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(54) Titre : SUPPORT D'IMPRESSION COMPOSE D'AU MOINS DEUX SUPPORTS D'IMPRESSION PARTIELS
ASSEMBLES DE FACON COPLANAIRE, SUPPORTS D'IMPRESSION PARTIELS ET PROCEDE DE FABRICATION
DE CEUX-CI

(54) Title: PRINTING CARRIER CONSISTING OF AT LEAST TWO FLAT PARTIAL PRINTING CARRIERS ASSEMBLED
IN A COPLANAR MANNER, PARTIAL PRINTING CARRIERS, AND METHOD FOR THE PRODUCTION THEREOF

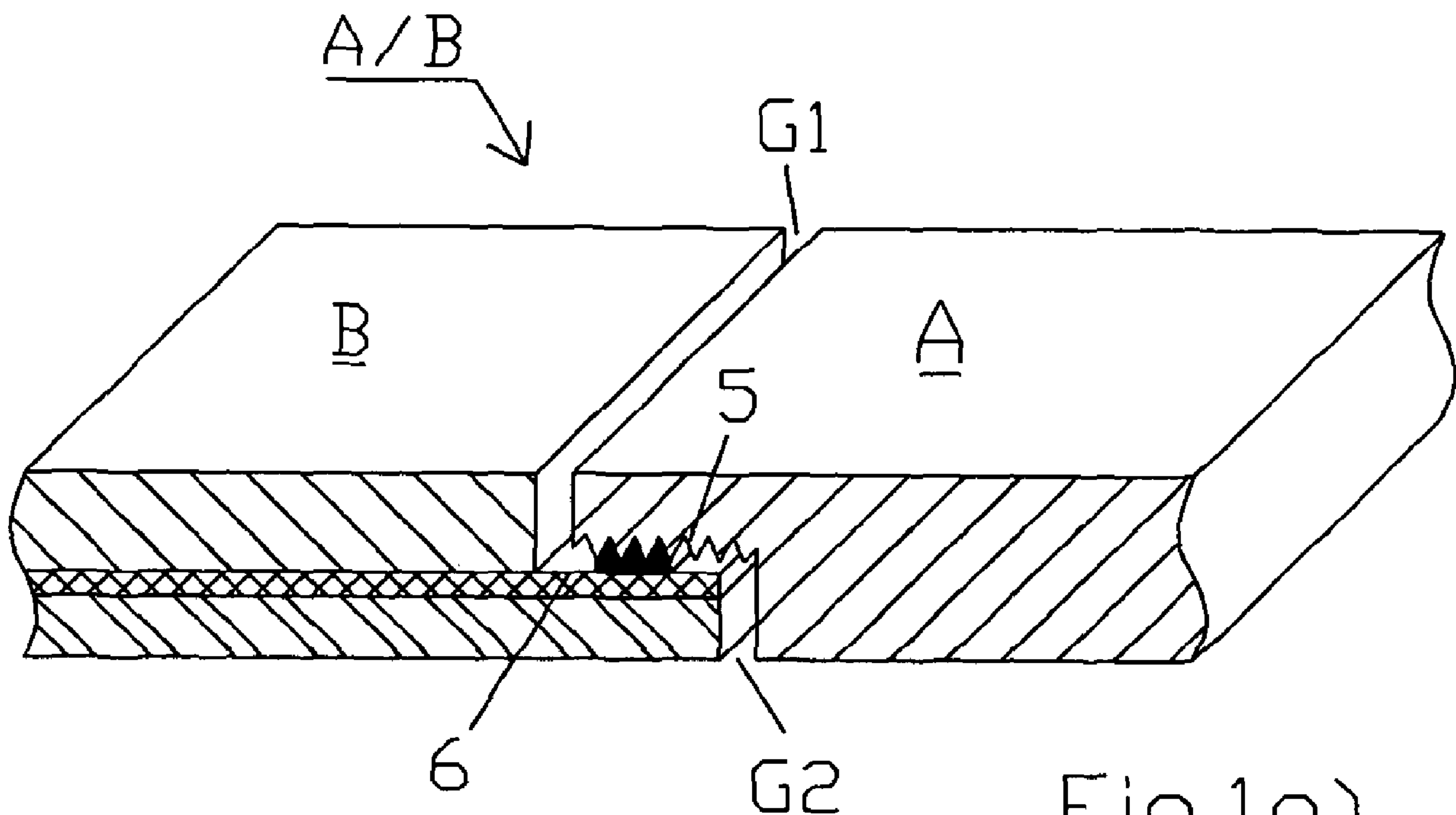


Fig.19)

(57) Abrégé/Abstract:

The invention relates to a printing carrier (A/B) consisting of at least two flat partial printing carriers (A, B) assembled in a coplanar manner, one of the partial printing carriers (A) comprising a paper layer (1). According to the invention, the thickness of the paper layer (1) of the partial printing carrier (A) is reduced along an edge strip (5) by removing a partial layer, the other partial printing carrier (B) has an edge strip (6) along which its thickness is reduced in relation to the rest, and both partial printing carriers (A, B) are interconnected along the two edge strips (5, 6) thereof. The invention also relates to especially suitable methods for producing such a printing carrier.

ABSTRACT

In a coplanarly joined print carrier (A/B) composed of at least two laminar partial print carriers (A, B), wherein one of the partial print carriers (A) contains a paper layer (1), the invention provides that the paper layer (1) of one partial print carrier (A) is
5 attenuated in thickness along an edge strip (5) by removing a partial layer, that the other partial print carrier (B) has a lesser thickness along one edge strip (6) than elsewhere, and that the two partial print carriers (A, B) are bonded together along their two edge strips (5, 6). Also described is a method especially suitable for making such a print carrier.

SPECIFICATION

TITLE

PRINTING CARRIER CONSISTING OF AT LEAST TWO FLAT PARTIAL PRINTING
CARRIERS ASSEMBLED IN A COPLANAR MANNER, PARTIAL PRINTING
CARRIERS, AND METHOD FOR THE PRODUCTION THEREOF

TECHNICAL FIELD

The present invention concerns a coplanarly joined print carrier made from at least two laminar partial print carrier s, wherein one of the partial print carriers has a paper layer.

5 The invention also concerns a partial print carrier with a paper layer, as well as a method for making such a print carrier and partial print carrier .

A print carrier or partial print carrier within the context of the present invention is understood to be a substrate, especially a sheet, web, or page-like substrate, which is printed and/or can be printed on one or both sides. The substrate can have a single or multiple-layer construction.

10 PRIOR ART

Print carriers based on paper sheets are increasingly needed, which are improved by means of local affixed items, usually in conjunction with die-cutting, and which contain integrated cards or labels, for example. The affixed items generally involve laminates, which contain the plasticizing and adhesive layers required for the integrated cards or
15 labels. As an example, reference may be made to WO 95/20493.

The affixed items cause local thickening of the printed carriers, which is not of any consequence for individual print-carrier sheets, but when placed in a stack, as it increases in height, it adds up and result in increasingly skewed stacking.

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In order to avoid this skewed stacking, which prevents full loading of the magazines, various solutions have already been proposed:

One proposal according to DE 197 41 563 consisted of making a single print carrier
25 with an integrated card, instead of local affixing, i.e., providing it with the layers needed for the integrated card over the entire surface. However, this solution could not be

successful, due to the much larger quantity of costly material needed for this. Also, the print carriers in this embodiment are altogether quite rigid and heavy and can hardly be folded at all, due to the layers of film usually present.

- 5 A proposal according to WO 2005/100006 consisted of retaining partial affixing on part of the surface and preventing skewing of the sheets in the stack by means of increasing thickness deformations imprinted in the paper material. However, due to the high elasticity of paper, these deformations have shown themselves to be insufficiently stable over time.

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- A print carrier was proposed in WO 92/05036 in the form of a card laminate with a first card, made of paper, for example, and a second card, in which the second card is fastened at one segment of the first card incised under pressure and exhibits a surface which is coplanar with it, so that skewing cannot occur in the stack. However, it results from this that this proposal could not be successfully achieved because the impression in the paper material of the first card would break down over time, due to the high elasticity of paper, as was the case with the aforementioned deformations.

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- In WO 00/41895, a coplanarly joined print carrier made from at least two laminar partial print carriers, of the type mentioned at the beginning, was proposed, in which the partial print carriers are glued together at their contiguous edges with essentially no overlap. However, it was not possible to achieve a sufficient binding strength in practice, at least not at a reasonable cost.

20

25 REPRESENTATION OF THE INVENTION

- The invention poses the problem of specifying a print carrier of the kind mentioned at the outset, in which both partial print carriers are robustly joined together coplanarly in a technically simple and systematically executed way and in which the partial print carrier comprised of the paper layer can simply consist of this paper layer and the other partial print carrier can consist, in particular, of a laminate suitable for integrated cards.

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This problem is solved according to the invention by means of a print carrier with the features of patent claim 1. The print carrier according to the invention is characterized by the fact that the thickness of the paper layer of one partial print carrier is therefore attenuated along one edge strip by removing a partial layer, that the other partial print carrier exhibits a lesser thickness along one edge strip than elsewhere, and that both partial print carriers are joined together along their two edge strips.

The two partial print carriers can be firmly joined together with their two edge strips, in particular by mutual overlap. In the area of overlap, a total thickness can be obtained in this way which is no greater than the thickness of the partial print carriers elsewhere. Alternatively, the two partial print carriers could also be joined together by their edge strips by bonding with at least one strip, in particular an adhesive strip, in which the thickness of the strip will be offset by the lesser thickness of the partial print carriers in the area of their edge strips, and likewise by means of at least one strip will in sum cause no increase in thickness besides, compared to the thickness of the individual partial print carriers.

According to a first preferred embodiment of the invention, the partial layer is removed from the paper layer by tearing it off. In this regard, the invention utilizes the knowledge that paper material can be split and that a strip with a partial layer of the paper material can, after making a suitable rip, be further torn off almost continuously at an extremely constant thickness.

Alternatively or in addition, the partial layer could be removed by an abrasion process, in particular by grinding or milling.

If the second print carrier is a multilayered card laminate with at least two layers that can be separated from each other, a strip can be removed from at least one layer of this laminate and thereby likewise obtaining a thickness reduction along an edge strip.

Preferably, the edge strip of the paper layer of one partial print carrier is delimited from the rest of the paper layer by a cut in the paper layer. The same holds true for the other partial print carrier, in particular if this is a laminate with at least two layers which can be peeled away from each other.

In a further preferred embodiment, the other partial print carrier is shorter in the direction of the edge strip than the partial print carrier containing the paper layer. This construction is then especially advantageous if the surfaces needed for an integrated card, for example, are less wide in the other partial print carrier, in particular it has to be only half as wide as the print carrier containing the paper layer and the other partial print carrier is moreover of an expensive laminate.

Both partial print carriers can be joined with each other by an adhesive strip, which is provided with a transponder. A transponder could also be contained in an adhesive strip, which is glued along a strip of a print carrier attenuated by removing a partial layer.

One object of the invention is a partial print carrier with a paper layer for making a print carrier according to the invention, in which the thickness of the paper layer is attenuated along an edge strip by removing a partial layer. Preferably, the partial layer of the paper layer is removed by tearing it off. Alternatively or in addition, the partial layer could be removed by an abrasion process, in particular by grinding or milling.

The partial print carrier can be provided with an adhesive layer covered by a peel-off covering layer at the edge strip of the paper layer.

Moreover, an object of the invention is a method for making a print carrier or a partial print carrier according to the invention, in which the partial layer is removed from the paper layer by tearing it off along the edge strip.

Preferably, the partial layer of the paper layer is torn off with an adhesive strip. Critical to the resultant thickness here of the partial layer are the tear conditions. Preferably, the adhesive strip is pulled off, along with the partial layer of the adhering paper layer, using a roller. In continuous production, with the paper web and the adhesive strip in the form of continuous webs, the two webs are passed across two rollers that wind against one another. Due to the tear conditions which are very uniform here, corresponding, rather, to a lifting off, a very uniform thickness can be attained for the partial layer and, thus, also for the remaining layer of the paper layer along the edge

strip. Above all, the thickness of the partial layer can be influenced here by the choice of diameter for the roller(s).

Another object of the invention is a method for making a print carrier or a partial print carrier according to the invention, in which the partial layer of the paper layer is removed along the edge strip by abrasion, in particular by grinding and/or milling.

As a result, the edge strip of the paper layer exhibits a smooth edge facing the rest of the paper layer; it is delimited by a cut in the paper layer, before removing the partial layer. The depth of the cut should correspond here to roughly the desired thickness of the partial layer.

Provided that the second print carrier is a multilayered laminate, the edge strip on it can likewise be delimited from the rest of the laminate before peeling off at least one layer by means of a cut in the laminate. The depth of the cut should correspond to at least the desired thickness of the partial layer.

A glued join is preferred for connecting the two partial print carriers along their two edge strips, with the two edge strips overlapping, in which, also preferably, if necessary, an adhesive layer is transferred dry from one carrier to one of the two edge strips. This has an advantage over a wet application of the adhesive layer, in that the adhesive layer is immediately available for gluing both partial print carriers and does not have to be dried first. A hot glue could also be considered, or a connection using an already existing coating by pressing the two webs together.

Finally, the method of the invention is preferably a continuous method, in which the two partial print carriers are present as webs and are processed, preferably at the same time, for example, by running off a roller. In addition to their being joined together, the two partial print carriers could also undergo further processing steps in the same run, such as, for example, printing or die-cutting, and finally separation.

In a further method according to the invention, two outer and one middle partial print carriers are used for the essentially waste-free manufacture of a print carrier, with the other partial print carrier shorter in the direction of the edge strip than the partial print

carrier containing the paper layer, in which both outer partial print carriers each contain a paper layer and each is attenuated in thickness along an edge strip by removing a partial layer and in which the middle partial print carrier exhibits a lesser thickness along two facing edge strips than the thickness elsewhere. The outer partial print carriers are each bonded along their edge strips to one of the edge strips of the middle partial print carrier. Then the partial print carriers so connected are passed by means of an edge strip alternately facing one another and in between the middle partial print carrier crossing a parting line separates into at least two of the print carriers.

10 BRIEF EXPLANATION OF THE FIGURES

The invention will now be explained in more detail by means of embodiment examples with reference to the drawing. Shown schematically are:

- Fig. 1 g), a coplanarly joined print carrier according to the invention, composed of two partial print carriers and a)-f), the individual steps for making this print carrier ;
- Fig. 2 a) a device for making the print carrier of Fig. 1 in a continuous process, in which two webs corresponding to the partial print carriers are processed and joined together coplanarly; b) and b'), plan views; and c) and c'), cross-sections of these webs; d) shows a modified die-cut unit of the device illustrated in a);
- Fig. 3 a), a'), b), b)', and c), cross-sections of the webs on different cylinders of the device in Fig. 2a);
- Fig. 4 a)-c), alternative embodiments for the coplanar connection of two partial print carriers by means of strips;
- Fig. 5 a), a print carrier according to the invention, in cross-section, with an integrated card; and b), the print carrier with the card removed;
- Fig. 6 a), a print carrier according to the invention, in cross-section, with an adhesive label, and b), the print carrier with the adhesive label removed;

- Fig. 7 in a representation according to Fig. 6 b), a print carrier according to the invention, in cross-section, with a folding card removed;
- 5 Fig. 8 a), another print carrier according to the invention, in cross-section, with an integrated flip card; b), steps for making the flip card; and c), the flip card released.
- 10 Fig. 9 a), a plan view of print carrier sheets with different widths of partial print carrier ; b), the print carrier folded; c), plan views of webs A1, A2, and B1 in a run through units corresponding to the units I-IV of Fig. 2 a); d) and e), respectively, a section through the two-part partial print carriers A1/B1/A2 occurring thereby; and f), a plan view of these print carriers in a run through a die-cut unit corresponding to the die-cut unit V of Fig. 2 a);
- 15 Fig. 10 a), a plan view of further print carrier sheets with different widths of print carriers and an integrated folding card in the print carrier B as well as, respectively in section; b), the print-carrier sheets, c) the print-carrier sheets with the folding card; d), the folding card bent over; and e), the
- 20 finished folding card; and
- Fig. 11 a)-c), four embodiments of the print carrier with strip-like attenuations with transponders incorporated therein.

25 In the figures, the size proportions of the various parts are not to scale. In particular, the thicknesses of the individual layers are represented greatly exaggerated for better recognition.

WAYS OF IMPLEMENTING THE INVENTION

- 30 Fig. 1 g) shows a print carrier A/B of two laminar partial print carriers A and B, joined coplanarly with mutual overlapping. The partial print carrier A consists of a single ply or layer 1 of paper. The partial print carrier B is a laminate with roughly corresponding thickness, made up of three layers 2, 3, and 4, in which layers 2 and 4 can likewise be

a paper layer or a film layer and layer 3 is a so-called peelable adhesive layer, which allows the layer 2 to be separated from it and it thereby remains behind on layer 4.

For the purpose of their coplanar joining, the partial print carriers A and B are each
 5 attenuated in thickness along an edge strip 5 or 6 by removing a strip-like partial layer 7
 from the partial print carrier A and a strip-like layer 8 from partial print carrier B. To
 facilitate this and to obtain a neat boundary for the edge strips 5 and 6, the partial print
 carriers A and B can be provided with cuts 9 and 10 beforehand. Figs. 1a) and 1b)
 show the two partial print carriers A and B in their original state, but already provided
 10 with such cuts 9 and 10. Fig. 1 c) shows the strip-like partial layer 7 of paper layer 1
 along the cut 9 of paper layer 1 and is thus represented as separated from partial print
 carrier A, whereby the separation is achieved by tearing it off, with fraying of the paper
 material. Fig. 1 d) shows the strip-like layer 8 along the cut 10 separated from partial
 print carrier B, whereby part of layer 2 is formed and is separated from the peelable
 15 adhesive layer 3. Then, on at least one of the attenuated edge strips 5 and/or 6, here
 edge strip 6 of partial print carrier B, an adhesive 11 is applied as a strip, as Fig. 1 e)
 shows. As represented in Fig. 1 f), the two partial print carriers A and B are finally
 glued together at their edge strips 5 and 6, mutually overlapping so that they come to
 lie essentially coplanar, as Fig. 1 g) shows. With suitable attenuation of the two partial
 20 print carriers A and B, possibly allowing for the thickness of the glue 11, the same
 thickness is obtained, at most, in their area of overlap 5/6 as the two partial print
 carriers each have, as this is preferred. The print carrier A/B, which is assembled from
 the two partial print carriers A and B, then likewise exhibits an essentially consonant
 thickness over its entire surface.

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Fig. 2 a) shows a device for making a print carrier A/B according to Fig. 1 in a
 continuous process using partial print carriers A and B, which are present as
 continuous webs and are unwound from feed rollers 20 and 21. Fig. 2 b) shows plan
 views of the webs A and B running through the device of Fig. 2 a). Fig. 2 c) represents
 30 a section through the finished print carrier A/B.

From the feed roller 20, web A is taken to a first die-cut unit I with a die-cut cylinder 22
 underneath and a opposing cylinder 23 on top, in which it runs onto the opposing
 cylinder 23 in the die-cut unit. The die-cut cylinder 22 is provided with at least one

rotating cutting edge to produce the cut 9 of Fig. 1 as the web A runs through the gap between the two cylinders 22 and 23. Ahead of this gap in the direction of rotation, a roller 24 rests against the die-cut cylinder 22, whereby a first adhesive strip K1, with a supporting film layer and an adhesive layer, which is pulled off a roller 25, is transferred
5 onto the die-cut cylinder 22 with the adhesive layer pointing outward. At the same time, a cover for the adhesive layer on the roller 24, such as one in the form of a silicone paper S1, is pulled off the adhesive strip K1 on the roller 24 and passes to a roller 26, onto which it is wound. The adhesive strip K1 comes in contact with the web A in the gap between the two cylinders 22 and 23, and there it is glued firmly to it under
10 pressure. Subsequently, carrying along with it a partial layer of the paper layer of web A, as will be further explained below, it runs further around the die-cut cylinder 22 as far as a deflection roller 27, by which it is carried away from the die-cut cylinder and fed to a wind-up roller at 28.

15 The adhesive strip K1 is so proportioned in width and so oriented relative to the web A and the cutting edge 22.1 making the cut 9 in it (Fig. 3 a)) that it comes to lie between one of the side edges of web A and the cut 9, and preferably the space between them is also essentially filled. In particular, it fits tightly against the cutting edge 22.1 on the die-cut cylinder 22.

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While now, since the adhesion of the adhesive layer of the adhesive strip K1 to the paper material of web A is chosen to be greater than the internal strength of the paper material, it tears this up or frays it in the direction of travel on the aforesaid edge strips
5, so that a partial layer of the paper layer corresponding to the partial layer 7 of Fig. 1 remains stuck to the adhesive strip K1 on the die-cut cylinder 22, while web A besides
25 runs further around the opposing cylinder 23. The partial layer 7 torn off by the adhesive strip K1 and stuck to it is wound up, together with the adhesive strip K1, onto the roller 28. The specific tearing conditions can be kept exactly constant in the procedure described, so that an approximately constant tear depth results, with a
30 correspondingly constant attenuation of web A along its edge strip 5.

Therefore, three processes take place at nearly the same time in the gap between the two cylinders 22 and 23: the production of the cut 9 for a straight boundary at the edge

strip 5 being attenuated, the application of the adhesive strip K1, and the tearing off of the partial layer 7 with the adhesive strip K1.

Web A with its attenuated edge strip 5 is then passed around various deflection rollers, including a second die-cut unit II, as is described below.

The second die-cut unit II contains a die-cut cylinder 30 on top and an opposing cylinder 31 underneath. This second die-cut unit II receives the web B fed from the feed roller 21 such that it runs onto the opposing cylinder 31. The die-cut cylinder 30, like the die-cut cylinder 22, is provided with at least one rotating cutting edge (30.1 in Fig. 3 b)) to make the cut 10 of Fig. 1 as web B runs through the gap between the cylinders 30 and 31. Because of the cut 10, the strip-like layer 8 of Fig. 1 d) is cut free and can then be pulled around the die-cut cylinder 30 besides from the rest of web B and can be wound up on a roller 32.

Web B with its thus attenuated edge strip 6 is then passed to a station III, at which an adhesive corresponding to the adhesive 11 of Fig. 1 e) is applied in a strip to the attenuated edge strip 6. The adhesive 11 is applied dry by means of a pair of rollers 33, 34, using pressure, and is at the same time passed from a feed roller 35, on which it is arranged between two covering layers of silicone paper S2 and S3. One of these covering layers, S2, is, prior to applying the adhesive layer 11, pulled off it by a roller 36 running against the roller 33 and is wound onto a roller 37. The other covering layer, S3, is pulled off it by a roller 39 only after applying the adhesive 11 to web B and is wound onto a roller 38. The adhesive 11 then lies exposed on the top side of web B at its edge strips 6. In order for the adhesive 11 to be separated in the proper sequence from the covering layers S2, S3, its adhesion with respect to the covering layer S2 must be clearly less than with respect to the covering layer S3.

At another station IV with two press rollers 40 and 41, web A and web B are brought together and glued to each other with the adhesive 11, under pressure, overlapping their two attenuated edge strips 5 and 6, as is also evident from Fig. 2 c). It is important that the pressure be exerted by the rollers 40, 41 in the overlap area, for which a so-called final adjustment is provided there. It can be seen from Fig. 2 a) how web A passes around the press roller 40 and is joined to web B. In Fig. 2 b), it can be

seen that the two webs A and B have been moved laterally relative to one other by means of the device, so that both their attenuated edge strips arrive at station IV with the press rollers 40 and 41 with precisely the desired mutual overlap and are pressed together.

5

As a result, a print carrier A/B has already been finished according to the present invention, albeit in the form of a continuous web, which is wound onto a roller 46 and could be made available for further continuous processing, for example at a print shop. But in practice, there is an increasing need for single sheets that can be handled by sheet printers. For that reason, a third die-cut unit III is also provided in the device of Fig. 2 a), with a die-cut cylinder 42 and an opposing cylinder 43, in which there is at least one cutting edge on the die-cut cylinder 42 that is oriented transverse to the direction of travel of the web A/B, for cutting single sheets to length from the web A/B. Reference 44 depicts a device for picking up and stacking the single sheets and 45 a stack of sheets. The sheets can have typical formats such as A4 or letter size.

