesive securement to both face panels as indicated at 23, 23a in FIGURES 9 and 10, or by stapling, or by other means. The reinforcing member may be considered as having a lower edge 25 (or 25a where a folded strip of paper 20a is used, as in FIGURES 7-10), which is in parallel spaced relation with respect to its upper edge 26 (or 26a where folded strip 20a is used), the latter being adjacent the line of fold 13, and as having opposite ends 27, 28 directed to-

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wards the respective side edges 16 and 17 of the bag. The front and back face panels 11 and 12 should be effectively attached to the reinforcing member 20 (or 20a) adjacent the lower edge 25 (or 25a) of the latter on both sides thereof, either as by disposing lines of adhesive securement closely adjacent thereto (as shown in FIGURES 1-6 and 9-10), or by particular disposition of certain heat sealing means as will be described in connection with certain features of the embodiment of FIGURES 7 and 8.

The reinforcing member is sufficiently wide (in the direction of height of the bag) to permit providing of one or more hanger apertures 24 therethrough, which aperture or apertures extend through the adjacent portions of the front and back face panels 11 and 12, thereby providing means whereby the bag may be suspended for display from a suitable hanger, hook, rod, or the like (not shown).

It will be noted that the reinforcing member 20 (or 20a) has length so as to extend only partially across the width of the bag 10, and centrally thereof, so that its opposite ends 27, 28 are spaced inwardly of the respective extreme side edges 16 and 17 of the bag. In the embodiments shown in FIGURES 1-6, portions of the front and back face panels 11 and 12 at the respective shoulders of the bag at its top end have been cut away to provide a so-called "notched" shoulder, or "cut-back" shoulder construction at each end of the reinforcing member. For clarity, the notched shoulders are generally indicated by reference numerals 29 and 30. As will later be pointed out, the benefits of the invention may in some circumstances be substantially obtained even though, as indicated in FIGURES 7 and 9, the top end shoulder portions 31, 32 are not cut out.

As indicated in FIGURES 1, 5 and 6 of the drawings, the lines of cut 33, 34, which extend perpendicularly inwardly of the respective side edges 16 and 17 of the bag, preferably are substantially coincident with the imaginary line of extension of the lower edge 25 of the reinforcing member toward each side edge of the bag. The lines of cut 35, 36 of the front and back face panels 11 and 12 which are in the direction of the height of the bag and which intersect with lines of cut 33, 34, respectively, to complete the notched construction at the respective ends 27, 28 of the reinforcing member may be coincident with the respective opposite ends 27 and 28 of the reinforcing member, as shown in FIGURES 1 and 5 as, for example, where a plurality of bags are formed in a continuous manufacturing operation as aforementioned. Alternatively, and in instances where the reinforcing member is provided in the form of a patch 20b, as shown in FIGURE 6 (or FIGURES 7 and 9), the lines of cut 35, 36 (referring now only to FIGURE 6) may be spaced towards the side edges of the bag from the respective opposite ends 27, 28 of the reinforcing member.

As will be understood from FIGURE 5, and as is sometimes preferred for the purpose of facilitating manufacture in a continuous manufacturing process such as aforesaid, the lines of cut 35, 36, as well as the opposite ends 27, 28 of the reinforcing member 20, need not be exactly perpendicular to the lines of cut 33, 34, but may be angulated with respect to lines of cut 33, 34 as is sometimes desirable where the reinforcing member 20 and the front of the back face panels 11 and 12 are simultaneously cut during the manufacturing process to provide the notched shoulders 29 and 30.

