H. B. SMITH.

PAPER BOX CONSTRUCTION.

APPLICATION FILED FEB. 24, 1920.

1,364,897. Patented Jan. 11, 1921.

Fig. 1,

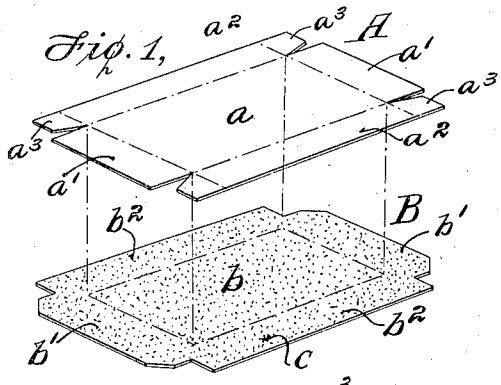


Fig. 5,

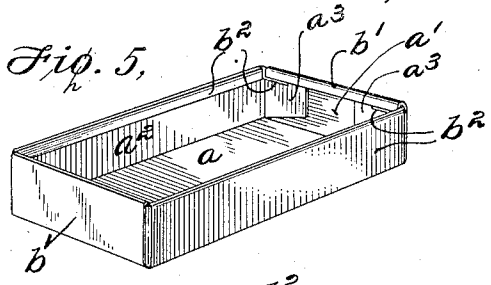


Fig. 2,

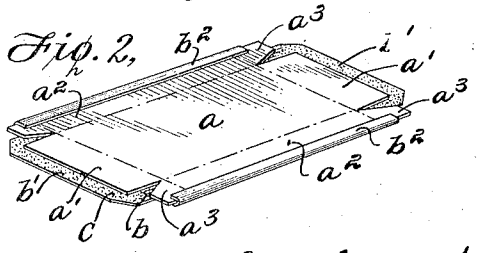


Fig. 6,

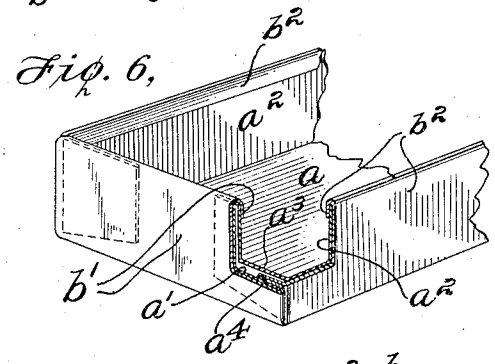


Fig. 3,

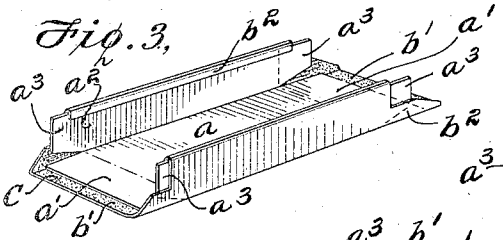


Fig. 7,

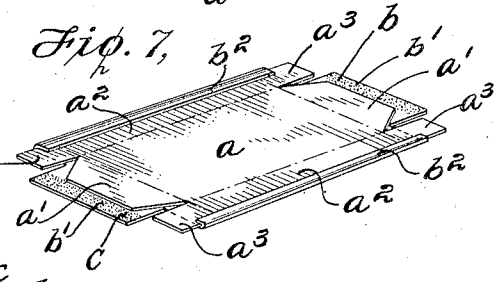


Fig. 4,

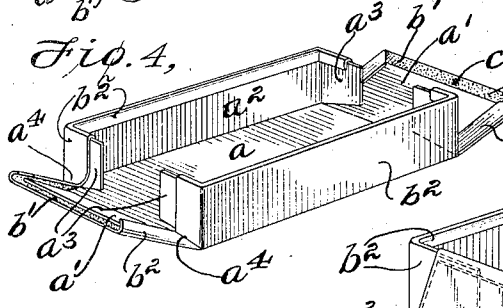


Fig. 8.