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Fig. 3 a), b) and c) clarify the situation at the three die-cut cylinders 22, 30 and 42 in the die-cut units I, II and III, in which the individual figures each show a longitudinal section through the die-cut cylinder and in which the sectional planes are each chosen as indicated by dashed lines, as in Fig. 2 a).

20

Fig. 3 a) shows the situation at die-cut cylinder 22 of the first die-cut unit I. The sectional plane is here chosen to be slightly slanted, so that it cuts the upper edge of the die-cut cylinder 22 shortly after the gap between it and the opposing cylinder 23, which is represented only in Fig. 2 a). The cutting edge rotating at the die-cut cylinder 22 to produce the cut 9 in web A is indicated as 22.1 and is composed of a thin die-plate, which is held magnetically on the die-cut cylinder 22. The die-cut cylinder 22 is, moreover, like the other die-cut cylinders as well, incidentally constructed as a magnetic cylinder. The adhesive tape K1, as already described, passes to the die-cut cylinder 22 so that it fits tightly against the cutting edge 22.1. In the gap between the die-cut cylinder 22 and the opposing cylinder 23, the cutting edge 22.1 penetrates into web A. The adhesive strip K1 is also glued here under high pressure to web A. At almost the same time, the tearing and separation of the partial layer 7 from web A begins in the gap, while the adhesive strip K1 with the partial layer 7 adhering to it

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continues to run through some rotational angle on the die-cut cylinder 22, while web A rotates around the opposing cylinder 23 and, past the gap, is removed from the adhesive strip K1 and the partial layer 7, as can be seen in Fig. 3 a).

5 Fig. 3 b) shows the situation at the die-cut cylinder 30 of the second die-cut unit II. Once again, the sectional plane is here chosen to be slightly slanted, so that the lower edge of the die-cut cylinder 30 is cut by it soon after the gap between it and the opposing cylinder 31, which is represented only on Fig. 2 a). The cutting edge rotating at the die-cut cylinder 30 to make the cut 10 in web B is indicated as 30.1 and is again
10 composed of a thin die-plate, held magnetically on the die-cut cylinder 30. The strip-like partial layer 8 of web B, cut free by means of the cut 10, is pulled off web B, while it runs further on the die-cut cylinder 30 through some angle of rotational, during which web B leaves the gap between the die-cut cylinder 30 and the opposing cylinder in a straight line.

15

In the embodiment examples described so far, the edge strips 5 and 6 of the two partial print carriers A and B are each oriented straight and parallel to one another, both as to their outer edges as well as the cuts 9 and 10. As a result, two hinge areas occur on the finished print carrier A/B, indicated as G1 and G2 in Fig. 1 g), along which both
20 partial print carriers A and B can be rolled against one another with little resistance. For many applications, this may be insignificant or even advantageous, but for others it may in comparison be undesirable. In the latter case, the hinge effect can be avoided to a large extent by means of a reciprocal gear-tooth construction of the two partial print carriers along their edge strips 5 and 6 and a bend-resistant connection produced. It is
25 sufficient for this, for example, to construct the two edge strips 5 and 6 as reciprocally undulating in opposite directions, to be precise, in terms of their outer edges as well as the cuts 9 and 10, as is represented in Fig. 2 b'), where the cuts are indicated as 9' and 10'. What is more, the cutting edges on the die-cut cylinders 22 and 30 must be constructed as correspondingly undulating, as Figures 3 a') and 3 b') show and where
30 the corresponding cutting edges are indicated as 22.1', 22.2', 30.1', and 30.2'. The cutting edges 22.2' and 30.2' are required here, in addition, to cut the outer edges of webs A and B in an undulating pattern, whereby cutting waste results. The two cutting edges 22.1' and 22.2' on the die-cut cylinder 22 can at the same time be used to advantageous to cut out, for example, with straight edges, from the adhesive strip K1

fed from the roller 25, an adhesive strip K1' exactly matching in wavy contour; whereby again, cutting waste will naturally result here, but it can be removed along with the covering S1.

- 5 The thickness of the partial layer 7 torn away from the paper layer of the partial print carrier A to attenuate its edge, and as a result the measure of this attenuation, depend on the quality of the paper used as well as, in part, on the rate of tearing, but above all on the angle of tear, whereby the thickness decreases as the tear angle becomes larger. The depth of the cut 9 plays practically no role in this connection. A sharp-
10 edged separation of the partial layer 7 will occur even if the depth of the cut 9 is somewhat less than the thickness of the partial layer 7. The adhesion of the adhesive strip K1 used in the device of Fig. 2 a) to the paper surface plays no essential role in the thickness of the partial layer 7, as long as this adhesion is just large enough.
- 15 In the device of Fig. 2 a), the tear angle is determined, on the one hand, by the diameter of the die-cut cylinder 22 and on the other hand by that of the opposing cylinder 23. These diameters typically amount to 110-150 mm for the die-cut cylinder 22 and 60-140 mm for the opposing cylinder 23 and thus are relatively large, which yields a relatively small tear angle and a large thickness of the partial layer 7 torn off,
20 which is usually favorable in practice. If, however, one wishes to reduce this thickness, the modified die-cut unit I' can be used, for example, as represented in Fig. 2d). With this, the web A and the adhesive strip K1 with the attached partial layer 7 are separated from one another onto a pair of rollers 29 with distinctly smaller diameter, arranged behind the die-cut cylinder and opposing cylinder.
- 25 Due to the measures described above, the thickness of the partial layer 7 can be adjusted relatively precisely to the respective desired value, particularly in the 20-120 μm range where, for example, a thickness of 25 μm is suitable for paper with a density of 80 g/m^2 and a thickness of 50 μm is suitable for paper with a density of 120 g/m^2 .
30 For paper with density greater than 140 g/m^2 and over 185 μm thick, the thickness of the partial layer 7 can be as much as 100 μm .

The laminate used in figures 1-3 for the partial print carrier B and the web B is specially suited to making integrated cards, in particular if the layer 2 is sufficiently

thick, rigid, and thus self-supporting. The device of Fig. 2 a) also allows, based on , the die-cut units which there anyway, just such integrated cards to be produced, at least in the laminate of web B in layer 2 in the same run as the bonding of the two webs A and B. What is more, it is sufficient in principle to provide the die-cut plate in the die-cut
 5 cylinder 30 with an additional rotating cutting edge, as represented in Fig. 3b) and Fig. 3b') and indicated as 30.3, and with this to cut into web B on the side of the layer 2 down to the depth of the peelable adhesive layer 3. The cards thus cut out along their perimeter from layer 2 are indicated by 12 in Fig. 2b) and Fig. 2b') and the corresponding cut in layer 2 by 13 in Fig. 3b) and Fig. 3b'). The integrated cards 12 are
 10 held on web B and in the finished print carrier A/B by the peelable adhesive layer 3 on layer 4, but they can also be detached from layer 4 by virtue of the separation properties of the peelable adhesive layer 3 and removed from the print carrier A/B.

On the die-cut cylinder 42 of the third die-cut unit III of the device of Fig. 2a), a die-plate
 15 could be provided, as represented in Fig. 3c), for example, with a rotating cutting edge 42.1, whereby this cutting edge 42.1 could cut out individual print-carrier sheets from the web A/B, by producing a die-cut grid (rather than cutting the web to length and crosswise). Alternatively or also in addition, a rotating cutting edge 42.2 could be used to cut into layer 4 of web B. This would be of interest, for example, within the contours
 20 of integrated cards 12 produced in layer 2 of web B, as represented by a dashed line in Fig. 2b) or Fig. 2b') and indicated by 14, because a layer would thereby be produced that would accompany the integrated cards 12 at their removal from the print carrier , which could, for instance, be provided with a previously applied imprint.

25 In the embodiment examples described above, the partial print carriers A and B were joined together coplanarly with a mutual overlap of their two attenuated edge strips 5 and 6. Fig. 4a)-c) shows basically how this might be possible without any mutual overlap of these edge strips, in contiguity, by using one strip 15 or two strips 15 and 16, whereby the strip or strips each bridge the contiguous area. The total thickness,
 30 consisting of the residual thickness of the two edge strips and the thickness of the strip or strips, shall further correspond roughly to the thickness of the two partial print carriers A and B. In particular, the strips 15 and 16 can be adhesive strips.

The partial print carriers A and B are not further specified as to their construction in Fig. 4. Actually, there could be a single paper layer in both of the partial print carriers. One or both partial print carriers could also be a multilayered laminate, such as, for example, that represented for partial print carrier B in Fig. 1 and used to make integrated cards in Figs. 2 and 3.

A plastic film, in particular in layer 2, for example, made of polyester with a thickness in the range of 75-250 μm could be used in the multilayered laminate, as is represented for partial print carrier B in Fig. 1 and is used to make integrated cards in Fig. 2 and 3. The peelable adhesive layer could exhibit a thickness in the range of 3-10 μm , and the layer 4 could be a carrier layer with a thickness of 23-36 μm . In this case, there would result a total thickness for the partial print carrier B, and thus, preferably, also for the paper material of the partial print carrier A, between 101-296 μm . The paper material preferred to be used would be one having a large volume and low weight, i.e., a low density.

The two edge strips 5, 6 could, in particular for a bond with mutual overlap, exhibit a width between 3-12 mm, but preferably between 4-8 mm.

In Figures 5-8, further selected examples of the layer construction for the two partial print carriers A and B are clarified, on the one hand their bonding as facilitated according to the invention and on the other hand the manufacture of various integrated products, where the partial print carrier A in Figures 5-7 again consists respectively of only a single paper layer, while the partial print carrier B is respectively a multilayered laminate.

In Fig. 5, partial print carrier B exhibits the following layered construction from top to bottom: a first film covering-layer 50, a first adhesive layer 51, a paper layer 52, a second adhesive layer 53, a second film covering layer 54, a peelable adhesive layer 55, and a carrier layer of paper or film 56. Along one edge strip, a strip with the layers 50-54 is removed from the peel adhesive layer 55 and is glued together there with an attenuated edge strip of the partial print carrier A by means of an adhesive 57, with overlap. Due to a rotating die-cut 58, extending from the first film covering-layer 50 down to the peelable adhesive layer 55, an integrated card 59 is cut free in the partial

print carrier B, which, by virtue of the separation properties of the peelable adhesive layer 55, can be removed and is shown as removed in Fig. 5b). The card 59 exhibits, as is often the case with such cards today, a paper core 52 with plasticizing on both sides by means of the film covering-layers 50 and 54.

5

In Fig. 6, the partial print carrier B exhibits, from top to bottom, a layer 60 consisting of paper, for example, an adhesive layer 61, a silicone parting layer 62, and a carrier layer 63 of paper or film. Along one edge strip, a strip with the layers 62 and 63 is removed from the adhesive layer 61 and glued there with overlap an attenuated edge strip of the partial print carrier A, using the adhesive of the adhesive layer 61. Due to a rotating die-cut 64 in the layer 60, an integrated self-adhesive label 65 reaching down to the parting layer 62 is cut free in the partial print carrier B, which can be removed due to the separation properties of the parting layer 62, and is represented as removed in Fig. 6b).

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Fig. 7 shows that a laminate with a wear layer 70, corresponding in construction to the laminate of the partial print carrier B of Fig. 6, could also be used to make, for instance, a folded card 71 which is not sticky on the outside, which after folding together and gluing its parts 72 and 73, exhibits more than twice the thickness of the layer 70. The layer 70 here could advantageously be a relatively thick film layer.

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Fig. 8 shows an embodiment in which the partial print carrier A is also a multilayered laminate and has, besides an upper paper layer 80, an adhesive layer 81 and a carrier layer 82 of tear-resistant film. This construction has the special advantage that no extra adhesive strip is needed to tear off a partial layer of the paper layer 80 in order to attenuate it at the edge, because such is already there, due to the layers 81 and 82. It is sufficient to provide the partial print carrier A with a cut, after which the partial layer of the paper layer 80 can be torn off immediately with the integrated adhesive strip.

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The partial print carrier B of Fig. 8 exhibits the reverse sequence of layers to that of Fig. 6 or 7 with the layers 83-86, where layer 86 is a transparent film layer. To attenuate the margin of the partial print carrier B, a strip with the layers 83 and 84 is removed, in which layer 84 is a parting layer that can be readily detached from the

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adhesive layer 85. The adhesive of this adhesive layer is immediately used to bond the two partial print carriers A and B, so that, again, no extra glue is needed.

From the construction described above, a flip card 90, for example, can be produced, in which an imprint 91 previously applied to the paper layer 80 of the partial print carrier A is arranged, protected under a transparent film layer. For this, a first partial card 87 is cut free in the partial print carrier A by a first die-cutting, in which, however, it is still held in the partial print carrier A by means of individual webs in the carrier layer 82. A second partial card 88 is cut free in the partial print carrier B by a second die-cutting, which is likewise still held in the partial print carrier B by means of individual webs in the layer 86. To make the flip card, in a first step, the part indicated as 89, containing the layers 83 and 84, is removed from the partial print carrier B, whereby the underlying area of the adhesive layer 85 is uncovered. In a second step, the partial print carrier B is folded around the bonding area on the partial print carrier A like a hinge, whereby the exposed adhesive layer 85 comes in contact with the surface of the partial card 87 provided with the aforesaid imprint 91 and can be glued to it. In a third step, the finished flip card 90 can be removed from the print carrier A/B by breaking the aforesaid webs.

Print carriers A/B according to the invention are ultimately required, for their use according to the specification, in the form of individual sheets, in which the form as are most commonly A4 at 297 X 210 mm or letter size at 297 X 216 mm. Insofar as a simple integrated card or label is merely available here in the partial print carrier B in the usual check format of 85 X 54 mm, these are half as wide as the partial print carrier B, even if these are arranged at the short end of the A4 or letter format. More than half of the considerably more expensive materials for partial printing carried B are not taken advantage of in this case, compared with partial print carrier A. Fig. 2b) shows this case. In contrast, a construction, as shown in Fig. 9a) and in which partial print carrier B extends over only half the short end of the print-carrier sheets or partial print carrier A is fully taken advantage of in practice. Fig. 9b) shows the same print-carrier sheets simply folded together, whereby only the half-wide partial print carrier B is supported and protected by the full-width partial print-carrier A and in this case is without problems, for example, in being able to be inserted in an envelope.

Hereinafter a method is explained with which print-carrier sheets 92 of the type in Fig. 9a) can be efficiently and in a practically waste-free manner produced in a continuous process. In this method, three partial print-carrier webs A1, A2, and B1 operate at the same time, in which the partial print-carrier webs A1 and A2 are arranged on either
 5 side of the partial print-carrier web B1 and with it are each joined coplanarly in a manner described according to the invention as a three-part print carrier A1/B1/A2.

The method can be executed with a device corresponding to Fig. 2a, with die-cut units I, II, and III, whereby additional units simply have to be provided for supplying and
 10 connecting the third partial print-carrier web A2 to the partial print-carrier web B1. The unwinding of the partial print-carrier web A2 can occur on the same line as for the partial print carrier A1. The attenuation of the edge strips, the different die-cut units, and the adhesives must be doubled. Fig. 9c) shows plan views of the webs A1, A2, and B1 in a run through units I-IV of a correspondingly constructed device. The middle
 15 web B1 is, for example, a multi-layer laminate according to that of Fig. 5, which is especially suited to manufacture integrated cards 12. Both of the outer partial print carriers A1, A2 can be paper webs. Figs. 9d) and e) show the resulting three-part print-carrier web A1/B1/A2 respectively in section C1-C1 of Fig. 9c) and C2-C2 of Fig. 9f).

20 Print-carrier sheets 92 corresponding to Fig. 9a) lie in pairs in the three-part print-carrier web A1/B1/A2 oriented oppositely. The parting line 93 between the facing print carrier 92 runs alternately along the outer edges of the middle partial print carrier B1, as is indicated in Fig. 9e) and in between crosswise through the middle partial print carrier B1. By means of appropriate trimmings and die-cuts of the print-carrier web
 25 A1/B1/A2, the print-carrier sheets 92 are obtained from the print-carrier web A1/B1/A2 corresponding to Fig. 9a).

Fig. 9f) shows a plan view of the print-carrier web A1/B1/A2 in a run through a die-cut unit V of the same device. In this die-cut unit V, for example, by means of one of the
 30 die-plates arranged on a magnetic cylinder, individual print-carrier sheets 92 corresponding to Fig. 9a) are cut out in pairs from the running web A1/B1/A2, in which the parting line 93 between the facing print carriers exhibits the shape of a right-angled curve, as has already been mentioned, running alternately along the outer edges of the middle partial print carrier B1. These are represented in Fig. 9f) as dashed hidden

lines. At the same time, the print-carrier sheets 92 in the die-cut unit III are also cut in the desired format (die-cut lines 94), in which a die-cut grid arises. By turning each print-carrier sheet 92 in each pair of sheets contained, all the print-carrier sheets 92 can be brought to cover one another and be stacked respectively with the partial print carrier B1, for example, at the lower right.

It would also be possible to simply undo the three-part print-carrier web A1/B1/A2 in the die-cut unit III along the parting line 90 into two opposing webs A1/B1 and B1/A2 and to wind these up, for example, for further continuous processing later. Likewise it would be possible to lengthen the print-carrier sheets without outside cuts by simple cross-cutting of the web in pairs .

The method described above, besides the fact that it allows for practically waste-free manufacture of print-carrier sheets according to Fig. 9a), is also for that reason highly efficient, because the print-carrier sheets according to Fig. 9a) always occur in pairs. A pair-wise production of "normal" print-carrier sheets, for example according to Fig. 2b) is, in contrast, not so readily possible, because the printing or web-finishing machines, as are usually used in the manufacture and processing of print carriers according to the invention, exhibit a standardized width of only 520 mm. This is not sufficient to allow for running two webs with a width corresponding to the height of an A4 format next to each other. In the method described for manufacture of a three-part print-carrier web A1/B1/A2 of a print carrier according to Fig. 9a), however, parts of the middle web B1 are attached at the parting along the parting line 93 alternating the two outer webs A1, A2. The finished two-part print carrier A1/B1, A2/B1 can consequently exhibit a total height corresponding to the height of the A4 format, although the three-part print carrier A1/B1/A2 exhibits a clearly smaller width, in particular a width of less than 520 mm.

Fig. 10a) shows a further print-carrier sheet 100 in plan view according to the invention, in which the partial print-carrier B extends only over half of the short end of the print-carrier sheet or the partial print carrier A. A folding card B is integrated here into the partial print carrier B, parts of which are indicated as 102 and 103. Above part 102 of the folding card 101 there runs, parallel to the overlapping edge strips of parts A and B, moreover, as an optional addition, a magnetic tape for information storage.

Also, these print-carrier sheets can be manufactured with the method described above out of a three-part print-carrier web, in which even reading and writing on the magnetic tape 104 could already occur on the running print-carrier web.

- 5 The layered construction of the print carrier 100 is apparent from Fig. 10b). With the partial print carrier A, a simple, edge-attenuated paper layer can be handled, as is further represented. The partial print carrier B is a multilayer laminate and exhibits, from top to bottom, a layer 105, made of a synthetic film, for example, an adhesive layer 106, a layer 107 made of paper, for example, a further adhesive layer 108, a
10 silicone parting layer 109, and a carrier layer 110 made of paper or film, for example. Along an edge strip of the partial print carrier B is a strip with layers 109 and 110 of the adhesive layer 108 removed and the partial print carrier B is glued overlapping there with an attenuated edge strip of the partial print carrier A by using the adhesive of the adhesive layer 108. By means of a web-less rotating die-cut 111 in the layers 105,
15 106, and 107, extending downward maximally to a carrier layer 110, the folding card 101 is cut free relative to the outside perimeter of their two parts 102 and 103 and can be removed from the partial print carrier B due to the separation properties of the parting layer 109, as Fig. 10c) shows.
- 20 Along the bonding line between the two parts 102 and 103 of the folding card 101 a further die-cut line 112 is available as a folding aid, which is executed in the layer 105 as a fully penetrating cut, in the layer 107 in contrast as a perforation with webs, and/or in this layer as an end not fully severed. Both parts 102 and 10 thus simply hang together above the layer 107 and in this also above only individual webs and/or above
25 a certain residual thickness. This is recognizable in Fig. 10d), where the cut line of the picture is selected in the area of a die-cut web 113 between the two parts 102 and 103.

Fig. 10 shows the finished folding card 101, folded together and glued, relative to its parts 102 and 103. Here the layers forming, which originate from the layer 105,
30 external and therefore the covering layers of the folding card 101, have no bonding to one another. Their encircling smooth and web-less cut edge in essence defines the outer contour of the folding card 101. The inner webs 113 between the layers serving as the core layers of the folding card, which originate from the layer 107, are in contrast barely recognizable and are practically unnoticeable by touch. The folding card 101

thus gives as a whole, in spite of the webs 113 present, the impression of a generally web-free card. This is particularly pronounced if the covering layers are of a relatively thick and rigid film and the core layers are of a thinner paper layer in comparison. For machine reading and writing of the magnetic tape 104, a certain rigidity should be
5 available anyway in the finished folding card 101.

Fig. 11a) shows a print carrier A/B of two laminar partial print carriers A and B, joined coplanarly with mutual overlapping, similar to the print carrier A/B of Fig. 1g). The partial print carriers A and B are not further specified as to their construction in Fig. 11.
10 Actually, there could be a single paper layer in both of the partial print carriers. One of the partial print carriers could also be a multilayered laminate, such as, for example, that represented for partial print carrier B in Fig. 1 and used to make integrated cards in Figs. 2 and 3.

15 Both partial print carriers A and B in Fig. 11a) are attenuated on an edge and are mutually overlapping and coplanarly joined together at their edge strips 205 and 206 by means of a special double-sided adhesive strip 210. The double-sided adhesive strip 210 exhibits two outer adhesive layers 211 and 212 and in between a supporting layer 213, which can be a simple film layer.

20 A transponder can be used as supporting layer 213 to provide the print carrier A/B of Fig. 11a) with additional functionality and thereby with a added value. Transponders, which are also called RFID-tags, are passive memory chips without own power supply but with an antenna for wireless coding with information respectively for wireless
25 reading of Information stored in the chip. Such transponders are usually constructed by several thin film layers laminated to each other (not shown in Fig. 11) and can, according to prior art, be produced sufficiently thin, as well as in the form of strips with e.g. a width of only 10 mm and a length of approximately 100 mm, to be suitable for the present application. A partly or even complete typographical production is possible.

30 A strip-like transponder 213 is provided between and covered from both sides and protected by the two edge strips 205 and 206, wherein the print carrier of Fig. 11a) is printable on its entire surface from both sides. The transponder 213 between the two edge strips 205 and 206 does not provoke a local larger thickness of the print carrier

A/B, as compared to a print carrier where the transponder would be glued like a label onto the print carrier or laminated in between two layers as it is common according to the prior art. In the later case the transponder should have the same area as the entire print carrier or compensating layers should be laminated together with and next to the transponder to avoid the difference in thickness. Both would not be very economical.
5 The same would apply to laminating a transponder between to paper layers of the same size in the area of a attenuated strip in one of or both paper layers.

The print carrier of Fig. 11a) can be produced with the device of Fig. 2a), provided that
10 a laminate e.g. according to the partial print carrier B of Fig. 1 is used as web B. If a mere paper web should be used as web B then, to obtain an attenuated edge strip, a die-cut unit should be used for the second die-cut unit II, which is constructed like the first die-cut unit I. The transponder 213 would then be applied with pressure onto the attenuated edge strip 6 like the adhesive 11 of Fig. 2a) in station III through the roller
15 pair 33, 34, and the transponder would be fed as endless web from a feed roll 35, on which it is arranged between the to adhesive layers 211 and 212 as well as two covering layers of silicone paper S2 and S3.

