S. BACHMANN.

BOX.

APPLICATION FILED NOV. 10, 1916.

1,354,012. **Patented Sept. 28, 1920.**

2 SHEETS—SHEET 1.

Fig. 1.

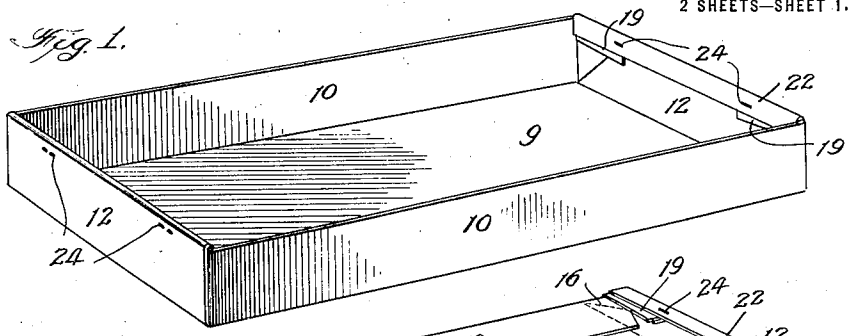


Fig. 2.

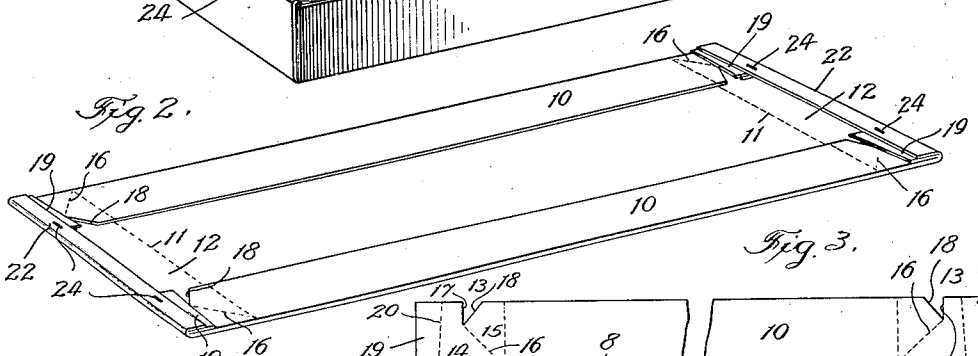


Fig. 3.

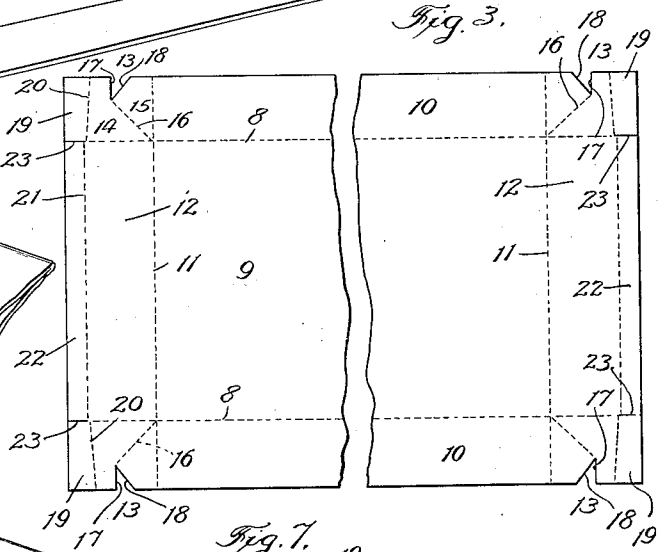


Fig. 4.

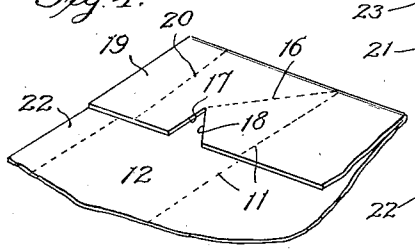


Fig. 5.

