

H. L. R. WOLF.  
PAPER BOX.

APPLICATION FILED NOV. 16, 1904.

Fig. 1.

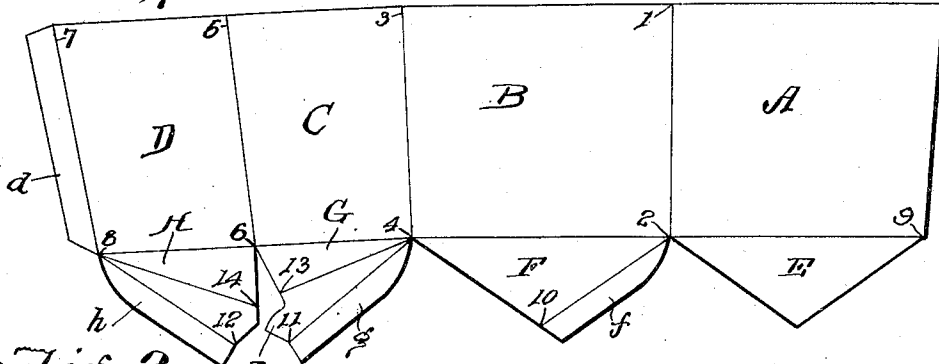


Fig. 2.

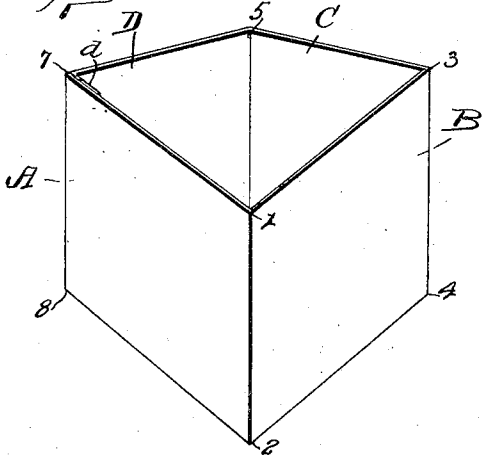


Fig. 3.

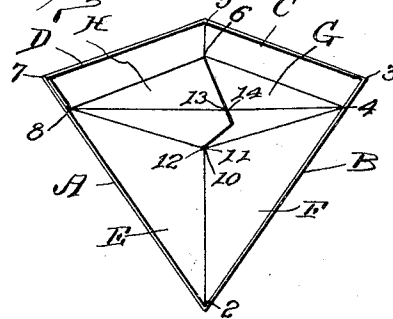


Fig. 4.

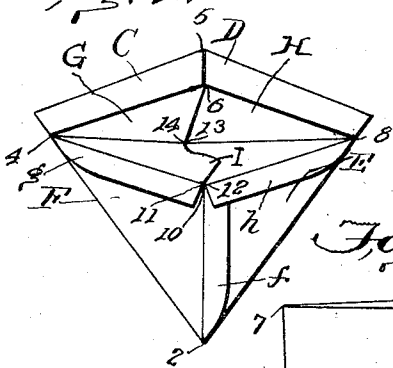


Fig. 5.

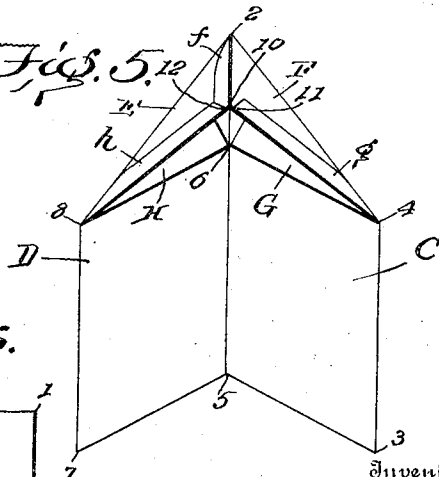
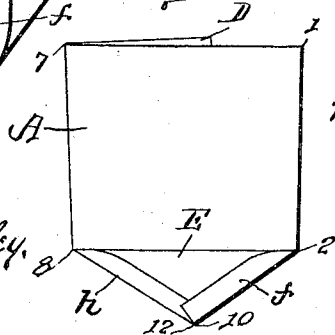


Fig. 6.



Witnesses

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# UNITED STATES PATENT OFFICE.

HENRY L. R. WOLF, OF DAYTON, OHIO, ASSIGNOR TO THE AULL BROTHERS PAPER & BOX COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

## PAPER BOX.

**SPECIFICATION** forming part of Letters Patent No. 792,686, dated June 20, 1905.

Application filed November 16, 1904. Serial No. 232,912.

*To all whom it may concern:*

Be it known that I, HENRY L. R. WOLF, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Paper Boxes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to paper boxes, and more particularly to what are known as "collapsible" or "folding" paper boxes which may be knocked down or folded into a flat form, so as to occupy only a small space when folded, while they may be readily expanded or set up into box form.

The particular embodiment of the invention illustrated is what is known as a "pail-filler," of which a number are packed in tiers in a wooden pail of downwardly-diminishing diameter, a mode of packing candy and the like in general use. These fillers have two relatively long sides which adjoin each other and two relatively short sides which adjoin each other and are united to the long sides, thus forming a box having the form of a trapezium in horizontal section.

It is the object of the invention to construct a box of this type each wall of which is without a fold or score of any kind, while the bottom is a single bottom composed of a single thickness of material, thus doing away with the extra material required to form the usual double bottom, said bottom being so constructed as to permit the box to be readily folded into a flat form and as readily set up into box form, the entire box, including both walls and bottom, being formed from a single blank.

