

April 7, 1953

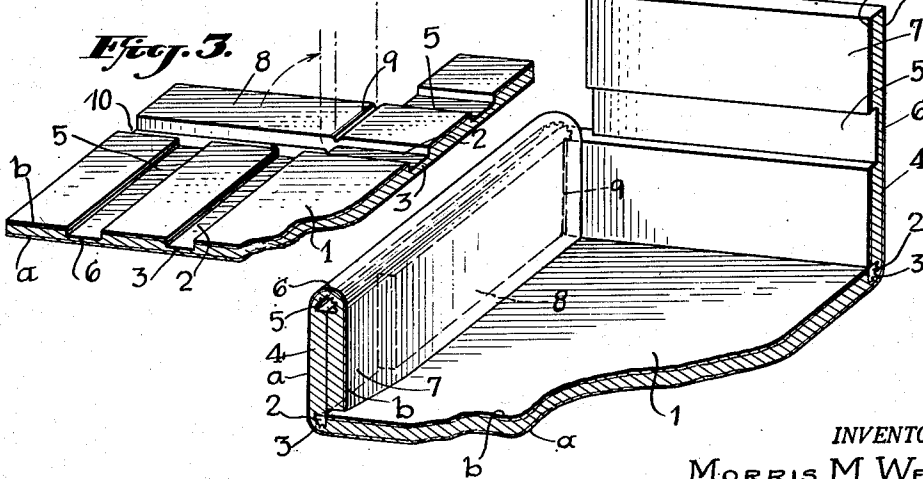
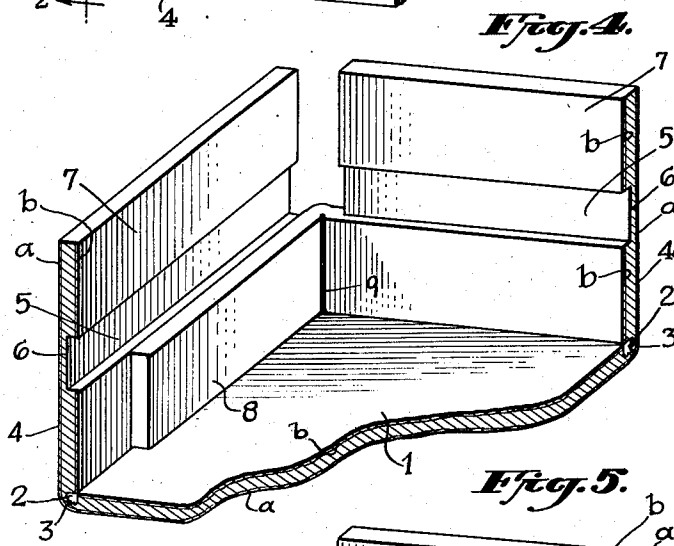
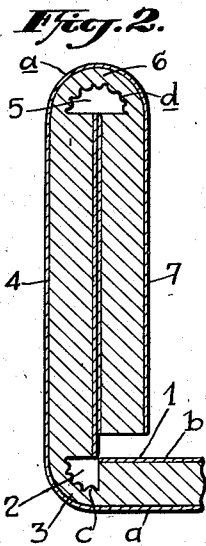
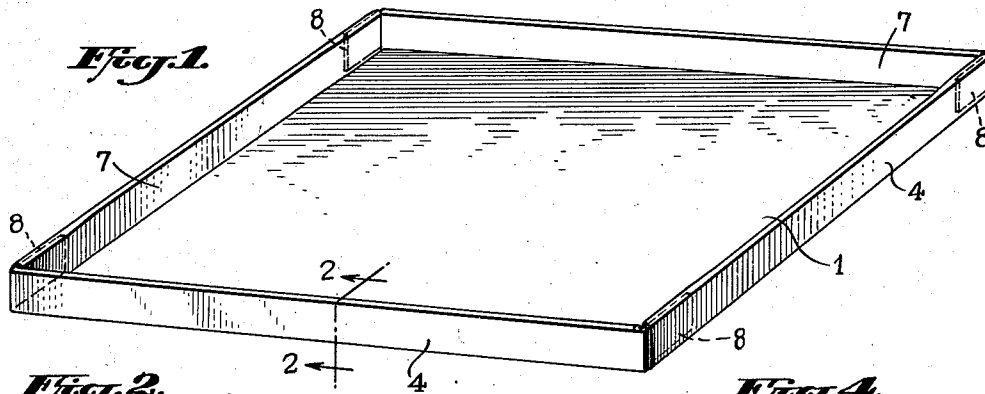
M. M. WEBER

2,634,046

CARDBOARD BOX STRUCTURE

Filed Aug. 10, 1950

3 Sheets-Sheet 1



INVENTOR.
MORRIS M. WEBER.
BY *Irving Crosby & Neal*
ATTORNEYS.

