Jan. 28, 1930. E. W. LABOMBARDE 1,745,101

PAPER BOX FOR LIQUIDS

Filed Aug. 13, 1925

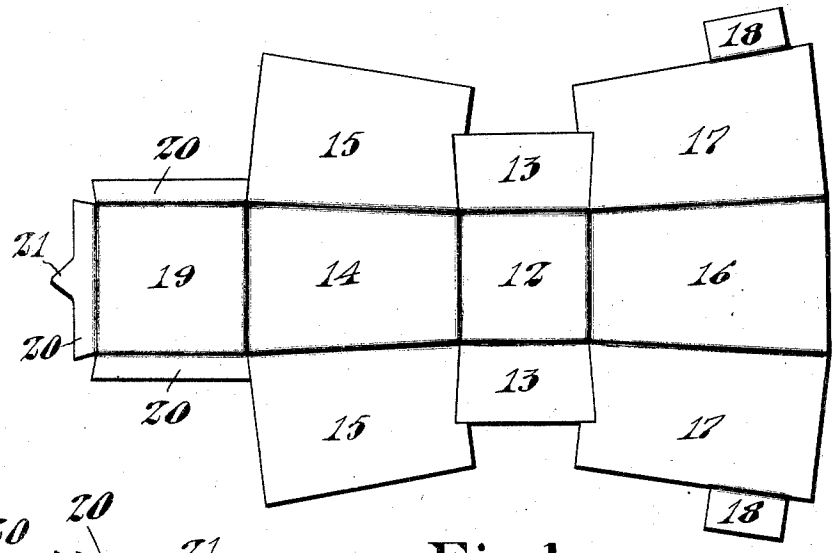


Fig.1.

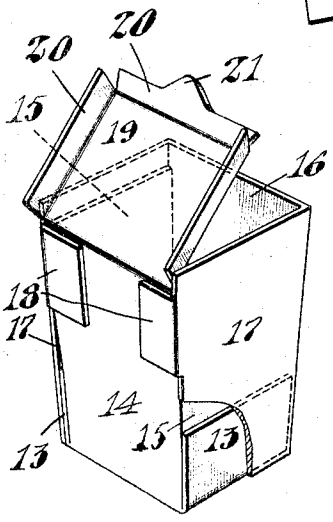


Fig.2.

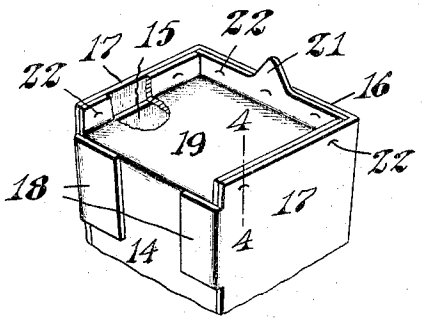


Fig.3.

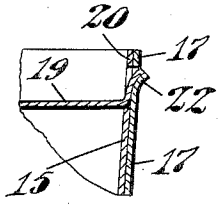


Fig.4.

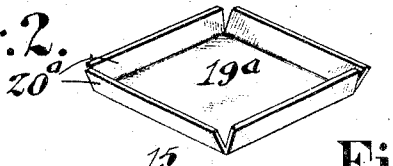
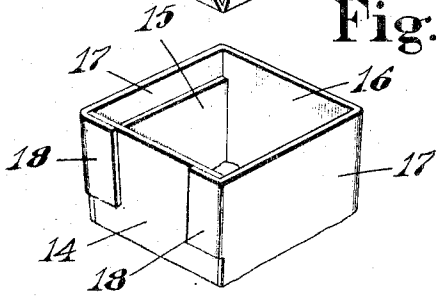


Fig.5.



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UNITED STATES PATENT OFFICE

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PAPER BOX FOR LIQUIDS

Application filed August 13, 1925. Serial No. 50,015.

This invention relates to the manufacture and production of paper boxes which are strong, durable, and leak-tight, and especially useful for the holding and transportation of liquids such as milk.

A particular object of the invention is to produce boxes of the above-mentioned character, which boxes will require no metal or other independent fastenings.

The invention consists in the blank and box substantially as hereinafter described and claimed.

Of the accompanying drawings:—

Figure 1 is a plan view of one form of blank employed.

Figure 2 is a perspective view of a similar blank set up to container or box form, and partly broken out.

Figure 3 is a similar view, of the upper portion, but with the cover closed and locked.

Figure 4 represents a section on line 4—4 of Figure 3, enlarged.

Figure 5 is a perspective view of another form of the box, with the cover separate therefrom, this being, for some purposes, the preferred form of the invention.

Similar reference characters indicate similar parts or features in all of the views.

It is to be understood, of course, that the drawings illustrate the material as much thicker than the paper used in practice, this being done in the interest of clearness.

Referring first to Figure 1, the blank is cut and creased to provide a section 12 which is to form the bottom of the box, said section having side flaps 13 the side edges of which diverge. Wall sections 14, 16, extend from opposite sides of the section 12, the section 14 having side flaps 15 and the section 16 having side flaps 17. Extending from the flaps 17 are small flaps 18 which may be larger or smaller than illustrated and which will be hereinafter referred to as tabs.

Integral with the wall section 14 is a rectangular cover section 19 having edge flanges 20, a lip 21 extending from the flange which is opposite the crease line of the cover section.

Preferably the blank is waxed while flat, and later, prior to applying adhesive to enable the blank to be set up to permanent container or box form, the wax is sufficiently removed from those areas which are to be glued together to enable the glue to be effective. Such removal may be effected in either of the known ways, or otherwise.

