Aug. 23, 1960 C. E. RUPP 2,950,038

PACKING PAD

Filed Sept. 6, 1957

Fig. 1.

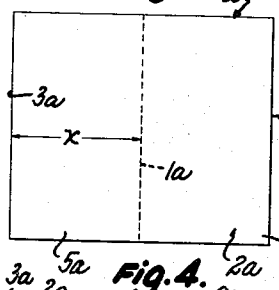


Fig. 2.

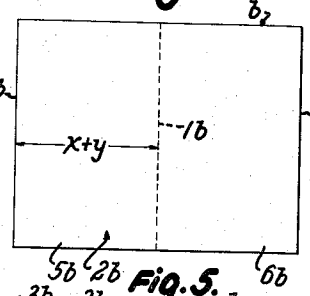


Fig. 3.

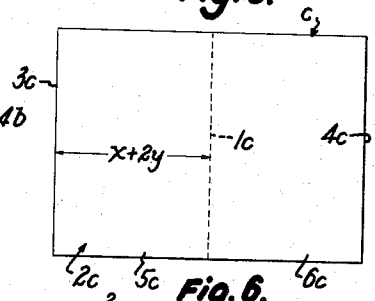


Fig. 4.

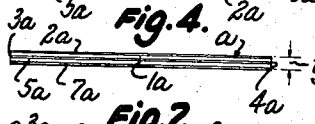


Fig. 5.

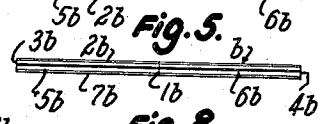


Fig. 6.

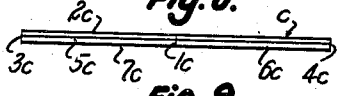


Fig. 7.

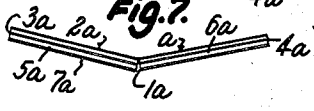


Fig. 8.

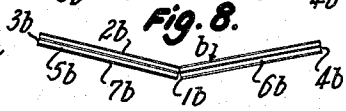


Fig. 9.

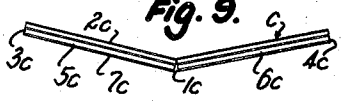


Fig. 10.

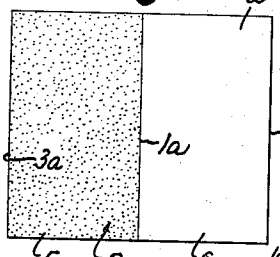


Fig. 11.

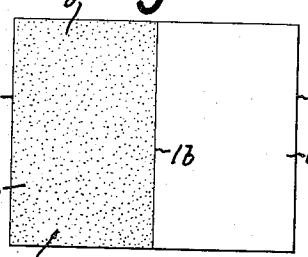


Fig. 12.

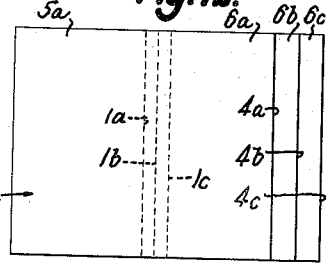


Fig. 13.

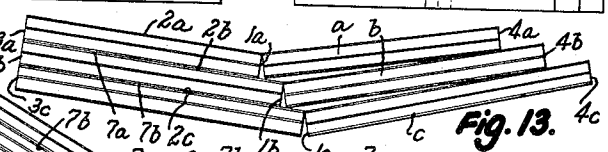


Fig. 14.

