(No Model.) 2 Sheets—Sheet 1.

E. B. MUNSON.

PAPER BOX.

No. 308,190. Patented Nov. 18, 1884.

Fig. 1.

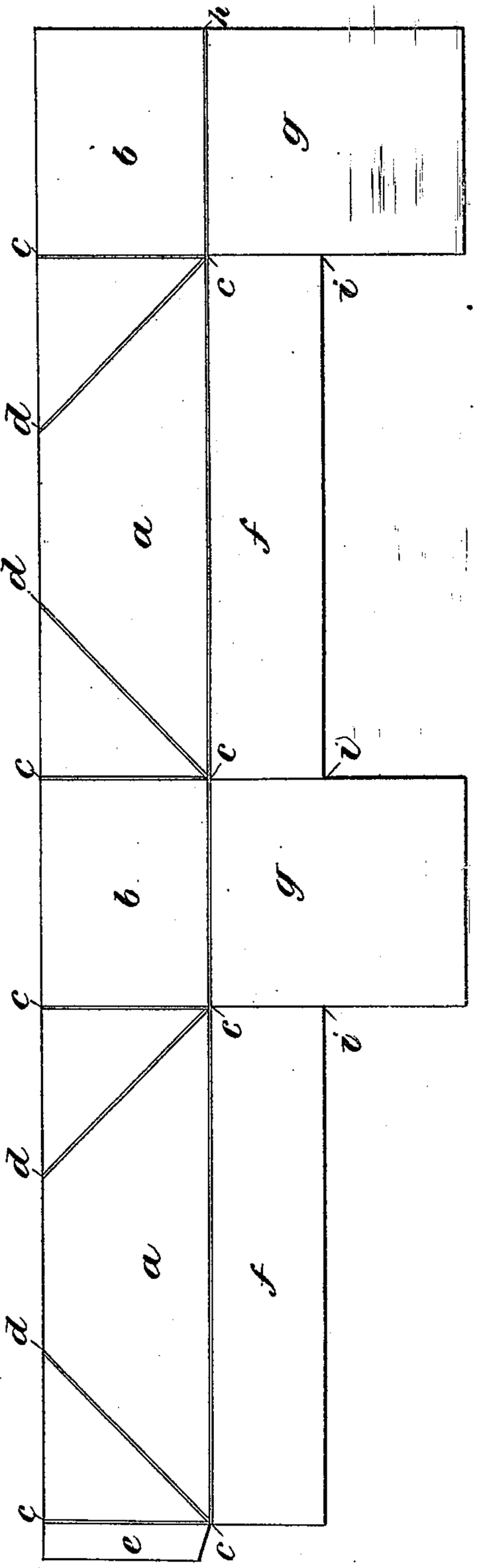


Fig. 6.

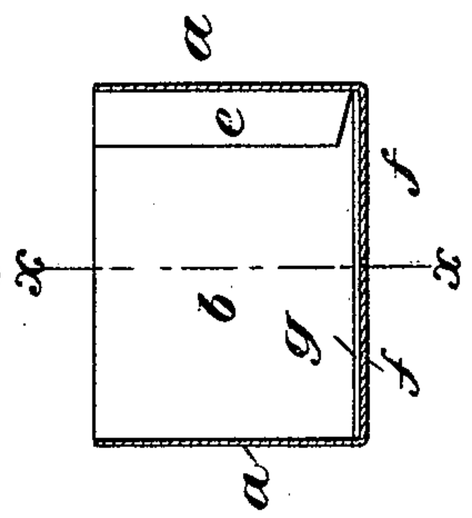
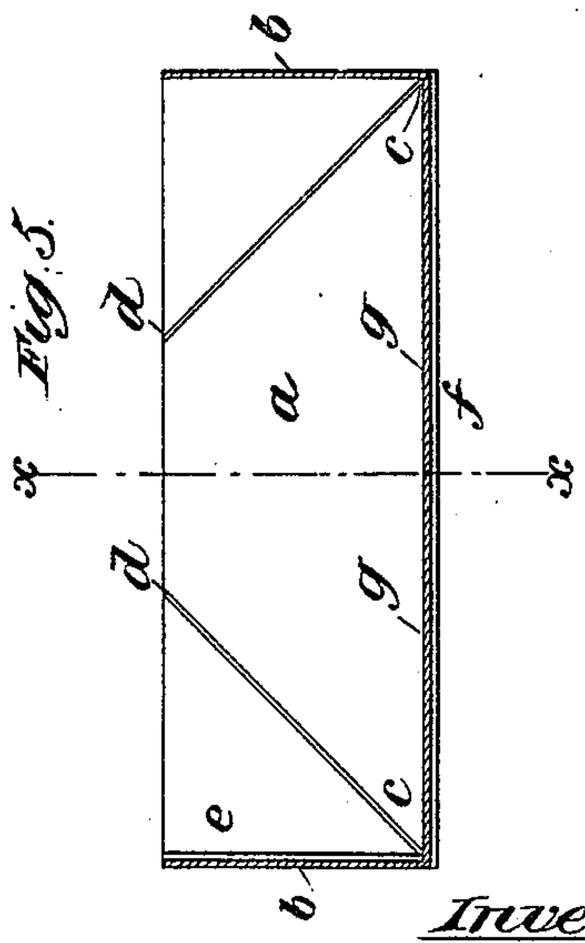


