(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 369 263 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.12.2003 Bulletin 2003/50

(51) Int Cl.[7]: **B44C 1/17**, B41M 1/14

(21) Application number: **03012301.2**

(22) Date of filing: **28.05.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(30) Priority: **31.05.2002 IT BO20020338**

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(54) Method and processing unit for producing decorated sheets for decorating ceramic articles

(57) A method of producing sheets for decorating ceramic articles, and which includes an automatic colouring step, in which a strip (2) of sheet material is fed beneath a number of colouring members (7) for depositing colouring substances on the strip (2); and an automatic cutting step, in which the strip (2) is cut along a cutting line (11) to define the sheets (12).

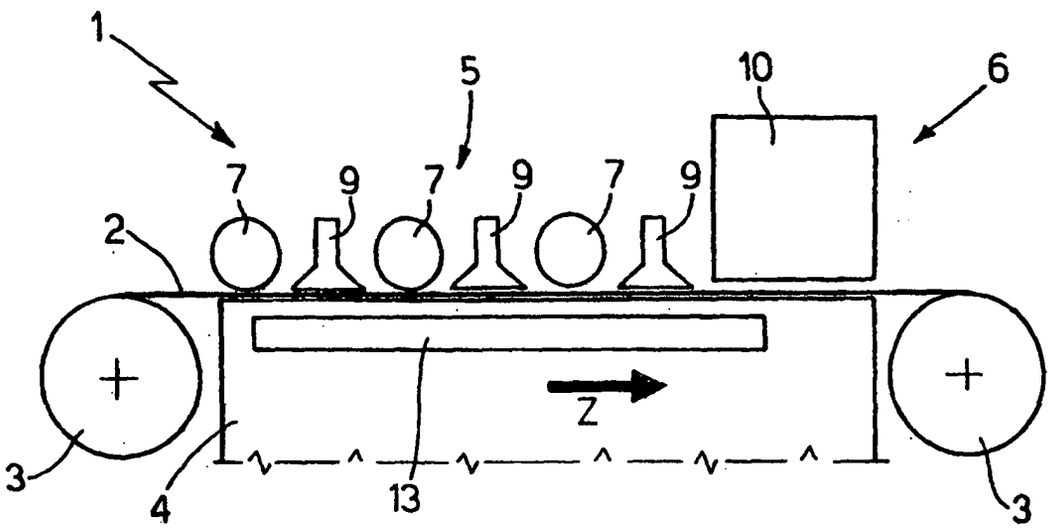

Fig.1

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Description

[0001] The present invention relates to a method and processing unit for producing sheets for decorating ceramic articles.

[0002] One method currently used to decorate ceramic articles employs sheets normally made of paper or plastic material, and on one face of which the decoration to be produced on the ceramic article is reproduced by hand using as colouring substances a mixture of oil-diluted ceramic oxides.

[0003] The sheet is applied to the plain ceramic article, and the whole is baked, so that the sheet material is either burned or absorbed, leaving the decoration in relief on the ceramic article.

[0004] The above method obviously involves a good deal of time and labour. In fact, as stated, the decoration on the sheet is produced by hand.

[0005] It is an object of the present invention to provide a method of producing sheets for decorating ceramic articles, designed to provide a solution to the problems of the known state of the art.

[0006] According to the present invention, there is provided a method of producing sheets for decorating ceramic articles; said method being characterized by comprising a colouring step, in which a strip of sheet material is run beneath a number of colouring members for depositing colouring substances on said strip; and a cutting step, in which said strip is cut along a cutting line to define said sheets; said colouring step and said cutting step being performed automatically.

[0007] In a preferred embodiment of the present invention, the colouring step comprises a drying operation, in which the colouring substances deposited on the strip by the colouring members are dried by a UV source.

[0008] It is a further object of the present invention to provide a processing unit for implementing the method of producing sheets for decorating ceramic articles, designed to eliminate the drawbacks of the known state of the art.

[0009] According to the present invention, there is also provided a processing unit for producing sheets for decorating ceramic articles; said unit being characterized by comprising feed means for feeding a strip of sheet material; colour-depositing means for depositing colouring substances on a surface of said strip; and cutting means for cutting a number of said sheets off said strip.

[0010] In a preferred embodiment of the unit according to the present invention, the unit comprises drying means located downstream from said colour-depositing means.

[0011] The method according to the present invention therefore provides for producing sheets for decorating ceramic articles quickly and efficiently, by the colouring and cutting steps being performed fully automatically, and so involving very little time and labour.

[0012] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic view of a preferred embodiment of the processing unit according to the present invention;
Figure 2 shows a larger-scale plan view of a detail of Figure 1.

[0013] Number 1 in Figure 1 indicates as a whole a processing unit for producing sheets for decorating ceramic articles. Unit 1 comprises a strip 2 of paper or plastic film sheet material wound about two rollers 3, one of which is powered to feed strip 2 in a direction z along a work surface 4; and suction means 13, shown schematically in Figure 1, for ensuring strip 2 adheres correctly to work surface 4 by means of a number of holes (not shown) formed in work surface 4.

[0014] Unit 1 comprises a colour-depositing station 5, and a cutting station 6. Colour-depositing station 5 comprises a number of members 7 for transferring colouring substances onto a given portion 8 (Figure 2) of strip 2. As strip 2 is fed through colour-depositing station 5, portion 8 of strip 2 receives different colouring substances in sequence from corresponding members 7, so that, on leaving colour-depositing station 5, portion 8 bears a finished decoration.

