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(54) **METHOD FOR FORMING THREE-DIMENSIONAL CONTAINERS OF EXTENSIBLE PAPER MATERIAL.**

VERFAHREN ZUM BILDEN VON DREIDIMENSIONALEN BEHÄLTERN AUS AUSZIEHBAREM PAPIERMATERIAL.

PROCÉDÉ DE FORMATION DE RÉCIPIENTS TRIDIMENSIONNELS EN MATÉRIAU PAPIER EXTENSIBLE

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## Description

[0001] The present invention relates to a method for forming three-dimensional containers of extensible paper material.

[0002] Methods for forming three-dimensional containers of paper material are known. see for example EP-A-1588853. One of these methods consists of wrapping about a tube a paper sheet with its surface corresponding to the lateral surface of the container, joining the superposed edges together and inserting a base to obtain for example an ice cream tub.

[0003] A drawback of this system is the fact that the container presents a flat surface which to be decorated must be subjected to a printing process.

[0004] Another method consists of applying a sheet of plastic material over the cavity of a mould the inner surface of which is provided with a three-dimensional design, then making the sheet adhere to the mould walls to obtain for example a plastic cup.

[0005] The drawback of this method is the fact that it can be used only to form plastic containers which are not of ecological materials and which also require costly and sophisticated processes for their formation.

[0006] Another method consists of forming the container by injection moulding.

[0007] This method presents the drawback that printing can be carried only after the container has been formed, by special methods which hence require a very costly process.

[0008] Methods are also known for forming filled and closed three-dimensional containers of substantially parallelepiped shape formed from coupled cardboard, they being produced starting from a tube of a web of material subjected to successive folding and welding for the side regions, and then closed to obtain for example a traditional milk container.

[0009] A drawback of these known methods is that the container obtained is linked to a geometry determined by folding, and in no way resembles a cup or tub in the traditional sense.

[0010] An object of the invention is to eliminate these drawbacks by providing a method which enables three-dimensional containers to be obtained the walls of which can be shaped to achieve a better ornamental appearance, improved product-customer communication facilities and an increased volume.

[0011] This and other objects which will be apparent from the ensuing description are attained according to the invention by a method for forming three-dimensional containers of extensible paper material as described in claim 1.

[0012] Some preferred embodiments of the present invention are further clarified hereinafter with reference to the accompanying drawings, in which:

Figures 1-4 represent schematically a method for forming containers with undercuts,

[0013] As can be seen from the figures, the method of the invention in the embodiment illustrated in Figures 1-4 foresees to form a substantially conical tubular element 8 from extensible paper material coupled to a thermoweldable polymer film, the longitudinal edges of which are joined together by thermowelding. The tubular element is preheated and then inserted into a mould 10, comprising two openable half-moulds 12, 12', which is of greater width than the cone and comprises two undercuts 14.

[0014] The cone is secured at its open ends and is hermetically sealed. An air flow is then fed through an aperture 16 provided in a closure cap 18 so that the cone 8 is deformed by the air and adheres to the mould walls.

[0015] When the cone has adhered to the walls of the cooled mould the two half-moulds 12, 12' are spaced apart so that the mould can be opened to extract the container in order to feed it to subsequent processing steps.

## Claims

1. A method for forming three-dimensional containers of extensible paper material, comprising:

- forming a substantially truncated conical tubular element (8) from extensible paper material coupled to a thermoweldable polymer film, the longitudinal edges of which are joined together by thermowelding,
- preheating said tubular element (8),
- associating the tubular element obtained (8) in this manner with a mould (10) negatively reproducing at least the side wall of the container to be obtained,
- feeding air flow into the mould (10) causing the tubular element (8) to deform and to adhere to the mould walls by utilizing the extensibility characteristics of the paper material,
- closing said tubular element at at least one end.

## Patentansprüche

1. Verfahren zum Bilden von dreidimensionalen Behältern aus dehnbarem Papiermaterial, umfassend:

- Bilden eines im Wesentlichen kegelstumpfförmigen röhrenförmigen Elements (8) aus dehnbarem Papiermaterial, das mit einer thermover-schweißbaren Polymerfolie verbunden ist, dessen Längsränder durch Thermoschweißen aneinander gefügt sind,
- Vorwärmen des röhrenförmigen Elements (8),
- in Verbindung Bringen des auf diese Weise erhaltenen röhrenförmigen Elements (8) mit einer Form (10), die zumindest die Seitenwand des zu erhaltenden Behälters als Negativ abbil-

det,

- Zuführen eines Luftstroms in die Form (10), der bewirkt, dass sich das röhrenförmige Element (8) verformt und an den Formwänden haftet, unter Verwendung der Dehnbarkeitseigenschaften des Papiermaterials,
- Verschließen des röhrenförmigen Elements an mindestens einem Ende.