Fig. 5.



Attest:
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(No Model.)

2 Sheets—Sheet 2.

E. B. MUNSON.

PAPER BOX.

No. 308,190. Patented Nov. 18, 1884.

Fig. 3.

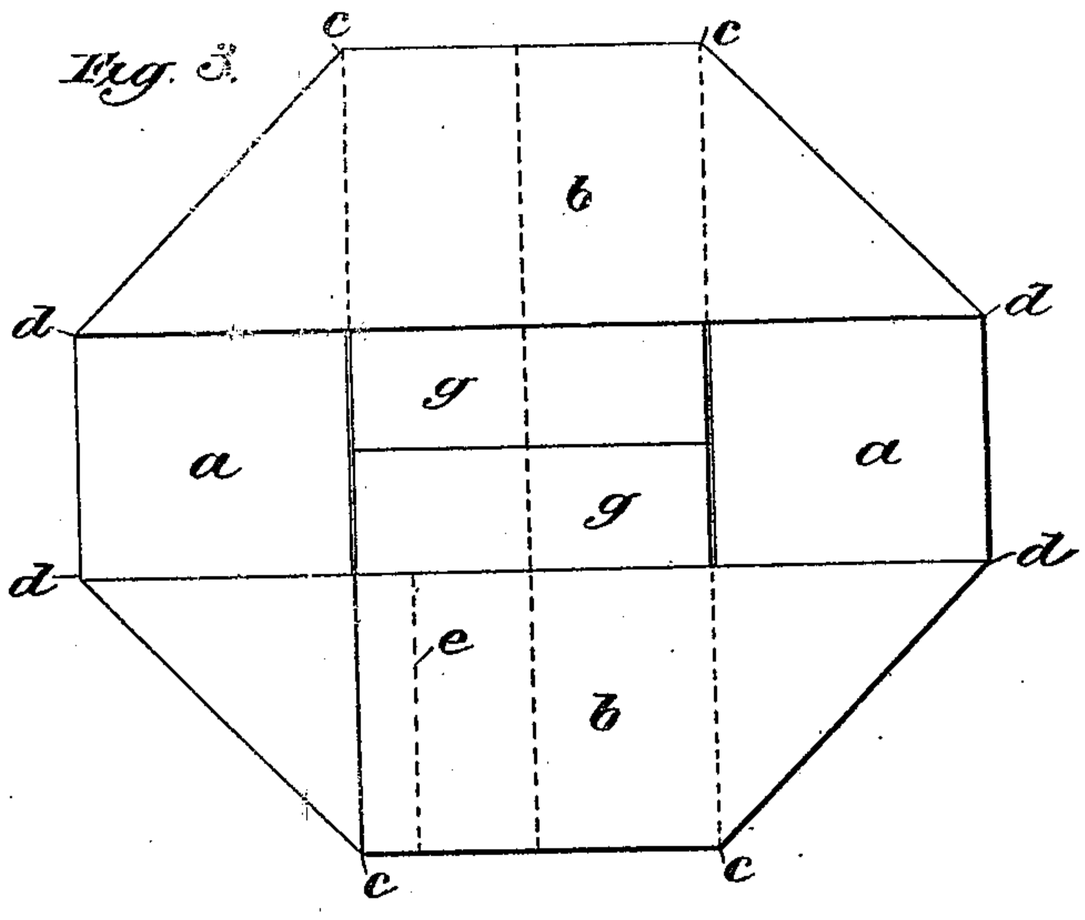


Fig. 2.

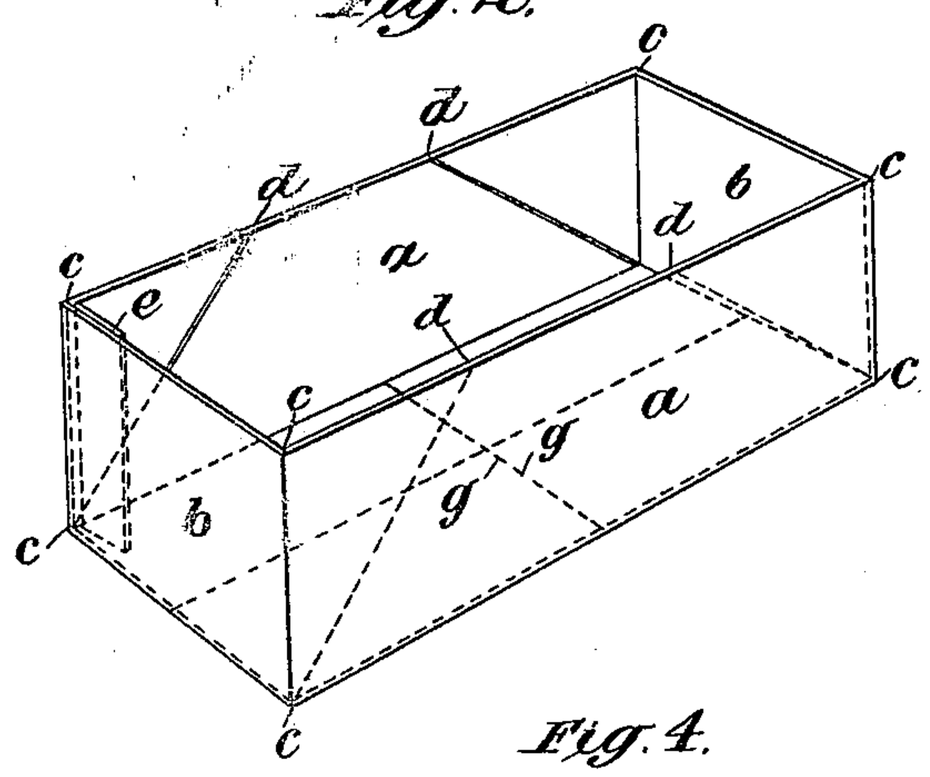
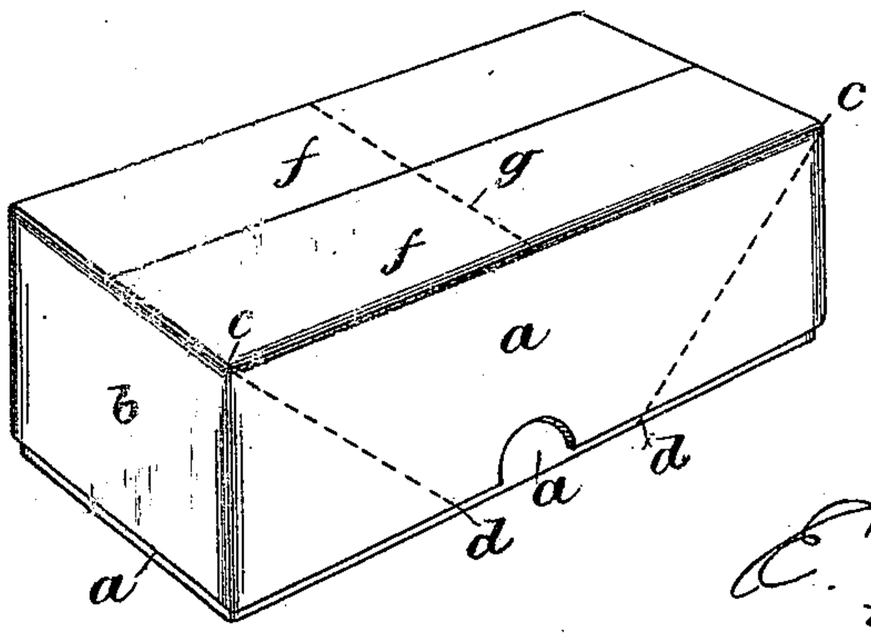


