No. 625,858. Patented May 30, 1899.

J. E. THORNTON.

CARDBOARD BOX.

(Application filed Dec. 21, 1897.)

(No Model.)

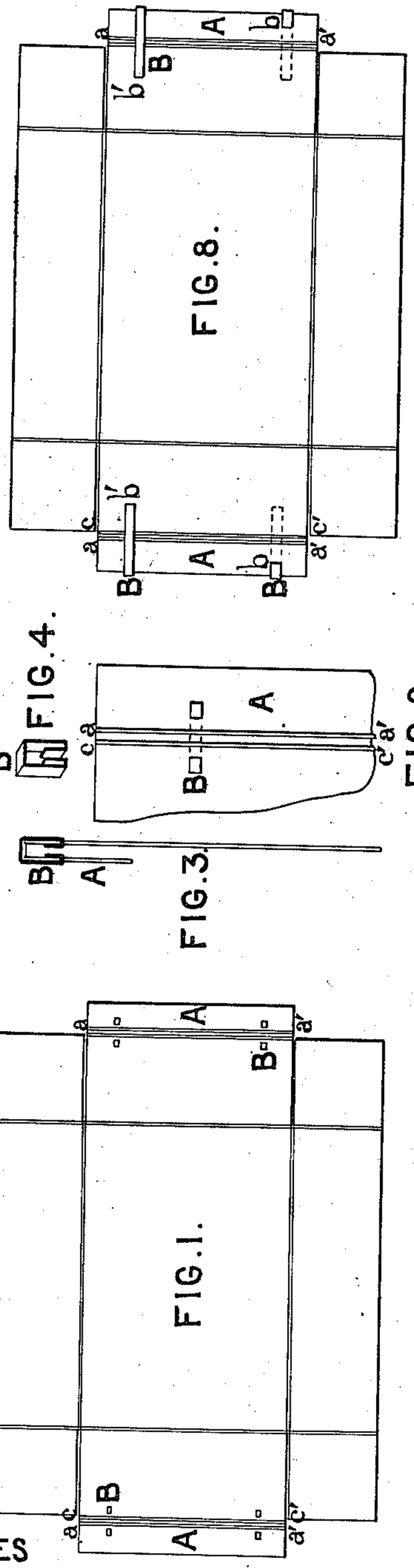

FIG. 8.

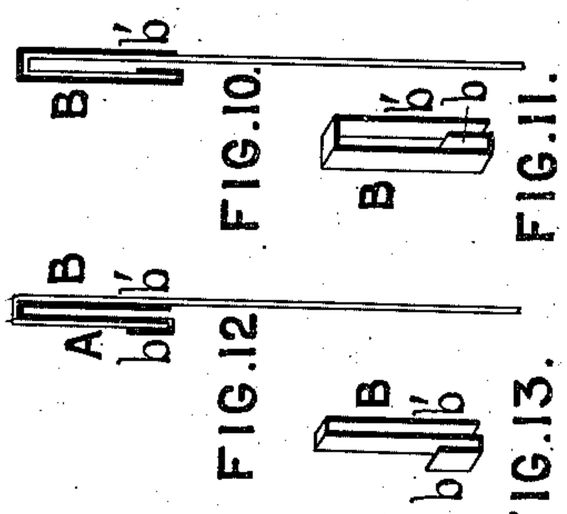

FIG. 10.

FIG. 11.

FIG. 12

FIG. 13.

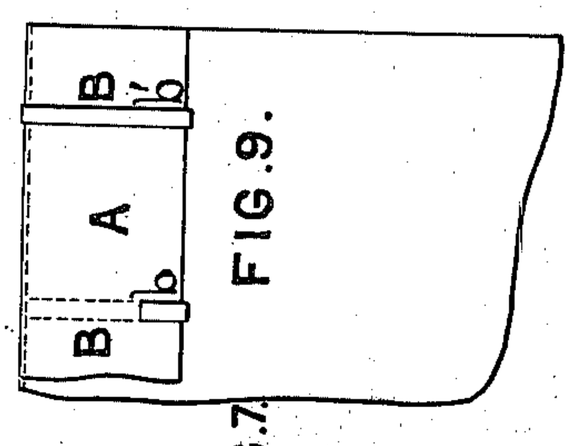

FIG. 9.

FIG. 4.

