April 29, 1930. W. E. BENSON 1,756,243

METHOD OF MAKING MULTIPLE WALL CONTAINERS

Filed Sept. 15, 1927 2 Sheets-Sheet 1

Fig. 1

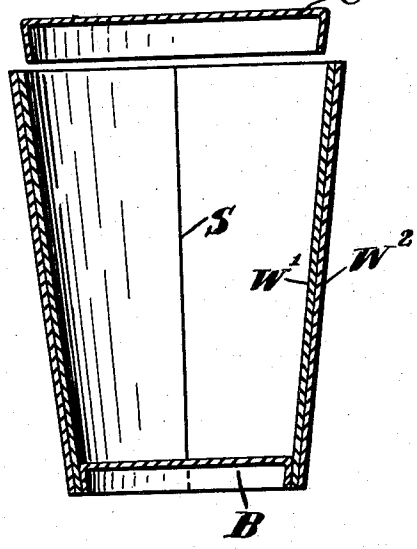


Fig. 2

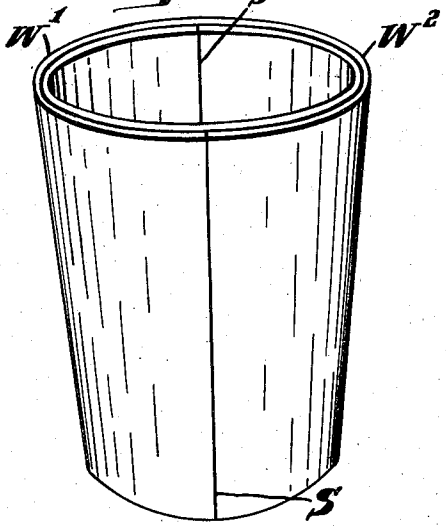


Fig. 3

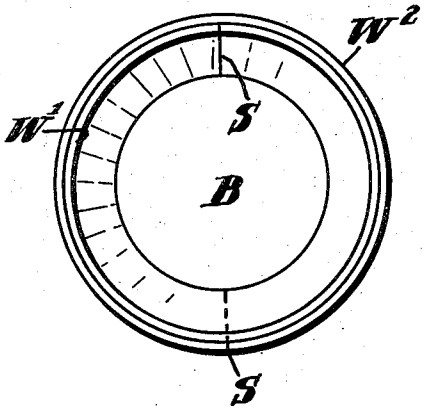
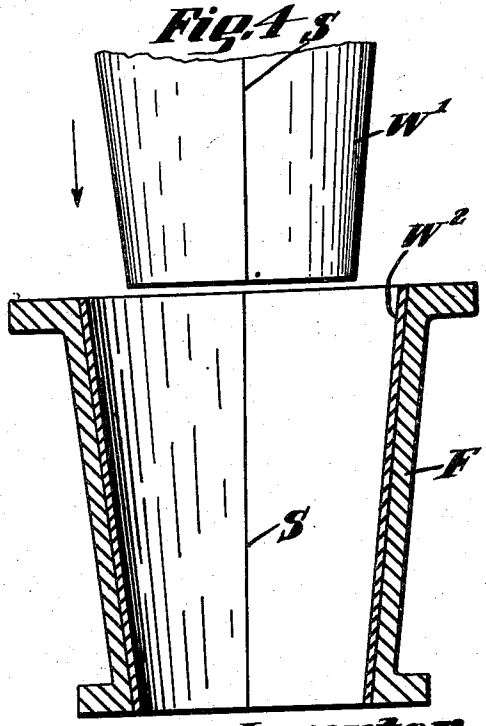


Fig. 4



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April 29, 1930. W. E. BENSON 1,756,243

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Filed Sept. 15, 1927 2 Sheets-Sheet 2

