R. F. THORNDIKE.

PAPER BOX AND BLANK THEREFOR.

APPLICATION FILED APR. 6, 1916.

1,193,087. Patented Aug. 1, 1916.

Fig. 1.

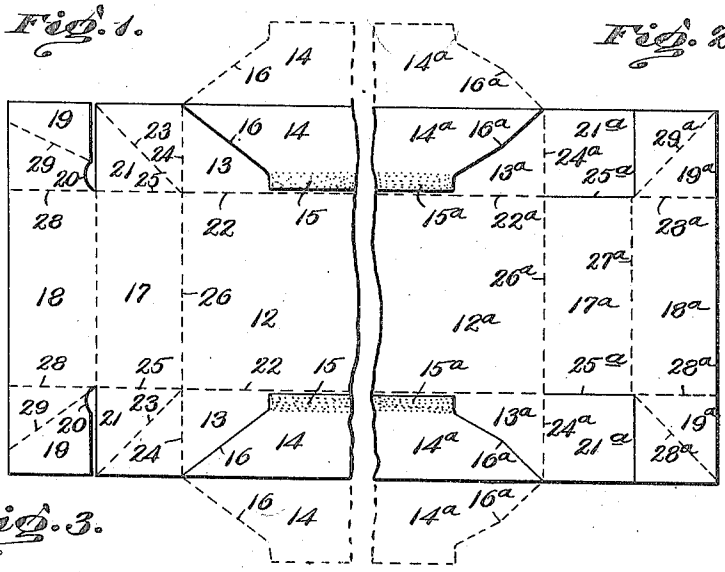


Fig. 2.

Fig. 3.

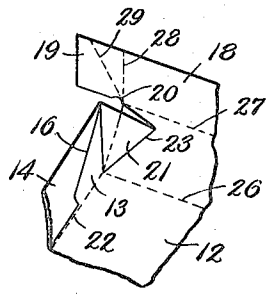


Fig. 9.

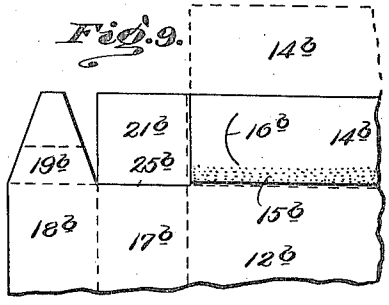


Fig. 4.

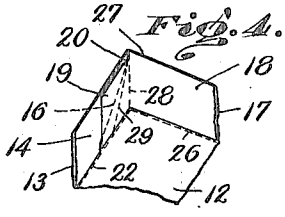


Fig. 10.

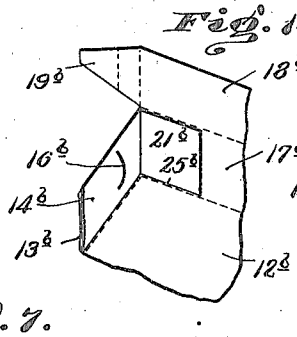


Fig. 11.

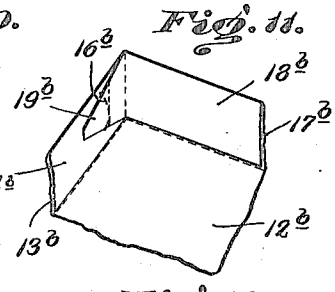


Fig. 5.

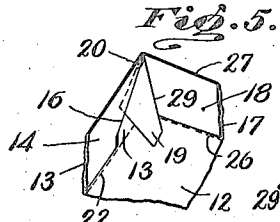


Fig. 7.

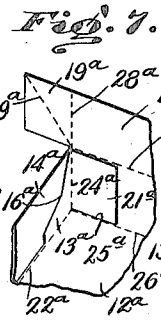


Fig. 8.

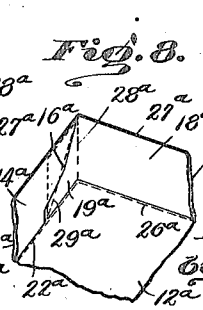


Fig. 12.

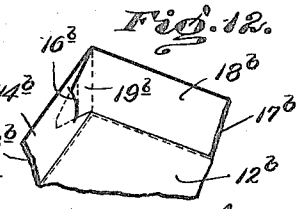
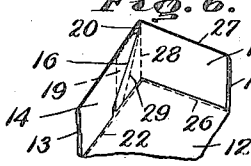


Fig. 6.



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by
O. W. Lawrence Atty.

UNITED STATES PATENT OFFICE.

ROTHCHILD F. THORNDIKE, OF CHELSEA, MASSACHUSETTS.