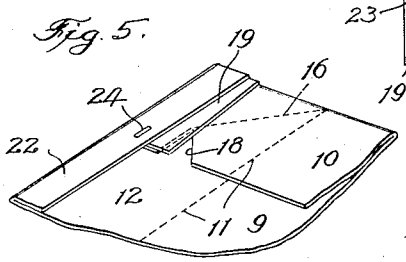


Fig. 7.

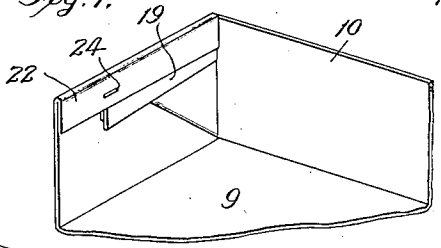
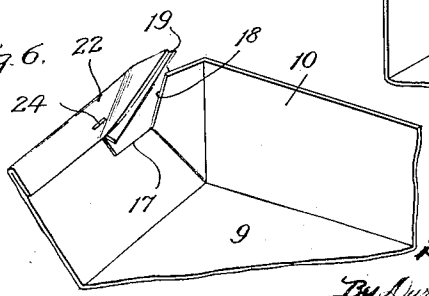


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 8.

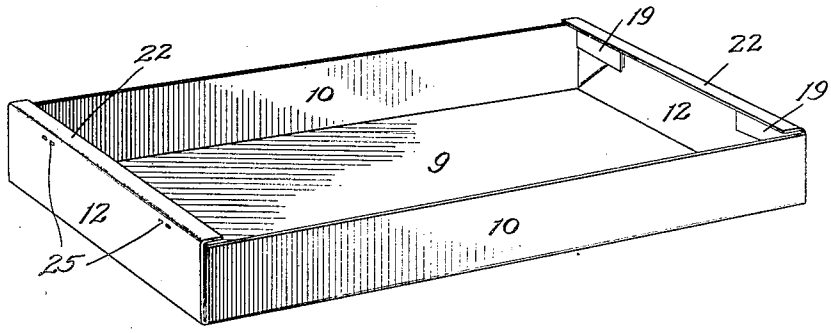
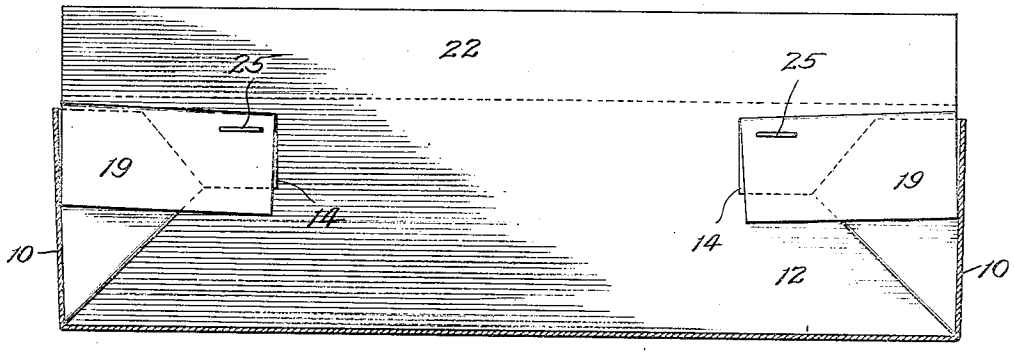


Fig. 9.



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UNITED STATES PATENT OFFICE.

SIEGMUND BACHMANN, OF CHICAGO, ILLINOIS.

BOX.

1,354,012. Specification of Letters Patent. Patented Sept. 28, 1920.

Application filed November 10, 1916. Serial No. 130,619.

To all whom it may concern:

Be it known that I, SIEGMUND BACHMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Boxes, of which the following is a specification.

