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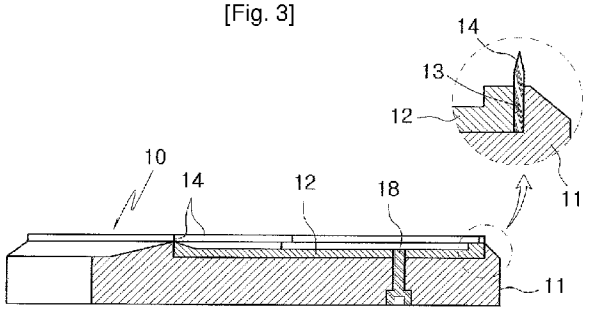
(54) Title: HIGH-FREQUENCY MOLD FOR MANUFACTURING THE DECORATION SHEET

[Fig. 3]



(57) Abstract: The present invention relates to a high-frequency mold for manufacturing a decoration sheet, and more particularly, to a high-frequency mold composed of an upper mold 10 and a lower mold 20 capable of being coupled to each other for cutting the decoration sheet for the purpose of clearly and accurately cutting the cut surface of the sheet, simplifying the cutting time and the process to enhance productivity of manufacturing the sheet, and separately manufacturing the mold and the blade and inserting and fixing the blade into the mold to simultaneously facilitate manufacture of the mold and reduce the manufacturing cost, wherein the upper mold 10 is composed of a base 11 where a fixation screw penetrates, a first fixed mold 12 separated/fixed at an inner surface of the base 11 by means of the fixation screw, and an external blade 14 inserted into a first gap 13 between circumferences of the first fixed mold 12 and the base 11.

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Description

HIGH-FREQUENCY MOLD FOR MANUFACTURING THE DECORATION SHEET

Technical Field

[1] The present invention relates to a high-frequency mold for manufacturing a decoration sheet, and more particularly, to a high-frequency mold for manufacturing a decoration sheet which allows cutting surfaces to be accurately and clearly to be cut without errors and allows a lower sheet and an upper sheet stacked on the lower sheet to be simultaneously cut when outer circumferences of various sheets are cut.

Background Art

[2] As shown in FIG. 1, various shapes of decoration sheets 3 are usually attached to top surfaces of shoes 5 for enhancing an outer look and providing a high-class image of a product, wherein such a decoration sheet is composed of one sheet or two sheets in which an upper sheet is stacked on a lower sheet for enhancing a three-dimensional effect and esthetic feeling.

[3] In order to cut and manufacture such a decoration sheet 3, an upper mold is engaged with a lower mold to be coupled, wherein a blade of a predetermined shape is disposed on the upper mold, the decoration sheet to be cur or manufactured is disposed between the upper and lower molds, the upper mold is moved toward and pressed onto the lower mold to cause the blade to cut the decoration sheet, so that the sheet having a predetermined shape is manufactured.

[4] In addition, in a case of the double sheet, a lower sheet usually formed of a natural or synthetic leather is cut by a blade formed on an upper mold simultaneously while an upper sheet formed of polyurethane (PU) or the like is cut to be a desired shape by an inner blade of a fixed mold disposed within the upper mold.

[5] However, according to this related art, the cut surface of the sheet is not clear, a portion of the sheet is not accurately cut, which causes a cutting process to be carried out several times by repeatedly pressing the upper mold, so that the process is complicated, takes a long time to manufacture the sheet, and causes a manufacture unit cost to be increased due to a very short lifetime of the mold.

[6] To cope with such defects, Korean Patent Application Nos. 10-2005-0119434 and 10-2001-0034053 according to the related art disclose a double structure, which derives a cutter for upper surface decoration from a cutter for base decoration cutting the base decoration textile so that the manufacture process may be facilitated.

[7] However, a separate process for forming various shapes on the upper decoration surface is required according to these related arts. In addition, it is difficult to form a

blade for cutting the decoration sheet by sharply processing a portion of a mold, and the mold itself must be formed of a material having a high intensity in consideration of the durability of the blade to cause the manufacturing cost to increase.

Disclosure of Invention

Technical Problem

[8] The present invention is directed to a high-frequency mold for manufacturing a decoration sheet, which allows a cutting surface of the sheet to be accurately and clearly cut and simplifies the cutting time and process of the sheet to enhance a productivity of manufacturing the sheet.

[9] In addition, the present invention is directed to a high-frequency mold for manufacturing a decoration sheet, which simplifies the process of manufacturing the decoration sheet having a double structure to enhance the production efficiency.

