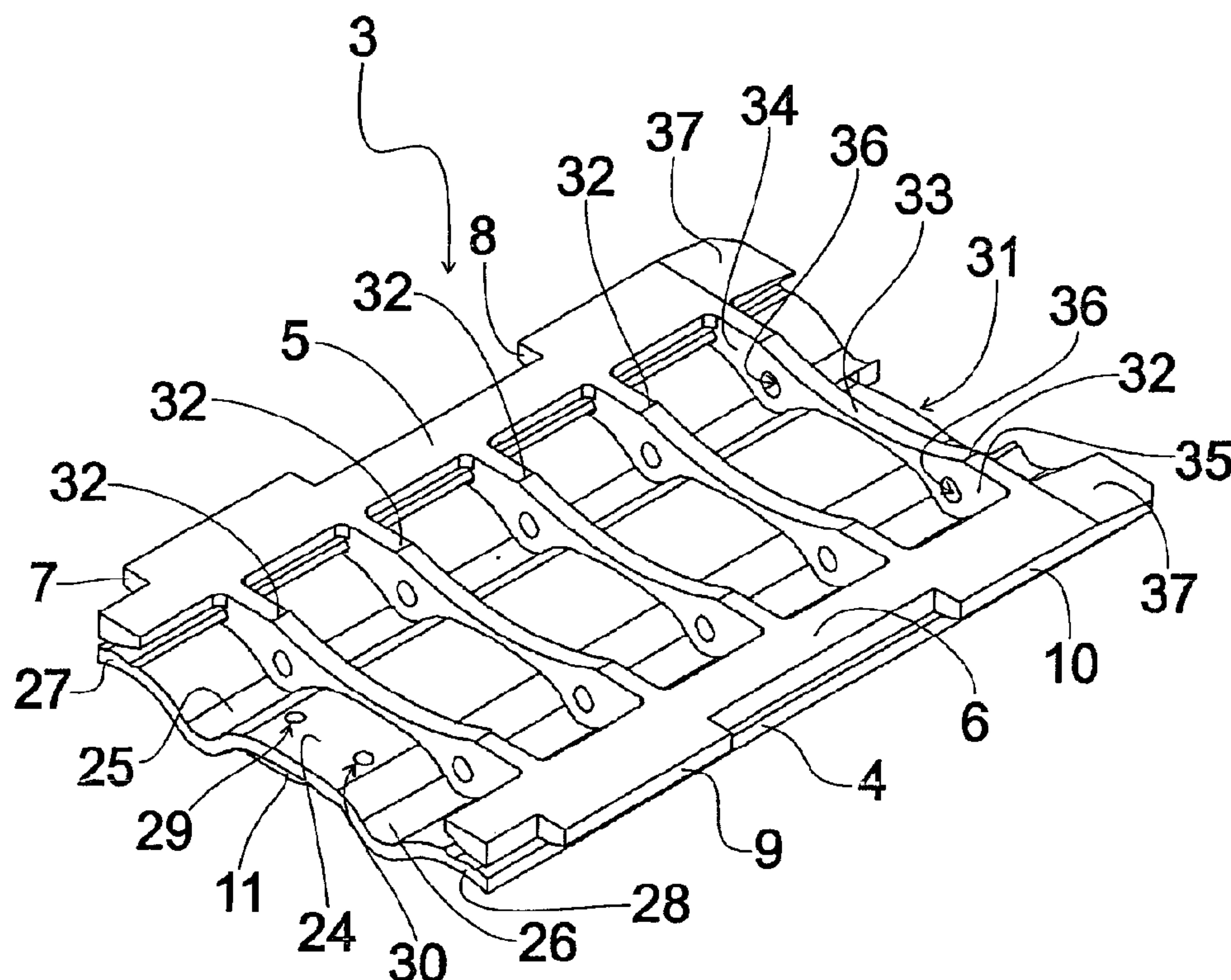




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(54) Title: CHAIN PAD FOR A CHAIN LINK



(57) Abrégé/Abstract:

A chain pad for a chain link of a caterpillar tread consisting of a base unit connected with a floor plate by means of a pad unit, wherein the base unit has a number of engaging elements elevated over the interior side on the interior side of the floor plate, with engaging recesses incorporated in webs, wherein cover strips are provided on each exterior side of each web as another engaging element, with projecting guide strip sections or continuous guide strips arranged thereupon, and a latching tongue is located on the base unit.



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## ABSTRACT

A chain pad for a chain link of a caterpillar tread consisting of a base unit connected with a floor plate by means of a pad unit, wherein the base unit has a number of engaging elements elevated over the interior side on the interior side of the floor plate, with engaging recesses incorporated in webs, wherein cover strips  
5 are provided on each exterior side of each web as another engaging element, with projecting guide strip sections or continuous guide strips arranged thereupon, and a latching tongue is located on the base unit.

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Chain Pad for a Chain Link

5 The invention relates to a chain pad with a base unit having a floor plate, and with a pad unit connected with the base unit on an interior side of the floor plate, wherein the base unit has a number of engaging elements on the interior side of the floor plate that are raised above the interior side, which together with the pad unit establish a positive connection.

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Such chain pads are known from EP 0 953 498 A1, as well as from DE 26 906 A1, US 6,412,888 B1 and GB 2360750 A. The previously known chain pads for a chain link have a base unit with a floor plate designed as sectionally angled sheet metal. In addition, the chain pads are equipped with a pad unit consisting of a rubber material typically applied to an interior side of the floor plate through vulcanization to establish a non-positive connection. The previously known chain pads are designed for insertion into a chain link of a caterpillar tread for a crawler vehicle. In addition, the base unit of these previously known chain pads has a number of engaging elements on the interior side of the floor plate that are raised above the interior side, which together with the pad unit establish a positive connection. However, this does not ensure with sufficient reliability that the previously known chain pads can withstand the high loads typically encountered in caterpillar treads under all conceivable conditions, since while the force is absorbed to a significant extent by the positive connection, the latter is not always enough given at least a sectional failure of a non-positive connection established through vulcanization.

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Therefore, some embodiments of the invention may indicate a chain pad of the kind mentioned at the outset characterized by an even more stable

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connection between the base unit and pad unit while being easy to manufacture by comparison to the previously known chain pads.

Some embodiments disclosed herein relate to a chain pad for a chain link with a base body consisting of interconnected floor plate, and also connected with a number of  
5 engaging elements on the interior side of the floor plate with engaging recesses provided with webs, as well as a pad unit connected on the interior side of the base unit, wherein the engaging recesses establish a positive connection with the pad unit, wherein a cover strip is arranged on each exterior side of each web at a distance from the interior side of the floor plate as another engaging element, and wherein the base unit consists of metal  
10 or a high-strength composite material or plastic, and the pad unit consists of hard rubber, polyurethane, rubber mixtures and/or elastic composite or plastic.

The chain pad may surprisingly satisfy the mentioned stringent requirements placed on chain pads used for caterpillar treads by virtue of the fact that the base unit has cover strips extending in the longitudinal direction and spaced apart from the longitudinal side  
15 edges of the floor plate, the exterior sides of which accommodate spaced apart guide strip sections, and that a latching tongue projecting at an inclination toward the transverse side edge of the floor plate is provided in the end region on the exterior side of the floor plate opposite the interior side, wherein the latching tongue preferably undulates in such a way as to have two curved tongue edge sections facing away from  
20 the exterior side of the floor plate, and a tongue midsection curved oppositely toward the floor plate and arranged between the tongue edge sections. This configuration may make the latching tongue highly resistant to inward bending toward the floor plate.