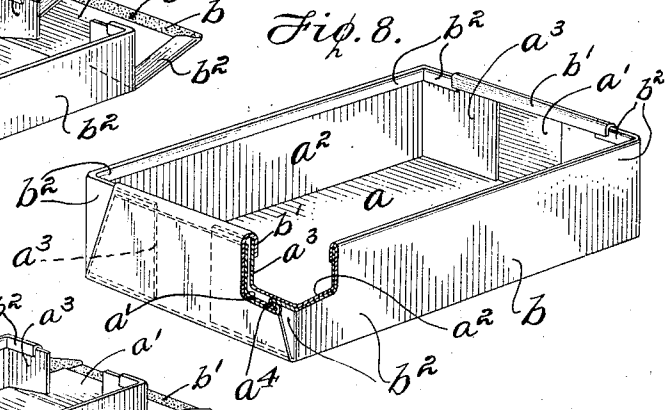
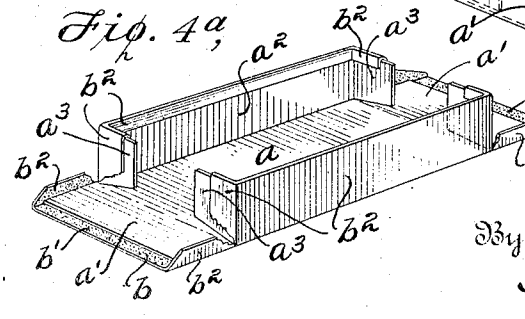


Fig. 4a,



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PAPER-BOX CONSTRUCTION.

1,364,897. Specification of Letters Patent. Patented Jan. 11, 1921.

Application filed February 24, 1920. Serial No. 360,561.

To all whom it may concern:

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

This invention relates to paper box construction, pertaining more particularly to covered box shells in which opposite end walls of the box are formed of more than a single thickness of the box blank, providing a multi-ply end formation, and the present application is a continuation in part of my application, Serial No. 235,515, filed May 20, 1918.

While boxes of this general type—formed from blanks foldable to provide end walls having more than one thickness—have heretofore been used commercially, and box shells of this type have been covered by a covering blank in several ways, I have discovered an entirely new way of applying covering blanks to boxes having multi-ply end walls, that not only adds greatly to the appearance and strength of the finished box, but materially reduces the cost of manufacture thereof.

One distinguishing characteristic of my improved covered box having multi-ply end walls, lies in the fact that portions of the covering blank are infolded about the vertical edges of the outer wing of the multi-ply wall at each end of the box, said infolded portions being confined between adjacent end wall plys, thus not only making a stronger box, but adding greatly to the attractive appearance thereof because the opposite vertical edges of the said outer wings are neatly covered. So far as I am aware, I am the first to apply a covering blank in this way.

In producing boxes of the character described, I have not only found that the cost of manufacture may be very materially decreased over the cost of manufacture of the boxes of the prior art, but I am able to produce a much more attractive and stronger box in a more efficient manner, this being due in part to the fact that the arrangement is such as to obviate the necessity of accurately registering the body blank and covering blank in the assembly of these parts, and furthermore, no preliminary staying or wing-affixing operations are required. I have also found certain other advantages in the method of manufacture which tend to reduce the cost of production and add to the strength and appearance of the product, but these are not particularly referred to or claimed herein, as claims to the method of manufacture of the box construction have been made in my companion application, Serial No. 254,630, filed September 18, 1918, the present application pertaining more particularly to the product.

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 construction and combination of parts hereinafter more 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 illustrating one form of box blank and complemental covering blank which may be utilized in the production of the box.

Figs. 2, 3 and 4, are perspective views illustrating steps in the manufacture of the box.

Fig. 4^a, is a perspective view of a slightly different form of the invention.

Fig. 5, is a perspective view of a completed box of the "tight wrapped" type.

Fig. 6, is a perspective view, on an enlarged scale, showing a portion of the box of Fig. 5 with parts broken away to show positions of the blanks in the completed box.

Fig. 7, is a perspective view showing a different form of box blank, *i. e.*, for a box of the "loose wrap" type.

Fig. 8, is a perspective view showing a completed box of the "loose wrapped" type, a portion being broken away to illustrate the relation of the parts.

Referring first to Figs. 1 to 6 inclusive, A indicates the box blank and B the covering blank.

The box blank is of a well known configuration, having the body portion a, end wings a', side wings a^2, and corner laps a^3 carried by the side wings, the dotted lines in Fig. 1 indicating the lines of folding, it being understood that when in infolded relation, the wings and corner laps are folded

to cause laps a^3 to form a ply of the end wall formation, end wing a' forming the outer ply of this formation.

The covering blank B, usually of thin pliable paper and generally decorated, is formed with a body portion b, end wings b' and side wings b^2. As will be seen from Fig. 1, body portion b is not defined by the size of body portion a of the box blank as is usually the case in the manufacture of "tight wrapped" covered boxes, but the cut-away portions of the covering blank are, in the present showing, such as to increase the area of this portion of the covering blank, it being understood that the configuration of the covering blank is generally of a different configuration from that of the box blank with the body portions of the two blanks differing in area. As shown, blank B is provided with adhesive, indicated at c. The cover blank B, may be adhesively attached throughout its entire area to exterior walls of box blank A, as is common in what are known as "tight wrap" boxes, or it may be attached at its infolded marginal edges only to produce what are known as "loose wrap" boxes. The invention is applicable to both types of boxes. The differences in the blanks will be readily understood from Fig. 2.