In order that the transponder comes to lie correctly in the sheets produced in die-cut
20 unit V, it must be suitably dimensioned with respect to its length and set in correctly. The inseting can be obtained by means of a so-called inseting group (not shown), which is arranged between the feed roll 35 and the roller pair 33, 34 and through which the transponder web can be slightly more or less stretched if required. For the inseting, the transponder web must be provided with inseting marks.

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In case that the transponder should be incorporated in print carrier sheets 92 of the type of Fig. 9a) with a A4 or letter size format, the length of the transponder should correspond only to half the width of the print carrier sheet so that one transponder is placed per print carrier sheet.

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Fig. 11b) shows an embodiment according to the one of Fig. 4a), wherein here the two edge strips 205 and 206 do not mutually overlap and are joined together with an adhesive strip 215. The adhesive strip 215 comprises a covering layer 216 in particular of paper, an adhesive layer 217 as well as a transponder 218 in between these two

layers according to the one in Fig. 11a). Here, the transponder 218 is also integrated in the print carrier A/B in a covered manner and does not provoke a local larger thickness of the print carrier.

- 5 The print carrier of Fig. 11c) is a modification of the print carriers of Fig. 11b), wherein here an adhesive strip according to the adhesive strip 215 with transponder 218 of Fig. 11b) is glued only along the attenuated edge strip 205 of the partial print carrier A. This embodiment is suitable if a partial print carrier A should be provided with a transponder without thickening and the partial print carrier B would not be of additional
10 use. The adhesive strip 215 containing the transponder could also be seen as a special kind of partial print carrier B, which merely lacks a thickened part.

The print carrier of Fig. 11d) is a modification of the print carrier of Fig. 11c), wherein here an adhesive strip according to the adhesive strip 215 with transponder 218 of Fig.
15 11b) is glued along an attenuated strip 221, which is not an edge strip anymore, of only one print carrier D of a paper layer 220. The attenuation along the strip 221 can be produced by tearing off a strip-like partial layer e.g. after previously providing the print carrier D with two parallel cuts, as already described e.g. for the attenuated edge strips 5, 6.

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The examples explained above are in no way to be understood as conclusive. Rather, they merely clarify that the present invention can be applied with a plurality of differently constructed partial print carriers and that within the framework of the present invention, even the most diverse integrated products can be made as a result.

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In order to avoid skewing in the stack, the two partial print carriers joined together should have the same thickness whenever possible. However, certain thickness differences can be tolerated. The resultant planar position for a thickness difference of up to at least +/- 5% will be sufficient for most applications.

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Integrated cards, folding cards, or labels typically exhibit dimensions of 55 to 85 mm, so that the partial print carrier B preferably used for their manufacture can exhibit a width of 80 mm. If the partial print carrier B in a print carrier A/B according to the invention, for example, is arranged in the format of an A4 sheet along one of its short sides, the

partial print carrier A will definitely have a height of more than 200 mm, so that the partial print carrier A, which can be made of an economical paper material, will constitute the largest part of the surface of the print carrier A/B.

- 5 In all the embodiment examples described above, the differentiation along the edge strip of the partial print carrier B, if this is a multilayered laminate, could also be achieved by measures other than attenuation by removing individual layers, in particular, when making the laminate itself.
- 10 In the method explained with the aid of Fig. 2 and Fig. 9, print carriers A/B with integrated card according to the invention could be made in a single run, whereby the method and the device used for it have to be modified somewhat according to the layered construction of the partial print carrier used. So, for example, to make the print carrier of Fig. 8, no extra adhesive strip K1 or any adhesive 11 is needed. Also, an
- 15 adhesive could already be present in web A, and after exposing this adhesive, only a small uncoated strip would have to be applied. If need be, tearing off the partial layer of the paper layer can also be done entirely without the aid of an adhesive strip. It would also be possible to use the first die-cut unit of Fig. 2 exclusively with its additional units and to simply create a paper web attenuated at its edge in a single run, which
- 20 could even be delivered to another manufacturer as starting material for further processing later. This attenuated paper web could also be already provided along its attenuated edge strip with an adhesive layer covered by a detachable covering layer.

REFERENCE PARTS LIST

	1	Lamina or layer of paper
	2	Paper or film layer
	3	Peelable adhesive layer
5	4	Paper or film layer
	5	Edge strips
	6	Edge strips
	5/6	Area of overlap
	7	Strip-shaped partial layer 7 on partial print carrier A
10	8	Strip-shaped partial layer 8 on partial print carrier B
	9'	Cut
	10	Cut
	11	Adhesive
	12	Cards
15	13	Cut
	14	Cut
	15	Strips, adhesive strips
	16	Strips, adhesive strips
	20	Feed roller
20	21	Feed roller
	22	Die-cut cylinder
	22.1	Cutting edge
	22.1'	Cutting edge
	22,2'	Cutting edge
25	23	Opposing cylinder
	24	Roller
	25	Roller
	26	Roller
	27	Deflection roller
30	28	Winding up
	29	Pair of rollers
	30	Die-cut cylinder
	30.1	Rotating cutting edge
	30.1'	Cutting edge

	30.2	Cutting edge
	31	Opposing cylinder
	32	Roller
	33	Roller
5	34	Roller
	35	Feed roller
	36	Roller
	37	Roller
	38	Roller
10	39	Roller
	40	Press roller
	41	Press roller
	42	Die-cut cylinder
	42.1	Rotating cutting edge
15	42.2	Rotating cutting edge
	43	Opposing cylinder
	44	Device for stacking sheets
	45	Sheet stack
	46	Roller
20	50	First film covering layer, film covering layer
	51	First adhesive layer
	52	Paper layer, paper core
	53	Second adhesive layer
	54	Second film covering layer, film covering layer
25	55	Peelable adhesive layer
	56	Carrier layer
	57	Glue
	58	Die cutting
	59	Integrated Card
30	60	Paper layer
	61	Adhesive layer
	62	Silicone parting layer
	63	Carrier layer
	64	Die cutting

	65	Integrated self-sticking label
	70	Wear layer
	71	Non-adhesive folding card
	72	Part of folding card 71
5	73	Part of folding card 71
	80	Upper paper layer
	81	Adhesive layer
	82	Carrier layer
	83	Reverse of Fig. 7
10	84	Parting layer
	85	Adhesive layer
	86	Transparent film layer
	87	First partial card
	88	Second partial card
15	89	Part with layer 83
	90	Flip card
	91	Imprint
	92	Print-carrier sheets
	93	Parting line
20	94	Die-cut lines
	100	Print-carrier sheets
	101	Folding card
	102	Folding-card part
	103	Folding-card part
25	104	Magnetic tapes
	105	Synthetic film, covering layers
	106	Adhesive layer
	107	Paper layer, core layers
	108	Adhesive layer
30	109	Silicone parting layer
	110	Carrier layer
	111	Web-less die-cutting
	112	Further die-cut line
	113	Die-cut webs

	205	Edge strip
	206	Edge strip
	210	Double-sided adhesive strip with transponder
	211	Outer adhesive layer
5	212	Outer adhesive layer
	213	Supporting layer / transponder
	215	Adhesive strip
	216	Covering layer
	217	Adhesive layer
10	218	Transponder
	220	Paper layer
	221	Strip-like attenuation
	A	Web / Partial print carrier
	B	Web / Partial print carrier
15	A/B	Print carrier , print carrier web
	A1	Partial print-carrier web
	A2	Partial print-carrier web
	B1	Partial print-carrier web
	A1/B1/A2	Two-part print carrier , print-carrier web
20	A1/B1	Print-carrier web
	B1/A2	Print-carrier web
	D	Print carrier
	G1	Hinge zone
	G2	Hinge zone
25	S1	Silicone paper
	S2	Silicone paper
	S3	Silicone paper
	K1	Glue strips
	I	First die-cut unit
30	I'	Modified die-cut unit
	II	Second die-cut unit
	III	Station
	IV	Station
	V	Third die-cut unit

PATENT CLAIMS

1. A coplanarly joined print carrier (A, B; A', B') of at least two laminar partial print carriers (A/B; A'/B'; A1/B1/A2), wherein one of the partial print carriers (A; A'; A1, A2)
5 contains a paper layer (1, 80)), characterized by the fact
that the paper layer (1, 80) of one partial print carrier (A; A') is attenuated in thickness along an edge strip (5; 5') by removing a partial layer (7),
that the other partial print carrier (B; B') has a lesser thickness along an edge strip (6; 6') than elsewhere, and
10 that both partial print carriers (A, B; A', B') are joined together along their two edge strips (5, 6; 5', 6').

2. A print carrier according to claim 1, characterized by the fact that the partial layer (7) is removed by tearing it off.

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3. A print carrier according to claim 1 or 2, characterized by the fact that the partial layer (7) is removed by abrasion, in particular by grinding and/or milling.

4. A print carrier according to one of the claims 1-3, characterized by the fact
20 that the two partial print carriers (A, B; A', B') are bonded to each other along their two edge strips (5, 6; 5', 6') with the two edge strips overlapping one another.

5. A print carrier according to one of the claims 1-3, characterized by the fact that the two partial print carriers (A, B) are bonded to each other along their two edge strips
25 (5, 6) with at least one strip (15, 16) in contiguity.

6. A print carrier according to one of claims 1-5, characterized by the fact that the two partial print carriers (A, B; A' B') are roughly the same thickness.

30 7. A print carrier according to one of the claims 1-6, characterized by the fact that its thickness in the area where the two partial print carriers (A, B; A' B') are bonded together along their two edge strips (5, 6, 5', 6') is no greater than the thickness of the thicker of the two partial print carriers.

8. A print carrier according to one of the claims 1-7, characterized by the fact that the edge strip (5; 5') of the paper layer (1) is delimited from the rest of the paper layer (1) by a cut (9; 9') in the paper layer (1).

5 9. A print carrier according to one of the claims 1-8, characterized by the fact that the other partial print carrier (B; B') is a laminate with at least two layers separable from one another (2, 4; 50-54, 56; 60, 63; 83, 86), at least one of which (2; 50-54; 63; 83) is removed along the edge strip (8).

10 10. A print carrier according to claim 9, characterized by the fact that the edge strip (8) of the laminate is delimited from the rest of the laminate by a cut (10; 10') in the laminate.

15 11. A print carrier according to one of the claims 1-10, characterized by the fact that one or both of the edge strips (5, 6; 5', 6') exhibit a width between 3-12 mm, but preferably between 4-8 mm.

20 12. A print carrier according to one of the claims 1-11, characterized by the fact that the edges of one or both edge strips (5, 6; 5', 6') are straight or undulating on one or both sides.

25 13. A print carrier according to one of the claims 1-12, characterized by the fact that the other partial print carrier (B; B') are shorter in the direction of the edge strip (8), in particular only half as long as the partial print carrier (A; A') containing the paper layer (1; 80).

30 14. A print carrier according to one of the claims 1-13, characterized by the fact that both partial print carriers (A, B) are joined with each other by an adhesive strip (210; 215), which is provided with a transponder (213; 218).

15. A print carrier with a paper layer (220), which is attenuated in thickness along an strip (221) by removing a partial layer (7) and is provided with an adhesive strip

(215) containing a transponder (218), which adhesive strip is glued along the attenuated strip.

16. A partial print carrier (A; A') for making a print carrier (A/B; A'B') according to one of claims 1-14 with a paper layer (1; 80), which is attenuated in thickness along an edge strip (5; 5') by removing a partial layer (7).

17. A partial print carrier (A; A') according to claim 16, characterized by the fact that the partial layer (7) is removed by tearing it off.

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18. A partial print carrier (A; A') according to one of claims 16 or 17, characterized by the fact that the partial layer (7) is removed by abrasion, in particular by grinding and/or milling.

15 19. A partial print carrier (A; A') according to one of claims 16-18, characterized by the fact that the strip (5; 5'; 221) of the paper layer (1; 80; 220) is delimited from the rest of the paper layer (1; 80; 220) by a cut (9; 9') in the paper layer (1; 80; 220).

20 20. A partial print carrier (A; A') according to one of claims 16-19, characterized by the fact that an adhesive layer covered by a detachable covering layer is available on the strip (5) of the paper layer (1).

25 21. A method for making a coplanarly joined print carrier (A/B; A'/B') of at least two laminar partial print carriers (A, B; A', B') according to one of claims 1-14 or a partial print carrier according to one of claims 16-20, whereby one partial print carriers or the partial print carrier (A; A') contains a paper layer (1; 80), which is attenuated in thickness along an edge strip (5; 5') by removing a partial layer (7), characterized by the fact that the partial layer (7) is removed by tearing off the partial layer (7).

30 22. A method according to claim 20, characterized by the fact that the partial layer (7) is torn off with an adhesive strip (K1; K1'; 81, 82).

23. A method according to claim 22, characterized by the fact that the adhesive strip (K1; K1'; 81, 82) is pulled off by a roller (22; 29).

24. A method for making a coplanarly joined print carrier (A/B; A'/B') of at least two laminar partial print carriers (A, B; A', B') according to one of claims 1-12 or a partial print carrier (A; A') according to one of claims 14-18, wherein one of the partial print carriers or the partial print carrier (A; A') contains a paper layer (1; 80), which is attenuated in thickness along an edge strip (5; 5') by removing a partial layer (7), characterized by the fact that the partial layer (7) is removed by abrasion, in particular by grinding and/or milling..

25. A method according to one of claims 21-24, characterized by the fact that the edge strip (5; 5') of the paper layer (1; 80) is delimited from the rest of the paper layer by a cut (9; 9') in the paper layer (1; 80).

26. A method for making a print carrier (A/B; A'/B') according to one of claims 1-14, characterized by the fact that a laminate with at least two layers glued to each other and separable from one another (2, 4; 50-54, 56; 60, 63; 83, 86) is used for the other partial print carrier (B; B'), the thickness of this laminate is reduced along the edge strip (6; 6') by detaching at least one of the layers (2; 50-54; 63; 83), and that, before detaching at least one layer (2; 50-54; 63; 83), the edge strip (6; 6') is delimited from the rest of the laminate by a cut (10; 10') in the laminate.

27. A method according to claim 25, characterized by the fact that an adhesive layer (11) is transferred from a carrier (S2, S3) to one of the two edge strips to bind the two partial print carriers (A, B; A', B') along their two edge strips (5, 6; 5', 6'), with the two overlapping edge strips.

28. A method according to one of claims 21-27, characterized by the fact that it is executed as a continuous process on running webs (A, B; A', B').

29. A method for manufacturing print carriers (A1/B1; A2/B1) according to claim 13 by using two outer (A1, A2) and one middle partial print carriers (B1), in which both the outer partial print carriers (A1, A2) each contain a paper layer and are each attenuated in thickness along an edge strip (5.1, 5.2) by removing a partial layer, and in which the middle partial print carrier (B1) exhibits, along two facing edge strips (6.1,

6.2), a smaller thickness than elsewhere, characterized by the fact that the outer partial print carriers (A1, A2) are each bonded along their edge strips (5.1, 5.2) with one of the edge strips (6.1, 6.2) of the middle partial print carrier (B1) and that the partial print carriers (A1, B1, A2) so bonded to each other pass by means of a facing edge strips
5 (5.1, 6.1, 5.2, 6.2) alternately along one another and in between the middle partial print carrier (B1) crossing a parting line (90) separate into at least two of the print carrier.

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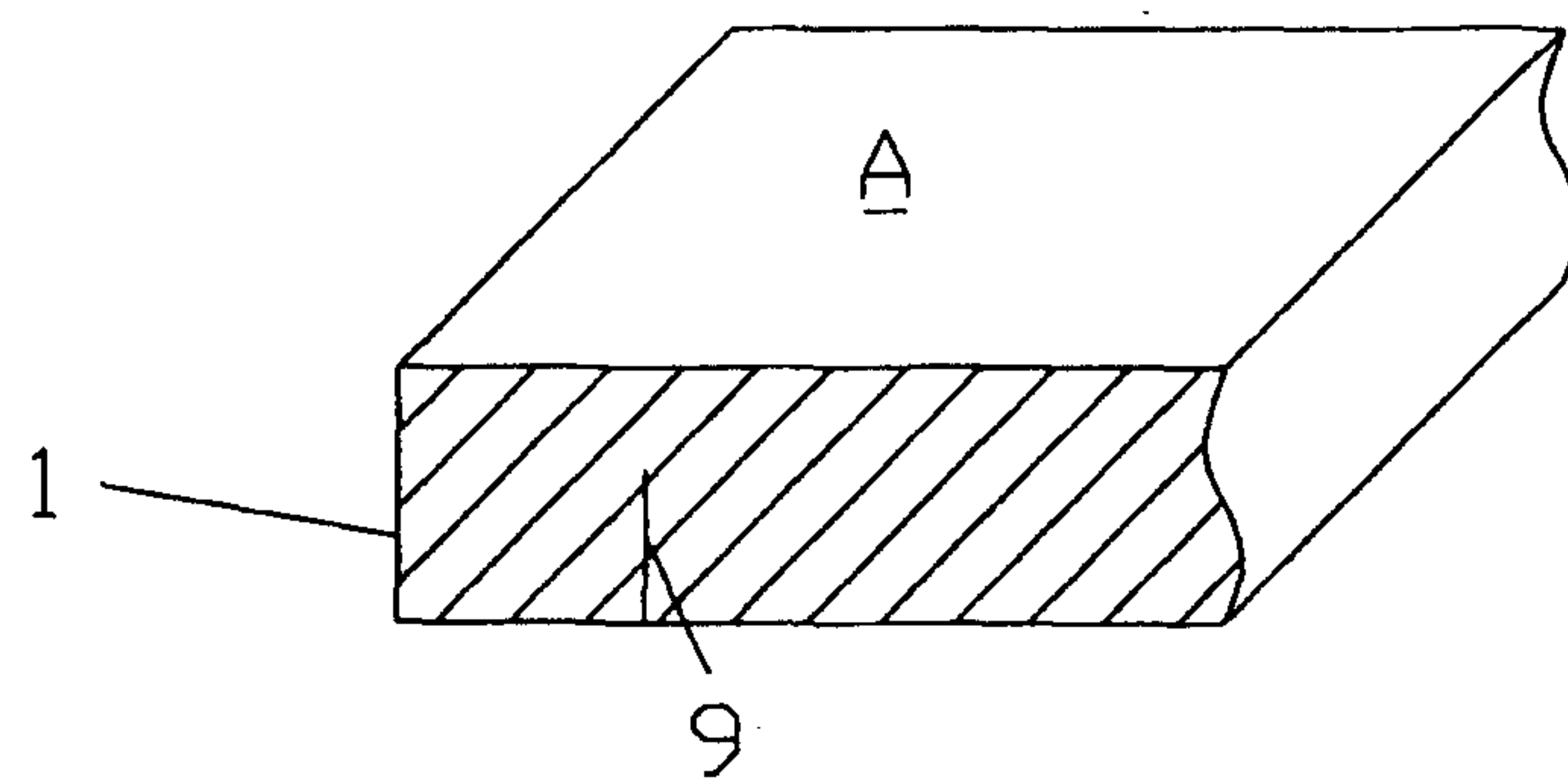


Fig.1a)

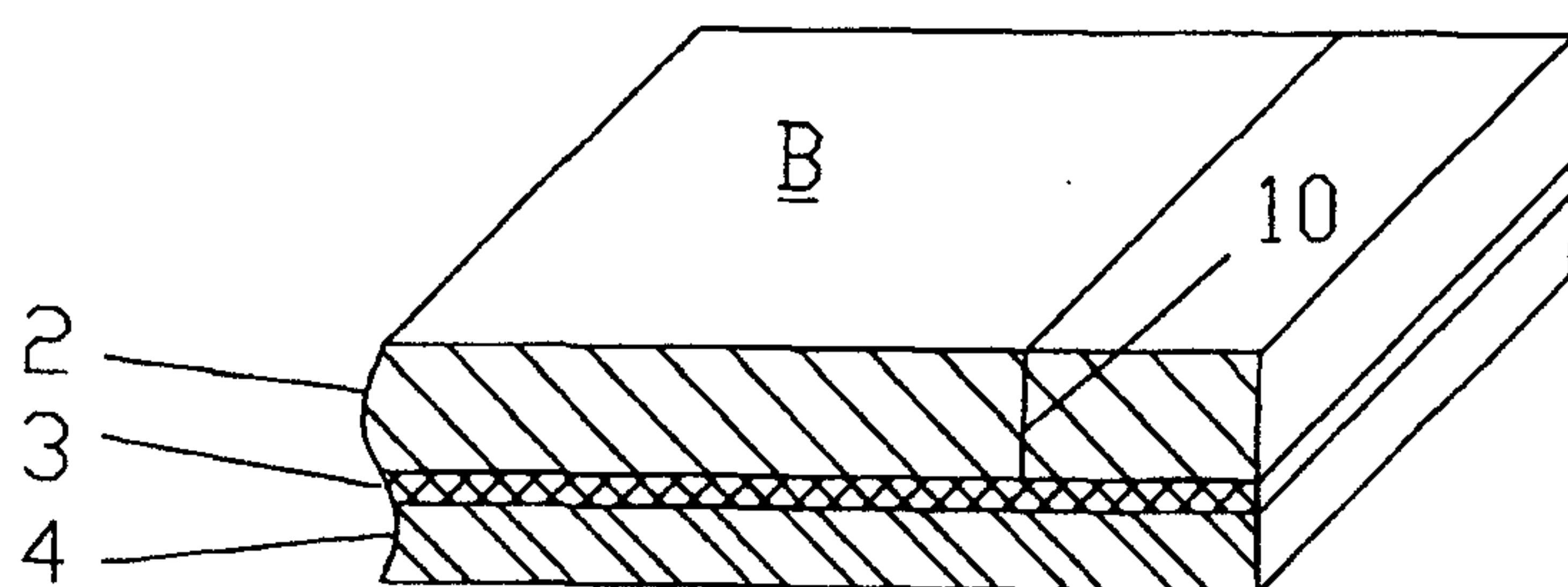


Fig.1b)

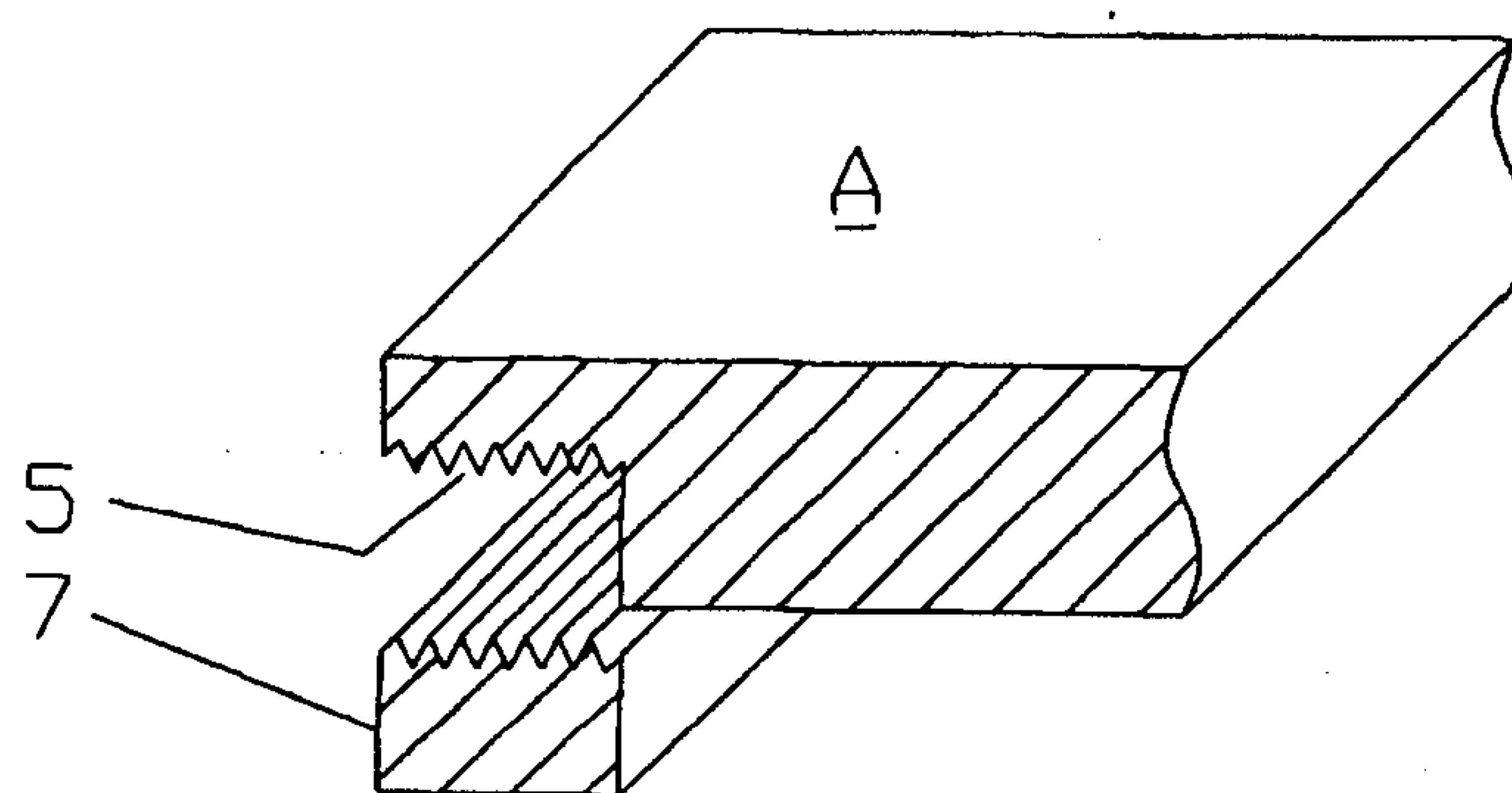


Fig.1c)

