United States Patent [19]

McDanield

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[54] **PACKAGING PAD**

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[73] Assignee: **Whirlpool Corporation**

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[52] **U.S. Cl.**.....**229/14 C,** 206/46 FN, 206/46 FR, 229/DIG. 1

[51] **Int. Cl.**.....**B65d 5/60**

[58] **Field of Search**.....229/14 C, DIG. 182; 206/45 FR, 206/46 FN, 62 R

[56] **References Cited**

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[57] **ABSTRACT**

A clearance shock absorbing packaging pad comprising a paperboard blank foldable into a hollow elongated four sided structure having interlocked overlapped top parts that do not require gluing or other fastening means other than the interlocked portions and sloping sides to control compression of the pad under load conditions.

5 Claims, 5 Drawing Figures

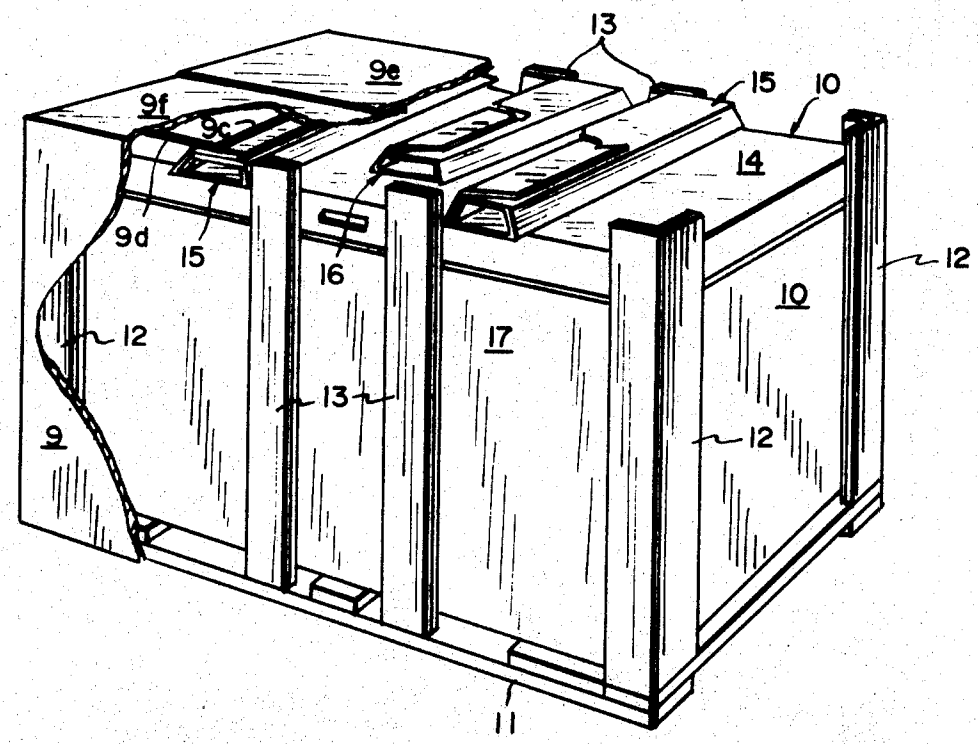


FIG.1

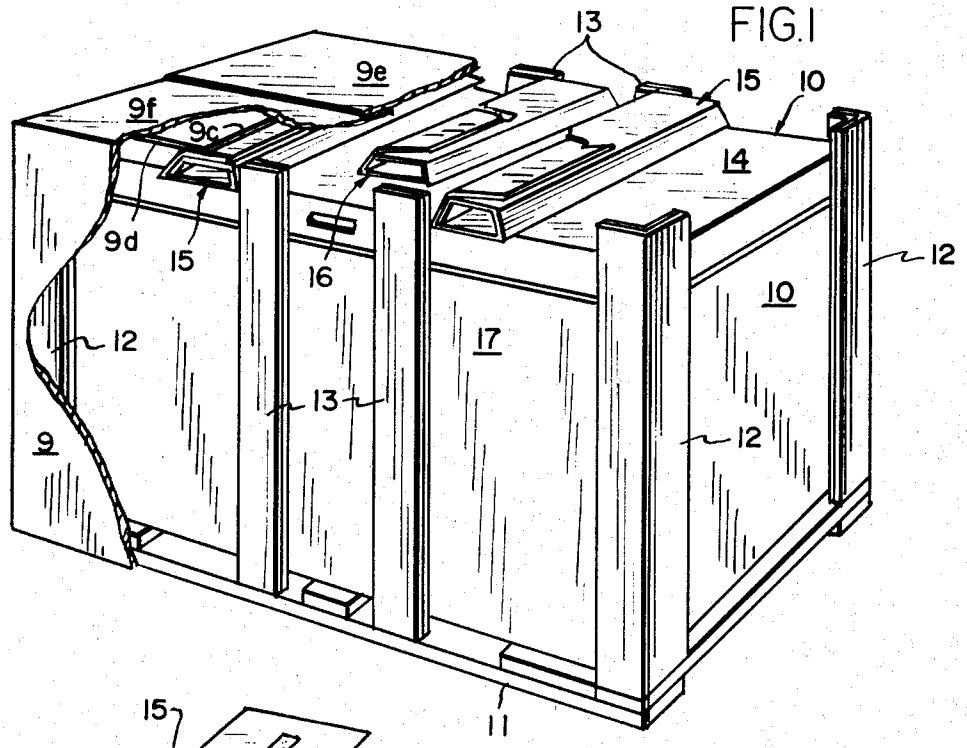


FIG.4

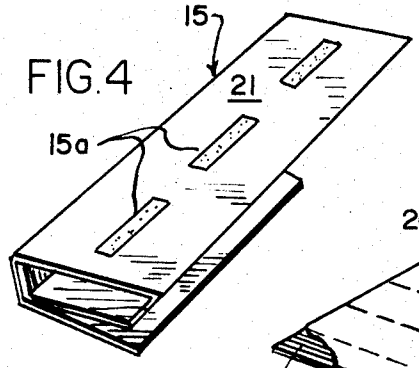


FIG.2

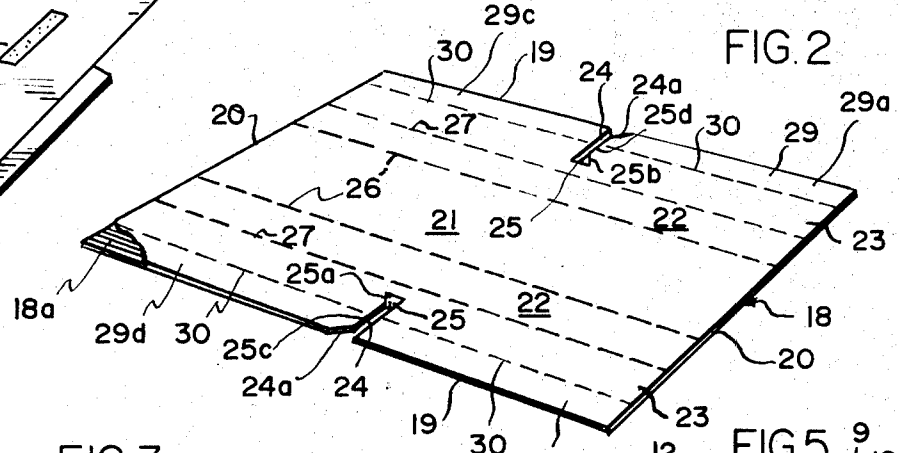


FIG.3

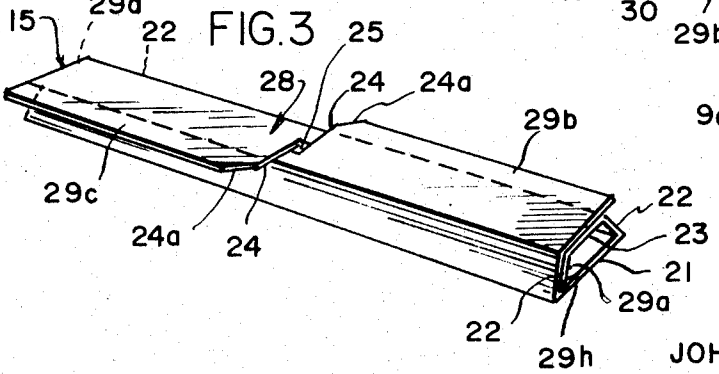
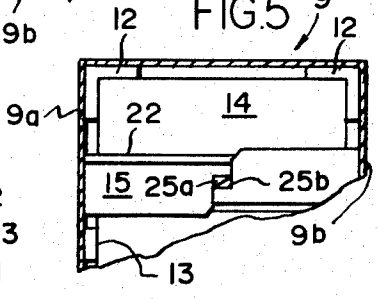


FIG.5



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PACKAGING PAD

SUMMARY OF THE INVENTION

One of the features of this invention is to provide a clearance shock absorbing packaging pad for protecting merchandise in shipment comprising a paperboard blank with fold areas and interlocking slits permitting folding the blank into a hollow structure with a base, inwardly sloping sides and a top formed of overlapped sections with