Fig. 2 shows a stage in the manufacture, the two blanks according to my new method being assembled while both are flat to place the body portion a of the box blank in superposed relation to the body portion b of the covering blank, this figure showing marginal portions of side wings b^2 as having been folded about and affixed to similar portions of side wings a^2 of the box blank, this being one method of manufacture of the box. As will be seen, the length of the side wings b^2 is less than the combined length of the side wings and laps of the box blank, while the end wings b' are of a length greater than the length of the end wings a'. And as will be noticed in the form illustrated in Fig. 1, the bottoms of the corner notches of blank B are spaced from the corners of body portion a, so that in the position shown in Fig. 2, the notches of the box blank practically overlie an unbroken or uncut portion of the cover blank; this arrangement, however, is not absolutely necessary in so far as the final product is concerned.

This effect will be more particularly understood from Fig. 3, which shows the assembled side wings as raised, the excess portion of the end wings b' being folded upward and in this position, extending in the plane of the side wings b^2, the notches of the box blank extending within this portion of the end wings b'. It will be noted from Fig. 3, that a portion of each corner lap a^3 is covered by side and end wing portions of the covering blank, while other portions of these laps a^3 are exposed. This particular configuration differs radically from the general type of box configuration during the covering operations, and the peculiar conditions present are met in the manner shown in Figs. 4 and 4^a either by forming gusset-folds a^4, Fig. 4, in the cover blank at the box corners, or by cutting or tearing the covering blank during the covering operation so as to reduce the body portion b to a proper size relative to body portion a, this being provided in suitable manner as by turning corner laps a^3 inward as indicated in Fig. 4^a which has the effect of tearing the blank to the proper point. The portion of the side wings b^2 which overlap corner laps a^3 aid in this connection, whether torn or in the form of gusset-folds, in that inturning of these laps a^3 may serve to produce the gusset-folds or the tearing action, it being understood, of course, that this portion of side wings a^2 is adhesively connected to the inner face and overlies the top edges of the upstanding side wings and corner laps.

After the cutting or tearing action, or the gusset-fold formation, has taken place, or simultaneously with such action or formation the portions of the end wings b' which provide the excess length of these wings— shown as upstanding in Figs. 4 and 4^a—are then turned inward and preferably affixed to the upper face of end wings a'—thus causing these portions of the end wings b' to be folded about opposite edges of end wings a' and neatly cover the same. The folded formation of wings a' thus produced is then raised to complete the composite or multi-ply end formation, thus placing these excess length portions of both the side and end wings of the covering blank between the end wings and corner laps of the box blank, after which the upstanding marginal portion of end wings b' is infolded to overlie the marginal portions of both plies of the end formation, producing the configuration shown in Fig. 5. The location of the excess length portions of the covering blank is indicated in Fig. 6, the latter view illustrating clearly the fact that all edges of the box blank are covered, thus exposing no "raw" edges.

The box blank of Fig. 7 varies from that of Fig. 1 in the shape of the end wings a' and corner laps a^3, the covering blank being changed in shape to take care of this condition. The general operation for producing the box is approximately the same as with the other form, the completed box, however, having a different external appearance, resembling what is known as a "loose wrap," as shown more particularly in Fig. 8, the outer ply conforming to the particular shape of end wings a', the arrangement being such that the "raw" edges of

the outer ply are covered. In boxes of the "loose wrap" type the covering blank is attached only at its infolded marginal edges b', and b^2. As will be seen, however, both types employ a box blank and covering blank in which the body portion of the covering blank is of greater length in one dimension than the corresponding length of the body blank, the increase overlying opposite end wings of the box blank and providing the material which, when torn or severed, or formed into a gusset-fold is adapted to produce the covering portions for the raw edges at the ends of the end wings. In addition, the covering blank has its end and side wings of such size as to project beyond the corresponding wings of the box blank, thus producing marginal portions which are adapted to be turned over the marginal edges of wings and be adhesively secured to the face of the box blank. As shown in Figs. 2 and 7, this inturning of the marginal edges of the side wings may be provided while the blanks are in the flat, thus producing an embryo assembly.

It is to be understood that the covering blank may be attached by zones of adhesive of the stencil type—at predetermined points only—thus producing what are known as boxes of the "loose wrap" type, and it will be understood that the blank may be adhesively attached substantially throughout its area, thus producing boxes of the "tight-wrap" type.

