Oct. 15, 1935. E. L. WALKER ET AL 2,017,331

ART OF MANUFACTURING CONTAINERS

Filed Sept. 8, 1933 2 Sheets-Sheet 1

Fig. 1.

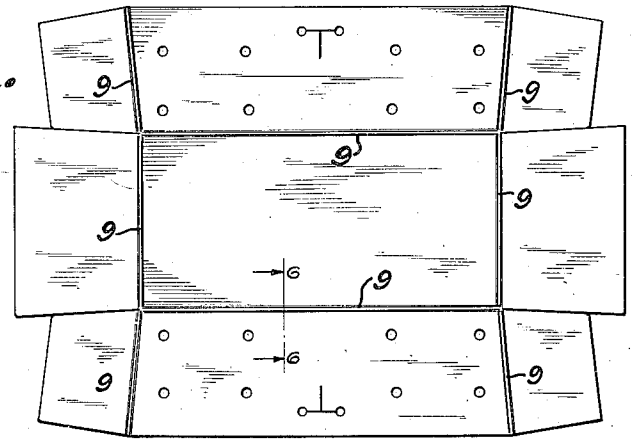


Fig. 2.

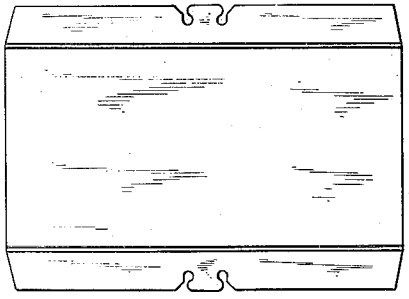


Fig. 3.

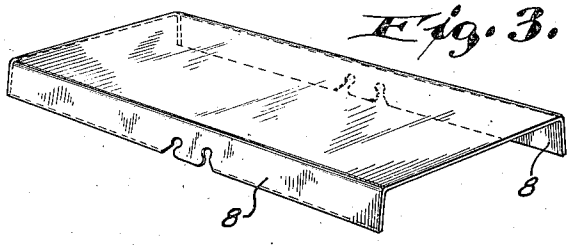


Fig. 4.

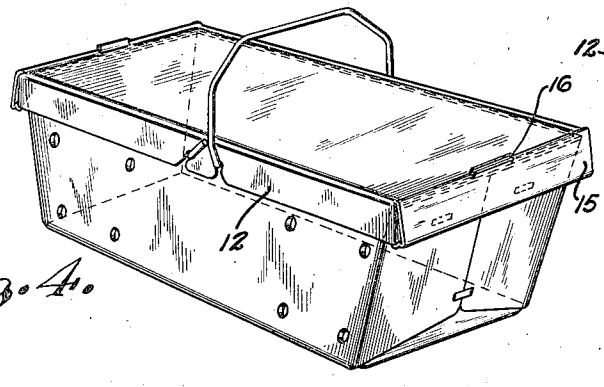


Fig. 5.

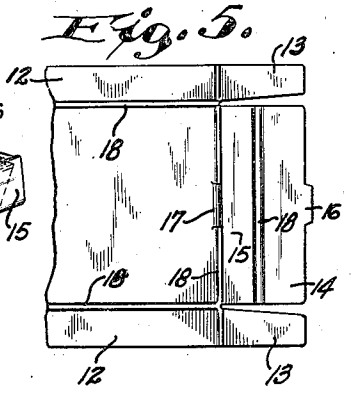


Fig. 6.

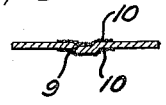
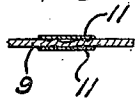


Fig. 7.



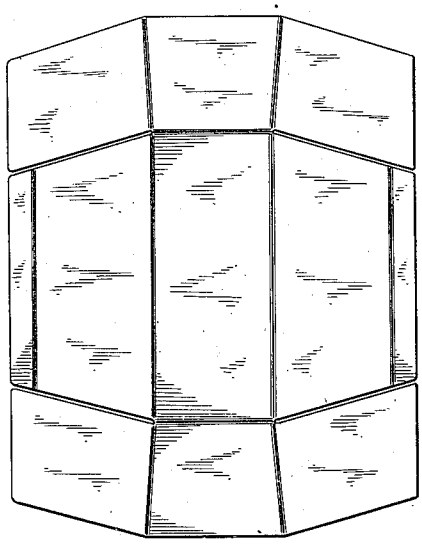
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Filed Sept. 8, 1933 2 Sheets-Sheet 2

Fig. 8.



