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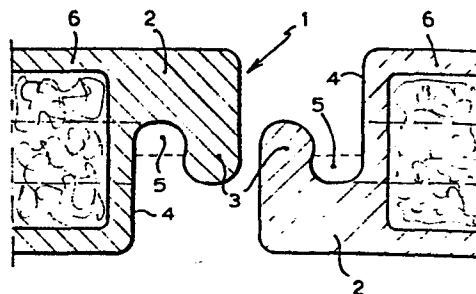
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(54) Couplable mat.

(57) A mat, provided along its circumference with a coupling member with another similar mat, wherein the coupling member is an L-shaped flange (1) at the edge of the mat, wherein the thickness of the vertical leg (3) increases in the direction of the free end and together with the side edge (4) of the mat it defines a groove (5), the width of which increases in the direction of the bottom in such a way that the largest thickness of the leg (3) is larger than the smallest width of the groove (5) and wherein at least the vertical leg (3) of the L-shaped flange (1) is made of resilient, compressible material.

FIG. 1



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A MAT

The present invention relates to a mat, provided along at least a part of its circumference with a member for coupling it with another, similar mat.

- 5 When doing gymnastics and other body exercises mats are used to break the fall, to catch the athlete after an exercise, to prevent wounds or injuries and for instance also to perform the free gymnastic exercise. For some
- 10 gymnastic exercises a relative large surface should be covered with mats and up to now this was done by simply sliding the mats towards each other with their side edges in contact with each other. The disadvantage thereof is that the mats often slide away from each other so that an
- 15 unequal surface is created which may lead at its turn to accidents and injuries for the athletes. It also happens that the mats are connected to each other by means of small belts, but this is often done inaccurately or is overlooked, so that the mats may slide all the same.
- 20 Moreover here the small belts or other fastening means do on their turn form inequalities in the surface of the mats.

The invention tends to abolish the disadvantages of said

known methods of connecting the mats.

This object is achieved in that according to the invention the coupling member consists of a substantially L-shaped flange at the edge of the mat, wherein  
5 the thickness of the vertical leg of the flange increases in the direction of the free end, and which vertical leg together with the side edge of the mat defines a groove, the width of which increases in the  
10 direction of the bottom in such a way, that the largest thickness of the leg is larger than the smallest width of the groove and that at least the vertical leg of the L-shaped flange is made of resilient, compressible material.

15

By applying said features it is achieved that between the two or more mats a coupling can be effected easily, which coupling will not loosen in use and has no portions, projecting from the surface of the mats. An  
20 important advantage of the mat is furthermore, that the mats are coupled with each other both in horizontal and in vertical direction, which is not so with the known coupled mats. Moreover the coupling operation of the mats cannot be overlooked. The coupling of the mats  
25 can be performed most easily by forcing the vertical leg at the coupling flange of the one mat into the groove between the vertical leg and the side edge of the mat of the coupling flange of another mat.

30 In a preferred embodiment of the mat according to the invention the cross-sectional configuration and the dimensions of the vertical leg of the L-shaped coupling flange are substantially equal to those of the under-

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cut groove between the vertical leg and the side edge of the mat and the sum of the thickness of the horizontal bar and the height of the vertical leg of the L-shaped flange is equal to the thickness of the mat.

5

In said embodiment a rigid and strong coupling between the mats mutually is achieved which is all the same easily detachable.

10 According to the invention the entire mat is made of resilient, compressible material. So the entire mat with the L-shaped coupling flanges can be manufactured in one and the same production step.

15 The invention will be illustrated by way of the drawings with an embodiment.

Figure 1 is a partial cross-section of two adjacent mats, wherein the L-shaped coupling flanges are not coupled  
20 with each other.

Figure 2 is a partial cross-section to two adjacent mats, wherein the L-shaped coupling flanges are coupled with each other and

25

figure 3 is a plan view of the mat according to the invention.

The mat according to the invention is provided along at  
30 least a part of its circumference, but as appears from figure 3, preferably along its complete circumference, with a substantially L-shaped coupling flange 1, which consists of a horizontal bar 2 and a vertical leg 3.

According to the invention the thickness of the vertical leg 3 of the L-shaped flange 1 increases in the direction of its free end, wherein the vertical leg 3 together with the side edge 4 of the mat defines a groove 5, the width of which increases in the direction of the bottom of the groove in such a way, that the largest thickness of the leg 3 is larger than the smallest width 3 of the groove 5, wherein at least the vertical leg 3 of the L-shaped coupling flange 1 is made of resilient, compressible material. Thereby side edge 4 of a mat, which is provided with an L-shaped coupling flange 1 with a downwardly protruding vertical leg 3, can be coupled with a side edge 4 of another mat, which is provided with an L-shaped coupling flange 1 with an upwardly extending vertical leg 3, by introducing the leg 3 of the one mat in the undercut groove 5 of the other mat, wherein the legs 3, during their introduction into the grooves 5, are first slightly compressed and subsequently expand again, so that the side edges of the two mats are coupled with each other both in horizontal and in vertical direction.

