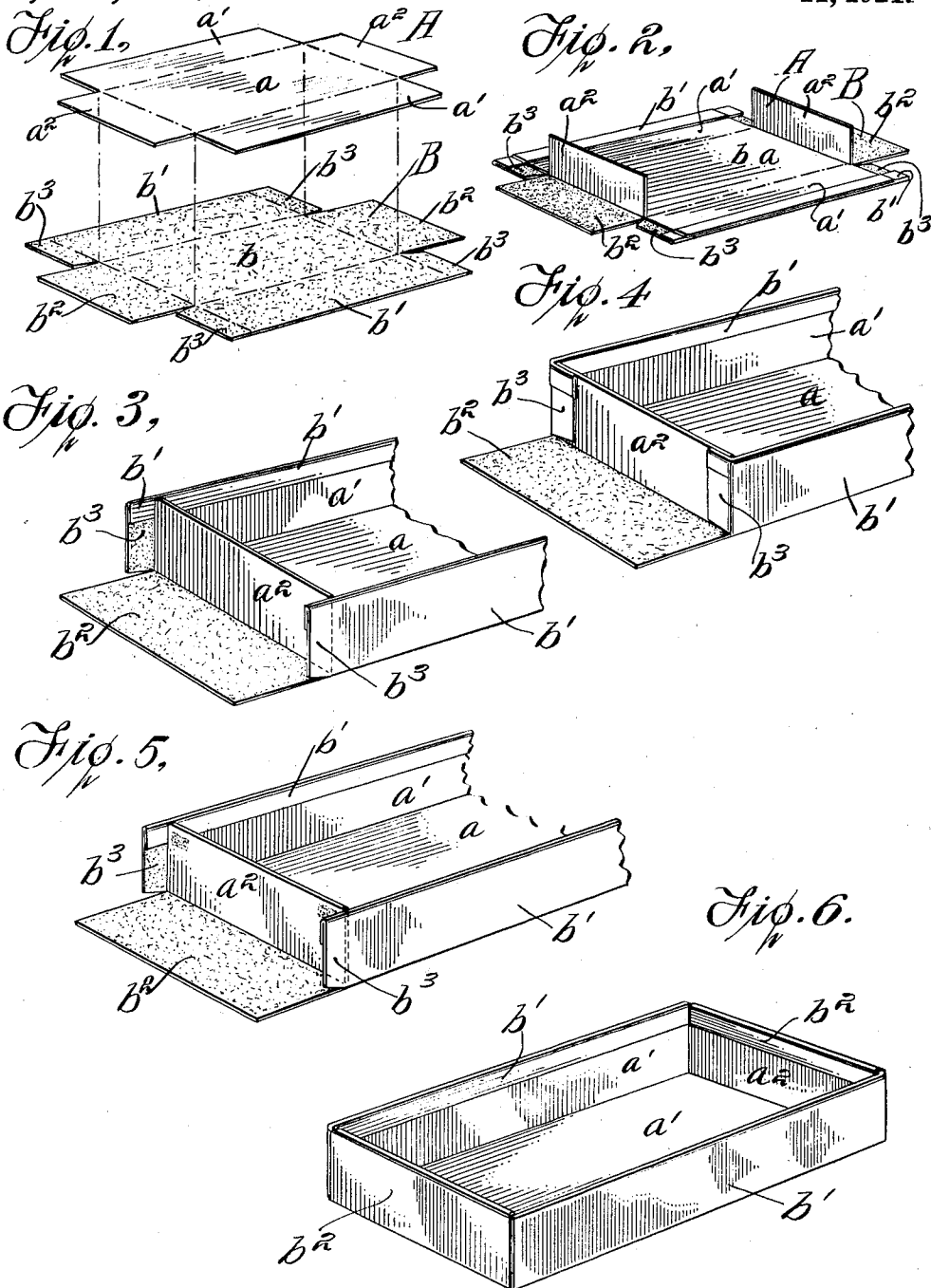


H. B. SMITH,
PAPER BOX SHELL.
APPLICATION FILED JAN. 24, 1919.

1,364,896.

Patented Jan. 11, 1921.



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PAPER-BOX SHELL.

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Specification of Letters Patent.

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Application filed January 24, 1919. Serial No. 272,908.

To all whom it may concern:

Be it known that I, HARRY BRIDGMAN SMITH, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Paper-Box Shells, of which the following is a specification.

This invention relates to the art of paper box construction, pertaining preferably to the production of shells wherein the covering blank is adhesively connected to each of the external walls of the shell blank as well as having the usual marginal edge infolded formation, a type of construction known to the trade as a "tight wrap" structure, although the invention is not limited in this respect, being applicable for use under conditions where the adhesive connection between the blanks is practically limited to that at the marginal edges and the staying laps, producing a structure of the "loose wrap" type.

