

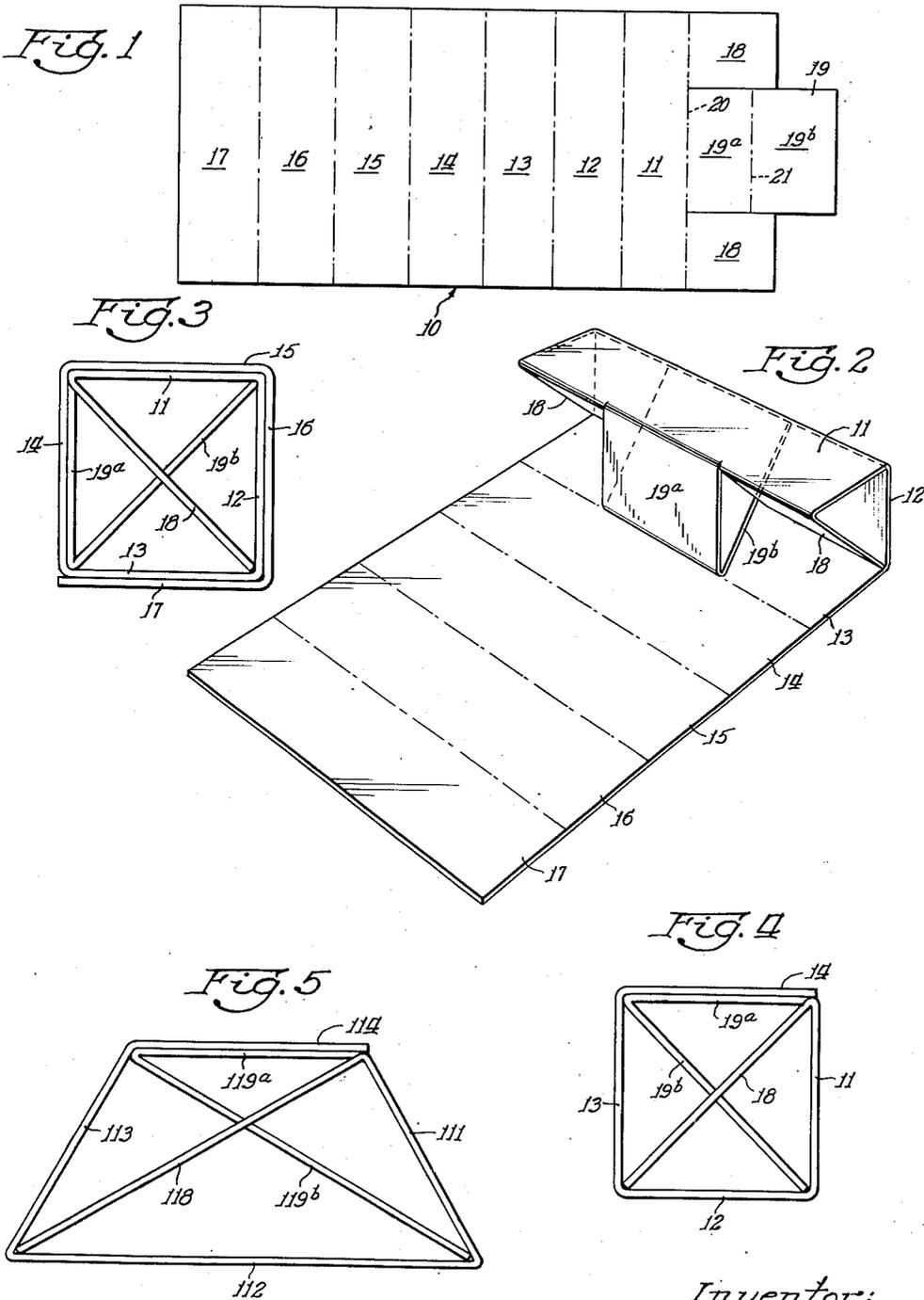
Sept. 2, 1952

N. M. SIDER

2,609,136

PACKING ELEMENT

Filed Sept. 19, 1947



Inventor:
Nicholas Sider
By: C. H. Sealey
Att.

