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- (54) Title
HONEYCOMB PAPERBOARD TOP AND BOTTOM LAYERS ATTACHING TECHNIQUES AND PROCEDURE
- (51)⁶ International Patent Classification(s)
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- (21) Application No. : **51085/98** (22) Application Date : **09/01/98**
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- (57)

Procedure Details (Figure 1)

- A. Material: Take two roll of paper sheet (2) (3) and honeycomb paper(1)(shown on Figure4)
- B. Material proceed: The honeycomb paper is pull by the heater(8). And dry machine movement and the final roller force it would pull the surface sheet(2)(3) and honeycomb paper(1).
- C. Glue application: After the honeycomb paper past heater(8) then lead the honeycomb paper to glue machine(5) for applying glue and softly pressuring honeycomb paper.
- D. Pressuring procedure: When the honeycomb paper pass the glue machine(5) it will be then attach to surface sheet (2)(3) and pull to the drying machine(4) and in order to increase the contact of surface sheet(2)(3) and honeycomb paper(1) there will be roller inside drying machine to pressure the paperboard.
- E. Final pressure: The final pressure roller (6) will give the honeycomb paperboard a final pressure in order to achieve perfect attachment. The speed of manufacturing honeycomb paperboard can be varied or adjusted by the turning speed of pressure roller(6).
- F. Cutting: Cutting machine(7) will automatically cut the honey comb paperboard to any desirable length and width.

Patent Request : Standard Patent / Patent of Addition

We, being the person(s) identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow:

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[54] Invention Title

Honeycomb paperboard. Top and Bottom layers attaching techniques and procedure

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Associated Provisional Application(s) Details

[60] Application Number(s) and Date(s)

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Basic Convention Application(s) Details

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Divisional Application Details

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Patent Invention Details (Patent of Addition requests only)

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Signature

Date

/ /

**Original
Complete Specification
Standard Patent**

Invention Title

The following statement is a full description of this invention, including the best method of performing known to me:-

[illegible]

This invention is to provide the techniques of attaching top and bottom layers of paper sheet to honeycomb medium paper (paper made out in the shape of honeycomb Figure 4) the final product is to be known as honeycomb paperboard.

For any fragile products or commodities, it needs good interior packing material in order to prevent any accidental collusion. In traditional way such as foam has been using for many years as a good packing material. And it dose reach the standard shock resistance requirement, but foam can cause some other problem. Such as harmful to environment, which foam can not be reused again or recycled, and foam can not be burned, if so it would produce hazardous smoke. And speaking of the shock resistance requirement, foam can be hard in a way, and if foam has been pressured hard on it's surface, it can not be return to it's original surface, and thus it would reduce the shock resistance requirement. And there are many countries specially Europe has banned any foam material from entering their country. Thus many manufacturers are looking for alternate packing materials. And honeycomb paper can just be the perfect solution. Honeycomb paperboard can be made in thickness of 2cm to 15cm. And it can have the strength of 30cm*30cm*3cm per 1 ton. And can have very good shock resistance.

In order to achieve time and economically efficiency for producing honeycomb paperboard, a good procedure and techniques are required.

The aim of this production procedure is to provide stronger and easier attaching techniques of top and bottom layer sheet to the medium honeycomb paper, in order to cut down the production time labour and cost.

For this technique there are 6 procedures:

1. Material: First take two roll of paper (as top layer and bottom layer) and let the honeycomb paper in between.
2. Material proceed: Machine expanding the honeycomb paper and past a heater (in order to rigid the expansion).
3. Glue apply: As expanded honeycomb paper passes the glue machine, the glue machine will softly pressuring the honeycombed paper while it's applying glue to the honeycomb paper.
4. Pressuring: Inside the drying machine there is a pressuring roller, which is to pressure the top and bottom layer paper sheet to honeycomb paper, in order to achieve a face to face attachment.
5. Drying: While the paper board is been pressured the drying machine also generate high temperature in order to dry the glue and improving glue attachment.
6. Final pressuring: In the end of drying machine a pressure roller is required, this is to achieve perfect attachment of top and bottom layer paper sheet to the honeycomb paper. The speed of manufacturing honeycomb paperboard can be varied or adjusted by the turning speed of pressure roller(6).
7. Cutting: After the perfect attachment is achieved a cutting machine can cut the paperboard in any desirable length and width(not longer than the surface sheet).

Procedure Details (Figure 1)

- A. Material: Take two roll of paper sheet (2) (3) and honeycomb paper(1)(shown on Figure4)
- B. Material proceed: The honeycomb paper is pull by the heater(8). And dry machine movement and the final roller force it would pull the surface sheet(2)(3) and honeycomb paper(1).
- C. Glue application: After the honeycomb paper past heater(8) then lead the honeycomb paper to glue machine(5) for applying glue and softly pressuring honeycomb paper.

