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M. H. SIDEBOTHAM

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METHOD OF MAKING PAPER BOXES AND FORM THEREFOR

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Fig. 1.

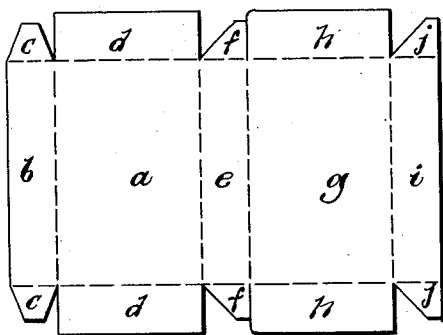


Fig. 3.

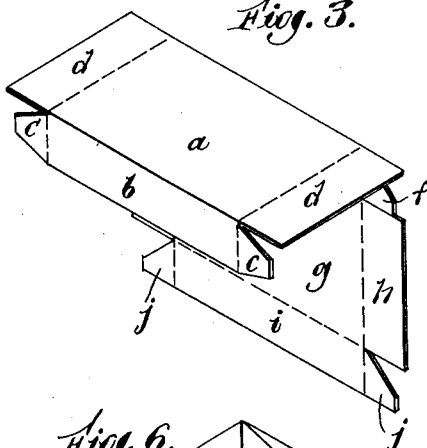


Fig. 2.

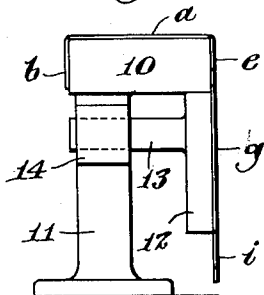


Fig. 6.

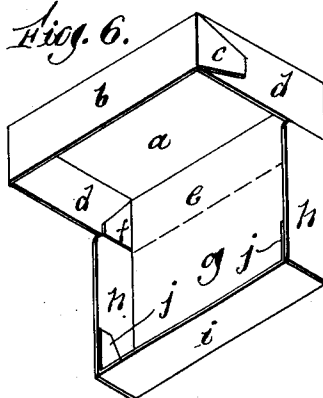


Fig. 5.

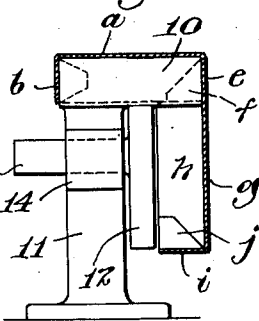


Fig. 4.

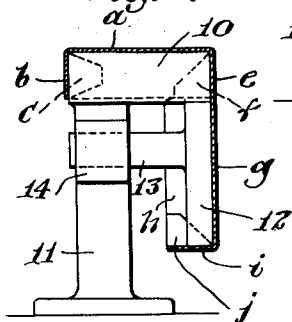


Fig. 7.

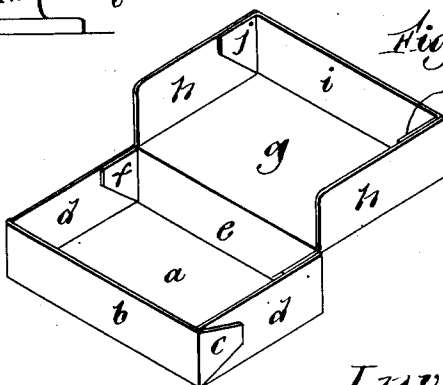
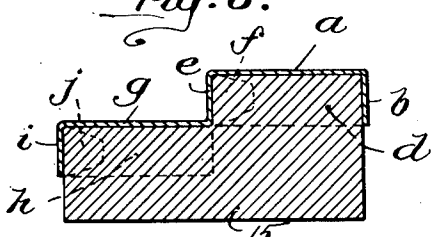


Fig. 8.



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METHOD OF MAKING PAPER BOXES AND FORM THEREFOR

Application filed December 15, 1930. Serial No. 502,307.

This invention relates to the making of paper boxes and has particular reference to the production of set-up boxes made from single blanks and including both receptacle members and cover members.

To carry out the present invention, a two-part form is provided, over which a previously cut and scored blank is folded either manually or by operative members of an automatic machine, preferably the latter. But since the present invention is not dependent upon any particular structure of such automatic machine, the accompanying drawings illustrate only the form and the successive steps of manipulating a blank thereover.

The invention consists in the form and the method of converting a paper blank to box condition, substantially as hereinafter described and claimed.

Of the accompanying drawings:—

Figure 1 is a plan view of a paper blank.

Figure 2 is a side elevation of the form with a blank partly folded thereover.

Figure 3 is a perspective view of the blank alone in the partly folded condition of Figure 2.

Figure 4 is a view similar to Figure 2 but showing the box (in section) as completely folded over the form.

Figure 5 is a view similar to Figure 4 but showing the form in its collapsed condition to permit the removal of the box therefrom.