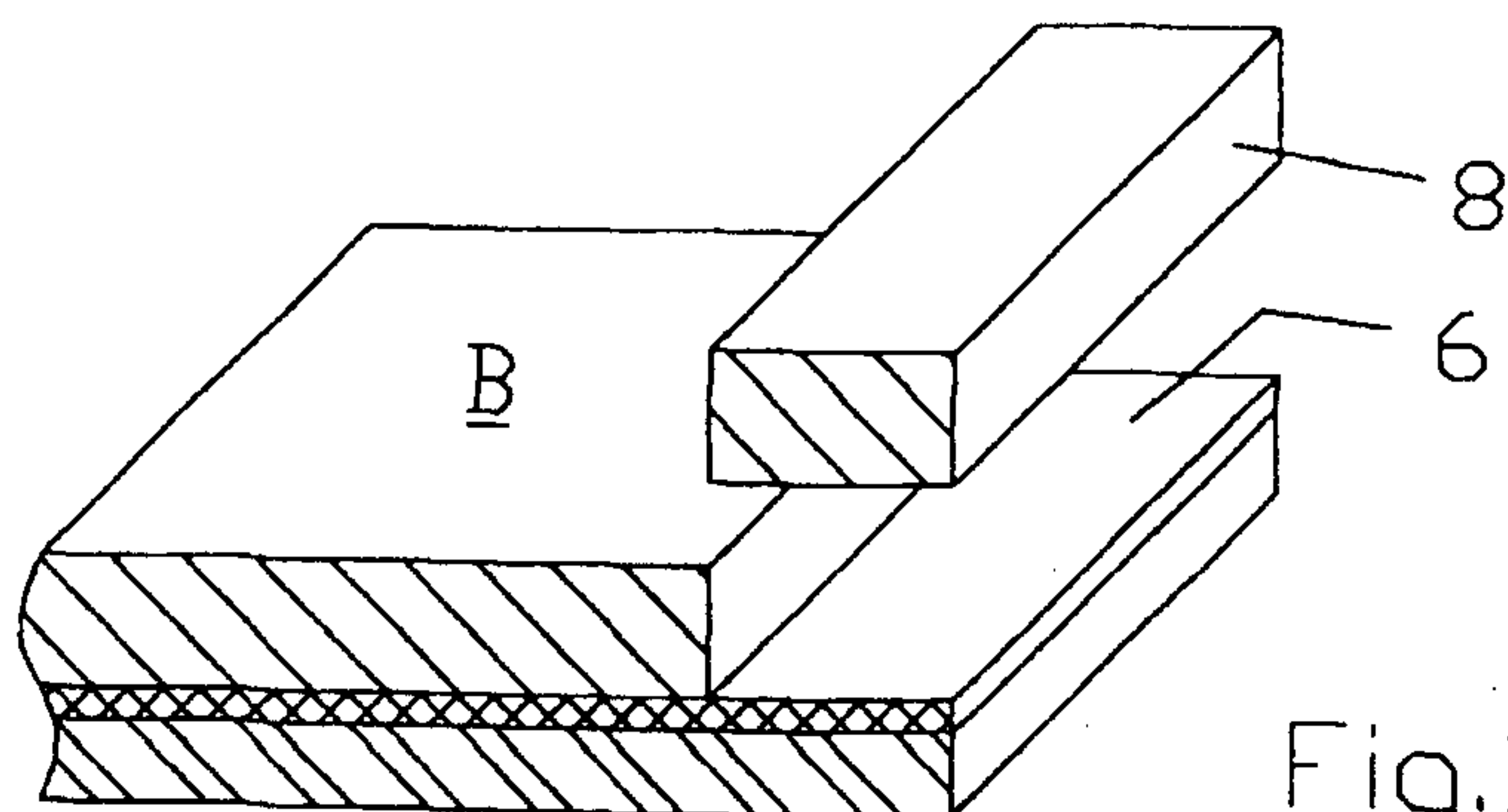


Fig.1d)

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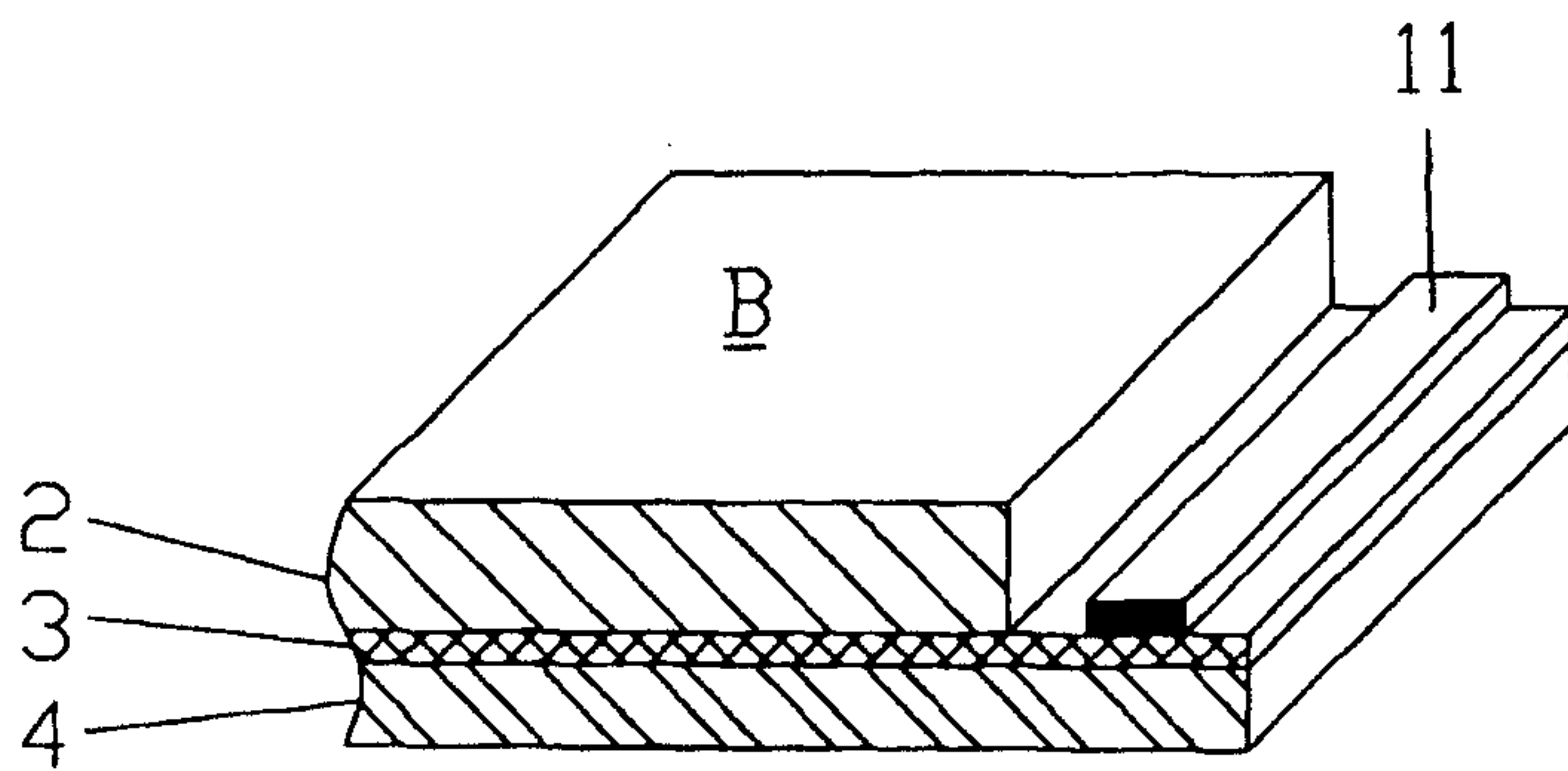


Fig.1e)

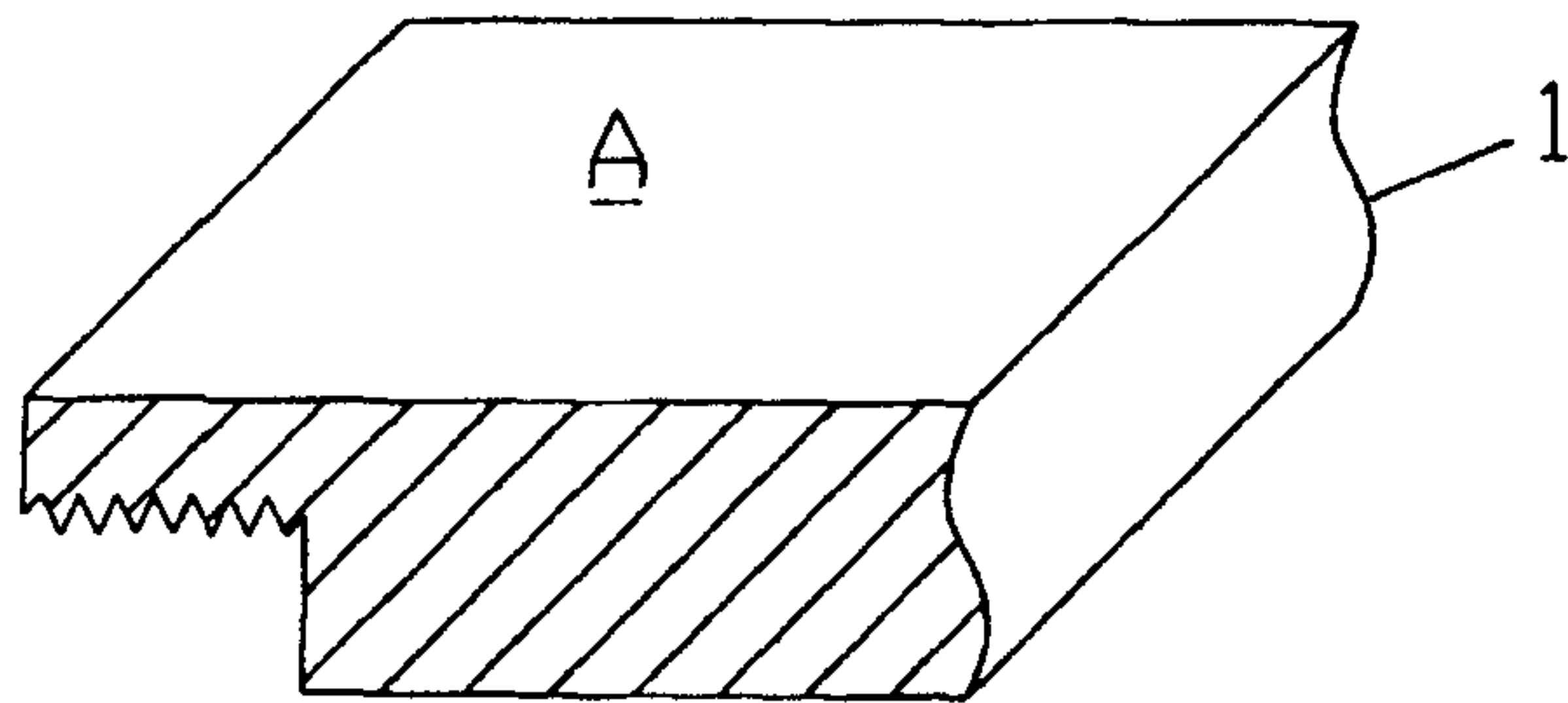


Fig.1f)

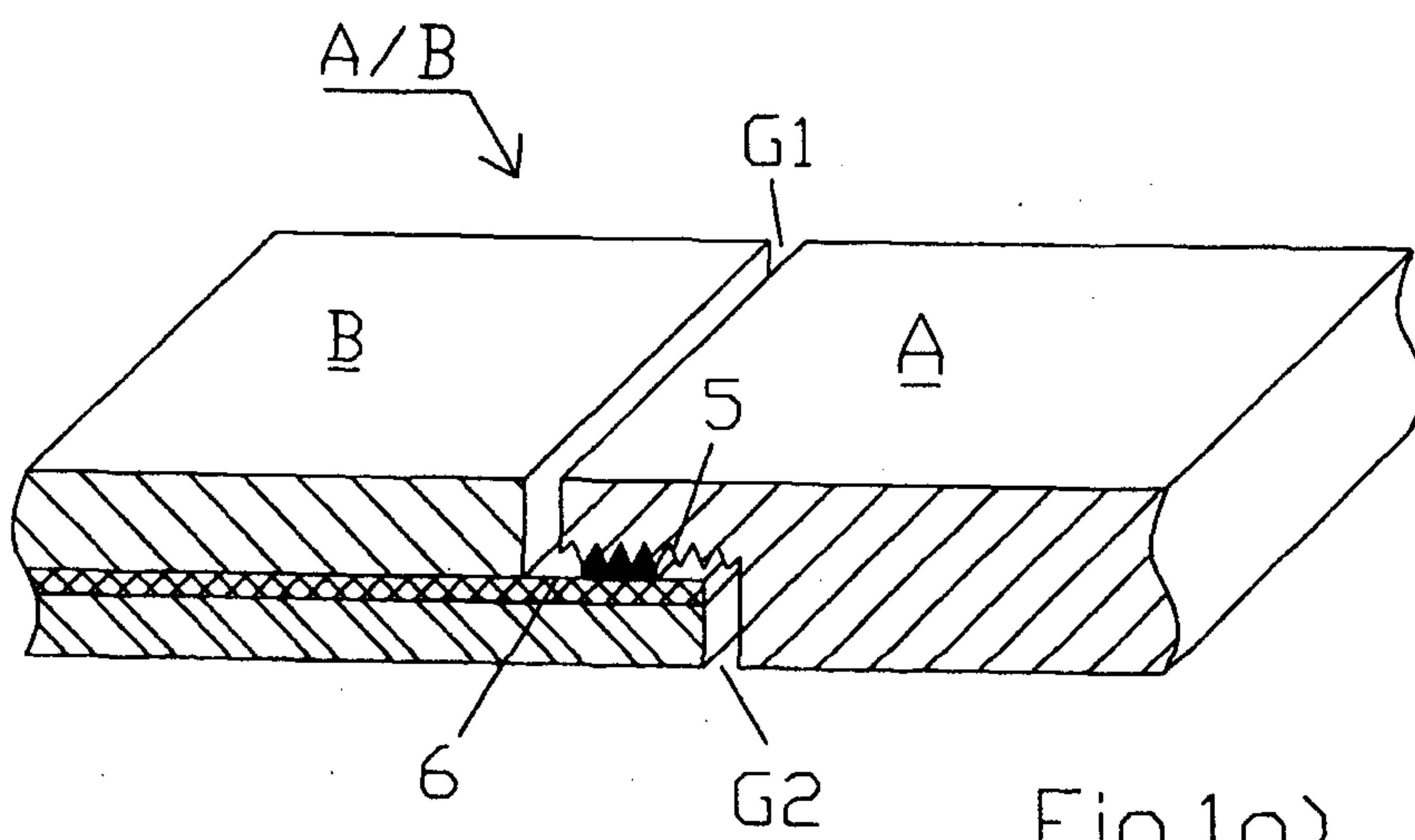
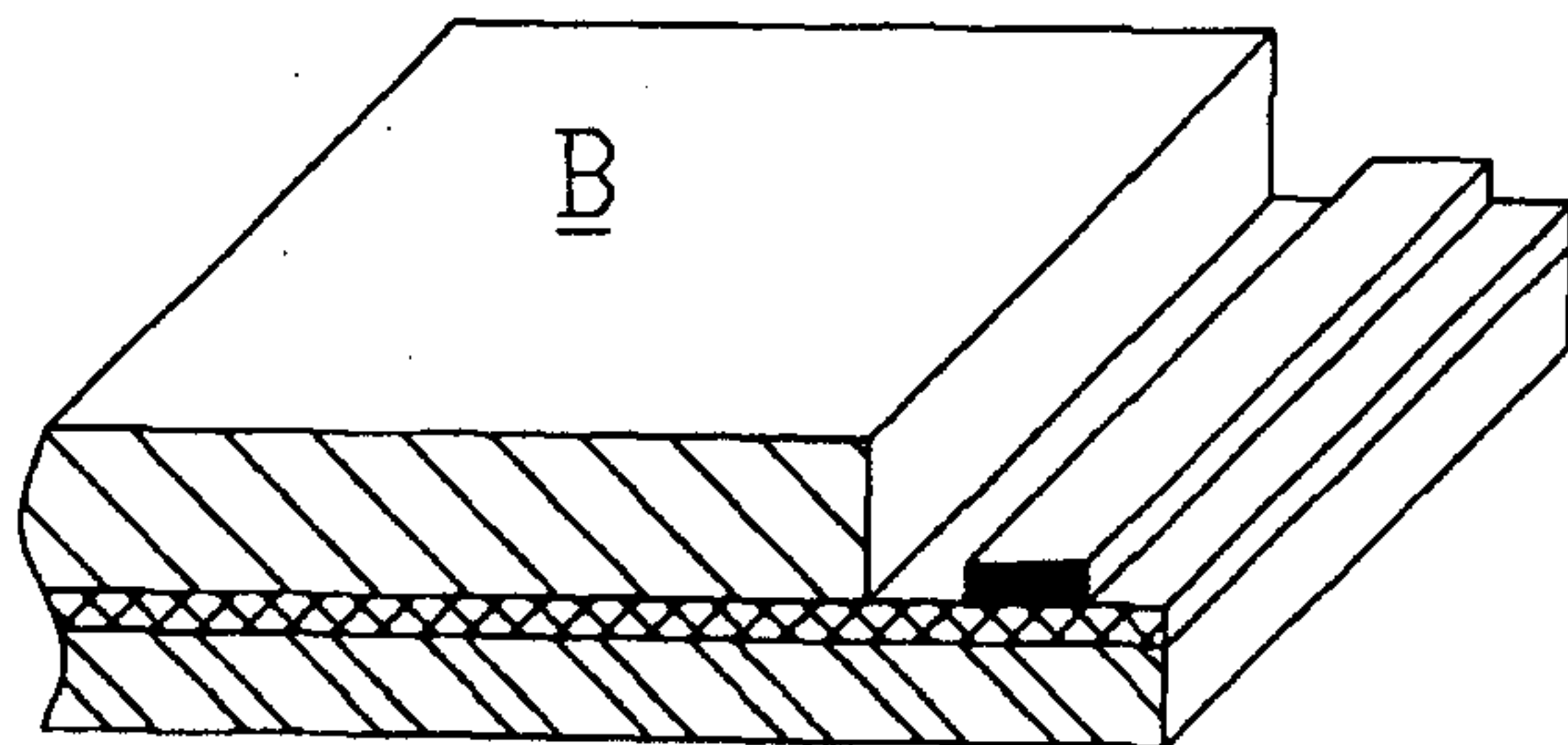


Fig.1g)

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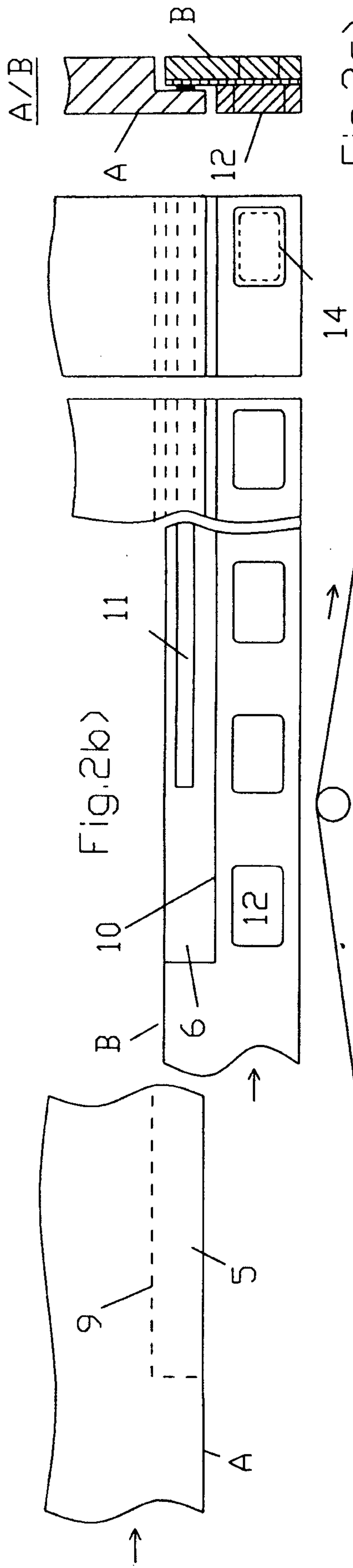


Fig. 2c)

