

CONTAINER SIDE**FIELD OF THE INVENTION**

This invention relates a side for a container, particularly a container which is used for the transport of liquids.

BACKGROUND TO THE INVENTION

It is common to provide containers comprised of a base and four interconnectable sides adapted to be demountably secured to the base, and a lid. Such containers are provided with a liner bag to hold liquid and discharge is through a nozzle on the bag which projects through one container side adjacent the container base.

In use the sides are mounted on the base and interlocked to provide a bag enclosure and the liner bag is placed in the enclosure and the nozzle is inserted into and passed through the nozzle hole in the container side from the inside of the enclosure. An operator finds it difficult to reach down into the container to insert the bag nozzle in the nozzle hole because the container sides are in the order of 1.2M high.

PRIOR ART

In the past one means of overcoming the above

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problem was the have the "nozzle side" of the enclosure laterally split to provide a lower part and an upper part. The upper part was connected by hinges to the lower part to allow the upper part to pivot outwardly. A major drawback with this arrangement was the bulkiness of the hinging arrangements which were used. The hinged part of the enclosure wall was held in place in the unfolded condition by bolts connecting the folding part to the adjacent enclosure walls.

10 OBJECTS OF THE INVENTION

The present invention has for its principal object the elimination of the bulky external hinge means of the prior art containers. A further object is to provide load resisting means at the hinge line between the upper and lower side parts to substantially eliminate pressure loads on the hinge connecting the upper and lower parts as are exerted by the load within a container of which the proposed container side forms part.

20 STATEMENT OF THE INVENTION

The invention can be said to provide a container side having an upper part and a lower part hinged together so the upper part can pivot relative to the lower part from a substantially co-planar operational condition to an overlying loading condition in which a

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liner bag can be readily loaded into a container of which the said side is an element, each container side part includes a frame covered with a liner panel and the liner panels provide a substantially continuous planar surface for the container side when said side parts are in the operational condition, load resisting means to couple adjacent sides of the frames of the upper and lower side parts where said load resisting means is automatically engaged when said side parts approach the operational condition following hinging of said upper part from the loading condition and which automatically disengages as said upper part is hinged from the operational condition towards the loading condition.

BRIEF DESCRIPTION OF THE DRAWINGS

Presently preferred embodiments of the invention will now be described with reference to the accompanying drawings in which;

- Fig.1 is a perspective view of a first embodiment of a container nozzle side according to the invention, Fig.2 is a perspective view of a container incorporating the nozzle side of Fig.1 in an inwardly hinged liner bag loading condition, Fig.3 is an enlarged sectional view on the section line 3-3 of Fig.1,

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Fig.4 is an enlarged sectional view on the section line 3-3 of Fig.1 as it would appear when hinged as shown in Fig.2,

Fig.5 is a view similar to Fig.3 of a second embodiment of the invention,

Fig.6 is a view of the Fig.5 components with the side parts hinging to a liner bag loading condition,

Fig.7 is view similar to Fig.5 showing an alternate form of load resisting means, and

10 Fig.8 is a view of the Fig.7 components with the side parts hinging to a liner bag loading condition.

DETAILED DESCRIPTION OF THE DRAWINGS

A typical container which would include the nozzle side of the invention as illustrated in Fig.2 would comprise four sides 1,2,3,4 fixed permanently or demountably to the base 18. The container sides 2 3 and 4 all comprise angle steel frames covered with a smooth surfaced liner panel 21. The sides 2 to 4 are corner connected in any suitable releasable manner.

20 The container nozzle side 1 shown in detail in Fig.1 comprises an upper part 6 and a lower part 7. Each part 6 and 7 includes an angle steel frame and the parts 6 and 7 share a smooth surfaced liner sheet 8. The part 6 is releasably secured to the sides 2 and 4 and is intended to remain secured during use of the container.

The sheet 8 comprises two portions 9 and 10 with a Vee notch 11 (see Fig.3) across the sheet 8 aligned with and facing the lower and upper frame members 13 and 14 of the side portions 6 and 7 respectively. The material 19 left as a result of the formation of the notch 11 acts as a hinge allowing the part 6 of the side 7 to hinge down inwardly relative to the side part 7. Securement means to be described releasably secures the side part 7 to the sides 2 and 4 when the side part 7 is in the upright operational position shown in Fig.1.

