Dec. 16, 1941. H. C. WAY 2,266,483

PACKAGING OR CRATING STRUCTURE

Filed June 1, 1940

Fig. 1.

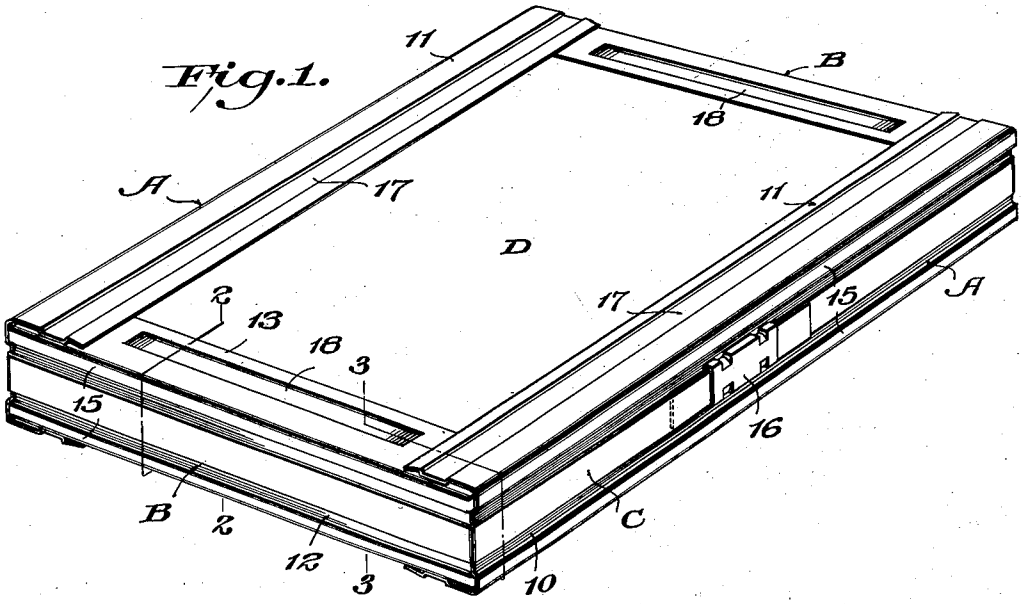


Fig. 2.

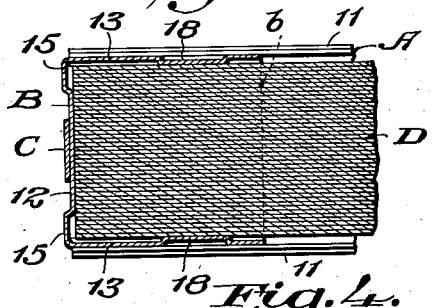


Fig. 3.

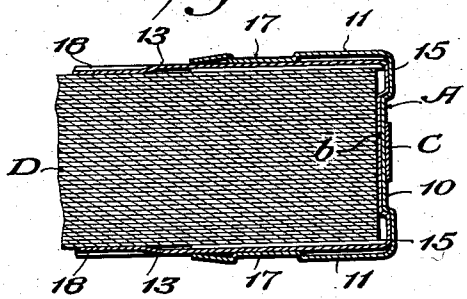
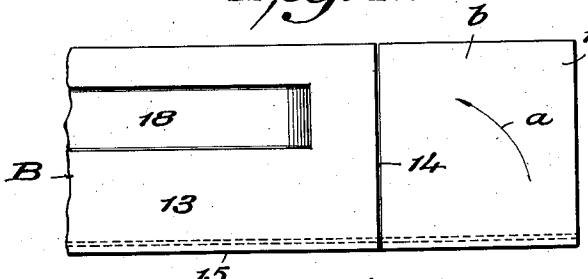


Fig. 4.



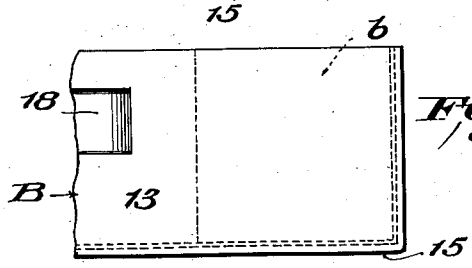
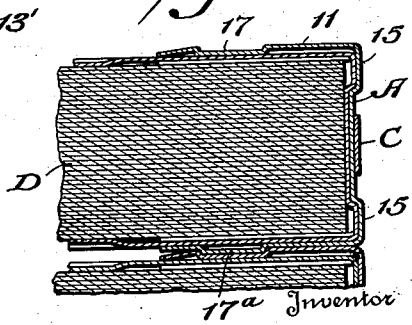


Fig. 5.

Fig. 6.



