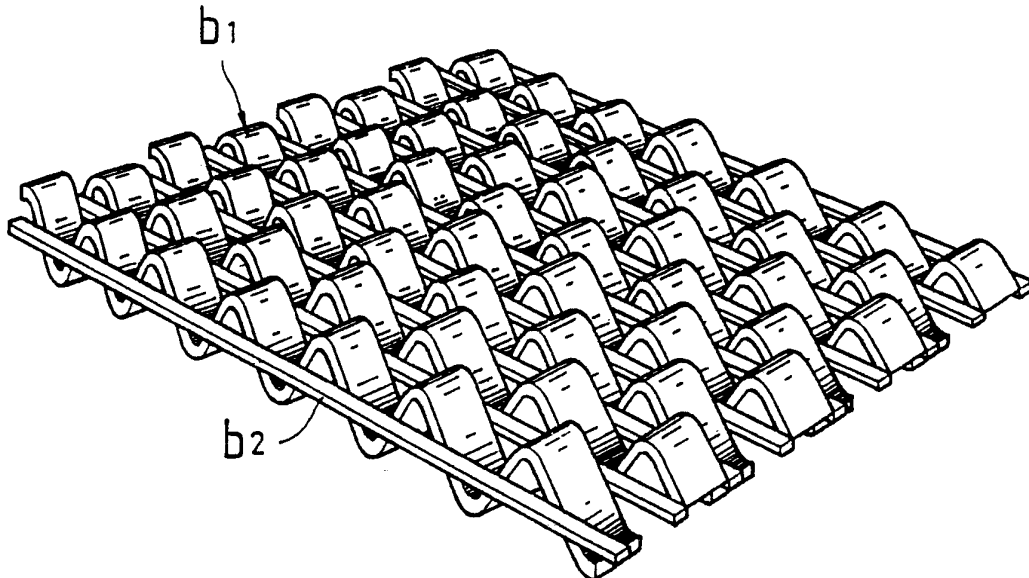




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<p>(21) International Application Number: PCT/KR91/00033 (22) International Filing Date: 20 December 1991 (20.12.91) (30) Priority data: 90-21958 27 December 1990 (27.12.90) KR (71) Applicant (for all designated States except US): LUCKY, LTD. [KR/KR]; 20, Yoido-dong, Youngdungpo-gu, Seoul 150-010 (KR). (72) Inventors; and (75) Inventors/Applicants (for US only) : KIL, Kee, Sung [KR/KR]; A-301, Lucky Apt., Pongmyung-dong, Cheongju-si, Choongchungbuk-do 360-300 (KR). WHANG, Woon, Hyun [KR/KR]; 109-402, Chookong Apt., Pongmyung-dong, Cheongju-si, Choongchungbuk-do 360-300 (KR). LEE, Kang, Youp [KR/KR]; 221-13, Pongmyung-dong, Cheongju-si, Choongchungbuk-do 360-300 (KR).</p>		<p>(74) Agent: KIM, Yoon, Bae; Y.B. Kim, Lees & Associates, 7th Floor, Garden Tower Bldg., 98-78, Unni-dong, Jongro-gu, Seoul 110-350 (KR). (81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), MC (European patent), NL (European patent), SE (European patent), US. Published With international search report.</p>

(54) Title: DOORMAT AND APPARATUS FOR PRODUCING THE SAME



(57) Abstract

The present invention relates to a doormat and an apparatus for producing the same. In particular, the doormat according to the present invention eliminates well mark from the outsole of shoes because of its good restoring force and elasticity, is convenient to use, may prevent slip because convexities formed on the surface of corrugated band are different from each other and has cushiony effect by space due to bend of synthetic resin sheet when people coming and going step on the above doormat laid on a door or a gate. The apparatus for preparing the above doormat comprises simple structure and is used in preparing easily the above doormat. Also, the above doormat comprises only plural and continuous corrugated bands (b₁), or the corrugated bands (b₁) are combined alternately with the straight bands (b₂) to form holes in order to remove easily water.