Inasmuch as the bottom of the notches of the covering blank and those of the box blank differ from each other in position and are brought into registration during folding by the tearing or cutting, or the gusset-fold forming operations referred to, it will be understood that there is no necessity for accurate registration of the blank during assembly, thus eliminating one troublesome factor in the cost of manufacture.

In addition, this has the further advantage of smoothing out the covering material which extends between the plies of the end configuration, the more or less irregular appearance produced by the tearing or gusset folding operation being immaterial since this portion of the covering blank is entirely hidden by the completion of the end formation of the box.

It will be understood, therefore, that the box construction of the present invention has several characteristics. For instance, the end formation is provided by a plurality of plies or thicknesses of the box blank; the marginal portions of the end wings of the covering blank overlie all of the plies of the end formation, being inturned onto the inner face of the formation; portions of the cover blank extend between plies of the end formation and thus overlie and cover the "raw" edges of the outer play. While it is preferred that all "raw" marginal edges of the box blank be covered, it will be readily understood that the invention is not limited in this respect, since the invention contemplates a construction in which the marginal edges of the upstanding side wings are left uncovered, an arrangement which retains the essential factors of the present invention, in that the end formation is not only so arranged as to provide for the covering of "raw" edges, but retains the advantage of the increase in strength of this formation provided by the construction shown, and adding greatly to the attractiveness of the box.

As heretofore pointed out, the present invention pertains to the box construction, it being readily understood that while I have shown a method by which it can be produced, the invention is not limited to such method or methods, the method of manufacture being claimed in my aforesaid companion application.

While I have herein shown and described several ways in which the present invention may be carried into effect, it will be readily understood that changes and modifications therein may be found necessary or desirable in meeting the exigencies of use, and I desire to be understood as reserving the right to make any and all such changes or modifications therein 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.

What I claim is:

1. A covered box shell comprising a box blank having end wings and side wings with corner laps, said end wings and corner laps being folded to produce an end wall formation embodying more than a single ply of the box blank material and with the end wings located externally with the shell, and a covering blank overlying the exterior walls of the box and having portions thereof folded about the side edges of the end wings and extending between adjacent plies of such end formation.

2. A covered box shell comprising a box blank having end wings and side wings with corner-laps, said end wings and corner-laps being folded to produce multiply end walls with the corner laps arranged interiorly of the shell, and a covering blank overlying the exterior walls of the box and having portions thereof infolded about the opposite raw edges of the end wings and extending between adjacent plies of the multiply end walls.

3. A covered box shell comprising a box blank and a covering blank assembled to produce an end formation embodying more than a single ply of box blank material, with portions of the covering blank inturned over

the marginal edges of each of the upstanding box walls and having other portions folded about opposite "raw" edges of the outer ply of the end formations and lying between adjacent plies.

4. A covered box shell, including a shell blank having wings and corner laps, and an exteriorly applied covering blank for the shell, said shell blank having predetermined wings and laps constituting a multiply structure for end walls of the box, the said covering blank having portions folded over and covering the marginal edges of the formed box shell including the corner laps, with other portions infolded about and covering the opposite edges of the wings included in each end wall structure of the box, said infolded portions lying between adjacent wings and corner laps.

5. A covered box comprising a shell blank and a covering blank applied exteriorly thereof, said shell blank having a body portion and integral side and end wings, two of said wings having corner laps, all of the wings being folded at an angle to the body portion to form the side and end walls of the box shell with the said corner laps infolded against the inner faces of the end walls of the shell, and the said covering blank having portions infolded about the opposite edges of the end wings at the ends of the box and extending between the inner face of said wings and the outer faces of the adjacent end laps, with portions adhesively connected to the inner face of the end wings.

6. A covered box shell comprising a box blank having a body portion and side and end wings, and a covering blank having a body portion and side and end wings of greater dimensions than the body blank, said blanks being assembled and folded into a shell having a multi-ply end formation and with portions of the covering blank at each corner of the box infolded in the form of a gusset, and lying between adjacent plies.

7. An embryo assembly for covered box shells comprising a box blank having a body portion, end wings, and side wings having corner laps, and a covering blank having a body portion, end and side wings, said covering blank having its body portion of greater length in one dimension than the corresponding portion of the box blank, with the increase overlying portions of the opposite box blank end wings, the several wings of the covering blank projecting beyond the corresponding wings of the box blank to provide marginal portions, opposite side margins extending onto and secured to the inner sides of the side wings of the box blank.

Signed at city of Brooklyn, in the county of Kings and State of New York this 19th day of February, 1920.

HARRY BRIDGMAN SMITH.