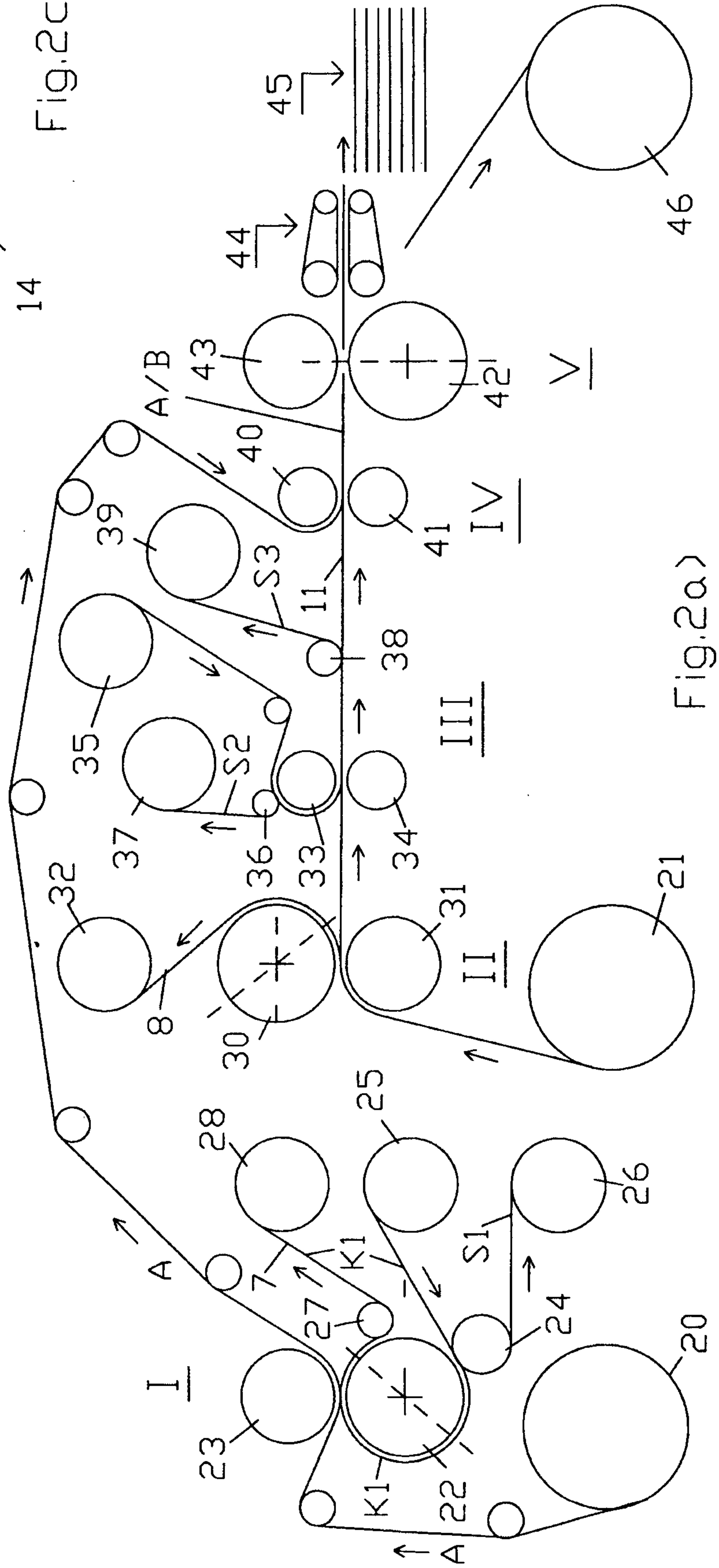
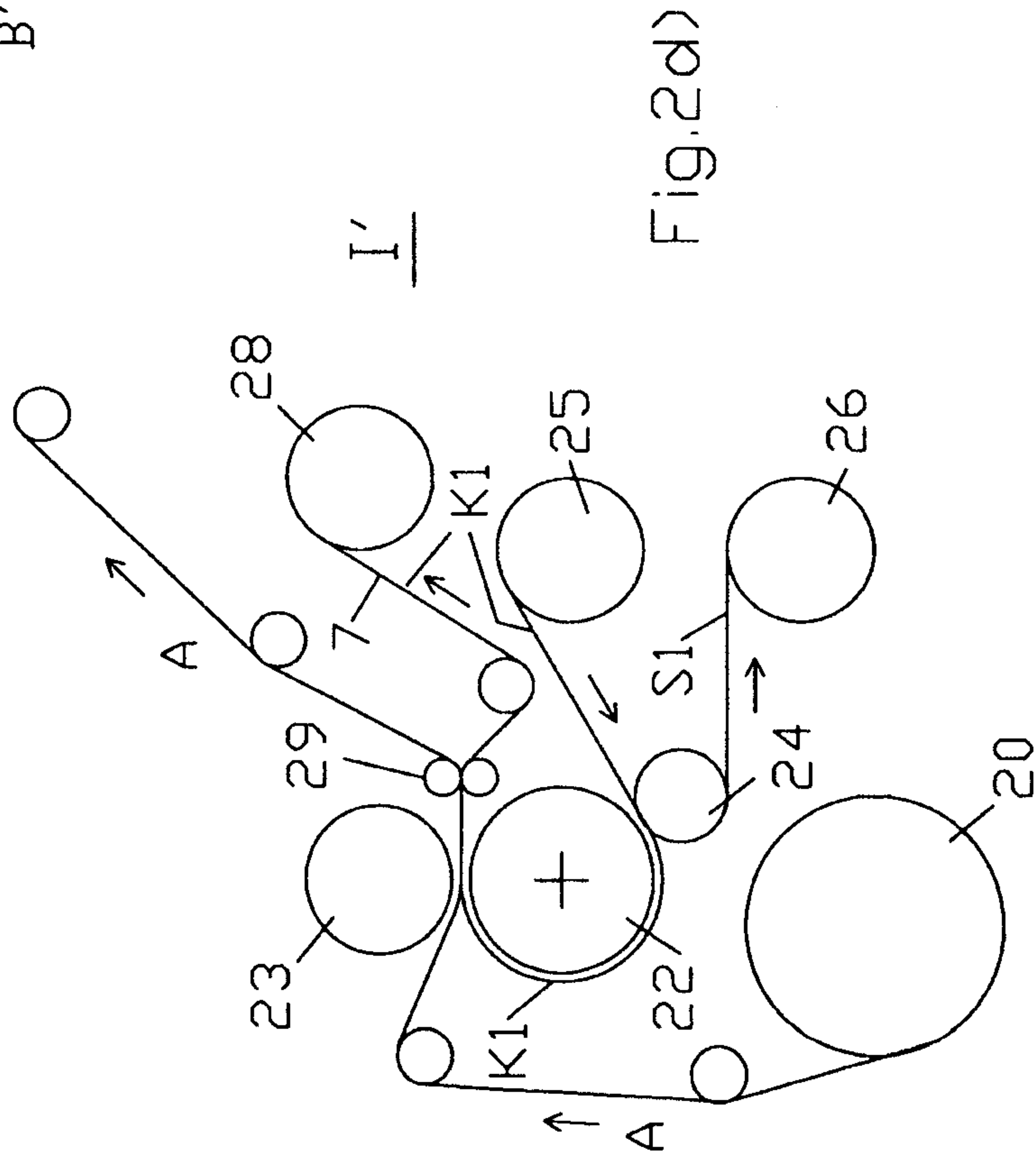
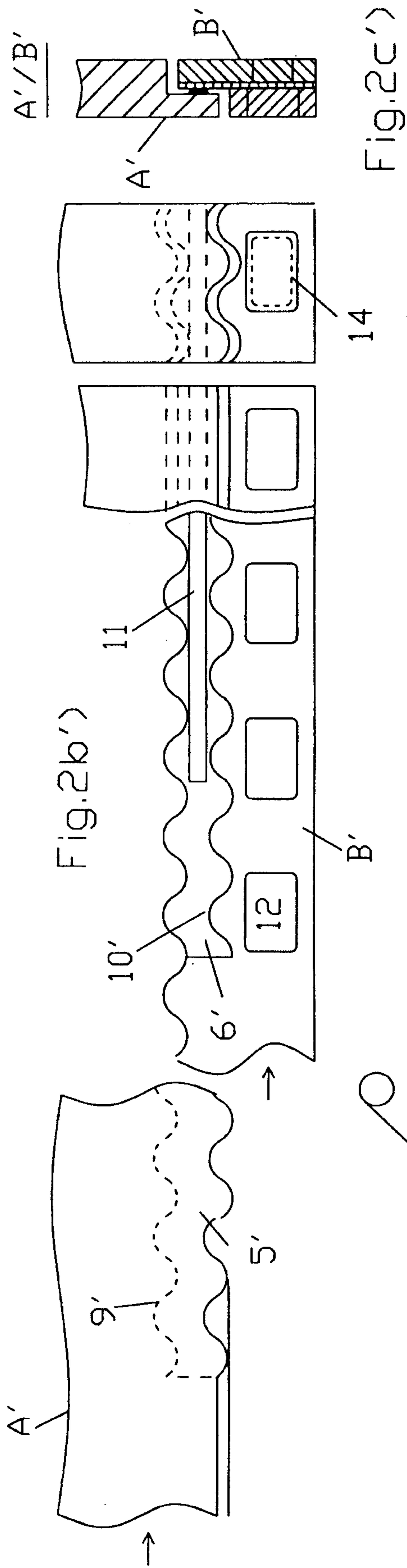
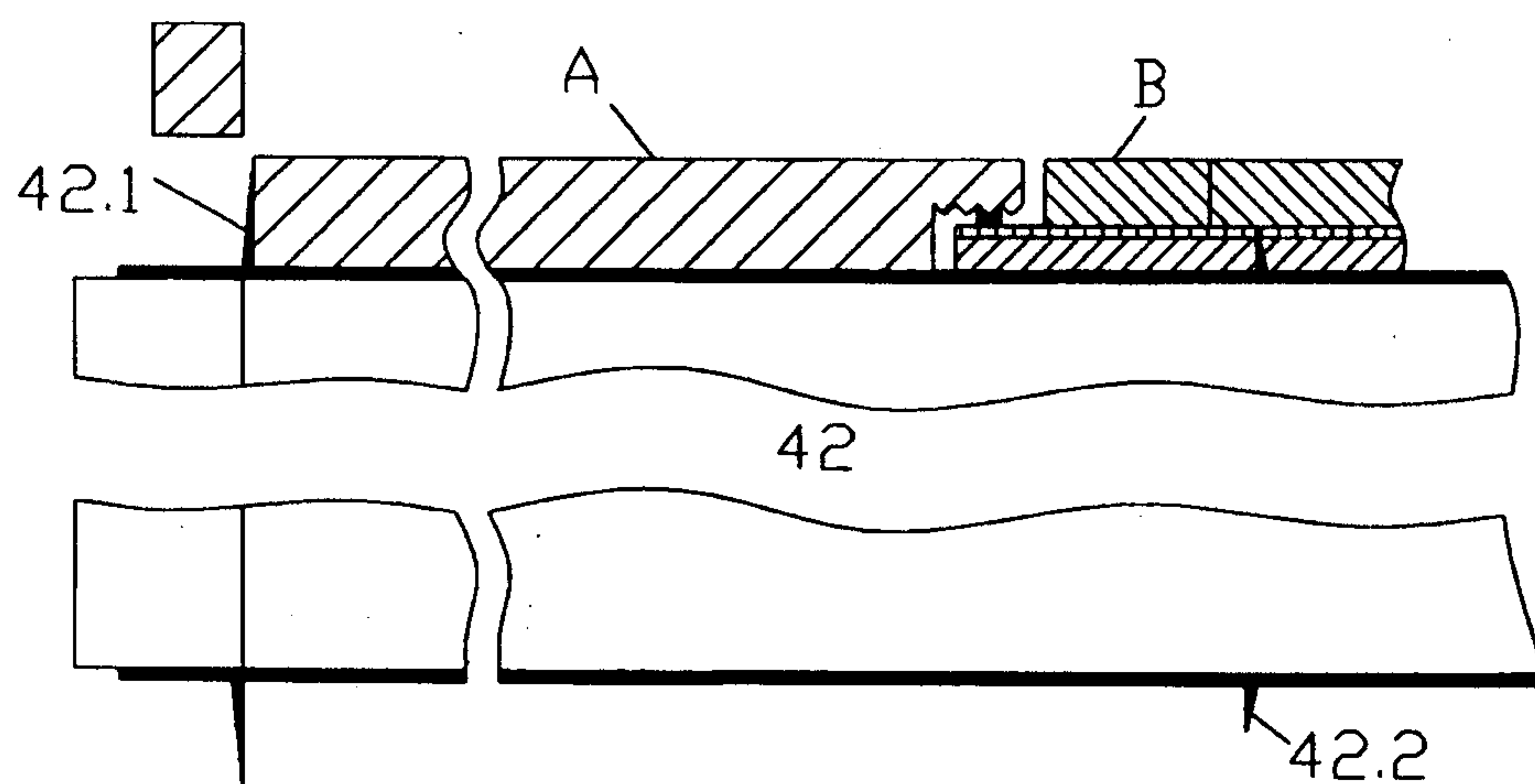
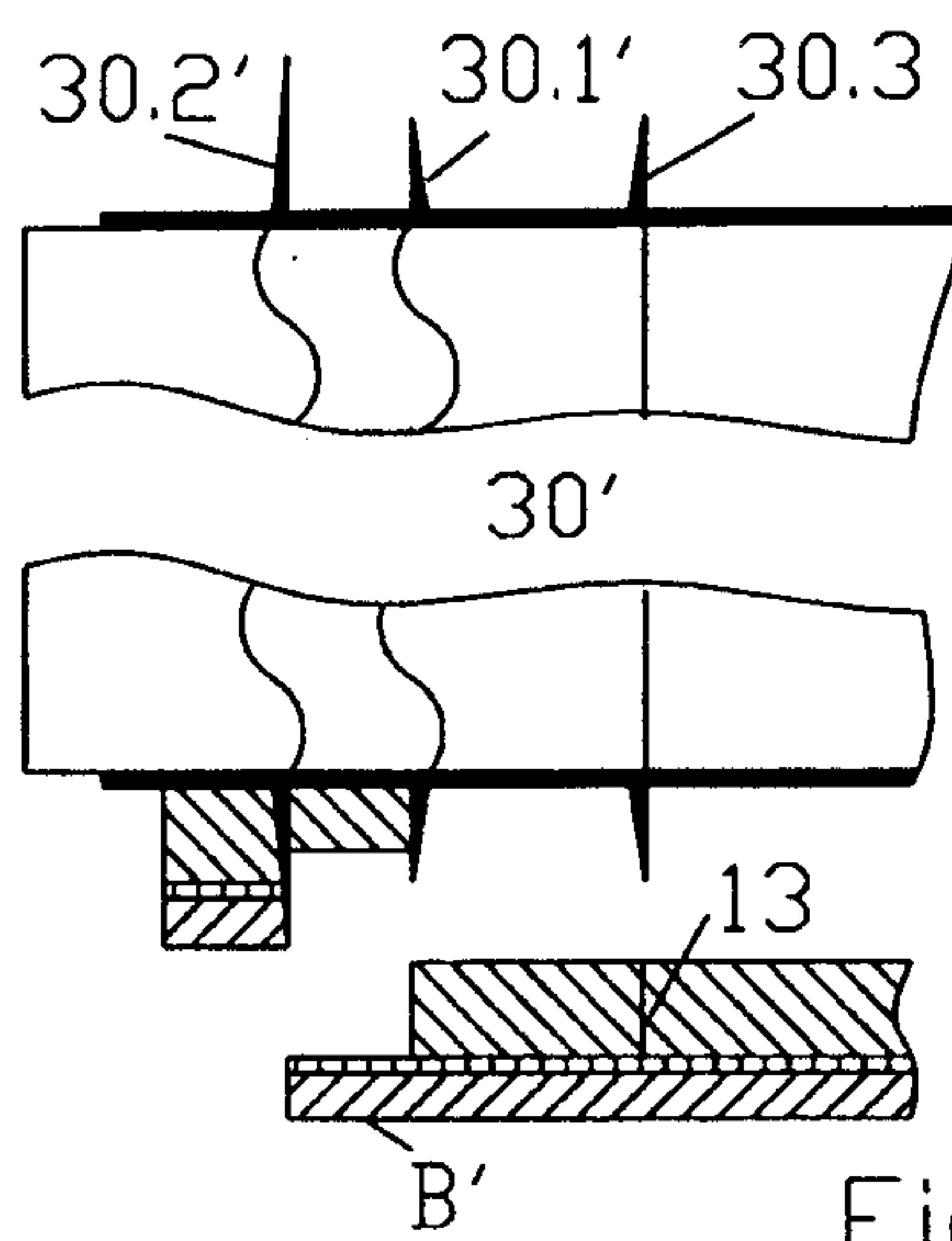
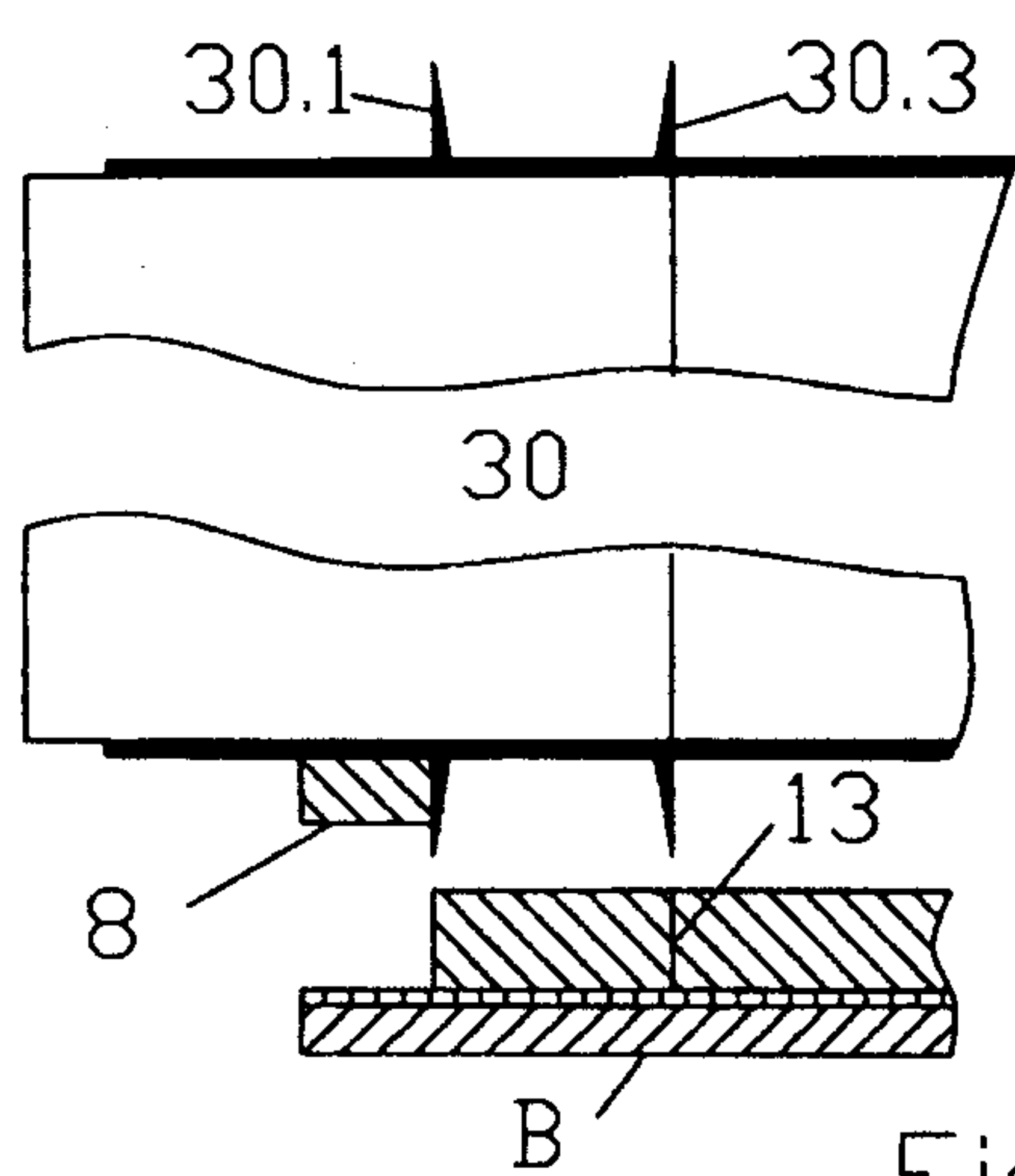
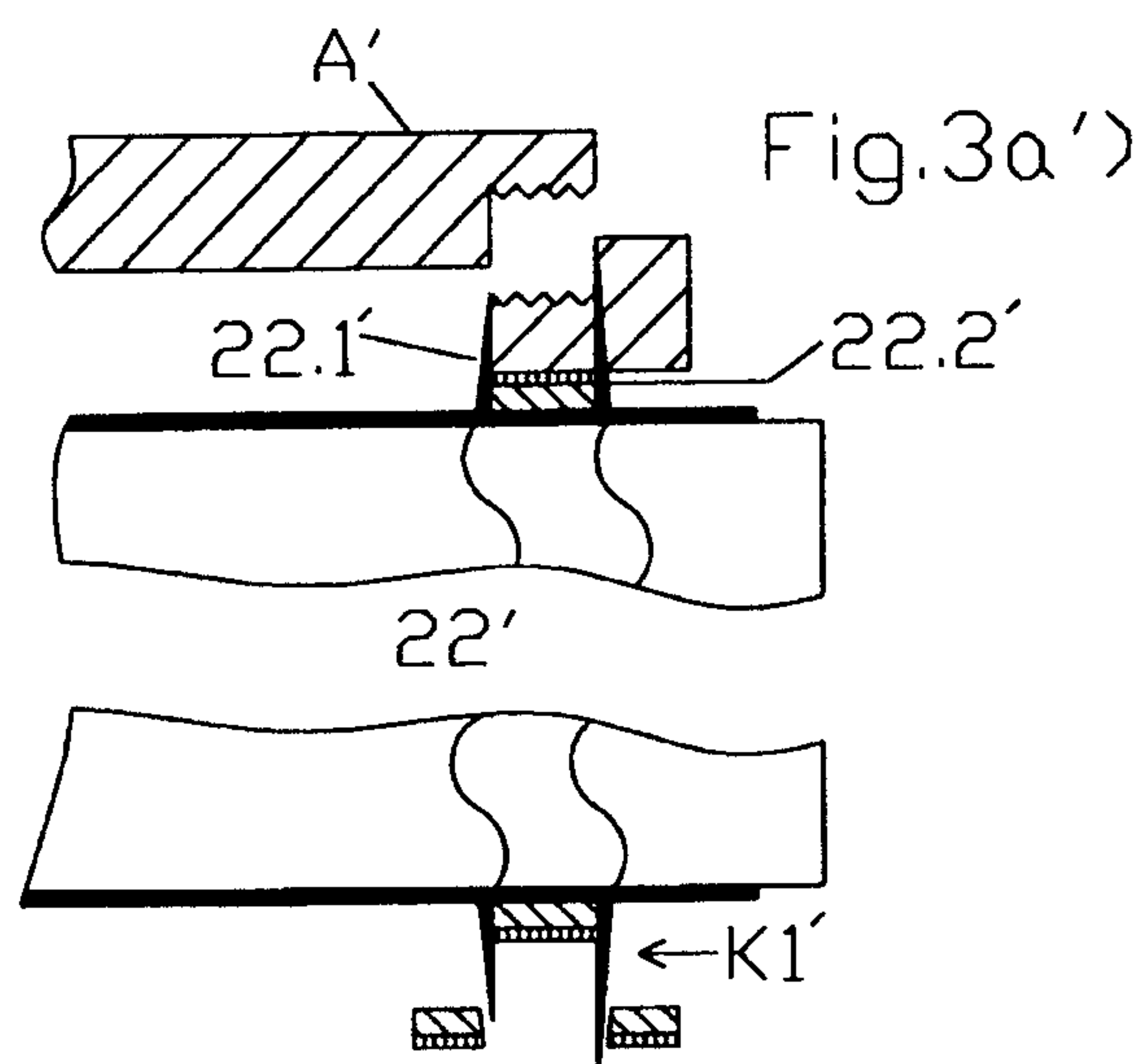
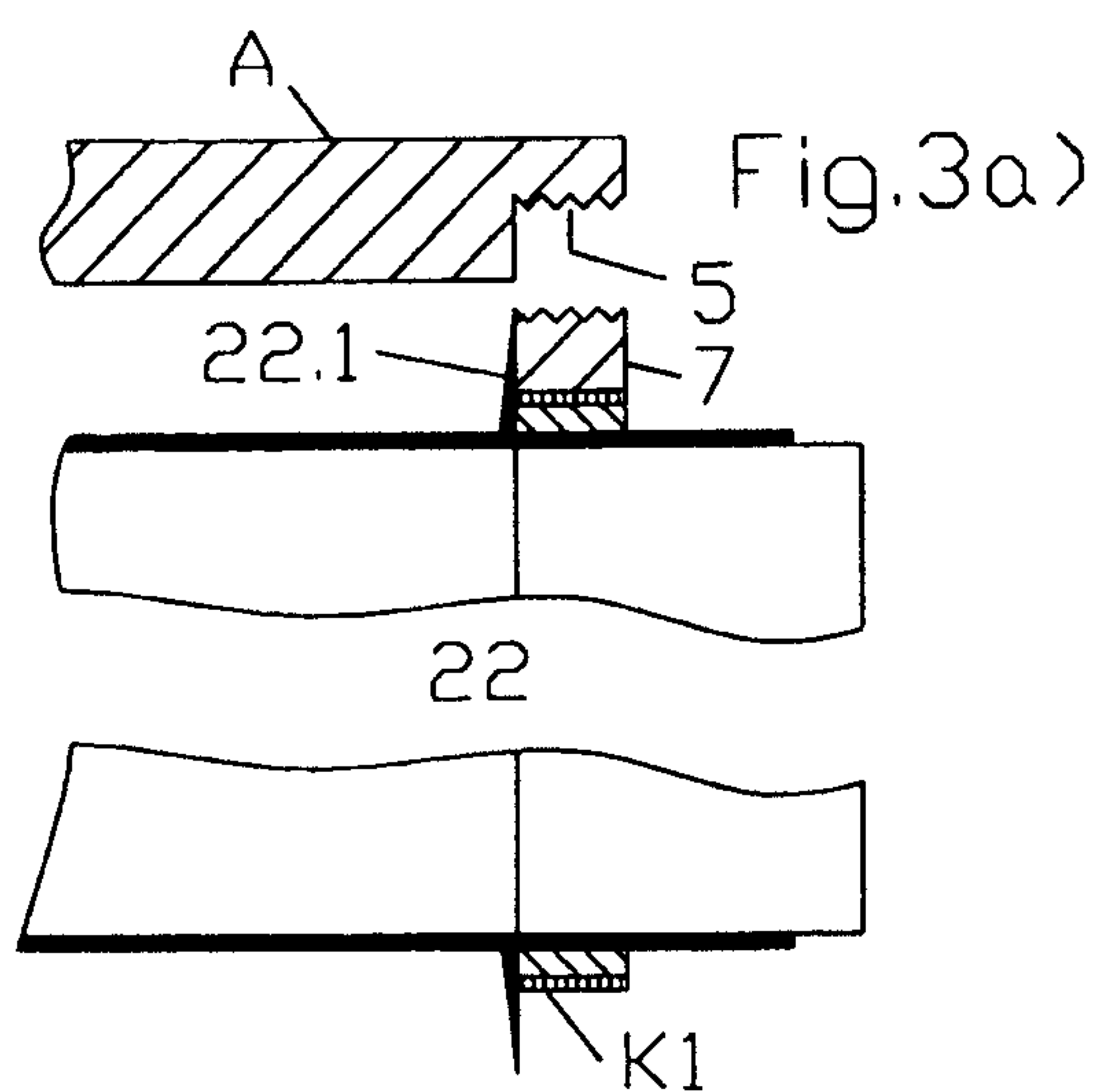


