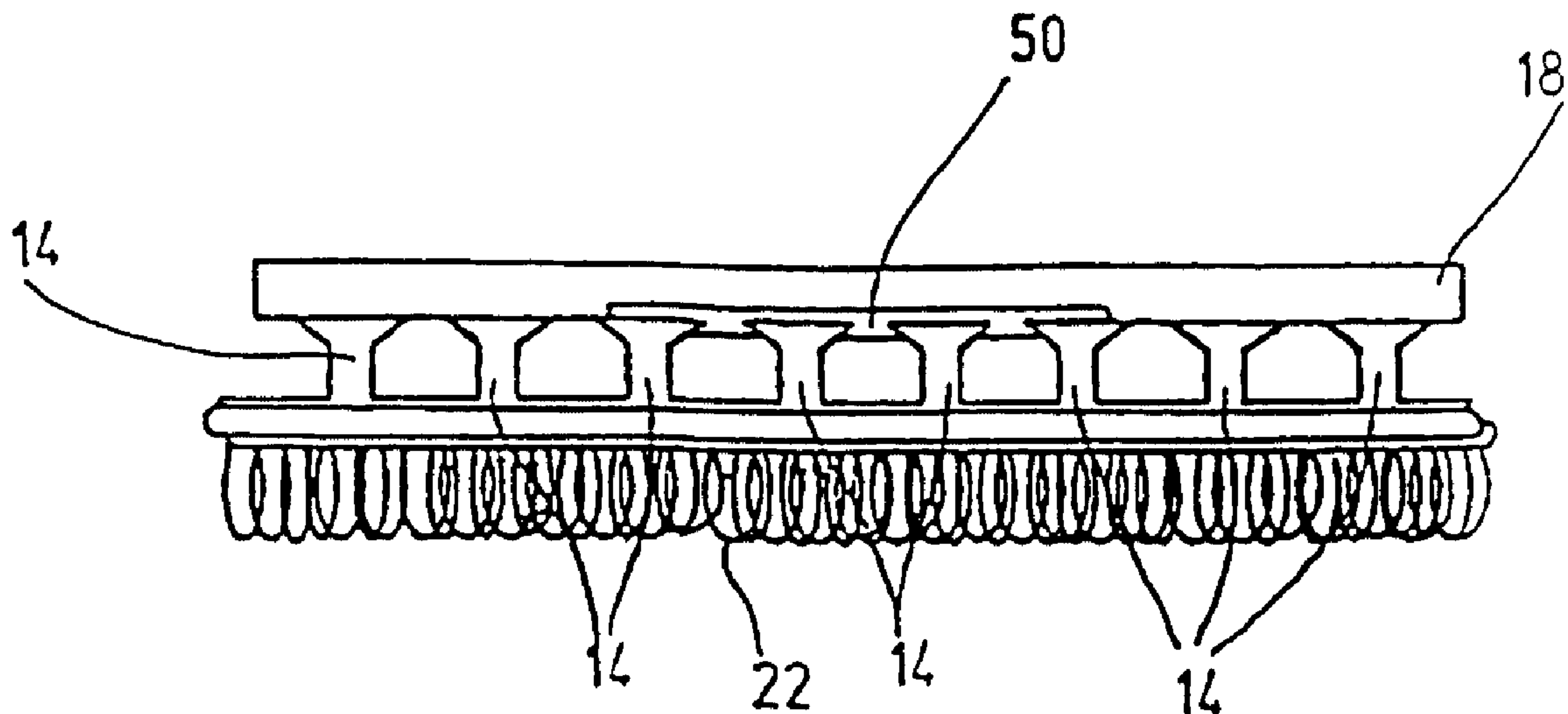




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(57) **Abrégé/Abstract:**

Disclosed is an adhesive body for producing a junction with a foam material molded body during molding of foam material, the adhesive body comprising a support strip, adhesive elements arranged on the support strip, the adhesive elements being stalk-like enlarged areas on the support strip and having flattened front ends remote from the support strip, and a surface covering having adhesive on an inner surface thereof adhering the covering to the flattened front ends of the adhesive elements to avoid penetration of the foam material into spaces between the adhesive elements during molding of the foam material, the covering being removable from the adhesive elements to expose the adhesive elements for use upon completion of the molding.



ABSTRACT

Disclosed is an adhesive body for producing a junction with a foam material molded body during molding of foam material, the adhesive body comprising a support strip, adhesive elements arranged on the support strip, the adhesive elements being stalk-like enlarged areas on the support strip and having flattened front ends remote from the support strip, and a surface covering having adhesive on an inner surface thereof adhering the covering to the flattened front ends of the adhesive elements to avoid penetration of the foam material into spaces between the adhesive elements during molding of the foam material, the covering being removable from the adhesive elements to expose the adhesive elements for use upon completion of the molding.

