



US 20030192896A1

(19) **United States**

(12) **Patent Application Publication**

Palmer

(10) **Pub. No.: US 2003/0192896 A1**

(43) **Pub. Date: Oct. 16, 2003**

(54) **PACKING INSERT**

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(21) Appl. No.: **10/078,860**

(22) Filed: **Apr. 10, 2002**

Publication Classification

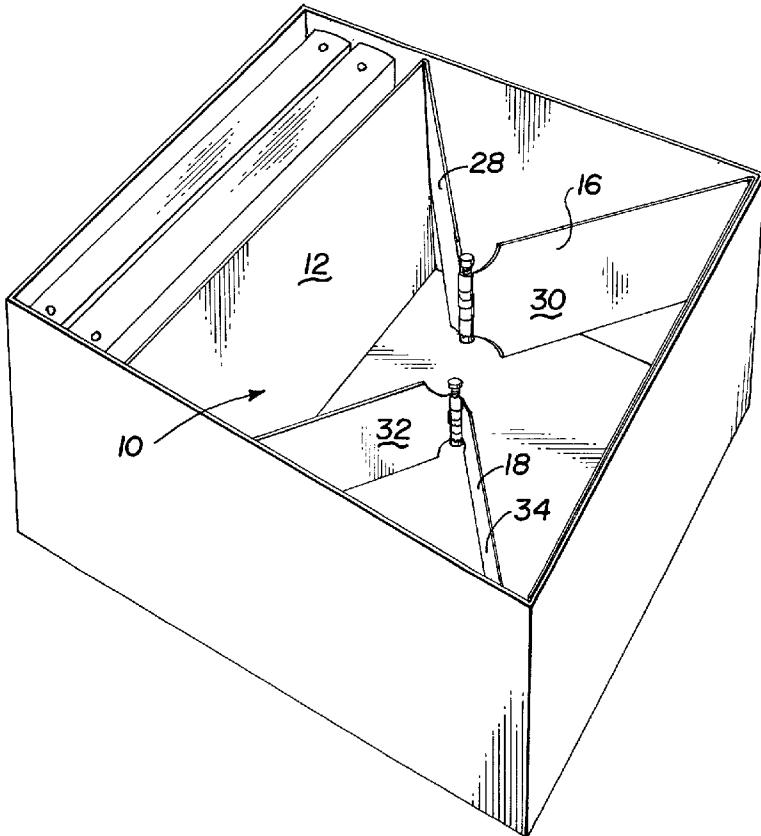
(51) **Int. Cl.⁷** **B65D 1/24**; B65D 57/00;
B65D 85/00