interengaging slits that are sufficient to hold the pad in its assembled folded arrangement without the requirement of additional fastening means such as glue. The pad is receivable between easily damaged merchandise and an outer shipping container. When the enclosing shipping container is in place, under compression load conditions, the inward slope of the pad sides will cause the sides to move inwardly until edge portions of the pad are tight into folded crease portions of the pad and thus the pad will support the load. The pad construction provides substantial strength and rigidity lengthwise of the pad to facilitate squeeze handling of the container without damage to the merchandise.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view illustrating a heavy article on a shipping frame with the pads in position along with other packaging elements for receiving the enclosing shipping container portions of which are removed to illustrate the invention.

FIG. **2** is a paperboard blank of corrugated board for forming a pad embodying the invention with a surface portion of the blank removed to show the flute direction of the corrugations.

FIG. **3** is a perspective view illustrating the assembled pad formed by folding the blank of FIG. **2**.

FIG. **4** is a fragmentary perspective view of the inverted pad.

FIG. **5** is a fragmentary plan view of the structure of FIG. **1** with top flap portions of the shipping container removed to illustrate the cooperation between the ends of the pads and the side walls of the shipping container to facilitate squeeze handling of the merchandise in shipment.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As illustrated in FIG. **1**, the packaging of a heavy article of merchandise such as the box **10** which in this embodiment is a chest type freezer comprises a corrugated board shipping container **9**, a wooden skid **11**, corner corrugated board paperboard pads **12** at the four vertical corners of the box **10** and vertical side pads **13** also of corrugated board paperboard at the sides of the box **10**. As can be seen in FIG. **1**, the lower ends of the pads **12** and **13** engage the skid **11** while the upper ends extend above the top surface **14** of the box **10**.

Positioned on the top surface **14** of the packaged box **10** are three shock absorbing pads with a pair of the pads **15** being located on opposite sides of an intermediate pad **16**. The pads **15** and **16** are of sufficient length to extend laterally between the side walls **9***a* and **9***b* of the shipping container **9**. The pads **15** are held in position on the top surface **14** by any means desired

such as gummed tape **15***a* so that the laterally extending edges **9***c* of the end flaps **9***d* of the enclosing shipping container **9** will substantially coincide with the longitudinal centers of the pads **15** as illustrated in FIG. **1** so that the pads **15** support the insides of the container end flaps **9***d* to assure contact with the outer top flaps **9***e* and **9***f* for container sealing by gluing. The intermediate pad **16** is adapted to aid in supporting the outer top flaps **9***e* and **9***f* of the shipping container **9**.