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD B. MUNSON, OF NEW HAVEN, CONNECTICUT.

PAPER BOX.

SPECIFICATION forming part of Letters Patent No. 308,190, dated November 18, 1884.

Application filed September 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. 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 Paper Boxes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to that class of paper boxes which are known as "knock-down boxes"—that is to say, those boxes which are so constructed that the several sides can be folded or brought together into a flat and compact form for storage and shipment, and then readily set up or brought into box form to receive the contents. The boxes of this class possess many desirable characteristics, and have gone into very extensive use as receptacles for a great variety of commodities which it is desirable to put up in neat and compact packages for the retail trade. As heretofore most commonly constructed the boxes of this class have been so made that when set up or brought into form to receive the contents the joints, or, at least, a portion of the joints of the box, were not permanently united, but were formed by simply lapping and locking or otherwise temporarily securing together the edges of the material. This manner of forming the joints or seams, which was rendered necessary in order that the box should be capable of being knocked down, necessarily prevented the formation of perfectly tight joints or seams, and thus rendered the boxes so constructed unfit for use as receptacles for all powdered or granulated substances which require perfectly tight receptacles. Another objection to the boxes thus constructed arose from the fact that the operation of setting them up or bringing them into condition to receive the contents required a considerable amount of labor. In an application for United States Letters Patent filed September 29, 1881, Serial No. 42,845, by Harvey S. Munson, there is described a box in which these objections are overcome by permanently uniting the sides, ends, and bottom of the box so as to form tight seams or joints, and providing the sides or ends with defined bending-lines, which extend obliquely from the upper edge to the corners or the point of union of the walls and bottom, thereby permitting the walls to be folded down onto or into line with the bottom to knock the box down for storage or shipment, and then turned up into vertical position when the box is to be filled. The box-body thus constructed is provided with a cover, which is adapted to sustain the box in its set-up position, and this cover may consist either of a plain tubular case, into which the body slides in the usual manner, or of a duplicate of the body, which shuts down over the body in the usual manner.

The present invention relates to a knock-down box of the character of that shown and described in the application just referred to, it being the object of the invention to improve the construction of said box in certain particulars, which will now be fully explained. The blank from which the box shown in said application is made is so folded that the ends of the box are composed of two or three thicknesses of the material, while the sides and bottom, and also the top, if the cover consists of a duplicate of the body, are composed of only a single thickness of the material. It will readily be seen that when the walls of the box are provided with the defined bending or folding lines, which enable them to be folded down onto or into line with the bottom, as explained, they are necessarily so weakened as to be incapable of resisting any considerable degree of pressure, and that, consequently, the bottom, or the bottom and top, if the cover is a duplicate of the body, must be largely depended upon to resist any pressure which tends to collapse or otherwise distort the box. It has been found in practice that when the bottom, or the bottom and top, is or are composed of but a single thickness of the material, it or they is or are not as stiff and rigid as is desirable in a box of this class, or in which the walls are weakened by the defined bending or folding lines referred to. The present invention aims to cure this defect; and to that end one feature of the invention, stated briefly, consists in so forming, creasing, and folding the blank that the walls which contain the oblique bending or folding lines will be com-

posed of a single thickness of the material, while the bottom and also the top, if the cover is a duplicate of the body, will be composed of two thicknesses of the material, and thus be proportionately stiffened and straightened.