Figure 6 is a perspective view illustrating the condition and the position of the box just as it is removed from the collapsed form.

Figure 7 is a perspective view of the box when turned over to position for receiving goods.

Figure 8 is a sectional view of another form.

Similar reference characters designate similar parts or features in all of the figures. For convenience of distinction, numerals are employed for the form, and letters for the blank or box.

Referring first to Figure 1 which illustrates one of the many shapes of blanks that may be employed, the blank is cut and creased to provide a bottom section *a* having

a front wall section *b* provided with end flaps *c c*, end walls *d d*, a rear wall section *e* provided with end flaps *f f*, and a cover section *g* provided with end flaps *h h* and with an edge flap *i* having end flaps *j j*.

Referring to Figures 2, 4 and 5, a form or block 10 is illustrated as horizontally projecting from the top of a standard 11 which may be a part of an automatic machine or may be secured to a suitable table or bench, according to whether the folding of the blank thereover is to be effected by a machine or manually.

A lower form member 12, having a vertical face, is provided with a shank 13 mounted in a horizontal bearing 14 in the upright or standard 11, so as to be shiftable to either one of the positions illustrated by Figures 4 and 5. Said shank may have a fairly close frictional fit in the bearing 14, or may be provided with means for holding it when shifted to either of said positions, according to whether the stock of which the blanks are made is very stiff or quite easily foldable as presently described. A friction fit of the shank in the bearing is sufficient when the blanks are of thin material or are so creased as to be easily wrapped about the duplex form.

The method of converting a blank such as illustrated by Figure 1 to box condition as illustrated by Figures 6 and 7 will now be explained.

With the form 12 in its outer position as shown in Figure 2, the blank (Fig. 1) is placed with its section *a* on the form 10 and the portions *b*, *e*, *g*, *i* folded down as illustrated by Figure 2. The blank then, if it were to be removed, would be in the condition illustrated by Figure 3. It is not removed, however, but glue is applied to the flaps *c*, *f* and *j*, and said flaps and the members *d* and *h* are folded in and overlapped as illustrated by Figure 4. The form 12 supports the members *g*, *h*, *i*, and the flaps *j* during the described completion of the folding. Figure 6 illustrates the condition of the completed box in the position which it occupies during the completion of the folding on the duplex form. By comparing said

Figure 6 with Figure 4, it will be seen that the completed box could not be removed from the form very readily if the form remained in the condition illustrated by Figure 4.

5 But by shifting the form 12 to the position illustrated by Figure 5, the completed box is free to be lifted directly upward, and when turned over as illustrated by Figure 7 is ready to receive goods.

10 After a completed box is lifted from the form while the latter is in the collapsed condition illustrated by Figure 5, the vertical form 12 is shifted back to the position illustrated by Figure 2, so that another blank can be folded over the duplex form in the manner that has been described.

15 Referring now to Figure 8, the duplex form, instead of consisting of two members one of which may be shifted relatively to the other, is formed as a single block 15 shaped somewhat like a pair of steps. It is a two-part form although the two members are not movable relatively to each other. The two members, instead of being at an angle to each other as in Figure 2, are in different but parallel planes. In said Figure 8, the higher member of the form block enables the same portions of the blank to be folded over it as those portions of the blank which have been described as folded over the form 10, Figure 2, and the lower member of the form block enables the same portions of the blank to be folded over it as those portions of the blank which have been described as folded over the form 12, Figure 2. In some cases, where the invention described herein is utilized in connection with machinery for effecting the bending or folding of the blanks, the embodiment of the invention illustrated by Figure 8 is preferred to the angular structure illustrated by Figures 2, 4 and 5.

Having now described my invention, I claim:—

45 1. The method of converting a paper blank to a box having receptacle and cover portions, consisting in folding one portion of the blank while that portion is in one plane and folding another portion of the blank while that portion is in another plane.

50 2. The method of making a set-up box having a receptacle portion and a cover portion, consisting in folding different portions of a blank while in different relative planes and controlling the folding operations according to the required sizes and proportions of the receptacle and cover portions.

55 3. Means for facilitating the making of paper boxes having receptacle and cover portions, said means comprising a pair of forms relatively positioned in different planes to support different portions of a blank during folding of the latter.

60 4. Means for facilitating the making of paper boxes having receptacle and cover

members, said means comprising a pair of forms relatively positioned at an angle to each other to support different portions of a blank during folding of the latter.

70 5. Means for facilitating the making of paper boxes having receptacle and cover members, said means comprising a pair of forms at an angle to each other to support different portions of a blank during folding of the latter, means being provided for shifting the relative positions of said forms.

75 6. Means for facilitating the making of paper boxes having receptacle and cover members, said means comprising an upright having a horizontal form, and a vertical form below the horizontal form having a shank movably mounted in said upright.

In testimony whereof I have affixed my signature.

MELVIN H. SIDEBOTHAM. 85

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