UNITED STATES PATENT OFFICE

2,609,136

PACKING ELEMENT

Nicholas M. Sider, Fort Wayne, Ind., assignor to
 Container Corporation of America, Chicago, Ill.,
 a corporation of Delaware

Application September 19, 1947, Serial No. 774,928

4 Claims. (Cl. 229-14)

1

This invention relates to a packing element or brace of paperboard, of the general type utilized for holding packed articles against shifting in a container, or to hold articles out of contact with the container walls, to protect the goods against damage in handling and shipment. More particularly, the invention relates to a packing element of paperboard which is so formed as to provide in effect a trussed brace, which because of its truss construction is very strong and rigid. This meets one of the requirements for packing elements of this type, which must be resistant to deformation under pressure. Other necessary or desirable features of such packing elements are ease and simplicity in construction, low cost and adaptability to different size and shape requirements. The element of my invention embodies all these.

It is an object of the invention to provide a paperboard packing element which is very strong and rigid and will not change shape or dimension even under abnormal loads.

It is another object to provide a paperboard packing element which is formed with a truss construction so as to be braced against deformation.

Still another object is the provision of a paperboard packing element which may readily be made in any desired size and in a variety of shapes.

A further object is the provision of a paperboard packing element which is simple in construction, easily and rapidly set up from a simply formed blank, and inexpensive.

Other and further objects and advantages of the present invention will be apparent to those skilled in the art from the following description, taken in connection with the appended drawing, in which:

Figure 1 is a plan of a blank for a packing element according to the invention;

Figure 2 is an enlarged perspective view of a packing element partially erected from the blank of Figure 1;

Figure 3 is an enlarged end view of the completed packing element of Figure 2;

Figure 4 is an end view similar to Figure 3, but showing a slightly modified form of the invention; and

Figure 5 is an end view of a packing element according to the invention, but having a cross-sectional shape different from that of the packing element shown in Figures 3 and 4.

The blank material may be any suitable paperboard, such as corrugated board, fibreboard, or the like, having the requisite strength. The blank

2

10 is divided by score lines into a plurality of panels, in the case illustrated in Figure 1 comprising seven panels 11 to 17, inclusive. The score lines facilitate the bending of the blank into the desired shape of packing element. From one edge of the end panel 11 extend a plurality of tongues 18 and 19, in the present instance shown as comprising two tongues 18 and a single tongue 19. The number of tongues employed may vary from two to any desired number. Preferably, although not necessarily, the tongues 18 alternate with the tongues 19 along the edge of the panel 11. A score line 20 divides the tongues from panel 11. The tongue 19 is divided into a connecting portion 19a and a terminal portion 19b by a score line 21 paralleling the score line 20 and spaced therefrom a distance substantially equal to the width of that panel. The packing element shown in Figure 3 is substantially square in cross section, the panels 11, 12 and 13 being of the same width. The panels 14, 15, 16 and 17 are of slightly greater width so that they may conveniently be folded about the narrower panels 11 to 13.

The tongues 18 have a width somewhat greater than the width of the panel 11, as will be more particularly explained hereafter. The connecting portion 19a of the tongue 19, being defined by the score lines 20 and 21, has a width substantially equal to that of the panel 11. The terminal portion 19b has a width substantially equal to the width of the tongues 18. By the width of the tongues is meant the dimension in the direction transverse of the panel 11, although this may be greater than the dimension of the tongues in the longitudinal direction of the panel.