D. Pressuring procedure: When the honeycomb paper pass the glue machine(5) it will be then attach to surface sheet (2)(3) and pull to the drying machine(4) and in order to increase the contact of surface sheet(2)(3) and honeycomb paper(1) there will be roller inside drying machine to pressure the paperboard.

E. Final pressure: The final pressure roller (6) will give the honeycomb paperboard a final pressure in order to achieve perfect attachment. The speed of manufacturing honeycomb paperboard can be varied or adjusted by the turning speed of pressure roller(6).

F. Cutting: Cutting machine(7) will automatically cut the honey comb paperboard to any desirable length and width.

The invention as mentioned is the most cost and time effective procedure of producing the honeycomb paperboard.

The claims defining the invention are as follow:

1. Machine expanding the honeycomb (paper) medium (1) and pass a heater (8) (in order to rigid the expansion).
2. As expanded honeycomb (paper) medium (1) passes the glue machine (5), the glue machine will softly pressuring the honeycomb medium while it's applying glue to the honeycomb medium.
3. Inside the drying machine (4) there is a pressuring roller (9), which is to pressure the top and bottom layer paper sheet to honeycomb (paper) medium, in order to achieve a face to face attachment.
4. In the end of drying machine pressure rollers (6,7) is required, this is to achieve perfect attachment of top and bottom layer paper sheet to honeycomb (paper) medium.
5. Roller 10,11 is to lead the face sheets (2,3) to a closer attachment with honeycomb medium.

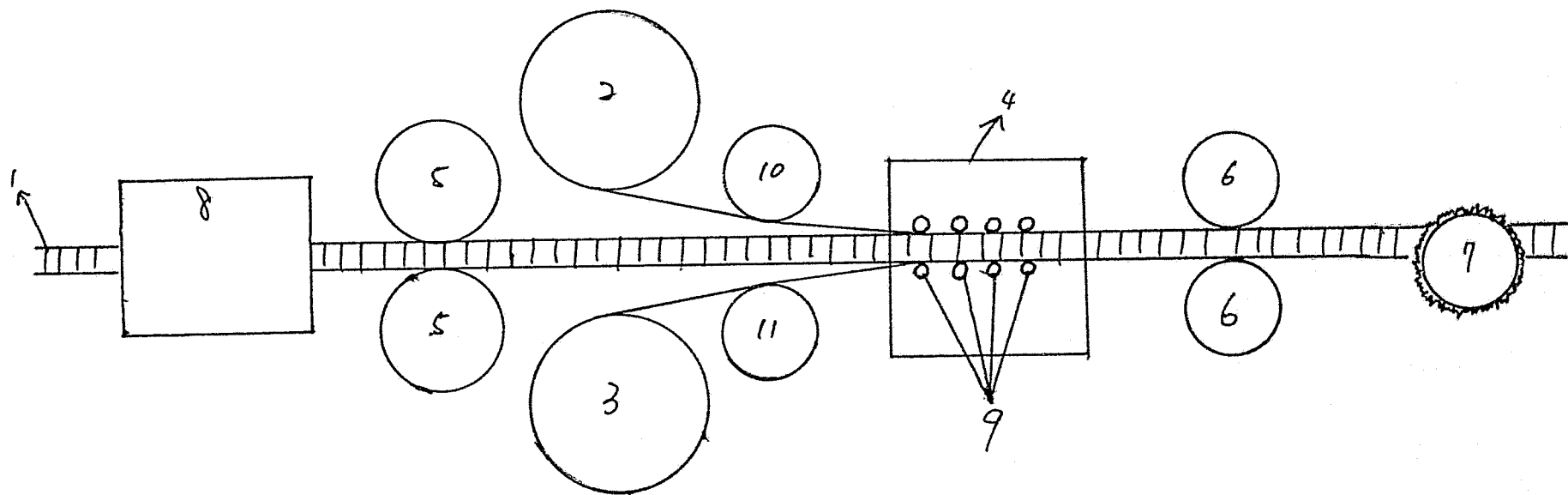
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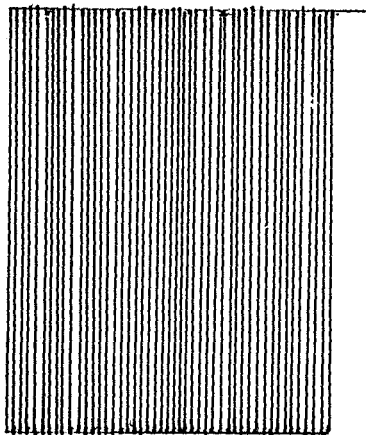
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Top View
Unexpanded Honeycomb



Expanded Honeycomb.