My invention relates to improvements in boxes formed from sheets of paper-box-board, or other suitable material, involving in their manufacture the making of a blank of a desirable form and folding such blank along folding lines to produce the box, and, more particularly, to the type of box formed of a base, with surrounding walls extending upwardly therefrom and carrying corner-extensions connected with walls of the box, and means on the box overlying portions of the extensions when the box is formed for holding the box in erected condition, my invention having been devised for use, more particularly, in boxes of the above referred to type wherein the parts are so constructed as to permit of erection thereof from collapsed condition or the collapsing of the box for storage purposes, though it may be employed in connection with boxes of the so-called non-collapsible type, it being my intention to protect the invention in all the uses to which it may be put.

My primary object, generally stated, is to provide a novel and simple construction of box wherein the folded corner-extensions thereof will be held securely in position in opposition to stresses to which the box may be subjected in use tending to accidentally collapse the box, as, for example, in the lifting of the box by the grasping of one of the walls against which the corner-extensions lie, and to provide a construction operating as above described which shall require the minimum amount of board in its manufacture.

As a preface to the description of the drawings, it may be stated that I have devised my invention for use more particularly in boxes of the above referred to erectable and collapsible type, and for this reason have shown it in this type of box, though, as stated above, as to certain features of the invention it is not limited to such type of box, and it is not my intention to limit it to use in connection with this type.

Referring to the accompanying drawings —

Figure 1 is a perspective view of a box of the erectable and collapsible type above referred to, and in which my invention is embodied, the box shown being of the suit-box type, and of a variety employing flaps on end-walls of the box assisting in the holding of the box in erected condition. Fig. 2 is a similar view of the box of Fig. 1 in collapsed condition. Fig. 3 is a broken plan view of the blank from which the box of Figs. 1 and 2 is constructed. Fig. 4 is a broken perspective view of one corner of the blank showing a portion of one of the sides and one of the end walls, the side wall with the corner-extension connected therewith being folded over against the central portion of the blank and the end-wall thereof, and constituting the first stage in the operation of folding the blank to produce a collapsed box. Fig. 5 is a similar view showing certain of the parts of the box in folded position, and constituting another step in the process of folding the blank to collapsed condition. Fig. 6 is a similar view showing the box in the process of being erected from collapsed condition. Fig. 7 is a similar view of one of the four similar corners of the box in erected condition. Fig. 8 is a view like Fig. 1 of another variety of box in which my invention is embodied; and Fig. 9, a sectional view of the box of Fig. 8 looking toward an end-wall of the box and showing the flap thereon in raised position.

The blank from which the box shown in Fig. 1 is formed consists of a rectangular sheet of boxboard, or the like material (Fig. 3), provided with parallel folding lines 8 along which the blank is foldable on the base 9 to form the side walls 10 of the box, and parallel folding lines 11 disposed at right angles to the lines 8 along which the blank is foldable to form the end-walls 12 of the box. The lines 8 and 11 extend at the four corners of the box beyond their points of intersection to form the four corner-extensions 13 which are hingedly connected with the ends of the walls 10 and 12 through the medium of the said extensions of the folding lines 8 and 11. As each of the corner-extensions 13 of the box is of the same construction and is formed in the same manner, it will suffice to describe one only of these extensions, a description being as follows: Each corner-extension 13 is formed of two sections 14 and 15 hingedly connected along

the diagonal line 16, a portion of the corner-extension being cut away along the lines 17 and 18 from one edge of the corner-extension to the said diagonal folding line, as represented in Fig. 3, though if desired the cut referred to may be a mere slit along a single line, and a third section 19 hingedly connected to the section 14 along the folding line 20, the latter extending in the same general direction as the folding line 11 and preferably, slightly inclined thereto, as represented. The end portions of the blank of Fig. 3 are adapted to be folded inwardly and downwardly along the folding lines 21, to form end flaps 22, the folding lines 21 extending preferably parallel with the folding lines 11 and slightly offset toward the ends of the blank, relative to the folding lines 20, the degree of off-set being preferably at least as great as the thickness of the board used in making the blank. The flaps 22 which are of a length substantially equal to the width of the base 9, are severed from the sections 19 along the lines 23 which are in line with the folding lines 8.