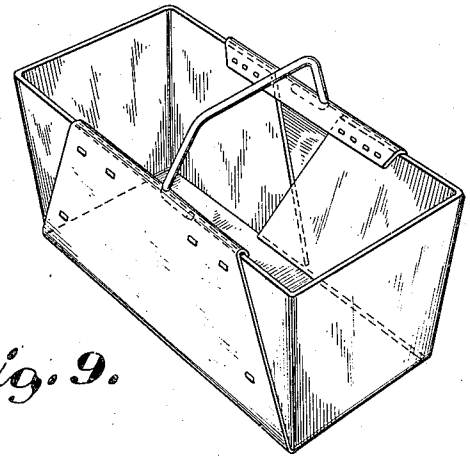


Fig. 9.

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ART OF MANUFACTURING CONTAINERS

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Application September 8, 1933, Serial No. 688,611

7 Claims. (Cl. 93—36)

This invention relates to improvements in the art of manufacturing containers.

The idea of impregnating a particular type of fibre board container with sulphur or the like to lend rigidity thereto and the quality of resistance to moisture forms subject matter of a co-pending application. The present invention relates more particularly to certain features connected with the method of impregnation to produce certain desired results.

Fibre board containers are commonly constructed from flat material which has been cut to desired shape and scored along desired lines to permit folding of portions of the blank relative to other portions thereof such as is necessary in assembling the finished article. While for certain types of containers, it is advisable to first form the finished article and then immerse the same in impregnating fluid, this is not always advisable as the sulphur, after it has solidified, tends to hold the article in formed shape and it may not therefore be collapsed without breaking the sulphur and perhaps also the fibre board along the lines of scoring. Where the article is a fibre fruit basket as illustrated, for the purpose of holding grapes or other like commodities, it is not always essential that the finished article be collapsible as the sloping sides of the basket permit nesting of the empty baskets during shipment. With other types of containers, however, and also with the type of basket illustrated, it may be desirable to ship the same in collapsed condition.

It is one of the objects of the present invention to provide a method of impregnating blanks for containers which permits the folding of the article to form after immersion of the blank in the impregnating fluid.

A further object is to provide a method of impregnating blanks for constructing containers or the like which permits the ready folding of the blank on lines of scoring, after the impregnating medium has solidified, thereby permitting shipment of impregnated containers in knock-down form and subsequent assembly thereof.

A more specific object of the invention is to provide a method wherein the before mentioned object may be accomplished by protecting portions of the blank while the blank is being immersed in the impregnating liquid to thereby prevent impregnation of said portions and to leave the same in a relatively flexible condition.

With the above and other objects in view, the invention consists of the improved art of manufacturing containers, and all its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings, in which the same reference numerals designate the same parts in all the views;

Fig. 1 is a plan view of a blank for forming a container;

Fig. 2 is a front view of the blank for a cover for the container of Fig. 1;

Fig. 3 is a perspective view of the cover of Fig. 2 after it has been formed;

Fig. 4 is a perspective view of the container formed from the blank of Fig. 1 in assembled condition showing a modified form of cover in place thereon;

Fig. 5 is a fragmentary detail view of one of the ends of the cover shown on Fig. 4;

Fig. 6 is a sectional detail view showing one method of protecting portions of a blank during impregnation;

Fig. 7 is a similar view showing another method of protection;

Fig. 8 is a plan view of a blank for forming a modified form of container; and

Fig. 9 is a perspective view of said container.

It has been found that sulphur when applied to fibre board, will, while in melted condition, permeate the material and form a coating around and between the fibres thereof. When the sulphur solidifies, it tends to add great strength to the material and lend rigidity thereto, thereby serving to hold the article in any form in which it has been prepared prior to immersion. In addition to the above, impregnation serves to waterproof the container. It is preferable to employ ordinary crude sulphur, which has been melted by the application of heat, in the impregnation process. The sulphur may, however, be suspended in a suitable liquid vehicle or may be combined with other ingredients.

For certain types of use, a container of fibre board or like material may be first formed to shape as shown in Figs. 4 and 9 and the container and cover may be separately immersed in the bath of hot-melted sulphur. After they have been subjected to the action of the bath for a sufficient length of time to enable the sulphur to permeate the fibre board, the articles are removed from the bath and the sulphur is permitted to cool and solidify. It will then serve to hold the container rigidly in assembled form and the flanges 8 of a cover of the type shown in Fig. 3 rigidly in bent position.

In view of the fact that it is easier to dip material when in a flat form as shown in Figs. 1,

2, and 8, the forming may be done after impregnation, while the liquid is still hot and before the sulphur has solidified. It is then desirable to utilize means for holding the container and cover in formed shape until it is entirely dry.

