CONTAINERS FORMED OF FLEXIBLE SHEET MATERIAL PROVIDING ONE OR MORE TIE-STRIPS

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This invention relates to containers formed of flexible sheet material and comprising portions formed to provide one or more tie-strips for closing the top of the container. Various such containers, usually of plastic, have been provided wherein extensions or other portions of the sheet material were separately arranged to provide tie-strips; one such arrangement being disclosed in my pending application Serial No. 326,277, now Patent No. 3,186,626. There are instances, however, where there is a tendency for the tie-strips so provided to tear—because of the thickness of the sheet material, the rough handling to which such arrangements are normally subjected, or to other reasons.

I have now found that such difficulties can be overcome by the provision of containers where, the one or more strips are still formed from the plastic sheet material of the container itself, they are of double-thickness and are attached to a double-thickness portion of the sheet material, by securing together two plies of the sheet material of the container (as by heat sealing) to provide a double-thickness strip and by providing, at least one rupturable line of separation (e.g. a perforated line) along the strip.

In various of its more specific aspects, moreover, the invention contemplates the provision of a double-thickness portion formed by uniting the top of the front and rear of the container to provide a tie-strip at the openable top of the container, the provision of a flexible sheet material in such form that such containers may be formed therefrom with particular ease, the provision of a double-thickness portion extending outwardly from but unitary with the sheet material of an open-top bag or other container and provided with one, or preferably two, rupturable separation lines extending near to but terminating short of the top of the double-thickness, and/or the provision of various constructional features of particular effectiveness.

The invention accordingly comprises articles of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the articles hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

FIG. 1 is an elevation (partly broken away) of a form of openable container embodying the invention;
FIG. 2 is a perspective view showing the tie-strip portion of the container of FIG. 1 separated from the body of the container;
FIG. 3 is a similar showing of the tie-strip portion further separated to provide two tie-strips;
FIG. 4 is an elevation showing one manner of reclosing a container by tying the tie-strips of FIG. 3;
FIG. 5 is an elevation showing a container similar to that of FIGS. 1–4, but with a rupturable separation line for the operation shown as completed in FIG. 3;
FIG. 6 is an elevation showing a piece of flattened tubular flexible sheet material adapted to be separated transversely to provide a plurality of containers such as shown in FIG. 5;
FIG. 7 is an elevation showing a further modification;
FIG. 8 is a perspective view of an open-top container embodying the invention;
FIG. 9 is a similar view showing the tie-strip portion of FIG. 8 separated from the body of the container;
FIG. 10 is a similar view showing one manner of closing the container of FIG. 8; and
FIG. 11 is a view similar to FIG. 8 showing an arrangement providing two tie-strips similar to the tie-strip of FIG. 8.

In the form of construction shown in FIGS. 1–4 there is shown an openable container comprising a front 5 and a rear 6 composed of flexible sheet material which may be of the type commonly used in sandwich or picnic bags and of which transparent polyethylene is an example. As exemplified, the front and the rear are lateral continuations of each other, so that the container is closed at its lateral edges 7 and 8; and the front and rear are united, as by heat sealing, at their bottom 9. They are also heat sealed together, or otherwise united, along a strip 10 which extends across the top of the container.

As will be seen from FIG. 1, the front and rear are united at least at a portion extending from a line in proximity to the top edge to a line in proximity to a rupturable separation line 12 which extends inwardly of one lateral edge, or in the present instance of both lateral edges 7 and 8, and below the united double-thickness portion 10, the present container being formed with a rupturable separation line 12 which is a line of perforations. In order to open the container, the line 12 is ruptured to provide, from the double-thickness strip 10, a double-thickness portion 15 which is anchored to double-thickness end portions 16 and 17 which are unitary with the body portions of the front and rear 5 and 6 which are now open so that they can be spread apart on lines 18 and 19 which are at the top of the single-ply portions thereof.

By rupturing the portion 15 along a line such as 21, this portion is divided into two tie-strips 22 and 23, which, after the container is filled, may be tied together to re-close the container as shown at 25 in FIG. 4.

If desired, the division of the portion 15 after the rupture of the separation line 12 may be facilitated by the provision of a rupturable separation line 26 extending from the top edge of the strip 10 to the rupturable separation line 12.

For the production of containers of the type shown in FIGS. 1–5 in a facile and highly effective manner there may be provided a construction as shown in FIG. 6 from which a plurality of containers of the type shown in FIG. 5 may be provided. An elongated tube of flexible plastic may be flattened so that the sides 28 and 29 thereof lie against each other, and these united at spaced intervals, as by heat sealing, to provide longitudinally-spaced transverse strips 30 each of which is provided with a transverse rupturable separation line 31 above which is a portion 32 and below which is a portion 33. Rupturable perforation lines 12 are provided just below the strip 30, and rupturable perforation lines 26 extend from the line 31 to the line 12. The lines 31, are preferably, made more readily rupturable than the lines 12 and 26 as by providing more perforations to the inch, longer perforations, heavier score lines, or otherwise. All that is necessary to produce individual containers from the tube is to sever the rupturable lines 31. Even if this results in the rupture or partial rupture of line 12 and/or 26 at the same time, this is ordinarily possible, since these have to be ruptured anyway to facilitate filling of the container.