ADHESIVE BODY

The invention relates to an adhesive body, especially an adhesive body to produce a junction with a foam material molded body during the molding procedure involving foam material, and incorporating individual adhesive elements, arranged on a support strip, which are covered over with a surface-forming covering means facing inward from the exterior to avoid penetration of foam material.

The adhesive body known from European Patent No. 0 612 485 B1 (issued April 26, 1995) has a traditional adhesive fastening part for the foaming in the foam material molded body, which adhesive fastening part is provided with catch elements on its frontal surface. On the reverse side of this adhesive fastening part is then found an anchoring part for the anchoring of the adhesive body in the surface of the foam material molded body to be foamed. The disclosed catch elements are covered over their entire surface by a plastic sealing material during the foaming, which following completion of the molding procedure can be torn off this surface for exposure of the anchoring elements. Seat coverings, padded parts or the like could then be mounted on the thus exposed anchoring elements and connected with the foam material molded body, and the corresponding adhesive fastening parts, for example in the form of a loops-strip material or the like, are brought into engagement with the anchoring element. Since the plastic sealing material surrounds the adhesive elements to be covered, form-locking in the shape of the anchoring elements, considerable force is required to separate the covering material from the adhesive elements, and the required mold-release forces can be greater than the connection forces between the specific adhesive bodies in the form of the adhesive fastening and the foam material. As a result, together with the covering sealing material one also

tears off the strip-like adhesive body from the freshly foamed foam material seat body, which leaves this seat degraded beyond the possibility of use. Even if the sealing material is recyclable and can be used again for subsequent molding procedures, a corresponding quantity of material is to be handled for re-use of said sealing material, which makes the known molding procedure more costly.

In European Patent Application No. 0 168 240 A2 (published January 15, 1986), with the same sort of adhesive body and with comparable molding processes, it has already been suggested to cover the anchoring elements of an adhesive fastening part on the frontal side only, using a thin foil, in order thus to avoid the penetration of the molding material; this however requires costly sealing measures in the border area of the foil, which then must eventually require a connection with the top of the adhesive fastener strip, which on the one hand increases the cost and on the other hand, especially in the frontal area of the strip-like adhesive fastener part, leads to sealing problems with the result that the foam material is even allowed the possibility of penetrating between the anchoring means. The catch elements thus surrounded by foam material are then no longer available for the subsequent attachment of padding coverings and padding material, which correspondingly prejudices the possibilities of establishing secure arrangements. Also the foil is easily torn and can be torn off, which in practice leads to further problems.

Starting from this state of the art the object of the invention is to further improve the known adhesive body in such a manner that it can be used with cost savings and can be

tightly connectable with the foam material molded body and also can guarantee with greater assurance that during the foaming no foam material gets into the adhesive elements.

The present invention provides an adhesive body, especially for the production of a junction with a foam material molded body (10) during the molding process involving foam material, having individual, adhesive elements (14) arranged on a support strip (16), which in order to avoid the penetration of foam material are covered with a surface-like coverings means (18) facing inward from the outside, characterized in that the covering means (18) is an adhesive means which engages adhering to the frontal side of the adhesive elements (14) and can be removed from these with exposure of the adhesive elements (14).

More specifically, the present invention provides an adhesive body for producing a junction with a foam material molded body during molding of foam material, the adhesive body comprising a support strip, adhesive elements arranged on the support strip, the adhesive elements being stalk-like enlarged areas on the support strip and having flattened front ends remote from the support strip, and a surface covering having adhesive on an inner surface thereof adhering the covering to the flattened front ends of the adhesive elements to avoid penetration of the foam material into spaces between the adhesive elements during molding of the foam material, the covering being removable from the adhesive elements to expose the adhesive elements for use upon completion of the molding.

The covering means itself is in the form of an adhesive means, which is supported adhering upon the frontal side of the adhesive elements, and can be removed from these elements, thus exposing the adhesive elements. During the generation of foam, the adhesive elements are securely covered and the foam material cannot adhere to the adhesive elements during the foaming and thus leave them unusable. Since the adhesive means is supported adhering detachably to the adhesive elements, the strip-like or surface-like adhesive means is easy to separate from the adhesive elements and undesired tearing of the adhesive body out of the foam material molded body does not occur. Besides, during generation of the foam this adhesive covering means is connected securely with the adhesive elements, so that undesired tearing into that material cannot occur.

The coating in the form of the adhesive material can be a very thinly constructed coating, so that only a quite small amount of material need be required for the covering. This lowers the cost along with the fact that the adhesive means being used can be stored and travels well to market at low cost.

