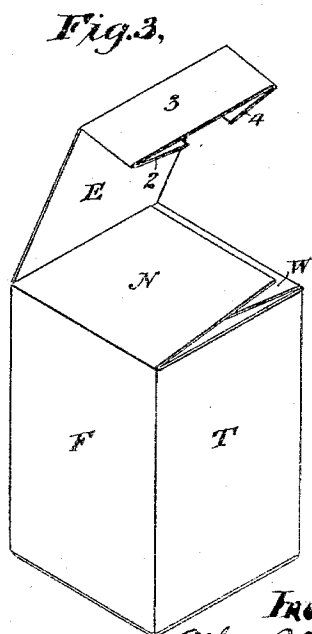
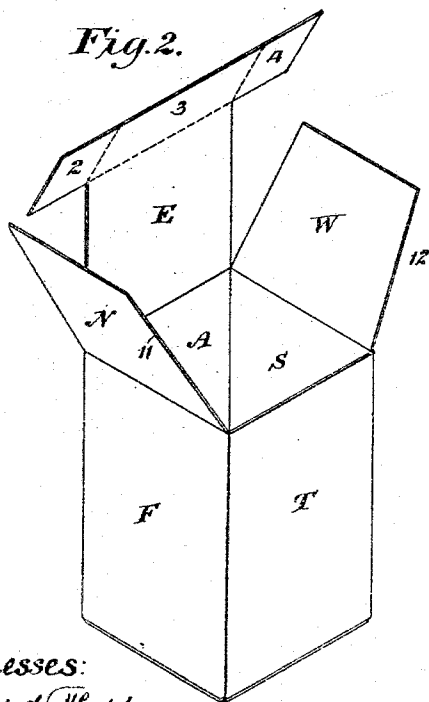
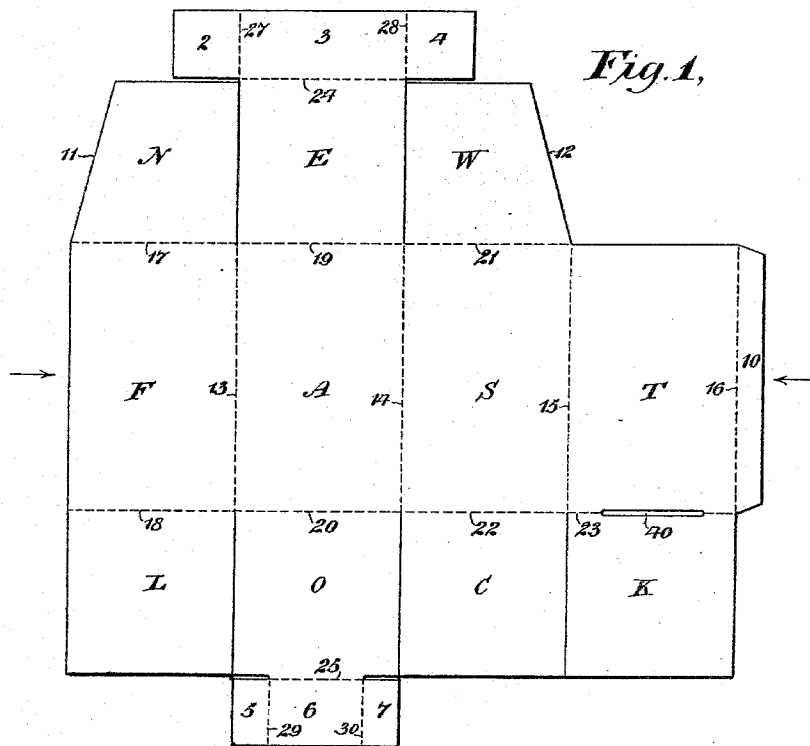


A. R. HIBSON.
FOLDING BOX.

No. 511,078.

Patented Dec. 19, 1893.



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By

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Fig. 4.