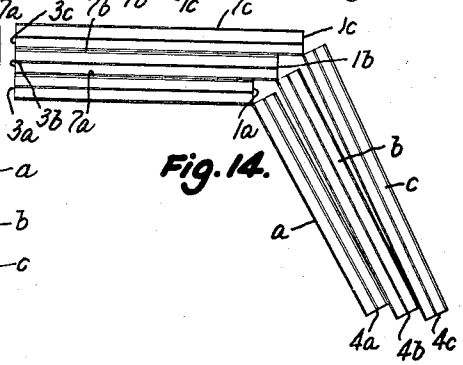
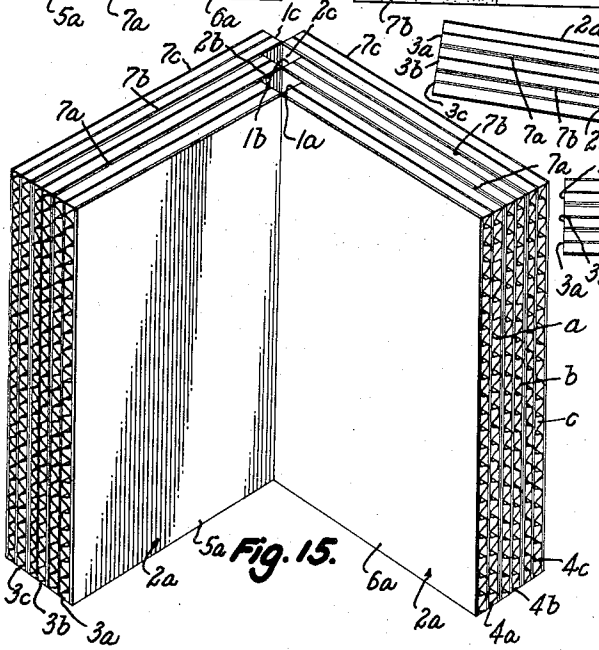


Fig. 15.



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Atty.

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2,950,038

PACKING PAD

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Filed Sept. 6, 1957, Ser. No. 682,534

1 Claim. (Cl. 229—14)

This invention relates to packing pads of the type adapted, primarily, for arrangement in the corners of packing cases and the like containers for properly supporting or locating articles therein to prevent the shifting, crushing and breakage of such articles and to cushion the articles within the confines of the containers in relation to the walls thereof, but, as will hereinafter appear, the packing pad of the present invention is adaptable for use in locations in containers other than in the corners thereof.

In its concept as a corner packing pad, the packing pad of the invention is similar, in general structure and function to that disclosed in Fig. 5 of the patent of Calvin A. Agar, No. 1,613,152, granted January 4, 1927, but it differs materially from the Agar corner pad in the specific mode of its construction and the arrangement and assembly of its parts, whereby advantages in its diversification of use, the manner and economy of its manufacture, and its packaging or handling for storage, shipment, sale and use are attained.

The object of the invention is to provide a packing pad preferably composed of a number of layers of paperboard material such as double-faced corrugated board, or double-double corrugated board, each layer of which is provided with a substantially medially disposed hinge-forming cut score upon which its thus hinge-joined parts may be folded from flat planar condition to any relative angular position, preferably from 180° to 90°, to form a corner packing pad, but capable of having its layers fully assembled and secured in flat, nonangular, form during the process of its manufacture, thus lending itself readily to packaging or handling for storage, shipment, sale and use in a form which is more economical, less space consuming and easier of manipulation than packing pads now known, and particularly those, such as Agar's, which are initially of rigid angular form.

To this end the invention comprises a lamellar packing pad each of the multiple layers of which is provided with a folding hinge defining in it two portions relatively movable from flat to angular position, the portions of the layers at one side of their respective folding hinges being secured together and their portions at the other side of such hinges being freely slidable upon each other, the folding hinges of the respective layers being arranged in parallelism but relatively laterally spaced apart a distance substantially equal to the thickness of the indivdual layers, or so spaced as to make possible the formation of any angular packing pad in which all of its freely slidable portions will lie in full face-to-face contact, all as will be explained hereinafter more fully and finally claimed.