In one preferred embodiment of the adhesive body of the invention the adhesive means can be selected from among the melting adhesive materials, especially from among the so-called hot-melt-adhesives, or from among the dispersion adhesive materials, preferably on an aqueous phenol resin base, or from among the adhesives on an acrylate base. Such adhesives are characterized especially by very good adhesive strength on the plastic materials which are in question in this case. Besides, they are weather-resistant and water-resistant and consequently are very appropriately in the position to effectively avoid undesired penetration of the foam material during the foam molding procedure. While in the technical information papers regarding these

adhesive materials their strongly adhering property is emphasized above all, for an expert in the art of adhesive strip fasteners, it is surprising that these strip fasteners can be easily detached from the adhesive elements of such an adhesive fastening part, insofar as the adhesive elements preferably incorporate no hook-shaped configuration, but rather are truncated on the frontal side.

In another preferred embodiment of the adhesive body according to the invention, on the side of the support strip facing the covering means is a loop material, preferably of cotton, which guarantees an extensive junction with the foam material. Preferably then the loop material is arranged on a flat strip which can be provided as an integral part of the support strip or can be connected with the support strip. With the described arrangements it is possible to produce such a secure junction of the adhesive body with the foam material during the generation of foam that neither with the removal of the adhesive material covering means nor with the subsequent tearing off of a fastener article on the seat covering is the foam-covered adhesive body part separated from the foam material.

With another especially preferred embodiment, the adhesive material means is an adhesive strip which can be rolled up and rolled out, which on its exterior side turned away from the adhesive elements is provided with a removable magnetic foil or a foil having a covering incorporating magnetizable particles, such as iron particles, or having a covering of silicon. Through the development or shaping of the adhesive material means as an adhesive strip which can be rolled out or rolled up, the adhesive means can be processed as a sort of a foil, and the production of the adhesive body calls for no costly equipment such as smelting devices and coating or application devices, but rather any extruding mechanism can be used for the application of the covering foam. More than that, simple feed devices and a pressure roller will suffice. Insofar as the adhesive

body is provided with a removable magnetic foil or a covering layer with magnetizable particles, said strip-like adhesive body can be inserted in the mold with magnetic mounting, over so-called pipes or channels, simply and securely adhered in the mold, and during foaming in the mold it can be held securely in its position in such a manner that during foaming in the mold it is not subjected to any dislocation or the like. Insofar as a silicon-coated covering layer is provided, the adhesive strip has an adhesive layer on both sides and consequently also an adhesive layer facing inward from the exterior, which can be detachably connected directly with the mold or its parts, such as pipes or channels.

Insofar as the adhesive elements of the adhesive body are formed of stalk-like thickenings or enlarged areas on the support strip, which are flattened on the frontal side or have concave depressions, these constructions can be extremely low in height and the process of rolling out the adhesive means thereby producing the adhesive body is simplified.

Hereinafter the adhesive body of the invention is to be described in greater detail relative to the drawing.

The drawings show reproductions in principle and not in scale, showing

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|--------------|---|
| Fig. 1 | an enlarged section of a representation of a first embodiment of the adhesive body as in Fig. 1a; |
| Figs. 2a, 2b | an enlarged representation of a modified embodiment of the adhesive body of Fig. 1; |
| Fig. 3 | a device for the production of the adhesive body. |

The adhesive body according to the invention serves especially for the production of a junction with a foam material molded body 10 during the molding procedure involving foam material. Such foam material molded bodies 10 serve for the production of foam material blanks, especially blanks for motor vehicle and aircraft passenger seats as well as their parts, such as seat parts, backrests, armrests and head supports. This also encompasses seat assembly members, by which these individual seat components are assembled into one seat structure. Dependent upon the specific molded body to be produced, a mold 12 or a molding box is provided, into which the foam material is introduced under pressure. Following termination of a heat treatment in mold 12, and a subsequent cooling process, then molded body 10 can be removed from mold 12 for further processing.

So that such a manufactured foam material molded body 10 can be provided with a coating material or the like, adhesive bodies in the form of strips are inserted into mold 12 and are foamed up with it. Corresponding complementarily constructed adhesive fastener parts on the coating material but not shown in the drawing then cooperate with adhesive elements 14 of the adhesive body, which is securely fastened to molded body 10, and thus fasten the covering to the foam material molded body 10.

The individual adhesive elements 14 are arranged on a support strip 16 preferably as one integral element with this support strip. To avoid undesired penetration of foam material, adhesive elements 14 are covered with a covering means 18.