PAPER BOX AND BLANK THEREFOR.

1,193,087. Specification of Letters Patent. Patented Aug. 1, 1916.

Application filed April 6, 1916. Serial No. 89,451.

To all whom it may concern:

Be it known that I, ROTHCHILD F. THORNDIKE, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Paper Boxes and Blanks Therefor, of which the following is a specification.

This invention relates to the manufacture of paper or pasteboard boxes, and has particular reference to that type sometimes called "knock-down" boxes, and which are produced in flat form by machinery, and shipped in that form to the users who turn up the side walls and manipulate some interengaging flaps or tongues to lock the corners and retain the walls in upright positions. Such boxes are usually made of very cheap stock and the interengaging or locking portions frequently tear or become accidentally disengaged especially when of the size and shape known as "suit-case" boxes.

The objects of my invention are to provide strong and durable boxes of this character, the walls of which boxes are of double thickness with no raw edges exposed, which boxes may be economically and rapidly made by machinery with the minimum waste of stock, and provided with means whereby, when converted from flat form to produce either the bottom or cover members of boxes, will be so absolutely locked at the covers that the interengaged portions can not possibly be separated accidentally and can be intentionally disengaged only with difficulty.

Of the accompanying drawings: Figure 1 is a plan view of the left hand portion of one form of blank embodying my invention, as produced ready to be shipped and set up by the user, the dotted lines indicating the complete shape of the piece of paper or pasteboard as died out. Fig. 2 is a view similar to Fig. 1 but showing the right hand portion of a box member blank which is cut and creased in a slightly different manner from that illustrated in Fig. 1. Figs. 3, 4, 5 and 6 are detail perspective views to illustrate successive steps in the setting up of the Fig. 1 structure to box member form, it being understood that each of the four corners is interlocked in the same manner. Figs. 7 and 8 are views similar to Figs. 3 and 6 respectively, illustrating the setting up of the blank of the Fig. 2 structure. Fig. 9 is a view similar to a portion of Fig. 1, illustrating another embodiment of my invention. Figs. 10, 11 and 12 are detail perspectives to illustrate the setting up of the blank of the Fig. 9 structure.

Referring first to Fig. 1, which shows a portion of a blank, it is to be understood that the other portion, which is broken away, will have the same arrangement of cut and creased lines. The rectangular central portion 12 has side sections 13, 14, the latter, when the blank is died out or otherwise made, extending out as indicated by dotted lines. By a folding machine of any well-known or preferred type, the sections 14 are folded in and adhesively secured along the dotted areas 15, leaving the rest of the sections 13, 14, unconnected so as to form pockets for the tongue flaps 19 hereinafter described. The production of the commercial blank in this manner is very rapid. The ends of the sections are cut away to form edges 16 which are oblique as clearly illustrated, for a purpose presently explained.

The portion 12 has end wall sections 17, 18, the latter having laterally extending tongue flaps 19 which are preferably formed with notches 20 in their inner edges. Sections 21 connect the sections 13, 17.

Blank folding lines are formed in any suitable manner, as by creasing the blank, at 22, 23, 24, 25, 26, 27, 28 and 29.

To set up the blank to form the bottom or cover member of a box, the side walls are turned up on the lines 22, and then the section 17 is turned up as indicated in Fig. 3, the sections 21 doubling on line 23 and turning in on lines 24, 25. Then the section 18 is turned on line 27 and carried in to inclose the now doubled sections 21 between it and sections 17, this movement causing the flaps 19 to bend backwardly on lines 28 and ride down inside sections 14 to the position indicated in Fig. 4. Next, the tongue 19, by pressure on its upper edge, is caused to bend on line 29 (see Fig. 5) until its upper edge engages the opening in the pocket formed, as hereinafter described, between sections 13, 14, after which a slight pressure on the bowed-out tongue causes the tongue to slip completely into the pocket as shown in Fig. 6, thus completing the operation. The notch 20 facilitates this last movement, by avoiding strain at the upper end of the line 28 that might cause the tongue to tear. The notch may be of any suitable shape. The oblique edge 16, as will be understood by

comparing Figs. 3, 4, and 5, enables the tongue flap to be readily inserted in the pocket, and yet, the tongue, when completely in the pocket, has so much of its area therein as to render accidental removal impossible. And so slight a portion of the edge of the tongue is now accessible, that it is difficult to get it out of the pocket. And of course no part of the interengaging members is accessible or visible from the outside.

