June 5, 1923.

1,457,641

W. P. STUBBS

COLLAPSIBLE CARTON

Filed Aug. 31, 1921

3 Sheets-Sheet 1

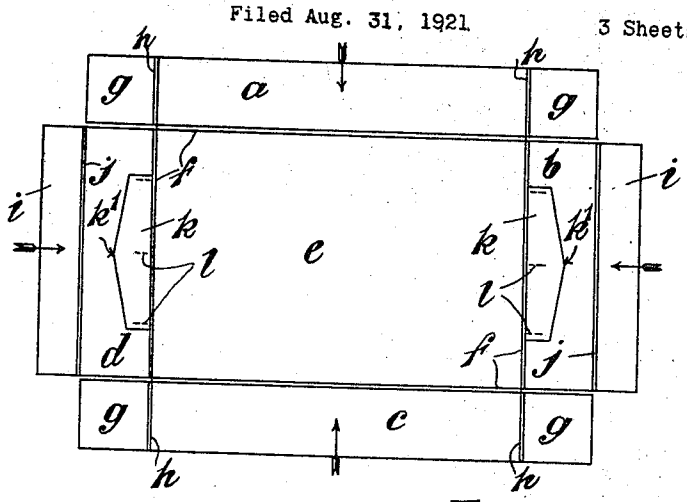


Fig. 1.

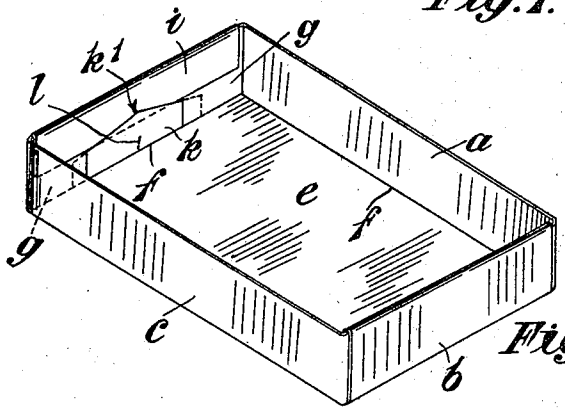
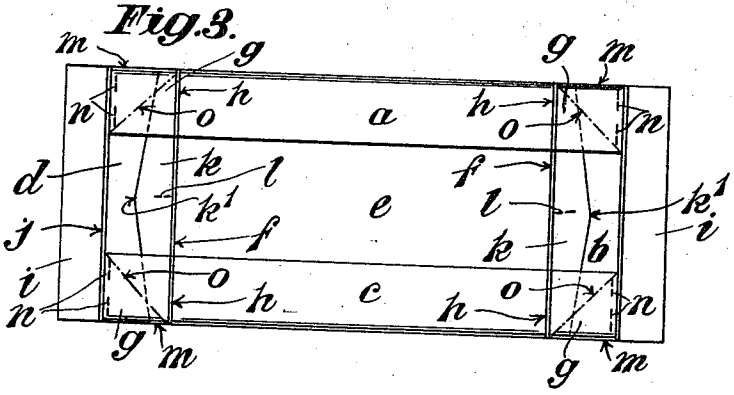


Fig. 2.

Fig. 3.



INVENTOR

WILLIAM P. STUBBS,

BY Bright & Bailey

ATTORNEYS

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3 Sheets-Sheet 2

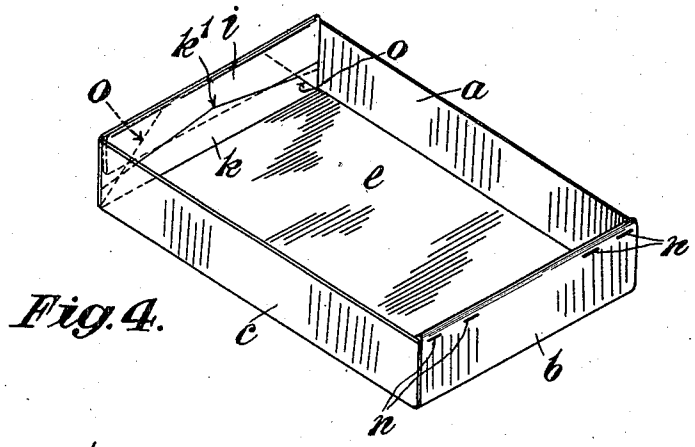


Fig. 4.