The present invention is designed more particularly to produce box shells of these types in a simpler manner and at a reduced cost, these results being obtained by changing the general form of assembly and construction in several respects. A few of these differences are pointed out.

Where the cover blank itself provides or carries the corner stay, it is the practice to employ laps at the ends of the side wings, these laps being applied to the upstanding end wings with the marginal edges of the lap extensions infolded over the edges of these end walls, thus obtaining the advantage of a double line of material extending over the joint formed at the meeting edges of the adjacent upstanding walls. As a result it is necessary to meet the problems of producing the infold of a continuous strip on the adjacent walls of the angular corners, in addition to which the infolding of the end wing of the cover blank provides a multiple thickness of material overlying the edges of the shell end wings at the ends of the wings as well as on the interior faces of these wings.

It is also the general practice to provide a set-up condition to the shell blank preliminary to the application of the cover blank, due to the necessity for carrying the staying laps on to the outer faces of the end wings.

In the present invention these practices

are changed by providing an assembly while both blanks are "in the flat", and then so folding the blanks as to retain the margins of the staying laps entirely exterior of the end wings of the shell blank—being interposed between the end wings of the two blanks—the result being that the covering for the upper edges of the upstanding walls of the shell blank are of a single thickness throughout—providing uniformity at the sides and ends of the shell—and limiting the infolding operations of a cover blank marginal edge to a single wall of the shell blank, eliminating the problems of the infolding at the corners of the shell.

This result is obtained by using blanks of simple form readily manipulated, and the general formation permits of simplification of the machine construction generally employed in the production of box shells.

To these and other ends, therefore, the nature of which will be readily understood as the invention is hereinafter disclosed, said invention consists in the improved methods of production and the constructions and combinations hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claims.

In the accompanying drawings, in which similar reference characters indicate similar parts in each of the views—

Figure 1 is a perspective view showing the blanks employed in producing one embodiment of shell in accordance with the present invention.

Fig. 2 is a similar view showing the blanks assembled in the flat with the shell blank end wings raised to upstanding position.

Fig. 3 is a similar view showing the assembly side wings raised to upstanding position.

Fig. 4 is a similar view showing the staying laps folded to position.

Fig. 5 is a view similar to the stage shown in Fig. 3 but disclosing the use of an additional adhesive connection.

Fig. 6 is a perspective view of a completed shell.

For the purposes of illustration I have shown the use of blanks adapted to produce a simple form of covered shell of the "tight wrap" type, it being understood that the invention is not limited to use in connection with this type.

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A indicates the shell blank, having the usual body portion a , side wings a' and end wings a^2 , this being a simple form of blank and generally formed from heavier paper board stock.

B indicates the cover blank, this also having the body portion b , side wings b' , end wings b^2 , and carrying laps b^3 located at the ends of the side wings.

The dimensions of the body portions of the two blanks are substantially equal, as is the length dimensions of the side and end wings. The width dimension of the wings of the cover blank are greater than those of the shell blank to provide the usual marginal edges to be folded over the outer edges of the shell blank wings and be infolded on to the interior of the upstanding walls. Laps b^3 have a width substantially equal to that of wings b' .

In the particular embodiment shown the cover blank has one face completely covered with an adhesive coating, thus providing for "tight wrap" application, but it will be understood that the coating may be of the zonal type used in the production of "loose wrap" constructions.

The blanks are preferably assembled "in the flat" by superposing the shell blank upon the coated face of the shell blank with the body portions in registration, the body portions and side wings being adhesively connected, end wings a^2 , however, being temporarily held out of contact with the coating of wings b^2 . When the blanks are thus positioned, the exposed marginal edges of side wings b' are folded over upon the upper face of side wings a' , adhesively securing these edges in position. And this line of fold is continued through the lap portions—Fig. 2—the marginal edges of the laps, however, being folded onto the laps themselves, thus reducing the width of the laps to an extent as to give them a width dimension not greater than the similar dimension of wings a^2 , and at the same time providing a multi-ply thickness to the laps at that portion where the greatest strength is desired in the completed shell—along the upper edges of the upstanding walls of the shell—it being understood, of course, that the laps serve as staying structures.