Preferably the cross-sectional configuration and the dimensions of the vertical leg 3 of the L-shaped coupling flange 1 are substantially equal to those of the undercut groove 5 between the vertical 3 and the side edge 4 of the mat and the sum of the thickness  $d$  of the horizontal bar 2 and the height  $h$  of the vertical leg 3 of the L-shaped flange 1 is equal to the thickness  $D$  of the mat, so that with an effected coupling between two side edges of adjacent mats the vertical legs 3 of the L-shaped coupling flanges 1 completely fill the grooves 5 and both in vertical and

in horizontal direction a solid and strong coupling is achieved, whereas the interconnected mats form an even, uninterrupted surface.

5 According to figure 1, 2 and 3 the vertical legs 3 of the L-shaped coupling flanges 1 are again and again oppositely directed at any two opposite sides of the rectangle of the mat, wherein the horizontal bars 2 are arranged on the one hand at the lower edge and on  
10 the other hand at the upper edge of the vertical rectangular cross-sectional plane of the mat and the outer face of the horizontal bars 2 are placed on the one hand in alignment with the lower face and on the other hand in alignment with the upper face of the mat.  
15 Thereby the mat according to the invention can be coupled at all four sides thereof with a similar mat, which coupled mats at their turn at the three remaining free sides can be coupled to similar mats, etc. so that a surface of any size can be uninterruptedly covered  
20 with mats according to the invention.

8  
The L-shaped coupling flanges 1 are formed integrally with the mat and the mat with the coupling flanges can be manufactured in one and the same operational phase  
25 in a mould into which a foamable plastics material is cast, particularly foamable polyurethane, that when foaming forms a compressed smooth casting skin 6 at the outside against the walls of the mould, and the gas cells of which increase from the outside inwards  
30 (figure 1 and 2). The casting skin 6 is schemetically illustrated in figure 1 and 2 with a straight, planar boundary at the interior, which will, however, have an irregular configuration in practice.

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CLAIMS

1. A mat, provided along at least a part of its circumference with a member for coupling it with another, similar mat, characterized in that the coupling member consists of a substantially L-shaped flange (1) at the edge of the mat, wherein the thickness of the vertical leg (3) of the flange (1) increases in the direction of the free end, and which vertical leg (3) together with the side edge (4) of the mat defines a groove (5), the width of which increases in the direction of the bottom in such a way, that the largest thickness of the leg (3) is larger than the smallest width of the groove (5) and that at least the vertical leg (3) of the L-shaped flange (1) is made of resilient, compressible material.
2. A mat according to claim 1, characterized in that the cross-sectional configuration and the dimensions of the vertical leg (3) of the L-shaped coupling flange (1) are substantially equal to those of the undercut groove (5) between the vertical leg and the side edge (4) of the mat and the sum of the thickness (d) of the horizontal bar and the height (h) of the vertical leg (3) of the L-shaped flange (1) is equal to the thickness (D) of the mat.

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3. A mat according to claim 1 or 2, characterized in that the L-shaped coupling flange (1) is provided along substantially the entire circumference of the mat, such that at two opposed sides of the mat the vertical legs (3) of the coupling flange (1) are oppositely directed and the horizontal bars (2) at the one side are aligned with the upper face, and at the other side they are aligned with the lower face of the mat.
- 5
4. A mat according to any of the preceding claims, characterized in that the L-shaped flange(s) (1) is (are) formed integrally with the mat.
- 10
5. A mat according to claim 4, characterized in that the mat is made of foamed plastics material, wherein during foaming in the mould a compressed casting skin (6) is formed at the outside of the material.
- 15
6. A mat according to claim 5, characterized in that the mat is made of foamed polyurethane, the gass cells of which increase from the outside inwards.
- 20
7. A mat, substantially as described in the specification and/or illustrated in the drawings.