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Doormat and apparatus for producing the same

Technical Field

5 The present invention relates to a doormat and an apparatus for producing the same. In particular, it relates to a doormat which has good cushiony effect by space due to corrugation of synthetic resin sheet when people coming and going step on it laid on a door or a gate, eliminates well muck from the outsole of shoes because of its good restoring force and elasticity, is also convenient to
10 use and may prevent slip because of various convexities formed on the surface of corrugated band, and to an apparatus which comprises simple structure and is used in preparing easily the above doormat.

Background of the Art

 Various kinds of doormats have been used because a room was stained with muck
15 adhered to the outsole of shoes in the case of entering a room with stained shoes.

 Up to date, metallic coil spring bonded in a state of sheet or pile has been used as a doormat. Recently, the synthetic resin was extruded in a fine fiber, and then the fibers got tangled with each other irregularly in a state of coil, the sheet obtained was used as a doormat. Among them, the doormat made of
20 metallic coil spring easily eliminated muck adhered to the outsole of shoes.

 Such metallic doormat, however, had a disadvantage that it was difficult to shake fine muck from boots since scrapable effect was reduced by crushing of metallic coil spring in using doormat. Other disadvantage was that it had poor feeling by hardness. Also, the doormat made of pile had disadvantages that it was
25 inconvenient in wetting and therefore it had to be dry, furthermore, it could hardly eliminate muck. Also, although the third doormat eliminated well muck

adhered to the outsole of shoes, which muck in aperture of coil irregularly tangled was hardly eliminated.

Summary of the Invention

Accordingly, the object of the present invention is to provide the doormat
5 having excellent cushiony effect due to space formed by corrugation of synthetic resin sheet so as to solve the above problems of the doormats.

Other object of the present invention is to provide the doormat having effect to eliminate excellently muck adhered to the outsole of shoes because of its good restoring force and elasticity.

10 Another object of the present invention is to provide the apparatus which comprises simple structure and may easily prepare the above doormat.

Brief Description of the Figure

Figure 1 is a perspective view of the doormat according to the present invention.

15 Figure 2 is a side view of the above doormat.

Figure 3 is a plane view of the above doormat.

Figure 4 is a front view of the above doormat.

Figure 5 is an alternative embodiment of the doormat according to the present invention.

20 Figure 6 is a side view of the doormat represented in figure 5.

Figure 7 is a plane view of the doormat represented in figure 5.

Figure 8 is a front view of the doormat represented in figure 5.

Each (A), (B), (C) and (D) of figure 9 is a plane view of the doormat prepared by band having various convexities on the surface thereof.

25 Figure 10 is a schematic view of the apparatus for preparing the doormat according to the present invention.

Figure 11 is a plane view of the roller of the above apparatus.

Figure 12 is a plane view of the alternative roller of the above apparatus.

Detailed Description

The synthetic resin composition formed into the doormat according to the present invention must be composed of the materials which have excellent waterproofing, wear resistance, soluble property, elasticity and the likes. The example of organic polymers having such characteristics are polyvinyl chlorides, polyesters, polyurethanes, polypropylenes, polyethylenes, polystyrenes and various synthetic rubber.

The illustrations in figure 1 to figure 12 more clearly show the preferred embodiment of the present invention.

As illustrated in figure 1 which is a perspective view of the doormat according to the present invention, the plural and continuous bands (b_1) having 1 to 5mm of thickness and 2 to 20mm of width are combined alternately with the straight bands (b_2) having 0.2 to 5mm of thickness and 2 to 20mm of width, or only the corrugated bands (b_1) are combined in different phases to give the doormat of the figure 1.

Figure 2 is a side view of the above doormat, a corrugated band has different phase against next corrugated band and such corrugated bands having different phases with each other are combined alternately. As a result, holes are formed in space between the corrugated band (b_1) and the straight band (b_2).