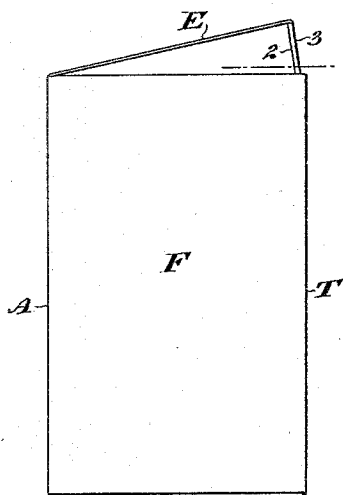


Fig. 5.

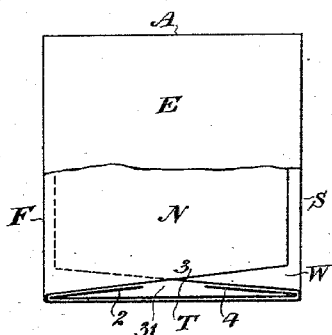


Fig. 6.

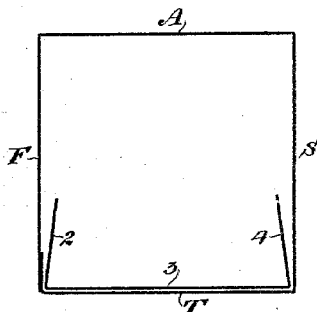


Fig. 7.

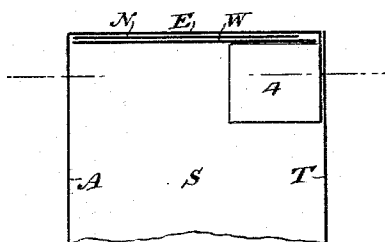


Fig. 8.

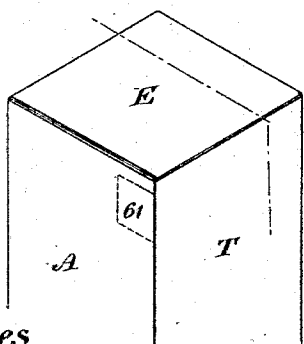
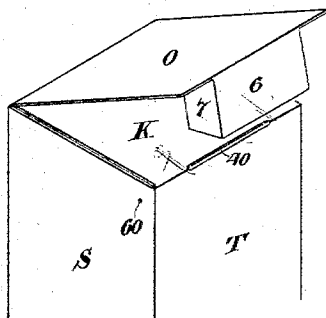


Fig. 9.



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UNITED STATES PATENT OFFICE.

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FOLDING BOX.

SPECIFICATION forming part of Letters Patent No. 511,078, dated December 19, 1893.

Application filed March 23, 1893. Serial No. 467,260. (No model.)

To all whom it may concern:

Be it known that I, ALBERT R. HIBSON, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Folding Boxes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

Folding boxes made from paper or similar flat or sheet material have heretofore had the flaps for closing their ends and the locking devices for securing their free parts, so constructed as to be capable of ready manipulation by the fingers of the user in setting up the parts in hollow or box form with one end closed ready to receive the contents, or, when filled for use, to have the other end or mouth closed to complete the package, and also so as to enable the fastening at one or both of its closed ends to be as readily detached to open the box. In consequence of these fastening means being readily moved into or arranged in the so-called locked condition, and as readily detached or disconnected, such fastening means are liable to become unfastened by a movement due to the handling of the package or from outward pressure from the contents within the box during its transport. Thus ordinary tucks entered within the box body alongside one of its sides, may from external engagement be drawn out, or from internal pressure be forced out, so as to open the box and release its contents; so also locking tongues that engage in lateral slots or pockets provided in the flaps or sides of the box are liable to be withdrawn from such slots or pockets by a movement of the tongues through outside contact or by reason of the bulging of the box end due to the pressure of the contents from within. In view of this liability of derangement of the parts or detachment of externally exposed locking devices, and consequent release of the contents, it has become almost a trade necessity, because the contents of such boxes are either heavy, fragile or multiplex, to provide such boxes with adequate means for holding their contents securely for carriage by the pur-

chaser, which is usually accomplished either by inclosing such box within an ordinary wrapping sheet, or by fastening it with a binding cord, and one or the other is done with most of the box packages sold and delivered at retail to a customer.