tD/HH/Tvds



FIG. 1

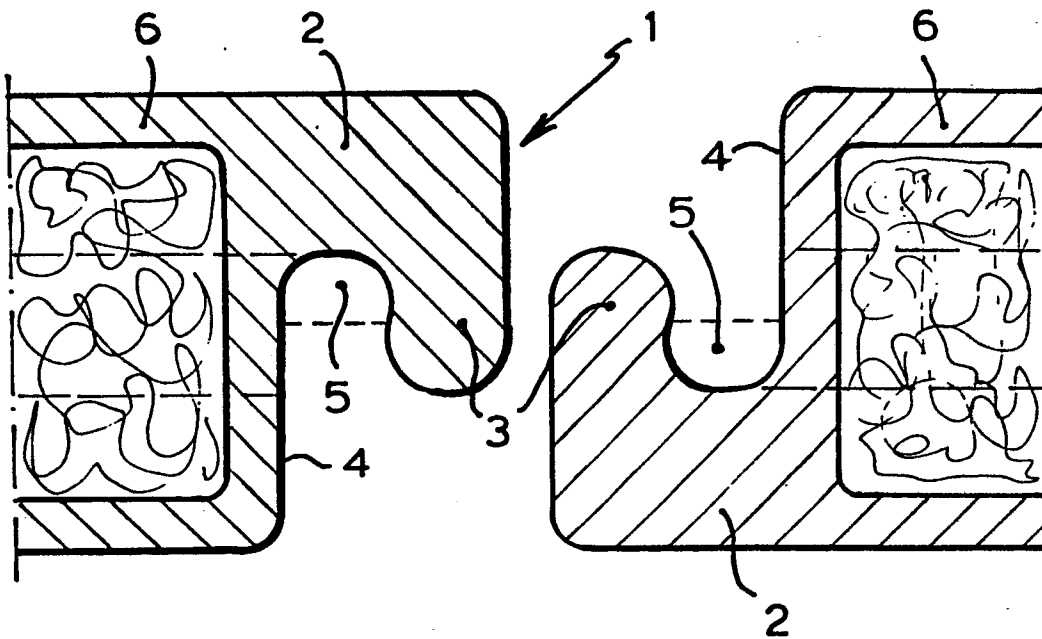
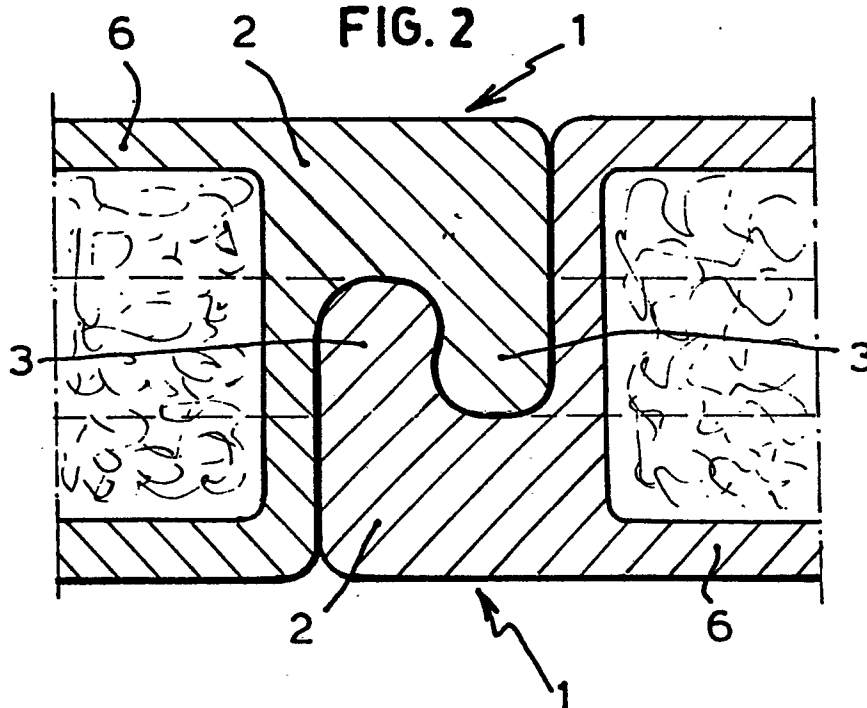