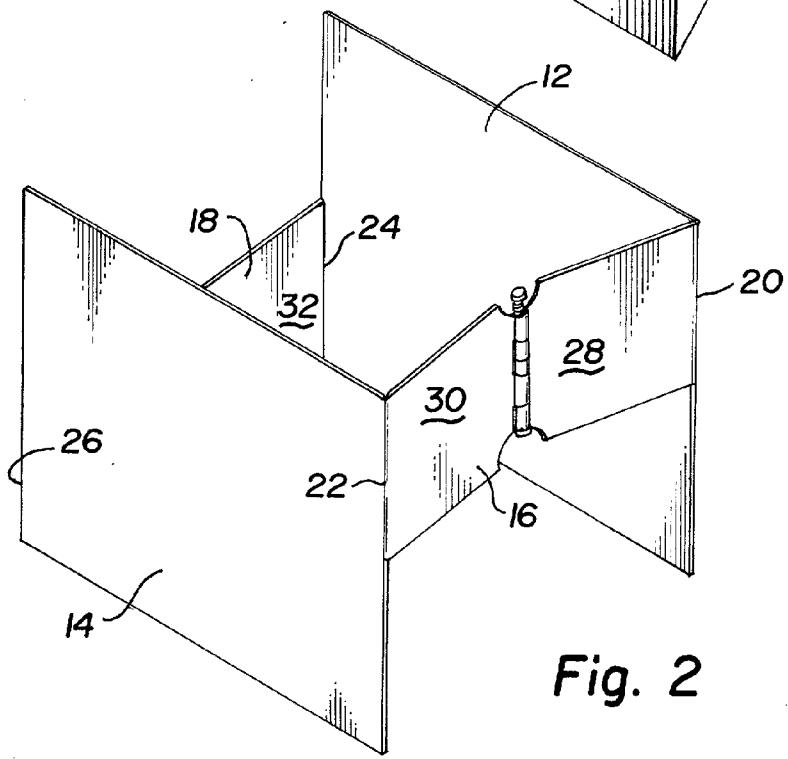
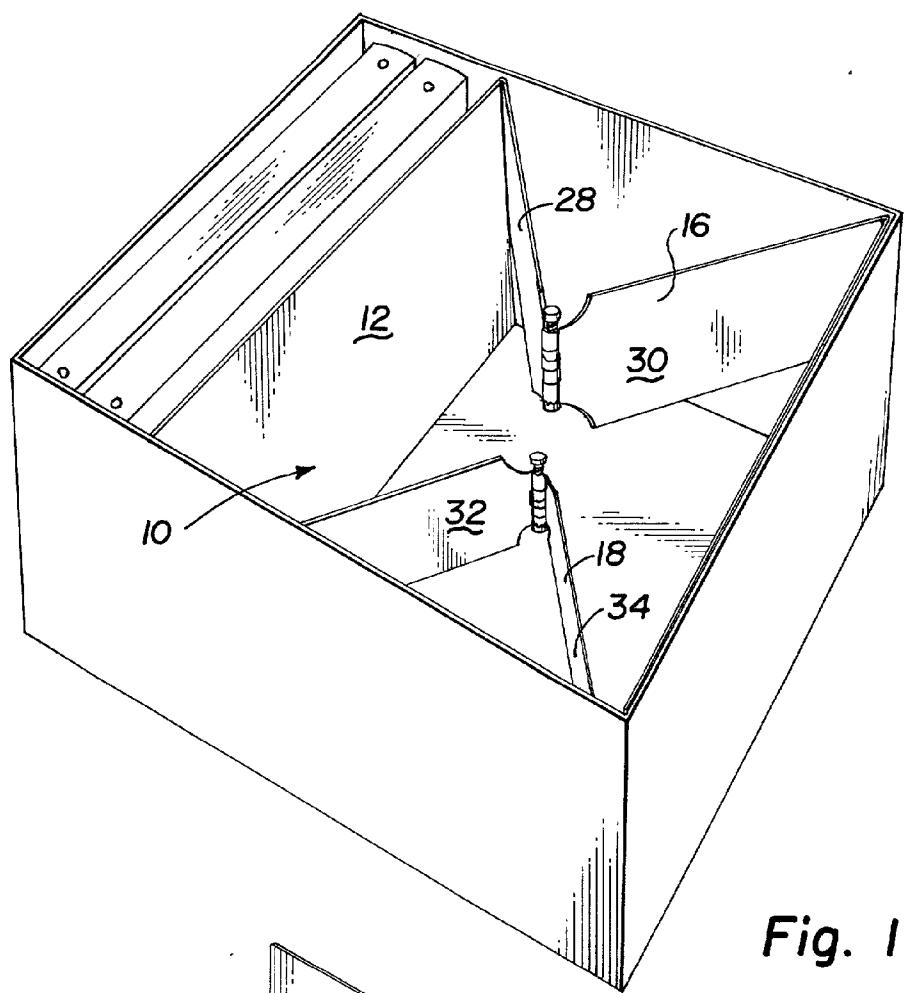
(52) **U.S. Cl.** **220/528**

(57) **ABSTRACT**

A packing insert is shown, which includes a first face, a second face, opposite the first face, a first side support and a second side support. The first side support is flexibly connected to the first face and the second face, preferably to one edge of each face. When not fully extended, the side supports bend inwards between the first face and the second

face. The first side support and the second side support are in positions with respect to the first face and the second face and each other such that when they are bent inwards between the first face and the second face, the first support member does not interfere with the second support member. In a preferred arrangement, the first side support is flexibly connected to the first face and the second face at a position which is different from that of the second side support, so that when the first side support and the second side support are bent inwards sufficiently far, they pass each other without interfering with each other. In one preferred arrangement, each side support includes a forward support member flexibly connected at one end to one edge of the first face and a rear support member flexibly connected at one end to one edge of the second face. The forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face. In one arrangement, each side support includes a multi-position locking hinge rotatably connecting the forward support member to the rear support member. In another arrangement, each side support includes a cam-locking hinge rotatably connecting the forward support member to the rear support member. In yet another arrangement, each side support includes a tension spring hinge rotatably connecting the forward support member to the rear support member.