Fig. 5

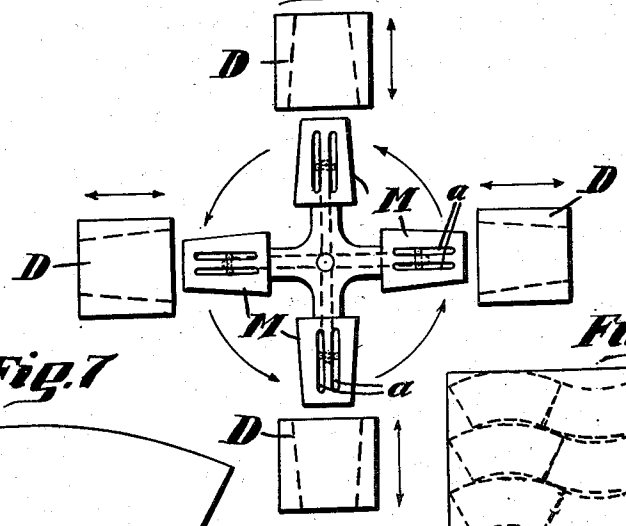


Fig. 7

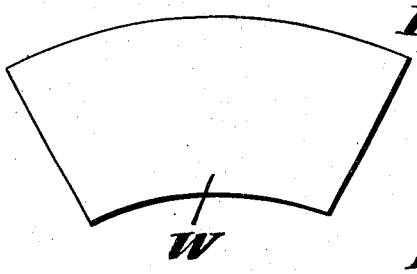


Fig. 8

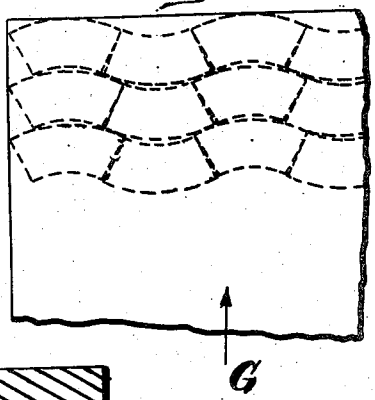
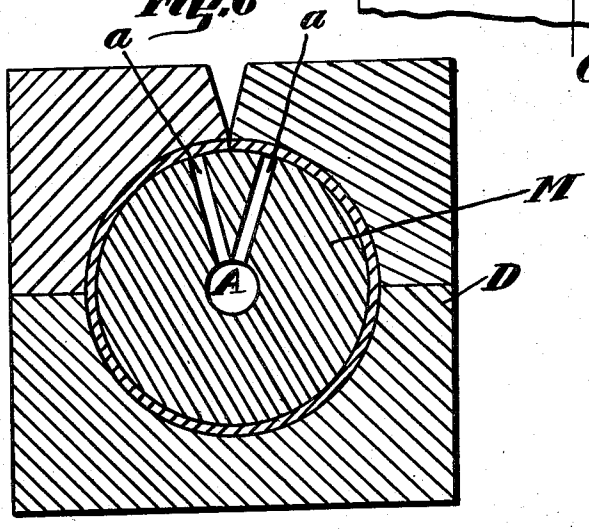


Fig. 6



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Patented Apr. 29, 1930

1,756,243

UNITED STATES PATENT OFFICE

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METHOD OF MAKING MULTIPLE WALL CONTAINERS

Application filed September 15, 1927. Serial No. 219,627.

My present invention has to do with multiple wall containers with special reference to their production on a commercial basis. The so-called paper container has proven in a variety of usages to be so efficient and economical a factor in packaging that users are constantly making new demands upon it and put it to new uses in which additional or special requirements are incident. My invention contemplates a container having various novel characteristics both as to structure and as to method of production. It will be understood that in containers of this sort where price is a considerable factor, any development in increased strength or convenience in use or in economy of production is of the greatest importance. My multiple wall container is capable of being made in the tapered type in which cups are made and therefore has the very great advantage of being capable of shipment in nested assembly in which a very great saving in bulk is made with a corresponding reduction of cost in packing and handling. The structure furthermore makes possible the attainment of great strength with the use of light stock. This is not only a factor of economy in material but effects an economy in handling and a variety of other advantages which will be pointed out further on.

As illustrative of my invention I have shown in the accompanying drawings a characteristic methodical basis of production as illustrative of the practice of my invention and also a typical form of product. Throughout the specification and drawings like reference characters are employed to indicate corresponding parts, and in the drawings:

Fig. 1 is a vertical section through a container and cover in accordance with my invention.

Fig. 2 is an elevation of the same.

Fig. 3 is a plan view.

Fig. 4 is an indicated method of assembly by female die.

Fig. 5 a diagrammatic indication of assemblying my male die.

Fig. 6 a section through a set of die members.

Fig. 7 a side wall blank, and

Fig. 8 an indicated method of producing such blanks.