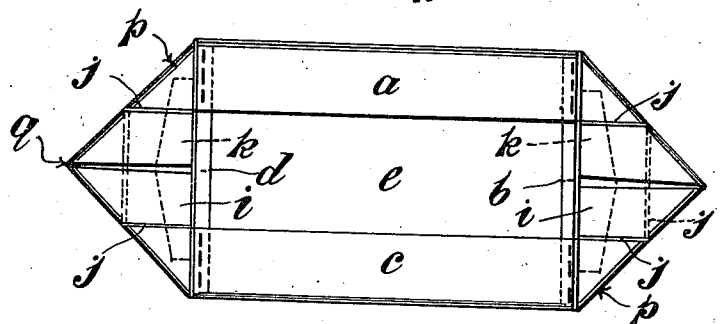


Fig. 5.

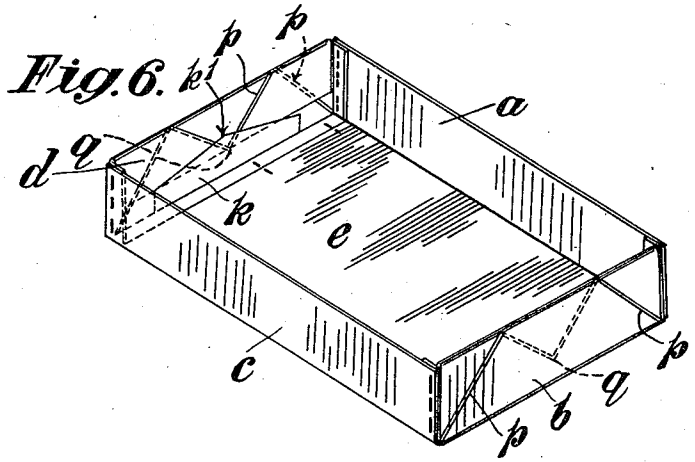


Fig. 6.

INVENTOR

William P. Stubbs,

By Bright & Bailey

ATTORNEYS

June 5, 1923.

1,457,641

W. P. STUBBS

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3 Sheets-Sheet 3

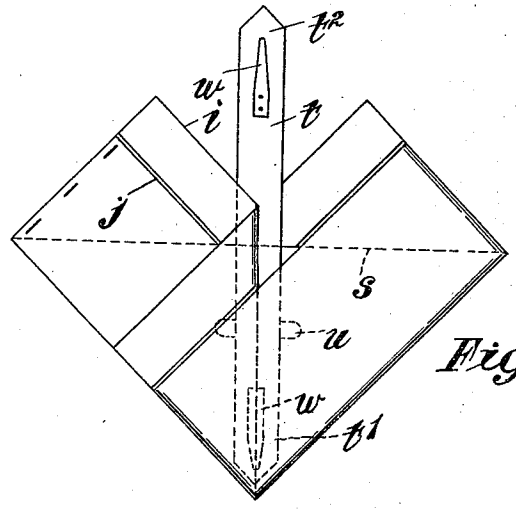


Fig.7.

Fig.9.

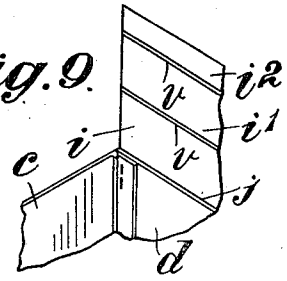


Fig.10.

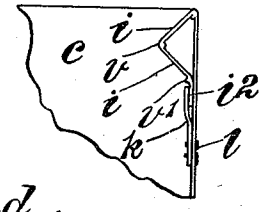
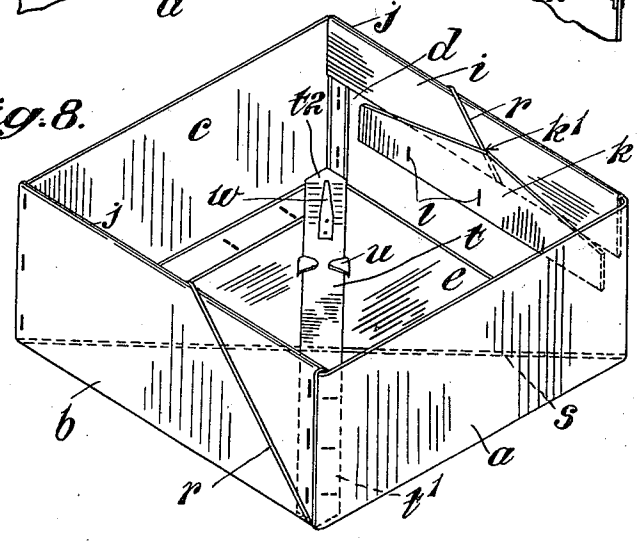