Another configuration of the latching tongue may enable a simple removal of the chain pad from the chain link during maintenance or replacement by providing the latching  
25 tongue with flat tongue edge sections on either side of a tongue midsection curved inward toward the floor plate like a trough, which may lead to a relatively simple deformability, and hence an easy detachment of the rear grip of the latching tongue with the tongue stop.

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Additional expedient embodiments and advantages to the invention may be gleaned from the following description of exemplary embodiments with reference to the figures in the drawing. Shown on:

- 5     Fig. 1        is a perspective view of an exemplary embodiment of a chain pad according to the invention and a chain link,
- Fig. 2        is a perspective view of the chain pad and the chain link according to Fig. 1, pre-assembly configuration.
- 10     Fig. 3        is a perspective view of the chain pad and the chain link according to Fig. 1 and Fig. 2, final assembly configuration.
- 15     Fig. 4        is a perspective view of a configuration of a base unit of a chain pad according to the invention, which is provided with webs extending in the transverse direction,
- Fig. 5        is a longitudinal section of the exemplary embodiment of a chain pad according to Fig. 1,
- 20     Fig. 6        is a cross section between webs depicting the exemplary embodiment of a chain pad described in the invention according to Fig. 1,
- 25     Fig. 7        is a cross section through a web depicting the exemplary embodiment of a chain pad described in the invention according to Fig. 1,
- 30     Fig. 8        is a perspective view of another exemplary embodiment of a chain pad according to the invention,

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Fig. 9 is a front view of a first configuration of a latching tongue on a floor plate of a chain pad according to the invention.

5 Fig. 10 is a front view of another configuration of a latching tongue on a floor plate of a chain pad according to the invention.

Fig. 1 shows a perspective view of an exemplary embodiment of a chain pad 1 according to the invention. The square chain pad 1 has a pad unit 2 consisting of an elastic material, such as hard rubber, polyurethane or an elastic composite or plastic, as well as a base unit 3 consisting of a metal or high-strength composite material or plastic. The base unit 3 having a basic rectangular shape is provided with a floor plate 4, the interior side of which facing away from the observer accommodates the pad unit 2 in the drawing according to Fig. 1. The base unit 3 further has cover strips 5, 6 extending in the longitudinal direction of the base unit 3 and spaced apart from the longitudinal side edges of the floor plate 4, the exterior sides of which in the exemplary embodiment according to Fig. 1 accommodate spaced apart guide strip sections 7, 8, 9, 10. A latching tongue 11 projecting at an inclination toward the transverse side edge of the floor plate 4 is provided in an end region on the exterior side of the floor plate 4 opposite the interior side and facing the user in the drawing according to Fig. 1.

Also shown on Fig. 1 is a chain link 12 for a caterpillar tread of a crawler vehicle not depicted in its entirety on Fig. 1, which as an essentially square, flat massive body is provided with connecting pins 13, 14 projecting in a longitudinal direction on a transverse side, and wall sections 15, 16, 17, 18 extending in the longitudinal direction that project over a cover side. The wall sections 15, 16, 17, 18 lying on a longitudinal side are spaced apart from each other by a dis-

- tance roughly corresponding to the length of the guide strip sections 8, 10 of the chain pad 1 facing away from the latching tongue 11. Each wall section 15, 16, 17, 18 is provided with a guide groove 19 that extends in the longitudinal direction of the chain link 12 and is  
5 designed to accommodate the guide strip sections 7, 8, 9, 10 or continuous guide strip 41. The end region of the chain link 12 adjacent to the connecting pins 13, 14 is further equipped with a projecting tongue stop 20.
- 10 Fig. 2 shows the chain pad 1 and pad unit 2 according to Fig. 1 in a pre-assembly configuration, in which the guide strip sections 8, 10 facing away from the latching tongue 11 and not visible on Fig. 2 are inserted between the wall sections 15, 16, 17, 18 of the chain link 12, and all guide strip sections 7, 8, 9, 10 are aligned flush with the  
15 guide grooves 19 of the wall sections 15, 16, 17, 18. This pre-assembly configuration can be used to slide the chain pad 1 into the chain link 12 in an insertion direction up to an assembly configuration.
- 20 Fig. 3 shows the exemplary embodiment according to Fig. 1 and Fig. 2 in the assembly configuration, in which the chain pad 1 has been completely inserted into the chain link 12. In the assembly configuration, the guide strip sections 8, 10 previously arranged in gaps 21 formed between the wall sections 15, 16, 17, 18 and lying on the  
25 front side viewed in the insertion direction, as well as the guide strip sections 7, 9 lying on the back side viewed in the insertion direction, have entered into the guide grooves 9, and the end of the chain pad 1 facing away from the connecting pins 13, 14 abuts the stop wall 22 of the chain link 12, while the latching tongue 11 not visible in the  
30 view on Fig. 3 encompasses the tongue stop 20 from the back. This secures the chain pad 1 in the longitudinal direction, both in and against insertion direction.

As may also be gleaned from the drawing according to Fig. 3, the end of the pad unit 2 facing away from the latching tongue 11 not visible on Fig. 3 is provided with an end recess 23.

5 Fig. 4 shows a perspective view of a configuration of the base unit 3 for a chain pad 1 according to the invention, for example as depicted on Fig. 1 with a view of the interior side. The floor plate 4 has an essentially flat, centrally located floor plate midsection 24 extending in the longitudinal direction of the base unit 3, abutted on either side in  
10 the direction of the longitudinal edges by a respective floor plate transition section 25, 26. The floor plate transition sections 25, 26 are trough-like in design, and spaced apart relative to the floor plate midsection 24 with their deepest area being a greater distance away from the cover strips 5, 6 than the floor plate midsection 24. At the  
15 edge sides of the floor plate transition sections 25, 26 facing away from the floor plate midsection 24, floor plate edge sections 27, 28 opposing the cover strips 5, 6 at a distance are provided, the exterior side of which lines up precisely with the cover strips 5, 6. As a result, the floor plate 4 has a dual undulating basic shape, in which the floor  
20 plate midsection 24 and floor plate edge sections 27, 28 lie essentially in one plane, and the floor plate transition sections 25, 26 each form a trough extending in the longitudinal direction.

The floor plate midsection 24 exhibits two channel recesses 29, 30  
25 lying opposite the latching tongue 11 in this exemplary embodiment, which form an opening between the interior side facing the viewer in the drawing according to Fig. 4 and the exterior side of the floor plate 4 facing away from the viewer in the drawing according to Fig. 4. A midsection edge recess 31 is introduced in the floor plate midsection  
30 24 on the transverse edge facing away from the latching tongue 11.

The base unit 3 of a chain pad 1 according to the invention has a number of webs 32 aligned in a transverse direction, which are ar-

5 ranged on the interior side of the floor plate 4 and elevated over the floor plate 4. Each web 32 is provided with a centrally arranged web midsection 33 and web edge sections 34, 35 arranged on either side of the web midsection 33. Each web midsection 33 extends over the floor plate midsection 24, while the web edge sections 34, 35 are arranged in the area of the floor plate transition sections 25, 26. As evident from Fig. 4, the middle of each web midsection 33 has a minimal height over the floor plate midsection 24, while the height increases toward the web edge sections 34, 35, peaking in the area of the floor plate transition sections 25, 26. Respective engaging recesses 36 that cross the webs 32 in a longitudinal direction are incorporated as engaging elements into the web edge sections 34, 35 in the configuration according to Fig. 4.

