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(54) **Mattress and mattress cover**

(57) A mattress having a longitudinal and a transverse direction and at least one lying surface arranged to support a user, the mattress comprising a resilient core (1), which is arranged to be depressed when a user is lying onto the mattress, and a mattress cover (2) enclosing the mattress core a(1) and made at least at the location of said lying surface of a cover material showing a predetermined stretchability, said lying surface showing at least one zone (II) which is situated in the longitudinal direction of the mattress between two adjoining zones (I and III) and which is arranged to be depressed

deeper than those two adjoining zones and wherein in the area formed by said zone and by said two adjoining zones, the cover material is interrupted at least once in the longitudinal direction of the mattress and, at each interruption (10, 11), the interrupted portions of the cover material are connected to one another by means of an elastic band (12) which band extends with its longitudinal direction in the transverse direction of the mattress and which band has at least in its transverse direction a higher stretchability than the predetermined stretchability of the cover material thereby increasing the compressability of the mattress in said zone (II).

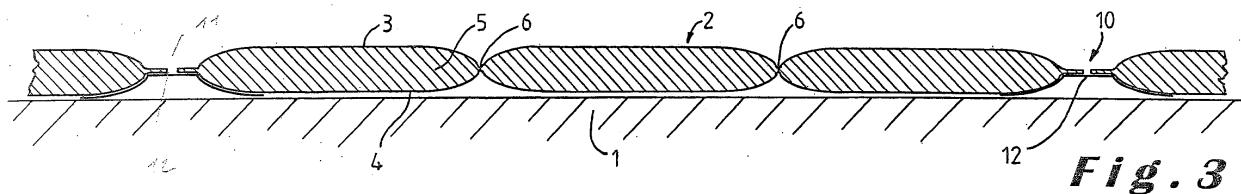


Fig. 3

Description

[0001] The present invention relates to a mattress having a longitudinal and a transverse direction and at least one lying surface arranged to support a user, the mattress comprising a resilient core, which is arranged to be depressed when a user is lying onto the mattress, and a mattress cover enclosing the mattress core and made at least at the location of said lying surface of a cover material showing a predetermined stretchability, said lying surface showing at least one zone which is situated in the longitudinal direction of the mattress between two adjoining zones and which is arranged to be depressed deeper than those two adjoining zones.

[0002] In order to provide an optimal support for a person lying on a mattress it is known that a mattress should be depressed deeper in certain zones, such as the shoulder and the hips zones, compared to other zones, such as the back zone. In this way, a sufficient support of the back or the lumbar area of the user can in particular be obtained. In practice different mattresses have been developed wherein the hardness of the mattress core is adjusted in different zones to provide such an optimal support.

[0003] Mattresses generally comprise a core enclosed in a mattress cover. This mattress cover should preferably be stretchable in order to maintain the support properties of the mattress core as much as possible. However, in practice, even so-called stretchable mattress covers still have a limited stretchability. Moreover, some people prefer a padded, more particularly a quilted mattress cover consisting of two layers of cloth with a padding of wool, cotton or a synthetic material between them. Such a mattress cover is substantially non-stretchable. Due to the so-called hammock effect caused by a non-stretchable cover the advantageous effects intended by providing zones of varying hardnesses in the mattress core are largely lost.

[0004] An object of the present invention is now to provide a new mattress having a cover which reduces the support properties of the mattress core to a less extent than the known mattress covers made of the same material.

[0005] In order to achieve this object, the mattress according to the invention is characterised in that, in the area formed by said zone and by said two adjoining zones, the cover material is interrupted at least once in the longitudinal direction of the mattress and, at each interruption, the interrupted portions of the cover material are connected to one another by means of an elastic band which extends with its longitudinal direction in the transverse direction of the mattress and which has at least in its transverse direction a higher stretchability than the predetermined stretchability of the cover material thereby increasing the compressability of the mattress in said zone.

