March 8, 1960 H. S. CRANE 2,927,635

DIE FOR PULP MOLDING

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Fig. 1.

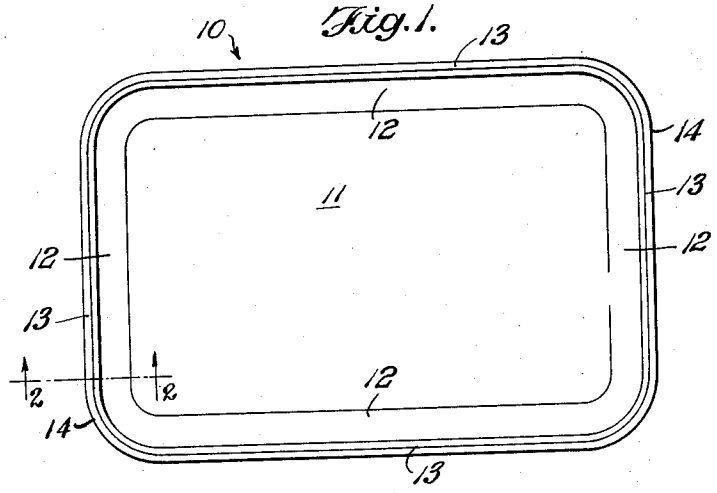
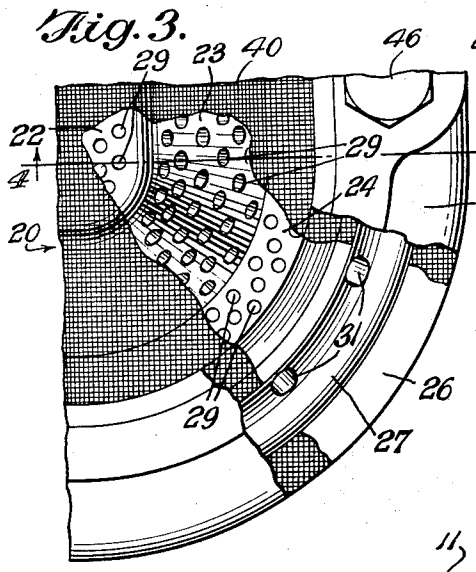


Fig. 3.



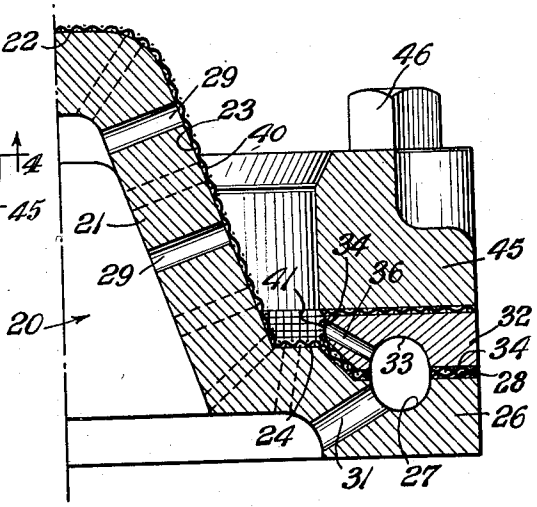
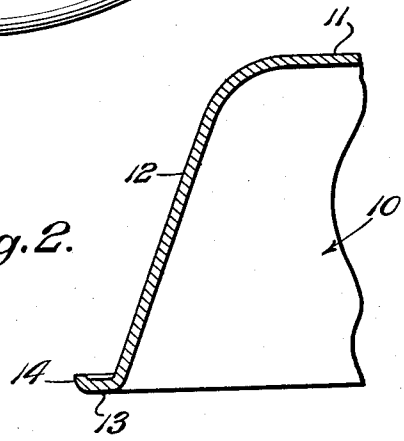


Fig. 4.

Fig. 2.



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DIE FOR PULP MOLDING

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9 Claims. (Cl. 162—411)

The present invention relates to a molding die and more particularly to a molding die for making an article of molded pulp having a flange and a rolled, screened edge.

Where containers and cartons are destined to be used only a few times, and therefore are to be produced and sold as economically as possible, the fabrication of such containers and cartons from molded pulp is indicated, since the molded pulp fabrication processes and techniques are known to be among the most economical ways of fabricating containers and cartons. Such containers and cartons have been known for many years, and though these containers and cartons first appeared as relatively rough articles, through the years efforts have been made to improve the appearance of the molded pulp articles so that they will be readily acceptable to the trade even though they must still be made as economically as possible.