FIG. 2.

FIG. 3.

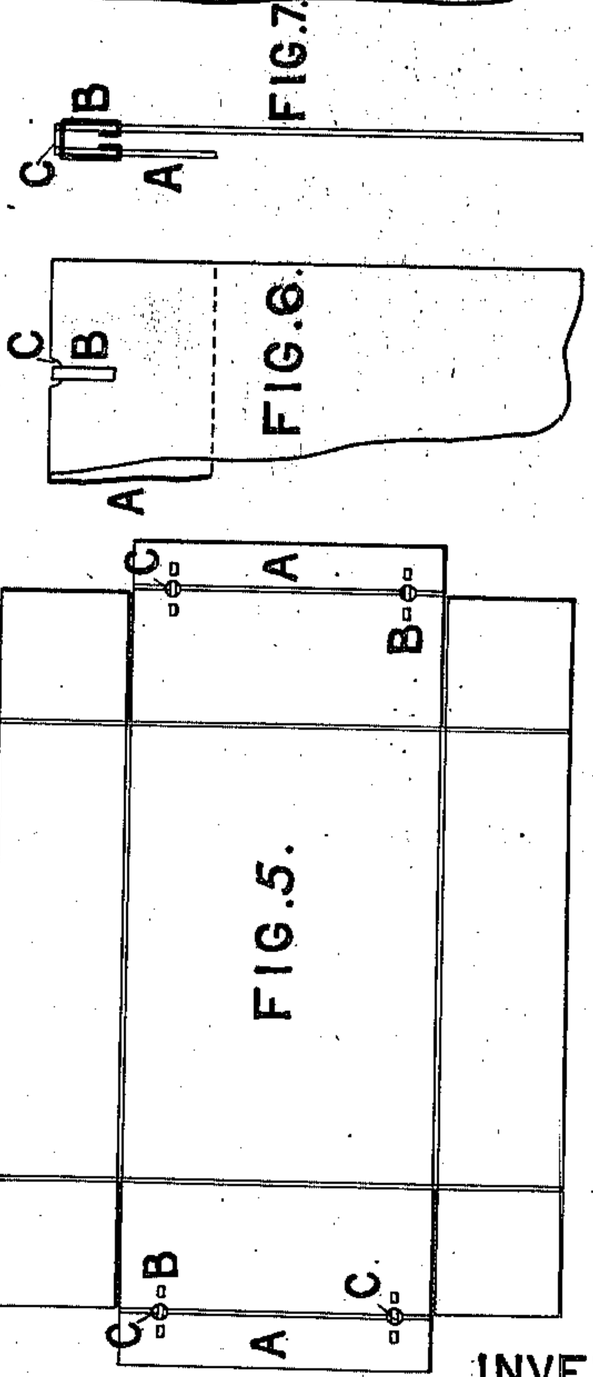

FIG. 7.

FIG. 6.

FIG. 1.

FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

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CARDBOARD BOX.

SPECIFICATION forming part of Letters Patent No. 625,858, dated May 30, 1899.

Application filed December 21, 1897. Serial No. 662,958. (No model.)

To all whom it may concern:

Be it known that I, JOHN EDWARD THORNTON, a subject of the Queen of Great Britain, residing at Altringham, in the county of Chester, England, have invented certain new and useful Improvements in Cardboard Boxes, of which the following is a specification.

The improvements forming the subject of this invention relate to that class of cardboard boxes which have flapells that fold over the loose end or side pieces to secure them together; and the object of this invention is to make these flapells self-fastening, so that they will retain their position when once folded over (without springing back) in a simpler, cheaper, and better manner than hitherto. Hitherto it has been found that when a plain strip is used in combination with an ordinary bend the flapell will not bend over easily when the strip is outside the hinge, owing to the fact that the act of bending over is equivalent to a shortening of the strip. Consequently the cardboard is pinched or nipped under the strip, and the flapell has a tendency to spring back somewhat after bending over. This has hitherto been obviated by making a bend or kink in the strip before attaching it, which gives it a greater length than the surface of board it covers, and therefore when bent over this extra length is taken up. In practice this is somewhat expensive, and I am now enabled to employ a plain strip or clip.

It consists, essentially, in forming in the cardboard of which the box is to be made two parallel grooves or forming slots or holes, over which the metallic fastening-strips will pass, or affixing such strips by one end only, so that when the flapell is bent over the metallic strip or clip is not stretched or elongated.