I do not limit myself to the specific details or form so far described. For instance, as shown in Fig. 2, in which reference numerals are employed the same as in Fig. 1, for similar features, but with the addition of the exponent "a", the oblique edge 16^a need not be straight, and the section 21^a, instead of being connected to section 17^a, may be separated therefrom by a slit 25^a and left uncreased (no crease 23). With this form, the manipulation to set up the box member will be substantially the same as already described, but differing in the following respects (see Figs. 7 and 8). When section 18^a is turned in and down from the Fig. 7 position, it incloses members 21^a of single thickness, instead of doubled as in Fig. 3, and the projecting mid-length portion of the edge 16^a of the pocket enables the upper edge of tongue flap 19^a to be inserted into the pocket with such ease that no recess 20 is needed.

With the form illustrated in Figs. 9 to 12 inclusive, in which the same reference numerals are employed to designate parts similar to those in Fig. 1, but with the exponent "b", a slit 16^b is formed in section 14^b, the tongue flap 19^b is formed tapering, and the section 21^b is cut from section 17^b at 25^b. With this form, the same setting up method is carried out as already described, the tongue 19^b being inserted through slit 16^b into the pocket formed between the two sections of the side walls above the glued line 15^b.

Of course the boxes may be made in any size and of any proportion. Furthermore, it is to be understood that the terms "side" and "end" are employed for convenience of description only, and are not to be understood as limitations meaning that the box member is elongated. It might be square, or the shape be such that the walls which provide the pockets for the tongues might properly be termed the end walls and the walls formed by the sections 17, 18, then termed the side walls.

Having now described my invention, I claim:

1. A paper box member comprising a central portion and four walls all of which are of double thickness, two of the walls being provided with pockets, the inner sections of the other two walls having extensions forming tongues, said tongues extending into the pockets in planes at a right angle to the walls which carry said tongues, the inner sections of the walls which are provided with pockets being permanently secured to the outer sections of said walls to prevent accidental disengagement of the tongues from the pockets.

2. A paper box member comprising a central portion and four walls all of which are of double thickness, two of the walls being provided with pockets, the inner sections of the other two walls having extensions forming tongues, said tongues extending into the pockets in planes at a right angle to the walls which carry said tongues, the inner sections of the walls which are provided with pockets being permanently secured to the outer sections of said walls to prevent accidental disengagement of the tongues from the pockets, said tongues being transversely creased to facilitate their insertion into the pockets.

3. A paper box member comprising a central portion having two side walls each of double thickness with a folded upper edge, the inner section being permanently secured along its lower portion to the outer section and said inner section having oblique end edges, and two end walls each of double thickness with a folded upper edge, the inner section having extensions forming tongues which enter the pockets of the side walls behind said oblique edges in planes at a right angle to the said end walls.

4. A paper box member comprising a central portion having two side walls each of double thickness with a folded upper edge, the inner section being permanently secured along its lower portion to the outer section and said inner section having oblique end edges, and two end walls each of double thickness with a folded upper edge, the inner section having extensions forming tongues which enter the pockets of the side walls behind said oblique edges in planes at a right angle to the said end walls, said extensions being transversely creased to facilitate their insertion into said pockets.

5. A box blank comprising a central portion, two side portions of double thickness with folded outer edges, the inner section being permanently secured to the outer portion at a point remote from said folded edge, and two end portions each comprising two foldable sections, the outer sections having extensions forming tongues adapted to be bent at right angles to said end sections, means being provided to enable said tongues to be slipped into the pockets formed between the sections of the side portions.

6. A box blank comprising a central portion, two side portions of double thickness with folded outer edges, the inner section being permanently secured to the outer portion at a point remote from said folded

edge, and two end portions each comprising two foldable sections, the outer sections having extensions forming tongues adapted to be bent at right angles to said end sections, the inner sections of the side portions having oblique edges to enable the tongues to be slipped behind them.

7. A box blank comprising a central portion, two side portions of double thickness with folded outer edges, the inner section being permanently secured to the outer portion at a point remote from said folded edge, and two end portions each comprising two foldable sections, the outer sections having extensions forming tongues adapted to be bent at right angles to said end sections, said tongues being transversely creased, means being provided to enable said tongues to be slipped into the pockets formed between the sections of the side portions.

8. A box blank comprising a central portion, two side portions of double thickness with folded outer edges, the inner section being permanently secured to the outer portion at a point remote from said folded edge, and two end portions each comprising two foldable sections, the outer sections having extensions forming tongues adapted to be bent at right angles to said end sections, said tongues being transversely creased and having their edges which fit under the folds of the side portions notched to reduce liability of tearing, means being provided to enable said tongues to be slipped into the pockets formed between the sections of the side portions.

In testimony whereof I have affixed my signature.

ROTHCHILD F. THORNDIKE.