The box may be formed into collapsed condition from the blank described by folding the side-walls 10 and the corner-extensions 13 connected therewith upwardly toward the base and then downwardly along the folding lines 8 to cause these side-walls and extensions to overlap the base 9 and ends of the walls 12, respectively, and the sections 19 to overlap the ends of the flaps 22, as represented of the one side-wall and corner-extension in Fig. 4. The flaps 22 and the sections 19 are then folded upwardly and inwardly and then downwardly to flatwise oppose the walls 12 and the sections 14 of the corner-extensions, respectively, and the end-walls, the outer margins of the sections 14, sections 19 and flaps 22 preferably secured together, as by the use of staples 24, or any other suitable fastening device, as shown in Figs. 2 and 5. The box thus formed into collapsed condition may be erected for use by the operator swinging the side-walls 10 at the folding lines 8 upwardly and outwardly to a position in which they extend in erect condition, the walls 12 being swung upwardly and inwardly along the folding lines 11 to a position in which they also extend in erect condition. In this operation the sections 15 of the corner-extensions 13 fold along the folding lines 16 and the extremities of the lines 11, as shown in Fig. 6, to a position in which they flatwise oppose the sections 14 in which position the corner-extensions extend substantially at right angles to the walls 10 of the box. In the operation of erecting the walls of the box as described, the operator flexes the outer ends of the flaps 22 which extend beyond the staples 24, and also flexes the free ends of the sections 19, in an upward direction and sufficiently far to permit the upper edges of the sections 15 of the corner-extensions to fold, without obstruction, to a position in which they overlie the sections 14 as stated, whereupon the operator releases his grasp upon the flaps and sections 19, permitting these parts to spring back to normal position in which they overlap the inner surfaces of the sections 15, as shown in Figs. 1 and 7, and hold the walls of the box against accidental collapsing.

To collapse the box, the operator flexes the ends of the flaps 22 and the sections 19 upwardly, swinging the walls 12 outwardly and downwardly along the folding lines 11 and the walls 10 inwardly and downwardly along the folding lines 8 to the position shown in Fig. 2.

The construction illustrated in Figs. 8 and 9 is exactly the same as that shown in the preceding figures, excepting that instead of securing the free edges of the flaps 22 intermediate their ends, as explained of the previously described construction, these flaps are left free, as shown. The fastening means, which in this case are staples represented at 25, pass through the inner ends of the sections 19, sections 14 and the end-walls 12 of the box, thereby securing these parts together. The flaps 22 may be either turned downwardly to flatwise oppose the upper edges of the end-walls of the box and the upper edges of the corner-extensions, or may be allowed to extend inwardly at substantially right angles to the walls carrying them, as shown in Fig. 8, in which position they may display advertising matter printed on their upper surfaces.

It will be noted that in each of the constructions illustrated the sections 19 serve by engaging with the upper portions of the corner-extensions 15 to hold these parts against collapsing and therefore hold the box in erected condition, and I have demonstrated in practice that the sections 19 provided as stated accomplish this function in a highly efficient manner. Where this feature of the box is employed in connection with the flaps 22, the free edges of which are held in position intermediate the ends of the box, as in the case of the construction of Figs. 1 to 7, the sections 19 and the free ends of the flaps 22 coöperate with each other in such a way that a high degree of resistance is afforded to stresses or forces tending to disengage the upper edges of the sections 15 from the parts thus provided for holding them in erected condition. Furthermore, where the box is formed as shown and explained in connection with Figs. 1 to 7 the sections 19 are caused to extend below the lower edges of the flaps 22, considering the box in erected condition, whereby the effective depth of those parts of the box