The material from which the liner panel is made is such that it will withstand multiple flexures at the hinge 19 without fracture, high density polypropylene is a suitable material for this purpose.

The internal pressure when a liner bag in the container is filled with liquid could, in the absence of load resisting means, apply unacceptable loads on the hinge 19 of the sheet 8. In Figs.3 and 4 the load resisting means comprises pins 12 fixed to the bottom rail 13 of the part 6 of the side 1 and holes 15 in the upper rail 14 of the part 7 of the side 1. It is to be understood that the arrangement could be reversed with the pins in the rail member 14 and the holes in the member 13. In another arrangement pins and holes could be provided on both rail 13 and rail 14.

Location means is provided the prevent outward

movement of the upper end of the part 6 of the side 1 beyond the upright condition shown in Fig.1. The location means comprises hook lugs 16 spaced from the inner surface of the liner sheet 21 on the sides 2 and 4. The end members 17 of the frame of the part 6 are engaged by the hook lugs 16. The lugs limit the outward movement of the part 6 and at the same time prevent the spreading apart of the sides 2 and 4.

Latching means in the form of slide bolts
10 identified 20 on the part 6 are engagable in holes 22 in the sides 2 and 4 to retain part 6 in the Fig.1 condition.

In the second embodiment of the invention the part 6 of the side 1 is able to be hinged outwardly. This can be best seen in Fig.5 where the portions 6 and 7 of the sheet 8 are separate members and are not hinged together as in the first embodiment. The angle shaped rails 13 and 14 are replaced by rectangular tubular members 23 and 24 and a strip of high density
20 polypropylene or like performance material is fixed to the members 23 and 24 as illustrated and indicated 26 to act as a hinge. It is to be noted that in this arrangement the Vee form of the notch of Figs.3 and 4 has been varied to a groove of U form.

Load resisting means comprising pins and holes as used in the first embodiment can also be used in this embodiment, see Figs.5 and 6. Again, it is to be

understood that the arrangement could be reversed with the pins 12 in the member 24 and the holes 15 in the member 23. In another arrangement pins and holes could be provided on both members 23 and 24.

10 Figs.7 and 8 illustrate an alternative load resisting means. As illustrated there is a load lug 27, which can be a single central broad lug or as an alternative two or three narrow lugs spaced along the length of the member 24, where the lug 27 extends above the top of the member 27. The lug 27 is accommodated in a very wide channel 28 in the hinge strip 26. As shown in Fig.7, the part 29 of the lug 27 extending above the member 24 laterally supports the bar 23 against loads exerted in the direction of the arrow 'L' by the contents of the container of which the side 1 forms part. As shown in Fig.8 hinging of the part 6 of the side 1 relative to the part 7 will automatically disengage the lug part 29 from the member 23.

20 Location means for the part 6 in this embodiment of the invention comprise lugs 25 on the part 6 which will bear on the outer end edges of the sides 2 and 4. The lugs 25 may include hooked ends to engage the outer faces of the sides 2 and 4 adjacent the side 1 thereby providing a restraint against the separation of the upper edges of the sides 2 and 4 adjacent the side 1.

Latching means in the form of slide bolts as used in the first embodiment would be suitable. As the

static pressure exerted by the liquid in a liner bag in the container will be low at the upper end of the part 6 the slide bolt latching means will adequately resist the applied pressure. The static pressure exerted at the upper zones of the sides 1 to 4 will also be resisted by an appropriately designed lid which will embrace the upper edges of the sides 1 to 4 and is almost invariably used with liquid carrying containers of the present type.

**CLAIMS:**

1. A container side having an upper part and a lower part hinged together so the upper part can pivot relative to the lower part from a substantially co-planar operational condition to an overlying loading condition in which a liner bag can be readily loaded into a container of which the said side is an element, each container side part includes a frame covered with a liner panel and the liner panels provide a substantially continuous planar surface for the container side when said side parts are in the operational condition, load resisting means to couple adjacent sides of the frames of the upper and lower side parts where said load resisting means is automatically engaged when said side parts approach the operational condition following hinging of said upper part from the loading condition and which automatically disengages as said upper part is hinged from the operational condition towards the loading condition.