Fig. 2a)



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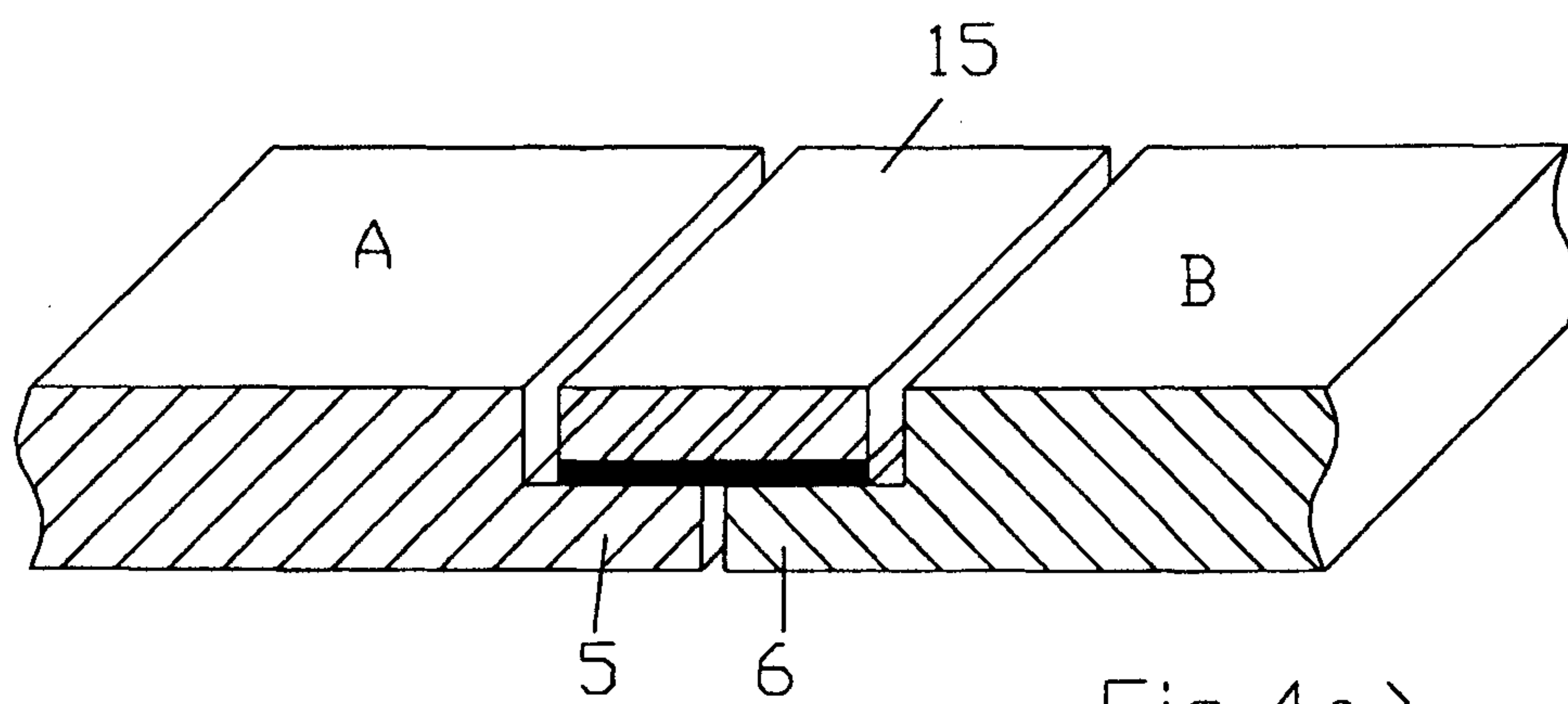


Fig.4a)

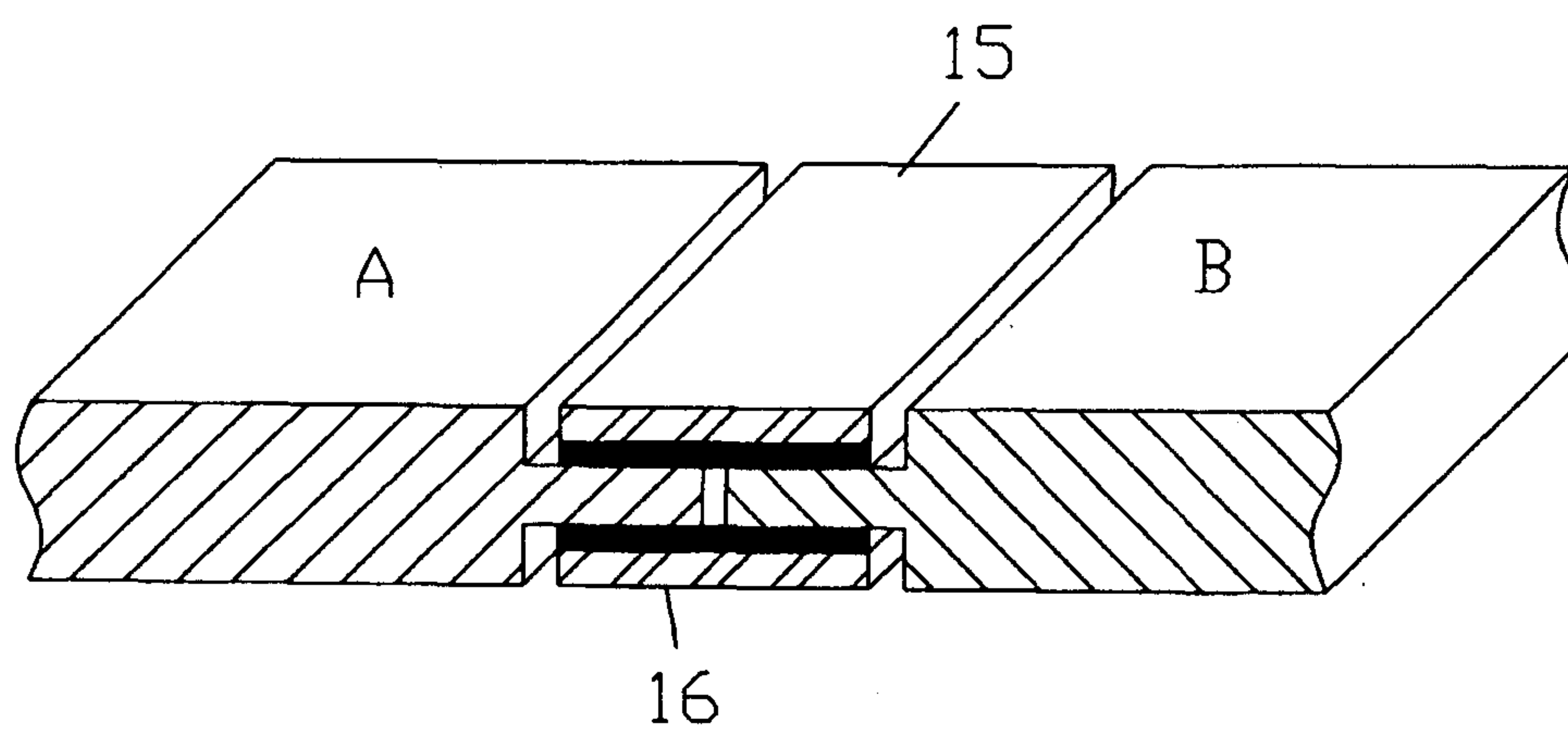


Fig.4b)

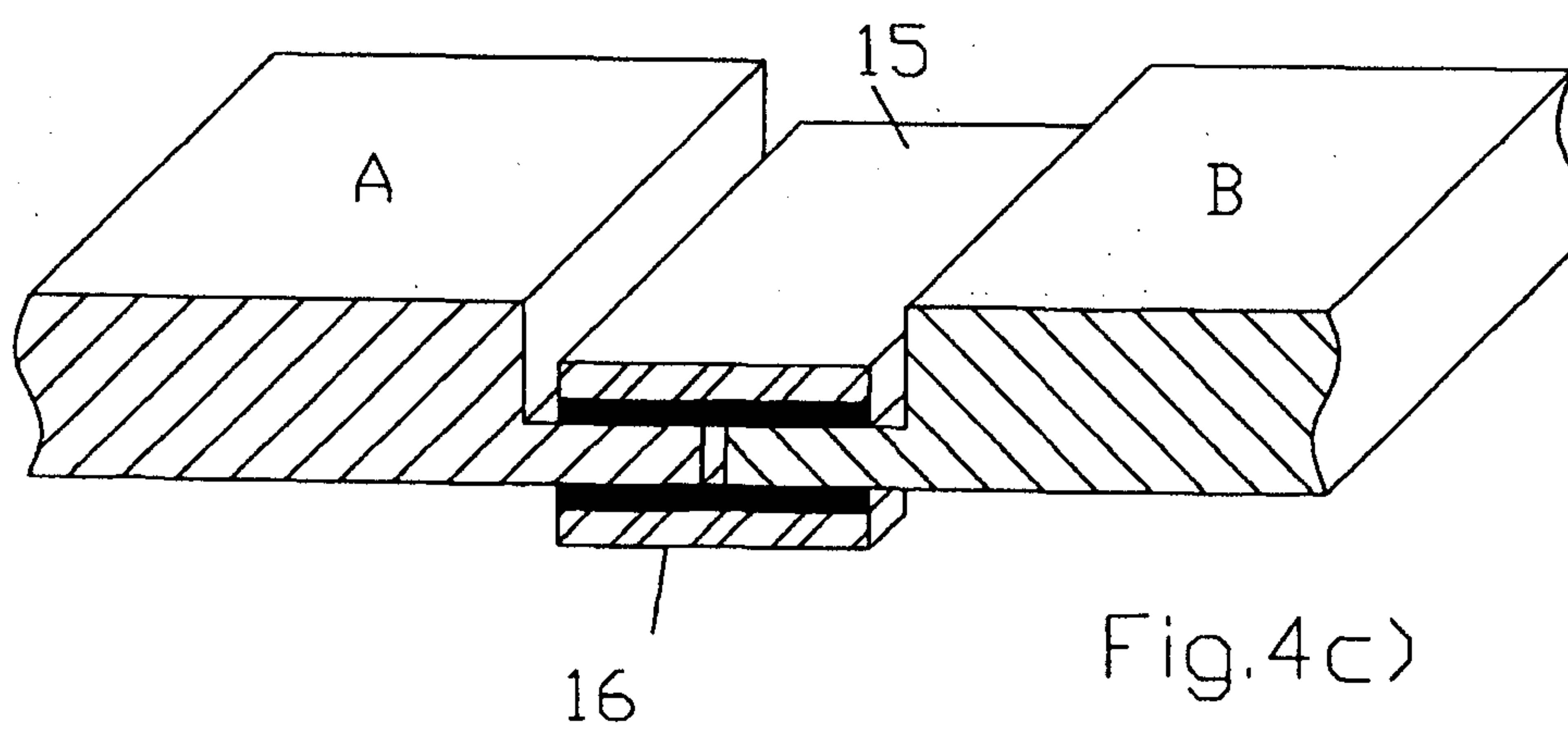
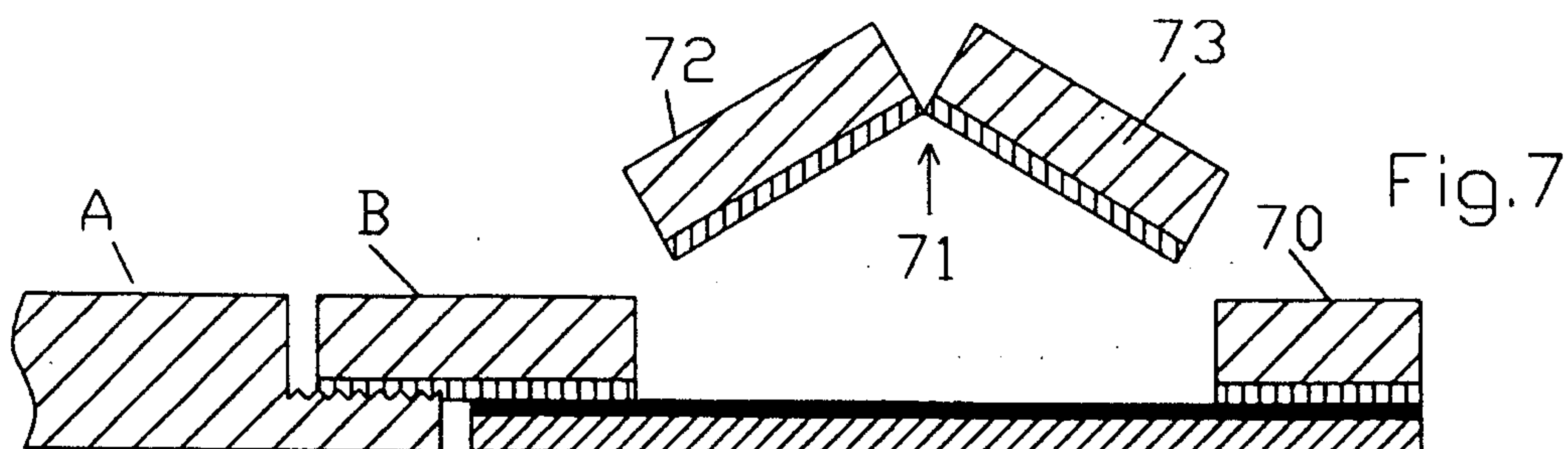
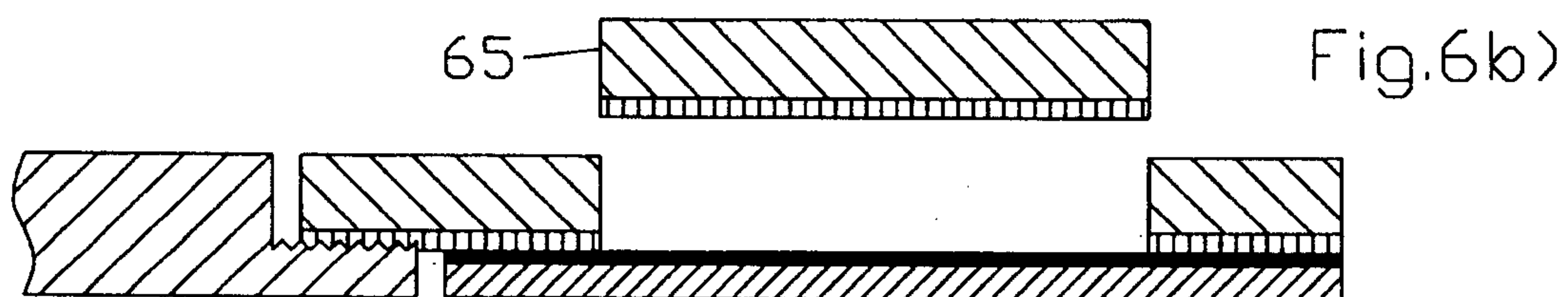
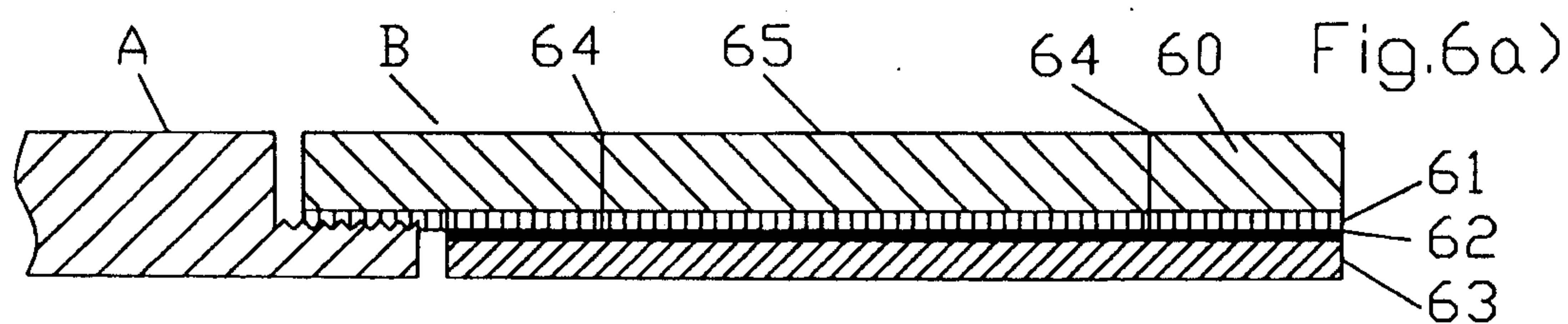
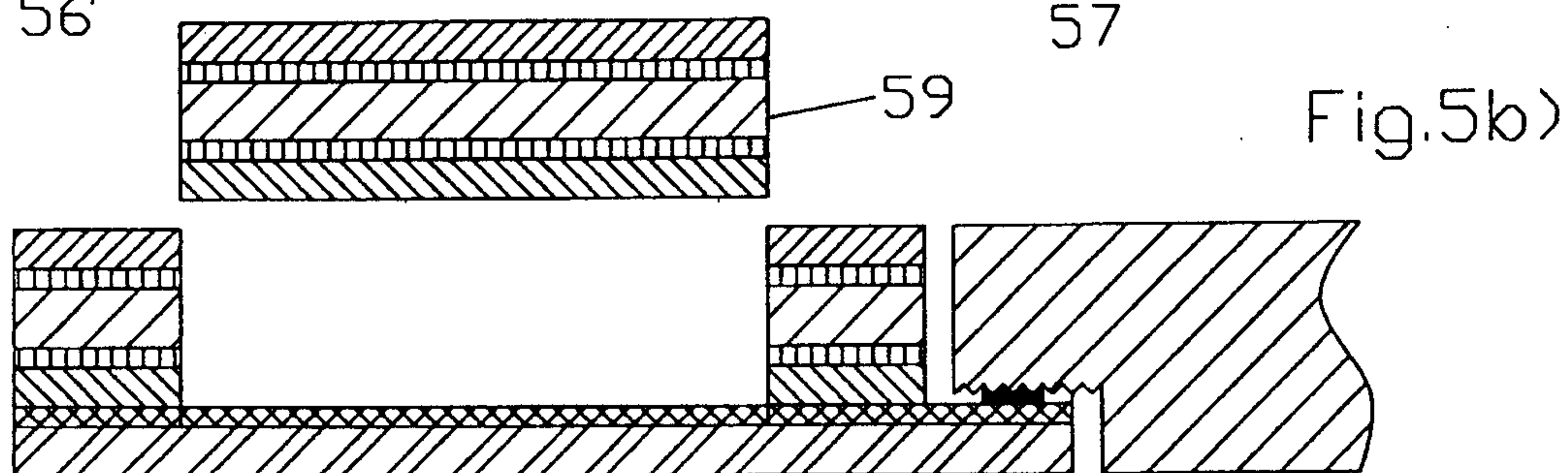
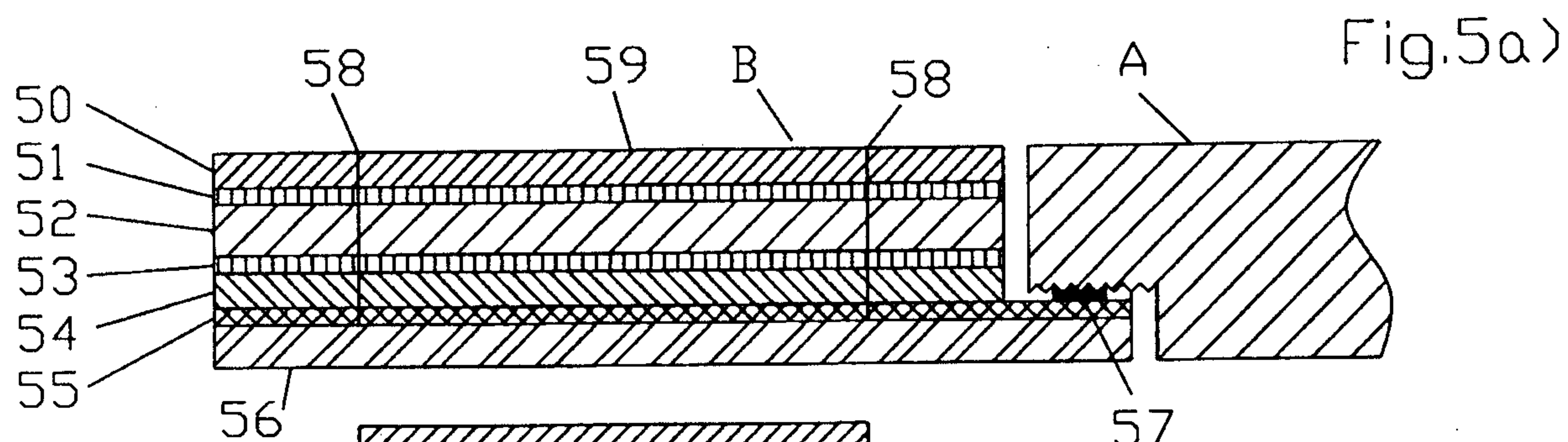


Fig.4c)

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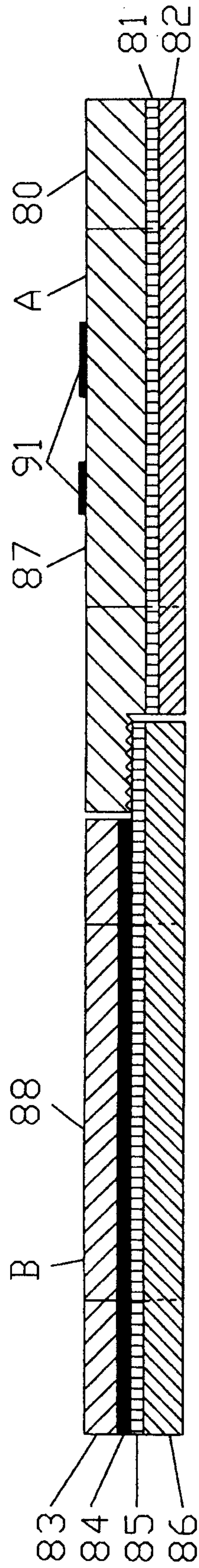