Accordingly, the space due to phase difference of the above corrugated bands (b_1) gives us good cushiony effect so that feeling is good at stepping on the above doormat. Also, since it has good restoring force and elasticity, muck adhered to the outsole of shoes is easily removed.

Figure 3 is a plane view of the above doormat and figure 4 is a front view of

the above doormat.

Figure 5 is an alternative embodiment of the doormat according to the present invention. Since a width (h_1) of the corrugated band (b_1) may be differ from other width (h_2) thereof, bending and stretching force is distributed.

5 Accordingly, the doormat has better good feeling in use and it is fashionable because of graceful external appearance.

Each figure 6, figure 7 and figure 8 is a side view, a plane view and a front view of the doormat represented in figure 5,

Also, figure 9 is an alternative embodiment of the doormat according to the present invention. Since A of figure 9 represents that convexities (d_1) are horizontally formed on the surface of corrugated band (b_1) and B represents that another convexities (d_2) are longitudinally formed on the surface of corrugated band (b_1). Also, C represents that convexities (d_3) are formed in all directions on the surface of corrugated band (b_1) and D represents that dotted convexities
15 such as the surface of orange are irregularly formed. Therefore, slip is prevented at trampling the corrugated band (b_1) in using the doormat.

Therefore, the above doormats have good cushiony effect by space due to corrugation of synthetic resin sheet. Also, it eliminates well muck from the outsole of shoes because of its good restoring force and elasticity. Furthermore,
20 it is convenient and may prevent slip because of various convexities formed on the surface of the corrugated bands.

Figure 10 is a schematic view of an apparatus for preparing the doormat according to the present invention. The synthetic resin sheet (8) formed from extrusion dice(1) passes between rollers(2, 3) having the plural protuberances(4, 4') in the lower part of extrusion dice(1), and then it is molded into corrugated
25 shape. Next, it passes by guide roller(6) to take up by take-up roller(7).

Also, figure 11 is a plane view of the roller of the above apparatus.

As illustrated in figure 11 which is a plane view of the roller, the drive roller(2) having plural corrugated protuberances (4) is meshed with the idle roller(3) having plural corrugated protuberances (4') in the lower part of
5 extrusion dice(1). In the case that the drive roller(2) is rotated, the idle roller(3) is also rotated in attendance on rotation of the drive roller(2).

Walls(5, 5') are optionally established between protuberances and a corrugated protuberance(4) formed on the drive roller (2) crosses with the corrugated protuberance(4') formed on the idle drive(3). Since the guide roller(6) is
10 placed near rollers(2, 3), the synthetic resin sheet passed by the guide roller (6) is taken up by take-up roller(7).

Figure 12 is a plane view of the alternative roller of the above apparatus.

The drive roller(2') having plural corrugated protuberances(4'') is meshed with the idle roller(3') having plural corrugated protuberances(4''') in the lower part
15 of extrusion dice(1). In the case that the drive roller(2') is rotated, the idle roller(3') is also rotated in attendance on rotation of the drive roller (2').

Also, a corrugated protuberance(4'') formed on the drive roller(2') crosses with the corrugated protuberance (4''') formed on the drive roller(3'). Since the
guide roller(6) is placed near rollers(2', 3'), the synthetic resin sheet passed
20 by the guide roller(6) is taken up by take-up roller(7).

The doormat prepared by the above process may be cut in optional size according to use. The structure of apparatus for preparing the above doormat is very simple and the process for preparing the doormat is also easy in the case of
use the above apparatus. Accordingly, efficiency of work can be accelerated and
25 the doormat having good qualities can be prepared.

