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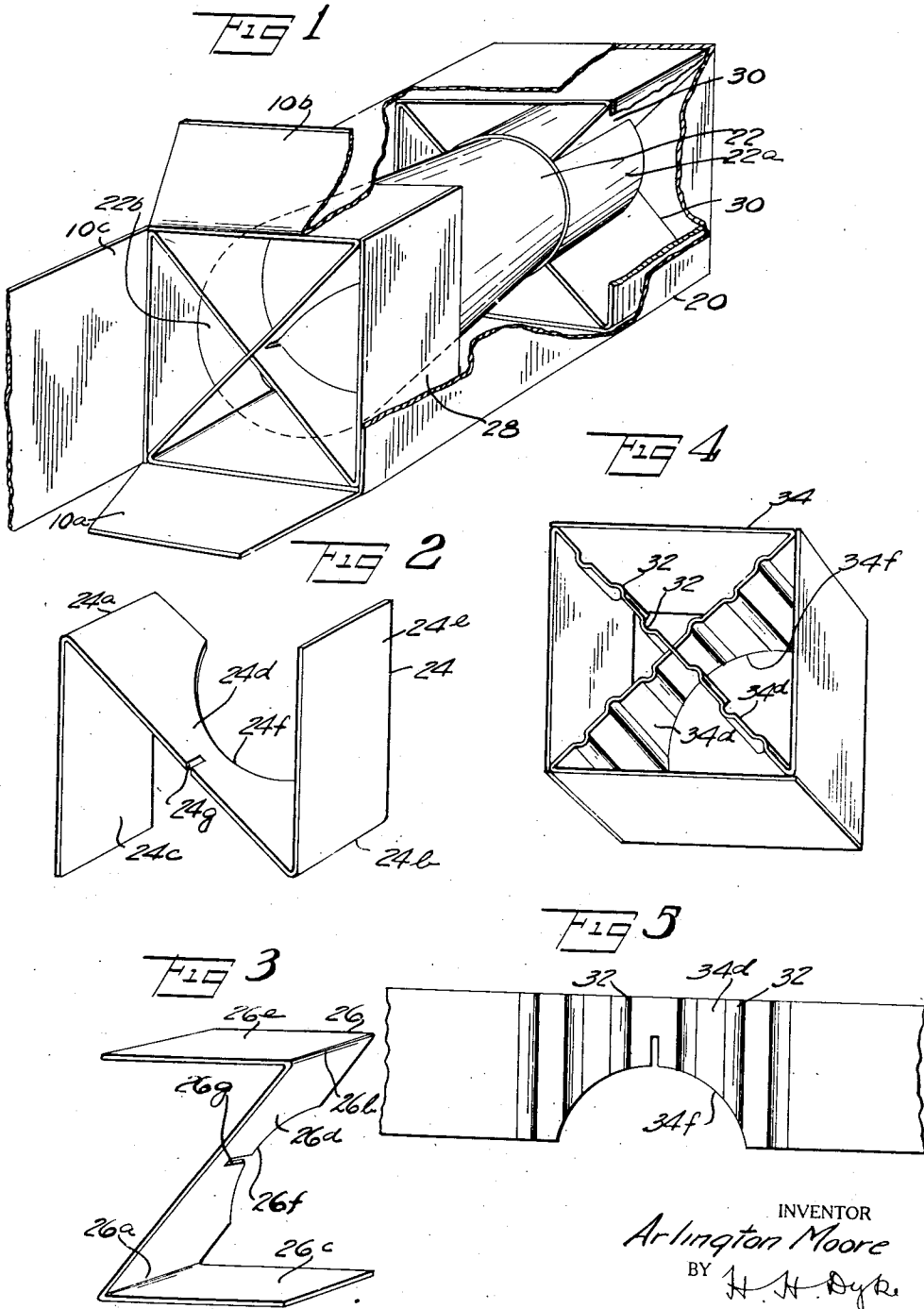
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PACKING FOR FRAGILE ARTICLES