[10] In addition, the present invention is directed to a high-frequency mold for manufacturing a decoration sheet, which allows the mold itself and a blade to be separately manufactured and allows the blade to be inserted and fixed within the mold, wherein the mold itself is formed of a material which relatively facilitates processing and costs less and the blade is formed of a material having high durability so that the mold may be easily manufactured and the manufacturing cost may be reduced.

Technical Solution

[11] One aspect of the present invention provides a high-frequency mold composed of an upper mold 10 and a lower mold 20 capable of being coupled to each other for cutting a decoration sheet, and the upper mold 10 according to a first embodiment comprises: a base 11 where a fixation screw penetrates; a first fixed mold 12 separated/fixed at an inner surface of the base 11 by means of the fixation screw; and an external blade 14 inserted into a first gap 13 between circumferences of the base 11 and the first fixed mold 12.

[12] The upper mold 10 according to a second embodiment further comprises: a second fixed mold 15 within the first fixed mold 12 and separated/fixed from/to the base 11 at an inner side of the first fixed mold 12 by means of the fixation screw; and an inner blade 17 protruded to be lower than the external blade 14 and inserted into a second gap 16 between circumferences of the second fixed mold 15 and the inner side of the first fixed mold 12.

[13] In addition, according to the upper mold 10 of a third embodiment, the inner blade 17 protruded to be lower than the external blade 14 is integrated with the first fixed mold 12 at an outer surface of the first fixed mold.

[14] In addition, according to the upper mold 10 of a fourth embodiment, a second fixed mold 15 separated/fixed from/to the base 11 by means of the fixation screw is disposed

at an inner side of the first fixed mold 12, and the inner blade 17 protruded to be lower than the external blade 14 is integrated with the second fixed mold 15 at a circumference of the second fixed mold.

[15] In addition, according to the upper mold 10 of a fifth embodiment, a shape part 19 including at least one protrusion 19a and a depression 19b is disposed at an inner surface of the inner blade 17 so that a pattern corresponding to the shape part 19 is imprinted onto the upper sheet.

[16] In this case, electricity is preferably applied to the upper mold 10 to allow the blade in a state heated by a high-frequency heat to cut the sheet.

Advantageous Effects

[17] According to the high-frequency mold of the present invention, electricity is used to cut a sheet heated to a temperature of about 1200℃ by a high-frequency, which leads to a single movement process of a mold enabling a cutting surface of the sheet to be accurately and clearly cut, so that a separate process of processing the cutting surface is not required to simplify the manufacturing process, and the sheet of high quality may be manufactured to enhance productivity.

[18] In addition, the blade is formed of a material having high durability and the mold for fixing the blade is formed of a relatively soft material, so that the mold may be easily manufactured and the durability of the blade may be guaranteed.

[19] Further, the mold is composed of a base and a fixed mold disposed inside the base which may be separated from each other, a blade is fixed in a gap formed between the base and the fixed blade, so that the assembly may be enhanced, and the inner fixed mold may be changed to have a double blade so that the decoration sheet formed of two sheets may be cut.

Brief Description of the Drawings

[20] FIG. 1 is a perspective view illustrating shoes mounted with a decoration sheet.

[21] FIG. 2 is a perspective view illustrating a high-frequency mold according to a first embodiment of the present invention.

[22] FIG. 3 is a cross-sectional view taken along the A-A line of FIG. 2.

[23] FIG. 4 is a cross-sectional view illustrating usage of the high-frequency mold according to the first embodiment of the present invention.

[24] FIG. 5 is a perspective view illustrating the sheet cut by the high-frequency mold according to the first embodiment of the present invention.

[25] FIG. 6 illustrates usage and a structure of a high-frequency mold according to a second embodiment of the present invention.

[26] FIG. 7 is a perspective view illustrating the sheet cut by the high-frequency mold according to the second embodiment of the present invention.

[27] FIG. 8 is a cross-sectional view illustrating a high-frequency mold according to a third embodiment of the present invention.

[28] FIG. 9 is a cross-sectional view illustrating a high-frequency mold according to a fourth embodiment of the present invention.

[29] FIG. 10 is a cross-sectional view illustrating a high-frequency mold according to a fifth embodiment of the present invention.

Best Mode for Carrying Out the Invention

[30] The present invention is directed to a high-frequency mold for manufacturing a decoration sheet, which allows a cutting surface of the sheet to be accurately and clearly cut and simplifies the cutting time and process of the sheet to enhance a productivity of manufacturing the sheet.

[31] In addition, the present invention is directed to a high-frequency mold for manufacturing a decoration sheet, which simplifies the process of manufacturing the decoration sheet having a double structure to enhance the production efficiency.

