Feb. 1, 1938. R. I. RHODES 2,107,085

METHOD OF MAKING CARDBOARD ARTICLES

Filed Jan. 28, 1936

Fig. 1

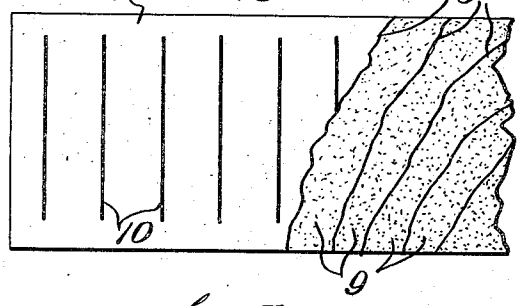


Fig. 2

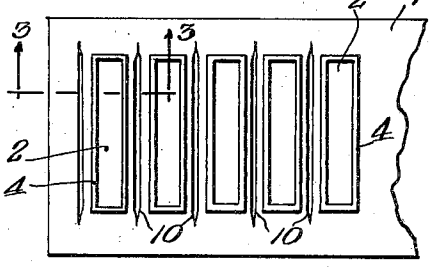


Fig. 3

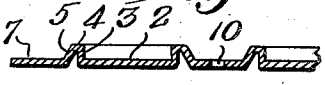


Fig. 4

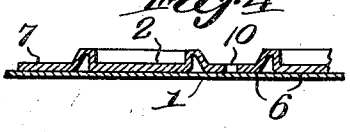


Fig. 5

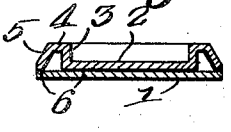


Fig. 6

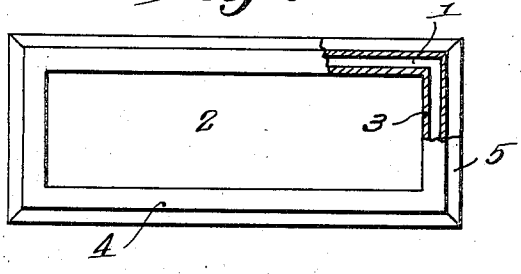


Fig. 7

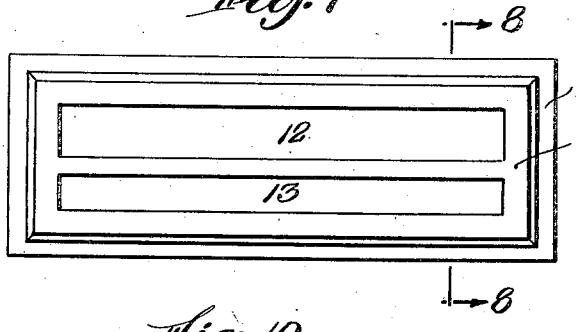


Fig. 8

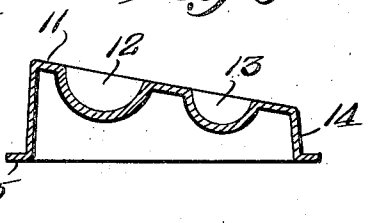


Fig. 10

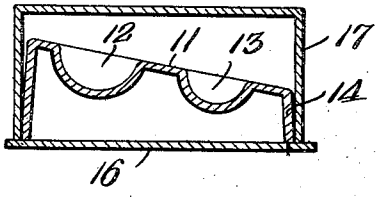
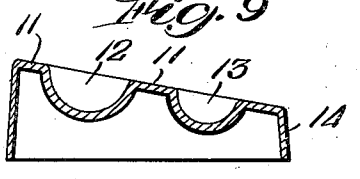


Fig. 9



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UNITED STATES PATENT OFFICE

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METHOD OF MAKING CARDBOARD ARTICLES

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Application January 28, 1936, Serial No. 61,169

6 Claims. (Cl. 93—39)

This invention relates to the art of making trays, frames, etc. from cardboard and similar sheet material, having for its objects to facilitate the shaping of such die-pressed articles to permit the formation of abrupt bends or folds without cracking or rupturing the material, to make the finished articles conform more accurately to the contour of the shaping dies, to reduce the cost of manufacturing of jewelry boxes and the like, and generally to improve the art to which the invention relates.

In one aspect the present invention comprises a method of making a display tray or the like formed of a piece of cardboard having a section permanently depressed below the level of the surrounding portion to provide a recess for the article to be displayed, the surrounding portion being turned downwardly throughout its outer periphery and being continuous at the corners, in combination with a cardboard bottom cemented to the lower edges of the downturned periphery and preferably also cemented to the bottom of the depressed central section. The margin of the cardboard bottom preferably projects outwardly beyond the upper portion of the tray to provide a seat for a cover fitting over the tray. To facilitate manufacture and to increase the rigidity of the resulting product, the cardboard is preferably formed of a plurality of superposed sheets of flexible material, such as tough kraft paper, cemented together face to face with any suitable cement such as animal glue. In the process of manufacture the superposed sheets are preferably die-pressed to shape before the adhesive between the sheets has dried, thereby facilitating the shaping operation and preventing the cardboard from cracking or rupturing at sharp corners, folds and bends. After the cardboard has been pressed to shape the cement may be fully dried but the finished product can be made to conform more accurately to the shape of the forming dies by again die-pressing the blanks after they have partially dried but before the cement has completely set.