April 7, 1953

M. M. WEBER
CARDBOARD BOX STRUCTURE

2,634,046

Filed Aug. 10, 1950

3 Sheets-Sheet 2

Fig. 6.

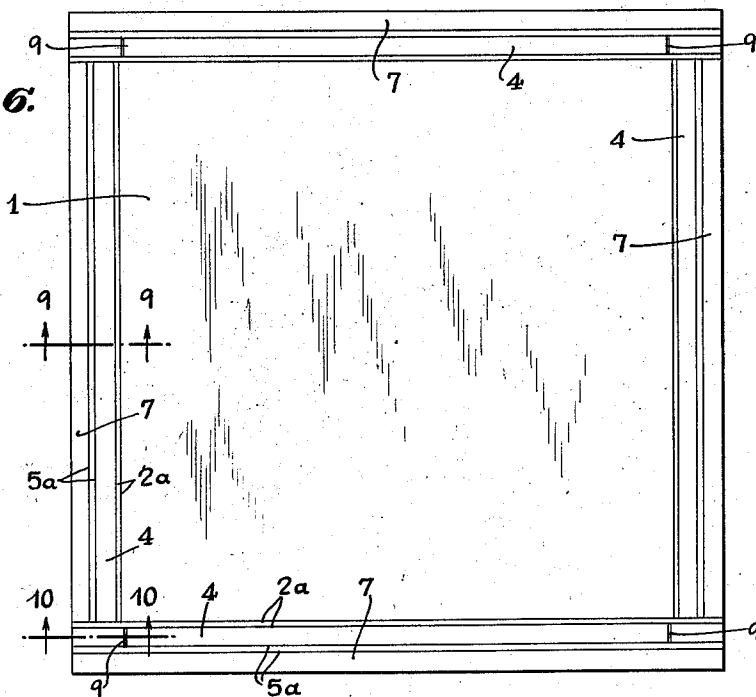
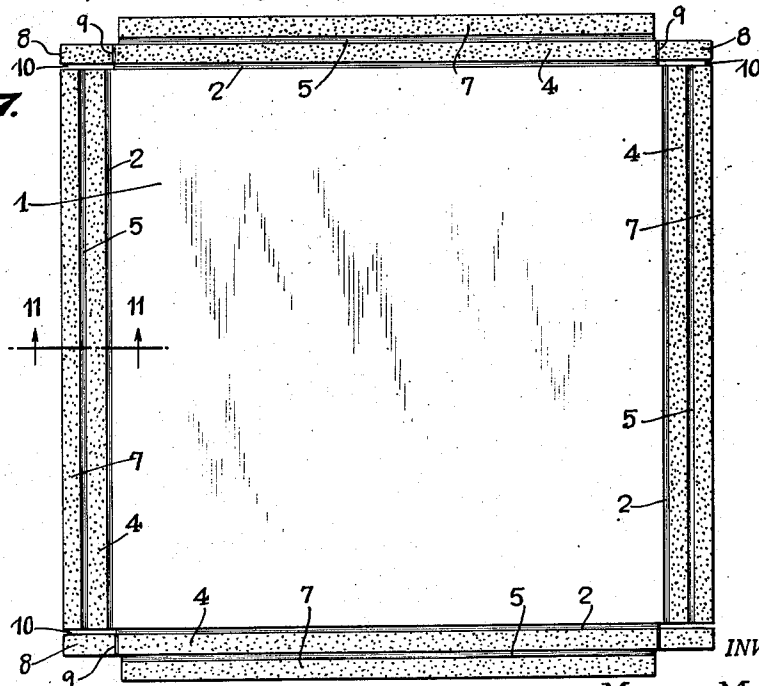


Fig. 7.



INVENTOR.

MORRIS M. WEBER.
BY *Ward Crosby & Neal*
ATTORNEYS.

April 7, 1953

M. M. WEBER
CARDBOARD BOX STRUCTURE

2,634,046

Filed Aug. 10, 1950

3 Sheets-Sheet 3

Fig. 8.