[32] In addition, the present invention is directed to a high-frequency mold for manufacturing a decoration sheet, which allows the mold itself and a blade to be separately manufactured and allows the blade to be inserted and fixed within the mold, wherein the mold itself is formed of a material which relatively facilitates processing and costs less and the blade is formed of a material having high durability so that the mold may be easily manufactured and the manufacturing cost may be reduced.

Mode for the Invention

[33] Hereinafter, preferred embodiments of the present invention will be described in more detail with reference to accompanying drawings.

[34] FIG. 2 is a perspective view illustrating a high-frequency mold according to a first embodiment of the present invention, and FIG. 3 is a cross-sectional view taken along the A-A line of FIG. 2, wherein the upper mold 10 shown in FIG. 2 is illustrated for cutting a decoration sheet of a shoe tip 4a of the shoes shown in FIG. 1

[35] Referring to FIGS. 2 and 3, the upper mold 10 of the present invention is classified into a base 11, a first fixed mold 12, and an external blade 14.

[36] The base 11 has a plurality of holes for allowing a fixation screw 18 to penetrate, and has a groove (given no reference numbers) almost similar to the first fixed mold 12 for allowing the first fixed mold 12 to be safely mounted in one surface (i.e., an upper surface of the drawings).

[37] The first fixed mold 12 is safely mounted in the groove of the base 11 and fixed by the fixation screw 18, and a first gap having a very small width, e.g., 1mm or less, is formed between the overall circumferences of the base 11 and the first fixed mold 12, and the external blade 14 is inserted and fixed into the first gap 13 as shown in the

enlarged portion of FIG. 2.

[38] That is, the external blade 14 is formed to have a band shape designed for cutting the sheet, an inner surface of the external blade 14 is in contact with the circumferential surface of the first fixed mold 12, and an outer surface of the external blade 14 is inserted into the first gap 13 to be in contact with the inner surface of the groove so that it is securely fixed between the base 11 and the first fixed mold 12.

[39] The external blade 14 may be formed of a steel suitable for the blade or any strong material which is usually employed for cutting. In contrast, in a case of the base 11 and the first fixed mold 12, they are formed of electrically conductive materials, for example, may be preferably formed of aluminum or copper which is a soft material facilitating processing and costs less, but not limited thereto.

[40] FIG. 4 is a cross-sectional view illustrating usage of the high-frequency mold according to the first embodiment of the present invention, and FIG. 5 is a perspective view illustrating the sheet cut by the high-frequency mold according to the first embodiment of the present invention, wherein mold structures according to embodiments corresponding to not only FIGS. 4 and 5 but subsequent figures, different from the mold structure of FIG. 2, are cross-sectional views illustrating simplified structures of the mold for example, for manufacturing the decoration sheet 3 illustrated in FIG. 7 for better understanding of the present invention.

[41] Referring to FIG. 4, the high-frequency mold for cutting the decoration sheet according to the present invention is composed of the upper mold 10 described above and a lower mold 20 of a flat plate shape on which the sheet to be cut is put.

[42] The lower mold 20 acts as a support where a decoration fabric to be the decoration sheet is put and is preferably formed to have flat plate shape, and the detailed description thereof will be omitted since the lower mold 20 of the present invention is the same as the conventional lower mold.

[43] As shown in FIGS. 4 and 5, when the upper mold 10 with the external blade 14 mounted is moved downward while the decoration sheet 3 is safely mounted on the lower mold 20, the decoration sheet 3 is cut by the external blade 14 to be divided into a cut body 3b and a remainder 3a. In this case, the cut body 3b is cut according to the band shape of the external blade 14 and is attached to the shoe tip 4a of FIG. 1, however, the shape of the decoration sheet 3 may be varied according to the band shape of the external blade 14.

[44] As such, when the decoration sheet 3 is cut, a general method such as applying a pneumatic power or hydraulic power may be employed to press the upper mold 10 toward the lower mold 20 so that the external blade 14 may cut the decoration sheet 3, or a high-frequency electric heating circuit may be connected to the upper mold 10 to have electric conductivity, which leads to an occurrence of a high-frequency heat of

about 1200℃ on the external blade 14, and when the external blade having such a heat is used to cut the decoration sheet 3, the cutting surface of the sheet 3 becomes more accurate and clearer and only one cutting process may be employed, and when a double decoration sheet to be described later needs to be cut, a contact surface of each sheet may be instantaneously attached.

[45] That is, when the decoration sheet 3 is composed of a lower sheet 1 and an upper sheet 2 which are stacked on each other, the upper sheet 2 must be cut by another blade other than the external blade 14, and a mold structure for cutting the double sheet will be described hereinafter.