[0006] By providing the elastic band or bands, the hammock effect of the mattress cover is reduced in the

zone which is arranged to be depressed deeper, for example in the hips zone or in the shoulder zone. In this way, the support properties provided by the mattress core are better maintained.

[0007] The mattress cover may be made of a stretchable material but, in view of the stretchability offered by the presence of the elastic bands, the mattress cover is preferably made of a substantially non-stretchable material, in particular a padded or a quilted material, providing extra comfort for the user.

[0008] In a preferred embodiment of the mattress according to the invention, the interrupted portions of the cover material substantially abut one another in the non-depressed state of the mattress.

[0009] In this way, the visual appearance of the mattress is largely maintained, especially when the elastic band is fixed, in particular stitched against the backside of the cover material.

[0010] The present invention also relates to a mattress cover arranged to be used in a mattress according to the invention.

[0011] Other particularities and advantages of the invention will become apparent from the following description of some particular embodiments of the mattress according to the present invention. The reference numerals used in this description relate to the annexed drawings wherein:

Figure 1 shows a top plan view on one of the lying surfaces of a mattress according to the invention having a removable mattress cover, comprising one part forming the lying surface of the mattress and fixed by means of a zip-fastener to the remaining part of the mattress cover;

Figure 2 shows a view on the bottom side of the unzipped and removed top part of the mattress cover;

Figure 3 shows, on a larger scale, a cross-sectional view along lines III-III in Figure 1;

Figure 4 shows, on a still larger scale, a detail of the mattress illustrated in Figure 3, more particularly the elastic band connecting two interrupted portions of the mattress cover;

Figure 5 is a view similar to Figure 4 but illustrating schematically the stretching of the elastic band when a person is lying onto the mattress.

[0012] The mattress illustrated in the figures consists generally of a core 1 enclosed in a removable cover 2. The core 1 may be for example a foam core or a core comprising springs, in particular pocket springs. It may have a uniform hardness or it may show zones of different hardnesses. Seen in the longitudinal direction of the mattress, the core shows preferably at least five zones of different hardnesses, namely a head zone, a shoulder zone, a back zone, a hips zone and a feet/legs zone. The shoulder zone and the hips zone have a lower hardness so that the shoulder and the hips can sink in deeper

into the mattress. In this way a sufficiently firm support of the back (lumbar region) can be obtained. Optionally, the head zone may have a same lower hardness as the shoulder zone since, due to the smaller weight of the head, it will still be adequately supported. The feet/legs zone can optionally be divided into three zones, namely into zones which are symmetrical to the back, shoulder and head zones (or to the back and shoulder/head zone when the shoulder and the head zone have a same hardness) so that the mattress shows seven zones and can be used in two orientations. The mattress has at least one but preferably two lying surfaces so that it can also be turned upside down.

[0013] Even when the core 1 has a uniform density, it shows at least one zone which is arranged to be compressed deeper than its two adjoining zones when a user is lying on the mattress. Indeed, due to the shape of the user the shoulder zone and/or the hips zone will normally be compressed deeper.

[0014] In the embodiment illustrated in the drawings, the lying surface of the mattress is divided in five zone namely in a head zone I, a shoulder zone II, a back zone III, a hips zone IV and a legs/feet zone V. Both in the shoulder zone II and in the hips zone the mattress is arranged to be compressed deeper than in the adjoining zones. The mattress cover 2 shows a top and a bottom part forming the lying surfaces of the mattress. As illustrated in Figures 1 to 3 these top and bottom parts are made of a padded material, in particular of a quilted material, comprising two layers 3, 4 of cloth with a padding 5 of wool, cotton, a synthetic material or the like between them. This layered cover material is stitched through according to transverse stitchings 6. At the edges an edging 7 is stitched to the cover material and underneath this edging 7 a zip-fastener 8.