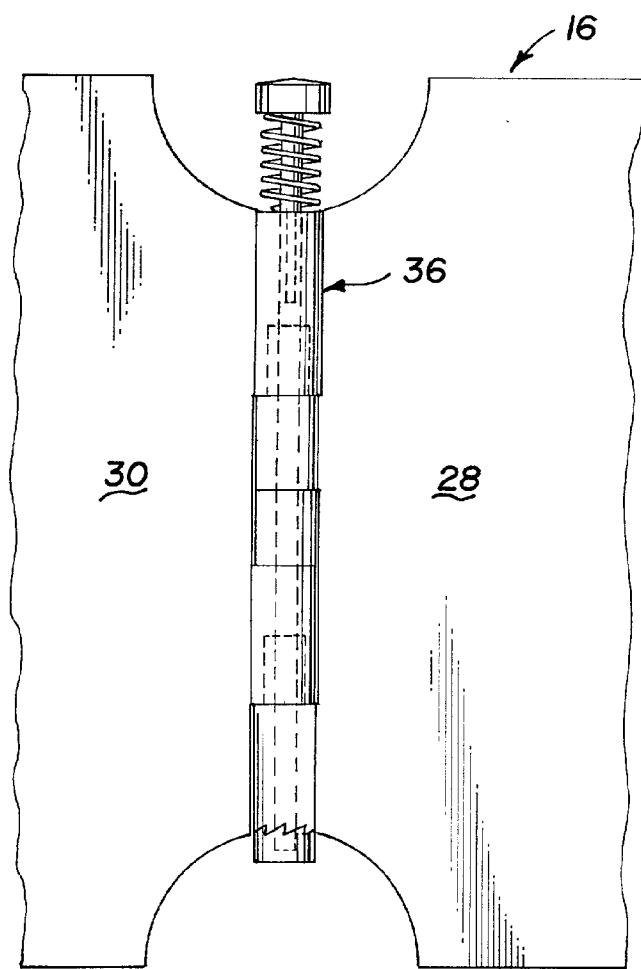


Fig. 3

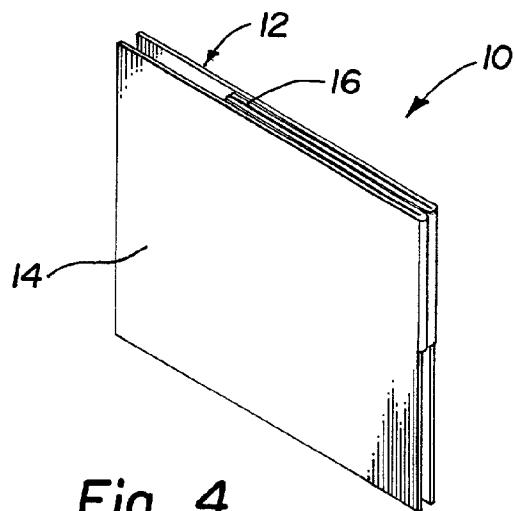


Fig. 4

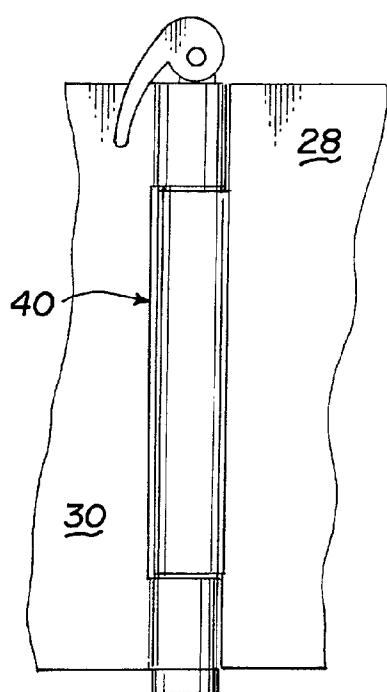


Fig. 5

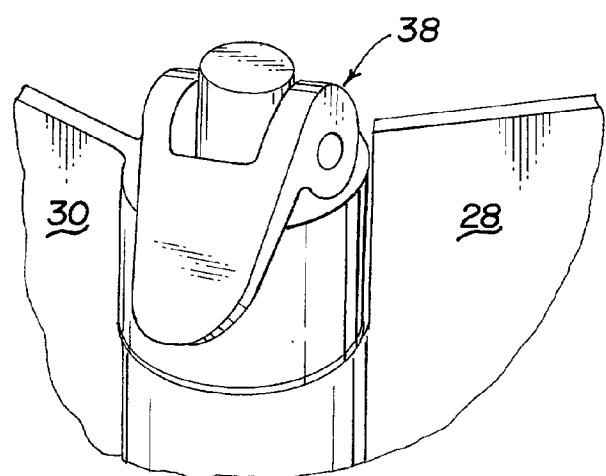


Fig. 6

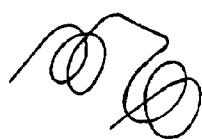


Fig. 6A

Fig. 6B



PACKING INSERT

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to packing boxes and file drawers.

[0003] 2. Description of Related Art

[0004] Previous packing inserts fall mainly into three classes: those with corner inserts, those which grip the sides of the container and those with inward folding sides: U.S. Pat. No. 0,974,871, PACKING OR SHIPPING BOX (Ferres), FIGS. 8 and 12; U.S. Pat. No. 0,987,958, PACKING OR SHIPPING BOX (Cleddy et al.), FIGS. 7, 8 and 9; and U.S. Pat. No. 2,742,219, ACCORDION PLEATED CUSHIONING STRIP (Van Antwerpen). All of the patents with inwardly folding sides have sides which are essentially full height (or length) and are aligned with the other sides rather than offset. They all seem to keep in place through outside pressure rather than a locking mechanism.

[0005] U.S. Pat. No. 3,221,973, SPACER PAD (Kalbrunner) shows various legs are offset from each other, although they are not opposite each other like the inwardly folding sides of the present invention.

SUMMARY OF THE INVENTION

[0006] A packing insert according to the present invention includes a first face, a second face, opposite the first face, a first side support and a second side support. The first side support is flexibly connected at one end to the first face, preferably to one edge, and is flexibly connected at the opposite end to the second face, preferably at one edge. The second side support is flexibly connected at one end to the first face opposite the connection to the first side support, and preferably to the edge of the first face which is opposite the edge connected to the first side support and is flexibly connected at the opposite end to the second face opposite the connection of the first side support, and preferably to the edge of the second face which is opposite the edge connected to the first side support. When not fully extended, the side supports bend inwards between the first face and the second face.