[46] FIG. 6 illustrates usage and a structure of a high-frequency mold according to a second embodiment of the present invention, and FIG. 7 is a perspective view illustrating the sheet cut by the high-frequency mold according to the second embodiment of the present invention, wherein the upper mold 10 have a second fixed mold 15 and an inner blade 17 within the first fixed mold 12 coupled to the base 11.

[47] The second fixed mold 15 is also fixed to the base 11 by means of fixation screw 18 as done in the first fixed mold 12 while the inner blade 17 has a predetermined shape, that is, a shape designed for cutting the decoration sheet, and an inner surface of the inner blade 17 is in contact with the circumferential surface of the second fixed mold 15 and an outer surface of the inner blade 17 is in contact with the inner surface of the first fixed mold 12, so that the inner blade 71 is inserted and disposed into a second gap 16 between circumferences of the first fixed mold 12 and the second fixed mold 15.

[48] In order to cut the double sheet composed of the lower sheet 1 and the upper sheet 2 using the upper mold 10 of the shape described above, it is preferable to make the protrusion height of the inner blade 17 lower than the protrusion height of the external blade 14. That is, the external blade 14 has a protrusion height higher than the protrusion height of the inner blade 17 by the difference t1, and the height difference t1 between the blades corresponds to a thickness of the lower sheet 1 so that t1 equals to t2 as shown in FIG. 6.

[49] Accordingly, when the double sheet is cut using the upper mold 10, the external blade 14 cuts both of the upper sheet 2 and the lower sheet 1 and the inner blade 17 moves less downward by the thickness t2 due to the height difference t1 to cut the upper sheet 2 only, so that the upper sheet 2 and the lower sheet 1 smaller than the upper sheet may be simultaneously cut and manufactured.

[50] In this case, as described above, when the high-frequency induction heater is connected to the upper mold 10, the blade is instantaneously heated up to about 1200℃ in an induction heating coil unit connected to the high-frequency induction heating circuit by the induction heating principle. Accordingly, when the upper sheet 2 formed

of a synthetic resin such as PU is stacked on the upper surface of the lower sheet 1 formed of a leather or leather product and the upper mold 10 is made to be in contact with the lower mold 20 simultaneously while a high-frequency heating is applied thereto, the upper sheet 2 is melted to be attached to the lower sheet 1.

[51] Accordingly, although not shown in the upper mold according to the present invention, it is preferable to dispose the induction heating coil unit within the upper mold and to connect this unit to the high-frequency induction heating circuit.

[52] Meanwhile, a structure of the inner blade 17 may be variously changed, which will be described hereinafter.

[53] FIG. 8 is a cross-sectional view illustrating a high-frequency mold according to a third embodiment of the present invention, and FIG. 9 is a cross-sectional view illustrating a high-frequency mold according to a fourth embodiment of the present invention.

[54] According to the third embodiment of the present invention referring to FIG. 8, the inner blade 17 is formed at an outer surface of the first fixed mold 12 and integrated with the first fixed mold 12 for fixing the external blade 14, and the inner blade also has a protrusion height lower than the external blade 14.

[55] By doing so, the first fixed mold 12 only needs to be fixed by the fixation screw 18 for inserting and fixing the external blade 14 into the base 11, so that the inner blade 17 is immediately assembled inside the external blade 14 to enhance the assembly.

[56] Meanwhile, according to the fourth embodiment of the present invention referring to FIG. 9, the second mold 15 and the inner blade 17 integrated as done in the embodiment of FIG. 6, wherein the first fixed mold 12 for fixing the external blade 14 is assembled within the base 11, the second fixed mold 15 within the first fixed mold 12 is fixed to the base 11 by means of the fixation screw 18 as shown in FIG. 9, the inner blade 17 is integrated within the second fixed mold 15, and the height of the inner blade 17 is also lower than the protrusion height of the external blade 14.

[57] FIG. 10 is a cross-sectional view illustrating a high-frequency mold according to a fifth embodiment of the present invention, which shows a shape part 19 at an inner surface of the inner blade 17.

[58] The shape part 19 acts as a cast for applying various shapes, for example, characters, symbols or logos to the surface of the upper sheet 2, and at least one shape part or continuously formed shape parts each composed of a protrusion 19a and a depression 19b are formed on the lower surface of the first or second fixed mold for fixing the inner blade 17 so that various shapes are formed on the surface of the upper sheet 2. In this case, it is preferable to form the protrusion 19a not to be higher than the inner blade 17 in order to prevent the protrusion from interveneing the lower sheet 1.