What is claimed is :

1. Doormat characterized in that only plural and continuous corrugated bands (b₁) having 1 to 5mm of the thickness and 2 to 20mm of width are alternately combined in different phase, or the above corrugated bands (b₁) are combined
5 between the straight bands (b₂) having 0.1 to 5mm of the thickness and 2 to 20mm of width.
2. Doormat according to claim 1, characterized in that it has the holes between corrugated band (b₁) and straight band (b₂) in order to remove easily water.
- 10 3. Doormat according to claim 1, characterized in that it has the holes between corrugated bands (b₁) having different phase with each other in order to remove easily water.
4. Doormat according to claim 1, characterized in that it is prepared by the corrugated bands (b₁) which have different widths (h₁, h₂).
- 15 5. Doormat according to claim 1, characterized in that it is prepared by the corrugated bands (b₁) which contain convexity in horizontal, convexity in longitudinal, convexity in all directions, or dotted convexity on the surface thereof.
6. Apparatus for preparing the doormat according to claims 1 to 5 comprise
20 extrusion dice (1), rollers (2, 3) having plural protuberances (4, 4') in the lower part of the extrusion dice (1), guide roller (6) placed near the rollers (2, 3) and take-up roller (7), in which the above drive roller (2) is meshed with the idle roller (3) and walls (5, 5') are optionally established between the protuberances, and the above corrugated protuberance (4) formed on the drive
25 roller(2) crosses with the corrugated protuberance (4') formed on the idle roller(3).

7. Apparatus according to claim 6, characterized in that the drive roller (2') having plural protuberances (4") is meshed with the idle roller (3') having plural protuberances(4''').

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FIG. 1

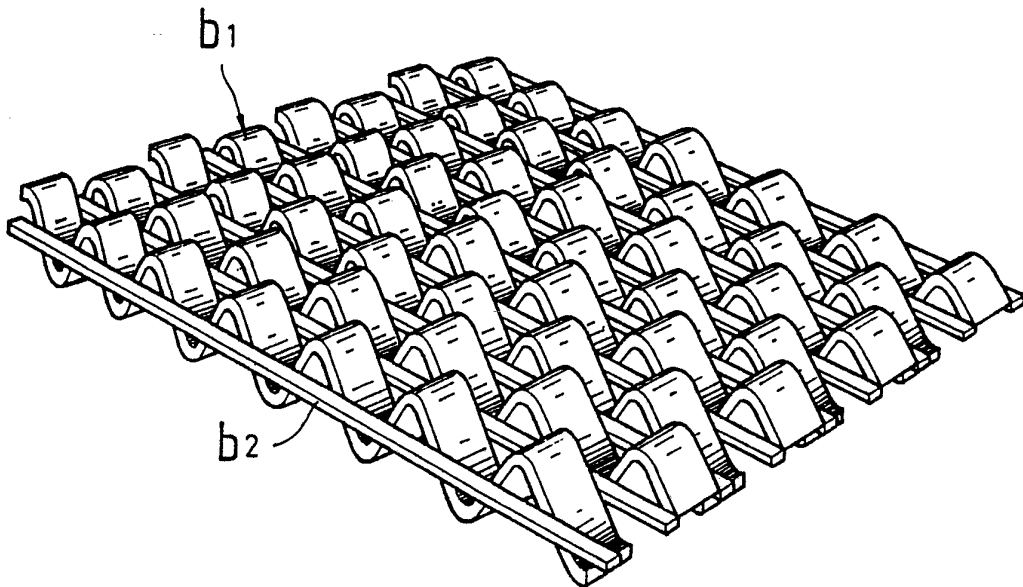
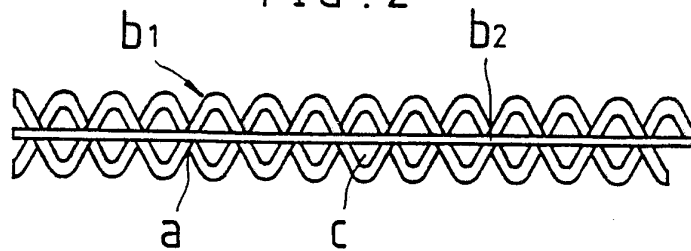