Fig. 8a)

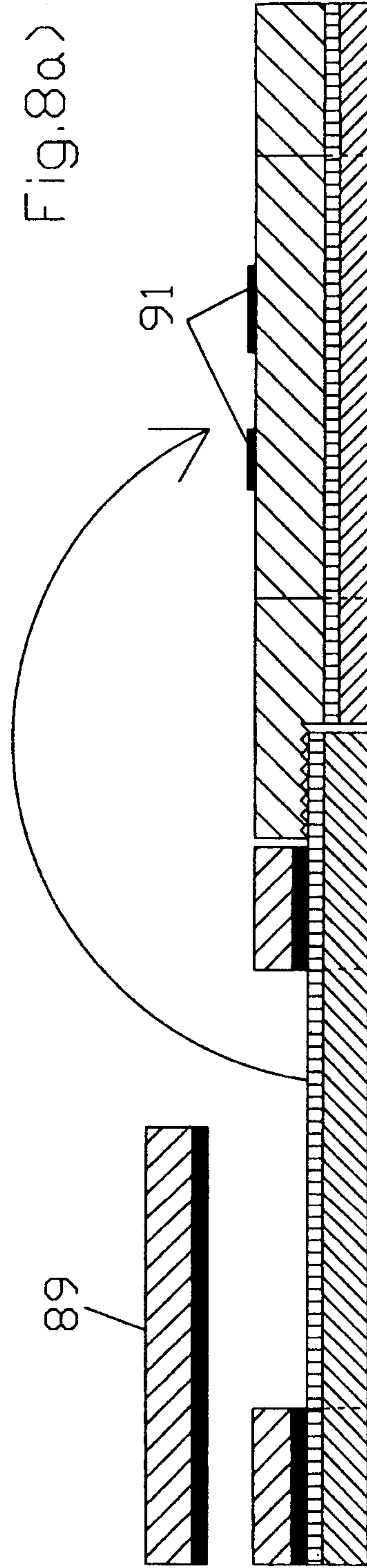


Fig. 8b)

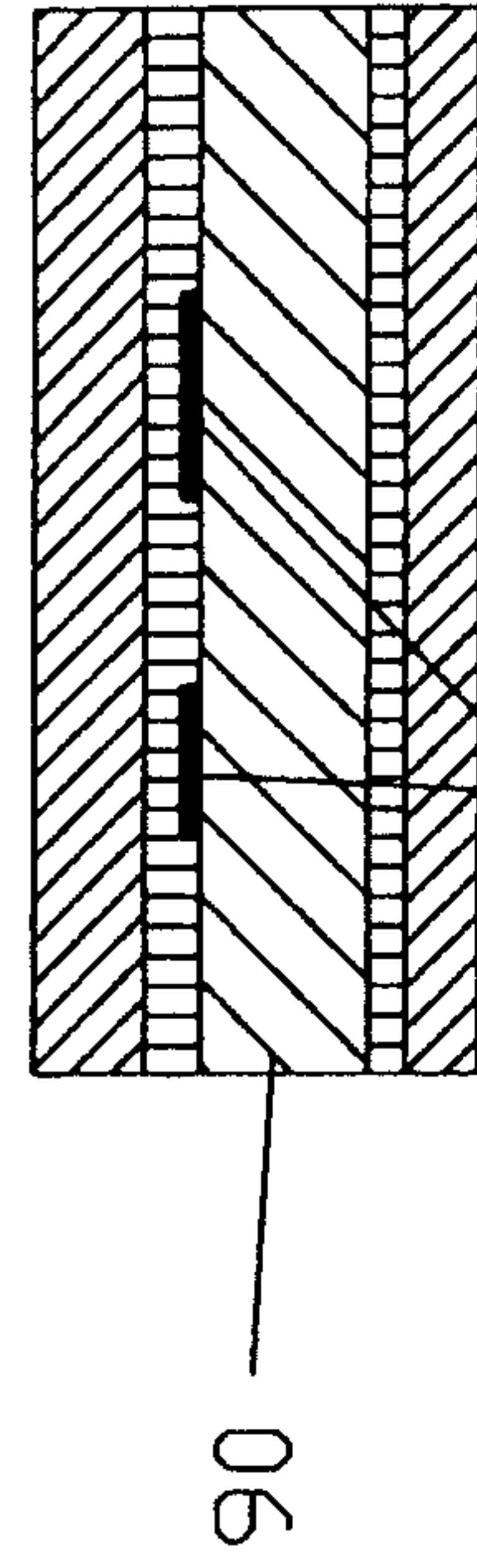


Fig. 8c)

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Fig.9a)

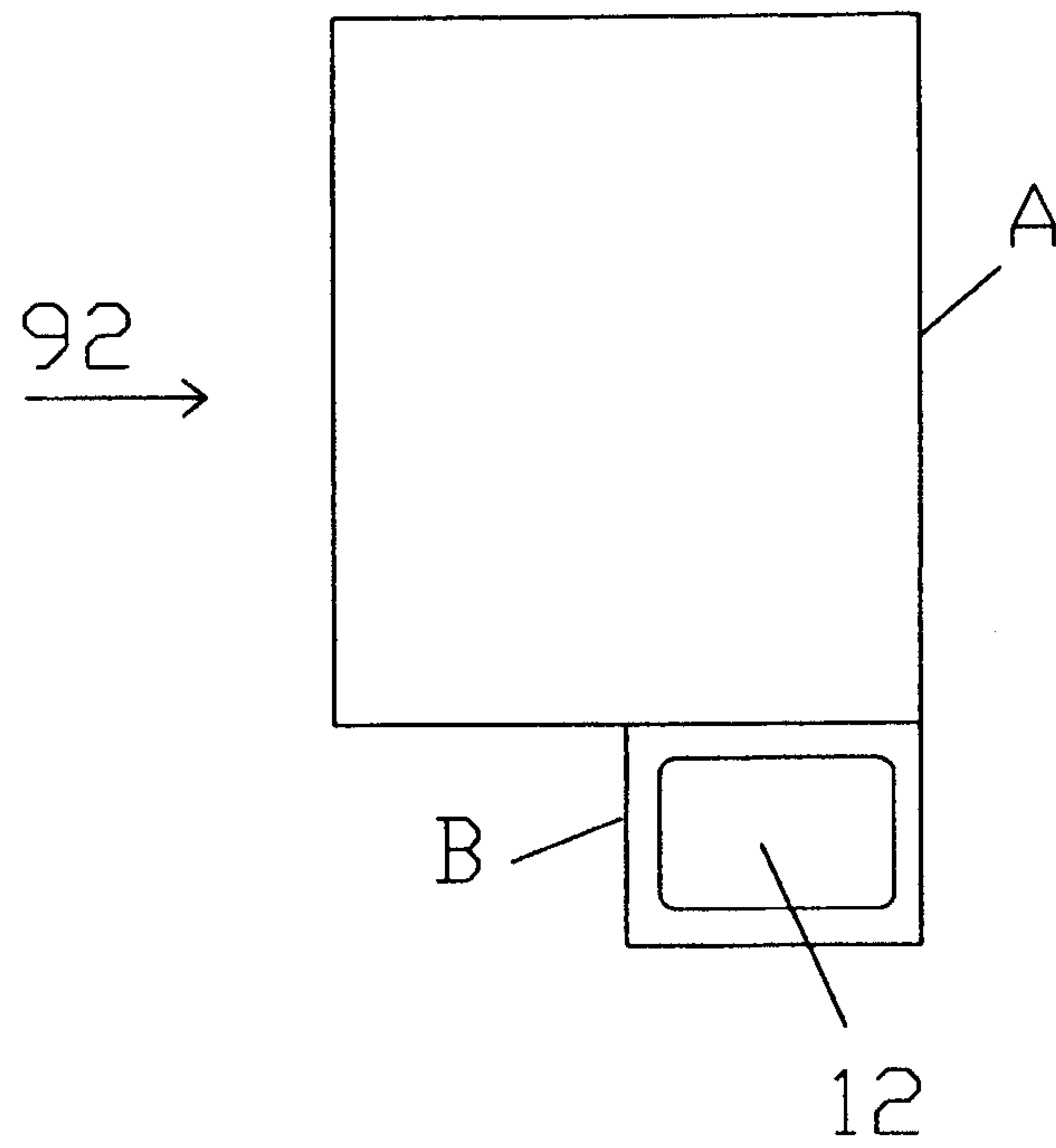
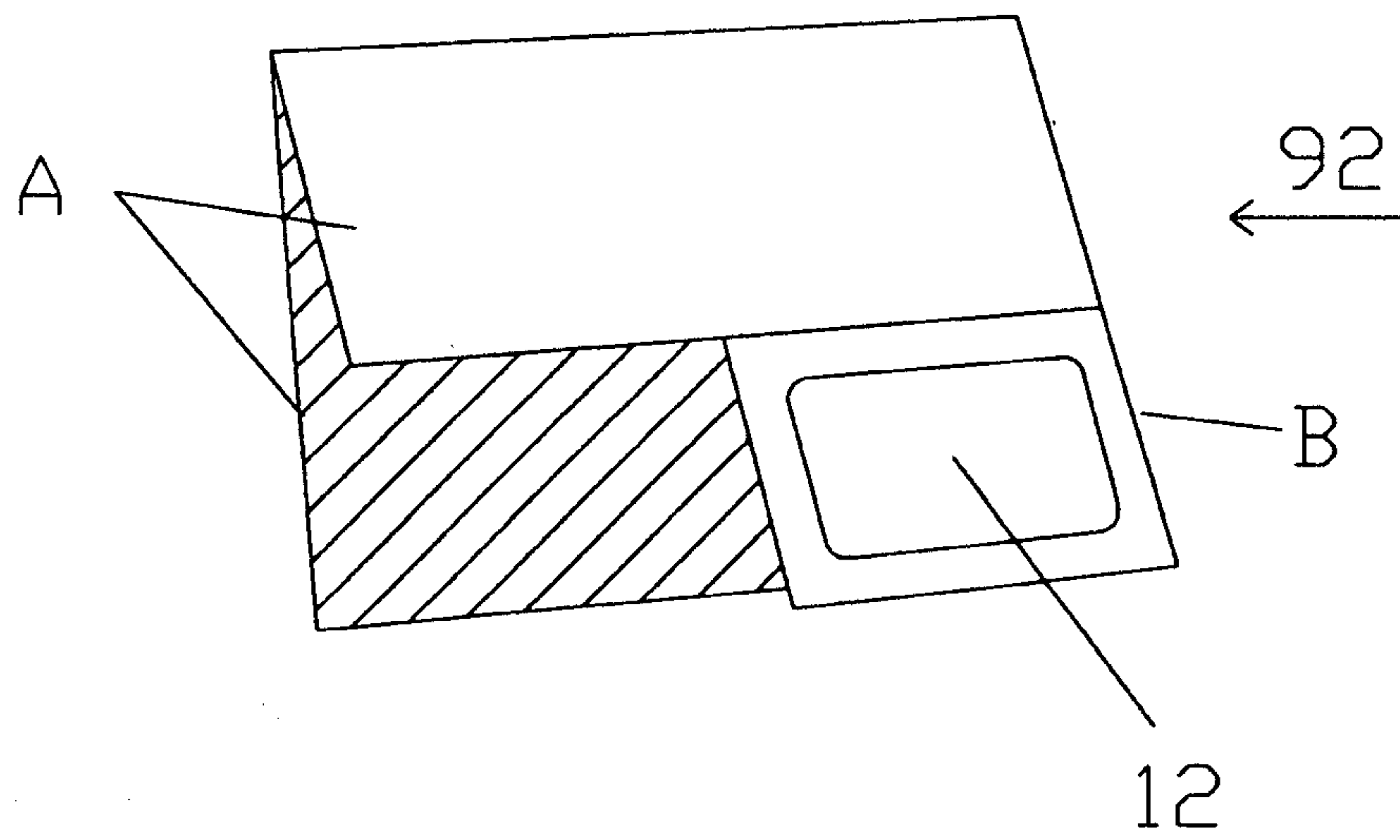
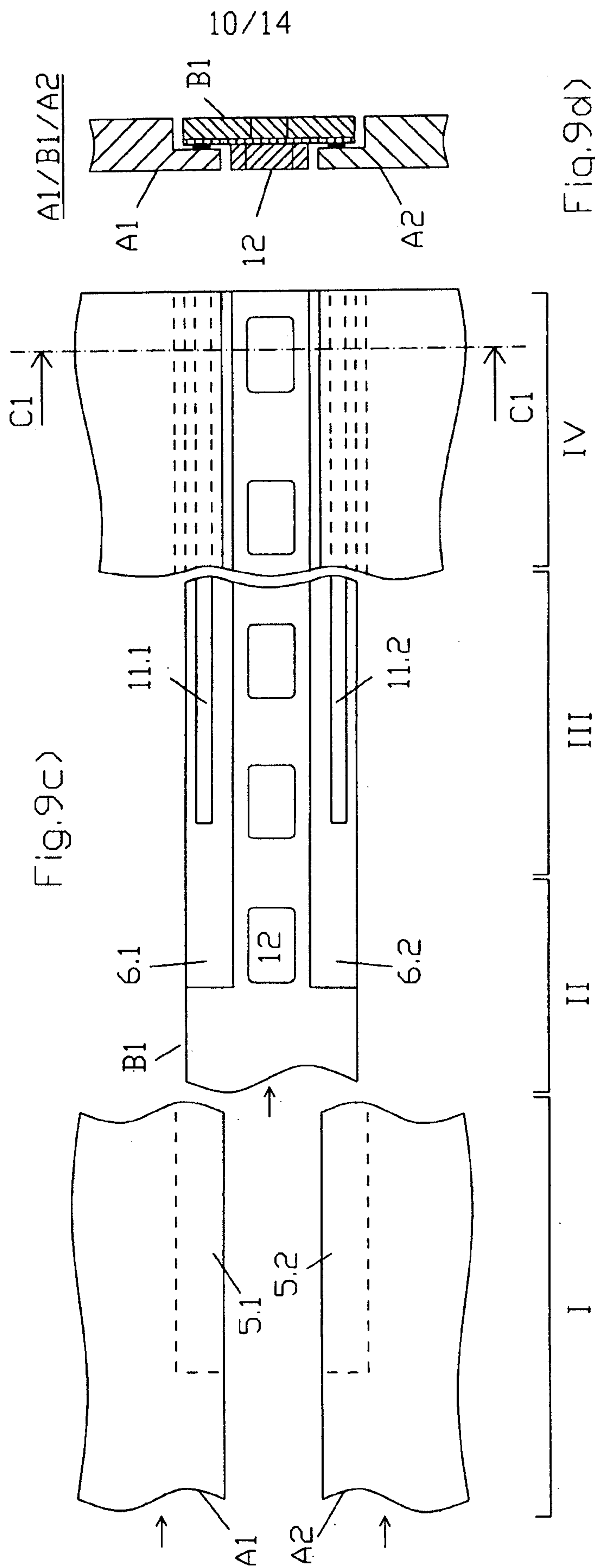
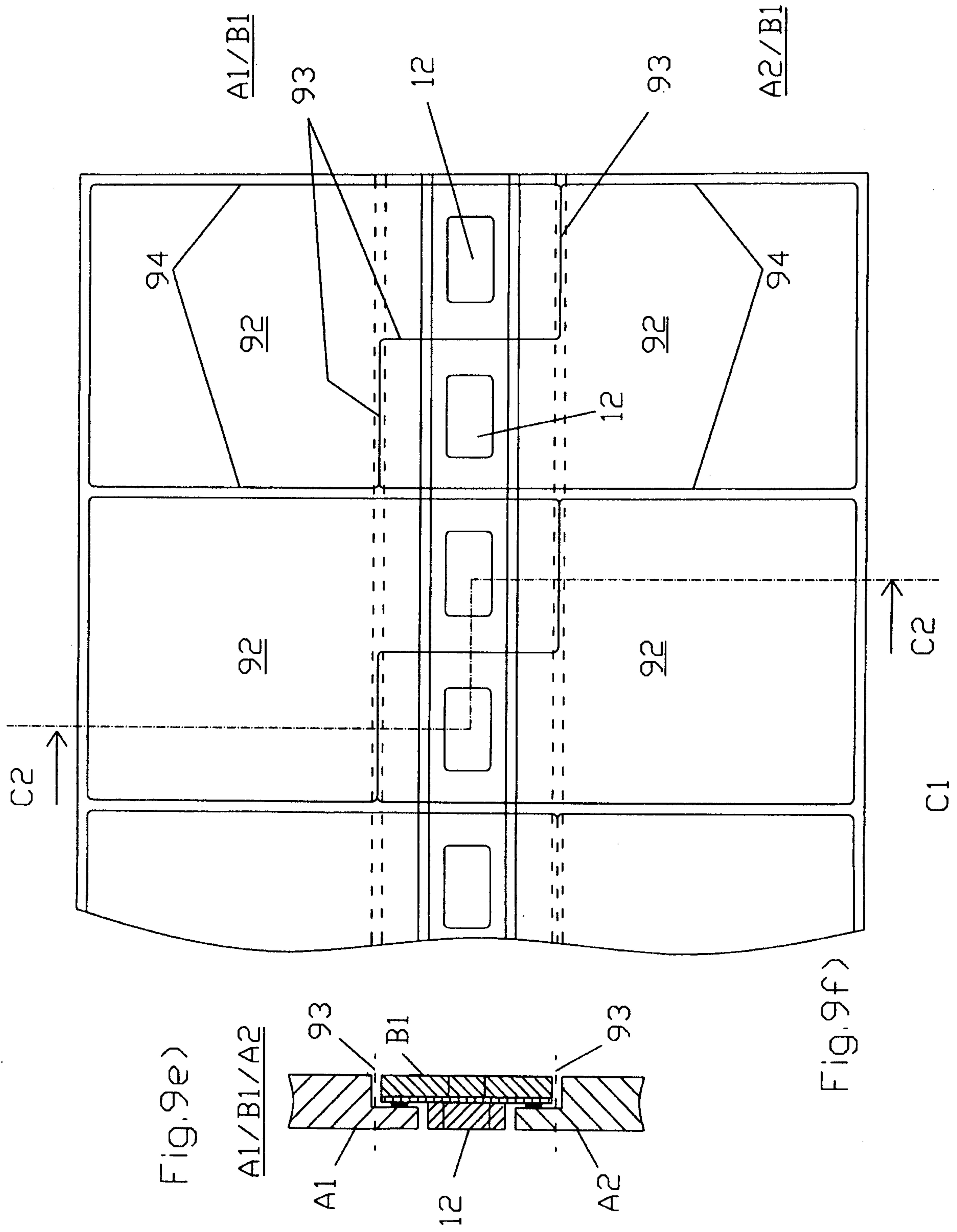


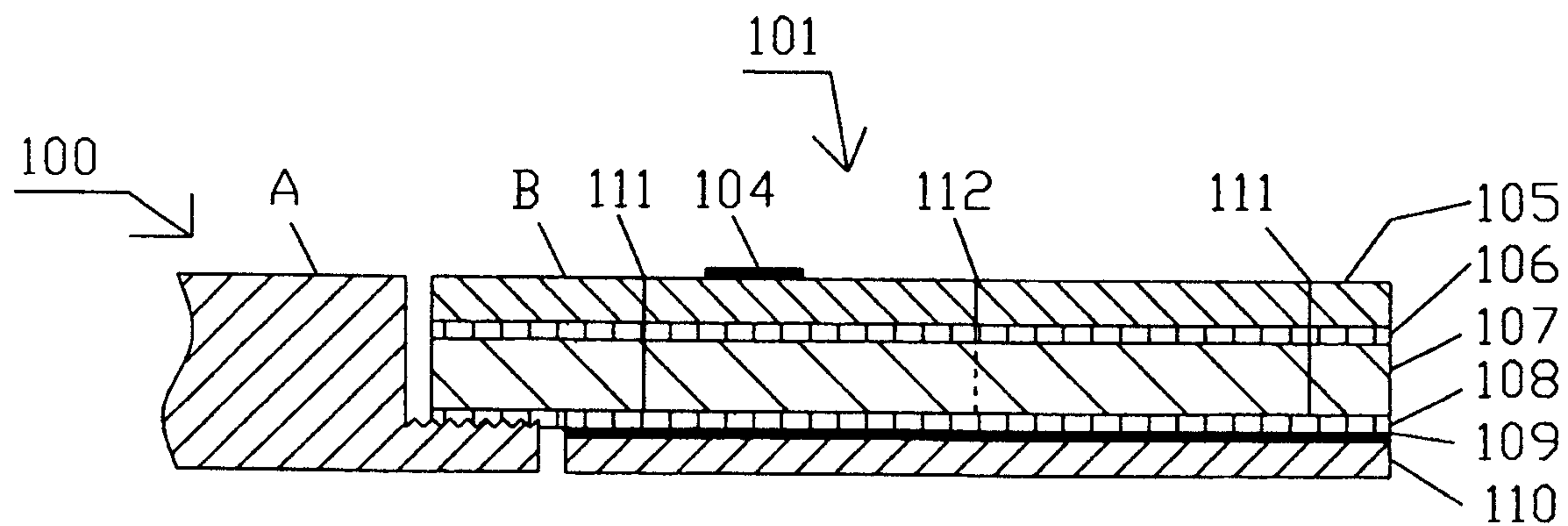
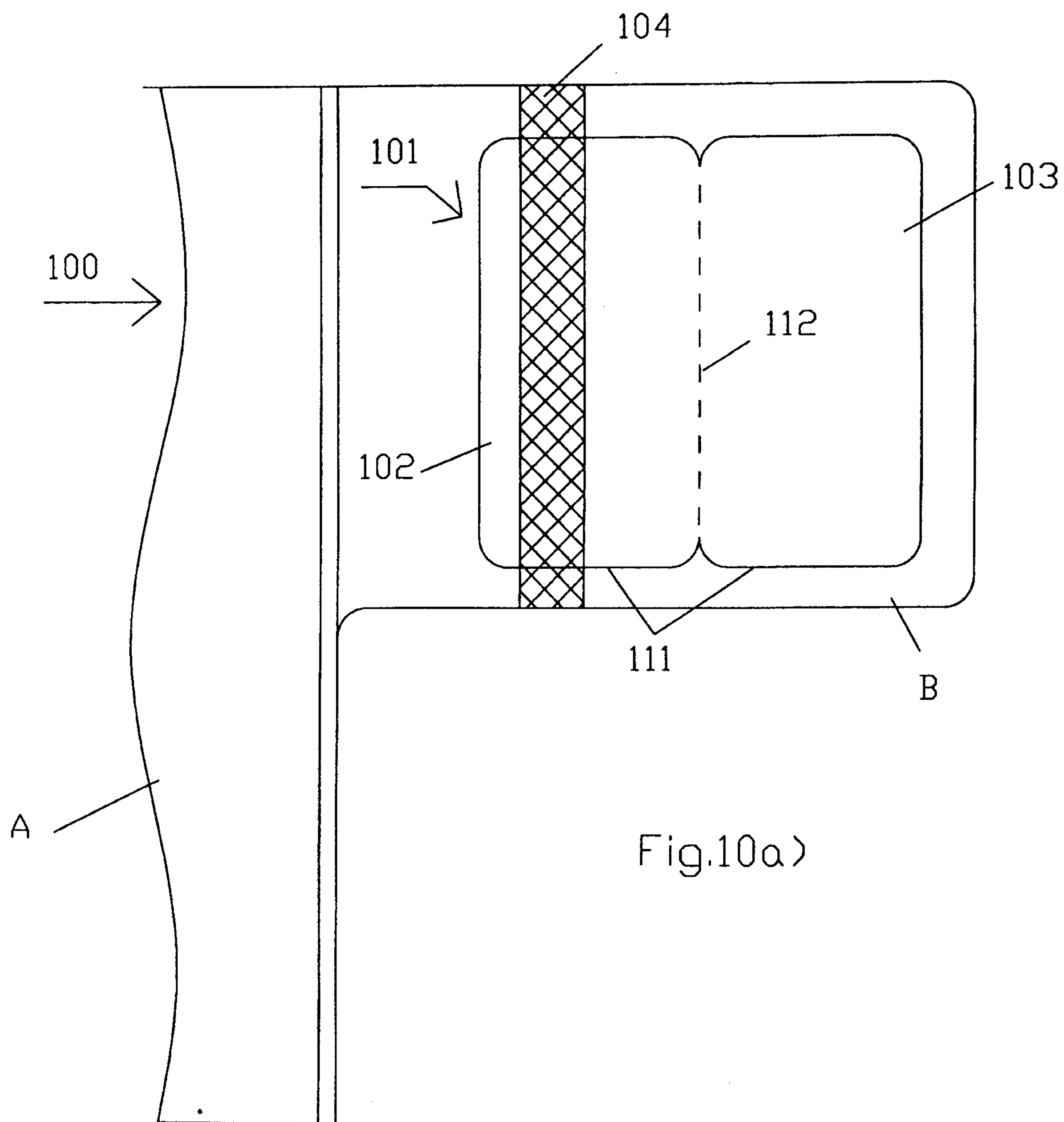
Fig.9b)