Each pad **15** and **16** is constructed of paperboard such as the ordinary corrugated board used widely in commerce for constructing shipping containers such as container **9**. Each pad comprises a paperboard blank **18** having opposite side edges **19** and end edges **20** forming a rectangular structure as shown in open position in FIG. **2**. A surface portion of the blank **18** is removed at **18***a* to show the flute direction of the corrugations providing greater strength lengthwise of the pad to resist crushing of the pad under squeeze handling conditions. In the illustrated embodiment each pad **15** and **16** is constructed of 200 lb. corrugated board with a "C" flute. Blank **18** has a longitudinal centrally located base portion **21** for forming a base of the pad, a pair of side portions **22** on opposite sides of the base portion **21** and substantially parallel thereto and to each other and a pair of edge portions **23** between the side portions **22** and the lateral edges **19**.

Each edge portion **23** has an inwardly directed slit **24** that are approximately linearly aligned to facilitate interlocking engagement of the side edges of the pad. In the illustrated embodiment each of the slits **24** are provided with an outwardly open angular lead in portion **24***a* and with a lateral triangular enlargement **25** at its inner end. The enlargements **25** extend in opposite directions with respect to the slits **24** such that on assembly of pad **15** as shown in FIG. **3** edge portions **25***a* and **25***b* (see FIGS. **2** and **5**) are in interlocking interference relationship.

The pad blank **18** has means such as scoring **26** and **27** between the portions **21**, **22** and **23** to aid in folding the blank to provide the pad as shown in FIG. **3** with a base **21**, sides **22** which slope inwardly with respect to base **21** as shown in FIG. **3** and a top **28** comprising the edge portions **23** in overlapped relationship with the slits **24** in interlocking interference engagement thereby resisting unfolding of the pad.

As can be seen from the drawings, the slits **24** extend less than the full width of the edge portions **23** so that downward pressure on the pad serves to force the slits into tighter engagement at their enlarged inner ends **25** facilitating a controlled compression of pad **23** under load conditions.

Each edge portion **23** in the illustrated embodiment has an extreme side edge boundary portion **29** at the edges **19** that is itself provided with a fold area such as scoring **30** to permit bending of a portion **29***a* of boundary portion **29** as illustrated in FIG. **3** into surface engagement with the corresponding side portion **22** on the inner surface thereof as illustrated at the right-hand end of FIG. **3**. Thus the inner edge portion **29***a* of boundary portion **29** has its edge received in the folded crease forming a corner between the base **21** and the adjacent side **22** to form a reinforcement for the side of the pad while the other and overlying boundary portion **29***b* extends beyond its corresponding side **22** to form a

lateral extension of the assembled pad (FIG. 3). Because of the interengagement of the slits **24** one overlying boundary portion **29***b* extends from one side of the pad **15** while another boundary portion **29***c* extends from the other side of the pad at the opposite end thereof (FIGS. 2 and 3). At the same time an edge portion **29***d* of blank **18** (FIG. 2) when the blank is formed into a pad **15**, has its edge received in the folded crease forming a corner between the base **21** and its adjacent side portion **22** at the far left-hand end of FIG. 3 which is not shown in detail. Although only a single pair of interengaging slits **24** have been illustrated it is of course obvious that more than one pair may be provided as desired. In all cases, however, the overlapping at the top of the assembled pad will be staggered as illustrated in FIG. 3.

In the illustrated embodiment the base **21** in the erected pad is wider than the top **28** of the pad and the slits **24** have the inner enlargements **25** to provide locking tabs **25***c* and **25***d* at about the center of the pad top **28**. In this embodiment the blank **18** is approximately 29½ inches long, and the distance from the right-hand edge as shown in FIG. 2 to slit **24** is approximately 15¼ inches on the upper edge of the blank **18**, and approximately 14¼ inches on the lower edge of the blank, resulting in approximate linear alignment of the slits **24**. Of course, the dimensions are related to the size of the shipping container and would be adjusted accordingly if the pads of the invention were used in conjunction with a shipping container of a different size. With the illustrated arrangement the sides **22** of the pad **15** as illustrated in FIG. 3 are sloped upwardly and inwardly from the base **21** to the top **28** at substantially equal angles which impart considerable compressive strength to the pad. Under compression load conditions, the inward slope of the pad sides **22** will cause the sides **22** to move inwardly until the edge or boundary portions **29***a* and **29***d* are tight into the folded crease portions of the pad as indicated at **29***h* in FIG. 3 thus to control compression and support the load.