As indicated in FIGURES 1 and 6, it is preferable to seal the front and back face panels 11 and 12 together at the lines of cut 33 and 34, such as by lines of heat seal 37, 38. These lines of heat seal 37, 38 extend from the side edges 16 and 17 of the bag at least to a location adjacent the lower edge 25 of the reinforcing member at its opposite ends 27, 28. Or, as illustrated in FIGURE 6, where the vertically disposed lines of cut 35, 36 are not coincident with the opposite ends 27, 28 of the re-

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inforcing member, the lines of heat seal 37, 38 may terminate outwardly of ends 27, 28 and additional adhesive securement, such as lines of heat seal 39, 40, is provided along the lines of cut 35 and 36 and extending to intersection with the heat seal lines 37, 38, respectively. In this way, the completed bag will be adequately sealed at its top end to prevent the introduction of dirt or the like. It will be noted that where the adhesive which joins the reinforcing member 20 to the front and back face panels 11 and 12, such as the lines of adhesive 21, 22, is disposed sufficiently close to the lower edge 25 of the reinforcing member, the vertically extending lines of cut 35, 36 need not be particularly sealed in instances where they coincide, or closely coincide with opposite ends 27 and 28 of the reinforcing member.

Referring now to FIGURES 3 and 4, upon being filled with bulky merchandise, such as the article generally indicated by reference numeral 41, a bag 10 made in accordance with the invention will blouse out to provide substantial thickness so as to contain the article with the front and back face panels 11 and 12 in substantially smooth and wrinkle-free condition. In blousing out, the respective side edges 16 and 17 of the bag will move inwardly, with respect to the bag width, with parallel translatable movement, and it will be found that a natural pleat will be formed at the top end shoulder portions of the bag, such pleats being generally indicated by reference numerals 42, 43. As indicated in the side elevation of FIGURE 4, the pleats 42, 43 will have somewhat triangular shape at the side edges 16 and 17, the top end shoulder corners 44, 45 (FIGURES 1, 5 and 6) moving vertically upward to their respective locations as shown in FIGURES 3 and 4.

It will now become apparent that, since the lines of cut 33 and 34 will also swing upwardly into substantial adjacent parallel relation with the respective ends 27, 28 of the reinforcing member, it will not always be found necessary that the front and back face panels 11 and 12 be sealed together along these lines of cut, and such embodiment of the invention is shown in FIGURE 5.

Moreover, and referring to FIGURES 7 and 9, it will now be understood that in some instances, such as where the contained article of merchandise has only moderate thickness or bulk, it will be unnecessary to cut out the top end shoulder portions 31, 32 of the bag. While, because of the bending or wrinkling of the line of fold 13 which will attend the aforesaid translatable movement of side edges 16 and 17 as the bag is blousing out, the bags of FIGURES 7 and 9 may not be as pleasing in appearance at their top ends 14 when filled with such merchandise, it will be found that the front and back face panels of these bags will nevertheless be free of wrinkles or such other undesirable distortions as would affect the potential customer's ability to read any printed indicia on the front or back face panels. The smooth and pleasing contour of the front and back face panels of a bag which is filled with merchandise is especially essential in such instances where printed indicia is placed on these panels. The indicia must be easily read or distinguished if impulse buying of the packaged articles is to be promoted in accordance with good merchandising practice.

Further in connection with FIGURES 7 and 8, where the reinforcing member such as 20a is attached to only one of the panels 11, 12, the lines of heat seal 37, 38 extending in a direction inwardly of the respective side edges 16, 17, should be slightly elongated to extend at least a short distance underneath the lower edge of the reinforcing member, such as is indicated by reference numerals 37a, 38a, thus maintaining the front and back panels 11 and 12 adjacent to the reinforcing member 20a, effectively over the height of the latter on both sides thereof, upon blousing the bag 10 when filling with merchandise. Contrasting FIGURES 9 and 10 with FIGURES 7 and 8, however, it will be noted that where the reinforcing member 20a, even though provided in the form of a folded

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strip of paper, is attached at both of its side surfaces to front and back face panels 11 and 12 by means such as full adhesive means 22, 23a which includes attachment of the reinforcing member adjacent its lower edge 25a (on both sides thereof), it is unnecessary to provide any lines of heat seal (such as 37, 38 in the other figures) which extend perpendicularly inward of the side edges 16 and 17. This is for reasons similar to those mentioned in connection with the description of the embodiment of FIGURE 5.