15 The cover strips 5, 6 are molded onto the ends of the web edge sections 34, 35 facing away from the web midsection 33 as additional engaging elements, a distance away from the floor plate edge sections 27, 28, wherein the ends of the cover strips 5, 6 facing away from the latching tongue 11 each have a startup incline 37 to facilitate the aforementioned insertion of the chain pad 1 into the chain link 2.

25 Fig. 5 shows a longitudinal section of the chain pad 1 according to Fig. 1. As evident from Fig. 5, the pad unit 2 completely envelops the webs 32, wherein material enters the floor plate midsection 24 and latching tongue 11 in a still free-flowing state while manufacturing the pad unit 2, thereby forming a tongue underlay packing 38 for the latching tongue 11 that increases resistance to constant deformation that weakens the secure hold of the chain pad 1 in the chain link 12.

30 Fig. 6 shows the chain pad 1 according to Fig. 1 in a cross section between two webs 32 not visible in the drawing according to Fig. 6. As evident from Fig. 6, the material of the pad unit 2 forms a strip

underlay packing 39 for the cover strips 5, 6 owing to the distance between the cover strips 5, 6 and floor plate 4, so that the cover strips 5, 6 are stabilized within the scope of elasticity of the material comprising the pad unit 2, and held in place with a certain elasticity.

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Fig. 7 shows a cross section of the chain pad 1 according to the exemplary embodiment on Fig. 1, as a cross section through a web 32. As evident from Fig. 7, the channel recesses 29, 30 incorporated into the floor plate transition sections 25, 26 are filled with material of the pad unit 2, thereby establishing additional positive connections between the pad unit 2 and base unit 3 distributed over the surface of the base unit 3 to go along with the strip underlay packings 39.

Fig. 8 shows a perspective drawing of another exemplary embodiment of a chain pad 1 according to the invention, wherein elements in the exemplary embodiment according to Fig. 1 and the exemplary embodiment according to Fig. 8 that correspond to each other are provided with the same reference number, and will not be described in any greater detail below. The exemplary embodiment according to Fig. 8 has guide strips 40, 41 extending essentially over the entire length of the cover strips 5, 6, which can be inserted into the guide grooves 19 of a chain link 12 depicted on Fig. 1 to Fig. 3. Because forces are introduced over the entire length of the cover strips 4, 6, this exemplary embodiment is characterized by an especially high stability.

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The front view of a base unit 3 for a chain pad 1 according to the invention shown on Fig. 9 depicts a first embodiment of a latching tongue 11, which exhibits two curved tongue edge sections 42, 43 facing away from the exterior side of the floor plate 4, and a tongue midsection 44 curved oppositely toward the floor plate 4 and arranged between the tongue edge sections 42, 43. This configuration

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of a latching tongue 11 is characterized by a very high resistance to inward bending toward the floor plate 4.

5 The front view of a base unit 3 for a chain pad 1 according to the invention shown on Fig. 10 depicts another embodiment of a latching tongue 11, wherein flat tongue edge sections 46, 47 are in this configuration provided on either side of a tongue midsection 45 curved inward toward the floor plate 4 like a trough. This embodiment of a latching tongue 11 is characterized by a relatively simple deform-  
10 ability for detaching the rear grip of the latching tongue 11 with the tongue stop 20 when removing the chain pad 1 from the chain link 2 during maintenance.

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CLAIMS:

1. A chain pad for a chain link with a base body consisting of interconnected floor plate, and also connected with a number of engaging elements on the interior side of the floor plate with engaging recesses provided with webs, as  
5 well as a pad unit connected on the interior side of the base unit, wherein the engaging recesses establish a positive connection with the pad unit, wherein a cover strip is arranged on each exterior side of each web at a distance from the interior side of the floor plate as another engaging element, and wherein the base unit consists of metal or a high-strength composite material or plastic, and the pad unit consists of  
10 hard rubber, polyurethane, rubber mixtures and/or elastic composite or plastic.
2. The chain pad according to claim 1, wherein the cover strips are provided in a longitudinal direction with guide strip sections projecting over the edge of the floor plate or continuous guide strips.
3. The chain pad according to claim 1 or claim 2, wherein the floor plate is  
15 provided with a floor plate midsection offset toward the pad unit relative to laterally lying floor plate transition sections, and wherein the webs have a web midsection in the area of the floor plate midsection having a lower height than web edge sections arranged in the area of the floor plate transition sections.
4. The chain pad according to claim 3, wherein floor plate edge sections  
20 are provided on the sides of the floor plate transition sections facing away from the floor plate midsection, and arranged opposite the cover strips at a distance.
5. The chain pad according to claim 4, wherein the engaging recesses are provided in the area of the web edge sections.
6. The chain pad according to one of claims 3 to 5, wherein a latching  
25 tongue inclined toward a transverse side edge of the floor plate is provided on a longitudinal side end region of the floor plate midsection on an exterior side of the

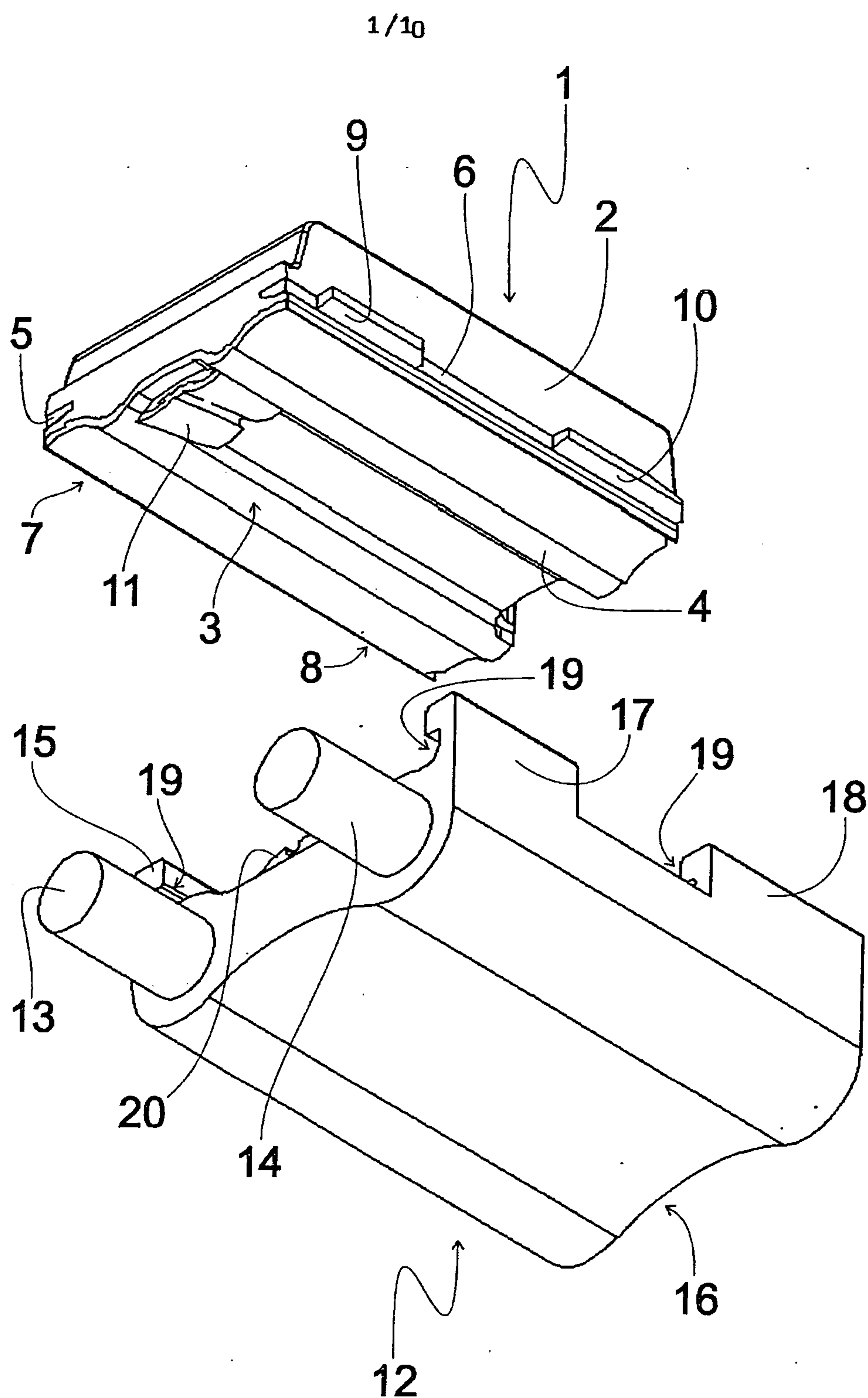
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floor plate lying opposite the interior side, and wherein at least one channel recess is formed in the floor plate midsection in the area of the latching tongue.