The present invention consists in a box whose closing flaps at one or both ends are secured in place by fastenings integral with the material composing the box, but so disposed so as to form an internal lock that will securely hold the parts in position against displacement by any weight or pressure, which the material composing the box will resist without tearing, and which presents no external part the movement of which will release the fastening.

In the accompanying drawings practical modes of carrying this invention into effect are fully illustrated.

Figure 1 is a plan view of a flat blank composing a box embodying this invention. Fig. 2 is a perspective view of such a box with the bottom end closed and the top end open. Fig. 3 is a like view with the last flap of the top end still open but with its locking wings bent into the position which they have when introduced into their receiving recess. Fig. 4 is a side elevation of the box with the outer flap partially closed, and its extension entered into its receiving slot and carried nearly into its final position. Fig. 5 is a plan view of the end of the box with the parts in the same position as in Fig. 4, but with the outer flap partially removed to better illustrate the relation of the parts. Fig. 6 is an inside view of the box taken on the section line of Fig. 4 showing the relation of the locking wings to the sides of the box. Fig. 7 is a sectional elevation through the locked end of the box on the section line of Fig. 8, and particularly shows the locking relation of the wings and closing flaps. Fig. 8 is a perspective view of the closed and locked box within which the locking wings stand as in Figs. 6 and 7, and this view particularly illustrates a means for unlocking said wings from their engagement with the flap W. Fig. 9 is a perspective view of a modification of the locking devices.

A description of the specific embodiments of this invention illustrated by Fig. 1 will now be given. It must be understood that such figure illustrates two forms of the lock, one at each end, and that the box may be composed of a blank provided with either form at both ends, or as shown; also that the box may be closed at both ends, or, be open at one end like a cup and have its opposite end which would then be the bottom, closed by the improved lock. With this understanding I will first describe a box provided with a lock of one construction and then with a lock of the other construction. As is common in this art, the material used for the making of the box may be paper, card-board, straw-board, combined cloth and paper, or any thin, flat and cheap material suited to the purpose, from which the blanks will be cut, creased or scored by any of the means in use for that purpose. The blank may be of such dimensions as to produce a rectangular box in its finished form or one more or less oblong considered transversely or longitudinally, and of any height suited to the character of the material which it is to contain. The blank illustrated consists of a flat sheet of material having the general configuration illustrated, cut or incised on the full lines and creased or scored on the dotted lines, whereby are provided the four sides, F, A, S, T of its body, one, T, being supplied with a projection 10 that laps upon the side F to form the seam uniting said body in flat tubular form, which body is capable of being brought into hollow tubular form by bending its parts upon the creased or scored lines 13, 14, 15, 16. At one end the side F is provided with a flap N united thereto by the creased or scored line 17 and at the other end with a flap L united thereto by the creased or scored line 18; the side A is provided at one end with a flap E attached thereto by the creased or scored line 19 and at its other end with a flap O attached thereto by the creased or scored line 20; the side S is provided at one end with a flap W united thereto by the creased or scored line 21 and at its other end with a flap C attached thereto by the creased or scored line 22; and the side T is provided at one end with a flap K attached thereto by the creased or scored line 23. The flap E is provided with an extension 3 united thereto by the creased or scored line 24 which extension carries at each of its sides a projecting wing 2, 4 united to it by the creased or scored lines 27, 28; and the flap O is provided with an extension 6 united thereto by the creased or scored line 25 and carries as each end projecting wings 5, 7, united to it by creased or scored lines 29, 30. Assuming now that the flap K is omitted and that the flap O is provided with an extension that is a duplicate of the extension 3 and its wings 2, 4, we shall have a blank the structure of which is such as to form a box with opposite ends closed and secured by this improved lock.