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2,266,483

UNITED STATES PATENT OFFICE

2,266,483

PACKAGING OR CRATING STRUCTURE

Harry C. Way, Wheeling, W. Va.

Application June 1, 1940, Serial No. 338,419

2 Claims. (Cl. 206—60)

This invention relates to packaging or crating structures, capable of general use but particularly intended for packaging or crating sheet materials, such as tin plate, and has particular reference to improvements in packaging or crating structures of the general type described and claimed in my prior patents, No. 1,910,781 and No. 1,910,782, dated May 23, 1933.

Generally speaking, the objects of the present invention is to provide a packaging or crating structure which is highly efficient in holding packaged or crated articles securely against shifting relative to each other, and which is of simplified design, less costly to produce and capable of easier and more rapid manipulation in forming a package and insuring that the elements comprising the same will be bound more firmly and securely together, than known packaging or crating structures of similar type.

With the foregoing general object and other objects in view, which will become more fully apparent as the nature of the invention is better understood, the same consists in the novel combination and arrangement of elements and in their novel features of construction, as will be hereinafter more fully described, illustrated in the accompanying drawing and defined in the appended claims.

In the accompanying drawing, wherein like characters of reference denote corresponding parts in the different views—

Figure 1 is a perspective view of a package formed in accordance with one practical embodiment of the invention.

Figure 2 is a detail section on the line 2—2 of Fig. 1.

Figure 3 is a detail section on the line 3—3 of Fig. 1.

Figures 4 and 5 are plan views of an end portion of one of the end members of the packaging structure illustrating the manner of forming the same; and

Figure 6 is a view similar to Fig. 3 illustrating a slightly alternative embodiment of the invention.

Referring to the drawing in detail, it will be observed that the present packaging or crating structure consists simply of a pair of duplicate, sheet metal side frame elements of channel form or U-shape in cross section, designated as A, A, a pair of duplicate, sheet metal end frame elements also of channel form or U-shape in cross section, designated as B, B, and a cooperating package tying or binding element designated as C.

Each side frame element A comprises an upright or web portion 10 and a pair of flanges 11, 11 extending laterally inward from said upright or web portion, one at the top and the other at the bottom thereof. Each end frame element likewise comprises an upright or web portion 12 and a pair of flanges 13, 13 extending inwardly from said upright or web portion, one at the top and the other at the bottom thereof.

The elements A are of lengths corresponding substantially to the length of the package to be formed and the elements B are of lengths corresponding substantially to the width of the package to be formed. Moreover, in height or depth the elements A and B correspond substantially to the height or depth of the package to be formed. On the other hand, the flanges 11 and 13 may be of any suitable widths regardless of the lengths and depths of the elements A and B.

In forming a package according to the invention and assuming that the articles to be packaged comprise, for example, a stack of tin plate sheets designated as D, the side and end elements A and B first are disposed in embracing relationship to the end and side portions, respectively, of the stack of sheets, with their upright or web portions 10 and 12 covering the edges of the sheets and their flanges 11 and 13 extending inwardly over the top and the bottom of the stack of sheets, the tying or binding element C then is applied against the outer faces of the upright or web portions 10 and 12 and drawn tightly to urge the elements A and B into close fitting engagement with the marginal portion of the stack of sheets, and said binding element C then is fastened in any suitable manner to firmly bind the stack of sheets D together against any possibility of separation or shifting superficially relative to each other.

In order to insure effective protection for the sheets D at the four vertical corners of the package, the end frame elements B, B preferably have their end portions *b*, *b* turned inwardly as shown in Fig. 5 of the drawing so that said elements are closed at their ends and cover portions of the side edges of the sheets D as well as the end edges thereof. In this connection and in order, during forming of the elements B, B, to adapt the end portions *b*, *b* thereof to be turned inwardly, the flanges 13, 13 of said elements first are transversely slit at points suitably spaced inwardly from their ends, as indicated at 14 in Fig. 4 of the drawing. The said end portions *b*, *b*, defined by the slits 14, then are turned inwardly, as indicated by the arrows *a* in Fig. 4, to positions as illustrated in Fig. 5 by bending the upright or

web portions 12 of said elements B, B along vertical lines in alinement with the slits 14. To permit the end portions *b*, *b* to be turned inwardly, the flanges 13' of said end portions are slightly deflected toward one another so as to clear the flanges 13, 13 and pass between the latter. Thus, the elements B, B not only are adapted at their ends to completely house and protect the corner portions of the stack of sheets D, but are desirably stiffened and reinforced at their ends to effectively resist damage to the corners of said sheets D in the event of careless handling of the package.

To stiffen and reinforce the upright or web portions 10 and 12 of the elements A and B, said upright or web portions are formed at their tops and bottoms with outwardly pressed ribs 15. The tying or binding element C is disposed between said ribs. Thus, said ribs also serve as stops effectively preventing the tying or binding element C from slipping off of the package.

