(No Model.) 2 Sheets—Sheet 1.

H. S. MUNSON.

KNOCKDOWN BOX.

No. 377,813. Patented Feb. 14, 1888.

Fig. 1.

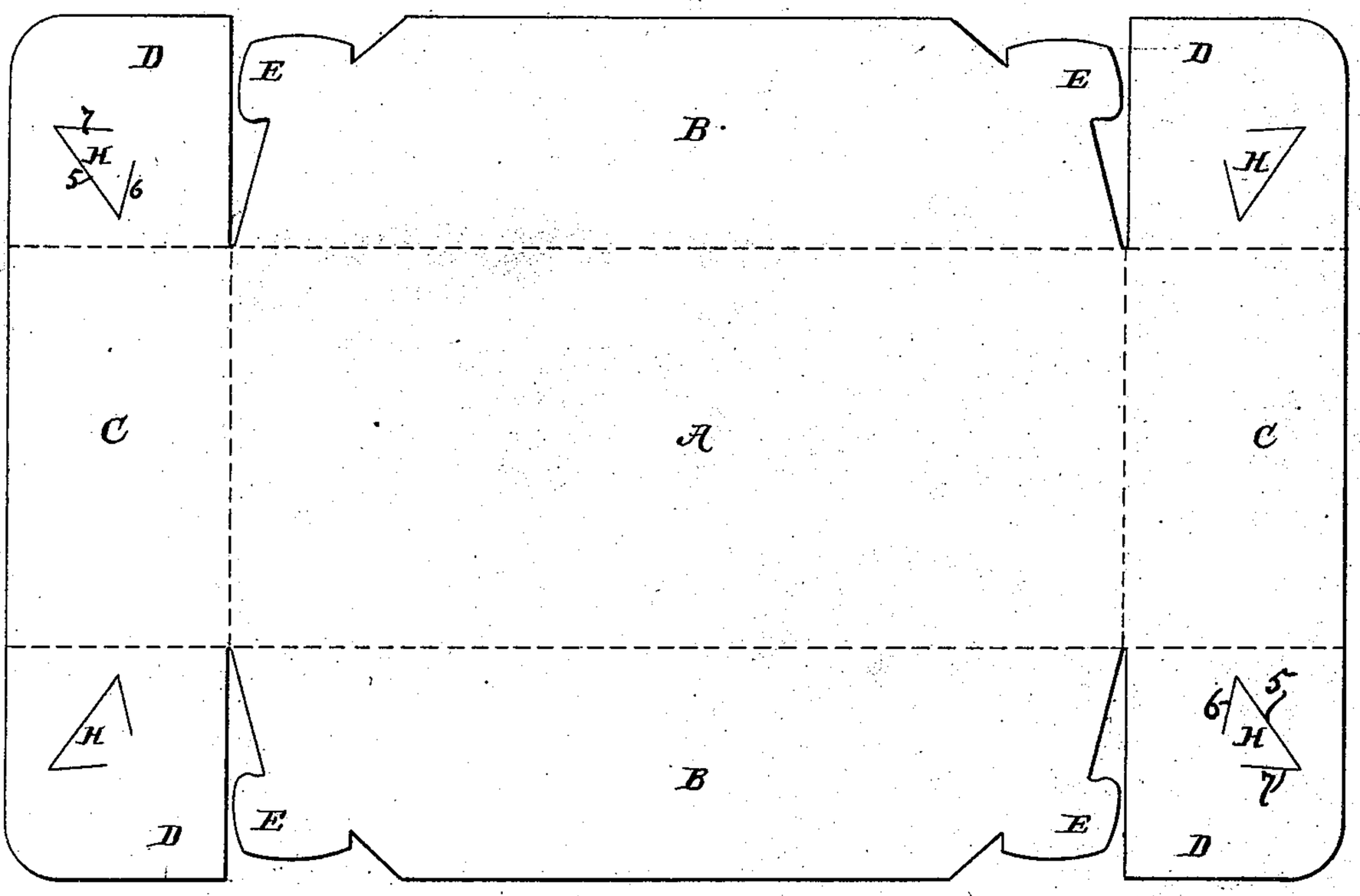


Fig. 3.