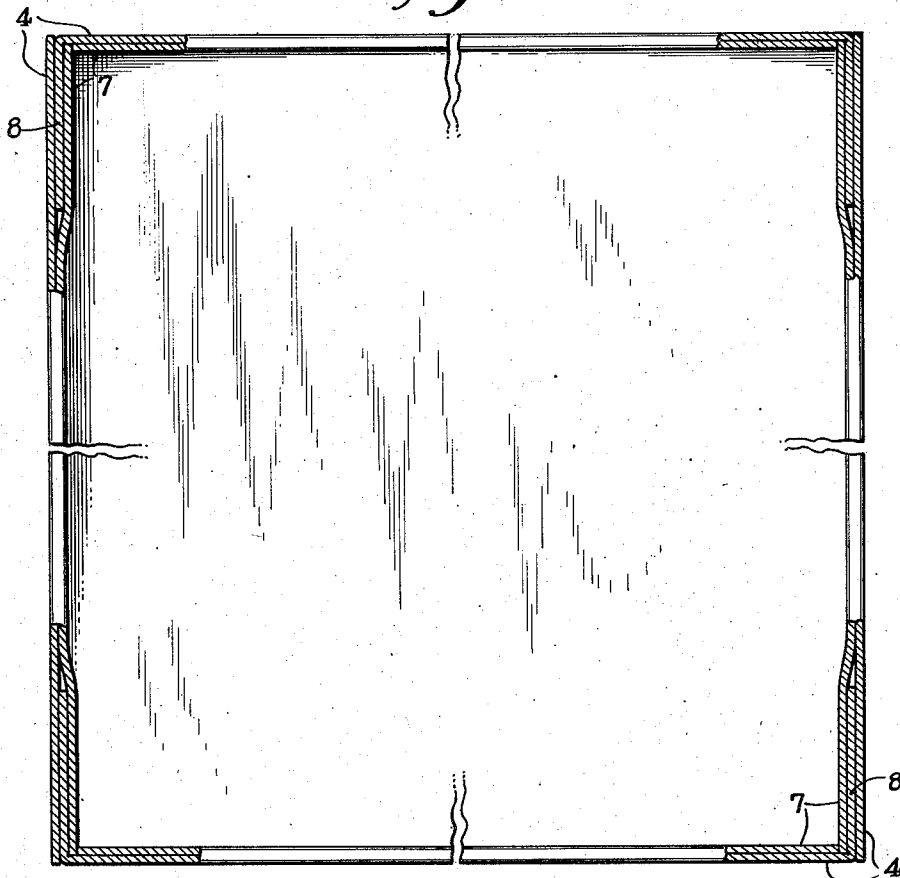


Fig. 9.



Fig. 10.



Fig. 11.



INVENTOR.
MORRIS M. WEBER.
BY *Wood, Cimbly & Neal*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,634,046

CARDBOARD BOX STRUCTURE

Morris M. Weber, New York, N. Y.

Application August 10, 1950, Serial No. 178,587

2 Claims. (Cl. 229—34)

1

The invention relates to relatively shallow cardboard boxes of the type conventionally used for handkerchiefs and the like, wherein the trade demands as to rigidity require that the cardboard be about .030" or more in thickness, and also it is customarily required that the edges and corners of the walls of the box be neat and trim in appearance, and that a so-called wrapper or facing sheet, be provided at least for the exterior surface of the cardboard, the wrapper being of white or colored paper, plain or printed, as desired. In most instances such a wrapper or facing sheet is also provided for the inside surfaces of the box.

To meet the above requirements, it has been conventional for many years to use blanks of so-called chipboard, sheet lined on one side (which becomes the inside of the box) the blank being scored to define the sides of the box and the corner portions of the blank cut out; then the side walls of the blank are folded up and corner stays glued on the outside of the blank; then the outside wrapper is prepared on a so-called mitering machine; then glue is applied to one surface of the wrapper, the operator places the corner stayed box in proper position on the glued wrapper, and in this condition the box is then placed in a wrapping machine which secures the wrapper in place and folds it over to cover the edges and inside surfaces of the side walls of the box.

The resulting box structure is decidedly expensive to produce, and the present invention aims primarily to provide a different box structure which is substantially lower in manufacturing cost and which nevertheless will fully measure up to the trade requirements as to rigidity and strength, trim and neat edges and corners, and finished appearance.

Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses a preferred form of cardboard box constructed in accordance with the invention; the disclosure however should be considered as merely illustrative of the invention in its broader aspects. In the drawings—

Fig. 1 is a general perspective view of a cardboard box constructed in accordance with the invention.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary view of one corner of a box blank, ready for the folding operations used in shaping the box into the form shown in Fig. 1.