Only a single tying or binding element C, or any desired plurality of tying or binding elements C may be used in connection with any given package, and said tying or binding element, or elements, as the case may be, may be of any suitable or desired form. In the present instance only a single tying or binding element C is illustrated and this is indicated as being in the form of a steel band, secured together at its ends by means of a clip 16 in accordance with known practice.

The end portions of the frame side elements A, A embrace the end portions of the frame end elements B, B, and preferably, but not necessarily, the flanges 11, 11 of the frame side elements A, A are reinforced and stiffened by having pressed inwardly therefrom ribs 17 which extend longitudinally thereof. These ribs may extend from end to end of said elements A, A or only along the medial portions of said elements, in which latter case they may be of sufficient depths to contact with the outermost plates of the stack D.

Preferably the flanges 13, 13 of the frame end elements B, B also are reinforced and stiffened by having pressed inwardly therefrom longitudinally extending ribs 18 which preferably are confined to the medial portions of said elements so as not to interfere with forming of the ends *b*, *b* of said elements in the manner heretofore described. The ribs 18 are of depths to contact with the outermost plates of the stack D and to thereby cooperate with the end portions *b*, *b* of said elements B, B in effectively holding the plates D against separation.

If desired, one of the flanges 11 of each frame side element A may have a rib 17 pressed inwardly therefrom and the other of said flanges may have a rib 17^a pressed outwardly therefrom, as illustrated in Fig. 6 of the drawing. Thus, in stacking a plurality of the packages the outwardly pressed ribs 17^a may be engaged in the channels formed by the inwardly pressed ribs 17 of the different packages and the packages thereby will be held against sidewise shifting relative to each other. Likewise, one of the flanges 13 of each frame end element B may have its rib 18 pressed inwardly thereof and the other of said flanges may have its rib pressed outwardly so that in stacking a plurality of the packages the outwardly pressed ribs may be engaged with the channels formed by the inwardly pressed ribs of the respective packages to hold the latter against endwise shifting relative to each other.

Of course, in forming a package according to the invention, protective sheets of cardboard or the like may be placed in covering relationship to the outer faces of the outermost sheets of the stack D and also, if desired, in covering relationship to the sides and ends of the stack of sheets, in accordance with practice well known in the art. Moreover, the ends of the frame side elements A, A may, if desired, be turned inwardly in the same manner as the end portions *b*, *b* of the frame end elements B, B or, alternatively, the ends of the frame side elements may be turned inwardly and the frame end elements may be left open at their ends. In fact, many variations of the structure specifically shown may obviously be resorted to without departing from the spirit of the invention.

Since the frame elements A and B are designed to be drawn together and fastened by the tying or binding element or elements C, rather than to be interfastened, packages formed in accordance with the invention may be bound very tightly against any possibility of shifting of the sheets D relative to each other. Moreover, it is possible by known devices to draw tying or binding elements such as the band C tightly about the elements A and B and to fasten together the ends of said typing or binding elements with little effort and in a very short period of time. Consequently, the present packaging structure is very practical and adapted to rapid, as well as economical, packaging of articles such as stacks of tin plate or the like.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. An article package comprising the articles, a pair of end frame elements of U-shape in cross section embracing the ends of the articles, a pair of side frame elements of U-shape in cross section embracing the sides of the articles, said elements each including a web and flanges extending inwardly therefrom, a rib pressed inwardly from one of the flanges and a rib pressed outwardly from the other of the flanges of at least one of said elements, of the said inwardly pressed rib forming a channel to accommodate the outwardly pressed rib of another package to hold the package against superficial movement when stacked one upon the other, said ribs being vertically alined with each other for stacking and holding of the packages in vertical alinement with each other, and a binding element extending entirely around the package in embracing relationship to the webs of said end and side frame elements and holding them tightly in inwardly urged embracing relationship to the ends and the sides of the articles.

2. An article package comprising the articles, a pair of end frame elements of U-shape in cross section embracing the ends of the articles, a pair of side frame elements of U-shape in cross section embracing the sides of the articles, said elements each including a web and flanges extending inwardly therefrom, the elements of one of said pairs being closed at their ends, the elements of the other pair being open at their ends and having their end portions disposed in embracing

relationship to the closed end portions of the elements of the first mentioned pair, ribs pressed from and extending longitudinally along the flanges of said elements, spaced ribs pressed outwardly from the webs of said elements and extending longitudinally along said webs, and a binding element extending around the webs of said elements between the ribs thereof and holding said elements tightly in inwardly urged embracing relationship to the ends and the sides of the articles.

HARRY C. WAY.