2. A container side as claimed in claim 1 wherein the liner panels of the side parts are panels of a single liner sheet and the panels are separated by a flex zone in said sheet and the liner panels lie in facing relationship when the side parts are in the loading condition.

3. A container side as claimed in claim 2 wherein





said flex zone is a section of said liner sheet of thickness less than that of the remainder of said sheet.

4. A container side as claimed in any one of claims 1 to 3 where the frames of the side upper and lower parts respectively include bottom and top rails which lie closely adjacent or in engagement when the parts of said side are in the operational condition and the load resisting means comprises engagable projecting members and apertures on said bottom and top rails.

5. A container side as claimed in claim 1 wherein said liner panels cover inner faces of the frames of the side upper and lower parts and those parts respectively include bottom and top rails which lie closely adjacent or in engagement when the parts of said side are in the operational condition, the hinge means between said side parts comprising a flexible element secured to said bottom and top rails and operational such that when said side parts are in the overlying loading condition outer faces of said side parts are in facing relationship.

6. A container side as claimed in claim 5 wherein the load resisting means comprises lug means on said top rail against which the outer face of said bottom rail is adapted to bear when said side parts are in said operational condition.

7. A container side as claimed in claim 6 wherein

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said flexible element is recessed to receive said lug means when said parts are in said operational condition.

8. A container side as claimed in any one of the preceding claims in combination with three additional container sides with a first of said additional sides disposed opposite said container side and joined at first and second ends respectively to first ends of the other additional container sides, and with second ends of said other additional sides joined respectively to ends of said container side lower part, location means at the second ends of the other additional sides at an elevation above said container side lower part to be engaged by the ends of said container side upper part when in the operational condition and to limit the hinging movement of said upper part beyond said operational condition.

9. A container side in combination with additional sides, as claimed in claim 8, wherein the ends of the container side upper part are adapted to be engaged by hook elements on said locations means thereby to prevent spreading apart of the second ends of said other additional sides.

10. A container side as claimed in any one of the claims 1 to 7 in combination with three additional container sides with a first of said additional sides disposed opposite said container side and joined at





first and second ends respectively to first ends of the other additional container sides, and with second ends of said other additional sides joined respectively to ends of said container side lower part, location means on ends of the container side upper part to abut second ends of said other additional sides when said upper part is in its operation condition in the operational condition and to limit the hinging movement of said upper part beyond said operational condition.

11. A container side in combination with additional sides, as claimed in claim 10, wherein the location means are hooked lugs with limbs to abut the second ends of said other additional sides and limbs to be engaged by outer faces of other additional sides to prevent spreading apart of second ends of said additional sides.