[0015] In order to reduce the hammock effect caused by such a substantially non-stretchable cover material in the shoulder zone, this cover material is interrupted twice, namely a first interruption 10 at the transition between the head zone I and the shoulder zone II and a second interruption 11 at the transition between the shoulder zone II and the back zone III. At each of these interruptions 10, 11 the interrupted portions of the cover material are connected to one another by means of an elastic band or strip 12. This elastic band 12 extends in the transverse direction of the mattress and has at least in its transverse direction, i.e. in the longitudinal direction of the mattress, a higher stretchability than the stretchability of the cover material. In this way, the hammock effect of the mattress cover is reduced so that the compressability of the mattress is correspondingly increased in the shoulder zone II.

[0016] The arrangement of two interruptions at both sides of the shoulder zone is to be preferred since tests have shown that in this way, the shoulder zone II can easily be depressed substantially as a flat plane, i.e. both the middle portion and the side portions situated adjacent to the head and the back zones can be de-

pressed easily down to a same depth.

[0017] Instead of providing two interruptions one could also consider to provide only one interruption which would then be situated preferably in the middle of the shoulder zone. Instead of arranging the interruptions at the transitions with the adjoining zones, they could also be arranged in the shoulder zone itself or in the adjoining zones. It is clear that it is also possible to provide more than two interruptions in the cover material.

[0018] Since a user is normally lying in the middle of a mattress, the interruptions 10, 11 do not necessarily have to extend over the entire width of the mattress although this is preferred. In the preferred embodiment illustrated in the drawings, the elastic bands 12 provide an increased stretchability of the mattress cover over its entire width, except for the edges where the non-elastic edgings 7 prevent a stretching of the cover 2.

[0019] The elastic bands 12 are preferably fixed against the backside of the cover material, in particular by means of stitchings 13. As illustrated in Figure 4 the interrupted portions of the cover material preferably substantially abut one another in the non-depressed or non-loaded state of the mattress so that in this way the elastic bands are largely hidden from view and a nicely finished surface is obtained.

[0020] The elastic bands are preferably made of a knitted stretchable fabric wherein elastics are provided extending in the transverse direction of the elastic bands.

[0021] As illustrated schematically in Figure 5, the elastic bands 12 are stretched in their transverse direction when a person is lying onto the mattress. The extent to which the elastic bands can be stretched depends on the intrinsic stretchability of the elastic bands and of the distance (in the longitudinal direction of the mattress) between the locations where the elastic bands are fixed to the cover material, i.e. the distance between the stitchings 13. The transverse stretchability of the elastic bands 12 should preferably be such that the stretchability of the mattress cover 2 is increased in the area of the shoulder zone and the two adjoining zones with at least 1 cm, and most preferably with at least 2 cm. The stretchability of the mattress cover should in particular be increased in a middle zone of the mattress extending over at least 50%, preferably over at least 75%, and most preferably over at least 90% of the width of the mattress since a person lying on the mattress will usually only be supported by such a middle zone. For determining the increase in stretchability of the mattress cover in the middle zone, a traction of 1 N multiplied by the width in cm of this zone should be applied to this zone and the elongation should be measured both for the cover material as such and for the cover material interrupted with the elastic band or bands (and this for a same length of mattress cover).

[0022] For a person skilled in the art it will be clear that a number of modifications can be applied to the embodiment illustrated in the drawings without departing

from the scope of the appended claims.

[0023] Instead of, or in addition to, providing the interruptions to increase the stretchability in the area of the shoulder zone, one or more interruptions and elastic bands could also be provided in the area of the hips zone to reduce the hammock effect in this zone. The interruptions and elastic bands could moreover be applied symmetrically along the length of the mattress so that the mattress can be used in two orientations with the same reduction of the hammock effect in the shoulder zone. The bottom side of the mattress cover, which has not been illustrated in the drawings, could further be provided in the same way as the top side with elastic bands so that the mattress can be used also upside down.