Fig.8.



INVENTOR

WILLIAM P. STUBBS,

BY Bright & Bailey

ATTORNEYS

Patented June 5, 1923. 1,457,641

UNITED STATES PATENT OFFICE.

WILLIAM POWNALL STUBBS, OF LEEK, ENGLAND.

COLLAPSIBLE CARTON.

Application filed August 31, 1921. Serial No. 497,290.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, WILLIAM POWNALL STUBBS, subject of the King of Great Britain, residing at 42 Osborne Street, Leek, Staffordshire, England, have invented new and useful Collapsible Cartons, (for which I have filed application in Great Britain, No. 8,916, March 26, 1920, Patent No. 155,160); and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to collapsible cartons, boxes and the like of the kind capable of being readily collapsed and as readily opened out and rigidly secured in opened position when required and further of the kind in which the carton box or the like has collapsible sides one or more of which sides have extended edges which are capable of being inturned and means disposed within the carton, box, or the like adapted to engage said inturned edge or edges for the purpose of securing the collapsible sides in the position.

The present invention relates to cartons and collapsible boxes of this general type and consists more particularly in the provision of improved means for interengaging the locking parts of the box or carton when required to be secured in the open position, in the provision of means for strengthening the corners or the bottom of the box or carton and in improvements in the construction or arrangement of certain of the parts as hereafter more fully described with reference to the accompanying drawings in which:—

Figs. 1 and 2 are plan and perspective views showing one form of carton according to this invention in the collapsible and open positions respectively.

Figs. 3 and 4, 5 and 6, 7 and 8 are similar views of further examples of cartons.

Fig. 9 is a fragmentary perspective view of a preferred construction of one of the extending sides, and

Fig. 10 is an end view of the same in the open or set-up position, the near side of the carton being removed for clearness. Similar letters of reference are used throughout the specification to denote like parts wherever occurring.

Referring now particularly to Figs. 1 and 2, the carton therein illustrated consists of four sides, *a*, *b*, *c*, *d*, and a base *e* connection therebetween being obtained through the medium of bending creases *f* which enable such sides to fold out flat as shown in Fig. 1 or to be turned to the vertical position indicated in Fig. 2. The sides *a* and *c* are each provided with flaps or extensions *g* which are connected only at their inner ends to the ends of their respective sides through the medium of bending creases *h* and extend outwardly therefrom a distance equal to the depth of the remaining sides *b* and *d*.

The sides *b* and *d* are each provided with an extension piece *i* which pieces are connected to the longitudinal outer edges of the same by bending creases *j*, thereby enabling such extension pieces to be turned inward so as to reside parallel with the inside faces of their respective sides *b* and *d*.

Strips *k* are secured to the inside face of each of the sides *b* and *d* by staples *l* or other suitable fastening means in such a manner as to leave a free or unattached portion along its upper edge for the reception of the free edge of the extension pieces *i*. To facilitate such extension pieces being tucked behind the strips the unattached edge of each of such strips is brought to a peak as at *k'*, which peak is then the only portion which engages the co-acting edge of the extension pieces *i*.

When in the open position indicated in Fig. 2 the sides *a*, *b*, *c*, *d*, are turned about their bending creases *f* to the vertical position and the flaps *g* inturned at right angles to their attached sides *a* and *c* so as to reside against the adjacent surfaces of the inside faces of the sides *b* and *d*. The extension pieces are then turned over the outside of the flaps *g* and finally tucked behind the peaks *k'*, of the strips *k*. This operates to maintain all four sides of the carton rigidly in the open position. To collapse the carton it is only necessary to remove the extensions *i* from behind the peaks *k'* when the sides may be easily opened out.