7. The chain pad according to claim 6, wherein the latching tongue is undulated in such a way as to have two curved tongue edge sections facing away  
5 from the exterior side of the floor plate, and a tongue midsection curved away from the floor plate between the tongue edge sections.

8. The chain pad according to claim 6, wherein the latching tongue is formed in such a way as to have flat tongue edge sections on either side of a tongue midsection curved inward toward the floor plate like a trough.



**Fig. 1**

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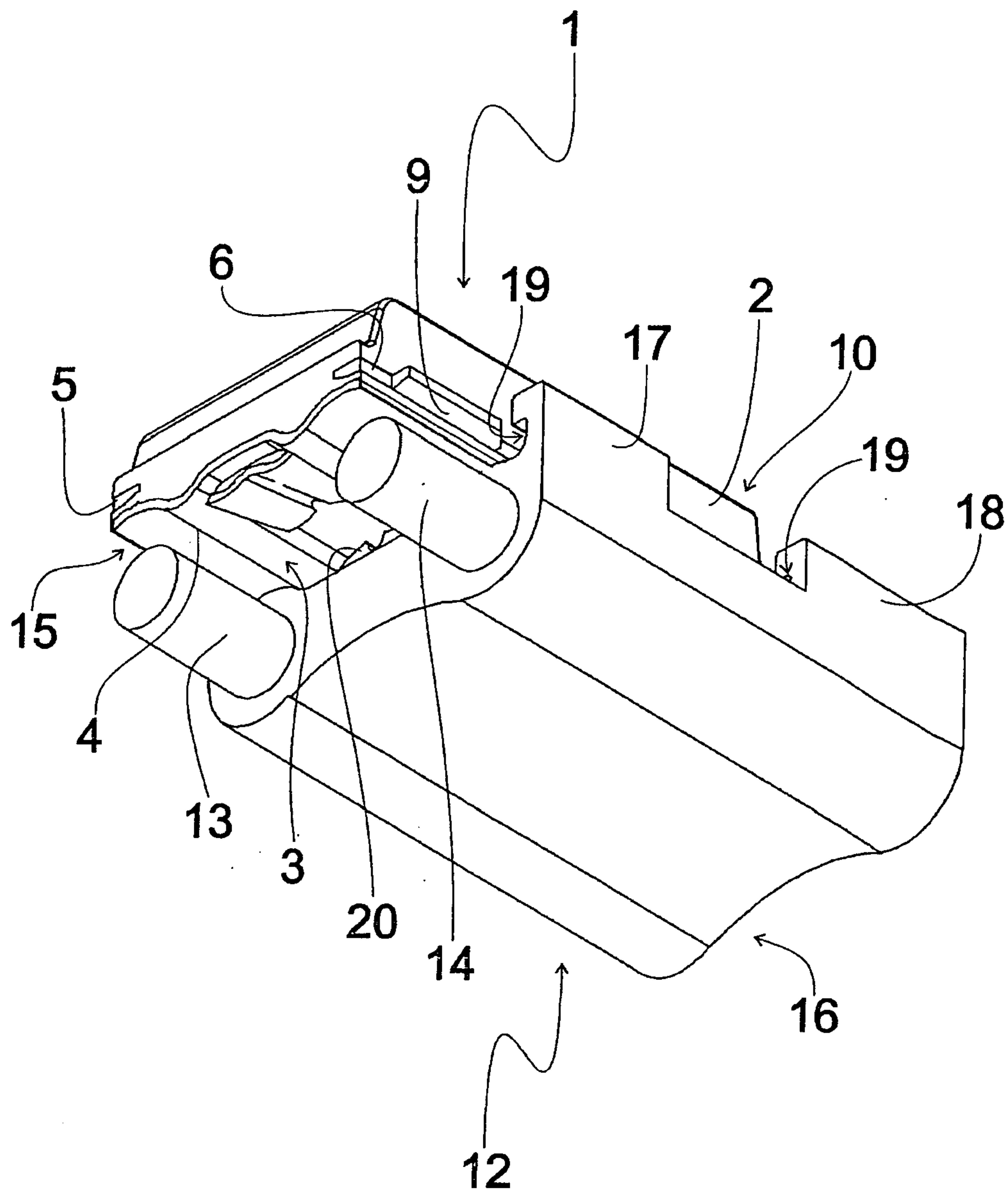
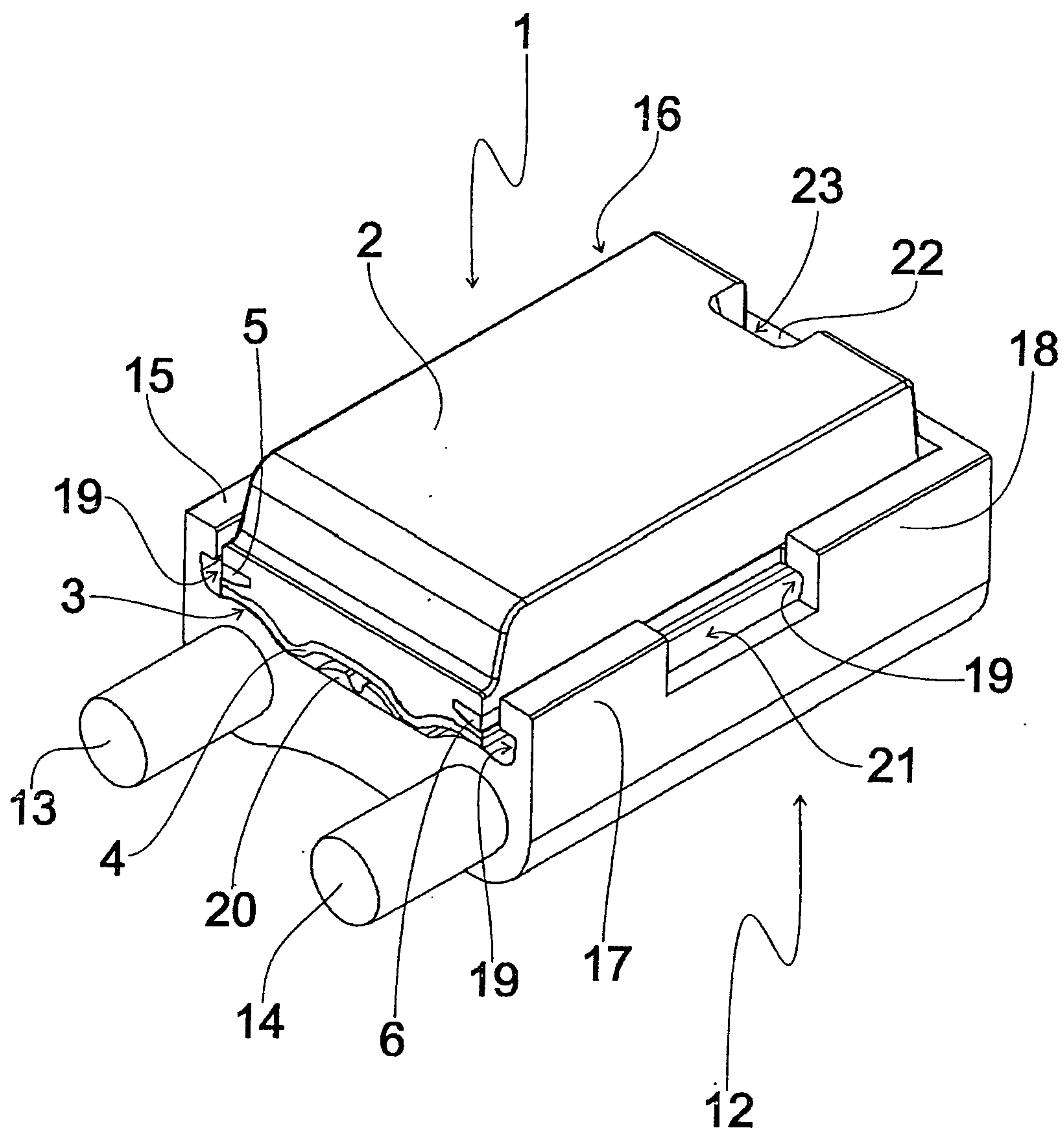