On one known molded pulp container, used extensively in the packaging of such fresh foods as meat products and fruit, the food is placed in the container and the food and the container then enclosed in a wrapping of transparent material, such as cellophane. These containers are now extensively manufactured with a flat bottom, tapered upstanding sides, and a peripherally extending flange. The interior of the container and the upper side of the peripherally extending flange are made against the molding screen, and thus have a fairly smooth and pleasing appearance. The addition of a rolled and screened lip will further enhance the attractive appearance of the container, and will not materially increase the cost thereof.

With the desideratum of producing such a container, however, there is unknown in the art a suitable mold for obtaining this container. In one known prior art die, resort was had to a mechanical rolling of an edge of a molded pulp article in order to obtain a rolled edge. Obviously, such a rolling is highly expensive as it necessitates the further handling and processing of the molded pulp article. In another known die for molded articles, a rolled edge on an upstanding wall was obtained, but only the hidden underside of the rolled edge was in contact with the screen, so that the visible part of the article had a rough appearance. In still another known prior art construction, the mold was so constructed that the resulting edge of the flange was not rolled, but was simply defined by a marginal ring.

In the making of dies to be used for making molded pulp articles, the usual practice is to machine the mold part of the die from a heavy metal, such as brass, to drill through the mold from one surface to the other, and to then place screening over the molding face of the mold. The placing of the screen on the mold is a difficult, time-consuming and tedious task even where the mold is of simple configuration. Thus, it is not unusual to cut the screen where necessary so that when it is placed on a curved surface the cut edges will come together into a joined or mating juncture. In addition, the more complicated the shape to be molded, the more difficult it is to produce the necessary shape of screen from the flat or

planular sheets of screens which are the starting material.

In the prior art die construction, it has been generally necessary to either use one continuous piece of screen or alternatively separate pieces of screen have had to be joined together so that they acted and functioned as one piece of screen.

An object of the present invention is to provide a die capable of molding a rolled, screened lip article.

A further object of the present invention is the provision of a die for making a molded pulp product having a rolled, screened lip, which die is relatively simple and inexpensive.

Yet another object of the present invention is to provide a die for making a molded pulp article having a rolled, screened lip wherein separate screens may be used to form the rolled, screened lip.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a plan view of a container made in accordance with the die of the present invention, said container being in inverted position;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a partial plan view of a die according to the present invention for making the container of Fig. 1; and

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 3.

Referring now to the drawing, there is shown in Fig. 1 a container **10** having a flat bottom **11**, flaring side walls **12**, an outwardly extending flange **13** and a rolled, screened lip **14** on the flange **13**. As may be clearly seen in Fig. 2, when the container **10** is in its normal position, the rolled lip **14** will be downwardly extending and present a finished and pleasing appearance to the viewer.

Referring now to Figs. 3 and 4, there is shown therein an illustrative part of a die **20** for molding the container **10** shown in Figs. 1 and 2. The die **20** comprises a mold **21** having a generally flat upper surface **22** and sloping sides **23** descending therefrom. At the base of the side **23** there is a flat annular surface **24**; it will be apparent that flat upper surface **22** will serve to mold the bottom **11** of the container, that sides **23** will mold the side walls **12** of the container and that annular lower surface **24** will mold the outwardly extending flange **13** of the container **10**.

Mold **21** has an annular flange **26** thereon outwardly of the annular lower surface **24**, and annular flange **26** has a groove **27** in the upper surface **28** thereof.

Holes **29** extend through the mold **21** throughout the upper surface **22**, sides **23** and lower surface **24** to communicate the molding and suction sides of the mold, in known manner. Holes **31** are also provided through the flange **26** to communicate the groove **27** and the suction side of the mold **21**.

Surmounting the flange **26** is a molding ring **32** having a groove **33** on the underside **34** thereof; molding ring **32** has an upstanding inner face **34** and holes **36** through the molding ring **32** and communicating the face **34** with the groove **33** thereof. It is the upstanding inner face **34** which suction molds the lip **14**.

A screen means **40** extends over the molding side of mold **21** and between the molding ring **32** and the flange **26**. A second screening means **41** extends between the molding ring **32** and flange **26**, across upstanding inner face **34** and along the top of molding ring **32**.

To secure the aforementioned parts of the die **20** together, there is provided a top deckle ring **45** through which there extends a plurality of bolts, bolt **46** being shown in Fig. 4 The bolts, such as bolt **46**, extend through top deckle ring **45** and molding ring **32** into or

beneath flange 26 where they are secured in known manner.