Covering means 18 is an adhesive material which, as shown especially in Figs. 1 and 2, rests on adhesive elements 14 and frees a uniformly arranged, radial spacing 20 between adhesive elements

14. Covering means 18 in the form of the adhesive material, which can be applied in foil form, thus engages adhering on the frontal side and is supported on the adjacent facing side of support strip 16. The adhesive means can be selected from among melted adhesive materials, which are also known as hot-melt-adhesives, from among dispersion adhesive materials, which preferably are on an aqueous phenol resin base, or from among adhesive materials based on acrylate.

A loop material 22 is found on the side of support strip 16 facing covering means 18, and is preferably of cotton, which guarantees a strong junction with the foam material during the foaming process. The foam material penetrates between the individual loops of the loop material which is arranged on a flat strip 24, and the penetrating foam yields a tight bond as soon as the foam material has hardened.

In one embodiment, the adhesive material means configured as an adhesive strip which can be rolled up and rolled out has a removable magnetic foil 30 or a comparable covering layer having magnetizable particles, not shown, such as iron particles on its exterior side 28 turned away from adhesive elements 14. The removable magnetic foil 30 guarantees that the adhesive body is held in mold 12, and has mountings 32 constructed of corresponding dimensions, which are provided with magnetic inserts, for example in the form of magnetic rods, not shown. These mountings 32 also can be removed from mold 12. When the molding process is terminated, magnetic foil 30 together with covering means 18 is preferably withdrawn and adhesive elements 14 are released for the next operation.

The cited adhesive elements 14 are formed of stalk-like thickened or enlarged areas on support strip 16, which are flattened in the frontal area and from the longitudinal transverse sectional point

of view taper inward cylindrically. Other cross sections, such as rectangular, elliptical or the like, are also possible. Furthermore the stalk-like enlarged areas can have not shown concave depressions on their free frontal area. Preferably adhesive elements 14 are of one piece integral with support strip 16 and are formed of a plastic material.

For the manufacture of the adhesive body with the plurality of adhesive elements 14 configured of one integral piece with support strip 16 in the form of thickened projecting stalks, a thermoplastic plastic is fed in plastic or liquid state into a gap between a pressure roll or platen and a grooved or shaped roll which is not shown in the drawing, whereupon the two rolls are driven in opposite directions of rotation, whereby the grooved roll has a sieve with outwardly and inwardly aligned open hollow spaces, of which the hollow spaces of the exterior contour correspond to stalk-like adhesive elements 14 and whereby the thermoplastic plastic penetrates unto the sieve and there hardens at least partially. Adhesive elements 14 which are thus produced are of only very small height and stand tightly together. Consequently it is not possible that the adhesive means in the form of covering means 18 engage in the spaces 20 between adhesive elements 14, which simplifies the withdrawal of covering means 18 from adhesive elements 14.

The device shown diagrammatically in Fig. 3 is the arrangement by which the adhesive body can be produced. The magnetic foil 30 or iron-containing paper is guided through between two rubber coating rollers 38, each of which runs in the direction of its arrow, whereby covering means 18 in the form of the adhesive strip runs on the bottom of magnetic foil 30 or of the paper. Before the bonding thus generated between the two rubber coating rollers 38 is carried out, a

covering paper 40 protecting the adhesive means is drawn through, and, as shown in Fig. 3, is correspondingly wound on a roll 42. Parallel to that, support strip 16, along with then outward projecting adhesive elements 14, is being unwound from an unrolling reel 44. In the direction of viewing shown in Fig.3, top rubber coating roll 38 then presses the adhering covering means 18 on support strip 16 and the completed and already described wide product 46 is produced, as is shown more clearly in Figs. 1 and 1a.

With this production of the adhesive body, one is not absolutely required to use strip materials as narrow or small product. Moreover all component parts of the described laminates can be produced as so-called wide product and can be joined together, and indeed permanently joined together to a width of up to approximately 1.5 m, whereby then from this wide product 46 it is possible to draw off portions and feed them to a rolling-cutting machine or reel-cutting machine or the like to obtain strips of the desired width and dimensions. Complicated two- and three-dimensional shapes can also be attained for seat construction, by punching, by water jet cutting or by means of a laser beam. The processing of the cut borders by means of adhesion or gluing or welding before use in foam mold 12 can also be deleted, in that the material can be brought directly from the relevant supply roll 44, which adds up to considerable savings in cost.

In the embodiment according to Figs. 2a and 2b, Fig. 2a reproduces a plan view of covering means 18 and Fig. 2b is a side view of the same. When adhering covering means 18 engages over the entire area of adhesive elements 14, relatively high manual forces are required for the removal of covering means 18. In order to facilitate this detachment and removal process, a non-adhering band 50 is provided in the embodiment as shown in Figs. 2a, 2b, to be rolled up together with it, so that it thus comes to lie between covering means 18 and adhesive elements 14 which are to be

covered. Since no adhering contact between covering means 18 and adhesive elements 14 takes place at the contact points of non-adhesive band 50, the manual removal process for covering means 18 is simplified. Non-adhering band 50 can be applied as a band or as foil or, as shown in Fig. 2a, covering means 18 can be applied engaging and supported from below at a certain spacing.

