

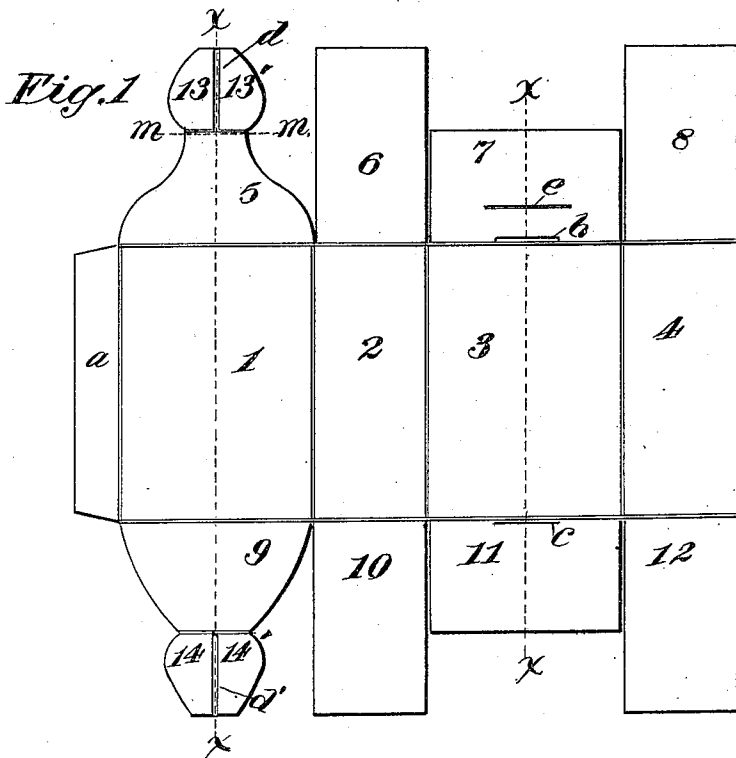
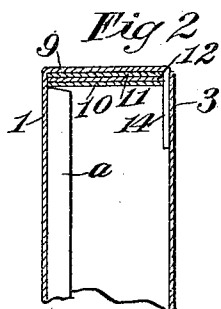
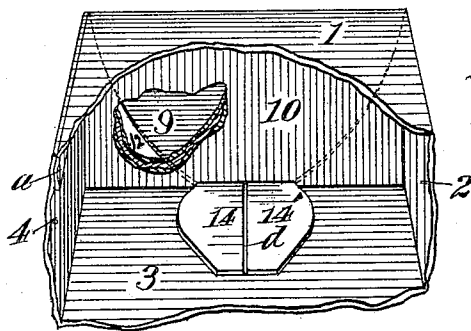
No. 640,766.

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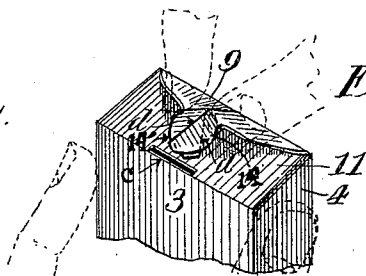
A. R. HIBSON.
KNOCKDOWN FOLDING PAPER BOX.

(Application filed Apr. 22, 1899.)

(No Model.)



WITNESSES:
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UNITED STATES PATENT OFFICE.

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KNOCKDOWN FOLDING PAPER BOX.

SPECIFICATION forming part of Letters Patent No. 640,766, dated January 9, 1900.

Application filed April 22, 1899. Serial No. 714,060. (No model.)

To all whom it may concern:

Be it known that I, ALBERT R. HIBSON, a citizen of the United States, residing in the borough of Brooklyn, city of New York, State of New York, have invented certain new and useful Improvements in Knockdown Folding Paper Boxes, of which the following is a specification, reference being had to the accompanying drawings, of which—

Figure 1 is a plan view of one form of blank useful to be employed in the application of my invention. Fig. 2 is a sectional view of the box produced from said blank, taken on the dotted lines X X. Fig. 3 is an interior end view of the box, part of the sides being broken away, so as to show the arrangement of the "split dead-lock" and further showing the operation of my invention. Fig. 4 is a detailed view of the locking-flap, showing the parts arranged for insertion into the slot.