It will be fully described with reference to the accompanying drawings.

Figure 1 is a plan of an extended blank from which the box is constructed, with two parallel grooves cut along the lines $a\,a'\,c\,c'$; Fig. 2, an enlargement of a portion of same, showing the grooves; Fig. 3, a sectional elevation through end of box, showing flapell A closed; Fig. 4, a perspective view of metal clip B in closed position; Fig. 5, a plan of extended blank, showing holes C punched beneath the metal clips B; Fig. 6, an elevation of part of end of box; Fig. 7, a sectional elevation of same; Fig. 8, a plan of extended blank, showing the metal clips B attached to the cardboard by one end only; Fig. 9, an elevation of end of box, showing same; Fig. 10, a sectional elevation showing metal clip B on outside of bend; Fig. 11, a perspective view of metal clip detached; Fig. 12, a section showing metal clip B on inside of bend; Fig. 13, a perspective view of clip detached.

A stiffening-piece or metallic clip B, of wire, metal ribbon, or other suitable material, is placed crosswise over the bend of the flapell when folded. The strip or clip B is sufficiently soft and ductile to bend over readily, and yet strong enough to retain its position when bent.

Referring to Figs. 1 to 4, in addition to or instead of the ordinary scores or bends, I cut two parallel grooves $a\,a'\,c\,c'$ at the bend of each of the flapells A. These grooves are distinct from the ordinary bends and are preferably in the form known as "channel-scoring," a solid ridge of ungrooved board being left between the grooves. The effect of these grooves is to allow of the material of the board closing in when being bent over without extending the exterior surface, and thus avoid the longitudinal stretching of the metallic strips or clips B that would otherwise take place.

Referring to Figs. 5 to 7, the bend of the flapell A is scored or creased in the usual way and a plain strip or clip B affixed thereto to hold it when bent. Immediately under the place in the bend where the metallic clip B crosses it I punch a hole or slot into which the strip or clip B fits when bent over, and thus the board is not pinched along the bent edge, nor has the flapell any tendency to spring back, for the reason that the surface of the board is practically the same length or shorter than the surface of the strip or clip that covers the adjacent part, and no tension is put upon it.

Referring to Figs. 8 to 13, instead of grooving the board or cutting holes or slots therein to prevent tension on the metallic clip or strip B, I find that by securing it at one end only and leaving the other free all tension can be avoided and the same result obtained of preventing the flapell springing back when bent over. The end *b* is secured to the flapell by

clenching, squeezing, or other means, and the end *b'* is left free either on the surface of the board or passed through a slit or hole punched in it, in which it can move to and fro. The strip or clip B is thus formed in the form of a fork, the long end *b'* of which extends across the hinge to maintain it in position when folded. The strip B may be placed either outside the bend of the hinge, as in Figs. 10 and 11, the end *b* being turned inward, or it may be inside the bend, as in Figs. 12 and 13, the end *b* being turned outward. Both positions are shown in Figs. 8 and 9. The forked end *b* engages the end of the flapell and may be pushed on either by hand or machine and be compressed or squeezed into the surface of the board by rollers, presses, or other means.

The springing back when the flapell is bent over occurs with all forms of creasing of the board hitherto used—that is to say, if the board is creased on a Remus or other form of bending-machine which does not cut the surface of the board; also if the board is simply scored in the ordinary way—that is, partly cut through with a thin knife-edge; and also if the board is channel-scored—that is, grooved by a gouge, saw, or other suitable tool. All of these methods of creasing are well known, and with each one the flapell springs back after bending over unless the metal strip is applied according to the way hereinbefore described.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. In a folding cardboard box a flapell A provided with incisions at the bend to receive a plain metallic cross-strip in combination with a plain metallic cross-strip B fitting into such incisions to prevent tension on such strip and prevent the flapell springing back when folded, substantially as described.

2. The combination in a cardboard box of folding sides folding ends flapells A provided with indents to receive metallic strips and plain metallic cross-strips B attached to the flapell and inserted in the indent to overcome longitudinal tension on the strips and prevent the flapell from springing back when folded substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

J. E. THORNTON.

Witnesses:
J. OWDEN O'BRIEN,
R. OVENDALE.