Furthermore, as shown in Fig. 2a, covering means 18 can be provided with a handle or grip 52 aligned transverse to its longitudinal alignment, which offers aid in gripping the unit. In the direction of viewing seen in Fig. 2a, then, viewed from handle 52 outward, covering means 18 is glued onto adhesive elements 14 flush with the right side and is left unattached flush with the left side. The adhesive material can naturally harden into an adhering foil coating or, as coating on the thin layer of foil, can produce the junction with adhesive elements 14.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An adhesive body for producing a junction with a foam material molded body during molding of foam material, the adhesive body comprising:

a support strip;

adhesive elements arranged on said support strip, said adhesive elements being stalk-like enlarged areas on said support strip and having flattened front ends remote from said support strip; and

a surface covering having adhesive on an inner surface thereof adhering said covering to said flattened front ends of said adhesive elements to avoid penetration of the foam material into spaces between said adhesive elements during molding of the foam material, said covering being removable from said adhesive elements to expose said adhesive elements for use upon completion of the molding.

2. An adhesive body according to claim 1, wherein said adhesive is a melting adhesive material.

3. An adhesive body according to claim 1, wherein said adhesive is a dispersion adhesive material.

4. An adhesive body according to claim 1, 2 or 3, wherein said adhesive has an aqueous phenol resin base.

5. An adhesive body according to claim 1, 2 or 3, wherein said adhesive has an acrylate base.
6. An adhesive body according to any one of claims 1 to 5, wherein said support strip has loop material on a side thereof remote from said covering for forming a tight junction with the foam material.
7. An adhesive body according to claim 6, wherein said loop material is cotton.
8. An adhesive body according to claim 6 or 7, wherein said loop material is arranged on a flat strip that is an integral part of said support strip.
9. An adhesive body according to claim 6 or 7, wherein said loop material is arranged on a flat strip that is connected with said support strip.
10. An adhesive body according to any one of claims 1 to 9, wherein non-adhering cover material is partially fitted between said adhesive elements and said covering.
11. An adhesive body according to claim 10, wherein said non-adhering material is a non-adhering band.
12. An adhesive body according to any one of claims 1 to 11, wherein said covering is an adhesive strip that can be rolled out and rolled up, said adhesive strip having an

exterior surface remote from said adhesive elements provided with a removable magnetic foil.

13. An adhesive body according to any one of claims 1 to 11, wherein said covering is an adhesive strip that can be rolled out and rolled up, said adhesive strip having an exterior surface remote from said adhesive elements provided with a layer having magnetizable particles.

14. An adhesive body according to claim 13, wherein said magnetizable particles are iron particles.

15. An adhesive body according to any one of claims 1 to 11, wherein said covering is an adhesive strip that can be rolled out and rolled up, said adhesive strip having an exterior surface remote from said adhesive elements, said exterior surface having a silicon-coated covering layer.

16. An adhesive body according to any one of claims 1 to 15, wherein said flattened front ends have concave depressions.

17. An adhesive body according to any one of claims 1 to 16, wherein said covering includes a handle to facilitate removal from said adhesive elements.