When the blank is converted to box form it is so folded that the flaps 13 extend up between the lower portions of the wall-section flaps 15, 17, as illustrated by Figure 2. In order that said flaps 13 may completely fill the lateral space between the lower portions of the flaps 15, 17, the blank is so cut (see Fig. 1) that the flaps 13 have diverging side edges. This, of course, results in the adjacent edges of the flaps 15, 17, being notched. Such notches, however, do not affect the durability of the box or the strength of its bottom. The box, when set up, is of tapering form, the side edges of the flaps 13 registering with the side edges of the flaps 15, 17, (see Fig. 2). In other words the walls 14, 16, and the overlapping flaps 15, 17, which form the other two walls of the box, taper downwardly. The upwardly extending flaps 13 of the bottom 12, which are secured to the flaps 15, 17, also taper downwardly, being of substantially the same shape and area as the lower portions of the overlapping flaps 15, 17. This enables closer joints to be formed when the box is completed, than is possible with tapering boxes in which upwardly extending flaps taper upwardly instead of downwardly.

When the box is completely folded or set up, the tabs 18 are bent around the two rear corners of the box and glued to the outer surface of the back wall 14 (Figs. 2 and 3). These tabs aid greatly in strengthening the box and holding it in shape with all joints leak-tight.

The lip 21 of the cover serves two purposes. The first is to aid in the folding of the blank to box form. As is well known, there are machines which automatically fold paper blanks while the blanks are traveling in the direction of their length. Since the blank is, in the present form, wider at one end than at the other end, and has very irregular side edges, it could not be reliably fed straight through the folding machine of the present known type. The lip 21, however, being at

the mid-width of one end of the blank, provides something to be engaged by a suitably located guide of the folding machine to ensure straight travel of the blank as it is folded. As such folding machine could form no part of the present invention, for patent purposes, further description thereof will not be necessary.

The other purpose of the lip 21 is to facilitate the unlocking and opening of the cover, as will be presently described.

As illustrated by Figure 1, the flaps 15 are of less longitudinal area than the flaps 17 so that when the blank is folded to box form (Fig. 2) the upper edges of the flaps 15 present shoulders or ledges. Then when the box has been filled and the cover is closed, the flanges 20 first engage the tops of the sections or members 16, 17, and are bent upward thereby, the margin of the section 19 coming to rest on the shoulders or ledges presented by the tops of the flaps 15. To secure this result, the section 14 which carries the cover section 19, has the same longitudinal area as the flaps 15. The area of the cover section 19 is such that when the box is completely closed, the flanges 20 bear flat and close against the inner surfaces of the upper edges of the wall sections 16, 17 (Fig. 3), and since the entire surfaces of the material are waxed, there is no possibility of leakage occuring so long as this close contact is retained. A convenient way to lock the cover in this tightly closed condition is to punch small portions of the flanges through the upper edge portions of the walls 16, 17, as indicated at 22 in Figures 3 and 4. Tools for interengaging small portions of paper material are well known and are suitable for the purpose just described.

It will be readily understood that the cover, with its flanges engaged and locked as described, materially strengthens the top of the box.

When the cover is to be raised, to remove the contents of the box, the user simply grasps the lip 21 and pulls it inwardly toward the center of the box, thereby first separating the lock 22 below it, and by continuing the pulling action the other locks are successively separated and the cover swung up.

For some purposes it is preferable that the cover, instead of being integral with the material which constitutes the rest of the box, shall be separate as indicated by the two members illustrated by Figure 5. In this structure, the wall section 14 is preferably of the same height as the sections 16, 17, and the cover 19^a is separate and has four flanges 20^a. When this form of box is to be closed, the cover is simply pushed down to the tops of the inner members 15, and then the flanges will be locked to the tops of the members 14, 16, 17, in the manner described in connection with Figures 3 and 4.

When the box is made according to the form illustrated by Figure 5, it may be desirable to provide the section 14 with a lip extending from the mid-width of its edge, similar to the lip 21 shown in Figure 1. And, of course, one of the flanges 20^a of the cover 19^a may have a similar lip to facilitate the unlocking and removal of the cover.

I do not limit myself to forming the tabs 18 as extensions of the flaps 17. They may, instead, when the box is of the form shown by Figure 5, extend from the opposite upper corners of the section 14 and be secured to the outer faces of the flaps 17. In this case, they would be smaller than illustrated, so as to be about equal to the difference in height between the members 15 and 17.

Having now described my invention, I claim:

1. A paper box having two of its walls consisting of overlapping flaps which taper downwardly, the bottom section of the box having upwardly extending flaps the side edges of which diverge and register with the side edges of the lower portions of said overlapping flaps and said flaps being secured thereto.

2. A paper box having a cover provided with upwardly extending flanges in contact with the inner faces of the upper portions of the walls of the box and having their edges exposed at the top of said walls, portions of the said flanges being interengaged with portions of the walls to lock them thereto.

3. A paper box having supporting ledges inside its upper portion, and a cover proportioned to fit closely within the top of the box and engage said ledges, said cover having upwardly extending flanges with portions thereof extending into apertures in the upper edge portions of the walls of the box to hold said cover seated on said ledges.

4. A paper box having a cover section integral with its rear wall section integral with its rear wall section, the side wall sections of the box having integral tabs extending around the corners of the box near the top thereof and adhesively secured to the outer surface of said rear wall section.

In testimony whereof I have affixed my signature.

ELIE W. LABOMBARDE.