A heavy-duty plastic bag is comprised of a flat front panel, a back panel and gusseted longitudinal side panels. One of the gusseted longitudinal side panels has extended opposed gusseted side walls to form bag carrying end panels. The bag carrying end panels are sealed with one another and are each provided with three spaced-apart handle holes for ease of carrying the bag by one or both ends of a person with the bag disposed horizontally to facilitate manipulation in carrying of the bag. The bag carrying end panels provide for reinforced hand holes and comfort to the hands of a user person. The gusseted side panels and front and back panels provide a heavy-duty plastic bag with four display panels.
HEAVY-DUTY QUAD SEAL PLASTIC BAG WITH SIDE HANDLE HOLES

TECHNICAL FIELD

[0001] The present invention relates to a heavy-duty plastic bag which is provided with handle holes in an extended gusseted side wall and wherein the bag has four panels to display printed matter.

BACKGROUND ART

[0002] It is known to form plastic bags with two or three handle holes provided in the top or bottom panels of the bags to facilitate carrying the bag or to facilitate pouring the contents of the bag. For example, a variety of bag constructions with two or three handle holes is described in U.S. Pat. Nos. 3,402,749, 5,782,562 and 6,361,209. In all instances the handle holes are provided in top or bottom flanges of the bags and these are formed by opposed plies folded on one another. When these bags are used for carrying heavy contents, the bags are often dragged on the floor surface by these handle holes due to its weight and this can damage the bag and spill the contents. Further, these heavy-content bags are difficult to lift off the floor when lying flat due to their length. Also, depending on the construction of the handle holes with only one or two plies of film material, the handle holes can rip or cause discomfort to the hands of the user person.

[0003] Another disadvantage of these prior art bags is that they only provide two panels for displaying advertising material, namely the front and rear panels. However, bags carrying heavy contents are usually disposed lying flat in a stack placed on a floor pallet with only the side edges of the bag showing with the exception of the top bags which display the front or back panels of the bag but these are not often visible. Therefore there is a need to provide a heavy-duty plastic bag which is easy to manipulate and carry, and which can display advertising material when the bags are stacked flat on one another and wherein the manipulation of the bag by the handles is not damaging to the hands of the user person.

SUMMARY OF INVENTION

[0004] It is therefore a feature of the present invention to provide a heavy-duty plastic bag which is provided with gusseted longitudinal side panels capable of carrying display material and wherein one of the longitudinal gusseted side panels is formed with end panels having three handle holes to carry the bag horizontally by one or both hands of a user person.

[0005] Another feature of the present invention is to provide a heavy-duty plastic bag formed with gusseted longitudinal side panels having handle holes formed in reinforced extended opposed gusseted end panels thereof which are sealed to one another to form reinforced carrying end panels.

[0006] Another feature of the present invention is to provide a heavy-duty plastic bag having handle holes in a longitudinal side gusseted display panel thereof and which permits the carrying of the bag horizontally with the hands positioned at a comfortable height.

[0007] Another feature of the present invention is to provide a heavy-duty plastic bag designed to be displayed lying down on a storage shelf or stacked on a floor pallet.

[0008] Another feature of the present invention is to provide a heavy-duty plastic bag having four display panels and reinforced gusseted side panels which allows for the bag to carry more weight.

[0009] According to the above features, from a broad aspect, the present invention provides a heavy-duty plastic bag comprising a flat front panel, a flat back panel and gusseted longitudinal side panels. The bag has a top end and a bottom end adapted to be sealed for containing a product in the bag. The gusseted longitudinal side panels each have opposed gusseted side walls collapsible against one another on a side central fold line. One of the longitudinal side panels has extended opposed gusseted side walls to form bag carrying end panels. Seal means is provided to secure the bag carrying end panels with one another. Three spaced-apart handle holes are formed in the bag carrying end panels with the handle holes of each bag carrying end panel aligned with one another. One of the handle holes is disposed substantially at mid-length of the bag carrying end panels to constitute a central hand hole. The other two of the handle holes are substantially equidistantly spaced on opposed sides of the central hand hole. The hand hole permits the heavy-duty bag to be carried from the gusseted longitudinal side panel by the use of one or both hands of a person disposed through said hand holes with the bag extending horizontally.