[0007] The first side support and the second side support are in positions with respect to the first face and the second face and each other such that when they are bent inwards between the first face and the second face, the first support member does not interfere with the second support member. In a preferred arrangement, the first side support is flexibly connected to the first face and the second face at a position which is different from that of the second side support, so that when the first side support and the second side support are bent inwards sufficiently far, they pass each other without interfering with each other.

[0008] In one preferred arrangement, the first side support includes a forward support member flexibly connected at one end to one edge of the first face and a rear support member flexibly connected at one end to one edge of the second face. The forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face. Similarly, the second side support includes a forward

support member flexibly connected at one end to the edge of the first face which is opposite the edge connected to the first side support and a rear support member flexibly connected at one end to the edge of the second face which is opposite the edge connected to the first side support. The forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face.

[0009] In one arrangement, the first side support further includes a multi-position locking hinge rotatably connecting the forward support member to the rear support member. In a preferred form, the second side support also includes a multi-position locking hinge rotatably connecting the forward support member to the rear support member. In another arrangement, the first side support includes a cam-locking hinge rotatably connecting the forward support member to the rear support member. In a preferred form, the second side support also includes a cam-locking hinge rotatably connecting the forward support member to the rear support member. In yet another arrangement, the first side support includes a tension spring hinge rotatably connecting the forward support member to the rear support member. Again, in a preferred form, the second side support also includes a tension spring hinge rotatably connecting the forward support member to the rear support member.