Filed Jan. 21, 1924

3 Sheets-Sheet 1



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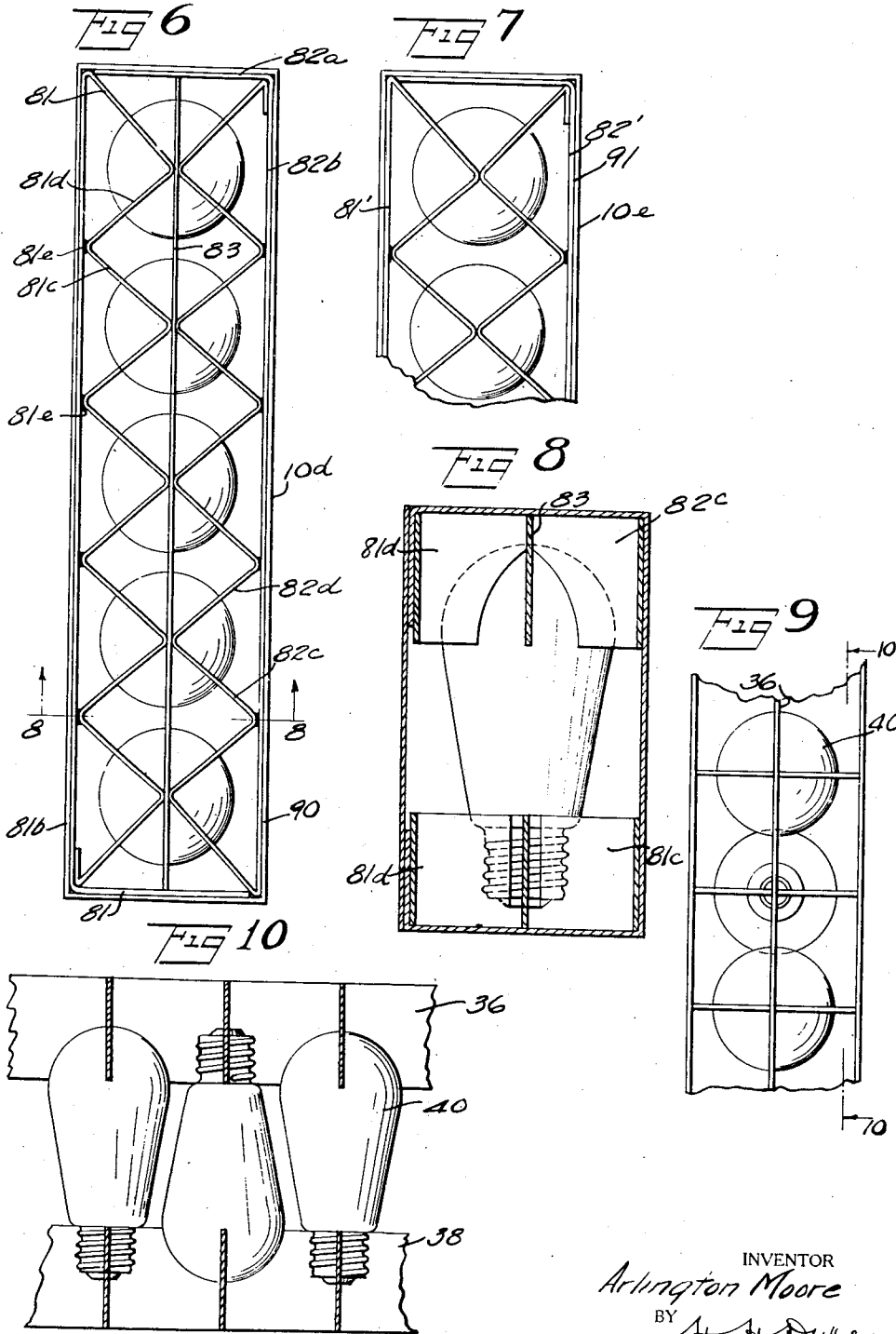