Fig. 2

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**Fig. 3**

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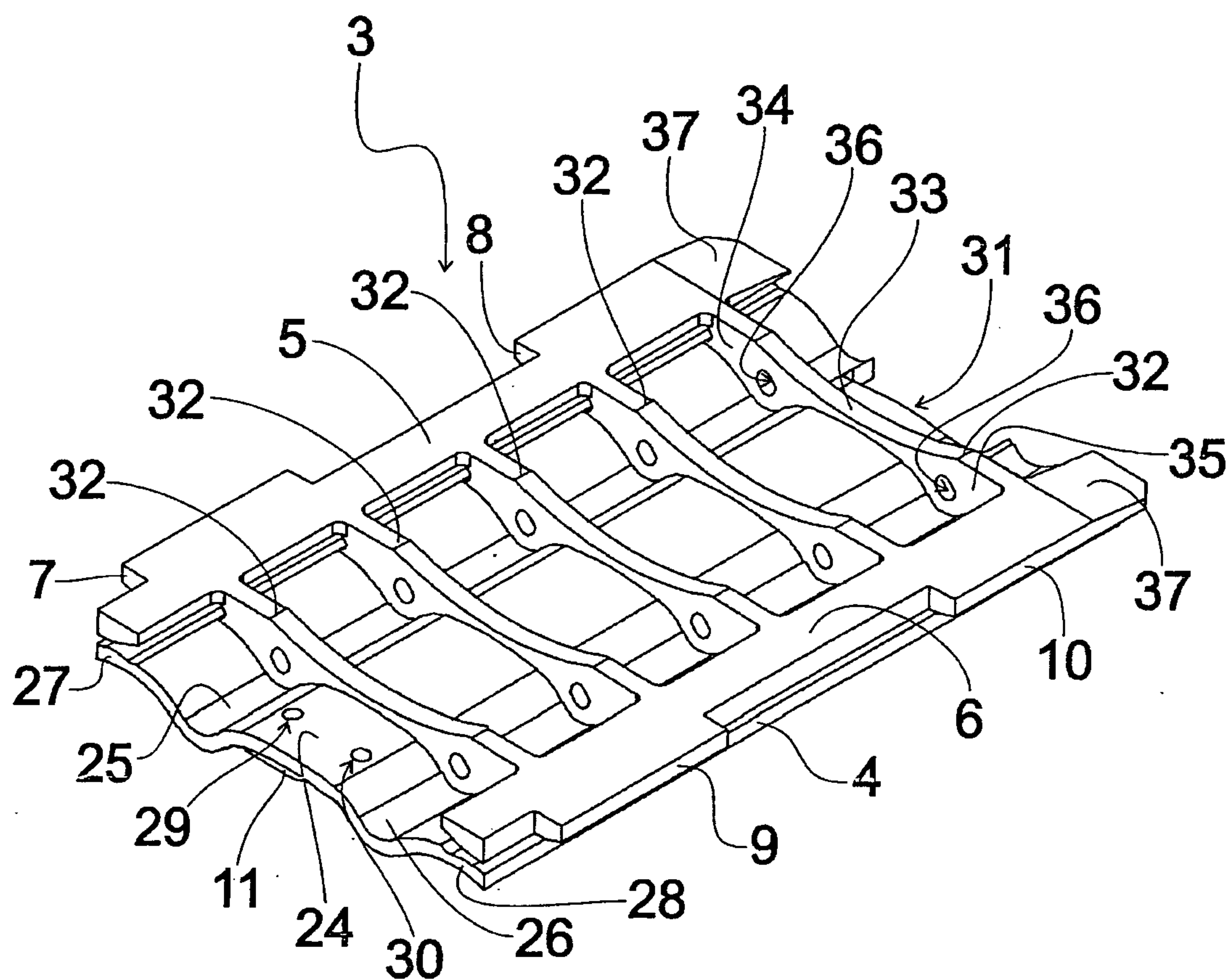