In another aspect of the invention the articles are made in gang form by similarly shaping recurrent sections of a continuous sheet of cardboard, the cardboard preferably being slit throughout the portion to be shaped intermediate the aforesaid sections to facilitate the shaping operation, the slits widening in the shaping operation to permit the material to be pressed into ridges or into irregular formations. After the blanks have thus been made in gang form a continuous piece of cardboard may be cemented to the back of the shaped material, after which the individual blanks may be cut apart and trimmed with sections of the backing material adhering thereto and trimmed in the same operation.

For the purpose of illustration typical embodiments of the invention are shown in the accompanying drawing in which

Fig. 1 is a plan view with parts broken away showing the preferred cardboard;

Fig. 2 is a similar view showing the cardboard after it has been die-pressed to shape;

Fig. 3 is a section on line 3—3 of Fig. 2;

Fig. 4 is a similar section after the backing has been applied;

Fig. 5 is a similar section after the blanks have been cut apart and trimmed;

Fig. 6 is a plan view of the resulting product, a part being broken away;

Fig. 7 is a plan view of another embodiment of the invention;

Fig. 8 is a section on line 8—8 of Fig. 7;

Fig. 9 is a similar section after the blank has been trimmed; and

Fig. 10 is a similar section after the backing has been applied to the blank and a cover has been applied.

The particular embodiment illustrated in Figs. 1 to 6 inclusive comprises a backing 1 of cardboard or the like cemented to the bottom of a tray comprising a bottom 2, upright inner walls 3, a rim 4 and sloping outer walls 5, the backing 1 being cemented both to the bottom 2 and also to the edges of the outer walls 5 as indicated at 6 in Figs. 4 and 5.

As shown in Figs. 1 and 2 the trays are preferably formed from cardboard 7 made up of a plurality of layers 8 of paper. As indicated at 9 in Fig. 1 the layers 8 are interconnected by coatings of cement 9. After the layers are cemented together and before they are die-pressed to shape the cardboard is provided with a plurality of slits 10 between the portions which are to be die-pressed. Then the portions between the slits 10 are die-pressed to the shape shown in Figs. 2 and 3 with ordinary heated dies having contours corresponding to that of the resulting blank. In this die-pressing operation the slits 10 are widened as the adjacent material is pressed up to form the ridges constituting the portions 3, 4 and 5 of the resulting tray. After a series of these trays are shaped in gang form as illustrated in Fig. 2 the backing material 1 is cemented to the back of the die-pressed card-

board. Thereafter the blanks are cut apart and trimmed as shown in Figs. 5 and 6.

In the process of making these trays the following procedure is recommended. While the cement 9 between the sheets is still wet the cardboard is slit and die-pressed. Thereafter it is partially dried, preferably to the extent of approximately 70% of the moisture content, and the cardboard is then again die-pressed, after which the cement is completely dried. By first die-pressing the cardboard while the cement is still quite wet, the cardboard may be much more readily shaped without danger of cracking or rupturing the paper at the edges and corners of the ridges; and by again pressing the blanks to shape after the cement has largely but not entirely dried the resulting shape corresponds more accurately with the shape of the dies.

While these articles may be used as picture or mirror frames and for various other purposes they are particularly suited for use as jewelry trays, for which use the interior of the tray, or at least the upper surface of the bottom 2, is preferably covered with fabric or a pad according to customary usage in this art. The other exposed portions of the articles may be sprayed with lacquer or otherwise suitably decorated.

The embodiment of the invention illustrated in Figs. 7 to 10 inclusive comprises a blank having a sloping top 11 containing two elongate recesses 12 and 13 and depending side walls 14. The blanks are preferably formed from cardboard such as shown in Fig. 1 and after the cardboard has been die-pressed to shape the flanges 15 are trimmed off as illustrated in Fig. 9. The backing 16 is then cemented to the lower edges of the walls 14. The backing 16 projects outwardly beyond the walls 14 to provide a seat for a cover 17.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. The method of making articles from sheet material which comprises superposing a plurality of sheets with adhesive therebetween to form composite sheet material, die-pressing the composite sheet material at recurrent locations to form a series of blanks each having a down-turned peripheral wall, and then separating the blanks and trimming off the material outside said wall.

2. The method of making articles from sheet material which comprises superposing a plurality of sheets with adhesive therebetween to form composite sheet material, die-pressing the composite sheet material while the adhesive is plastic to shape the composite sheet material, causing the adhesive to partially set, again die-pressing the sheet in the desired shape, and then causing the adhesive to set further.

3. The method of making articles from sheet material which comprises superposing a plurality of sheets with adhesive therebetween to form composite sheet material, die-pressing the composite sheet material at recurrent locations to form a series of blanks, joining a continuous backing to said series, and then simultaneously cutting said material and backing to form individual blanks with a part of said backing joined thereto.

4. The method of making cardboard articles which comprises slitting the central zone of a piece of cardboard at recurrent locations, die-pressing the intermediate portions to form blanks including raised portions produced by widening said slits, and subsequently trimming off the cardboard around each blank.

5. The method of making articles from sheet material which comprises superposing sheets of flexible material with adhesive therebetween to form composite sheet material, slitting the central zone of said composite material at recurrent locations, die-pressing the intermediate portions to form blanks including raised portions produced by widening said slits, and subsequently trimming off the composite material around each blank.

6. The method of making cardboard articles which comprises die-pressing a piece of cardboard to form a recess and a surrounding down-turned wall integrally joined to surrounding cardboard, trimming off said surrounding cardboard, and fastening a bottom against the lower edge of said wall.

RUSSELL I. RHODES.