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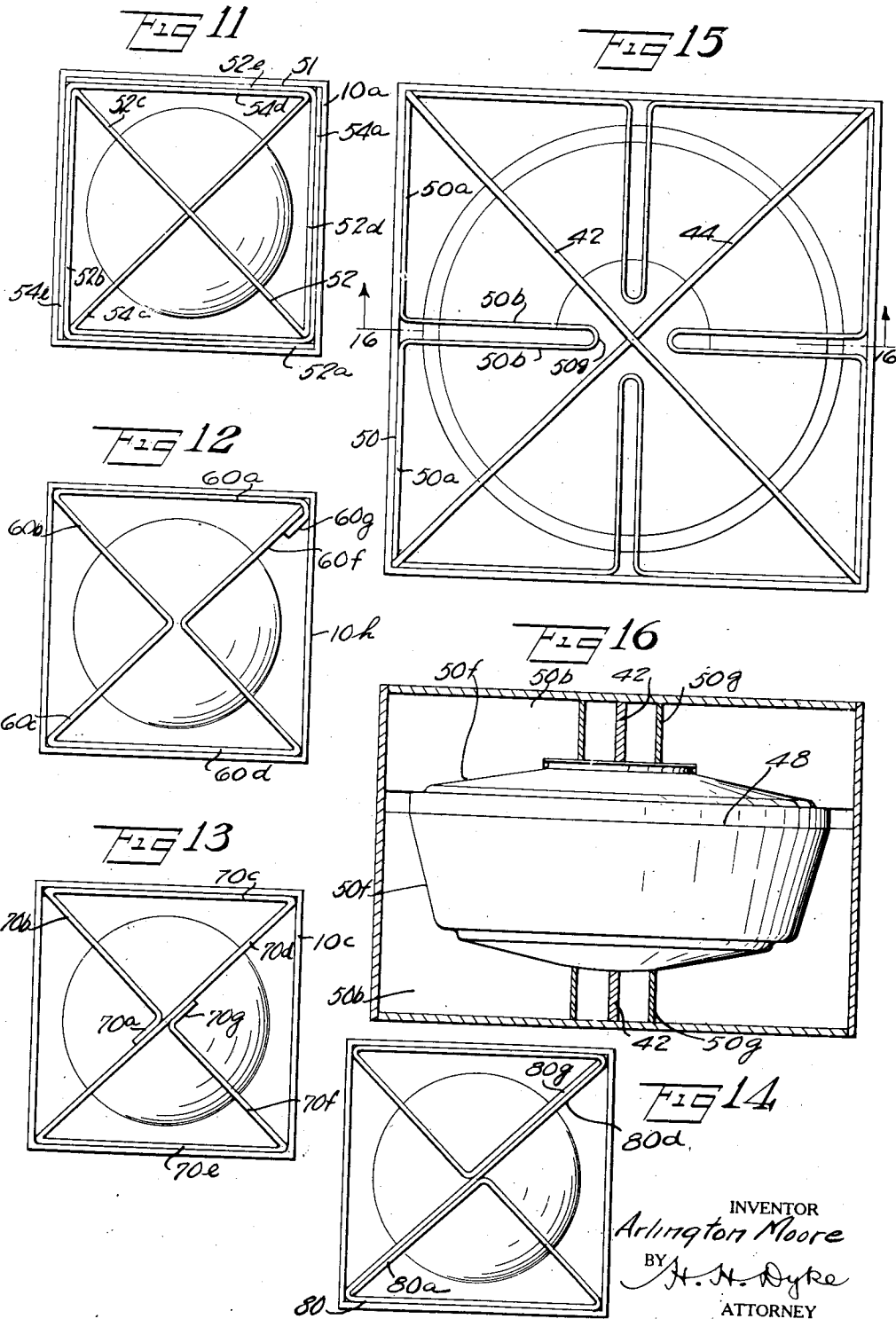
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# UNITED STATES PATENT OFFICE.