Claims

1. A mattress having a longitudinal and a transverse direction and at least one lying surface arranged to support a user, the mattress comprising a resilient core (1), which is arranged to be depressed when a user is lying onto the mattress, and a mattress cover (2) enclosing the mattress core a(1) and made at least at the location of said lying surface of a cover material showing a predetermined stretchability, said lying surface showing at least one zone (II) which is situated in the longitudinal direction of the mattress between two adjoining zones (I and III) and which is arranged to be depressed deeper than those two adjoining zones, **characterised in that**, in the area formed by said zone and by said two adjoining zones, the cover material is interrupted at least once in the longitudinal direction of the mattress and, at each interruption (10, 11), the interrupted portions of the cover material are connected to one another by means of an elastic band (12) which extends with its longitudinal direction in the transverse direction of the mattress and which has at least in its transverse direction a higher stretchability than the predetermined stretchability of the cover material thereby increasing the compressability of the mattress in said zone (II).
2. A mattress according to claim 1, **characterised in that** the cover material is substantially non-stretchable.
3. A mattress according to claim 1 or 2, **characterised in that** the cover material is a padded material, in particular a quilted material.
4. A mattress according to any one of the claims 1 to 3, **characterised in that** the cover material is interrupted over substantially the entire width of the mattress.
5. A mattress according to any one of the claims 1 to 4, **characterised in that** in the area formed by said zone (II) and by said two adjoining zones (I and III), the cover material is interrupted at least twice in the longitudinal direction of the mattress.
6. A mattress according to claim 5, **characterised in that** the cover material is interrupted at the transitions of said zone with its two adjoining zones.
7. A mattress according to any one of the claims 1 to 6, **characterised in that** in the non-depressed state of the mattress, the interrupted portions of the cover material substantially abut one another.
8. A mattress according to any one of the claims 1 to 7, **characterised in that** the elastic band (12) is fixed, in particular stitched against the backside of the cover material.
9. A mattress according to any one of the claims 1 to 8, **characterised in that** by the presence of said at least one interruption (10, 11) in the cover material, the stretchability of the mattress cover, determined by measuring the elongation of the mattress cover when exerting a traction of 1 N/cm on the mattress cover (2) in the longitudinal direction thereof, is increased in said area, in at least a middle zone of the mattress extending over at least 50%, preferably over at least 75%, and most preferably over at least 90% of the width of the mattress, with at least 1 cm and preferably with at least 2 cm.
10. A mattress according to any one of the claims 1 to 9, **characterised in that** said zone which is arranged to be depressed deeper than its two adjoining zones is arranged to be located underneath the shoulders or underneath the hips of the user.
11. A mattress according to any one of the claims 1 to 10, **characterised in that** said zone the mattress core (1) has a smaller hardness than in said two adjoining zones.
12. A mattress cover arranged to enclose a resilient mattress core and showing the characteristics defined in any one of the claims 1 to 11.