which are provided for overlappingly engaging the sections 15 of the corner-extensions, is greatly augmented as compared with the effective depth of the end flaps, such as the end flaps 22 when these are alone provided, where the blank is formed from the same length of material. In other words, the provision of the sections 19 permits the parts which overlap the corner-extensions and hold the walls erected, to have greater effective depth than could be procured by making the blank from the same length of material if these sections 19 were omitted, and this general feature of the provision of the sections 19 coöperating with the flaps 22 renders the box far more resistant to stresses and forces tending to collapse the box, than it would be if the box were made from the same length of material and the flaps 22 at the ends of the box were disassociated with any other parts reinforcing them or aiding them in resisting stresses tending to flex them.

Where the flaps 19 are provided in connection with the flaps 22 of Figs. 8 and 9, which may be of such dimensions as to cause them to overlap each other and thus form a top for the box, the flaps 22 aid in preventing the collapsing of the box inasmuch as they tend to stiffen the upper edges of the walls carrying them and they perform this function whether they be positioned as shown in Fig. 8 or whether they are turned downwardly, as stated in connection with a description of the construction shown in this figure. Under some conditions it may be found desirable not to have the stitching, or other fastening means, penetrate the end-walls of the box, in which case the sections 19 would be secured, as by the staples 24 to the sections 14 only, and if the flaps 22 are provided to operate as in the construction shown in Figs. 1 to 7, inclusive, the staples may if desired penetrate only the flaps, sections 19 and sections 14.

While I have shown the sections 19 as associated with flaps on the walls of the box against which the corner-extensions lie, I do not wish to be understood as intending to limit my invention as to certain features thereof to a construction wherein the flaps 22 are provided, for, as stated above, I have demonstrated that the sections 19 in and of themselves serve as a very effective means for holding the corner-extensions in erected condition, preventing collapsing of the box. Furthermore, I do not wish to be understood as intending to limit my invention to the particular embodiments thereof illustrated and described, as the invention may be otherwise embodied, it being my intention to claim my invention as fully and completely as the prior state of the art will permit.

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

1. A box formed of a base, walls extending upwardly therefrom, corner-extensions connected with the walls of the box and having portions lying flatwise against adjacent box-walls, and flaps carried by the walls against which said extensions lie and overlapping said extensions at their ends, said corner-extensions having sections connected therewith at the upper extremities of said corner-extensions and interposed between the ends of said flaps and portions of said corner-extensions lying flatwise against the box-walls, said sections directly underlying said flaps and directly overlying the last-referred-to portions of said corner-extensions and coöperating with said flaps to hold said box in erected condition.

2. A collapsible box formed of a base, walls extending upwardly therefrom, corner-extensions connected with the walls of the box and having portions lying flatwise against adjacent box-walls, flaps carried by the walls against which said extensions lie and overlapping said extensions at their ends, said corner-extensions having sections connected therewith at the upper extremities of said corner-extensions and interposed between the ends of said flaps and portions of said corner-extensions lying flatwise against the box-walls, said sections directly underlying said flaps and directly overlying the last-referred-to portions of said corner-extensions and coöperating with said flaps to hold said box in erected condition, and means engaging said flaps intermediate their ends, the sections on said corner-extensions and the walls carrying said flaps for securing said parts together, said engaging means being so disposed relative to said parts as to permit of those portions of the corner-extensions not secured thereby to be readily flexed into and out of the positions which they occupy in the erected and collapsed conditions of the box.

3. A blank for the purpose set forth, formed of a sheet of flexible material having parallel intersecting fold lines defining the walls of the box, the outer marginal portions of opposed ends of the blank being provided with fold lines defining flaps, and corner-portions of the blank connected with two adjacent walls and each having a diagonal fold line defining two sections, and a third section united at its outer end to one of the said first-named two sections along a fold line extending generally in the same direction as that in which the lines defining the box-walls which carry said flaps extend but inclined at a slight angle thereto and slightly offset therefrom.

SIEGMUND BACHMANN.