Figs. 4 and 5 are perspective views illustrating

2

successive stages of the above mentioned folding operations.

Figs. 6 and 7 are plan views illustrating appropriate preliminary stages of preparing a blank for the folding operations.

Fig. 8 is a plan view partially cut away of the completed box shown in Fig. 1.

Figs. 9 and 10 are detail sections taken on the lines 9—9 and 10—10 of Fig. 6, and

Fig. 11 is a similar detail section taken on the line 11—11 of Fig. 7.

The invention is applied to boxes constructed of so-called bending chipboard, this cardboard material having applied at least to the surface thereof which is to constitute the outside of the box, a so-called patent coating, or a clay coating *a*, and in most instances a similar coating *b* on the surface thereof which is to constitute the inside of the box. Coatings of the above character, as per se known in the art, have either an outer facing of white or colored paper stock of higher grade, or of clay composition, applied to the chipboard during the manufacture thereof, and calendered to impart a finished surface or surfaces to the product, the coatings thus becoming an initial integral part of the completed board. One of the important advantages of the present invention is that the above type of material may be used in forming the box, whereas such material cannot be advantageously used in forming the conventional boxes above referred to, in which the so-called wrapper has to be applied after the box is formed in order to produce the desired finished effect. The end wall 1 of the box has its interior edges defined by channels 2 of routed construction, i. e. the surface of the cardboard material which is to form the inside of the box is cut or gouged out to provide these channels 2, the channels extending through one-half or more of the cardboard material, so as to provide relatively thin cardboard portions 3 at their bases, which are flanked by the facing *a*. Then the material is bent up at right angles at these channels, as indicated for example in Fig. 4, to form the outer side walls 4 of the box, and it is found that the above described channel structure, backed by the coating *a*, enables trim and uniform edges to be formed for the end wall 1 of the box, without cracking or unduly deforming or overstraining the cardboard material, and that the joint at the corners is of adequate strength. As the bases 3 of the channels 2 are bent, the cardboard material at the outside of the bends will not stretch unduly or crack, using material of the type above referred to, and the cardboard

3

material at the inner sides of the bends is compressed, tending to crumple to some extent as indicated by the wavy line *c* in Fig. 3, but this will be hidden in the completed box and the edges will be strong and uniform and neat in appearance.

The outer side walls 4 of the box are also provided at their edges remote from the end wall 1, with interior channels 5 of routed construction similar to those already described and which have bases 6 backed by the coating *a*, the width of these channels 5 being preferably somewhat greater than the channels 2, the width of the channels 5 being preferably about three times the thickness of the material, whereas the channels 2 are preferably of width about twice the thickness of the material. With channels 5 of the above character, it is found that without unduly weakening the material or marring the resulting edges, the bases 6 of the channels may be bent around through 180° as indicated in Fig. 2 and at the left of Fig. 5, to provide inner side walls 7 which extend to, or nearly to the end wall 1. As previously mentioned in connection with the channels 2 it is found that with a material of the character under discussion, the bases 6 of the channels 5 will bend around trimly and uniformly to produce neat and trim edges upon the box, without injuring the coating *a* and although the inside portions of the bases 6 may crumple somewhat as indicated by the wavy line 4 in Fig. 2, being compressed when bent, this will not be objectionable since it is hidden in the finished box.

The juxtaposed surfaces of the respective side walls 4 and 7 will be coated with glue and pressed together, and appropriate tongues 8 (as hereinafter described in greater detail) are provided to reinforce the corner joints at the sides of the box. Fig. 4 shows an initial stage of folding at which a side wall 4 has been bent up and a tongue 8 bent to lie against the inner side of the wall 4 at the left, but the inner side walls 7 have not yet been folded down. Fig. 5 shows the left hand inner side wall 7 bent down to lie inside of and against the tongue 8, after which the step of bending down the right hand inner side wall 7 remains to be performed, it being understood that adhesive is applied to the surfaces of the inner and outer side walls which are in contact with each other.

It is found that, using cardboard of the above described character, a box of the above described structure may be produced at substantially lower cost (about 20%) as compared to the conventional boxes above referred to, and will still be adequately strong, and of the required neat and trim appearance, particularly at the edges and corners, due primarily to the routed channel construction used in combination with the coatings as above described. I am aware that routed grooves are not broadly new, in so far as I am aware the possibilities of providing a box of the structure under discussion which will meet practical requirements, with the attendant savings in cost, have not previously been appreciated or availed of. These savings are of crucial importance to the box maker, since otherwise present day transportation costs seriously limit the areas over which competitive sales of this type of box may be made.