Fig. 4

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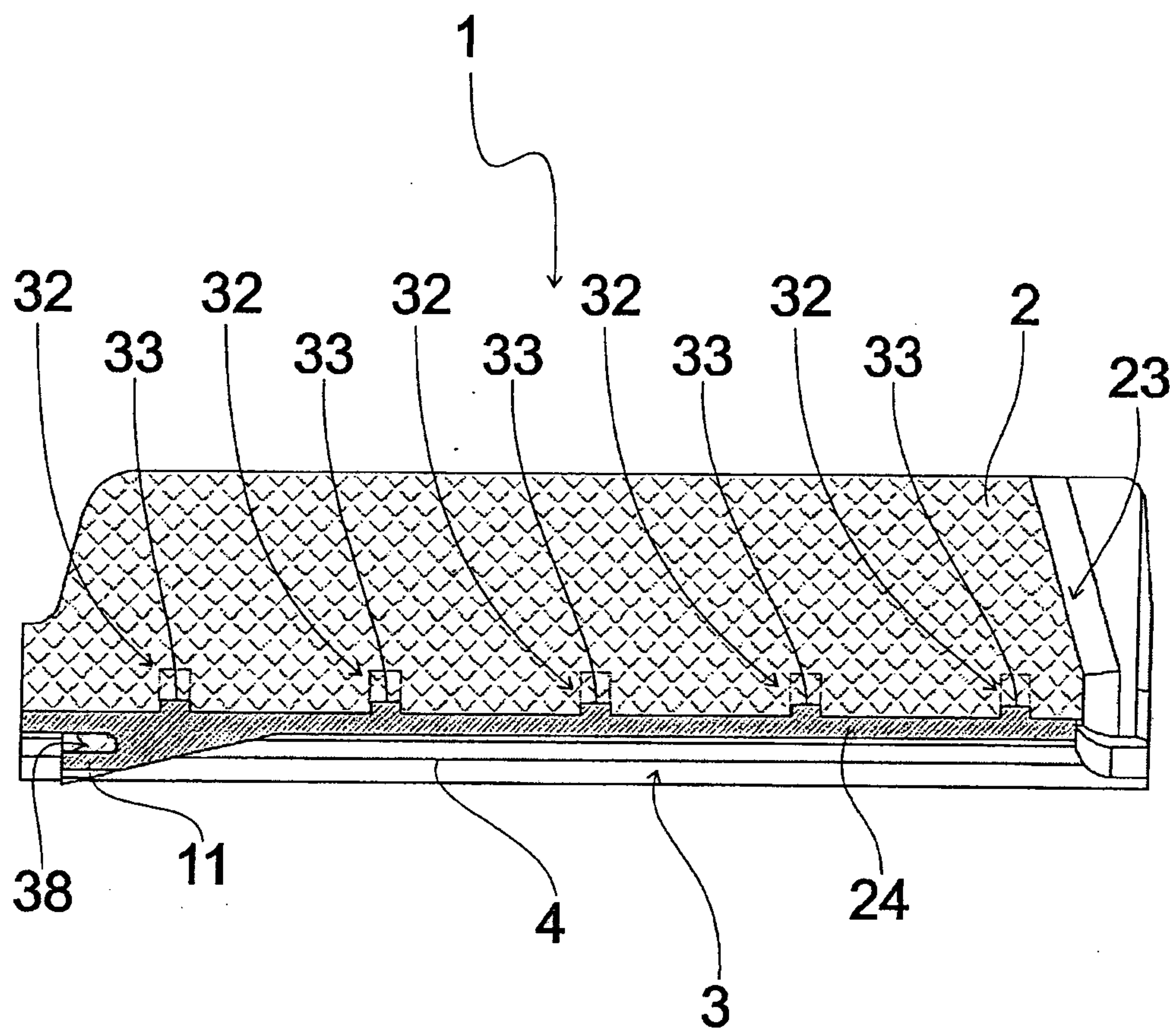


Fig. 5

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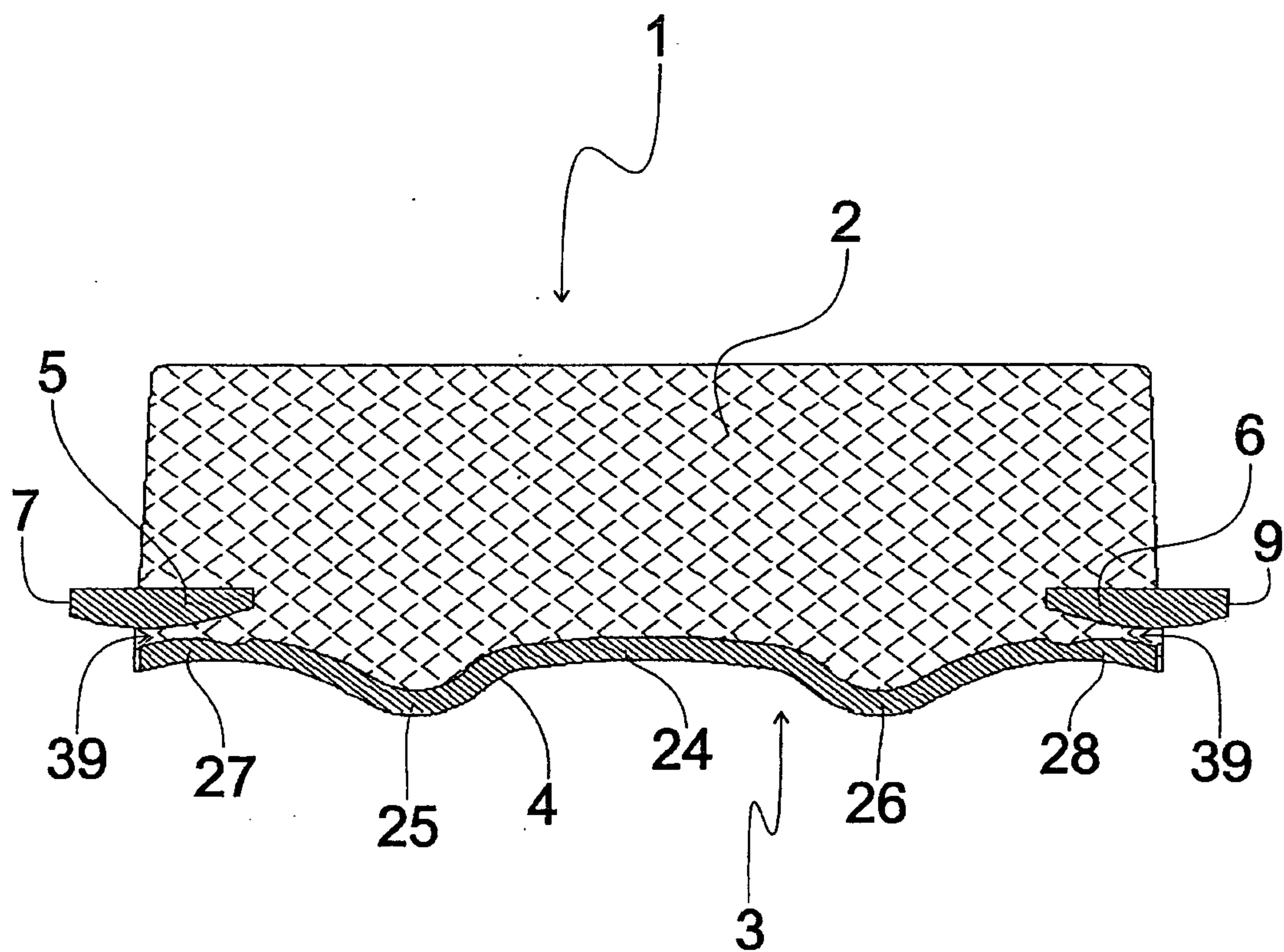
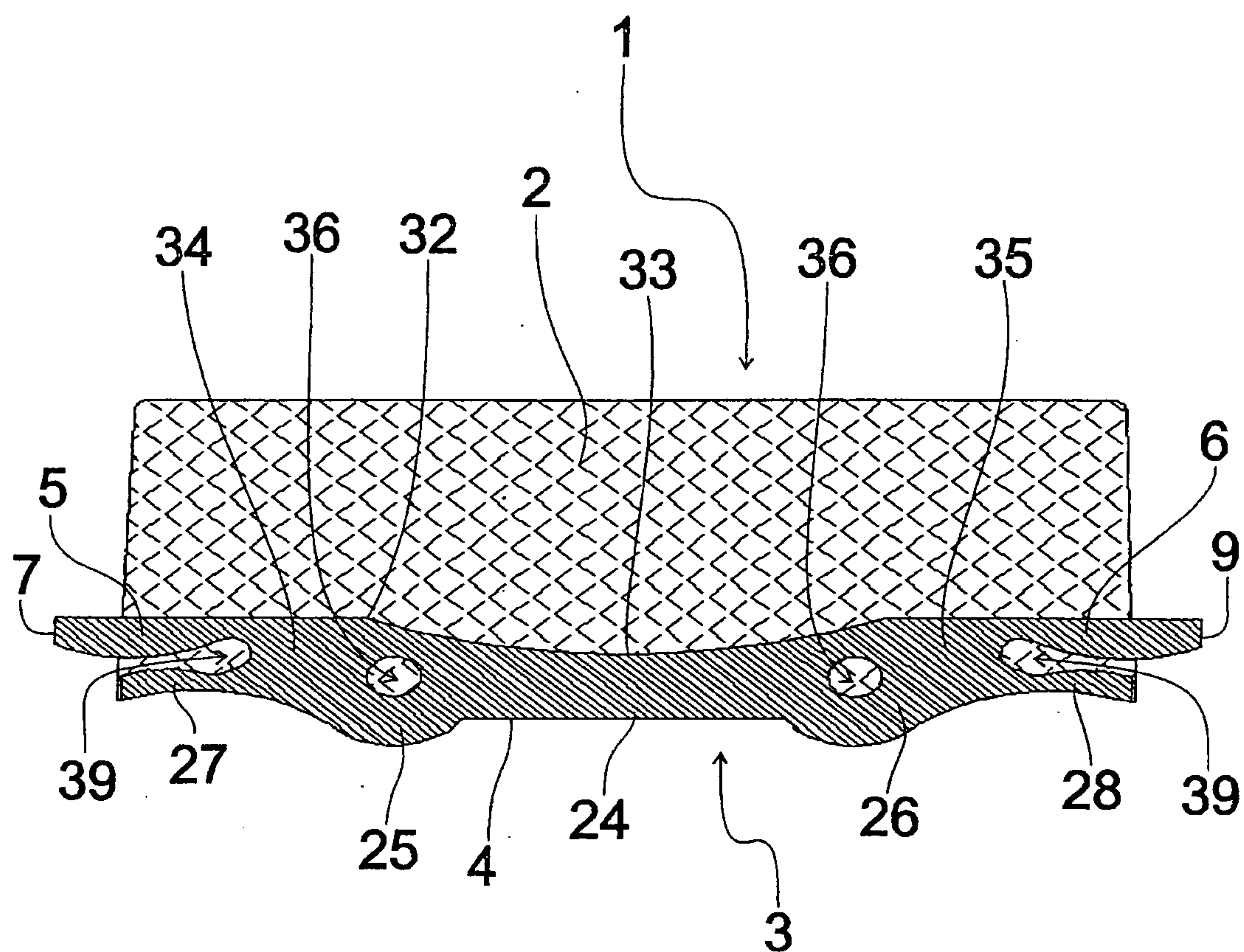