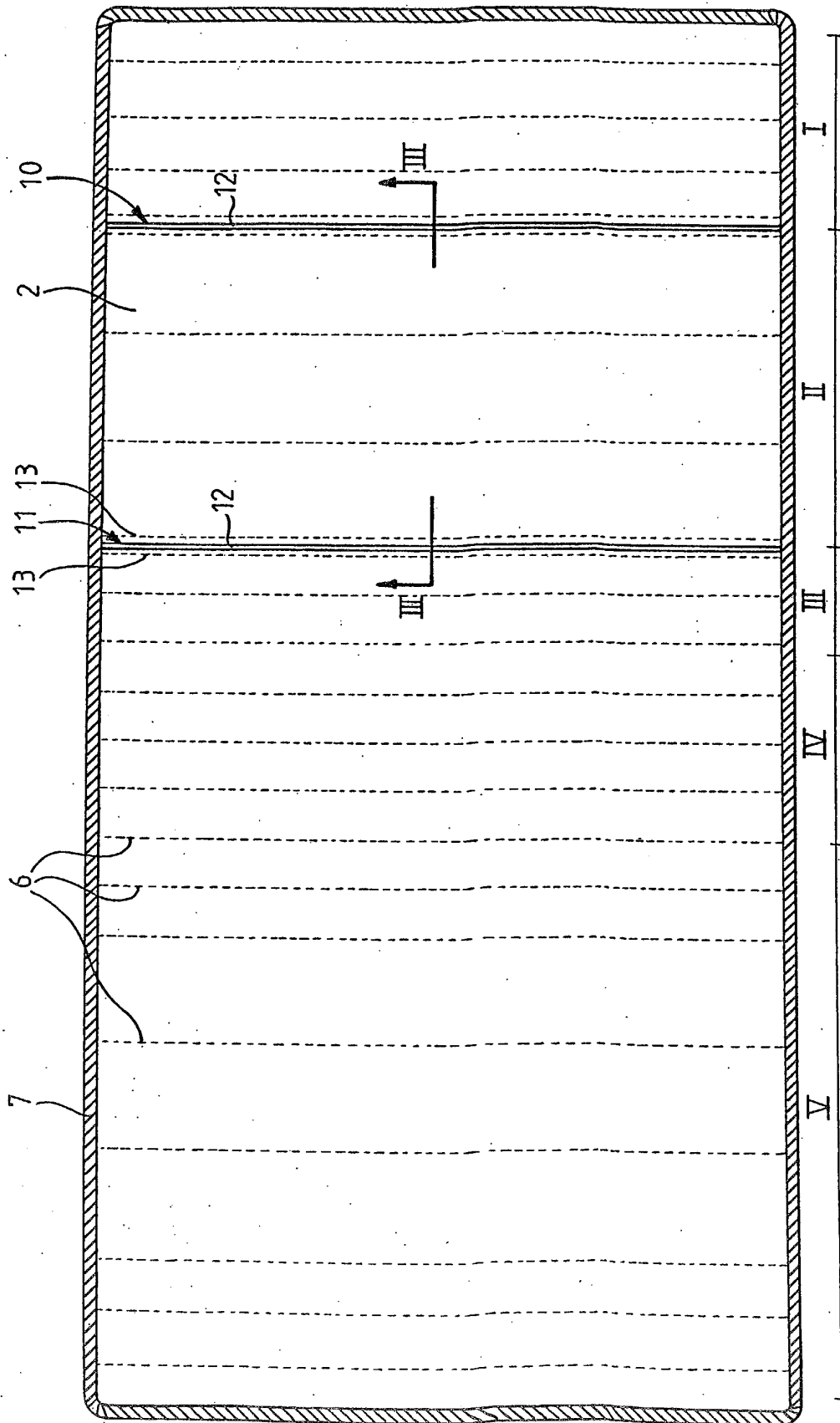


Fig. 1

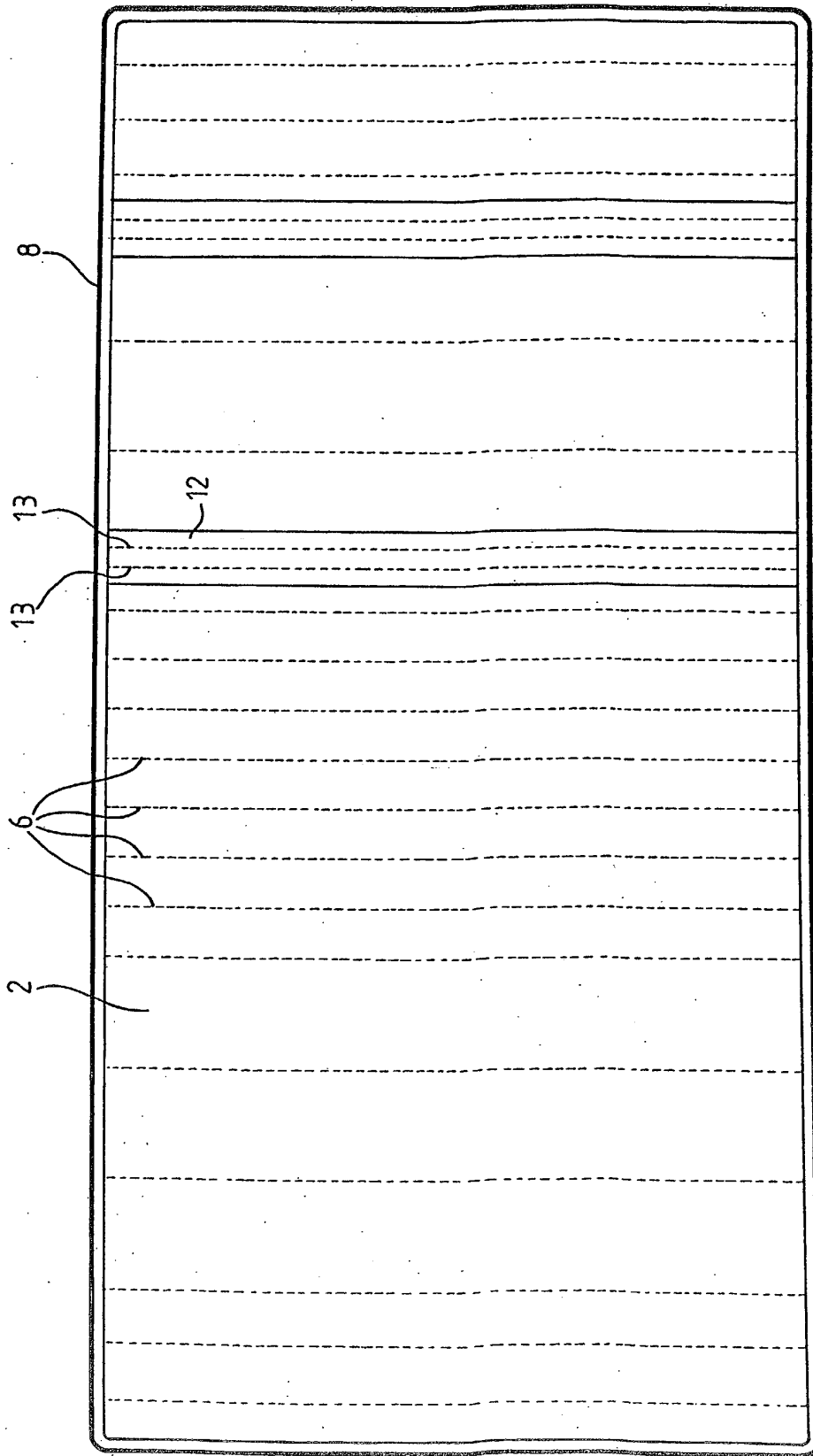