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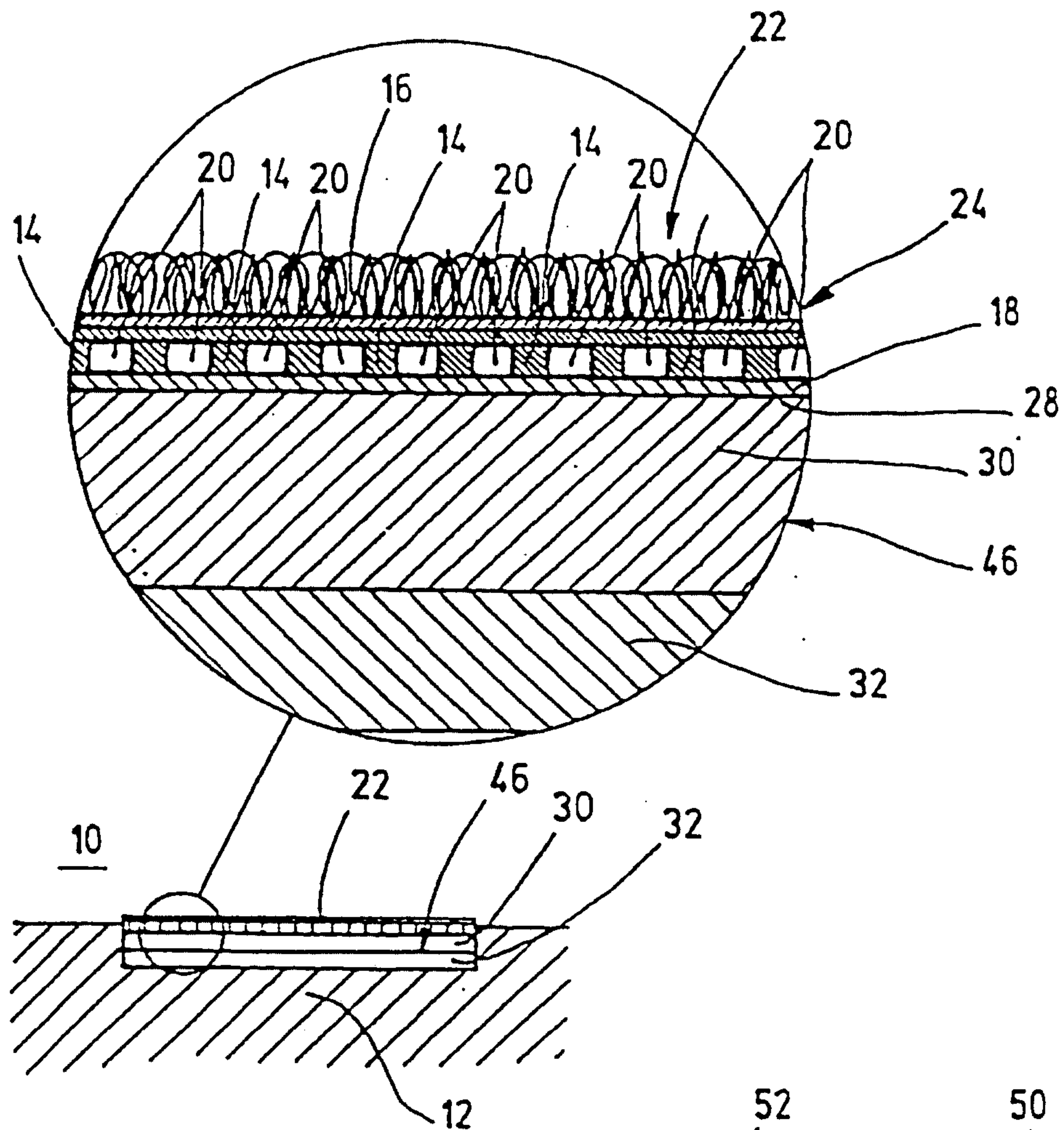