Thus has been described a bag in several of its embodiments which achieves all of the aforesaid objects of the invention.

What is claimed is:

1. A tubular bag of flexible material having a top end, a bottom end and opposed side edges, and including oppositely disposed front and back face panels, a reinforcing member disposed between said front and back face panels at said top end of the bag and centrally of the width of the bag between said side edges, said reinforcing member having a lower edge and respective opposite ends each facing towards one of said opposed side edges of the bag, and further having length shorter than said width of the bag at its said top end whereby each of said opposite ends thereof is spaced a substantial distance inwardly in the direction of said bag width from its said associated side edge of the bag, said oppositely disposed front and back face panels being cut away within each region of the bag located outwardly of the respective opposite ends of the reinforcing member to said respective side edges of the bag and substantially in alignment with said lower edge of the reinforcing member to define notched top end shoulder regions of the bag thereat, means attaching said reinforcing member in said position with respect to said front and back face panels, means retaining each of said front and back face panels in adjacent, substantially contiguous relationship with respect to said lower edge of the reinforcing member, respective sealing means sealing together said front and back face panels at each of said opposed side edges of the bag, each said sealing means extending in a line from substantially said bottom end of the bag to said respective notched shoulder regions thereof.

2. A tubular bag according to claim 1 wherein said oppositely disposed front and back face panels are sealed together substantially along the boundary edges of each said notched top end shoulder region of the bag.

3. A tubular bag according to claim 1 wherein each said notched top end shoulder region extends outwardly from coincidence with each respective opposite end of the reinforcing member.

4. In a tubular bag of flexible material having a top end and opposed side edges, and including oppositely disposed front and back face panels, the improvement comprising means retaining said front and back face panels in substantially adjacent, contiguous relationship with respect to each other within, and to define a rectangular area of said face panels which is adjacent to said top end and centrally of the width of the bag between its said side edges, said rectangular area having a lower edge which is in substantially parallel spaced relationship with respect to said top end, said rectangular area extending along a major portion of said bag width and, further, being spaced a substantial distance inwardly in the direction of said bag width from each of said side edges, means stiffening said rectangular area substantially throughout the same, and respective and aligned lines of seal extending inwardly in the direction of said bag width from each of said side edges to said rectangular area and sealing said front and back face panels together substantially in alignment with said lower edge of the rectangular area.

5. A tubular bag of flexible material having a top end, a bottom end and opposed side edges, and including oppositely disposed front and back face panels, a re-

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inforcing member disposed between said front and back face panels at said top end of the bag and centrally of the width of the bag between said side edges, said reinforcing member having a lower edge and respective opposite ends each facing towards one of said opposed side edges of the bag, and further having length shorter than said width of the bag at its said top end whereby each of said opposite ends thereof is spaced a substantial distance inwardly in the direction of said bag width from its said associated side edge of the bag, said oppositely disposed front and back face panels being cut away within each region of the bag located outwardly of the respective opposite ends of the reinforcing member to said respective side edges of the bag and substantially in alignment with said lower edge of the reinforcing member to define notched top end shoulder regions of the bag thereat, means attaching said reinforcing member in said position with respect to said front and back face panels, means retaining each of said front and back face panels in adjacent, substantially contiguous relationship with respect to said lower edge of the reinforcing member, re-

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spective sealing means sealing together said front and back face panels at each of said opposed side edges of the bag, each said sealing means extending in a line from substantially said bottom end of the bag to said respective notched shoulder regions thereof, each said notched top end shoulder region extending outwardly from coincidence with each respective opposite end of the reinforcing member, and said front and back face panels at each of said notched shoulder portions being sealed together in respective lines of seal extending from each of said opposed side edges of the bag to respective locations substantially adjacent said respective opposite ends of the reinforcing member.

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