[59] Hereinafter, usage aspects for manufacturing a double sheet using the high-

frequency mold according to the present invention will be described in more detail with reference to FIGS. 6 and 7.

[60] When the fabric of the lower sheet 1 and the fabric of the upper sheet 2 to be processed are sequentially put on the lower mold 20 and the upper mold 10 is made to be in close contact with the lower mold 20, the external blade 14 fixed to the upper mold 10 reaches the upper surface of the lower mold 20 to cut the lower sheet 1 with a desired shape, and the inner blade 17 reaches the upper surface of the lower sheet 1 only to cut the upper sheet 2 with a predetermined shape.

[61] A high-frequency induction coil (not shown) disposed in the upper mold 10 melts the upper sheet 2 formed of a synthetic resin up to a melting point through high-frequency heating, so that the upper sheet is attached to the lower sheet 1. In this case, it is preferable to control the high-frequency heater in order to prevent the lower sheet 1 from being deformed when the upper sheet 2 is melted through the high-frequency heating.

[62] Meanwhile, when the mold having the shape part 19 is employed as shown in FIG. 10 the surface of the upper sheet 2 is in contact with the shape part 19 composed of the protrusion 19a and the depression 19b, so that the shape of the shape part 19 is imprinted onto the upper sheet 2 when the upper mold 10 is separated from the lower mold 20.

[63] According to the present invention as described above, the decoration sheet having a double structure composed of an upper sheet and a lower sheet is cut simultaneously while a high-frequency mold for manufacturing the decoration sheet which allows many shapes to be imprinted onto the upper sheet is provided, so that many other alterations are possible to those skilled in the art without departing from the scope of the present invention.

Industrial Applicability

[64] According to a high-frequency mold of the present invention, a sheet is cut by a pressure resulting from a pneumatic power or hydraulic power or by a high-frequency heat resulting from electricity, so that the cut surface is clear and accurate without requiring a separate process of processing the cut surface, and the mold and the blade are separately configured to allow a low-cost material to be selected when the mold is manufactured, and to facilitate processing so that the productivity may be enhanced and the sheet of high quality may be produced.

Claims

[1] A high-frequency mold composed of an upper mold 10 and a lower mold 20 capable of being coupled to each other for cutting a decoration sheet, the upper mold 10 comprising:
a base 11 where a fixation screw penetrates;
a first fixed mold 12 separated/fixed at an inner surface of the base 11 by means of the fixation screw; and
an external blade 14 inserted into a first gap 13 between circumferences of the base 11 and the first fixed mold 12.

[2] The high-frequency mold according to claim 1, further comprising:
a second fixed mold 15 within the first fixed mold 12 and separated/fixed from/to the base 11 at an inner side of the first fixed mold 12 by means of the fixation screw; and
an inner blade 17 protruded to be lower than the external blade 14 and inserted into a second gap 16 between circumferences of the second fixed mold 15 and the inner side of the first fixed mold 12.

[3] The high-frequency mold according to claim 1, wherein the inner blade 17 protruded to be lower than the external blade 14 is integrated with the first fixed mold 12 at an outer surface of the first fixed mold.

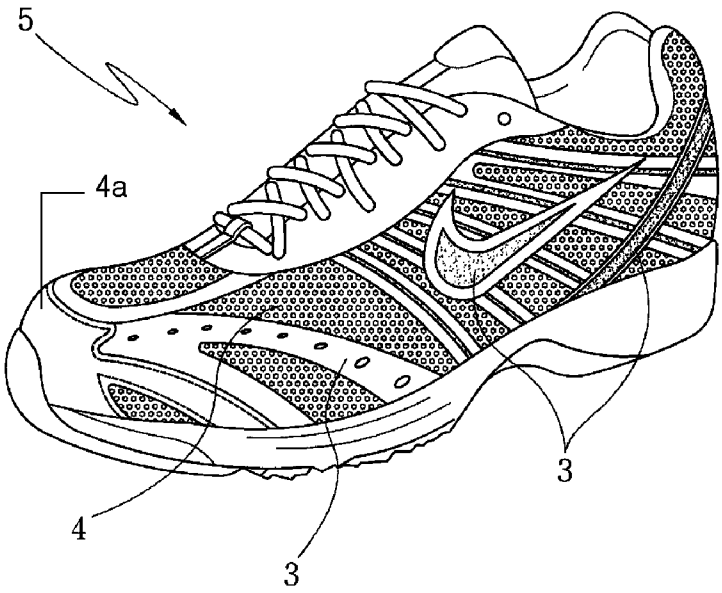
[4] The high-frequency mold according to claim 1, wherein a second fixed mold 15 separated/fixed from/to the base 11 by means of the fixation screw is disposed at an inner side of the first fixed mold 12, and the inner blade 17 protruded to be lower than the external blade 14 is integrated with the second fixed mold 15 at a circumference of the second fixed mold.