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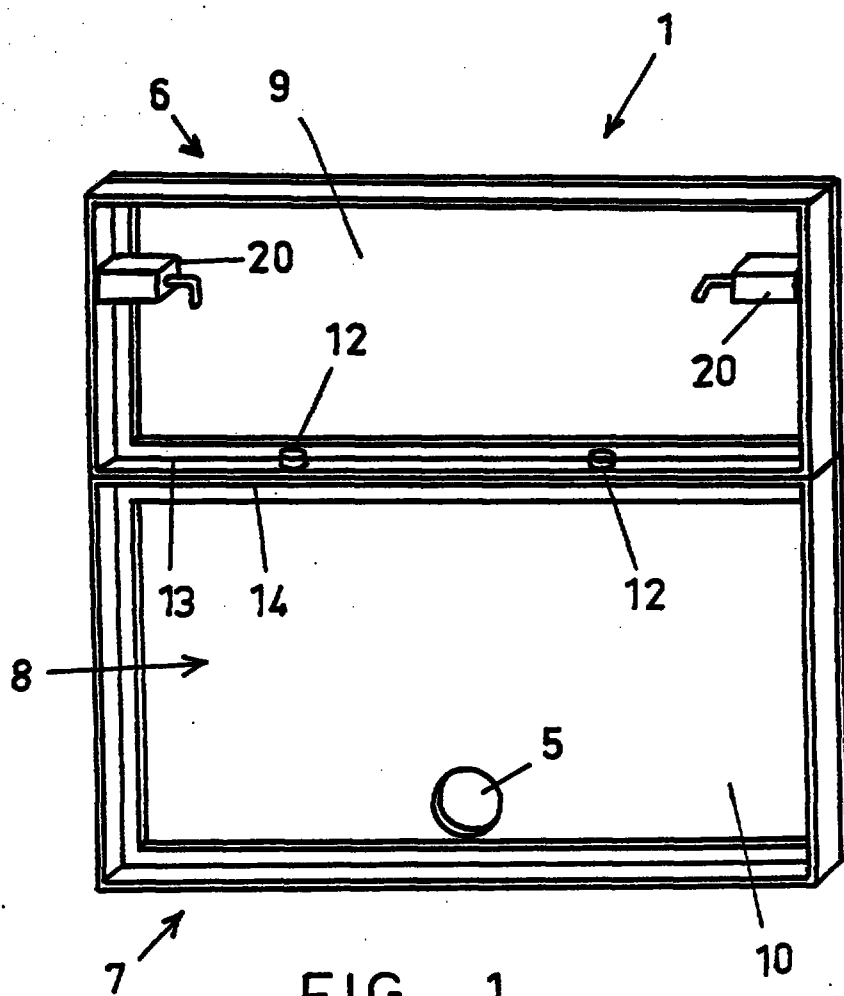


FIG. 1.

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FIG. 3.

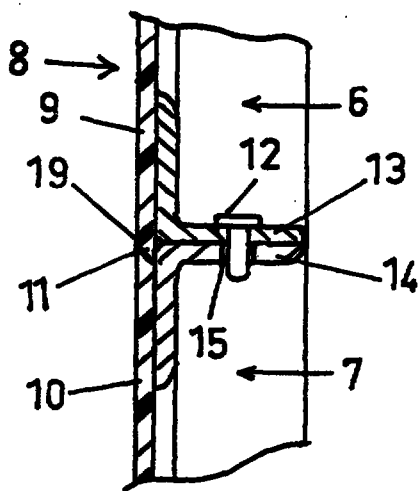


FIG. 4.

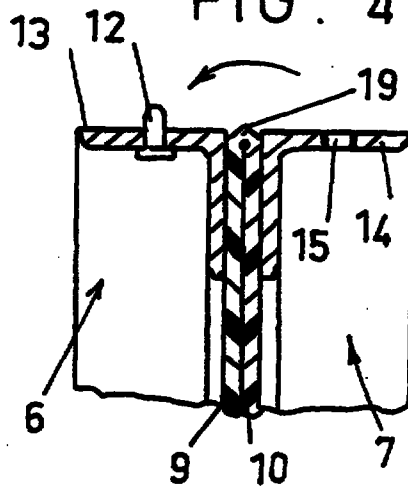


FIG. 5.

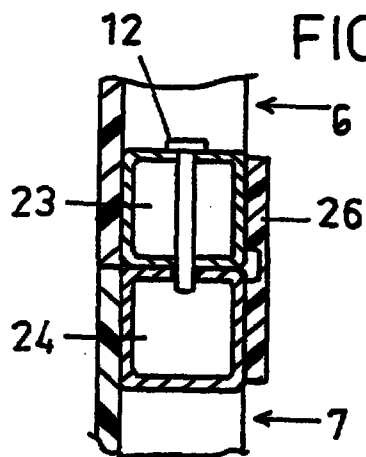


FIG. 6.

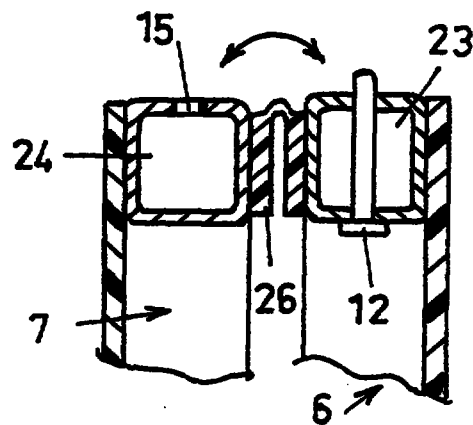


FIG. 7.