In the accompanying drawing illustrating the invention, in the several figures of which like parts are similarly designated,

Figs. 1, 2 and 3 show, in plan, three related layer elements as viewed from the inner face of the angular, or corner, packing pad to be formed therefrom,

Figs. 4, 5 and 6 are edge views of the three layer elements shown in Figs. 1, 2 and 3, respectively,

Figs. 7, 8 and 9 are views similar to Figs. 4, 5 and 6, but showing the elements with their portions angularly bent upon the folding hinges provided by the cut scores formed therein,

Fig. 10 is a plan view of the reverse side of the layer element shown in Fig. 1 and indicates the application of adhesive to one of its folding portions defined by the folding hinge score,

Fig. 11 is a view similar to Fig. 10 but related to the layer element of Fig. 2,

Fig. 12 shows in plan the three layers of the packing pad assembled as a unitary structure and viewed from the face indicated in relation to Figs. 1, 2 and 3,

Fig. 13 is an enlarged edge view of the assembled, unitary pad structure with a preliminary angular folding bend given to it,

Fig. 14 is a view similar to Fig. 13, but reversed face-for-face, showing an increased extent of angular folding bend, and

Fig. 15 is a perspective view of the pad with its portions arranged at an angle of 90° for use as a conventional corner packing pad.

Although the invention may be utilized in the formation of packing pads having angularly disposable related portions of various types, it is shown in the drawing, and will be described hereinafter, primarily in its application to the production of a corner pad having its said related portions capable of being arranged to form, ultimately, a 90° angle, in that such a pad will ordinarily have the free edges of its related portions in uniform, flush arrangement. However, when this edge arrangement is not essential or desired the related portions of the pad may be of various, and different, dimensions, either laterally or longitudinally, but the basic concept of the invention having to do with the association of their respective folding hinge scores or angular folding means will still be made to apply.

In the embodiment of the invention illustrated in the drawing the packing pad comprises three layer members or laminae *a*, *b* and *c* of so-called "double-double" corrugated board, that is to say corrugated board having two layers of corrugated paper, and outer, inner and intermediate liner sheets, with the corrugations running lengthwise, or longitudinally, as best shown in Fig. 15, so that the pad may have the thickness, rigidity, resiliency and crush resistance found desirable in such pads. However, the pad may be formed of more or fewer layer members or laminae, and other types of corrugated board, or other paperboard or sheet material, may be employed for its production.

Each of the layer members *a*, *b* and *c* is formed with a substantially medially disposed cut score **1***a*, **1***b*, **1***c* which extends through it from one face, its ultimate outer face, to the inner face of its respective inner liner **2***a*, **2***b*, **2***c* (see Figs. 4 to 9 and 13 to 15) to thereby form at the score-adjacent portion of such inner liner a proper folding hinge which, in the innermost layer, presents an unbroken surface. As shown in Figs. 1 to 3, and having reference also to Fig. 12, where the free side edges **3***a*, **3***b* and **3***c*, particularly, of the finished pad are to be in flush alignment (Figs. 12 to 15), and considering the layer members, when laminated, from the inside of the ultimate angle of the pad as in the order *a*, *b*, *c*, and the score **1***a* as being arranged laterally inwardly from the edge **3***a* of the inner layer member *a* a distance *x*, the scores **1***b* and **1***c* of the layer members *b* and *c* will be so disposed that their distance from the edges **3***b* and **3***c* of their layer members will be $x+y$ and $x+2y$, respectively, where *y* is equal to the thickness of the indi-

vidual layer members, as indicated in Figs. 1 to 4, or, as will later be described, may be predetermined for the ultimate angle of the pad and as related to the thickness of the layer members. Of course, if more layer members are used, each successive outwardly disposed layer member will have this $x+y$ dimension increased by another y increment as, for example, $x+3y$, $x+4y$, etc.

Where, as shown, a pad having symmetrical angularly foldable portions is provided, and the free edges of both portions are to be in flush alignment (Fig. 15), the distance of the free side edge 4*a*, 4*b*, 4*c* of each layer member from its respective folding score 1*a*, 1*b*, 1*c* will be equal to the respective distance x, $x+y$, $x+2y$, thus providing two similar foldable portions 5*a*—6*a*, 5*b*—6*b*, 5*c*—6*c* in each of the layer members, respectively.