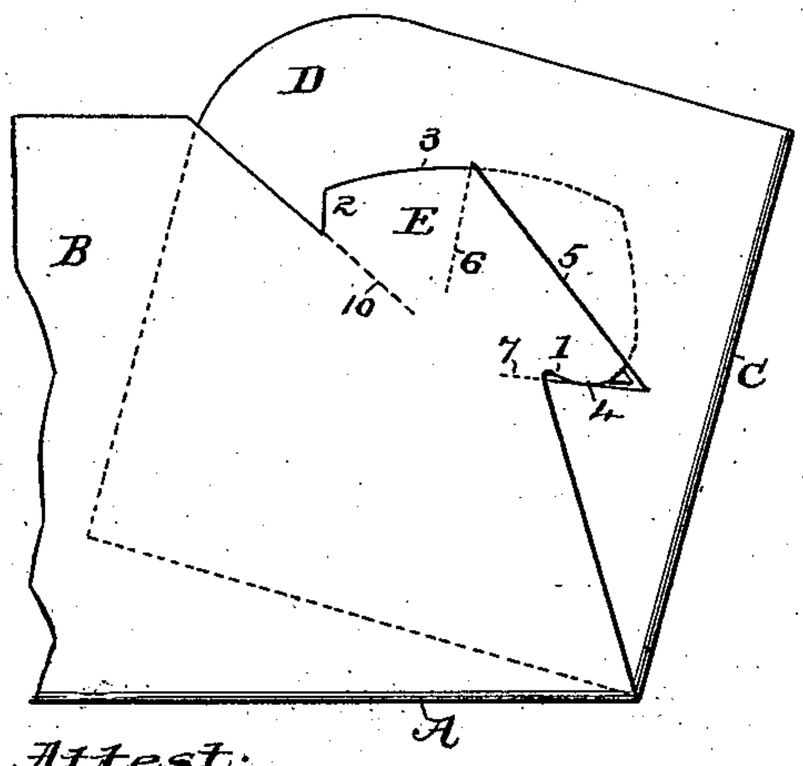
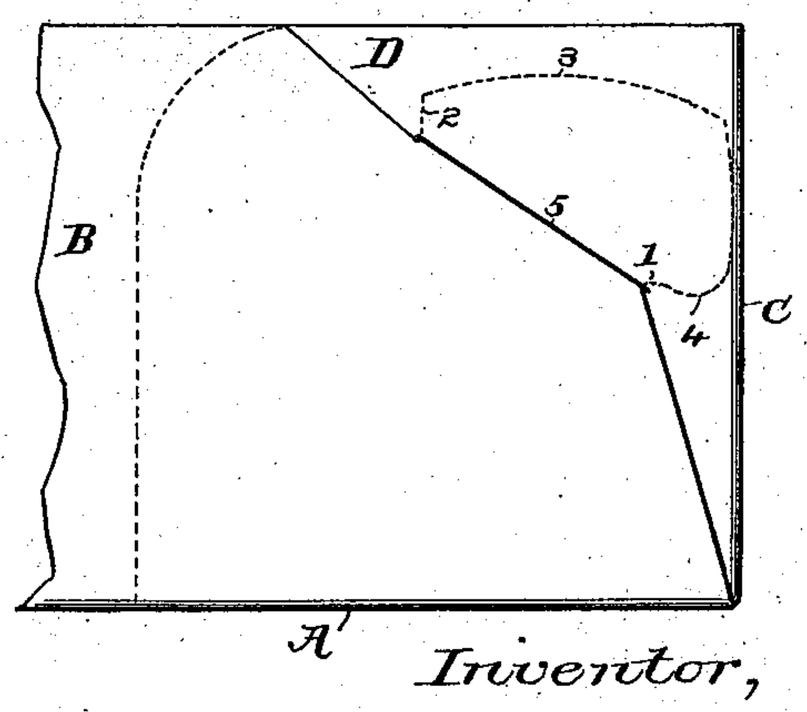


Fig. 4.



Attest:

Geo. H. Graham.

A. M. Jarbera

Inventor,

Harvey S. Munson,

by Munson & Philipp

Attys.