It will, of course, be understood that the die 20 as shown and described is placed in a molding box which is connected with a source of vacuum by appropriate conduits, or in known fashion to those skilled in the art.

In operation, the parts of the die 20 will be made and assembled as herein shown, and the die associated with a suction box as above noted, the die will then be placed in a pulp slurry, suction applied, and molded pulp will be sucked against the molding side so as to mold the container 10 with the bottom 11, sides 12, flange 13 and the rolled, screened lip 14. To accomplish this, suction will be applied to the molding sides of the die through the holes 29; suction will also be applied to the inner face 34 through the hole 36, the groove formed by the grooves 33 and 27, and the hole 31.

It will thus be seen that there has been provided a molding die of simple and inexpensive construction enabling the production of an article such as a container having a rolled, screened lip on a flange thereof, and employing a plurality of screen means.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A die for making a molded pulp container with a rolled and screened lip comprising a mold having a generally flat upper surface, sloping side surfaces descending from said upper surface and a flat outwardly extending lower surface, said surfaces defining a molding side of said die, said die having a suction side opposite said molding side, screen means over said surfaces, holes through said mold communicating the molding and suction sides thereof, whereby to form a flanged container, a flange on said mold outwardly of said lower surface, said flange having a groove in the upper surface thereof, holes communicating said groove with the suction side of said mold, a molding ring surmounting said flange and having a groove on the underside thereof overlying the groove of said flange, said molding ring having an upstanding inner face, screen means over said face, holes through said ring communicating said face and the groove of said molding ring, a top deckle ring overlying said molding ring, and means securing said deckle ring, molding ring, mold and screen means together, whereby to form a container with a rolled and screened lip.

2. A die for making a molded pulp article with a rolled and screened lip comprising a mold for forming a flanged article, said mold having suction and molding sides and holes therethrough communicating said sides, said mold having a peripherally extending surface for forming the flange of said article, a flange on said mold outwardly of said surface, said flange having a groove in the upper surface thereof, holes communicating said groove with the suction side of said mold, a molding ring surmounting said flange and having a groove on the underside thereof overlying the groove of said flange, said molding ring having an upstanding inner face, holes through said ring communicating said face and the groove of said molding ring, a top deckle ring overlying said molding ring, and means securing said deckle ring, molding ring and mold together, whereby to form an article with a rolled and screened lip.

3. A die according to claim 2, a first screen means over said inner face and second screen means over the remaining molding surfaces.

4. A die for making a molded pulp article with a rolled and screened lip comprising a mold for forming a flanged article, said mold having suction and molding sides and holes therethrough communicating said sides, said mold having a peripherally extending surface for forming the flange of said article, a flange on said mold outwardly of said surface, said flange having a groove in the upper surface thereof. holes communicating said groove with the suction side of said mold, a molding ring surmounting said flange and having a groove on the underside thereof overlying the groove of said flange, said molding ring having an upstanding inner face, holes through said ring communicating said face and the groove of said molding ring, and means securing said molding ring and mold together, whereby to form an article with a rolled and screened lip.

5. A die according to claim 4, a first screen means over said inner face and second screen means over the remaining molding surfaces.

6. A die for making a molded pulp article with a rolled and screened lip comprising a mold for forming a flanged article, said mold having suction and molding sides and holes therethrough communicating said sides, said mold having a peripherally extending surface for forming the flange of said article, a flange on said mold outwardly of said surface, a molding ring on said flange, said molding ring having a molding face adjacent and at an angle to said peripherally extending surface, and means extending through said molding ring to the molding face thereof for communicating said molding face and the suction side of said mold.

7. A die in accordance with claim 6, a first screen means over said molding face of said ring and second screen means over the remaining molding surfaces.

8. A die for making a molded pulp container with a rolled and screened lip comprising a mold having a generally flat upper surface, sloping side surfaces descending from said upper surface and a peripherally extending lower surface adjacent said side surfaces, said surfaces defining a molding side of said die, said die having a suction side opposite said molding side, holes through said mold communicating the molding and suction sides thereof, whereby to form a flanged container, a flange on said mold outwardly of said lower surface, a molding ring on said flange, said molding ring having a molding face adjacent and at an angle to said peripherally extending surface and means extending through said molding ring to the molding face thereof for communicating said molding face and the suction side of said mold.

9. A die according to claim 8, a first screen means over said molding face of said ring and second screen means over the remaining molding surfaces.

References Cited in the file of this patent

UNITED STATES PATENTS

1,701,238	Kennedy	Feb. 5, 1929
2,585,049	Shepard	Feb. 12, 1952
2,749,572	Nowak	June 12, 1956