FIG. 2



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FIG. 3

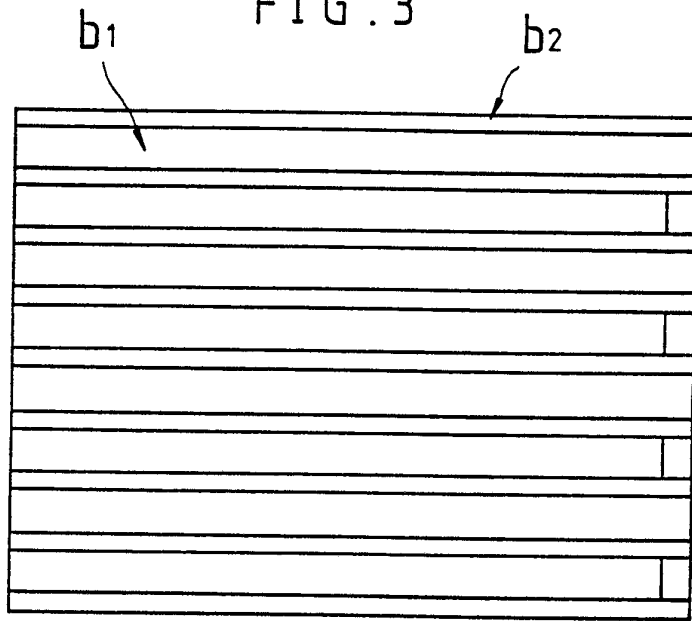
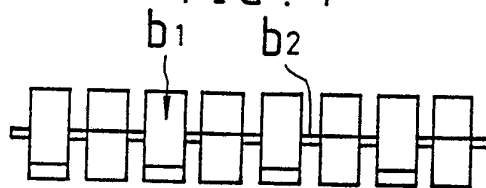


FIG. 4



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FIG. 5

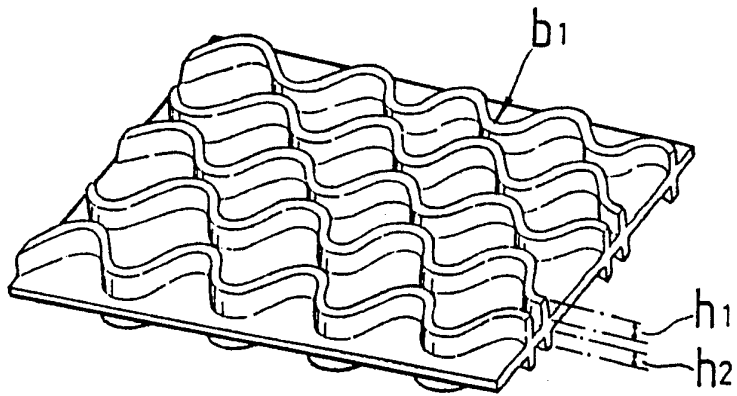
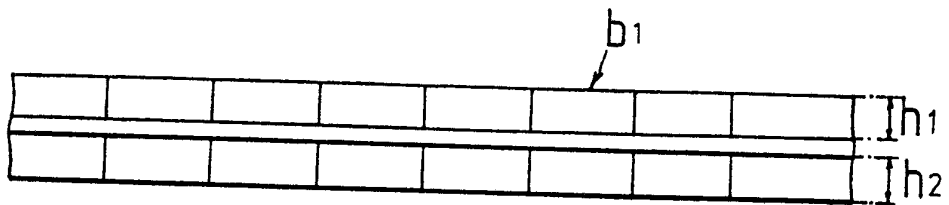