(No Model.) 2 Sheets—Sheet 2.

H. S. MUNSON.

KNOCKDOWN BOX.

No. 377,813. Patented Feb. 14, 1888.

Fig. 2.

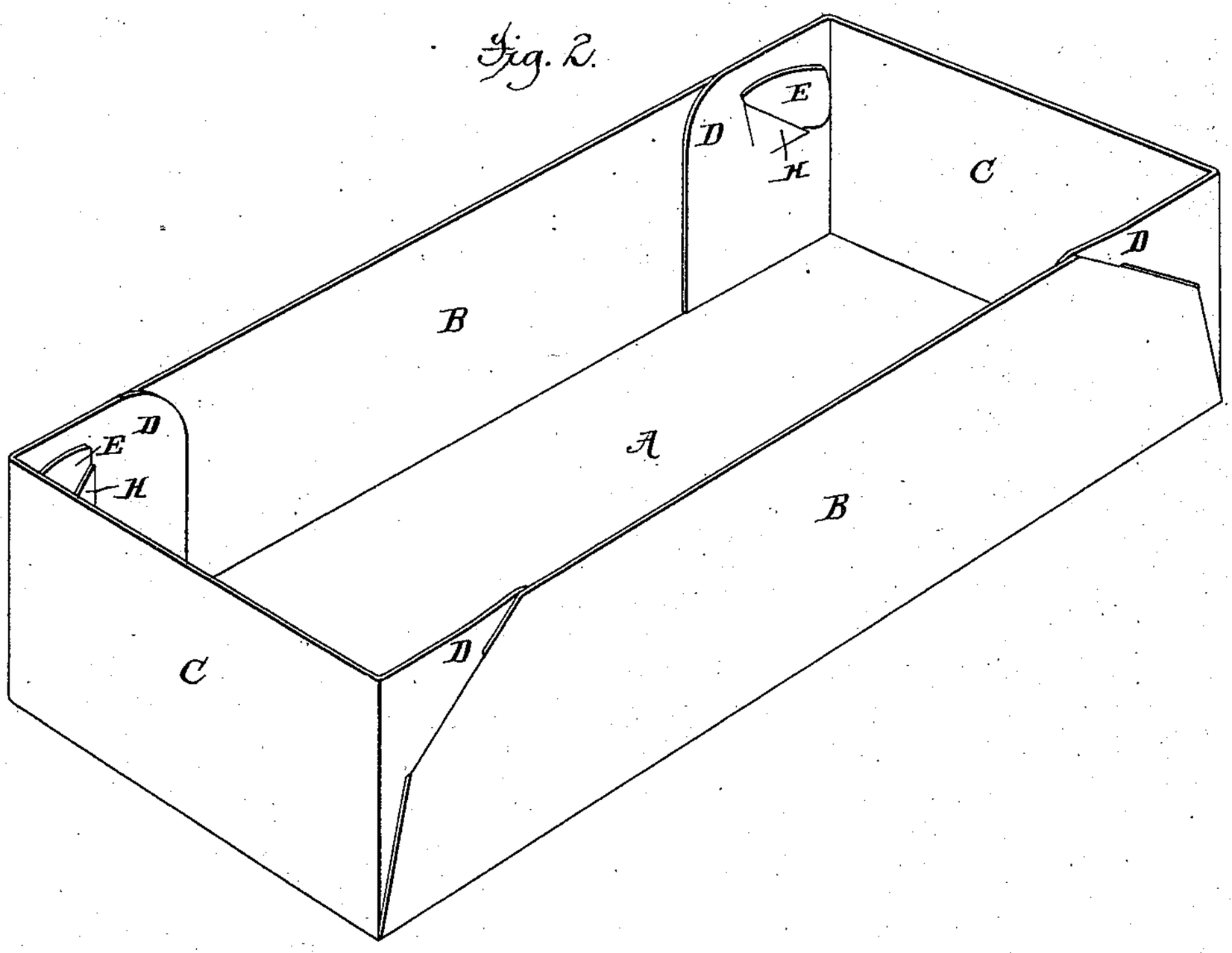
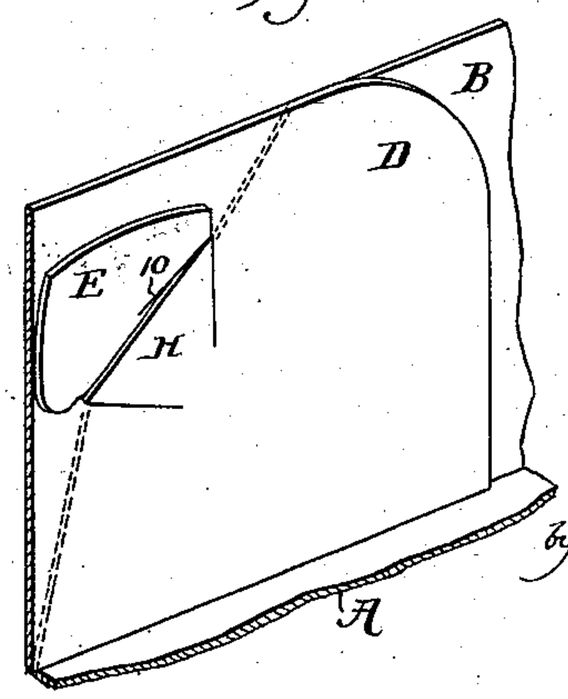