Obviously, if flush free edges for the angular pad are not required or desired, or a stepped free edge, or edges, may be preferred, it is merely necessary that in the assembly of the several layer members their folding scores 1*a*, 1*b*, 1*c* be progressively, relatively, laterally displaced at distances equal to the predetermined value of the dimension y, as indicated in Fig. 12.

With reference to Figs. 10 to 12, it will be seen that with adhesive applied, as indicated by stippling, to the exposed faces of the outer liners 7*a*, 7*b* of the portions 5*a*, and 5*b* of the layer members *a* and *b* (Figs. 10 and 11) these members are superimposed upon and caused to adhere to the outer faces of the inner liners 2*b* and 2*c* of the portions 5*b* and 5*c* of the members *b* and *c* (Fig. 12) with the free side edges 3*a*, 3*b* and 3*c* of all of the members *a*, *b* and *c* in flush alignment. Due to the dimensional relation of the scores 1*a*, 1*b* and 1*c* to the free side edges 3*a*, 3*b* and 3*c*, these scores will lie in properly, relatively, laterally displaced parallelism to thus accommodate the completed pad to bending of the layer members upon their hinge means, the unsecured portions 6*a*, 6*b* and 6*c* being capable of relative sliding movement during such bending, as illustrated in Figs. 13 and 14.

Other methods and means may be employed for securing either the folding portions 5*a*, 5*b* and 5*c*, or, alternatively, the folding portions 6*a*, 6*b* and 6*c* together, so long as the predetermined, spaced parallel arrangement of the folding score means 1*a*, 1*b*, 1*c* is obtained.

It will be appreciated, moreover, that the various layer members in any one pad construction may be of different thicknesses and provision for their proper angular folding may be made by a proper parallel spacing of their respective folding scores appropriate to such thicknesses.

Furthermore, the material of the assembled pads may be made in any desired length, and individual pads of a height required for a particular packing operation may be cut therefrom.

As hereinbefore indicated, packing pads thus constructed in accordance with the invention may be shipped flat (Fig. 12) and they may be utilized in packing either in flat form or folded to any desired angle from 180° to 90° (Figs. 12 to 15) to accommodate them to the conformation of the articles to be packaged or of the containers to receive such articles.

Also, for corner pads for any particular angle, say less or greater than the 90° pad shown in the drawing, a proper, predetermined, relative, parallel spacing of the folding scores of the several layer members will make possible the production of pads which, when they are bent to such particular, predetermined angle will have the free foldable portions of such layer members in full face-to-face contact rather than partially separated as indicated by the showing of Figs. 13 and 14. This may be determined mathematically.

Various changes and modifications are considered to be within the principle of the invention of the scope of the following claim.

What I claim is:

A lamellar, right angularly-foldable, packing pad for article assembly with a container, said pad comprising at least two layer members of corrugated board, each of said layer members being provided on its inner face with a liner sheet and having intermediate its opposite side edges integral pre-formed folding hinge means defining two foldable portions of the layer member, said hinge means comprising a cut extending through the body of the layer member from the opposite face thereof and terminating at said inner liner sheet, said cut being in substantial parallelism with said opposite edges, the uncut liner sheet thus serving to span said cut and furnish a hinge connection between the respective foldable portions, said layer members being assembled one upon another in flat planar relation with their respective hinge means in substantial parallelism but relatively offset for a distance substantially equal to the thickness of the corrugated board, the portions of the thus assembled layer members at one side of said hinge means being rigidly secured together and their portions at the other side of said hinge means being free for relative sliding contact, whereby such pad assembly may be folded simultaneously upon the hinge means of its respective layer members to present its foldable portions at opposite sides of said hinge means in angular relation to each other.

References Cited in the file of this patent

UNITED STATES PATENTS

1,154,688	Bale	Sept. 28, 1915
1,603,158	Smith	Oct. 12, 1926
1,613,152	Agar	Jan. 4, 1927
2,659,124	Henry	Nov. 17, 1953