[0015] More specifically, members 7 are defined by known rollers having a cylindrical outer surface, in which dead cavities are formed containing a given amount of colouring substance, which is transferred to portion 8 by direct contact by rolling the cylindrical surface over strip 2 travelling through colour-depositing station 5.

[0016] Colour-depositing station 5 comprises a number of UV lamps 9, each located downstream from a respective member 7 in the feed direction of strip 2, and which are required to dry the deposited colour, which is defined by ceramic oxides diluted with UV-dry oils.

[0017] Cutting station 6 comprises at least one cutting device 10, shown schematically in Figure 1, for cutting strip 2 along a cutting line 11, shown by the dash line in Figure 2, to detach from strip 2 individual sheets 12 of appropriate size, which are later applied to ceramic articles in known manner.

[0018] As will be clear from the above description, the method and processing unit according to the invention provide for producing sheets for decorating ceramic articles quickly and efficiently.

[0019] Clearly, changes may be made to the unit for producing sheets for decorating ceramic articles according to the invention, without, however, departing from the scope of the accompanying Claims.

[0020] For example, the colouring step and cutting step need not necessarily form part of the same production line, i.e. once the colour is deposited, the strip of sheet material may be rewound and cut later.

Claims

1. A method of producing sheets for decorating ceramic articles; said method being **characterized by** comprising a colouring step, in which a strip (2) of sheet material is run beneath a number of colouring members (7) for depositing colouring substances on said strip (2); and a cutting step, in which said strip (2) is cut along a cutting line (11) to define said sheets (12); said colouring step and said cutting step being performed automatically.

2. A method as claimed in Claim 1, **characterized in that** said colouring step comprises a drying operation, in which the colouring substances deposited on the strip (2) by said colouring members (7) are dried by at least one UV source (9).

3. A processing unit (1) for producing sheets for decorating ceramic articles; said unit being **characterized by** comprising feed means (3) for feeding a strip (2) of sheet material; colour-depositing means (7) for depositing colouring substances on a surface of said strip (2); and cutting means (10) for cutting a number of sheets (12) off said strip (2).

4. A unit as claimed in Claim 3, **characterized by** comprising drying means (9) located downstream from said colour-depositing means (7).

5. A unit as claimed in Claim 3 or 4, **characterized in that** said colour-depositing means (7) comprise rollers having a cylindrical outer surface, in which are formed dead cavities containing a given amount of colouring substance.

6. A unit as claimed in one of Claims 2 to 5, **characterized in that** said colour-depositing means (7) and said cutting means (10) form part of the same production line, and define a colour-depositing station (5) and a cutting station (6) respectively.

7. A unit as claimed in one of the foregoing Claims, **characterized by** comprising suction means (13) for ensuring the strip (2) adheres to a work surface (4).

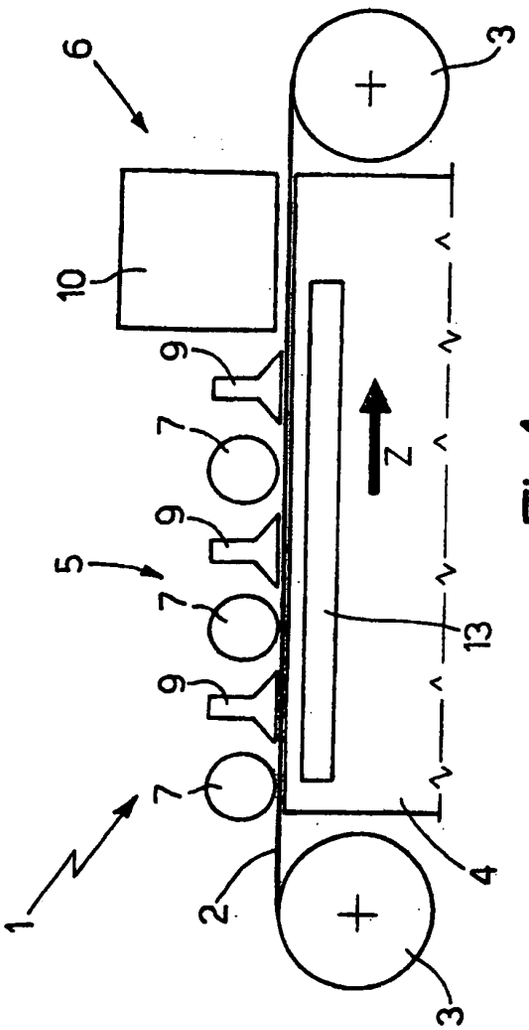

Fig.1

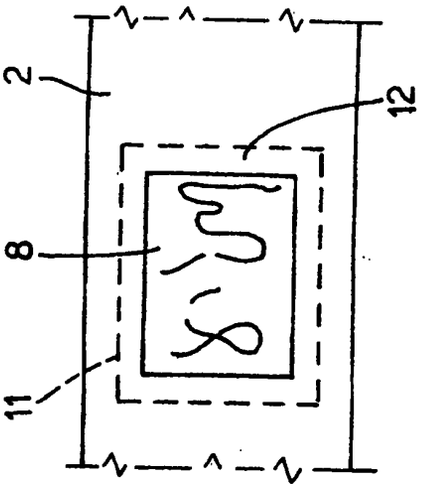

Fig.2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 01 2301

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Y		2,4	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	9 October 2003	Sartor, M

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 01 2301

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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