Fig. 5.



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UNITED STATES PATENT OFFICE.

HARVEY S. MUNSON, OF NEW HAVEN, CONNECTICUT.

KNOCKDOWN BOX.

SPECIFICATION forming part of Letters Patent No. 377,813, dated February 14, 1888.

Application filed October 25, 1883. Serial No. 110,021. (No model.)

To all whom it may concern:

Be it known that I, HARVEY S. MUNSON, a citizen of the United States, residing in the city of New Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Knockdown Boxes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

In said drawings, Figure 1 represents the blank from which the box or cover is made, the same illustrating the mode of knocking down adapted to secure economy of space in packing or shipment. Fig. 2 illustrates the blank set up or brought into box form for use. Figs. 3 and 4 are somewhat enlarged views showing the structure of the lock and the mode of securing the corners of the box or cover in their united condition. Fig. 5 shows a modification of locking-tongue.

Many forms of locking devices have heretofore been adopted for securing together the upturned sides and ends of a box or cover of a box in such manner that the same may be readily detached and the parts composing the box or cover be laid flat for storage and shipment. Boxes and covers to which such devices are applied are made from paper, pasteboard, and the like, from the fragile nature of which material it frequently results that the locking devices are ruptured and the box or cover destroyed.

My improvement relates more particularly to the locking devices of such boxes; and it consists in the peculiar structure hereinafter fully explained, and set forth in the claims.

In its general form the box shown is rectangular, consisting of a bottom, A, two sides, B, and two ends, C, which sides and ends are bent upward at or approximately at right angles to the bottom A, and united to each other at or near the corners, and thus form the shallow structure that is to constitute a box or cover of a box, as is shown in Fig. 2. The corner flaps, D, projecting from either the sides or ends, are each provided with the pocket or female part of the lock. When the parts of the lock are applied as shown, each side B will be fashioned at each extremity by suitably cutting it into a tongue, E, that provides two locking-shoulders, 1 2, a curved upper edge, 3, and a curved lower edge or hooked projection, 4, and each corner flap, D, will have a pocket within which said tongue may engage. The pocket is formed by a simple incision, 5, from the ends of which incisions 6 7 are extended at such converging angles as to form a loose spring-like flap, H.

In connecting the sides and ends of the box they are united and secured at the corners by first bending up the sides, as B, at right angles to the body A, then bending the flap, as D, at right angles to the end C, and then bending the end D at right angles to the body A, in accomplishing which the flap D will pass inside of the side B, as in Fig. 3. In this manipulation pressure applied upon the tongue E will force inward the spring-like flap of the pocket H, and thus enable the said tongue to enter and be guided within said pocket as the end C is pressed toward its right-angular position with respect to the body A. In assuming such position the curved upper edge, 3, of the tongue E will form a guide that will not only properly direct the curved lower edge or hooked projection 4 into said pocket, but force said hooked projection downward at the proper time to seat its locking-shoulder 1 in the juncture of the pocket formed at the point where the incisions 5 and 7 join. This seating and the passage of the locking-shoulder 2 into or seating of the same in the junction of the pocket formed where the incisions 5 6 meet are simultaneously accomplished by the peculiar shape of the curved edge 3 of said tongue, which first operates to guide the greatest extension of the projection 4 into the pocket and then to force its recessed portion or locking-shoulder 1 into the jaw of the pocket. This structure insures a perfect locking of the parts together and provides against loose play. In detaching the parts the flexibility of the material composing the flap D and side B may be depended upon to enable the jaw of the pocket to be raised over the shoulder 2 without rupturing the same if a second use of the box is desired; but the structure is more particularly designed to accomplish tight locking in the first instance.