As is apparent, the top **28** of each pad has a double thickness of paperboard throughout its length and width formed by the overlapping portions **23**. Because of this and because of the angled arrangement of the sides and interengagement of the slits **24** the pad is very resistant to collapse under a compressive force. However, even if such collapse does occur there will still be three thicknesses of paperboard protecting the packaged article. Furthermore, the collapse of the pad would be obvious from examination of the container signaling that no further loading should take place. In contrast, a solid pad, if used instead of pad **15**, would tend to crush the merchandise under overload conditions without evidence of such overload, possibly resulting in delivery of damaged merchandise.

In FIG. 1 there is illustrated the placing of the pads **15** and **16** of this invention on the top surface **14** of the box **10**. As shown in FIG. 5 the pads such as pad **15** extend the full width of shipping container **9** and thus reinforce and support the container side walls **9***a* and **9***b* to facilitate squeeze lifting of the container through resistance to crush in this direction from the squeeze lift equipment. In addition, the flute direction of the corrugations of the corrugated board forming the blank **18** is parallel to the opposite side edges of the blank as shown at **18***a* in FIG. 2 and thus the pads **15** have greater strength lengthwise for improved resistance to crushing under a squeezing force applied to the ends of the pad.

It is of course evident that similar pads can be used where feasible between the sides of box **10** and the inner sides of the enclosing packing container **9** in lieu of elements **13**.

Having described my invention as related to the embodiment shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A clearance shock absorbing packaging pad, comprising: a folded paperboard blank having opposite side edges, a base portion, a pair of opposite side portions at the opposite sides of the base portion and a pair of edge portions between said edges and said side portions; means forming approximately linearly aligned inwardly directed interlocking slits at said edge portions; and means providing fold areas between said portions, the resulting said pad thereby having a base comprising said base portion, opposite sides comprising said side portions and a top comprising said edge portions in overlapped relationship with said slits in interlocking interference engagement, an edge portion on one side of its said slit being above and on the other side of its said slit beneath said opposite edge portion with the result that said overlapped edge portions are also interlaced for added shock absorbing strength and stability, each said edge portion having a boundary portion at a said edge provided with a fold area means permitting bending of a boundary portion of the inner said overlapped edge portion into surface engagement with the corresponding side portion on the inner surface thereof, and with said edge of said inner portion being received in the angle formed by the base portion and corresponding said side portions.

2. The pad of claim **1** wherein each said slit extends less than the full width of its said edge portion, the slits having lateral interlocking enlargements.

3. A clearance shock absorbing packaging pad, comprising: a folded paperboard blank having opposite side edges, a base portion, a pair of opposite side portions at the opposite sides of the base portion and a pair of edge portions between said edges and said side portions; means forming approximately linearly aligned inwardly directed interlocking slits at said edge portions; and means providing fold areas between said portions, the resulting said pad thereby having a base comprising said base portion, opposite sides comprising said side portions and a top comprising said edge portions in overlapped relationship with said slits in interlocking interference engagement, an edge portion on one side of its said slit being above and on the other side of its said slit beneath said opposite edge portion with the result that said overlapped edge portions are also interlaced for added shock absorbing strength and stability, said base portion being wider than said overlapped top, and the slits terminating at substantially the center of the pad so that the sides of the resulting pad are sloped

upwardly and inwardly toward each other for added crush resistance.

4. The pad of claim 3 wherein each said edge portion has a boundary portion at a said edge provided with a fold area means permitting movement of the boundary portion of the inner said overlapped edge portion into surface engagement with the corresponding side portion on the inner surface thereof under a compression load applied to the top of said pad, and with said edge of said inner portion received in the angle formed by the base portion and corresponding said side portion.

5. The pad of claim 4 wherein each said slit extends less than the full width of its said edge portion, the slits having lateral interlocking enlargements.

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