Fig. 1

Fig. 1a

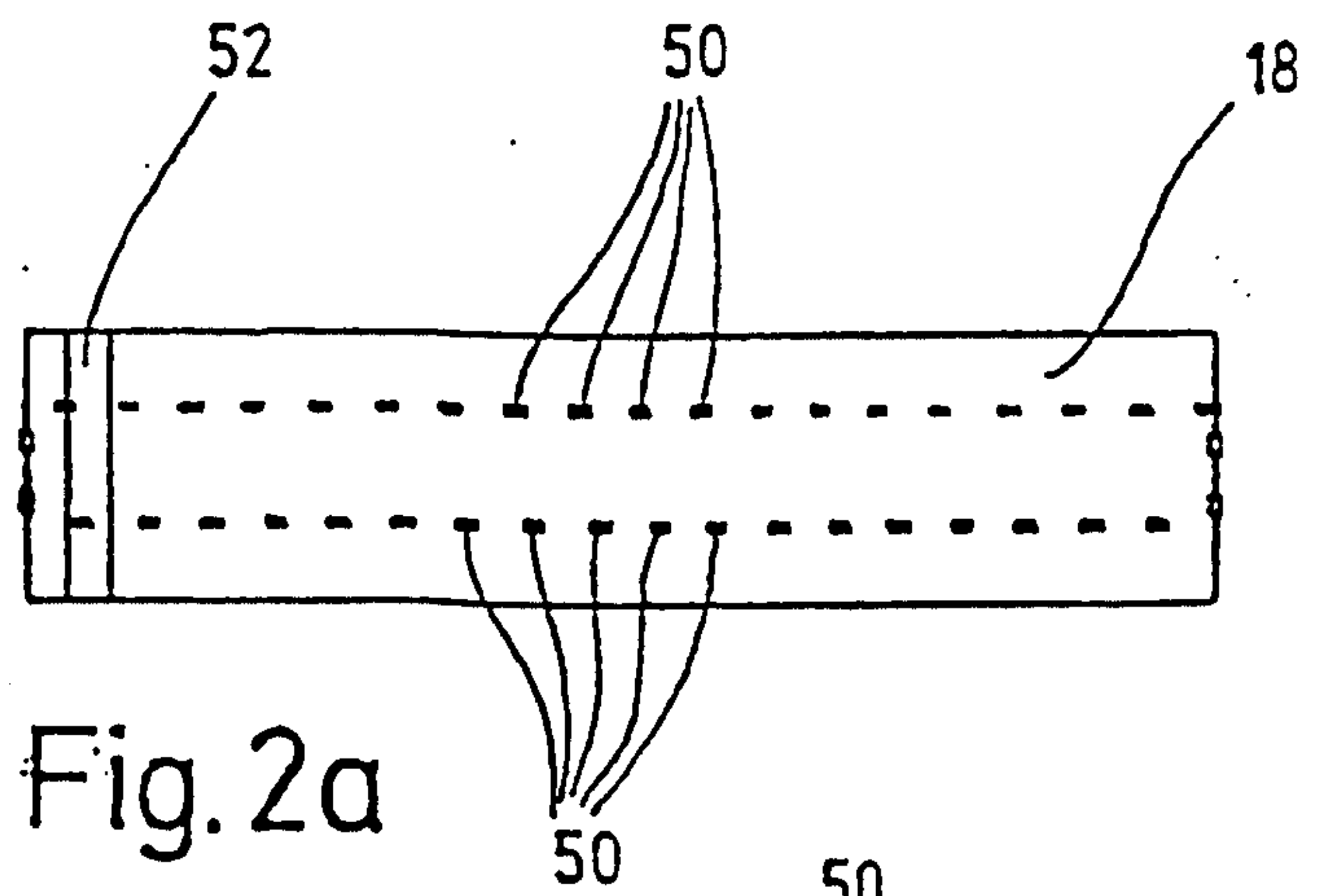


Fig. 2a

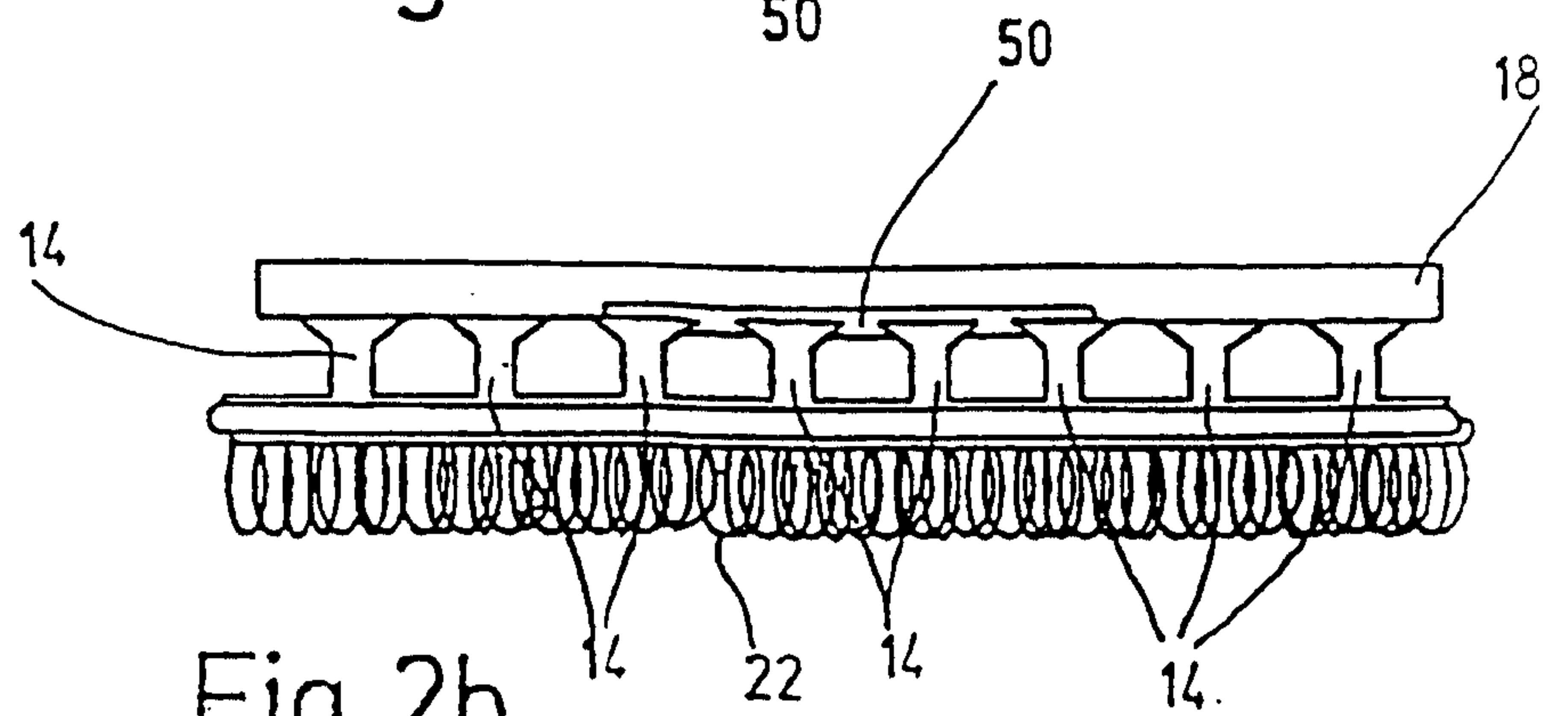