Fig. 6

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**Fig. 7**

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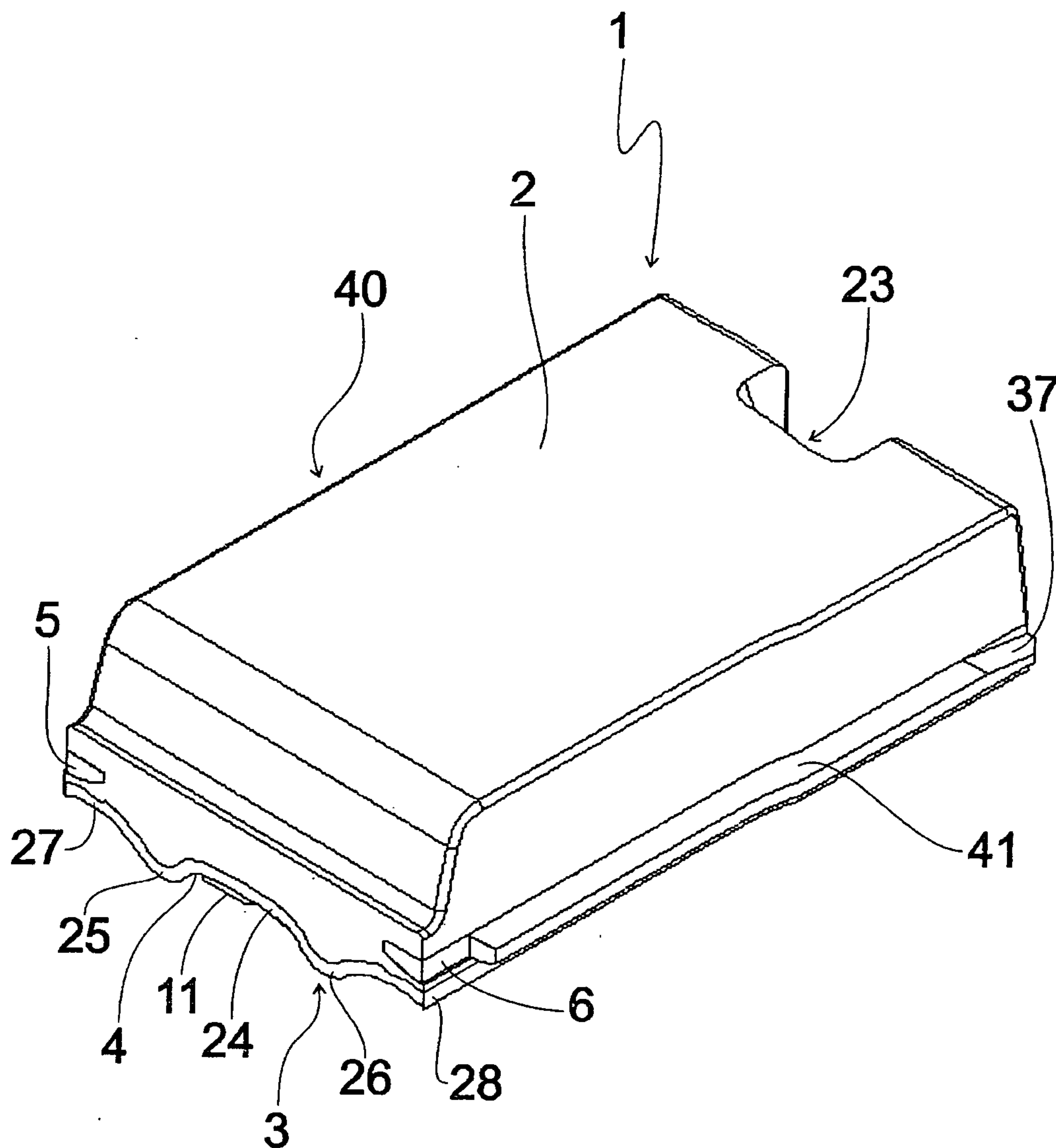