The typical form of container shown in the drawings consists of a pair of side wall members W^1 and W^2, assembled with their side edges abutted and internally glued each to the other. Such a side wall assembly may be fitted with a bottom B which is shown of simple flange type inserted into the bottom B of the tapered wall and cemented therein. I have also shown at C a cover which is of the inserted type. Such a cover becomes a very important factor in accordance with my tapered side walls, because it makes a very tight snug fit so that after the goods are packaged the unit has no projections at the top which might catch and tend to disengage the cover. It will be noted that the side wall members have their lateral seams S, S staggered with relation to each other. I have shown only two blanks in the side wall assembly but it will be understood that more than two may be used as desired.

The side wall blanks when laid out flat comprise a paper segment as indicated in Fig. 7. This I have indicated generally as a blank by the reference character W. These blanks have usually been cut from a narrow strip or sheet in making drinking cups, but in my multiple wall container I attain certain advantages and great economy by cutting the well blanks W in transverse series from a broader web of paper. Such a series I have illustrated in Fig. 8 in which it will be seen that the blanks are reversed in the series so that each transverse series forms a generally sinuous strip in which the arcuate form of each member W is reversed from those next adjacent. It will also be noted that at indicated by the arrow G in Fig. 8, the grain of the paper runs longitudinally of the strip. This natural grain of the paper plays an important part in the production of my multiple wall containers for the following reason. In assembling these containers the paste applied to one member has a wetting tendency which can be utilized to effect what is a very slight initial expansion of the blank so that upon drying it has a slight shrinking tend-

ency but one definite enough to produce important results. For this the paste should be applied to the outer blank or blanks. The shrink of paper is transversely of the grain and with wall blanks cut as indicated, there is a shrinking tendency circumferentially of the container which tends to bring the wall members into a very close relation.

In assembling such wall members I utilize a series of female dies F into which the external blanks W^2 may be deposited either mechanically or by hand. These blanks W^2 may be pasted and curled and slid within the tapered female die to which they conform to natural uncurling tendency. The inner blank W^1 may then be inserted in a similar manner as indicated in Fig. 4. This manner of female die assembly is of such a nature that even hand production may be worked very economically. For machine production I prefer a slightly different method in which the wall members are picked up on forms M of which there may be a plurality, as indicated in Fig. 5. Such a form has preferably an internal air passage A with leading passages *a* emerging on the surface adjacent the line at which the edge of the blanks is to come. With a suitable suction through the channel A the edges of the walls may be held down tightly on the forms M and to these the external wall W^2 may be applied by the rotating form M or by advancing a hollow cooperating die D between which and the member M the walls may be given suitable pressure. The second blank may be applied by a similar apparatus to that shown in Fig. 5, working in cyclic relation therewith or for the purposes of the present application might be considered as applied by the same apparatus. This is possible due to the fact that the article produced is a tapered wall container. As a modification the outer wall may be deposited in the die D after the manner described in connection with Fig. 4.

The composite walls thus produced even where very thin paper is used, are very strong and a great variety of desirable features may be introduced. For example, the inner wall member W^1 may be of waterproof stock and the external wall of a different material. Furthermore, the external wall may be of colored stock to give any desired effect or the external wall may be a printed stock or it may be embossed or otherwise decorated or marked. These factors are of great advantage in merchandising and highly appreciated by the trade.

As herein indicated, considerable variety of procedure may be had in accordance with my invention and, of course, the exact form and construction of the containers may be varied, all as within the spirit of my invention if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:—

1. The method of forming a side wall of a multiple wall container consisting in inserting an outer side wall into a form, and in inserting a second side wall within said first laid wall with an interposed layer of adhesive, said second wall having its vertical edges in abutment and disposed out of alignment with those of the first laid wall.

2. In the method of forming a tapered multiple wall container, consisting in nesting a plurality of side wall blanks, the inner blank having its vertical edges in abutment and the edges of each blank being circumferentially displaced with reference to those of the blank next adjacent, in forming a bottom and in permanently assembling said bottom within said inner multiple wall.

3. The method of forming a container wall consisting in depositing within a hollow die a fitted wall blank, in depositing a second similarly fitted wall blank cementitiously coated on both its sides within the first blank and in depositing a third blank within the last mentioned blank.

In testimony whereof I affix my signature.

WILLIAM E. BENSON.