FIG. 2



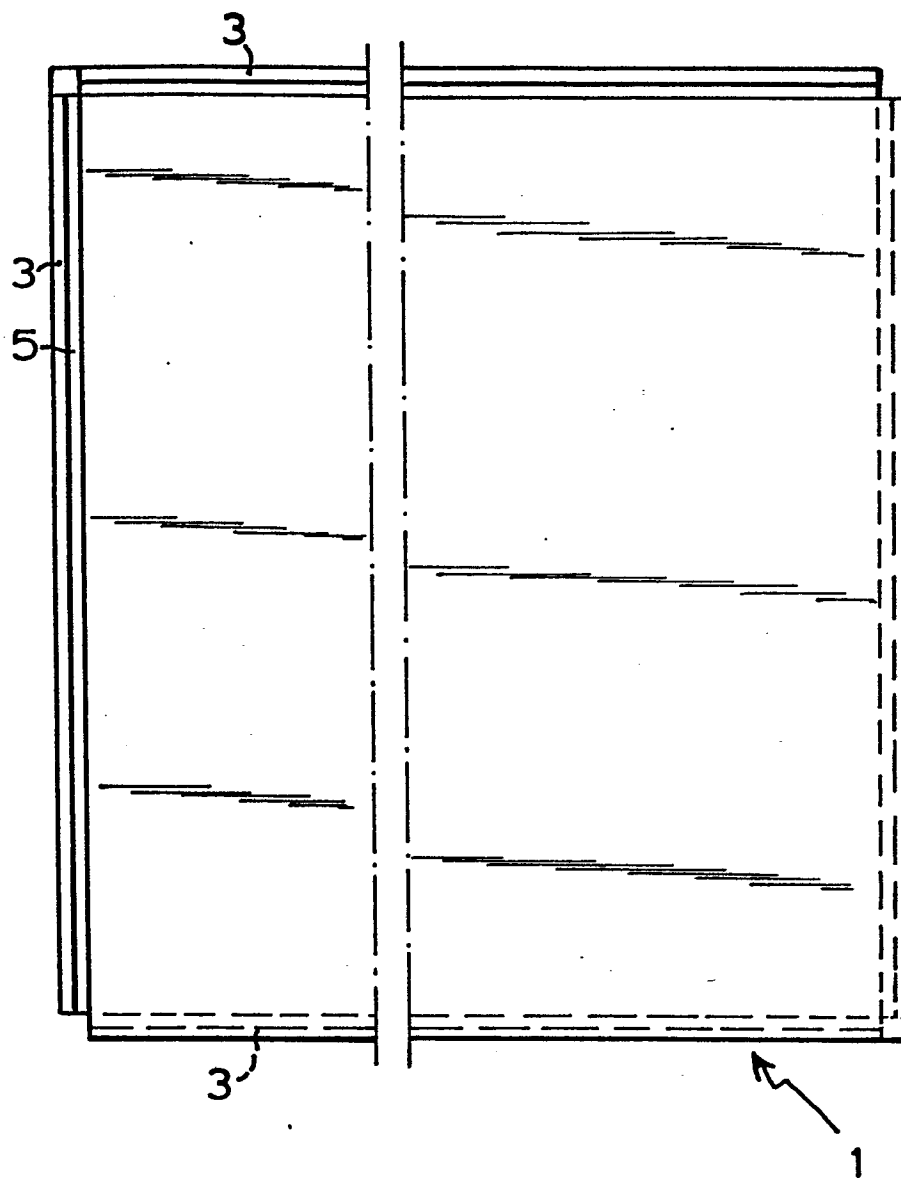


FIG. 3



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# EUROPEAN SEARCH REPORT

**0085196**  
Application number

EP 82 20 0111

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. <sup>3</sup> )
X	DE-C-4 463 380 (FRENZEL) *	1-7	A 47 G 27/02 A 63 C 19/04 E 04 F 15/10 E 01 C 13/00
A	DE-A-2 516 843 (WILHELM KÖPP ZELLKAUTSCHUK) * Claims; figures *	1,7	
X	FR-A-2 278 876 (CHOPPE) * Whole document *	1-4,7	
X	GB-A- 647 812 (FREEMAN) * Page 3, lines 23-47; figure 4 *	1-4,7	
X	BE-A- 750 281 (SCHEERLINCK) * Page 8, last paragraph; page 9, paragraph 1; claims 1,17,18; fig- ure 10 *	1-4,7	
X	FR-A-1 293 043 (PIRAUD PLASTIQUES) * Abstract; figures 4-6 *	1-4,7	TECHNICAL FIELDS SEARCHED (Int. Cl. <sup>3</sup> )  A 47 G A 63 C E 04 F E 01 C
A	GB-A-1 308 011 (COUQUET) * Page 3, lines 97-130; page 4, lines 1-9; figures 7-12 *	1-4,7	
A	DE-A-2 510 863 (SCHLEMMER-EXTRA-WERKE) * Claims; figures *	5	
		-/-	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
DEN HAAG		30-09-1982	BOURSEAU A.M.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
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P : intermediate document		& : member of the same patent family, corresponding document	



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
A	CA-A-1 086 789 (PRITCHARD) * Claims 7,8 *  -----	5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
The present search report has been drawn up for all claims			
Place of search DEN HAAG		Date of completion of the search 30-09-1982	Examiner BOURSEAU A.M.
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons  & : member of the same patent family, corresponding document	