

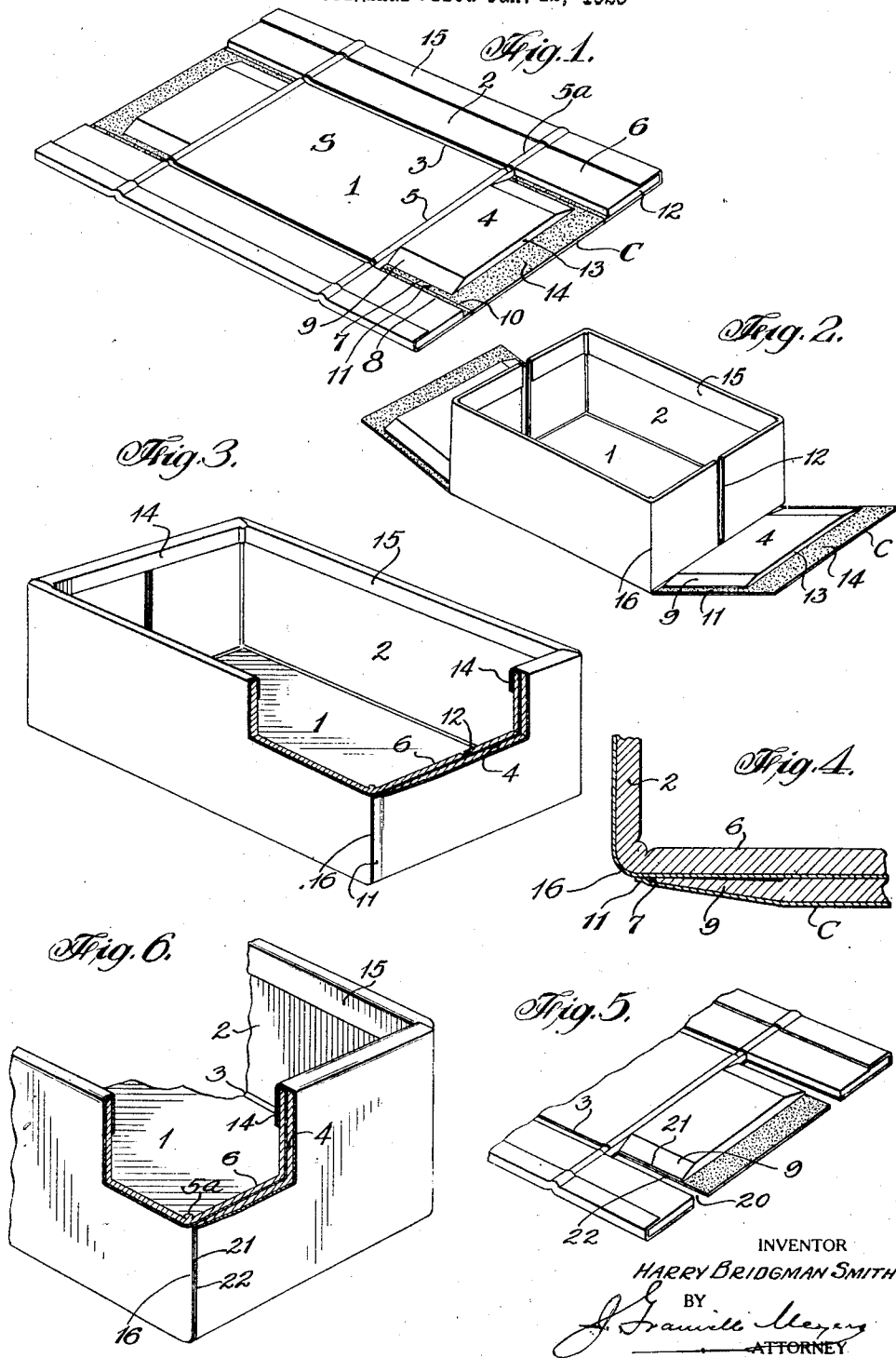
May 1, 1928.

1,667,874

H. B. SMITH

BOX BLANK AND BOX

Original Filed Jan. 12, 1923



Patented May 1, 1928.

1,667,874

UNITED STATES PATENT OFFICE.

HARRY BRIDGMAN SMITH, OF NEW YORK, N. Y., ASSIGNOR TO HOAGUE-SPRAGUE CORPORATION, OF LYNN, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

BOX BLANK AND BOX.

Original application filed January 12, 1923, Serial No. 612,170. Divided and this application filed October 25, 1926. Serial No. 144,043.