The object of my invention is to produce a folding paper box which after being set up may be closed or locked in such a manner as to preclude the opening thereof without detection—that is to say, without perforating, severing, or destroying some portion of the constituent walls or other parts of the box; also, to obtain a more secure locking generally than those heretofore employed, and not only a more secure locking, but also one which may be more readily manipulated and effected and economically made. I attain these objects by the peculiar improved devices which, together with their method of operation, I will now describe.

I produce out of any convenient material—as, for instance, heavy paper or cardboard—a blank having, we will say, for illustration, the form of that depicted in Fig. 1, which represents a blank adapted to be made up into what is broadly known as a "tubular" folding or knockdown box, the lap *a* being glued to the side 4 in the usual manner, the tube so constructed making up the body of the box, which will then be closed at the ends in the manner which I will describe. As is well understood in this art, the said blank can be struck out of the material by a proper die, which will not only cut out the outer lines, but will simultaneously crease into the mate-

rial "fold-lines," so called. (Illustrated by the double lines in Fig. 1.) The blank will thus present, as is customary in cases of tubular boxes, four sides 1 2 3 4, separated from each other by intervening creased lines, also the aforesaid lap *a*, which is permanently glued or otherwise attached to the inside of the side 4, thus producing a box-body of rectangular cross-section and which, as will be well understood, can be folded flat by collapsing it on the aforesaid creased lines. The sides 2 4 are respectively provided with end-closing extensions of a familiar type 6 and 8 and 10 and 12, designed to be bent over at right angles to their respective sides and so as to lap over each other in closing the ends of the box, whereby, as is well known, greater tightness and imperviousness is secured in the closure of the box; but these parts also in my improvement contribute toward the production of novel results, as will be hereinafter described. The side 3 is, as shown, provided with two outer end-closing flaps 7 and 11, designed, respectively, to be folded down at right angles the one over the other, as aforesaid, closed inner flaps 6 and 8 and the other flap 11 over the flaps 10 and 12. These flaps 7 and 11 are both provided with slits *b c*, which are preferably not mere slits, though the latter might be employed, but complete openings caused by removing a small portion of the material constituting the flap. The side 1 is also provided with flaps 5 and 9, terminating, respectively, in retaining pieces or locks 13 13' and 14 14'. These retaining pieces or locks are each provided with a preferably central longitudinal split or slit *d*, which, it will be observed, extends from the outer edge thereof to a point at about the narrowest portion of the neck. The neck is also preferably creased, as shown, to facilitate bending. The inclosed flap 7 is also provided with a supplemental slit *e*, the function of which will be hereinafter described. The operation of my invention is as follows: The box having been permanently secured into tubular shape, as stated, is first opened into operative form, so as to present a rectangular cross-section. The flap 10 is folded down at right angles to its attached side, thereby covering