BRIEF DESCRIPTION OF DRAWINGS

[0010] A preferred embodiment of the present invention will now be described with reference to the accompanying drawings in which:

[0011] FIG. 1 is a perspective view of the heavy-duty plastic bag of the present invention provided with bag carrying end panels formed in a gusseted side wall of the bag and wherein three handle holes are formed for ease of carrying the bag;

[0012] FIG. 2 is a side view of the gusseted longitudinal side panel which does not contain bag carrying handle holes;

[0013] FIG. 3 is a top view of FIG. 1 with the bag carrying end panels of the gusseted side wall disposed spread apart in an open position;

[0014] FIG. 4 is a transverse section view of the bag showing the quad seal design wherein four distinct seals and two large display gussets are provided on the longitudinal sides of the bag;

[0015] FIG. 5 is a fragmented section view showing the gusseted end panel formed with extended opposed gusseted side walls to form reinforced bag carrying end panels;

[0016] FIG. 6 is a section view similar to FIG. 5 but showing a reinforcing plastic film sheet patch disposed within the gusseted side panel wherein handle holes are provided;

[0017] FIG. 7A is a fragmented perspective view showing tag seal holes formed in the opposed gusseted panels;

[0018] FIG. 7B is an enlarged cross-section view showing opposed gusseted side walls sealed to one another at their ends through the tag seal holes;

[0019] FIG. 8A is a side view of a heavy-duty plastic bag constructed in accordance with the present invention and showing a slider zipper provided adjacent one of the top or bottom ends of the bag for filling or dispensing material;

[0020] FIG. 8B is a side view of a further heavy-duty plastic bag constructed in accordance with the present invention and wherein the opposed top and bottom ends of the bag are sealed.
FIG. 9 is a side view showing two heavy-duty plastic bags of the present invention laid flat upon one another and illustrating opposed gusseted longitudinal side panels displaying advertising material; and

FIG. 10 is a side view of the heavy-duty plastic bag of the present invention disposed in a flat condition and illustrating the position of the tag seal holes and seal strips.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the drawings and more particularly to FIGS. 1 to 4, there is shown generally at 10, a heavy-duty plastic bag constructed in accordance with the present invention laid on one of its sides. The bag is formed from a multiply plastic film material and comprises a flat front panel 11, a flat back panel 12 and gusseted longitudinal side panels 13 and 14, which are better illustrated in FIGS. 2 and 3, respectively.

The bag 10 has a top end 15 and a bottom end 16 adapted to be sealed for containing a product in the bag and particularly heavy-duty products such as dog food, course salt, or other granular or heavy material. The gusseted longitudinal side panels 13 and 14 each have opposed gusseted side walls, herein side walls 13" and 13" for side gusset panel 13, and side walls 14" for side gusset panel 14. Each of the side walls 13, 13", 14, 14" are collapsible against one another on side central fold lines 13"" and 14"", respectively.

As shown in FIGS. 1 and 3, the longitudinal side panel 14 has extended opposed gusseted side walls to form bag carrying end panels 17 and 17'. As shown in FIGS. 4 and 5, these bag carrying end panels comprise two plies of multilayer plastic films. One ply is constituted by a longitudinal side end section 11 or 12' of the front and rear panels, respectively and the other ply is formed by the opposed extended gusseted side walls 17 and 17', respectively. These two plies of multilayer plastic films are heat sealed with one another as illustrated by seal 18, whereby to form reinforced bag carrying end panels comprised of two layers of film sheet material.

As better illustrated in FIGS. 1 and 3, each of the carrying end panels 17 and 17' are provided with three spaced-apart handle holes 19, herein a substantially central handle hole 19 disposed at substantially mid-length of the back carrying end panel 17 and 17' and opposed side hand hole 19 disposed substantially equidistantly spaced on opposed sides of the central handle hole 19. As above-mentioned, these handle holes are formed in reinforced two-ply bag carrying end panels 17 and 17' and when these two end panels are brought together in juxtaposition, as shown in FIG. 1 with the hand holes aligned, they form four plies of multilayer plastic film providing for a reinforced carrying horizontal section of the bag and further provide comfort to the user person's hands. Also, because these hand holes are disposed along a horizontal side gusset of the bag, it does not require high lifting of the arms to carry the bag off a floor surface as the length of the bag is disposed horizontally, thus facilitating manipulation of the bag with its heavy contents.