This application is a division of my application Ser. No. 612,170, filed January 12, 1923, for boxes and methods of making same, and relates to the boxes and box blanks there-

in disclosed.

The principal objects of the invention are: to provide boxes and blanks which may be produced in various ways, but are especially well adapted for manufacture by the continuous production methods disclosed in the above application; to provide blanks and boxes and especially covered boxes and blanks having desired appearance or "finish" and which are at the same time, relatively inexpensive because of novel structural features and adaptation to continuous production methods; and more particularly to provide boxes and blanks and especially covered boxes and blanks in which certain marginal portions, for instance, wing margins of the shell or body material are of reduced thickness or beveled for the purpose of providing thin edges of the shell or cover material, or both, which produce desired smooth surfaces in the completed box part or provide for completely concealing the shell edges adjacent the margins or zones of reduced thickness by strips or flaps of the cover material projecting beyond said shell edges, or else provide thin edges of the combined materials which are relatively unnoticeable and unobjectionable in the completed box part.

The characteristics and advantages of the invention are further sufficiently explained in connection with the following detail description of the accompanying drawing, which shows representative embodiments of the invention. After considering these examples, skilled persons will understand that many variations may be made, and I contemplate the employment of any structures that are properly within the scope of the appended claims.

Fig. 1 is a perspective view of the reverse or inner face of a composite blank embodying the invention in one form.

Fig. 2 shows the same, partly folded.

Fig. 3 shows a completed box part produced from the blank of Figs. 1 and 2, with certain portions cut away for explanatory purposes.

Fig. 4 is an enlarged horizontal section of the corner structure of Fig. 3.

Fig. 5 shows one end of a modified blank.

Fig. 6 shows one end of a box part produced from that blank with corner portions cut away for explanatory purposes.

While in some cases the blanks and box parts may consist only of suitable body or shell material, such as cardboard, strawboard or chipboard and the like, the novel and advantageous features of the invention are probably of greater importance in covered blanks and boxes, and the examples chosen for illustration are therefore composite blanks and box parts consisting of shell or body material with overlying cover material, usually of thinner sheet stock than the shell material, such as a suitable grade of paper, although not necessarily limited to paper. For convenience and clearness of illustration, the shell stock is shown in somewhat exaggerated thickness in relation to that of the cover material.

The blanks here shown are also adapted for continuous production methods of my invention, in which the shell and cover materials are preferably advanced in the form of continuous webs, from rolls, operated upon before or after assembly contact, or both, to produce individual blank formations in one or both of the webs, and brought together and secured to form a continuous composite assembly, which is then severed transversely at intervals to produce the individual blanks, all as fully set forth in the above identified parent application. The present articles are, however, adapted or adaptable for other production methods, such for example, as those in which the shell or cover material, or both, may be provided or handled in the form of individual blanks and so assembled to produce the individual composite blanks here illustrated, ready for folding and securing in a box form.

Fig. 1 shows one representative composite blank, preferred for certain purposes. This comprises a sheet of shell or body material S, such as above referred to, and a sheet of cover material C, such as referred to, these sheets being secured together by adhesive applied in strips or zones, or all over the contacting surfaces.

The blank includes a central or body portion 1 corresponding to the top or bottom of a completed box part, depending upon whether the box part is the top or cover section of a two-part box, or the lower or bot-

tom section thereof. The changes required to adapt the blank for lower or upper parts are principally dimensional and need not be further mentioned. Projecting from the body portion 1 are side wings 2 defined by fold formations 3, and end wings 4 defined by transverse fold formations 5. End laps or corner laps 6 extend from ends of the side wings as defined by continuations 5^a of the transverse fold formations. Each of the stated parts, in the present example, includes portions of both the shell and cover sheets. The fold formations may be of any suitable type. Desirably, for some purposes, the longitudinal fold formations 3 may consist of channels or longitudinal zones of reduced thickness produced by grinding or skiving operations upon the shell, and the transverse fold formations 5 are bead creased, produced by pressing or crimping operations upon the shell or combined materials. The longitudinal edges 7 of the end wings 4 are separated from the opposite adjacent edges of the corner laps 6 by cutting operations performed upon the shell, usually before application of the cover sheet, and desirably, the separation of these wing edges is effected by slotting operations in which substantially wide strips of the shell material are excised, leaving the edges 7 spaced substantially away from the adjacent corner lap edges 8. As an example of an important feature of the invention referred to early above, namely, the reduction of the thickness of certain zones or wing margins of the blank, the longitudinal margins 9 of the shell end wings 4 are of reduced thickness or, specifically, beveled, as shown, by skiving or grinding operations usually (though not necessarily) performed before assembly contact of the shell and cover materials, and before or after the slotting operation, to produce separation and spacing of the edges 7 and 8, with the result that the longitudinal edges 7 of the shell end wings are of reduced thickness or specifically, as shown, very thin. After described operations upon the shell, the cover paper is applied and then overlies the longitudinal slots producing the separated shell edges 7 and 8. The cover paper is then cut along lines 10 approximately in line with the longitudinal fold lines 3. The location of these slits may vary substantially, but in the present particular example, for reasons shortly explained, the slits 10 are so located that strips or flaps 11 of cover paper of substantial width are produced, extending outwardly from the thin shell edges 7.