[5] The high-frequency mold according to any one of claim 1 to claim 4, wherein a shape part 19 including at least one protrusion 19a and a depression 19b is disposed at an inner surface of the inner blade 17 so that a pattern corresponding to the shape part 19 is imprinted onto the upper sheet.

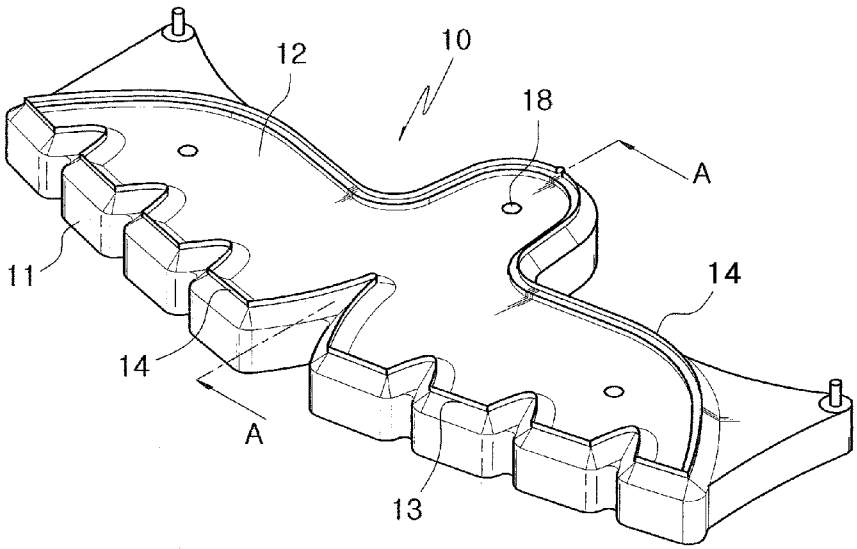
[6] The high-frequency mold according to claim 5, wherein the protrusion 19a is protruded to be lower than the inner blade 17.

[7] The high-frequency mold according to any one of claim 1 to claim 4, wherein the upper mold 10 is pressed toward the lower mold 20 by a hydraulic power or pneumatic power, or is connected to an induction heating coil to allow the blade to cut the sheet.

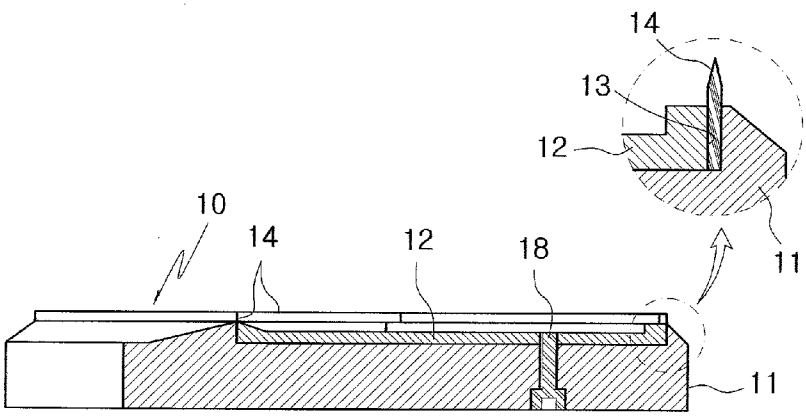
[Fig. 1]