As shown in FIG. 5, the seal 18 secures the opposed film plies of the extended gusseted side walls throughout the length of the extended opposed gusseted side walls. It is to be understood that seals could be formed only about the handle holes 19 and 19' of the bag or they could be formed by spaced-apart seal strips, not shown but obvious to a person skilled in the art.

With particular reference to FIG. 4, it can be seen that the other of the opposed gusseted side panels, herein side panel 13, is not provided with bag carrying end panels but has end seal strip 20 and 20' formed in a longitudinal side end edge section of a respective one of the front and back panels 11 and 12, respectively, whereby to form a reinforced gusseted longitudinal side panel. The seal bag carrying end panels 17 and 17' also constitute reinforcement of the side gusset panel 14.

As is more apparent from FIGS. 4, 8A, 8B and 9, the front and back panels and the gusseted longitudinal side panels form four distinct display panels for containing printed matter 25. Because these heavy-duty plastic bags are usually stacked on top of one another on a floor pallet 26 or on shelving, often only the gusseted longitudinal side panels are visible, as shown in FIGS. 2 and 9. As shown in FIG. 9, the bottom bag 10 is visible from gusseted side panel 13 while the top bag 10' is visible from gusset side panel 14. It can be appreciated that when these bags are filled with material, the gusseted side walls 13 and 14 will bulge out, thereby providing a display surface. Also, the bag carrying end panels 17 and 17', because of their reinforcement due to being welded to one another and having multiple plies, also maintain an extended position making the display printed material 25 visible, as illustrated in FIG. 9.

As shown in FIGS. 8A and 8B, these bags may be provided with slider zipper openings 27 or other zipper openings. They could also have a printed score line 28, shown in FIG. 8B, to indicate to the user person that the bag can be slit open in a top and bottom corner thereof for dispensing material dependent on the content of the bag. Of course, the hand holes 19 also provide for ease of dispensing of the content as it assists in holding the bag in a lifted position and permitting easy tilting thereof for dispensing of its material content, and such is known in the art. The re-sealable opening 27 is usually a heavy-duty zipper capable of retaining a closed state when these bags are manipulated.

With reference now to FIG. 6, there is shown a further embodiment of the construction of the bag carrying end panels 17 and 17'. As herein shown, a reinforcing plastic film sheet patch 28 is disposed longitudinally between an inner surface 29 of the opposed gusseted side walls 14 and 14' and a respective one of a longitudinal side end edges 30 and 30' of the front and back panels 11 and 12, respectively. The reinforcing plastic film patch 28 is also formed from a multilayer film and is secured between the two film layers of the extended opposed gusseted side walls by heat seal. When the opposed bag carrying end panels 17 and 17' are thus folded against one another, they provide six plies of plastic film material to form reinforced bag carrying end panels and providing still more comfort to the hand of the user person as there are now six plies of film material surrounding the hand holes 19 and 19'.

As shown in FIGS. 7A, 7B and 10, the opposed gusseted side walls, herein side walls 13' and 13" of side gusset 13, are provided with a tag seal hole 31', respectively, adjacent an end of the side gussets 13 and 14. Diagonal seal strips 35 are formed between side seals 34 and seals 30 and 20' to prevent content spillage should these seal tags release during filling or during use. The bag seal holes 31 of the opposed gusseted side walls are juxtaposed when the opposed gusseted side walls are collapsed on one another before filling. These holes expose a back unprinted surface 32 of the front and back panels 11 and 12, respectively, for heat weld-
ing the opposed back surfaces 32 to one another in a tag seal region 33 as shown in FIG. 7B. This is particularly useful for handling the bag in filler machines where the bag can be maintained upright with the end corners of the bag held together by this tag seal for ease of feeding the top end 15 of the bag in a sealer whereby to form the top seal line 34, as shown in FIG. 1. Preferably, but not exclusively, the heavy-duty plastic bag of the present invention is formed from 48 gauge multi-resin polyester material or other suitable heavy-duty resin material.