the end. The flap 12 is next similarly bent down upon the flap 10. The flap 11 is next bent down so as to overlie the two previously-mentioned flaps substantially at right angles to its connected side 3. The flap 9 is next bent down in the same general direction, and pressure is brought to bear upon the outer edges of the projecting lock 14, whereby, owing to the presence of the split *d*, the two sides of the lock separated by the split are caused to overlap and are crowded together, as shown in Fig. 4, so as to very greatly diminish the original width of the locking projection, and thus enable it to be readily inserted within the opening *c*. After the commencement of such insertion, the parts having been folded upon each other, as stated, a mere trifling pressure applied so as to push the partially-collapsed locking projections into the slot will suffice to send it home, the external edges being shaped so as to produce a gradually uniformly tapering tongue, and the ends of the opening *c* crowding upon the said tapering sides of the tongue readily tend to facilitate the collapsing together of the two members, one on each side of the slit *d*. After the widest part of the locking-tongue has thus been forced through the opening *c* these two members of the locking-tongue on each side of the slit *d* will tend to resume their normal position, (shown in Fig. 1,) the manipulation aforesaid required to insert them having resulted in the accumulation of a tendency to spring back out of their collapsed or distorted position. The opening *c*, however, being considerably shorter than the greatest distance across the combined members constituting the locking projection, their return to normal position will preclude their withdrawal from the opening *c* until they are again brought back into the collapsed or distorted position. (Shown in Fig. 4.) This, however, it will be observed is impossible to be effected without bringing to bear upon the members a distorting or collapsing pressure substantially equivalent in force and direction to that originally employed in compelling their insertion into the opening. It will be observed, however, that in the new position in which they have now been brought, as shown in Fig. 2, these members of the locking projection now lie flat against the inside of the box side 3 and bearing directly against it, owing to the fact that that portion of the locking projection extending beyond the neck has been bent over at substantially a right angle, and the tendency of the material to spring back to normal position forces the two members with a good pressure against the inside of the box side 3. The result of this spring-pressure against the box side is to force the two members back into their original position relative to each other—that is, to bring them both back into the same plane—which when accomplished they will, as before, rest with their edges constituting the slit *d* abutting against each other. Such being the case, it will be substantially impossible, at least without great inconvenience, to lift the members away from their contacting-pressure against the box side 3 in order to bring them again into the collapsed position (shown in Fig. 4) for the purpose of withdrawal from the opening *c*, the flaps 10 and 12 assisting somewhat in this result. It would be extremely inconvenient and difficult to accomplish such withdrawal even with free access to the parts, the interior of the box being completely opened up for that purpose and all contents having been removed; but in boxes of small or moderate size it will be found practically impossible to insert the fingers, hampered by contacting with the interior surfaces of the sides, in such a manner as to perform the difficult feat of recollapsing the members of the locking projection into the position of Fig. 4. A special tool would require to be devised for this purpose, and it is doubtful whether even this could be satisfactorily manipulated. So firm and tenacious is my lock and so extremely difficult to manipulate that when the parts are once inserted into operative position withdrawal of them is substantially impossible. When contents, however, have been introduced into the box, these immediately rest upon the aforesaid members of my locking projection and force them additionally against the box side 3, so that it becomes impossible to distort them out of their said abutting position and therefore impossible to withdraw the lock 14 14' from its engagements in the opening *c*. The contents having been introduced into the box, the top closes in the same way as the bottom; but it will now be observed that all access to the interior of the box has been completely cut off, so that by no manipulation without cutting into or perforating the exterior of the box is it possible to disturb the expanded normal relation and abutment of the members of the respective locking projections, so as to bring them into the collapsed position, as shown in Fig. 4. As a consequence it is wholly impossible to open the box without detection—that is to say, the external walls of the box must be actually separated and torn apart or in some way cut into, so as to give a free and unimpeded access to the abutted members of the locking projections, and not only an ordinary access, but one of such a character as to enable them to be collapsed, as shown in Fig. 4, in order to insure withdrawal. It will not, therefore, be sufficient to unglue the pasting-flap *a* from its attached side 4, because even then the locking tongues or projections could not be reached on the inside except possibly in cases of abnormally-prolonged boxes. The capacity of my box to thus insure the carriage of contents in such a way as to prevent tampering therewith in any way without detection is of value, and the accomplishment of this result in the ef-

fective manner pointed out and without resort to other instrumentalities than the shaping and cutting of the paper or other material out of which the box is constructed is, I believe, novel. The most convenient manner of opening the box is by the insertion of a knife or other cutting instrument in the flap 5 and severing therefrom the locking projections 13 13' along the dotted line *m*. The top flap 5 will thus be left with a tapering projection, which, should it be desired to reclose the box temporarily, may be thrust, as will be readily understood, into the slot *e*. In cases in which it is not desired to have this supplementary and temporary locking the outside flap, carrying the locking projection, may be made of different form, as 9.