[0010] These and other objects, advantages and features of this invention will be apparent from the following description taken with reference to the accompanying drawing, wherein is shown a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWING

[0011] FIG. 1 is a perspective view of a packing insert according to the present invention, in use in packing a box with looseleaf notebooks;

[0012] FIG. 2 is a perspective view of a packing insert according to the present invention;

[0013] FIG. 3 is a detailed view of a hinge of the packing insert of FIG. 2;

[0014] FIG. 4 is perspective view of the packing insert of FIG. 2 in a collapsed position;

[0015] FIG. 5 is an alternative embodiment of the hinge of FIG. 3; and

[0016] FIG. 6 is yet another embodiment of the hinge of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] Referring now to the drawing, and in particular to FIG. 1 and FIG. 2, a packing insert according to the present invention is referred to generally by reference numeral 10, and it includes a first face 12, a second face 14, opposite the first face, a first side support 16 and a second side support 18. The first side support is flexibly connected at one end to the first face, preferably to one edge 20 of the first face and is flexibly connected at the opposite end to one edge 22 of the second face. The second side support is flexibly connected at one end to the first face opposite the connection to the first side support, and preferably to the edge 24 of the first face which is opposite the edge connected to the first side support and is flexibly connected at the opposite end to

the edge **26** of the second face which is opposite the edge connected to the first side support. When not fully extended, the side supports bend inwards between the first face and the second face.

[0018] First side support **16** and second side support **18** are in positions with respect to first face **12** and second face **14** and each other such that when they are bent inwards between the first face and the second face, the first support member does not interfere with the second support member. In the case illustrated, first side support **16** is connected to the top of the two faces, and second side support **18** is connected to the bottom of the two faces. Each side support is less than half the height of the faces, so that side support **16** passes over the top of side support **18** without hitting it or otherwise interfering with its operation. In a preferred arrangement, the first side support is flexibly connected to the first face and the second face at a position which is different from that of the second side support, so that when the first side support and the second side support are bent inwards sufficiently far, they pass each other without interfering with each other. Referring also to **FIG. 4**, this allows packing insert **10** to be folded flat for storage purposes or for when a box or file drawer is nearly full.

[0019] In one preferred arrangement, first side support **16** includes a forward support member **28** flexibly connected at one end to edge **20** of the first face and a rear support member **30** flexibly connected at one end to edge **22** of the second face. The forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face. Similarly, second side support **18** includes a forward support member **32** flexibly connected at one end to edge **24** of the first face which is opposite the edge connected to the first side support and a rear support member **34** flexibly connected at one end to edge **26** of the second face which is opposite the edge connected to the first side support. The forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face.

[0020] Referring also to **FIG. 3**, in one arrangement, the first side support further includes a multi-position locking hinge **36** rotatably connecting the forward support member to the rear support member. In a preferred form, the second side support also includes a multi-position locking hinge rotatably connecting the forward support member to the rear support member. In another arrangement, referring to **FIG. 5**, the first side support includes a cam-locking hinge **38** rotatably connecting the forward support member to the rear support member. In a preferred form, the second side support also includes a cam-locking hinge rotatably connecting the forward support member to the rear support member. In yet another arrangement, referring to **FIG. 6**, the first side support includes a tension spring hinge **40** rotatably connecting the forward support member to the rear support member. Again, in a preferred form, the second side support also includes a tension spring hinge rotatably connecting the forward support member to the rear support member.

[0021] From the foregoing it will be seen that this invention is well adapted to attain all of the ends and objectives hereinabove set forth, together with other advantages which are inherent to the apparatus.

[0022] It will be understood that certain features and subcombinations are of utility and may be employed without

reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

[0023] As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the figures of the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

1. A packing insert, comprising in combination:

a first face;

a second face, opposite the first face;

a first side support, flexibly connected at one end to one edge of the first face and flexibly connected at the opposite end to one edge of the second face, and bending inwards between the first face and the second face; and

a second side support, flexibly connected at one end to the edge of the first face which is opposite the edge connected to the first side support and flexibly connected at the opposite end to the edge of the second face which is opposite the edge connected to the first side support, and bending inwards between the first face and the second face, wherein the first side support and the second side support are in positions with respect to the first face and the second face and each other such that when they are bent inwards between the first face and the second face, the first support member does not interfere with the second support member.