In Fig. 6 I have shown in an initial stage, a blank appropriate for the production of boxes of the above described structure, it being understood as indicated in Fig. 9, that the initial ma-

4

terial will already be provided with a coating *a* which is to become the outer surface of the box, and with a second coating *b* if the latter is to be used. This is in contrast with conventional box structures of the type under discussion, wherein a wrapper or facing sheet has to be applied after the blank has been formed into box shape. As indicated in Figs. 6 and 9 the blank may be initially provided with a series of score cuts 2*a* which define the sides of the channels 2 later to be formed, and also a similar series of score cuts 5*a* which define the sides of the channels 5 later to be cut. At this stage creases 9 (Figs. 6 and 10) are formed at the points where the tongues 8 will join their respective sidewalls, to avoid unduly weakening the bases of the tongues when bent. The above operations may be performed by an appropriate die at the time the blank is cut from a larger coated cardboard sheet, after which the channels 2 and 5 will be formed, and the material die cut as indicated in Fig. 7, to cut away the corner portions of the blank which lie endwise of certain of the inner sidewalls 7, and provide slots 10 (Fig. 7) which separate the tongues 8 from the ends of the adjacent walls 4 and 7 between which the tongues 8 are later interposed as previously described. The blank will then be ready to have adhesive applied to its wall portions 4 and 7, after which the previously described folding operations are performed to produce a completed box as shown in Figs. 1 and 8. The operations required to produce the box are substantially simplified as compared to the conventional boxes previously referred to.

While the invention has been disclosed as applied to a box of the above described specific structure, it should be understood that changes may be made therein without departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. A cardboard box structure of the character described having an integral finish coating on its outer surface, said box structure including an end wall having the cardboard material thereof partially cut away to provide interior routed channels extending respectively along the edges of said end wall, the material at the bases of said channels being bent to provide a first set of side walls extending from said end wall and connected thereto by said bases, said coating overlying the aforesaid bent portions of the material, said side walls also having the cardboard material thereof partially cut away to provide interior routed channels as aforesaid extending along the edges of said first set of side walls which are remote from said end wall, the cardboard material at the bases of said last mentioned channels being folded inwardly through substantially 180 degrees to provide a second set of side walls extending from said last mentioned edges toward said end wall, said last mentioned base portions also having said coating overlying the same to define the side wall edges which are remote from said end wall, and means interconnecting the adjacent corner portions of said side walls to hold the latter in position.

2. A cardboard box structure of the character described having an integral finish coating on its outer surface, said box structure including an end wall having the cardboard material thereof partially cut away to provide interior routed channels extending respectively along the edges of said end wall, the material at the bases of said

channels being bent to provide a first set of side walls extending from said end wall and connected thereto by said bases, said coating overlying the aforesaid bent portions of the material, said side walls also having the cardboard material thereof partially cut away to provide interior routed channels as aforesaid extending along the edges of said first set of side walls which are remote from said end wall, the cardboard material at the bases of said last mentioned channels being folded inwardly through substantially 180 degrees to provide a second set of side walls extending from said last mentioned edges toward said end wall, said last mentioned base portions also having said coating overlying the same to define the side wall edges which are remote from said end wall, certain of the aforesaid side walls having at their corner portions, integral creased tongues extending in between the corner portions of other respectively adjacent side walls to hold the side walls in position.

MORRIS M. WEBER.

REFERENCES CITED

The following references are of record in the 25 file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,302,507	Cady -----	May 6, 1919
1,762,704	Smith -----	June 10, 1930
1,818,102	Snyder -----	Aug. 11, 1931
1,895,778	Andrews -----	Jan. 31, 1933
1,934,641	Rafton -----	Nov. 7, 1933
1,934,642	Rafton -----	Nov. 7, 1933
2,099,936	Kieckhefer -----	Nov. 23, 1937
2,125,847	McKenzie -----	Aug. 2, 1938
2,197,152	Mason -----	Apr. 16, 1940
2,311,156	Casto -----	Feb. 16, 1943
2,411,989	Dunham -----	Dec. 3, 1946
2,544,101	Oxley -----	Mar. 6, 1951

FOREIGN PATENTS

Number	Country	Date
3,435	Great Britain -----	Feb. 11, 1898
7,949	Great Britain -----	Apr. 5, 1907
168,157	Switzerland -----	June 1, 1934