In certain instances it may be desirable to provide only one double-thickness tie-strip which after rupture of its separation line or lines is attached at only one end and which may, for example, effect a tying action by being
tucked under itself. To this end, there may be used a construction such as shown in FIG. 7 wherein there is provided, instead of the separation line 12 as shown in FIG. 1, a rupturable separation line 12a which, as shown, extends all the way to the right-hand edge 7 of the container.

In the form of construction shown in FIGS. 8–10 there is shown an open-top container comprising a front 35 and a rear 36, which, like the members 5 and 6, are exemplified as being formed of flexible flattened tubular transparent plastic material, and which are joined at one lateral edge 38 and united along their bottom at 39. Their upper edges are independent to provide an opening 40. At a suitable position, as at the other lateral edge, the front and rear are united to provide, as will be seen from FIG. 8, a double-thickness strip 42 at least a portion of which is sealed and which extends from the bottom to the top of the container, and is formed with a rupturable separation line 43 which extends from the bottom of the double-thickness strip 42 to a point adjacent to but short of the top of the double-thickness strip 42, the sealed portion extending at least from a line in proximity to the line 43 to a lateral edge of the bag so that there is provided a double-thickness tie-strip 44 (see FIG. 9) which after rupture of the line 43 is still unitary with the double-thickness anchoring portion 45 the plies of which are part of the front 35 and rear 36, which are sealed at said other edge by a portion 46 (as well as the portion 45) the strip 42. The tie-strip 44 may then (after the container is filled) be tucked into and passed thru itself or otherwise used to close the container, as indicated in FIG. 10.

Where two tie-strips like the tie-strip 44 are desired, all that is necessary is to provide instead of one double-thickness strip 42 a line 43 a double-thickness strip 42a with two separation lines 43a and 43b, to provide two tie-strips 44a and 44b as well as a double-thickness anchoring portion 45a and an edge seal 46a.

Since certain changes may be made in the above articles and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:
1. A container formed of flexible sheet material comprising a front and rear provided parallel to and adjacent to one edge with a rupturable separation line extending less than the full length of said edge, said front and rear being united at a portion extending at least from a line in proximity to said rupturable line to a line in proximity to said edge and extending laterally beyond said rupturable line, to provide upon the rupture of said rupturable line at least one double-thickness tie-strip attached to a part of said united portion beyond said rupturable line and for use in closing said container.
2. A container as in claim 1 wherein the other edges of said front and rear are closed and wherein said front and rear are sealable separably of said rupturable line so that an opening will be formed upon the rupture of said rupturable line.
3. A container as in claim 1 wherein there is provided a top opening and wherein said rupturable line extends upwardly from a lower edge and terminates short of the upper edge and wherein said front and rear are united inwardly of said rupturable line as well as beyond the end thereof.
4. A bag formed of flexible sheet material having a closed bottom and an open top and having two plies of said sheet material formed to provide a double-thickness strip sealed together along a portion extending from said bottom to said top and outwardly to a line in proximity to a lateral edge of said bag and formed with a rupturable line extending medially along said portion to a point adjacent to but spaced from the top thereof to provide a double-thickness tie-strip unitary at its top with a double-thickness portion of said sheet material.
5. A container formed of flexible sheet material providing a front and rear, and having an open top, a closed bottom, and a closed lateral edge, said front and rear being united to form a double-thickness marginal strip at the other lateral edge and having a portion sealed transversely its length, and a rupturable line extending upwardly thru said portion and terminating adjacent to but short of the top thereof, said sealed portion extending from a line in proximity to said rupturable line to a line in proximity to said lateral edge to provide a double-thickness tie-strip self-anchored to said sheet material near but below the upper end of said double-thickness strip.
6. A container as claim 4 wherein a plurality of such rupturable lines are provided along said portion to provide a plurality of such tie-strips unitary at their tops with a double-thickness portion of said sheet material.
7. An openable container reclosable by at least one integral tie-strip and comprising a front and rear formed of flexible sheet material joined at their lateral edges and bottom and united at their top to provide a double-thickness top strip extending downwardly at least from a line in proximity to the top edge of said front and rear being formed with a rupturable line just below said top strip and extending only part way between the lateral edges of said container to permit the separation of part of said top strip to provide at least one double-thickness tie-strip anchored to a double-thickness portion of said sheet material.
8. An openable container reclosable by at least one integral tie-strip and comprising a front and rear formed of flexible sheet material joined at their lateral edges and bottom and united at their top to provide a double-thickness top strip, said front and rear being formed with a rupturable line just below said top strip and extending only part way between the lateral edges of said container to permit the separation of part of said top strip to provide at least one double-thickness tie-strip anchored to a double-thickness portion of said sheet material, said rupturable line terminating short of both lateral edges of the container.
9. A container as in claim 8 wherein said top strip is bisected by a rupturable line extending at an angle to the first mentioned rupturable line.
10. A container as in claim 7 wherein said rupturable line extends from one lateral edge of the container and terminates short of the other lateral edge.
11. A container as in claim 1 wherein said sheet material is plastic material and said front and said rear are united by heat sealing.
12. A container as in claim 1 wherein said rupturable line is a line of perforations.

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