2. A packing insert according to claim 1, wherein the first side support is flexibly connected to the first face and the second face at a position which is different from that of the second side support that when the first side support and the second side support are bent inwards sufficiently far, that they pass each other without interfering with each other.

3. A packing insert according to claim 2, wherein:

the first side support comprises a forward support member flexibly connected at one end to one edge of the first face and a rear support member flexibly connected at one end to one edge of the second face, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face; and

the second side support comprises a forward support member flexibly connected at one end to the edge of the first face which is opposite the edge connected to the first side support and a rear support member flexibly connected at one end to the edge of the second face which is opposite the edge connected to the first side support, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face.

4. A packing insert according to claim 3, wherein the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

5. A packing insert according to claim 3, wherein:

the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

6. A packing insert according to claim 3, wherein the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

7. A packing insert according to claim 3, wherein:

the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

8. A packing insert according to claim 3, wherein the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

9. A packing insert according to claim 3, wherein:

the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

10. A packing insert according to claim 1, wherein:

the first side support comprises a forward support member flexibly connected at one end to one edge of the first face and a rear support member flexibly connected at one end to one edge of the second face, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face; and

the second side support comprises a forward support member flexibly connected at one end to the edge of the first face which is opposite the edge connected to the first side support and a rear support member flexibly connected at one end to the edge of the second face which is opposite the edge connected to the first side support, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face.

11. A packing insert according to claim 10, wherein the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

12. A packing insert according to claim 10, wherein:

the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

13. A packing insert according to claim 10, wherein the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

14. A packing insert according to claim 10, wherein:

the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

15. A packing insert according to claim 10, wherein the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

16. A packing insert according to claim 10, wherein:

the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

17. A packing insert, comprising in combination:

a first face;

a second face, opposite the first face;

a first side support, flexibly connected at one end to the first face and flexibly connected at the opposite end to the second face, and bending inwards between the first face and the second face; and

a second side support, flexibly connected at one end to the first face opposite the connection to the first side support and flexibly connected at the opposite end to the second face opposite the connection to the first side support, and bending inwards between the first face and the second face, wherein the first side support and the second side support are in positions with respect to the first face and the second face and each other such that when they are bent inwards between the first face and the second face, the first support member does not interfere with the second support member.

18. A packing insert according to claim 17, wherein the first side support is flexibly connected to the first face and the second face at a position which is different from that of the second side support that when the first side support and the second side support are bent inwards sufficiently far, that they pass each other without interfering with each other.

19. A packing insert according to claim 18, wherein:

the first side support comprises a forward support member flexibly connected at one end to the first face and a rear support member flexibly connected at one end to the second face, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face; and

the second side support comprises a forward support member flexibly connected at one end to the first face opposite the connection to the first side support and a rear support member flexibly connected at one end to the second face opposite the connection to the first side support, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face.

20. A packing insert according to claim 19, wherein the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

21. A packing insert according to claim 19, wherein:

the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

22. A packing insert according to claim 19, wherein the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

23. A packing insert according to claim 19, wherein:

the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

24. A packing insert according to claim 19, wherein the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

25. A packing insert according to claim 19, wherein:

the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

26. A packing insert according to claim 17, wherein:

the first side support comprises a forward support member flexibly connected at one end to the first face and a rear support member flexibly connected at one end to the second face, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face; and

the second side support comprises a forward support member flexibly connected at one end to the first face

opposite the connection to the first side support and a rear support member flexibly connected at one end to the second face opposite the connection to the first side support, wherein the forward support member and the rear support member are rotatably connected to each other at their ends which are opposite the first face and the second face.

27. A packing insert according to claim 26, wherein the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

28. A packing insert according to claim 26, wherein:

the first side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a multi-position locking hinge rotatably connecting the forward support member to the rear support member.

29. A packing insert according to claim 26, wherein the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

30. A packing insert according to claim 26, wherein:

the first side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a cam-locking hinge rotatably connecting the forward support member to the rear support member.

31. A packing insert according to claim 26, wherein the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

32. A packing insert according to claim 26, wherein:

the first side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member; and

the second side support further comprises a tension spring hinge rotatably connecting the forward support member to the rear support member.

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