The invention also embraces certain other minor features of construction, all of which will now be fully explained, and particularly pointed out in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a blank of suitable shape, and provided with suitable defined folding-lines, to adapt it to form a box according to the present invention. Fig. 2 is a perspective view of the completed box when set up or opened out to receive the contents. Fig. 3 is a plan view of the same when knocked down or folded flat for storage or shipment. Fig. 4 is a perspective view of the box set up and provided with a cover, which is a duplicate of the body or box proper. Fig. 5 is a longitudinal section of the box taken upon the line *x x* of Fig. 6; and Fig. 6 is a cross-section of the same taken upon the line *x x* of Fig. 5.

Referring to Fig. 1, it is to be understood that the sides *a a* and ends *b b* of the box are formed of a single continuous strip or band of the material, which is provided with defined bending-lines, *c c*, upon which the material is bent to form the corners of the box, and also with defined bending-lines *c d*, upon which the sides are bent when the box is to be knocked down. This strip is provided at one end with a flap or extension, *e*, which, when the blank is folded into box form, overlaps and is secured to the opposite end of the strip to complete the walls of the box, as shown in Fig. 2. The side and end portions, *a b*, are provided with lateral extensions or flaps, *f g*, which together form the bottom of the box. The portions *f g* are separated from the portions *a b* by a defined bending-line, *c h*, which serves to define the line of fold between the walls and the bottom of the box, and the portions *f g* are separated from each other by cuts *c i*, which extend inward to the line *c h*. It will be observed that the portions *f* are of a width equal to one-half the width of the box, and that the portions *g* are of a length equal to one-half the length of the box. The purpose of this will presently appear.

The operation of making the box from the blank thus formed is as follows: The blank is first bent upon the lines *c c*, so as to form a rectangle and cause the portion *e* to overlap the portion *b*. The portions *e b* are then secured together, as shown in Fig. 2. The portions *g g* are then folded inward so as to form the inside of the bottom, and the portions *f f* likewise folded inward so as to form the outside of the bottom, or vice versa, the parts *f f* and *g g* being pasted or otherwise secured together so as to make the bottom of double thickness, as shown in Figs. 2, 3, 5, and 6. To knock the box down it is only necessary to bend the sides *a a* either outward or inward upon the lines *c d*, so as to fold the sides and ends down onto or into line with the bottom, as shown in Fig. 3. To set the box up the operation is simply reversed. The bending-lines *c d* may be formed by either creasing, scoring, or indenting the material, or in any other suitable manner, and it will of course be understood that these bending-lines, instead of being formed in the sides *a a*, may be formed in the ends *b b*, if preferred. The box thus formed will be provided with a cover, which serves, when the box is set up, to support the walls and prevent them from being spread by the pressure of the contents. This cover may consist of a simple tubular casing, into which the body or box proper slides, or it may consist, as shown in Fig. 4, of a duplicate of the body, made, however, slightly larger, so as to close down over the body. When the cover consists of a duplicate of the body, and is of considerable depth, the bending-lines *c d* of both the body and cover may be formed in the sides *a a* or in the ends *b b*; but when the cover is comparatively shallow, the bending-lines of the body should be formed in the sides, and those of the cover in the ends, or vice versa.

By forming and folding the blank in the manner described the bottom of the box, and also the top, if the cover is a duplicate of the body, is composed of a double thickness of the material, and is consequently so stiffened and strengthened as to be capable of resisting to a considerable extent any pressure tending to collapse or distort the box, and thus compensate for the weakening of the sides or ends caused by the formation therein of the bending-lines *c d*.

What I claim is—

1. The herein-described box having walls composed of a single thickness of the material, and provided with the defined bending-lines *c d*, and a bottom composed of a double thickness of the material, substantially as described.

2. The combination, with a box having walls composed of a single thickness of the material, and provided with the defined bending-lines *c d*, and a bottom composed of a double thickness of the material, of a cover similarly formed and arranged to close over the same, substantially as described.

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

EDWARD B. MUNSON.

Witnesses:
HARVEY S. MUNSON,
EDSON S. BEACH.