For the purpose of transit it is convenient to turn the sides *a* and *c* inwards so as to lie against the face of the base *e* and similarly the extensions *i* which may be maintained in such inturned position by tucking the same behind their respective strips *k*.

In the preferred form as illustrated in

Figs. 3 and 4 the wing pieces g of the sides a and c are connected to the end pieces b and d. Connection between the inner ends of the wing pieces and the adjacent ends of the sides a and c is as formerly through the medium of bending creases h. A further connection is however made by the wing pieces with the end edges and inside face of the sides b and d through the medium of a bending crease m and staples n respectively. A bending crease c is disposed diagonally across each wing piece about which such wing pieces bend when the sides are being turned into the vertical or open position.

A carton having wing pieces formed and secured as above defined possesses greater rigidity in the open position than the example first described in connection with Figs. 1 and 2 and for this reason the same is preferred. The sides a and c are shown in Fig. 3 as being folded flat against the base e it being of course understood that the attachment between the wing pieces and the sides b and d prevent the sides a and c from being turned outwards as was permissible in connection with the example illustrated in Fig. 1.

The modified form of carton illustrated in Figs. 5 and 6 is designed with the object of producing a collapsible carton in which all of the sides are connected by their adjacent edges. With this object in view the sides b and d with their extension pieces i are provided with diagonally disposed bending creases p which extend from the corners constituted by the junction of the sides with the base and converge to a point q coinciding with the centre of the outer edges of the extension pieces i. The bending crease j between the extension pieces i and their respective sides b and d is as formerly.

In a carton as above described all of the sides and the extension pieces i fold inwards when collapsed as illustrated in Fig. 5 thus ensuring the desired compactness for transit.

In the case of cartons or boxes for the packing of delicate articles such as millinery or wreaths means are desirable for reinforcing the bottoms of the same.

One suitable means for this purpose is illustrated in Figs. 7 and 8 which also illustrate a further modified construction of carton embodying the features according to this invention.

In the carton illustrated all of the sides are connected together as in the previous example illustrated in Figs. 5 and 6 but the sides b and d together with their extension pieces i are formed each with a single diagonal bending crease r which bending creases are arranged at opposite inclinations relative to each other. A further diagonally disposed bending crease is formed in the base e as indicated at s. This crease s extends across the bottom of the carton from one corner to the opposite corner. The bending crease j is positioned as in the other examples described.

The reinforcing means provided for the base e consists of a bar t of wood or other material of sufficient rigidity disposed across the base of the carton at right angles to the diagonal bending crease s in which it is secured permanently by one end t' and temporarily by the other end t^2, metal clips u being provided for the purpose, such clips being of such a form as will allow of the end t^2 being quickly and easily released when it is desired to collapse the carton.

It will of course be understood that reinforcing means either as above defined or of any other suitable character may be applied to any of the examples illustrated.

In Figs. 9 and 10 I illustrate a means whereby great rigidity in a collapsible box or carton may be simply and easily obtained. Such means consist in increasing the length of the extension piece i by the addition of two further extension pieces i' and i^2 connection therebetween being obtained through the medium of longitudinally disposed bending creases v and v'. When the carton is opened out or set up the extension piece i^2 is tucked in behind the peak k' of the strips k thereby causing the extension piece i and additional extension piece i' to assume the triangular position illustrated in Fig. 10. The projecting edge thus formed provides a support for the sides a and c of the carton when so constructed in addition to the support it offers to the sides b and d.

A construction as thus described may be applied to any or all of the examples of cartons herein described and illustrated.

Metal clips w, Figs. 7 and 8, may be secured to each end of the reinforcing bar t as shewn to which the frame of a wreath or similar article may be conveniently attached.

What I claim is:—

A carton having collapsible sides, three extensions on each of two oppositely disposed sides of said carton adapted to be turned inward to form a projecting rib of triangular cross section, said extensions being relatively connected, and a strip of material secured to each of said two sides effective to retain the adjacent edges of said extensions in inturned position.

In witness whereof I have signed this specification in the presence of two witnesses.

WILLIAM POWNALL STUBBS.

Witnesses:

FRANK STUBBS,

WILLIAM CLARK.