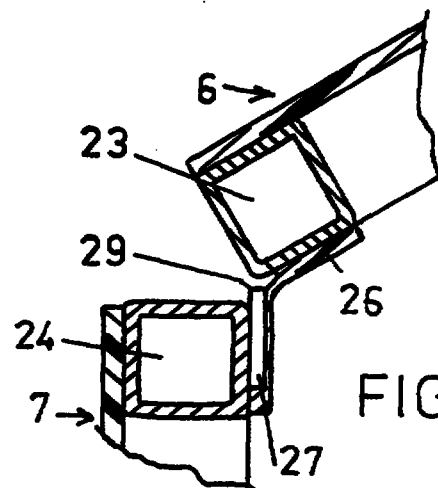
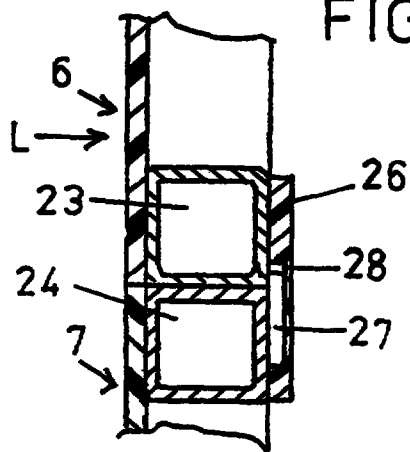


FIG. 8.

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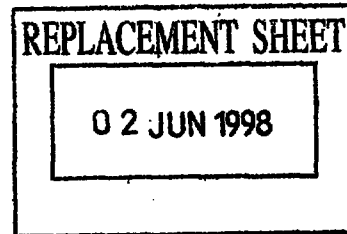
problem was the have the "nozzle side" of the enclosure laterally split to provide a lower part and an upper part. The upper part was connected by hinges to the lower part to allow the upper part to pivot outwardly. A major drawback with this arrangement was the bulkiness of the hinging arrangements which were used. The hinged part of the enclosure wall was held in place in the unfolded condition by bolts connecting the folding part to the adjacent enclosure walls.

OBJECTS OF THE INVENTION

The present invention has for its principal object the elimination of the bulky external hinge means of the prior art containers. A further object is to provide load resisting means at the hinge line between the upper and lower side parts to substantially eliminate pressure loads on the hinge connecting the upper and lower parts as are exerted by the load within a container of which the proposed container side forms part.

STATEMENT OF THE INVENTION

The invention can be said to provide a container side having an upper part and a lower part with substantially the same width, a hinge connection between said upper and lower parts which allows only pivotal hinging movement about a single pivot axis as said upper part hinges between an



operational relationship with said lower part and a folded relationship with said lower part, each part of said container side includes a frame covered with a liner panel and the liner panels of said parts provide a substantially continuous planar inner surface for the container side when said side parts are in said operational relationship with adjacent edges of said frames in overlying relationship, load resisting means to couple the adjacent edges of said frames together, said load resisting means being engaged automatically as said side parts approach said operational relationship following hinging movement of said upper part from the folded relationship, and being automatically disengaged as said upper part is hinged from the operational relationship towards the folded relationship.

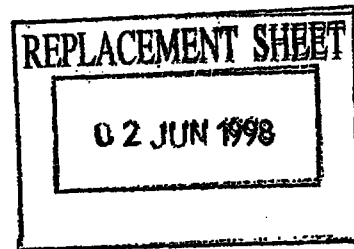
BRIEF DESCRIPTION OF THE DRAWINGS

Presently preferred embodiments of the invention will now be described with reference to the accompanying drawings in which;

Fig.1 is a perspective view of a first embodiment of a container nozzle side according to the invention,

Fig.2 is a perspective view of a container incorporating the nozzle side of Fig.1 in an inwardly hinged liner bag loading condition,