FIG. 6



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FIG. 7

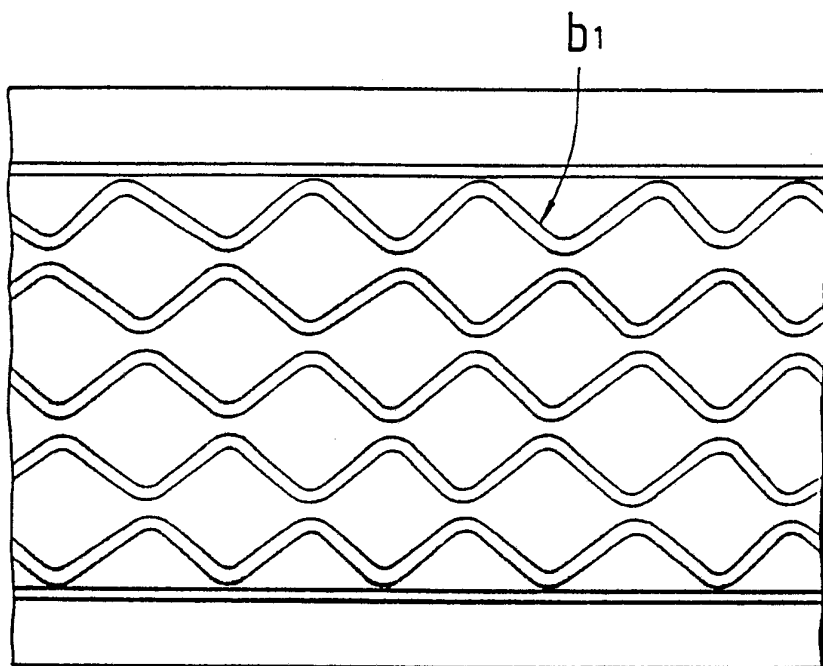