It will be evident that it will not be necessary to apply my invention to both ends of a tubular box. One end, for instance, might be closed by gluing the flaps together or in any other convenient or well-known manner; but I know of no manner of closing which brings the parts together, as stated, in such an effective and tightly-locking relation or which is so well adapted to prevent reopening without detection.

The approximate shape of the various parts might be infinitely varied without departing from my invention, so long as the slit between the members of the locking-tongue is preserved in such relation to the other parts as to be wholly or substantially carried within the box and at an angle to the flap in the locking projection of which it is situated.

I am aware that in previous instances of folding paper boxes locking projections or parts have been constructed adapted to be inserted into a slot and separated from each other merely by a slit; but in all these cases the parts were easily unlocked and withdrawn from engagement in the slot from the outside of the box and without in any way disturbing or perforating its exterior, and therefore I do not wish to be understood as claiming in this application any such previously-well-known features, one of the distinctive features of my box or lock consisting in the origin of the slit at the narrower neck, which connects the divided or slitted head with the flap, connecting it with the remainder of the box, and extending from such origin outwardly through the head only, the said neck, as well as the connecting-flap, being unslitted, substantially—that is to say, it being preferable, if not essential, to locking on the inside in such position as to preclude opening without detection, that the slit dividing the head into two members shall when the parts are in final position be substantially wholly contained on the inside of said box, since otherwise the members could be, by pressure from the outside, distorted so as to admit withdrawal and opening.

My improvement is adapted to be used in other than tubular boxes—in fact, in any boxes

in which the parts are so closed and fastened as to render it difficult without disturbance or cutting of the exterior to manipulate or collapse the aforesaid members of my locking projections.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a folding paper box a paper locking-head divided or slitted into two members by a slit originating at, and extending there-through from, a solid unslitted neck connecting it with the remaining parts of the box, said members normally being, and abutting in the same plane against each other along the line of said cut, a longitudinal aperture in said box of less extent longitudinally than the normal width of said head, and other parts of said box connecting the said head and aperture so that the former, when temporarily distorted by overlapping of one of its said members upon the other may be inserted into and wholly passed through said aperture and afterward retained on the inside of said box on the resumption, and during the continuance, of the normal position of the said members relatively to each other, substantially as and for the purposes described.

2. In a box a slitted head connected by an unslitted neck with a flap likewise unslitted, the said flap being hinged or rotatively connected with the remainder of the box, and a longitudinal aperture in another part of said box of less longitudinal extent than the width of said head when normally expanded, and said aperture so situated as to admit the insertion therethrough into the interior of the box of the whole of said slitted head, substantially as and for the purposes described.

3. In a box a slitted head connected by an unslitted neck with a flap likewise unslitted, the said flap being hinged or rotatively connected with the remainder of the box, and a longitudinal aperture in another part of said box of less longitudinal extent than the width of said head when normally expanded, said aperture being so situated as to admit therethrough into the interior of the box, insertion of the whole of said head and its retention therein in a plane at an angle to that of the plane of said flap, substantially as and for the purposes described.

4. In a folding paper box a slitted head extending from an unslitted flap hinged or rotatively connected with the remainder of the box, and a longitudinal aperture in another part of said box of less longitudinal extent than the width of said head when normally expanded, and said aperture so situated as to admit the insertion therethrough into the interior of the box of the whole of said slitted head, substantially as and for the purposes described.

5. In a completely-inclosed and locked folding paper box an unslitted interiorly-locking flap 5 provided with a slitted head comprising two members 13 13', a closing-flap 7 and

a slot *b* substantially as and for the purposes described.

6. In a folding paper box an unslitted closing-flap 5 having a slitted locking-head comprising two members 13 13' a closing-flap 7 a slot *b* of less longitudinal extent than the width of said head when normally expanded

and a supplemental slot *e*, substantially as and for the purposes described.

ALBERT R. HIBSON.

Witnesses:

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PHILIP C. PECK.