After this assembly into embryo shell form has been provided, the side wings are raised—Fig. 3—and the lap formations folded onto the exterior face of the end wings a^2 as in Fig. 4, adhesive connection being provided between the laps and the end wings. If desired, the infolded lap portions or the end wings a^2 may be provided with a spot of adhesive—as in Fig. 5—to provide adhesive connection at this point. As will be understood, this locates the staying laps entirely exterior of wings a^2 , and with the double thickness, provides the desired

strength at the open top of the shell without necessitating the infolding of the margin over the wings a^2 as has been the practice in securing the presence of more than a single thickness of cover material at this point.

The shell is then completed by applying end wings b^2 in the usual manner, the wings overlying the staying laps and the shell blank end wings, and being folded over the upper edges of wings a^2 and infolded on to the inner faces of the latter wings. As the end wings are of equal length in both blanks, the infolding operation is of simple character.

As will be seen, this locates the staying laps entirely between the respective end wings, with each stay of the desired multi-ply formation, and at the same time provides a single-ply cover for the upper edges of each of the upstanding walls of the shell, thus giving a neater appearance at this point and to the interior of the shell since this single ply result is present therein.

As will be understood the great advantage of assembling in the flat is made possible by reason of the elimination of the infolding of the lap portions over the end wings. It has been contemplated to provide this form of assembly where the end wall formation is of multi-ply formation, the lap infold being applied over the shell blank laps, but, so far as I am aware, this assembly has not been employed where the end wall is of single ply. This enables greater accuracy in registration and speed of assembly and eliminates liability of shifting the relative positions of the blanks. And in the setting up operations the infolding operations are of simple type since there is no requirement of manipulating the portions of a strip which is to be applied onto the faces of two walls extending angularly to each other. When the shell is completed, the staying laps are entirely hidden, and the covering appears as in the usual type of covered box shells.

While I have herein shown and described ways of carrying out the invention, it will be understood that changes or modifications therein may be found desirable or essential—as, for instance, by placing the laps on the end wings instead of the side wings and applying the end wings in the flat—and I desire to be understood as reserving the right to make any and all such changes or modifications as may be found desirable or essential, in so far as the same may fall within the spirit and scope of the invention as expressed in the accompanying claims when broadly construed.

Having thus described my invention, what I claim as new is:

1. A covered paper box comprising a shell blank foldable to provide upstanding walls,

and a cover blank applied thereto, said cover blank having folded portions of double thickness operative as corner stays for the box, and with those edges of the upstanding walls lying in the plane of the open top of the shell including the said corner stays covered by portions of the cover blank.

2. A covered paper box shell comprising a shell blank foldable to provide upstanding walls of single ply, and a cover blank applied thereto, said blanks being assembled with cover blank portions operative as stays and with each stay including more than a single ply and with those edges of the upstanding walls lying in the plane of the open top of the shell covered by a single ply of the cover blank.

3. A covered paper box shell comprising a shell blank foldable to provide upstanding walls of single ply, and a cover blank applied thereto and having dimensions to provide marginal infolding edges and staying laps having widths substantially equal to the wings by which they are carried, said blanks being assembled into a set-up formation having infolded marginal edges adhesively connected to and extending throughout the inner periphery of the upper edges of the upstanding walls of the shell blank, said infolded portions being of single ply on each wall.

4. A covered paper box shell comprising a shell blank foldable to provide upstanding walls of single ply, and a cover blank applied thereto, said blanks being of the wing type and said cover blank having staying laps at the ends of opposite wings, said blanks being assembled with the staying laps of integral multi-ply formation and positioned solely on the exterior faces of the upstanding walls of the shell blank extending angularly to the lap-carrying wings,

those edges of the upstanding walls lying in the plane of the open top being covered by a single ply of the cover blank.

5. A covered paper box shell comprising a shell blank embodying a body portion, side and end wings, and a cover blank embodying a body portion, end wings and side wings having laps of greater width than the width of the shell blank wings, the end wing length being substantially equal in both blanks, said blanks being assembled with the excess width of the laps folded upon the lap portions to form a lap formation and with the lap formations interposed between the respective end wings in the completed shell, the excess width of the cover blank wings being infolded over the upper edges of the shell blank wings to provide a single ply covering element therefor.

6. An embryo assembly of cover and shell blanks adapted for the production of covered paper box shells wherein the edges of the upstanding wings of the shell blank are covered by a single ply cover, said assembly comprising a shell blank having side and end wings, and a cover blank having end wings and side wings carrying integral laps at the ends of the side wings, said laps having a width substantially equal to the width of the side wings, said blanks being assembled "in the flat" with marginal edges of the cover blank side wings folded upon the inner faces of the shell blank side wings, the line of fold being continued through the lap portions to cause the latter to have a width not greater than the width of the shell blank side wings and provide staying laps of multiple ply.

In testimony whereof I have hereunto set my hand.

HARRY BRIDGMAN SMITH.