In forming the packing element from the blank, the tongues are folded on the score line 20 and the tongue 19 is also folded on the score line 21. The blank is then folded on the score lines between the panels 11 and 12 and the panels 12 and 13, the free ends of the tongues 18 being engaged in the angle formed by the panels 12 and 13, while the connecting hinge portion 19a of the tongue 19 is bent to extend from the panel 11 to the fold line between the panels 13 and 14 substantially parallel to the panel 12, and with the terminal portion 19b extending from this fold line diagonally into the angle defined by the panels 11 and 12, the partially formed packing element then appearing as shown in Figure 2. The panels 14, 15, 16 and 17 are then folded about the connecting portion 19a and panels 11, 12 and 13, respectively. An end view of the packing element then appears substantially as shown in Figure 3. Any suitable means may

3

be employed to prevent unfolding of the packing element, as for example, adhesive, adhesive tape or staples.

In Figure 4, a packing element is illustrated which is identical with that shown in Figures 1 to 3, except that the panels 15, 16 and 17 are omitted. The number of panels which may be employed may be varied, of course, depending upon the particular use to which the packing element is to be put. The element of Figure 3, having a wall of double thickness substantially throughout its periphery, is stronger than the element illustrated in Figure 4. The tongue portion 19a serves as part of one of the element walls. For most purposes, the packing element of Figure 4, when formed of corrugated board, for example, is more than equal to its purpose. It will be clear that if desired the panel 14 might also be omitted from the packing element of Figure 4, the tongue portion 19a serving as a wall of the element. It is also within the scope of the invention to provide a packing element with only the panel elements 11 and 12, means being provided to secure the free ends of the tongues 18 and of the terminal portions 19b to the panels. Such a construction, however, would not ordinarily be considered practical.

The form of the packing element as shown in Figures 3 and 4 is substantially square in cross section, but obviously this can be modified to provide a rectangular cross section, or other polygonal cross sections. As an example, a packing element according to this invention having a trapezoidal cross section is shown in Figure 5. In this modification the reference numerals of the various parts are the same as the corresponding parts of the packing element of Figures 3 and 4, prefixed with the numeral 1. Thus panels 111, 112, 113, and 114 correspond to the panels 11, 12, 13 and 14 of Figures 1 to 4, and the tongues 118 and tongue portions 119a and 119b correspond to the tongues 18 and tongue portions 19a and 19b. The number of panels might of course be varied as explained above, if desired. Since the only important difference between this modification and the forms shown in Figures 3 and 4 resides in the different proportions of the various parts, it is not considered necessary to describe this form farther or to illustrate the blank from which it is formed.

In the forms shown in Figures 3 and 4, the width of the tongues 18 and of the terminal portion 19b of the tongue 19 is equal to the square root of twice the square of the width of the panel 11. This will readily be apparent from the figures, the tongues and terminal portions each comprising the hypotenuse of an isosceles triangle. Similarly, the Pythagorean theorem applies to determine the width of the tongues and terminal portions when the packing element is formed of rectangular cross section. When the packing element is of other than rectangular cross section, the width of the tongues and terminal portions may be ascertained either by calculation or experiment. The only requirement for the dimensions of the tongues is that they extend a sufficient distance to fit snugly between the apexes of the angles within the packing element between which they are disposed, and have an extent lengthwise of the panel 11 sufficient to assure enough rigidity so that they will not deform readily upon application of pressure to the packing element.

By providing a packing element of the construction described, a strongly braced article is produced. The tongues 18 and terminal por-

4

tions 19b of the tongues 19 lie in intersecting planes, and with the panels form trusses which give the packing element its greater strength and resistance to deformation.

It will be obvious that flaps, lugs or other means may be provided either as separate elements or as integral parts of the packing element for securing it in a desired position in a container, or for attaching it to a packed article, without departing from the spirit and principle of the invention.

As already mentioned, the cross-sectional shape of the packing element may be varied as desirable for particular applications, but the principle as employed in the illustrated embodiments of the invention is followed in all the various forms. Although tongues of only two widths have been illustrated, it will be clear that the tongues might be formed in three or more widths and be disposed in such relation within the packing element as to provide truss bracing, the particular arrangement depending upon the number of walls and angles in the particular element.