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## PACKING FOR FRAGILE ARTICLES.

Application filed January 21, 1924. Serial No. 687,491.

My invention relates to packing for fragile articles, and particularly to various features of improvement on my U. S. Patents 1,449,531, granted Mar. 27, 1923 on crates, and 1,449,532 granted Mar. 27, 1923 on containers for electric bulbs and the like.

One feature of the present invention is the provision of strips set edgewise, and containing seats made of partial seat portions formed in the edges of portions of said strips, which said strips are so disposed as to engage or enter the corners of the receptacle or carton and thus be retained in position.

Another feature is the provision of such seat containing strips or strip portions extending diagonally or substantially diagonally of the carton or receptacle, which is preferably square or rectangular in cross-section, but may be of other forms.

Another feature of the invention consists in the provision of non-crossing strips set edgewise and arranged with seat forming cut outs in the edges thereof, so arranged and disposed as to form seats for the articles to be packed. This enables the over-all length of the completed package to be reduced and avoids any weakness due to notching the intersecting strips at their points of crossing.

Other features of my invention will appear in connection with the following description.

In the accompanying drawings showing certain illustrative embodiments of my invention, Fig. 1 is a perspective view with parts broken away of a carton having the supporting members engaging the corners thereof, and with a smooth necked radio tube in place therein. Figs. 2 and 3 are perspective views of the component strips making up the supporting members of Fig. 1. Fig. 4 is a perspective of a modified form of supporting insert, which is like that of Figs. 1, 2 and 3, except that the strip portions, in which the seats are formed, are scored at intervals to secure flexibility and to enable same to yield and conform to the contour of the supporting object. Fig. 5 is a fragmentary side view of one of the scored strips used to make the support of Fig. 4. Fig. 6 is a plan view of a carton for multiple objects, having non-crossing supporting strip lattice work. Fig. 7 is a fragmentary view of a modification of the form shown in Fig. 6, in

which the median strip of Fig. 6 is omitted. Fig. 8 is a cross-section on line 8—8, Fig. 6. Figs. 9 and 10 are respectively plan and sectional views of a carton support for electric light bulbs, wherein the bulbs are alternately arranged in inverted relation. The section of Fig. 10 is on line 10—10, Fig. 9. Figs. 11—14 are end views of modified forms of carton inserts, and Figs. 15 and 16 are respectively plan and sectional views of a modified support for large articles, such as electric light globes, Fig. 16 being a section on line 16—16 of Fig. 15.

Reference character 20 designates a carton to contain individual fragile articles, such as a radio bulb 22. The seats in which the articles are supported by their ends are formed in the edges of strips 24 (Fig. 2) and 26 (Fig. 3).

Said strips 24 and 26 are formed in such manner as to make up an insert engaging within the corners of the carton. As shown they are folded into substantially Z-form along fold lines 24<sup>a</sup>, 24<sup>b</sup> and 26<sup>a</sup>, 26<sup>b</sup>, and so comprise three folded parts 24<sup>a</sup>, 24<sup>b</sup>, 24<sup>c</sup> and 26<sup>a</sup>, 26<sup>b</sup> and 26<sup>c</sup>.

The cross-bar portions 24<sup>c</sup> and 26<sup>c</sup> are formed with cut out portions 24<sup>d</sup> and 26<sup>d</sup> to form a seat at their intersection and are notched out as shown at 24<sup>e</sup>, 26<sup>e</sup>, where they intersect and cross one another to make up a seat insert to be inserted in the carton 20, and designated generally by reference character 28.

It will be seen that inserts 28 are of generally cubical or parallelepipedon exterior formation, the cross-bar parts 24<sup>a</sup> and 26<sup>a</sup> of Z-shaped members 24 and 26 crossing one another diagonally of the carton, and the end folds 24<sup>c</sup>, 24<sup>e</sup>, 26<sup>c</sup> and 26<sup>e</sup> lying in contact with and parallel to the carton walls and serving to retain the diagonal strips 24<sup>a</sup> and 26<sup>a</sup>, containing the seat cut outs 24<sup>d</sup> and 26<sup>d</sup>, in position extending diagonally of the carton and in engagement with the interior corners thereof, so that they cannot be displaced when an article is in place and the flaps 10<sup>a</sup>, 10<sup>b</sup> and 10<sup>c</sup> of the carton are closed.

The bottom insert 30 is preferably like the insert 28 already described, except that the cut outs 30 are of a form adapted to receive the base 22<sup>a</sup> of bulb 22, instead of being rounded out as shown at 24<sup>d</sup>, 26<sup>d</sup> to receive the rounded end 22<sup>b</sup> of bulb 22, and in gen-

eral the cut outs in the strips to make up the seats for articles to be supported are of a form adapted to conform to contour of supported articles or parts thereof.

5 If desired, the seat containing strip portions may be scored or weakened, as indicated at 32, 32 in the insert member 34 of Fig. 4, to increase their flexibility and enable them to conform readily to articles supported, and eliminate any undue rigidity. This scoring is preferably confined to the diagonal portions 34<sup>a</sup> containing the seat cut outs 34<sup>t</sup>, but may be extended throughout the strips, if desired.