Fig. 2

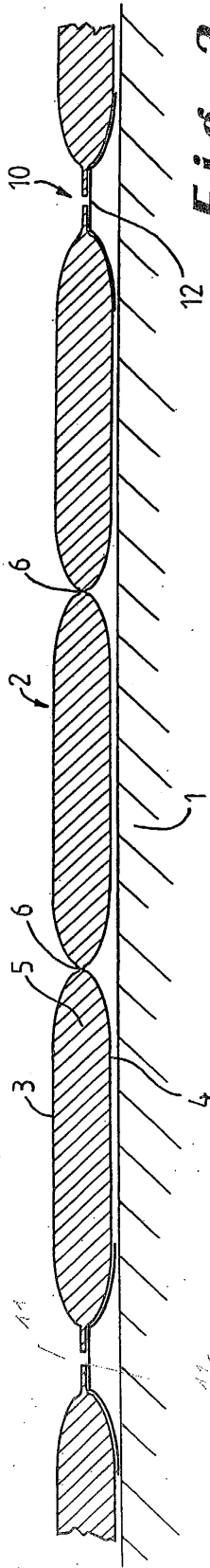


Fig. 3

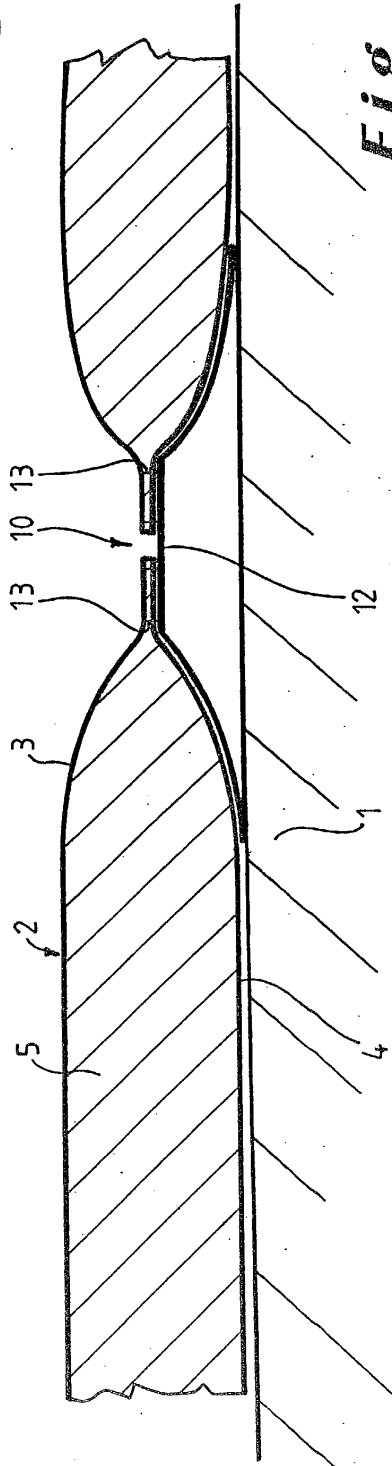


Fig. 4

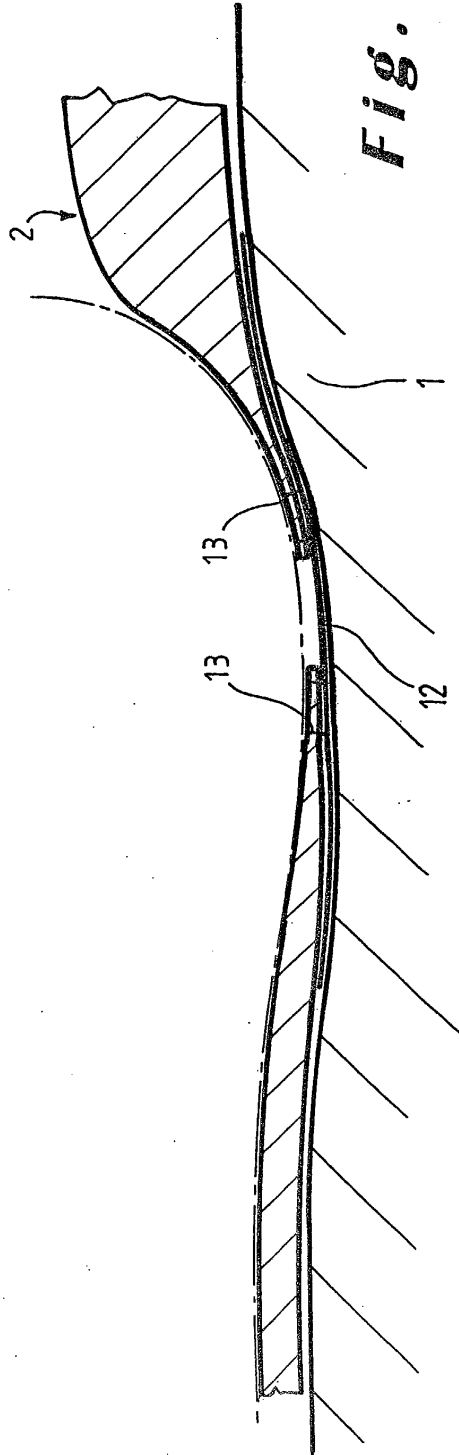


Fig. 5