[0033] It can be concluded from the above that the heavy-duty plastic bag construction of the present invention facilitates the handling and carrying of the bag by the use of one or both hands with the longitudinal axis of the bag lying in a horizontal plane. It also provides for four display panels whereby display material is visible when the bag is disposed lying flat on its side even in stacked bundles supported on floor pallets. The quad seal design of the side gusseted panels also provides reinforcements of these side panels and the bag carrying end panels of one side gusset is also reinforced with at least four plies of the multi-ply film providing for the bag to carry more weight and making it easier on the consumer hands to carry the bag.

[0034] It is within the ambit of the present invention to cover any obvious modifications of the preferred embodiment described herein, provided such modifications fall within the scope of the appended claims.

We claim:

1. A heavy-duty plastic bag comprising a flat front panel, a flat back panel and gusseted longitudinal side panels, said bag having a top end and a bottom end adapted to be sealed for containing a product in said bag, said gusseted longitudinal side panels each having opposed gusseted side walls collapsible against one another on a side central fold line, one of said longitudinal side panels having extended opposed gusseted side walls to form bag carrying end panels, and seal means to secure said bag carrying end panels with one another, three spaced-apart handle holes formed in said bag carrying end panels with said handle holes of each bag carrying panel aligned with one another, one of said handle holes being disposed substantially at mid-length of said bag carrying end panels to constitute a central hand hole, the other two of said handle holes being substantially equidistantly spaced on opposed sides of said central hand hole, said hand holes permitting said heavy-duty bag to be carried forms aid gusseted longitudinal side panel by the use of one or both hands of a person disposed through said hand holes with said bag extending horizontally.

2. A heavy-duty plastic bag as claimed in claim 1 wherein the other of said opposed gusseted side panel which is not provided with bag carrying end panels has an end sealed strip formed with a longitudinal side end edge section of a respective one of said front and back panels to form a reinforced gusseted longitudinal side panel, said sealed bag carrying end panels also reinforcing said one of said longitudinal side panels.

3. A heavy-duty plastic bag as claimed in claim 2 wherein said seal means is a heat seal to secure said bag carrying end panels with one another at least in a surrounding area of said three hand holes.

4. A heavy-duty plastic bag as claimed in claim 2 wherein each said bag carrying end panel comprises two plies of multi-layer plastic films, one ply constituted by a longitudinal side end section of one of said front and back panels, and the other ply formed by said one of said extended opposed gusseted side walls, said two plies being heat sealed to one another along their entire length.

5. A heavy-duty plastic bag as claimed in claim 1 wherein said front and back panels and said gusseted longitudinal side panels form four distinct display panels for containing printed matter, said gusseted side walls being visible when said heavy-duty plastic bag is resting flat on said front or back panel or when stacked flat on one another whereby to display said printed matter.

6. A heavy-duty plastic bag as claimed in claim 1 wherein one of said front and back panels is provided with a re-sealable opening formed adjacent one of said top and bottom ends thereof for access to a product contained in said heavy-duty bag.

7. A heavy-duty plastic bag as claimed in claim 4 wherein said opposed bag carrying end panels when folded against one another provides four plies of said multi-layer film to form reinforced hand holes for carrying a heavy content and provide comfort to the hands of the person carrying said heavy-duty plastic bag.

8. A heavy-duty plastic bag as claimed in claim 1 wherein said extended opposed gusseted side walls have a reinforcing plastic film sheet patch disposed longitudinally between an inner surface of said opposed gusseted side walls and a respective one of a longitudinal side end edge section of said front and back panels and secured thereto by said seal mean, said opposed bag carrying end panels, when folded against one another, provide six plies of plastic film material to form reinforced bag carrying end panels.

9. A heavy-duty plastic bag as claimed in claim 1 wherein said opposed gusseted side walls of said opposed gusseted panels are provided with a tack seal hole adjacent an end thereof, said tack seal holes of said opposed gusseted side walls being juxtaposed when said opposed gusseted side walls are collapsed on one another, said holes exposing a back surface of said back and front panels for heat welding said opposed back surfaces to one another in the area of said tack seal holes.

10. A heavy-duty plastic bag as claimed in claim 1 wherein said heavy-duty plastic bag is formed from 48 gauge multi-resin polyester material.