When the parts are in the locked position, it will be observed, as in Fig. 4, that these locking-shoulders operate to prevent any other than a forcible detaching of the parts, shoulder 1 operating against an upward movement of

the flap D and shoulder 2 against an outward movement of said flap, while the seating of the edge of the flap D upon the bottom A of the box and the seating of the end of the tongue against the end C of the box operate to prevent any rupture of the lock by inward pressure of said end C.

The lock may be constructed without the curved projection 4, and have the same provided with a straight edge extending from the points 1, which edge may, if desired, be inclined downward. The curved form is, however, preferable, as it insures a snug fit and tight lock. This construction of locking devices presents free edges of the side B of such limited extent as not to be liable to engagement with foreign bodies in handling and use, whereby the lock might be injured or disengaged. The pocket is also of such peculiar structure that it enables the entrance through it of a tongue, the widest part of which is considerably greater in dimension than the length of the mouth of said pocket, and this is due to the angular position of said mouth and the peculiar curve of the guiding-edge 3.

The pocket is formed without removing any stock by a main incision, 5, the extremities of which unite with angular converging incisions 6 7, whereby great strength is preserved at the union of said incisions with the main incision where the strains are to be exerted. The feature characterizing this formation of pocket for the reception of holding-tongues in paper articles is found in the converging incisions 6 7. They produce, in connection with the incision 5, a spring like flap whose hinge is so reduced in its extent as to form a wide pocket and enable the flap to be easily pushed aside by the entering of a tongue, and thus not only admit it to pass easily into the pocket, but recover itself by its spring-like action to hold the inserted tongue. It thus operates to admit a tongue as readily as would a pocket formed by the removal of considerable stock, but, unlike it, affords a pinching or binding hold, for the reason that the flap has a tendency to recover its normal position and bear against the back of the tongue.

As before stated, secure fastening in the first instance is the desirable feature in these boxes, which, shipped or packed flat for convenience of storage, are set up when they are to be put into use, and hence the stronger and more secure the lock the more desirable the box becomes. To this end I have also provided a means for interlocking the parts auxiliary to their mere locking feature, and this is provided by dividing the tongue on the line 10 by a simple incision, whereby a free part is provided that will, after the tongue is entered into the pocket, spring inward far enough to engage with and lie against a part of the upper edge of the spring-flap H of the pocket, thus providing a direct bearing of a part of the side B against and in opposition to a part of the flap D and accomplishing a perfect interlocking, as in Fig. 5.

What is claimed is—

1. A lock for uniting the separable parts of articles made from paper or similar material, consisting of a locking-tongue having projections 2 4 and a locking-pocket formed by incisions 5 6 7, substantially as described.

2. A locking-pocket for uniting the parts of articles made from paper or similar material, consisting of a main incision, 5, the extremities of which unite with angular converging incisions 6 7, substantially as described.

3. The combination, with a pocket consisting of an angular incision, 5, of a tongue having projections 2 4 and a curved upper edge, 3, substantially as described.

4. The herein-described box, consisting of the bottom A, sides B B, and ends C C, made integral with each other, the ends C being provided with the flaps D, lying inside of the sides B, and having the locking-pockets H, located in close proximity to the corners of the box, and the sides B, lying upon the outside of the flaps D and being provided with the locking-tongues E, which extend inward and upward through the locking-pockets and lie upon the inside of the box, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HARVEY S. MUNSON.

Witnesses:
T. H. PALMER,
H. T. MUNSON.