Fig.3 is an enlarged sectional view on the section line 3-3 of Fig.1,

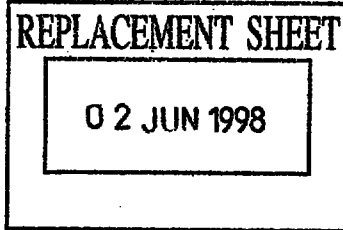


CLAIMS:

1. A container side having an upper part and a lower part with substantially the same width, a hinge connection between said upper and lower parts which allows only pivotal hinging movement about a single pivot axis as said upper part hinges between an operational relationship with said lower part and a folded relationship with said lower part, each part of said container side includes a frame covered with a liner panel and the liner panels of said parts provide a substantially continuous planar inner surface for the container side when said side parts are in said operational relationship with adjacent edges of said frames in overlying relationship, load resisting means to couple the adjacent edges of said frames together, said load resisting means being engaged automatically as said side parts approach said operational relationship following hinging movement of said upper part from the folded relationship, and being automatically disengaged as said upper part is hinged from the operational relationship towards the folded relationship.
2. A container side as claimed in claim 1 wherein the liner panels of the side parts are panels of a single liner sheet and the panels are separated by a flexzone in said sheet and the liner panels lie in facing relationship when the side parts are in the folded relationship.
3. A container side as claimed in claim 2 wherein said flex zone is a section of said liner sheet of thickness less than that of the remainder of said sheet.



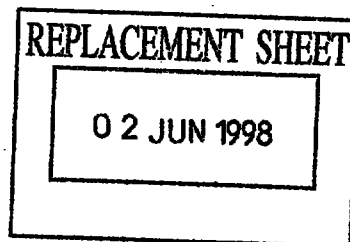
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4. A container side as claimed in any one of claims 1 to 3 where the frames of the side upper and lower parts respectively include bottom and top rails which lie closely adjacent or in engagement when the parts of said side are in the operational relationship and the load resisting means comprises engagable projecting members and apertures on said bottom and top rails.
5. A container side as claimed in claim 1 wherein said liner panels cover inner faces of the frames of the side upper and lower parts, and said parts respectively include bottom and top rails which lie closely adjacent or in engagement when the parts of said side are in the operational relationship, the hinge means between said side parts comprising a flexible element secured to said bottom and top rails and operational such that when said side parts are in the overlying folded relationship the outer faces of said side parts are in facing relationship.
6. A container side as claimed in claim 5 wherein the load resisting means comprises lug means on said top rail against which the outer face of said bottom rail is adapted to bear when said side parts are in said operational relationship.
7. A container side as claimed in claim 6 wherein said flexible element is recessed to receive said lug means when said parts are in said operational relationship.



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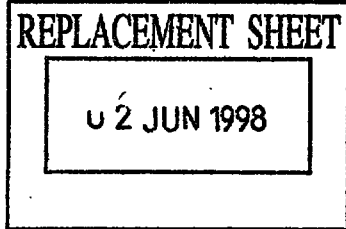
8. A container side as claimed in any one of the preceding claims in combination with three additional container sides with a first of said additional sides disposed opposite said container side and joined at first and second ends respectively to first ends of the other additional container sides, and with second ends of said other additional sides joined respectively to ends of said container side lower part, location means at the second ends of the other additional sides at an elevation above said container side lower part to be engaged by the ends of said container side upper part when in the operational relationship and to limit the hinging movement of said upper part beyond said operational relationship.

9. A container side in combination with additional sides, as claimed in claim 8, wherein the ends of the container side upper part are adapted to be engaged by hook elements on said locations means thereby to prevent spreading apart of the second ends of said other additional sides.

10. A container side as claimed in any one of the claims 1 to 7 in combination with three additional container sides with a first of said additional sides disposed opposite said container side and joined at first and second ends respectively to first ends of the other additional container sides, and with second ends of said other additional sides joined respectively to ends of said container side lower part, location means on ends of the



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container side upper part to abut second ends of said other additional sides when said upper part is in its operation relationship and to limit the hinging movement of said upper part beyond said operational relationship.

11. A container side in combination with additional sides, as claimed in claim 10, wherein the location means are hooked lugs with limbs to abut the second ends of said other additional sides and limbs to be engaged by outer faces of other additional sides to prevent spreading apart of second ends of said additional sides.