Fig. 2b

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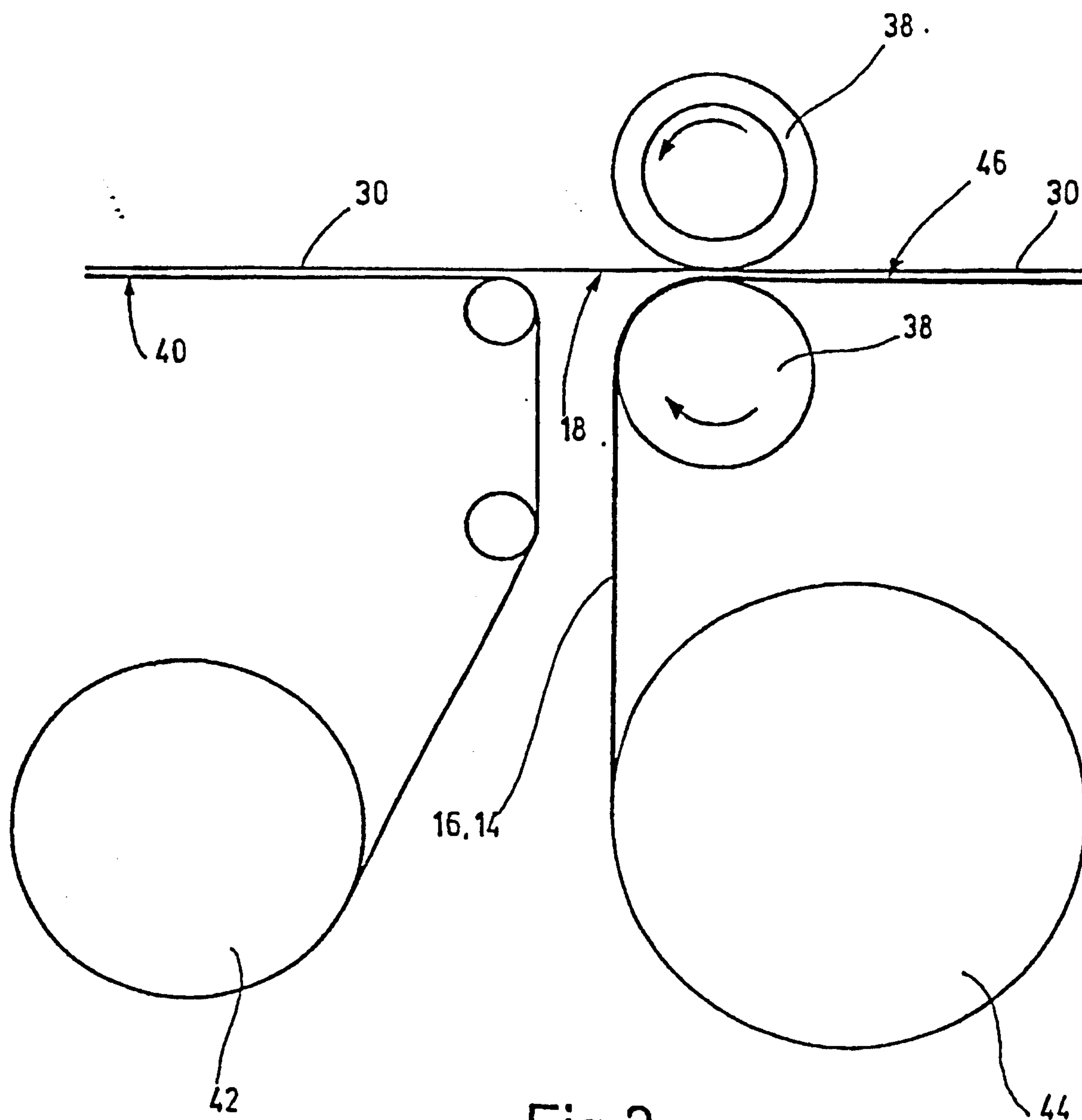


Fig. 3