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## Revendications

1. Procédé de formation de récipients tridimensionnels en matériau papier extensible, comprenant :

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- la formation d'un élément tubulaire (8) substantiellement en forme de cône tronqué à partir du matériau papier extensible couplé à un film polymère thermosoudable, dont les bords longitudinaux sont joints par thermosoudage,
- le préchauffage dudit élément tubulaire (8),
- l'association de l'élément tubulaire (8) obtenu de cette manière avec un moule (10) reproduisant au négatif au moins la paroi latérale du récipient devant être obtenu,
- l'alimentation d'un courant d'air dans le moule (10) faisant que l'élément tubulaire (8) se déforme et adhère aux parois du moule en utilisant les propriétés d'extensibilité du matériau papier,
- la fermeture dudit élément tubulaire à au moins une extrémité.

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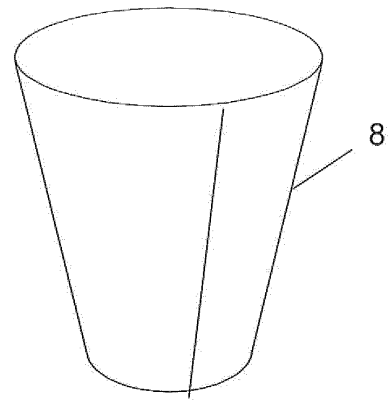


FIG. 1

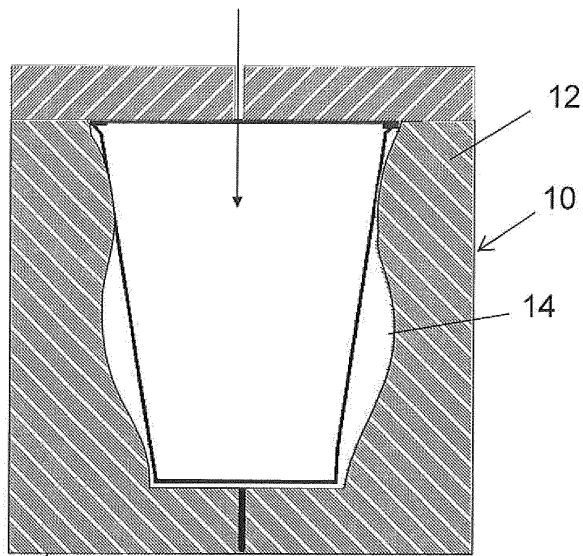


FIG. 2

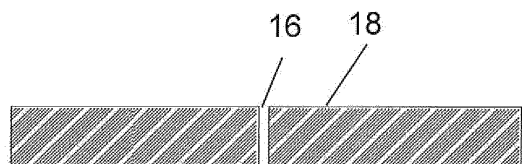


FIG. 3

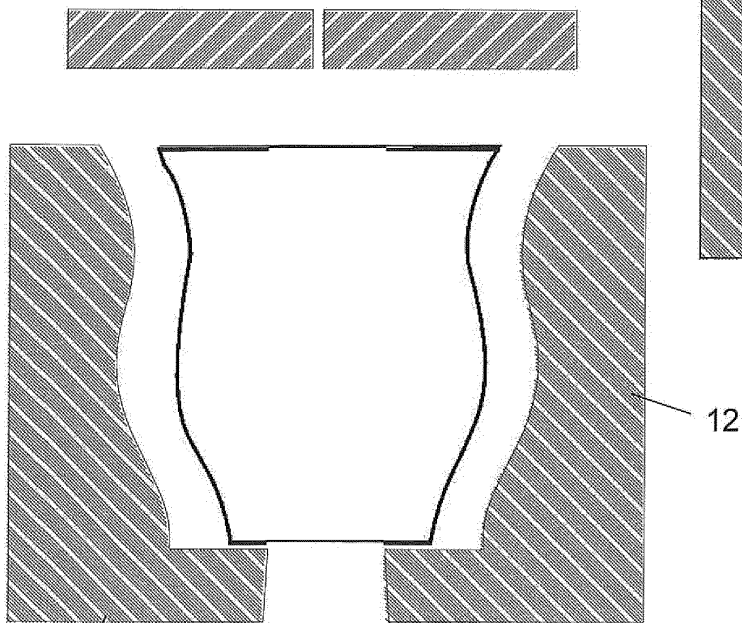


FIG. 4

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- EP 1588853 A [0002]