Fig. 8

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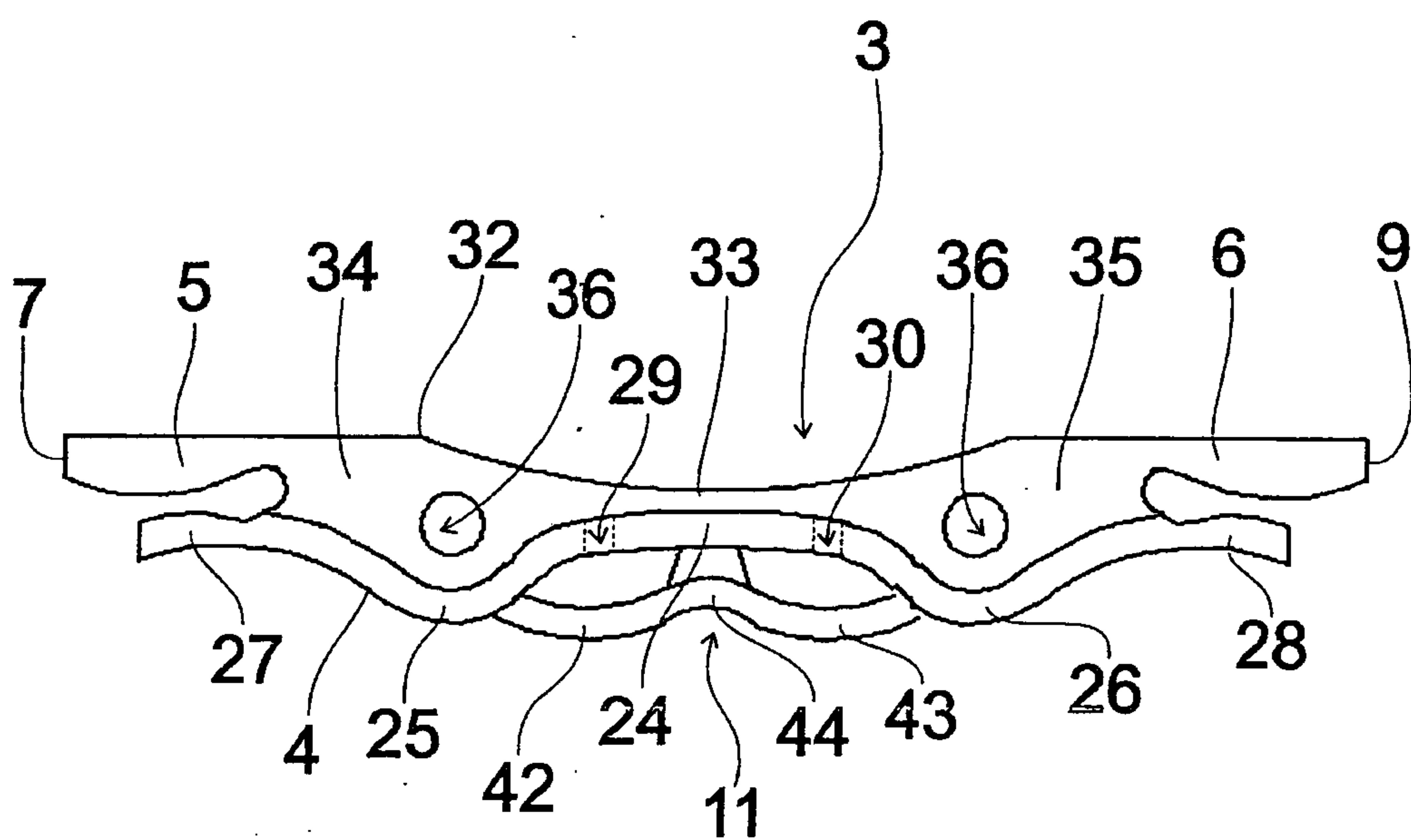


Fig. 9

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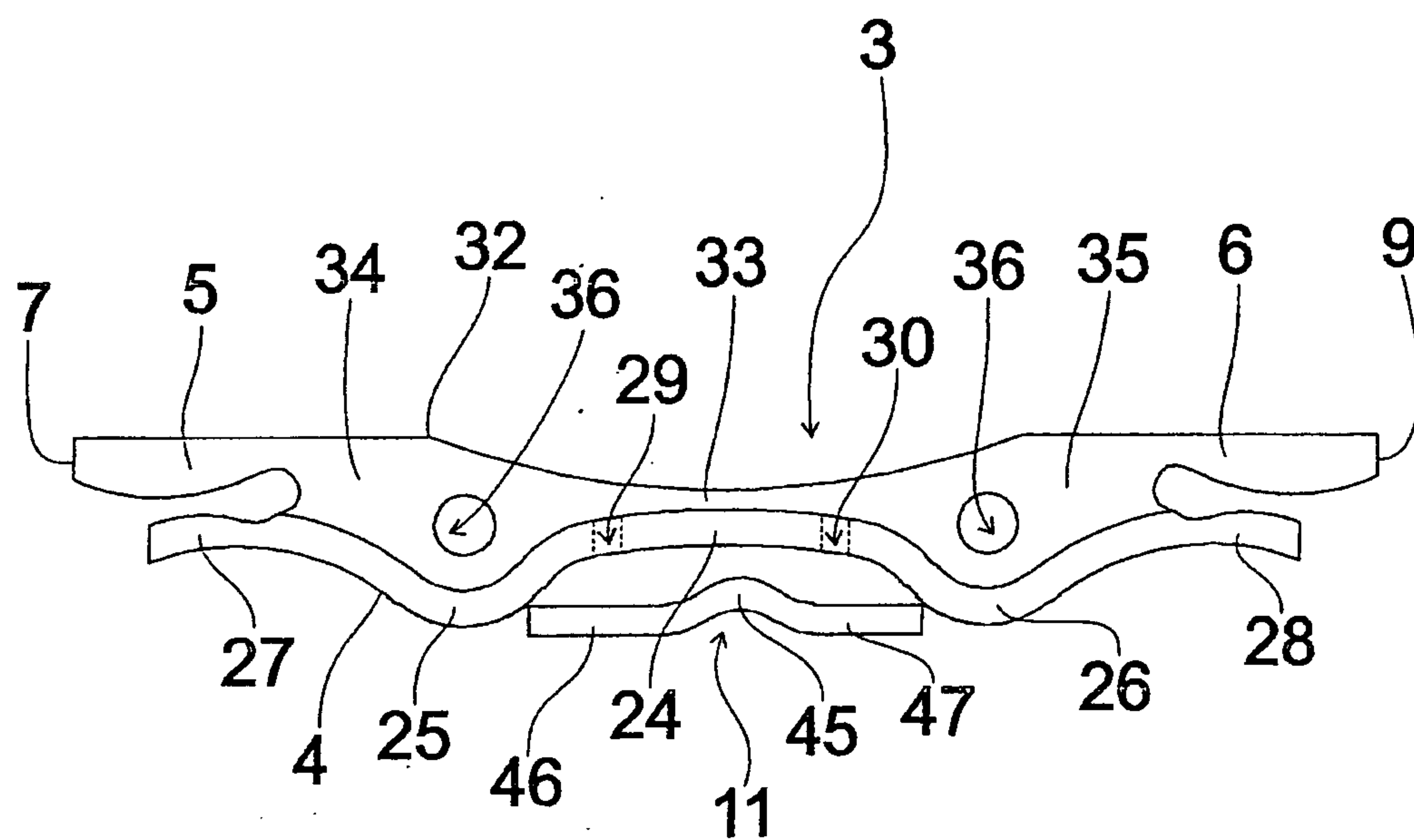


Fig. 10