15 Another feature of improvement applicable to crossed intersecting strips is shown in Figs. 9 and 10, where the seats in each insert member 36, 38 are alternately formed to conform respectively to the base and outer ends of articles, such as electric light bulbs 40, having different formations at their opposite ends. In this way, the articles can be packed in decreased space by inverting each alternate object, such as a bulb, with respect to the intervening ones, as clearly shown in Fig. 10. This arrangement may be resorted to whether the seats are formed in the edges of intersecting strips as disclosed in my said prior Patents Nos. 1,449,531 and 1,449,532, or whether the strips are arranged to provide seats without intersecting or crossing one another as in forms hereinafter described.

In the form of Figs. 15 and 16, the crossing or intersecting strips 42, 44 are arranged diagonally to engage in the corners of carton 46, and means are provided to hold them in place and to provide additional seating for the large fragile articles, such as the electric light globes 48. In the form shown, such means comprise strips 50 folded into substantially T-form, as clearly shown in Fig. 15, and including portions 50<sup>a</sup>, 50<sup>a</sup> adapted to lie against the carton wall and to engage and assist in retaining crossed strips 42, 42 in the corners of the cartons, and a two-part interiorly extending portion comprising folds 50<sup>b</sup>, 50<sup>b</sup>. The inwardly extending parts 50<sup>b</sup>, 50<sup>b</sup> have seat portions 50<sup>t</sup> cut in them, as shown in Fig. 16, and being free at their inner ends, as indicated at 50<sup>s</sup>, Fig. 15, are highly flexible and conform readily to the object, as the globe 48, being supported. In this way a very effective packing of large fragile articles can be secured at low cost and readily applied or removed. The seats in the inserts at the opposite ends of the carton may be of different forms to conform to the differing formation of the object packed, as shown in Fig. 16.

The crossed strips may be held in place by folded extensions thereof, as well as by the separate pieces such as 50 shown in Figs. 15 and 16. An example of this is illustrated in Fig. 11, in which the inserts 51 for carton

10<sup>a</sup> are made up of crossing strips 52<sup>c</sup>, 54<sup>c</sup> and extensions thereof are provided, which provide a double thickness support all around the interior of the carton 10<sup>a</sup>. The two strips 52 and 54 as thus folded comprise respectively the folded portions 52<sup>a</sup>, 52<sup>b</sup>, 52<sup>c</sup>, 52<sup>d</sup>, 52<sup>e</sup> and 54<sup>a</sup>, 54<sup>b</sup>, 54<sup>c</sup>, 54<sup>d</sup>, 54<sup>e</sup>.

I have found that substantially the same effect as with crossed intersecting strips may be secured without actual crossing or intersection, and that the seat containing inserts may be made up of a relatively small number of strips with suitable folds and suitable cut outs. Examples of such constructions are shown for individual packing cartons in Figs. 12, 13 and 14, and for multiple packing cartons in Figs. 6 and 7.

In Fig. 12 the insert 60 for carton 10<sup>b</sup> is formed of a single strip comprising a fold 60<sup>a</sup> lying against a wall of the carton, an inwardly extending, substantially V-shaped portion comprising folds 60<sup>b</sup>, 60<sup>c</sup>, a portion 60<sup>d</sup> lying parallel to portion 60<sup>a</sup>, and against the opposite carton wall, a second inwardly extending, substantially V-shaped portion comprising folds 60<sup>e</sup> and 60<sup>f</sup>, and the folded portion 60<sup>f</sup> is secured to the initial folded portion 60<sup>a</sup>, as by being glued to the tab 60<sup>g</sup> of portion 60<sup>a</sup>. The V-shaped folded portions containing the cut-out seats in their edges may be secured together at their apices, if desired, but if left free, as shown, provide a desirably resilient and simple construction.

In Fig. 13 the insert 70 in carton 10<sup>c</sup> comprises a strip, including a tab 70<sup>a</sup>, a half diagonal 70<sup>b</sup>, a side portion 70<sup>c</sup>, a diagonal portion 70<sup>d</sup>, a second side portion 70<sup>e</sup>, and a second half diagonal with a terminal tab 70<sup>f</sup>. Tabs 70<sup>a</sup>, 70<sup>f</sup> are secured to the diagonal portion 70<sup>d</sup> to form in effect a pair of diagonal strip portions to contain the seat cut outs in the edges of the strip.