As another method of procedure, flat material may be impregnated and permitted to cool. The material may then be assembled into the form of a container at a subsequent time by reheating, to thereby temporarily place the sulphur in a liquid state, in which condition the fibreboard can be bent to desired shape. The scoring of the material may be done before or after impregnation.

Where it is desired that the container be shipped in knock-down form, which is particularly necessary when the container is not of such shape that a plurality can be nested, the present method contemplates the use of protecting means on portions of the container to prevent impregnation of said portions. Accordingly, referring to the blank of Fig. 1, narrow areas along the lines of scoring 9 may be treated with material 10 as shown in Fig. 6 which will prevent the sulphur from penetrating. For this purpose, waxes or oils or other suitable material may be utilized. As an alternative, narrow strips 11 as shown in Fig. 7, of metal or other suitable material may be clamped or otherwise suitably secured in position over the lines 9 while the blank is being impregnated to prevent the sulphur from acting upon the covered areas. With this method of procedure, after the impregnated blank has dried, the sulphur will of course have permeated only the unprotected portions, thereby leaving narrow flexible areas along lines of scoring 9 to permit folding of the blank from the form shown in Figs. 1 and 8 to the assembled form of Figs. 4 and 9. With this method of procedure, any type of collapsible container may have major portions thereof stiffened by sulphur impregnation without interfering with the collapsibility thereof. This method is particularly useful where the cover is of the self locking type shown in Figs. 4 and 5. Here the cover is provided with side flanges 12, end tabs 13 in foldable connection with the side flanges and end flanges each formed of two sections, 14 and 15. In assembly the tabs 13 are bent inwardly and the end sections 15 are folded inwardly and downward adjacent the sections 14, there being tongues 16 which are snapped into slits 17 to hold the cover flanges in the assembled position shown in Fig. 4. Inasmuch as it is desirable to ship this type of cover in collapsed form, the lines of scoring 18 may be protected during impregnation as above described.

After impregnation of the material, it is a part of the present method to shower the article with cold water or other suitable liquid to cause rapid solidification of the sulphur. This showering is also very important in view of the fact that it serves to lighten the color of the material so that it will not be unduly darkened by the sulphur. If there is any printing on the container, the showering with water also serves to brighten the quality of the latter and thereby counteract the unfavorable action of the sulphur thereon. The color may also be lightened by treatment of the article with steam, vapor, gas, moist atmosphere, or other moist fluid.

The impregnating methods above described may be employed not only in connection with containers proper and covers therefor, but also in connection with partitions and fillers to render the latter more rigid and to render the same impervious to moisture. Various changes and other adaptations may be made and all of such changes are contemplated as may come within the scope of the claims.

What we claim is:

1. The method of forming impregnated containers comprising applying to a fibre board blank, melted impregnating material which, when cool, will lend rigidity to the fibre board, and folding the blank into container form while the impregnating material is in a liquid state.

2. The method of forming impregnated containers comprising dipping a blank of fibre board or the like into a bath of melted impregnating material which, when cool, will lend rigidity to the fibre board, removing the blank from the bath, and folding the blank into container form while the impregnating material is in a liquid state.

3. The method of forming impregnated containers comprising dipping a blank of fibre board or the like into a bath of melted impregnating material which, when cool, will lend rigidity to the fibre board, removing the blank from the bath, folding the blank into container form while the impregnating material is in a liquid state, and holding the container in formed shape while the impregnating material cools and solidifies.

4. The method of forming impregnated containers comprising dipping a blank of fibre board or the like into a bath of melted impregnating material which, when cool, will lend rigidity to the fibre board, removing the blank from the bath, permitting the blank to cool, re-heating the blank to again place the impregnating material into a liquid state, and folding the blank into container form while the impregnating material is in said liquid state.

5. The method of forming impregnated containers comprising applying to a fibre board blank, melted impregnating material which, when cool, will lend rigidity to the fibre board, and forming the blank into container form while the impregnating material is in a liquid state.

6. The method of forming impregnated containers comprising dipping a blank of fibre board or the like into a bath of melted impregnating material which, when cool, will lend rigidity to the fibre board, removing the blank from the bath, forming the blank into container form while the impregnating material is in a liquid state, and holding the container in formed shape while the impregnating material cools and solidifies.

7. The method of forming impregnated containers comprising dipping a blank of fibre board or the like into a bath of melted impregnating material which, when cool, will lend rigidity to the fibre board, removing the blank from the bath, permitting the blank to cool, re-heating the blank to again place the impregnating material into a liquid state, and forming the blank into container form while the impregnating material is in said liquid state.

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