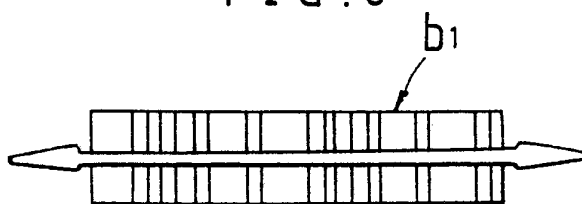
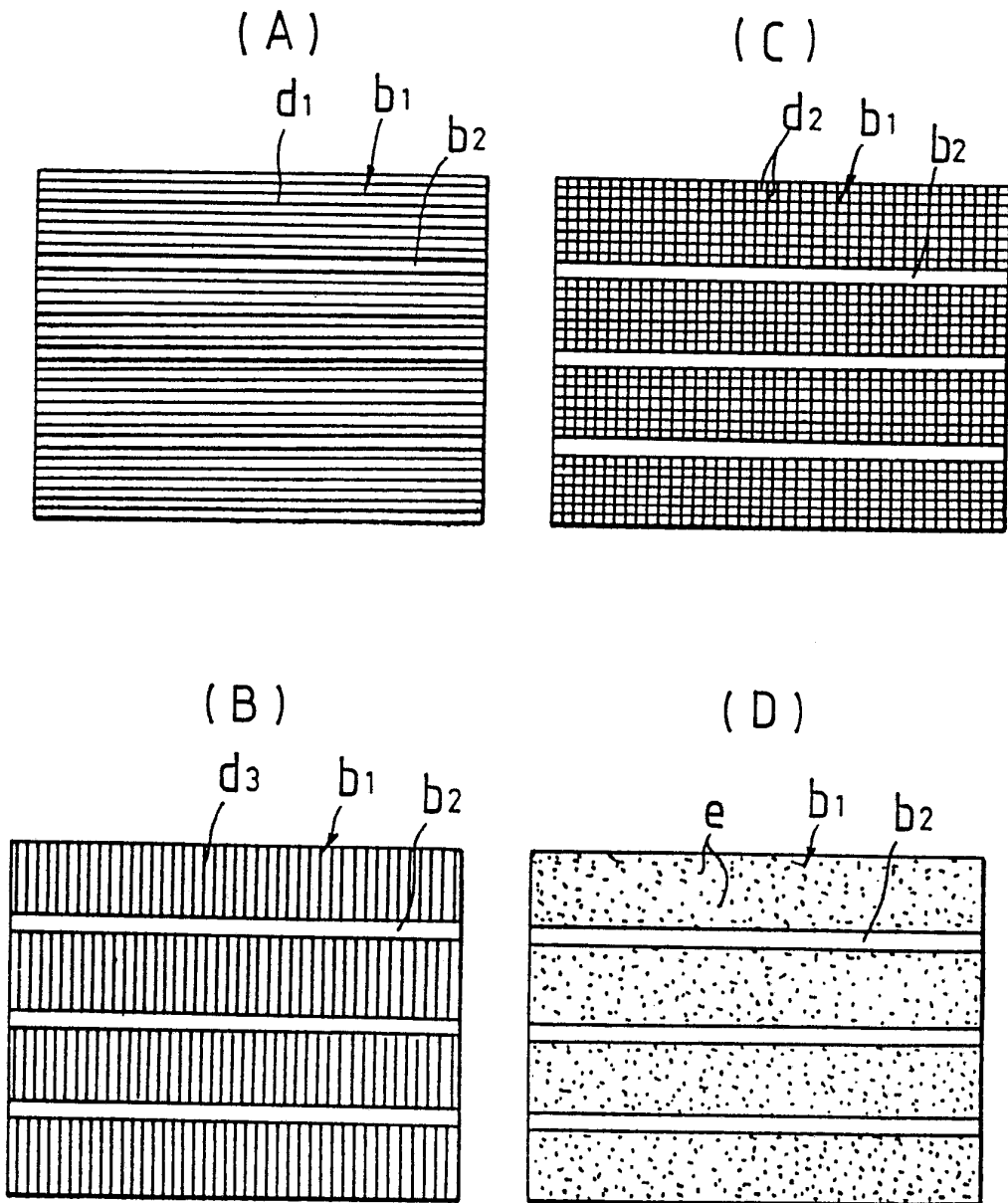