In Fig. 14 I have shown another insert made up of a single strip, which is substantially like the form of Fig. 13, except that in this case, instead of tabs 70<sup>a</sup>, 70<sup>f</sup> secured to diagonal portion 70<sup>d</sup>, the corresponding portions 80<sup>a</sup>, 80<sup>f</sup> are extended to the corners making, with the diagonal portion 80<sup>d</sup>, substantially a two thickness diagonal supporting portion to extend across one diagonal of the carton.

The construction illustrated in Figs. 6, 7 and 8 is generally like that of Fig. 12, arranged, however, for a multiple packing carton. In the form of Fig. 6, the inserts 90 for carton 10<sup>a</sup> are made up of three strips, strip 81 comprising portion 81<sup>a</sup> lying within an end of the carton, portion 81<sup>b</sup> extending along one side of the carton, and the V-shaped folds comprising portions 81<sup>c</sup>, 81<sup>d</sup>, and containing the cut outs to provide seats for packed articles extending inwardly to about the median line of the carton and se-

cured to the side portion 81<sup>b</sup> at 81<sup>c</sup>, 81<sup>e</sup>, as by glue or like cementitious material.

The strip 82 on the other side of the carton is folded in a similar manner, comprising the like folded portions 82<sup>a</sup>, 82<sup>b</sup>, 82<sup>c</sup>, 82<sup>d</sup>, and with the like fastenings at 82<sup>a</sup>, 82<sup>d</sup>.

If desired, a central strip 83 set edgewise and provided with cut outs to assist in the formation of seats may be interposed between the substantially meeting apices of the V-shaped folds 81<sup>c</sup>, 81<sup>d</sup>, and 82<sup>c</sup>, 82<sup>d</sup>, thus providing support for articles along substantially intersecting lines arranged to include intermediate angles in the neighborhood of 60 degrees each. The central strip 83 may be dispensed with, however, and in Fig. 7 I have illustrated such construction, in which the insert 91 for carton 10<sup>e</sup> comprises strips 81' and 82', like those of Fig. 6 already described, and with the intermediate strip 83 of Fig. 6 omitted.

While I have referred herein more especially to seat forming inserts for cartons, it will be understood that the strips containing the seat portions and particularly those for the lower end of the carton may be permanently secured in place therein, if desired. The upper seat containing member is ordinarily inserted in the carton after the articles are in place therein. The terms "upper" and "lower" are, of course, used only in a relative sense.

It will be seen that the folded strips of the present invention can be readily collapsed into a very small space for shipping, and when wanted for use can be readily assembled into the desired relation for insertion into the cartons or other containers.

It will be understood that the forms shown are for illustration only and for affording an understanding of the invention and not for imposing limitations thereon.

I claim:

1. A seat providing insert for a packing carton or the like comprising a pair of strips folded in substantially Z-form, set edgewise and crossing one another, and having cut outs on their edges to together form seats for

articles to be packed, the leg portions of the Z-shaped members being adapted to lie against the carton walls from one corner to an adjacent corner of the carton and the cross-bar portions thereof containing the seat forming cut outs and adapted to extend diagonally from corner to corner of the carton.

2. Seat forming inserts for cartons and the like of generally parallelopipedon from comprising a pair of strips set edgewise and folded into substantially Z-shape with the leg portions of the Z-shaped members forming the walls of the insert, and the cross-bar portions thereof having cut outs in their edges to form a seat for articles to be packed, and having score lines therein to impart increased flexibility thereto.

3. An insert for packing cartons and the like comprising strips set edgewise, having seat providing cut outs therein, and adapted to extend diagonally across the carton, and provided with extensions adapted to lie against the sides of the carton from a corner to an adjacent corner of the carton.

4. A seat forming member for packing cartons comprising strips set edgewise and adapted to extend across one another diagonally of the carton, and having cut outs therein to form seats at their intersection, and extensions on said strips at each end adapted to lie against the sides of the carton, and to extend to and engage the carton at a corner thereof.

5. The combination of a packing container, with an insert disposed edgewise therein and including portions disposed against certain of the walls of said container and extending substantially from corner to corner thereof, and portions having seat forming cut-outs extending obliquely from said first named portions transversely of the container, and disposed in intersecting planes; each of said transverse portions being integrally connected to certain of said portions extending along the wall of the container.

In testimony whereof, I have signed my name hereto.

ARLINGTON MOORE.