The length of the end wing and corner lap formations (that is their dimensions lengthwise of the blank) depend mainly on dimensional considerations, namely, the depth and width of the completed box part. Usually the outer ends 12 of the corner laps are to be brought together in closely abut-

ting relation, and customary box dimensions permit, in such cases, making the length of the end wings such that they terminate on lines 13 considerably inward from the ends 12 of the corner laps. This provides projecting cover end wing margins 14, desirable in highly finished boxes, as later explained. Otherwise in some cases the cover paper forming a part of the end wing structures may be severed along the shell end lines 13.

The free cover margins 11 and 14 are adhesively coated at any convenient time. Usually this adhesive is applied to the cover material before it is associated with the shell, and when the blanks are folded without any substantial delay into box form, this adhesive remains in proper sticky condition, and no adhesive application is necessary in the folding and securing operations.

In certain preferred forms longitudinal margins 15 of the cover paper are turned over and secured upon the inner surfaces of the outward longitudinal margins of the shell side wings and corner laps 2 and 6. In other cases, these turned or overlapped cover margins may be omitted.

The blank is now ready for folding into box form by turning the side wings with their connected corner laps upward at right angles to the body 1, and turning the corner laps inward so that their edges 12 approximately meet or abut, as in Fig. 2, and then turning the end wings up against the outer faces of the corner laps, turning the end wing cover margins 14 inward over the upper edges of the corner laps and down against inner faces thereof, and pressing the longitudinal cover wing margins 11 upon the outer faces of the corner laps adjacent the box corners 16, all as in Fig. 3, which shows the completed box part, the end structure of which is additionally explained in the enlarged section, Fig. 4. It is now evident that the strips or zones 9 of the shell end wings are of reduced thickness or beveled formation, providing a gradual tapering of the outer end layer consisting of the end wing 4, toward the corners of the box, with the thin outer shell edges 7 near the box corners and with the cover margins 11 overlapping and concealing the shell edges and secured to the corner lap cover paper near or substantially at the box corner. There is thus provided a box end structure having the appearance of a substantially smooth, flat end surface without appreciable shoulders or irregularities; and with the shell edges entirely concealed by cover paper, which is very desirable in a covered box, in some classes of which the presence of any unconcealed shell edges is undesirable. This result is attained conveniently and economically, and without necessity for inturning of cover paper about

the shell edges 7 or for producing tuck folds in the box end structure, other expedients heretofore proposed, which are relatively inconvenient and expensive.

5 The inturned cover end wing margins 14, when provided, produce the desired interior appearance or "finish" of the box, that is to say, they correspond with the inturned side wing cover margins 15 and present a
10 complete cover trim about the interior periphery of the box, as well as providing for the entire or principal connection and securing of the end structure. These margins may, however, in some cases, be omitted and
15 in such cases the end wings will be secured by adhesive applied to their inner faces or to outer faces of the corner laps, and the longitudinal dimension of the end wing will be such that its edge 13 lies along the free
20 edges of the corner laps.

Figs. 5 and 6 sufficiently explain a modification in which, in the final blank form, the cover material or the combined shell and cover materials are cut, usually by slotting
25 operations or excision of strips of the material of substantial width, to produce slots 20, substantially in line with the longitudinal fold lines 3, the inner edges of these slots producing parallel or superposed thin
30 shell edges 21 and cover edges 22.

This result, or blank formation, is usually attained by performing the slotting operations after the shell and cover materials are brought together and secured. When this
35 modified blank is folded to box form, as sufficiently shown in Fig. 6, the beveled shell formations 9 produce a smooth outer end structure with gradual tapering toward the box corners, as in the previous example.
40 Adhesive is applied to outer surfaces of the corner laps adjacent the box corners, or to the beveled shell margins 9, and these marginal portions are pressed down upon the outer faces of the corner laps, with the result
45 that the combined edges 21 and 22 of the shell and cover materials respectively, adjacent the box corners 16, are relatively thin and unnoticeable and especially the shell edge 21 while actually exposed, is very
50 thin, and noticeable only upon close inspection, and therefore unobjectionable in boxes intended for many purposes.