FIG. 8



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FIG. 9



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FIG. 10

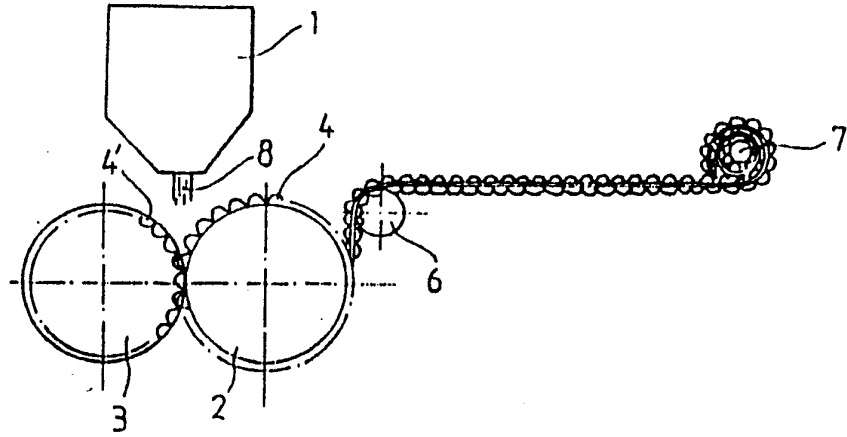


FIG. 11

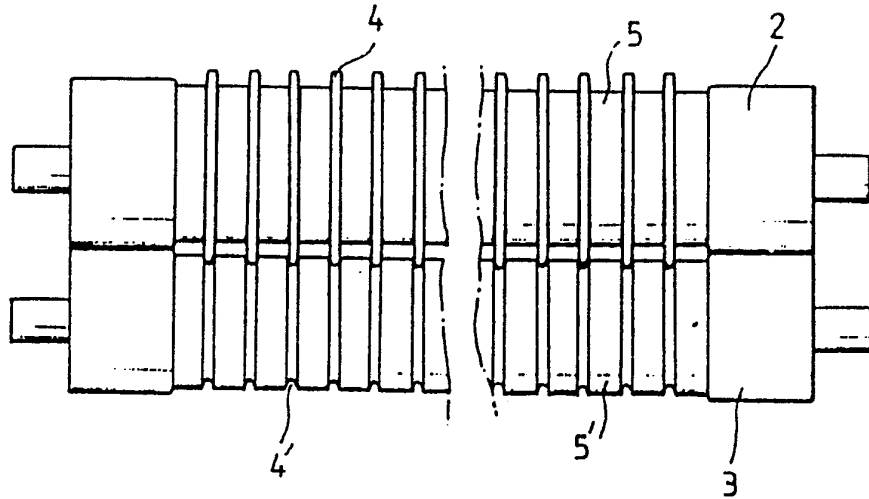
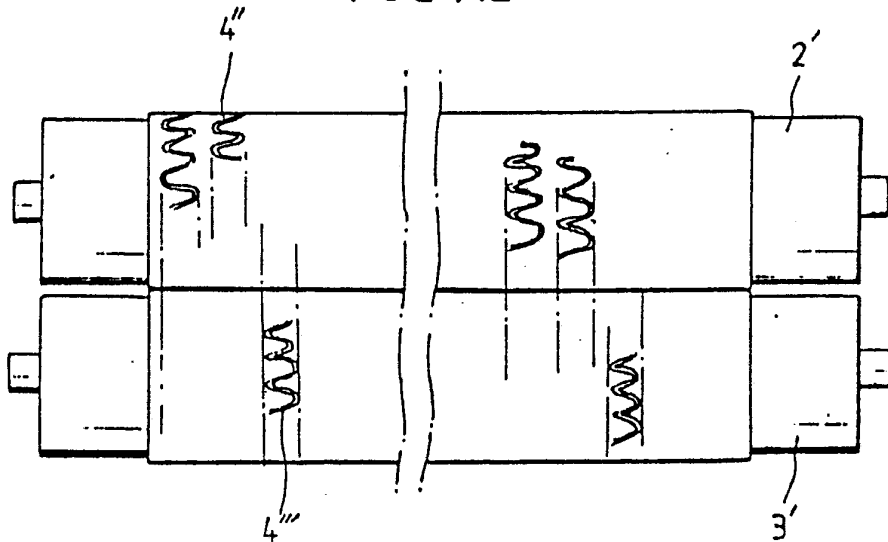


FIG. 12



INTERNATIONAL SEARCH REPORT

International Application No PCT/KR 91/00033

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl. ⁵ : A 47 L 23/22; A 47 G 27/02		
II. FIELDS SEARCHED		
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Classification System	Classification Symbols	
Int. Cl. ⁵ :	A 47 L 23/22, 23/24, 23/26; A 47 G 27/00, 27/02; B 29 C 59/04	
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	DE, C, 942 712 (ULVSUNDA GUMMIFABRIKS AKTIEBOLAG) 09 May 1956 (09.05.56), see fig. 1 and 3.	(1-5)
A	EP, A2, 0 199 537 (MINNESOTA MINING AND MANUFACTURING COMPANY) 29 October 1986 (29.10.86), see fig. 1 to 3.	(1-7)
A	DE, C, 14 333 (P.M. LELLAN) 18 July 1881 (18.07.81), see fig. 1 to 3.	(1)
A	US, A, 3 893 795 (NAUTA) 08 July 1975 (08.07.75), see fig. 1 to 3.	(6,7)
A	US, A, 3 235 440 (J.P. GOULD) 15 February 1966 (15.02.66), see fig. 4.	(6,7)
A	DE, A, 2 107 054 (FOSTER GRANT Co., Inc.) 23 November 1972 (23.11.72), see fig. 1.	(6,7)

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IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
17 February 1992 (17.02.92)	20 February 1992 (20.02.92)	
International Searching Authority	Signature of Authorized Officer	
AUSTRIAN PATENT OFFICE	<i>Velinsky-Huber</i>	

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