To these ends the invention consists in certain novel features which will now be described and will then be particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the blank from which the box is constructed, the same being shown cut and scored, but not folded. Fig. 2 is a perspective view of the box set up. Fig. 3 is a top plan view of the box set up. Fig. 4 is a bottom plan view of the same. Fig. 5 is an in-

verted view of the box in process of being folded into flat form, and Fig. 6 is a view of the box in its flat or knocked-down form.

Referring first to the blank shown in Fig. 1, it will be seen that it comprises the longer sides A and B, united along the scored line 1 2, and the shorter sides C and D, united along the scored line 5 6, the side C being united with the side B along the scored line 3 4. The outer end of the side D has united to it along the scored line 7 8 the flap *d*, which when the box is being constructed is united to the free edge of the side A, thus connecting all four sides of the box. The side A has connected to its lower margin along the scored line 2 9 a triangular flap E, which forms one of the bottom sections, and the side B has united to it along the scored line 2 4 a similar triangular flap F, which also forms a part of the box-bottom. The bottom section F has united to one of its edges along the scored line 2 10 a flap *f*, which in constructing the box is lapped over upon and secured to the adjacent edge of the flap E, the scored line 2 10 forming one of the lines of fold of the bottom. The side C has connected to its lower edge along the scored line 6 4 a bottom section G, to the free edge of which is connected along the scored line 11 4 a flap *g*, which in constructing the box is secured to the adjacent edge of the bottom section F. The side D has connected to it along the scored line 8 6 the bottom section H, which has connected to its free edge along the scored line 8 12 the flap *h*, which in constructing the box is secured to the other edge of the bottom section E. The bottom section G is scored along the line 13 4 about equidistantly between the scored lines 6 4 and 11 4, and the bottom section H is similarly scored along the line 8 14 about equidistantly between the lines 8 6 and 8 12. The adjacent edges of the bottom sections G and H diverge in the blank at an angle such as to cause them to meet when the box is set up, and one of said members—in the present instance the member G—is provided with an extension I, which in the set-up box will underlie the other section H and support it in position. When the box is constructed from the blank

just described and set up or expanded into box form, it will form the box shown in Figs. 2, 3, and 4 of trapezium form in horizontal cross-section, having the four sides A, B, C, and D, each of which sides is continuous and unbroken, without fold, score, or crease of any kind. The bottom is a single bottom composed of a single thickness of material and comprises the four sections E, F, G, and H, which are permanently united together and fold along the lines 2 10, 4 11, and 8 12. That portion of the bottom constituted by the sections G and H is severed transversely from the center of the bottom to the edge thereof at the point 6, and these parts are adapted to fold along the lines 4 13 and 8 14. It will thus be seen that the bottom, considered as a whole, has two folding-lines extending across the same between the same pair of opposite corners—namely, the lines 4 11 12 8 and 4 13 14 8. The direction of fold of the lines 4 11 and 8 12 is outward with respect to the box in knocking down the box, while the direction of fold along the lines 4 13 and 8 14 is inward with respect to the box during the first part of the operation of knocking down the box, this fold finally disappearing when the box is knocked down. Assuming that the box is set up and that it is desired to fold it into flat form, as shown in Fig. 6, the sections G and H are first pressed inward, folding along the lines 4 13 and 8 14, the sides C and D also folding inward along the line 5 6 until the parts assume the position shown in the inverted view, Fig. 5. The further folding of the box in the same direction causes the bottom sections E and F to fold outward along the line 2 10, the bottom sections G and H flattening out again as the box approaches the flattened form, which latter is shown in Fig. 6. When the box is thus folded, it will be seen that the entire bottom thereof lies without the sides, so that the thickness of the folded box is made more uniform throughout, the maximum thickness being reduced by reason of the fact that the bottom is not folded in between the sides. The setting up or expanding of the box into box form consists of a mere reversal of the steps just described, and by simply separating the sides of the box so as to bring them into proper position the bottom is at the same time also brought into proper position, and the box is thus rapidly and readily set up. The box is thus constructed without the embodiment in it of any superfluous stock, is simple and efficient for its purpose in construction, and may be readily manipulated without special instructions.

It is obvious that the invention is not limited to the precise details of construction herebefore described and shown in the accompanying drawings, as the same may be modified without departing from the principle of the invention.

Having thus fully described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A collapsible paper vessel having four walls and a bottom, the bottom being composed of four sections united to fold along three lines from a common center to three of the corners, two of said sections being cut or separated between said common center and the fourth corner and having an additional folding-line between the corners adjacent to said fourth corner, substantially as described.

2. A collapsible paper vessel formed from a single blank, cut and scored to fold into box form, comprising four sides free from scores or folds, and a single bottom comprising two sections adapted to fold outwardly, and two other sections separated from each other and respectively united to the two first-mentioned sections, said separated sections being adapted to fold inwardly during the initial portion of operation of knocking down the box, the entire bottom lying without the sides when the box is folded, substantially as described.

3. A collapsible paper vessel formed from a single blank, folded and scored to form a box having two adjoining long sides and two adjoining short sides, each side free from folds or scores, and a single bottom, the short sides folding inward between the long sides when the box is folded into flat or knocked-down position, a portion of the bottom folding outward during said operation, and the remainder of the bottom first folding inward and then straightening outward during said operation, the entire bottom lying without the sides when the box is folded, substantially as described.

4. A collapsible paper vessel of the pail-filler class, having four unscored sides and a single bottom, said bottom folding along lines from a central point to the four corners, one of which lines is severed, the bottom having an additional line of fold connecting the corners adjacent to the severed line, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY L. R. WOLF.

Witnesses:

E. THOMPSON,  
W. P. JAMES.