I claim:

1. A box blank comprising connected shell
55 and cover materials and having wing formations, certain margins of the shell material which underlie the cover material in the wing formations being of reduced thickness to produce thin, flat-lying edges of said wing
60 formations adjacent to the corners of the box when secured to other parts of the blank in box form.

2. A box blank comprising connected shell
65 and cover materials and having wing formations, certain marginal zones of the shell

material in the wing formations being of reduced thickness adjacent to the corners of the box when the blank is folded, the shell material being slotted to provide substantial
70 separation of certain adjacent wing portions and also provide thin edges of said shell wing margins adjacent the cover edges comprised in said wing portions.

3. A box blank comprising connected shell
75 and cover materials and having wing formations, certain margins of the shell material in the wing formations being of reduced thickness, the shell material being slotted to provide substantial separation of certain adjacent wing edges and also to provide thin
80 edges of said wing margins adjacent to the corners of the box when the blank is folded, and the cover material being cut to provide cover edges adjacent said thin shell edges.

4. A box blank comprising connected
85 sheets of shell and cover material and having wing formations including adjacent edges of shell material substantially spaced from each other, certain of the shell wing margins adjacent said edges being of reduced
90 thickness, and margins of cover paper projecting in said spaces beyond the edges of said shell margins to provide for smooth, thin, flat connection to other blank surfaces when the blank is secured in box form.

5. A composite box blank of sheet shell
95 and cover materials secured together and including a body portion, side and end wings and corner laps, certain marginal portions of the shell material which underlie the
100 cover material in the end wings being of reduced thickness with thin outer edges for flat adhesive connection to other parts of the blank when the latter is secured in box form.

6. A composite box blank of sheet shell
105 and cover materials secured together and including a body portion, side and end wings and corner laps, the longitudinal margins of the shell material in the end wings being of reduced thickness and having thin edges
110 spaced from adjacent edges of the corner laps, the cover material overlying the spaces between said wing and corner lap edges being slit to provide free cover margins projecting beyond said thin shell edges for flat,
115 smooth, adhesive connection to outer faces of the corner laps when the blank is secured in box form.

7. A box part formed from a composite
120 blank consisting of substantially thick shell material and relatively thin cover material overlying one face thereof and adhesively secured, the blank including a central portion, end wings foldably extending from the
125 ends thereof, side wings foldably extending from the sides of the central portion and having corner laps foldably extending from the ends thereof, all of said blank parts including portions of both the shell and cover materials, the longitudinal margins of the
130

shell material in the end wings being of reduced thickness and the edges of such reduced shell portions underlying the cover material near the longitudinal edges thereof, said blank being folded with the side and end wings perpendicular to the central portion, the corner laps located against inner faces of the end wings, and said longitudinal end wing cover edges being located close to the end wall corners with the underlying adjacent portions of the shell end wings of reduced thickness providing a smooth apparently flat surface contour of the box end wall.

8. A box part formed from a composite blank consisting of substantially thick shell material and relatively thin cover material overlying one face thereof and adhesively secured, the blank including a central portion, end wings foldably extending from the ends thereof, side wings foldably extending from the sides of the central portion and having corner laps foldably extending from the ends thereof, all of said blank parts including portions of both the shell and cover materials, the longitudinal margins of the shell material in the end wings being of reduced thickness, and longitudinal free margins of the end wing cover material projecting substantially outward beyond said thin shell edges, the blank being folded and secured in box form with side walls consisting

of the side wings perpendicular to the central portion of the end walls consisting of the corner laps and overlying end wings perpendicular to the central portion, said projecting free cover margins of the end wings being adhesively secured to outer faces of the corner laps near the end wall corners and overlying and concealing the adjacent thin edges of said end wing shell margins.

9. A box blank of shell material having wing portions two of which meet to close the end of the box when the blank is folded and a third one of which forms a reinforcing flap over the seam between the first two, the third wing being of reduced thickness at the ends adjacent to the corners of the box formed by folding the blank.

10. A box blank comprising connected shell and cover materials, the blank having wing portions two of which meet when the blank is folded to form a box, and a third portion which forms a reinforcing flap over the seam between the first two, such third portion being of reduced thickness on its ends adjacent to the corners of the box formed by folding the blank, and the cover material terminating at the corners where the shell is thinned.

Signed at New York city, in the county of New York and State of New York this 22nd day of October A. D. 1926.

HARRY BRIDGMAN SMITH.