It will be obvious that various changes in and modifications of the inventive embodiments illustrated and described may be made without departing from the principles of this invention. Some of these possible changes and modifications have been pointed out in the foregoing description and others will readily suggest themselves to those skilled in the art. In view of the variations which may be made in embodying the invention, it is not intended to limit the invention to the specific embodiments shown and described, but only as required by the spirit and scope of the appended claims.

I claim:

1. A packing element of paper board comprising a substantially vertical panel, an upper substantially horizontal panel hinged at one side edge to the upper edge of said vertical panel, a lower substantially horizontal panel hinged at one side edge to the lower edge of said vertical panel, and a plurality of tongues hinged to the other side edge of said upper panel, one of said tongues comprising a connecting portion extending from said upper panel to the other side edge of said lower panel and a terminal portion extending from the lower edge of said connecting portion to said one edge of the said upper panel, the other of said tongues extending from said other side edge of said upper panel to said one side edge of said lower panel and crossing said terminal portion of said one tongue.

2. A one-piece packing element formed from a paper board blank folded to provide a first substantially vertical panel, a lower substantially horizontal panel hinged at one side edge to the lower edge of said vertical panel, a second substantially vertical panel hinged at its lower edge to the other side of said horizontal panel, and a plurality of tongues hinged to said blank with one of said tongues extending from the lower edge of said second vertical panel to the upper edge of said one vertical panel and the other of said tongues extending from the upper edge of said second vertical panel to the lower edge of said first vertical panel and crossing said one tongue.

3. A blank for folding into a packing element, said blank comprising a substantially rectangular sheet of paper board cut and scored to provide a plurality of substantially rectangular parallel panels hinged together along parallel fold lines extending transversely of said blank, and a plurality of tongues hinged to one of the end panels of said blank at one end of the latter along fold

5

lines parallel with said first fold lines, said tongues being aligned with said panels lengthwise of said blank, one of said tongues having a fold line parallel with said panel fold lines and dividing said one tongue into an inner connecting portion extending from said one end panel a distance approximately the same as the extent lengthwise of said blank of said one end panel and an outer terminal portion of an extent lengthwise of said blank greater than that of said one end panel, the other of said tongues being of an extent lengthwise of said blank approximately the same as that of said terminal portion of said one tongue.

4. A blank for folding into a packing element, said blank comprising a substantially rectangular sheet of paper board cut and scored to provide a plurality of substantially rectangular parallel panels hinged together along parallel fold lines extending transversely of said blank, a tongue hinged to one of the end panels of said blank at the midportion of said one end panel along a fold line parallel with said first fold lines, said tongue having a fold line parallel with said panel fold lines and dividing said tongue into an inner connecting portion extending from said one end panel a distance approximately the same as the extent lengthwise of said blank of said one end panel and an outer terminal portion of an extent lengthwise of said blank greater than that of said one end panel, and other tongues hinged to said one end panel

6

at opposite sides of said first tongue along fold lines forming extensions of the fold line between said first tongue and said one end panel, said other tongues being of an extent lengthwise of said blank approximately the same as said outer terminal portion of said first tongue, all of said tongues being disposed within the extent of said one end panel transversely of said blank and aligned with said panels lengthwise of said blank.

NICHOLAS M. SIDER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,207,899	Greve	Dec. 12, 1916
1,262,508	Kaufman	Apr. 9, 1918
1,585,684	Oppenheim	May 25, 1926
1,601,957	Gaylord	Oct. 5, 1926
1,624,360	Oppenheim	Apr. 12, 1927
1,713,548	Oppenheim	May 21, 1929
1,725,291	Moore	Aug. 20, 1929
2,183,177	Van Saun	Dec. 12, 1939
2,307,350	Anderson	Jan. 5, 1943
2,444,183	Cahners	June 29, 1948

FOREIGN PATENTS

Number	Country	Date
323,309	Great Britain	Jan. 2, 1930