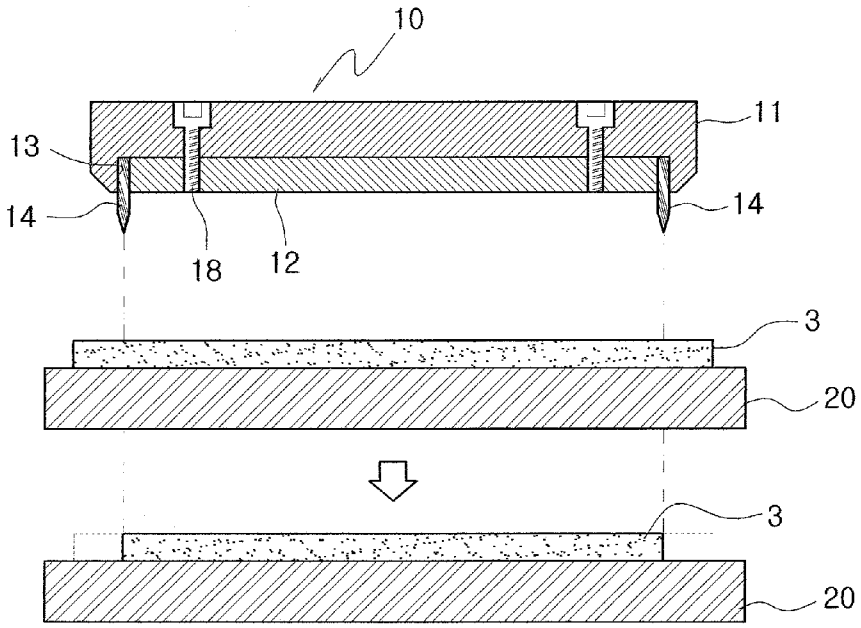
[Fig. 2]



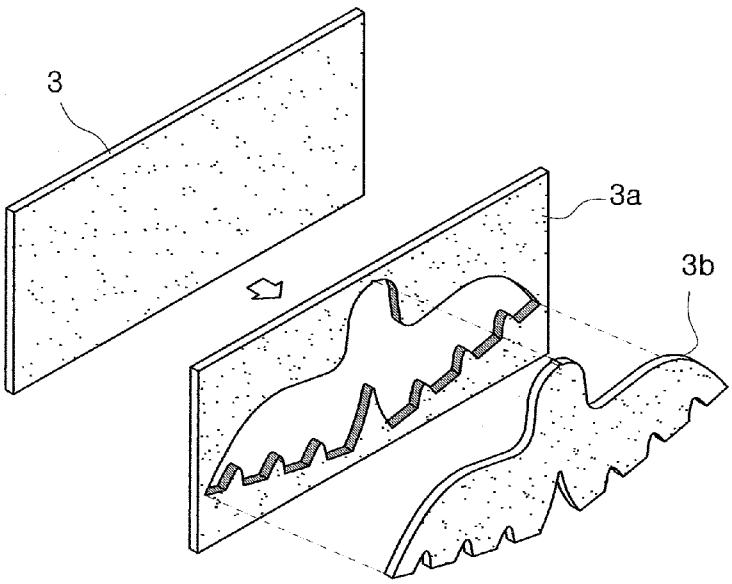
[Fig. 3]



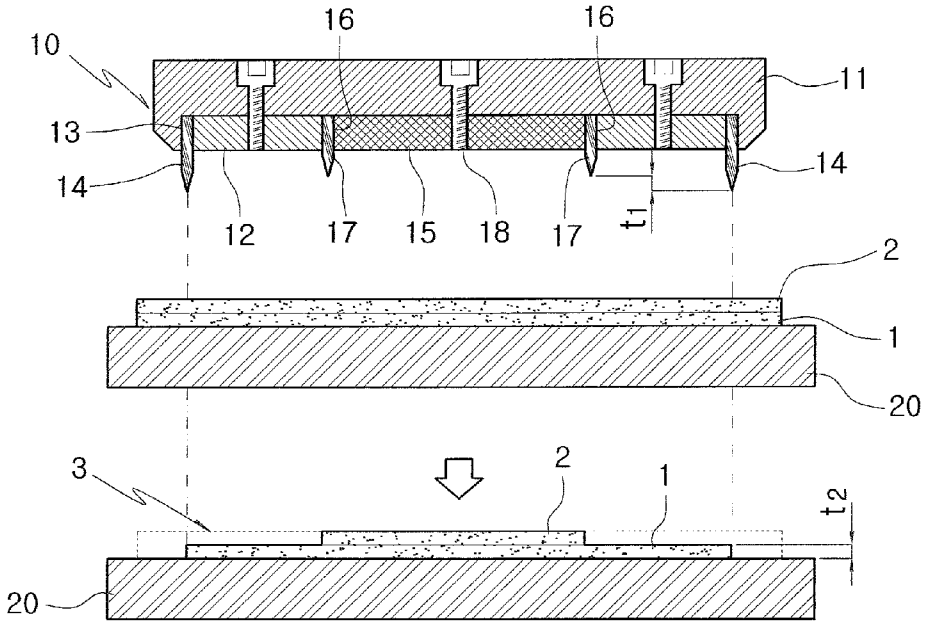
[Fig. 4]