Such a blank having its sides F, T connected together by the projection 10, may be bent on the creased lines 13, 14, 15, 16 into hollow, tubular form and have its ends closed and securely locked as follows: Its flap W is first bent inwardly over the end of the tubular body, followed by the opposite flap N, or vice versa which flaps are thus respectively disposed at right angles to the sides F, S, as in Fig. 5, and will, if provided with angular edges 11, 12, present an opening as 31. If now the projecting wings 2, 4 are bent inwardly upon the extension 3 and said extension 3 be bent on the line 24 at right angles to the flap E and said flap E be bent on the line 19 over the flaps N, W, the said extension and its wings 2, 4 may be freely entered through the recess 31, as in Figs. 4 and 5, and thus be entered within the box until the flap E lies snugly upon the flaps W, N, as in Fig. 7, whereupon the said wings 2, 4 from their elasticity or tendency to open, will, being no longer obstructed by the angular edges 11, 12 of the flaps N, W, spring inwardly underneath the flap N and respectively be projected toward the sides F, S of the body of the box as in Fig. 6, with their edges close to the inner surface of the flap W (see Fig. 7), and thus form obstructive bearings resting against or engaging with the composite end of the box made up of the flaps W, N, E, and in such relation acting as a lock wholly within the box that prevents said flap E from being detached without tearing some of the component parts of the closed end of the box, and which flap E consequently securely holds the flaps N, W in place, while the box end presents a smooth, unbroken surface. In like manner the opposite end of the box will be closed and locked by a similar manipulation of its flaps, L, C, O, if the latter is provided with an extension constructed like 3 and provided with like wings 2, 4, which box when thus closed and fastened forms a structure securely locking its contents within it and that may not be opened by any ordinary opening movement and which will successfully resist any opening strain exerted by its contents upon either end, and which is especially well adapted to contain and support for carriage a filled bottle or similar contents, without danger of the same being released by a separation of the closing parts of the box ends. Thus is also obtained a package having a smooth exterior and which may not be opened without injuring its contents or destroying its structure, thus providing what is tantamount to a sealed package. Such a structure of the closing device for the bottom end omits the flap marked K, but it is practical to include such a flap, as K, at both ends of the box as will hereinafter appear.

If now we assume the blank shown in Fig. 1 to be severed on a line connecting the arrow points at the sides of said figure, the upper blank formed by this segregation will be

united by the projection 10 into tubular form and have its end closed by manipulating its flaps N, E, W, extension 3 and its wings 2, 4, as just described, and thus will be formed a box with an open end like a cup and provided with a closed bottom, the component parts of which so lock themselves together as to provide great carrying strength and thus provide a receptacle for heavy contents, as screws, cartridges, and the like, which may be transported without danger of loss from disengagement of the locked parts forming the bottom.

It may now be remarked that although advantageous the angular structure of the edges 11, 12 of the flaps N, W that provide a recess 31 for the convenient entrance of the extension 3 and their wings 2, 4, need not exist, since these edges 11, 12 need only be cut away or trimmed sufficiently on their edges which are to be passed by the extension 3 to accommodate merely the thickness of the extension 3, for the reason that the front side T may be sprung or bowed sufficiently to admit the entrance of the wings 2, 4 without the provision of such recess 31.

In segregating the structure of blank shown in Fig. 1, the bottom blank thus formed will be united in tubular form by the projection 10. In this construction of blank and box made therefrom, the extension that is upon the flap O has its wings 5, 7 formed out of material that extends to the width of the flap O only, and in this case, since the end will be formed by closing down the flaps L, C, K, O, in the order named, so that they will all lie at right angles to the sides of the body of the box, it will be apparent that the flap K must be provided on its line 23 with an entrance slot 40 for the extension 6 and its infolded wings 5, 7 to pass through, see Fig. 9, said extension 6 and its wings 5, 7 thus forming a tongue which enters through the slot 40, and beneath which said wings will spring outwardly under the flaps L, O, C, K, and thus form obstructive bearings in like manner as do the wings 2, 4, as is shown in Fig. 10. It will now be apparent that a blank provided at both ends with flaps L, O, C, K, an extension 6 and its wings 5, 7, will form a box closed at both ends in substantially the same way as is the box first described herein, and one especially adapted to the carriage of such contents as a filled bottle or like large and heavy material.

Such an internal fastening for a box end, in any of the forms shown, provides for the first time a means of closing and fastening, that automatically locks its parts together secure against any manipulation for opening the same applied directly to the fastening means, or in other words, provides a lock the holding elements of which are integral with the tubular body of the box and which secures the end closed by the edges of the wings simply abutting against the flat surface of another of its members. Therefore any modifica-

tion of this invention involving a lock having this characteristic element is to be regarded as within the scope of this invention. 70

Of course, a box embodying this invention consisting of a body open at one end as a cup may be closed by any construction of cover, either one of solid construction or one made with pasted or other seams uniting it into proper form, or a duplication of the improved structures shown herein, may be made shallow enough to especially adapt it as a cover.

It will be apparent that a box of so-called solid construction, that is, one not adapted to be knocked down or folded flat may be provided with this improved lock. 80

While this improved fastening may not be detached by the fingers without destroying the box, a means for disengaging its locked members is provided for by the making of a small hole as 60 through the sides of the box opposite to the projecting wings of the lock, through which an instrument may be inserted to press back and release said wings so that the extension carrying them may be withdrawn. This may also be provided for by tongues as 61 formed by scored or perforated lines that may be broken by the finger to enable the same to be swung inward to effect this same object. 95

What is claimed is—

1. A box provided with a fixed part, and with a closing flap having an extension which carries a wing or wings that fold upon said extension so as to enter with it into the box and expand or unfold within the box to engage the fixed part and thus become locked against withdrawal, substantially as described. 100

2. A box provided with a fixed part and a closing flap having an extension that carries a wing or wings which fold upon said extension so as to pass with it through a narrow recess or slit enter into the box and there expand or unfold in position to engage the fixed part of the box and thus become locked against withdrawal, substantially as described. 110

3. A box provided with a closing flap hinged at one edge thereto and having an extension attached to its opposite edge and provided with a wing or wings which fold onto said extension, so that the extension and its wing or wings will enter within the body of the box parallel with its front wall, and then expand or unfold so as to engage the innermost end flap and lock the parts closed, substantially as described. 120

4. A box provided with end flaps, one of which has an extension carrying a wing or wings that fold flat upon it, and thus adapt the same to be entered within the box and said wing or wings to expand or unfold beneath the flaps and thus lock the box closed, substantially as described. 125

5. A box, the outer end closing flap of which is provided with a projecting wing that may be folded so as to be entered into the box body beneath one of the other end flaps and then automatically unfold to change its angle 130

of relation to the said flaps and abut against the same so as to obstruct any withdrawal of the said outer flap, substantially as described.

6. A box provided with two opposite side flaps and an outer closing flap, the latter having an extension carrying a wing or wings adapted to be folded or laid in a plane parallel with one surface of the extension, and thus be rendered capable of entering between the edges of the side flaps and the front side of the box whereby said wing or wings will move inwardly and expand so as to engage beneath all the end flaps and lock the whole in place, substantially as described.

7. The combination with the box body, its outermost end closing flap, and an extension thereof provided with a folding wing or wings adapted to be entered into and to expand within the box body, of side flaps whose edges adjacent to the lock entering side of the box are cut away to facilitate the passage of said wing or wings, substantially as described.

8. The combination with a box provided with a securing lock which consists of an outer flap having a projecting part carrying a folding wing or wings, that are entered within the box body and there expanded or unfolded underneath an end flap so as to prevent the withdrawal of said outer flap, the side or sides of the box provided with a hole through which said wing or wings may be engaged and moved into a plane that will

permit such withdrawal, substantially as described.

9. The combination with a box provided with a securing lock which consists of an outer flap having a projecting part carrying a folding wing or wings, adapted to enter within the box body and there expand or unfold underneath an end flap so as to prevent the withdrawal of said outer flap, of a side or sides provided with a hole temporarily closed by a tongue the edges of which are normally joined thereto and which may be detached by pressure to act as a lever for pressing a wing into a plane that will admit of its being detached to open the box, substantially as described.

10. A blank for the formation of a box, consisting of a sheet of paper or similar material cut and incised as shown so as to provide sides F, A, S, T, lap 10, flaps N, E, W, and extension 3 and wings 2, 4, whereby said parts may be folded into box form and the end thereof may be closed and locked, substantially as described.

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

ALBERT R. HIBSON.

Witnesses:

S. G. PATERSON,

WM. J. BONNER.