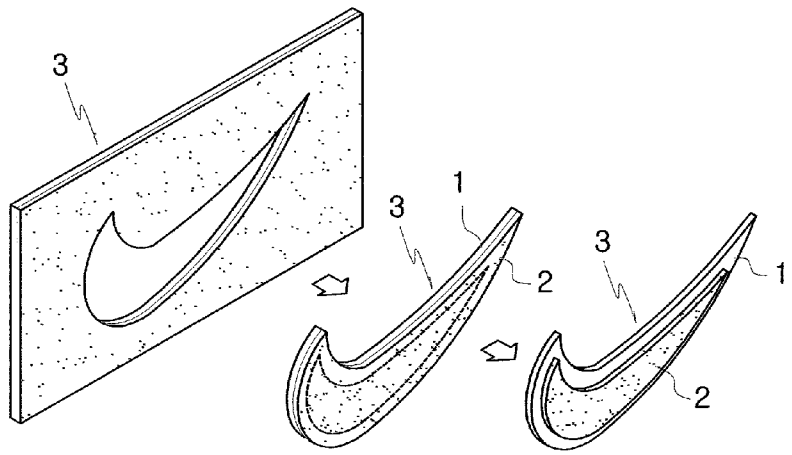
[Fig. 5]



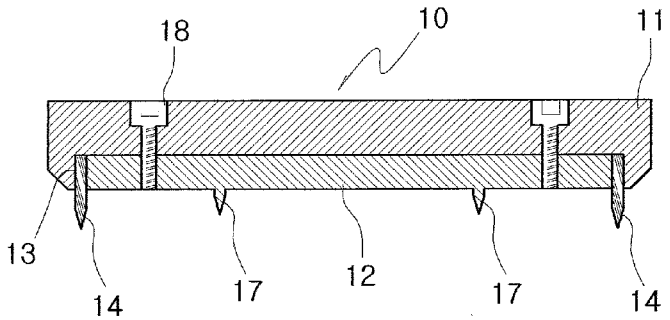
[Fig. 6]



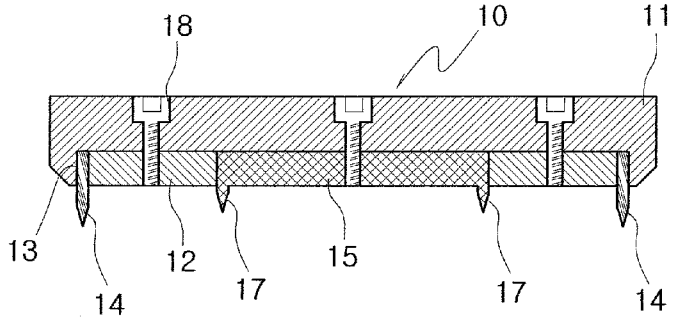
[Fig. 7]



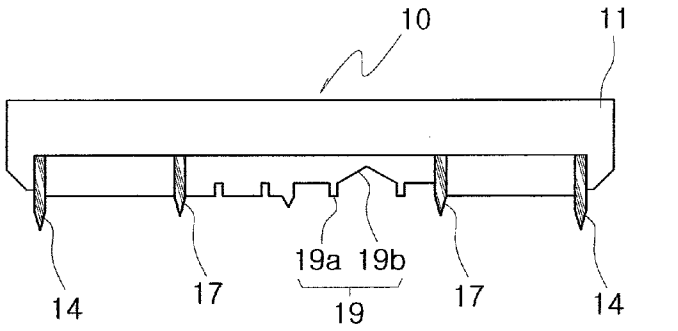
[Fig. 8]



[Fig. 9]



[Fig. 10]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2008/000714

A. CLASSIFICATION OF SUBJECT MATTER

B29C 33/08(2006.01)i, B29C 33/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 B21D 28/26, B44C 1/24, B27M 1/02, B32B 5/18, B29C 43/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility Models and applications for Utility Models since 1975
Japanese Utility Models and applications for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS, PAJ, USAPP

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y --- A	KR 10-0668761 B1 (DONG YUNG ENGINEERING CO., LTD.) 12 January 2007 See abstract, claims 1-2, figures 2-3	1, 7 ------ 2 - 6
Y --- A	KR 10-2000-0014246 A (CHOI, JIN SIK; LEE, GEON BOO) 06 March 2000 See abstract, claim 1, figures 5-7	1, 7 ------ 2 - 6
Y --- A	JP 07-214716 A (NAGAOKA SANGYO KK) 15 August 1995 See claim 2, figure 8	3 ---------- 1, 2, 4 - 7

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 10-0668761 B1	12.01.2007	NONE	
KR 10-2000-0014246 A	06.03.2000	NONE	
JP 07-214716 A	15.08.1995	NONE	