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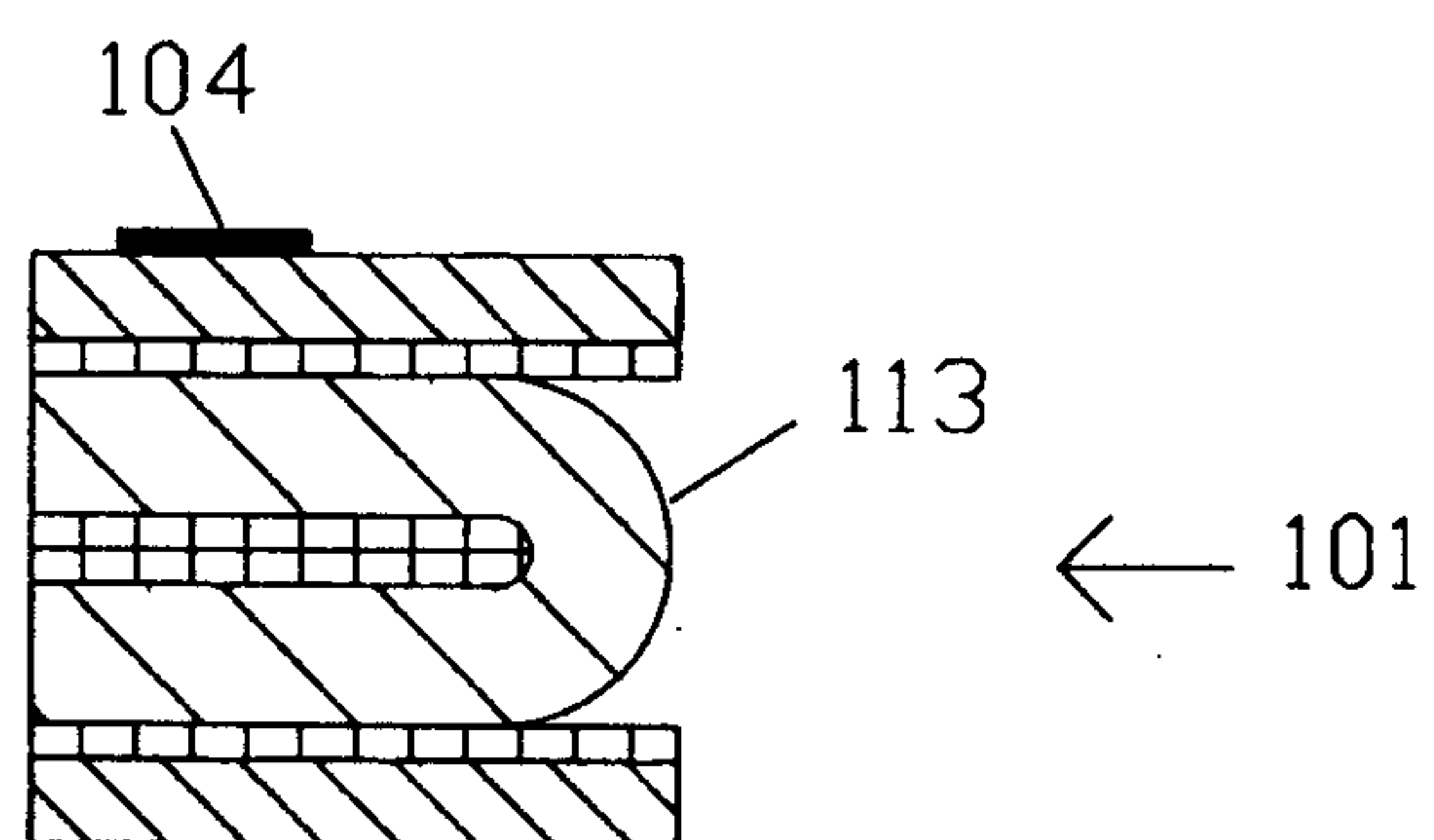
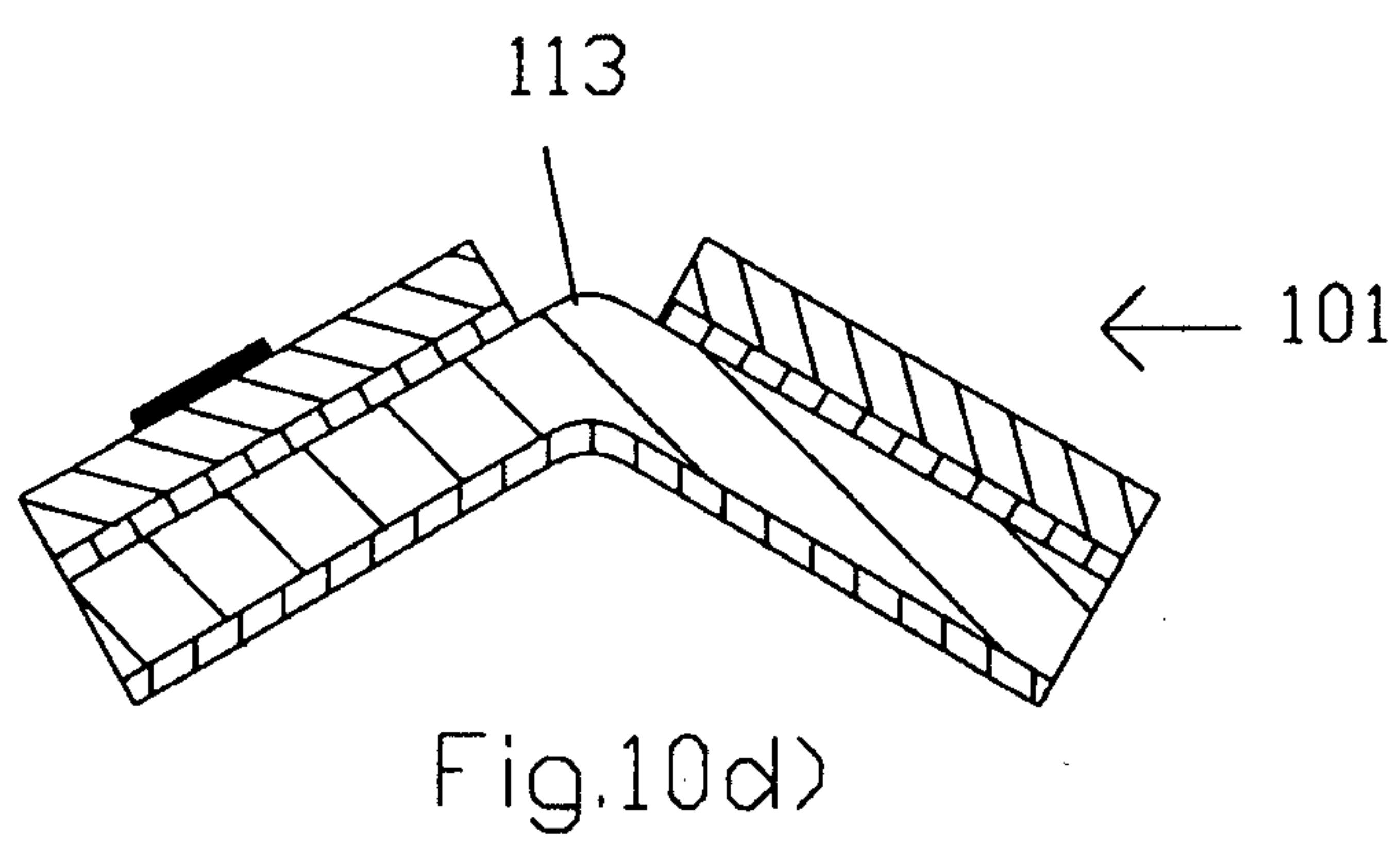
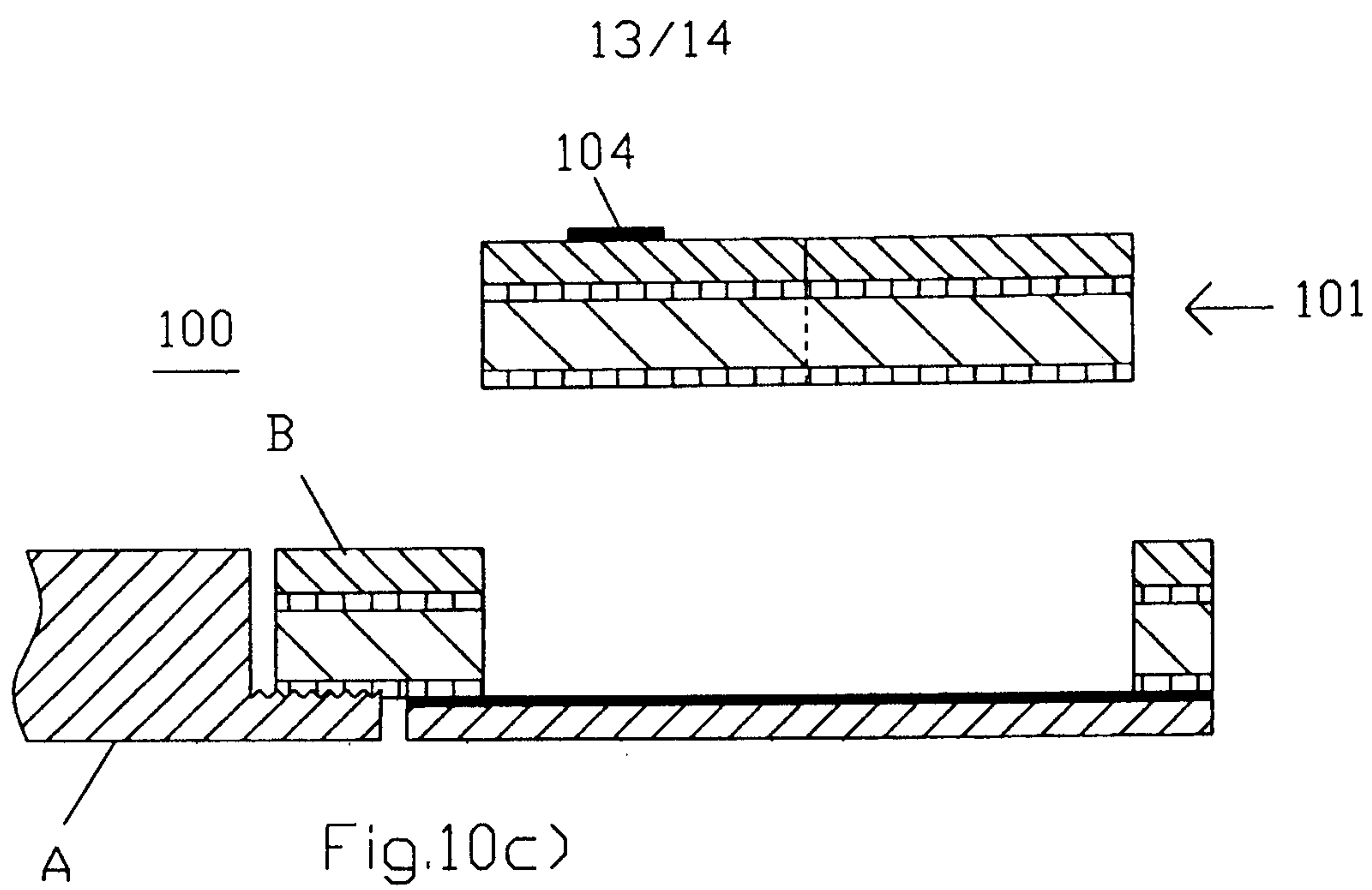


Fig.10e)

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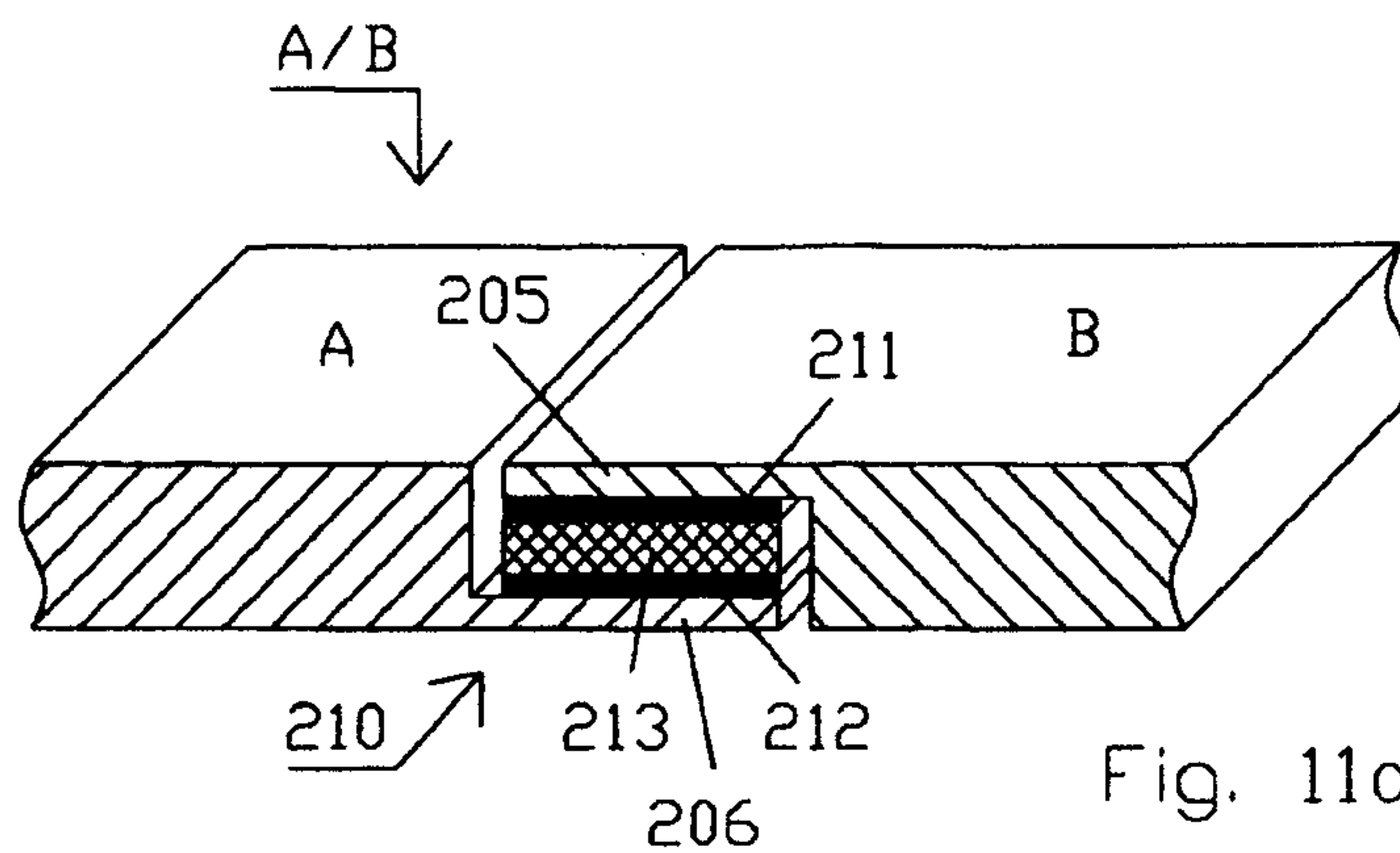


Fig. 11a)

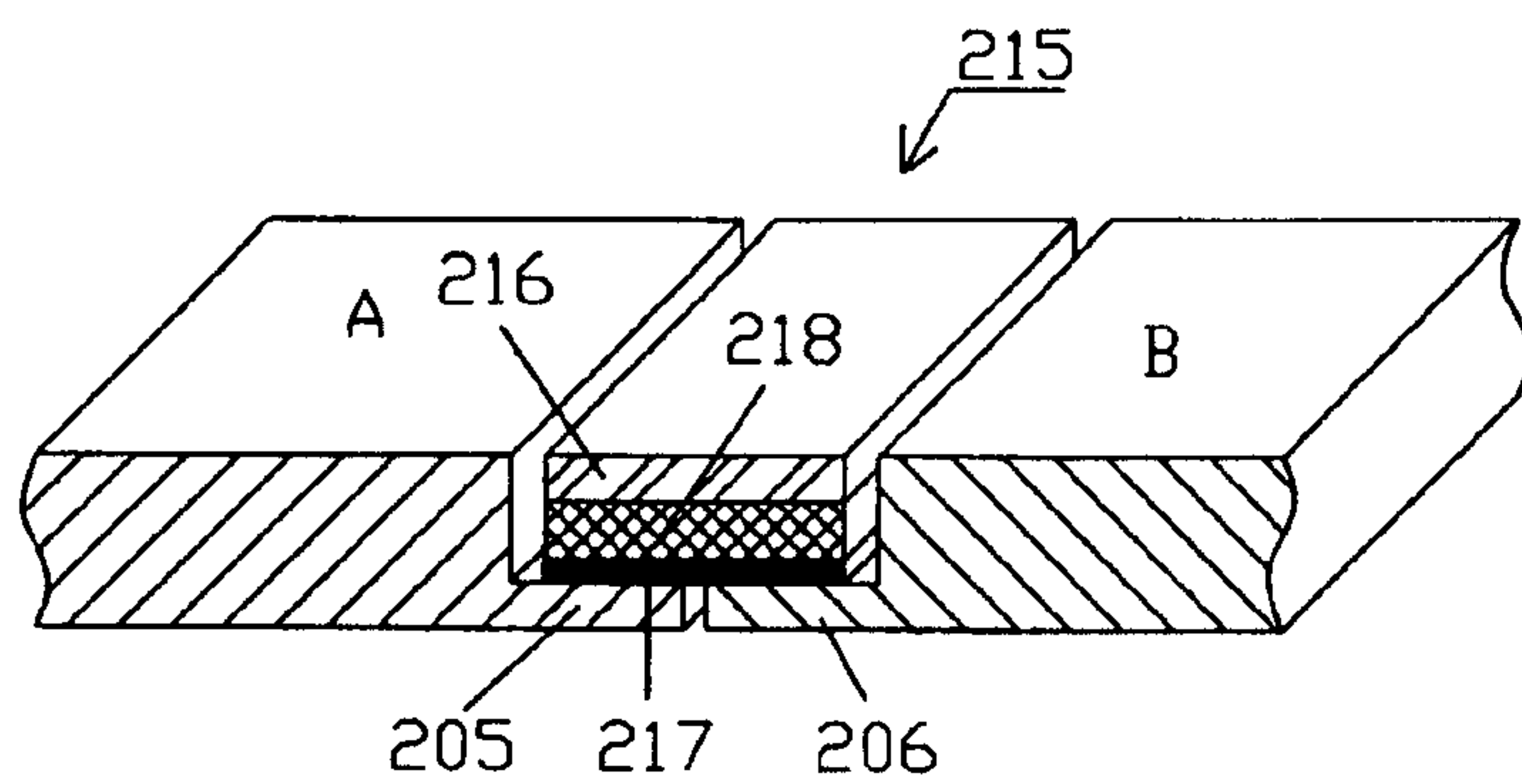


Fig. 11b)

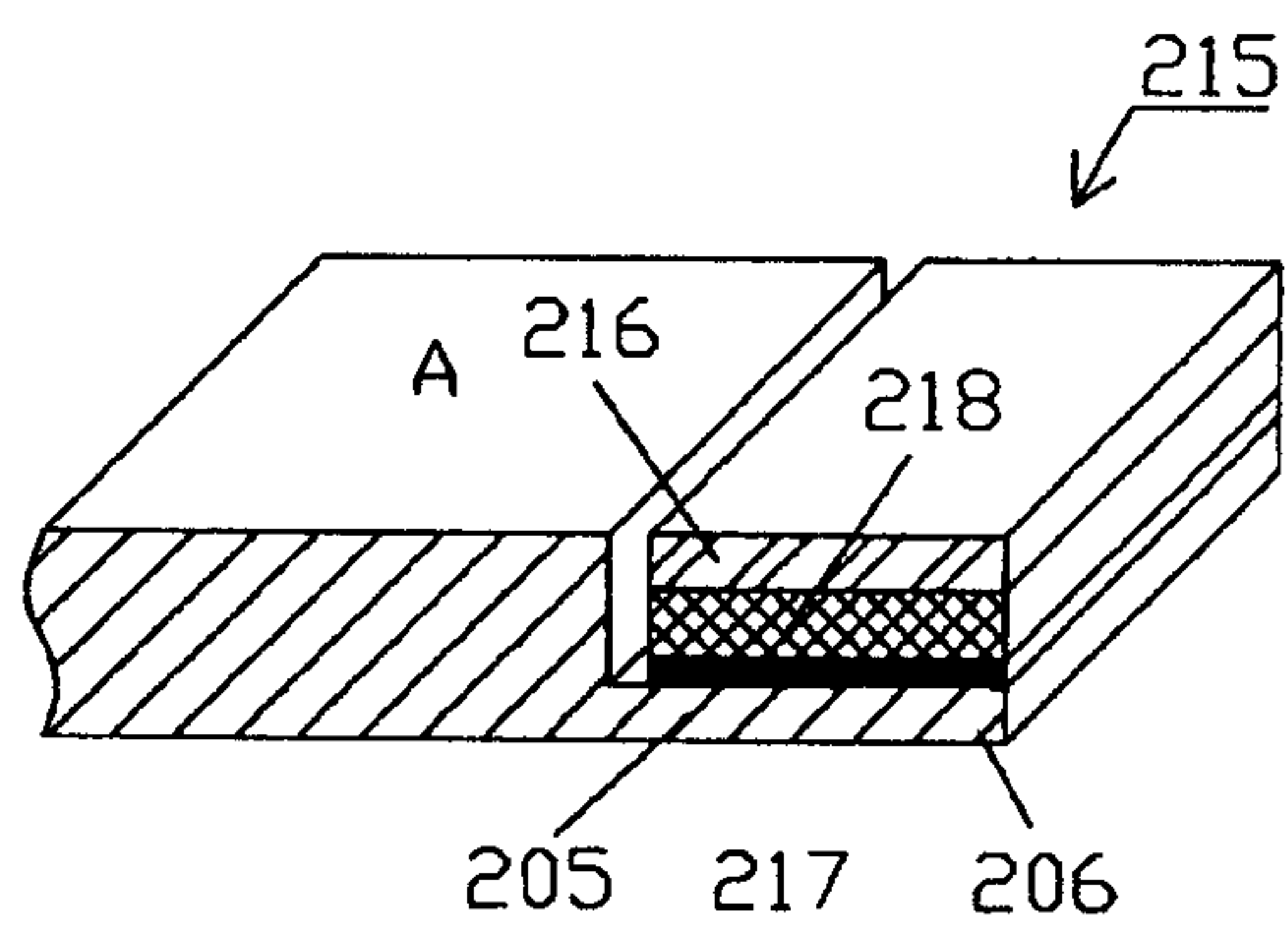


Fig. 11c)

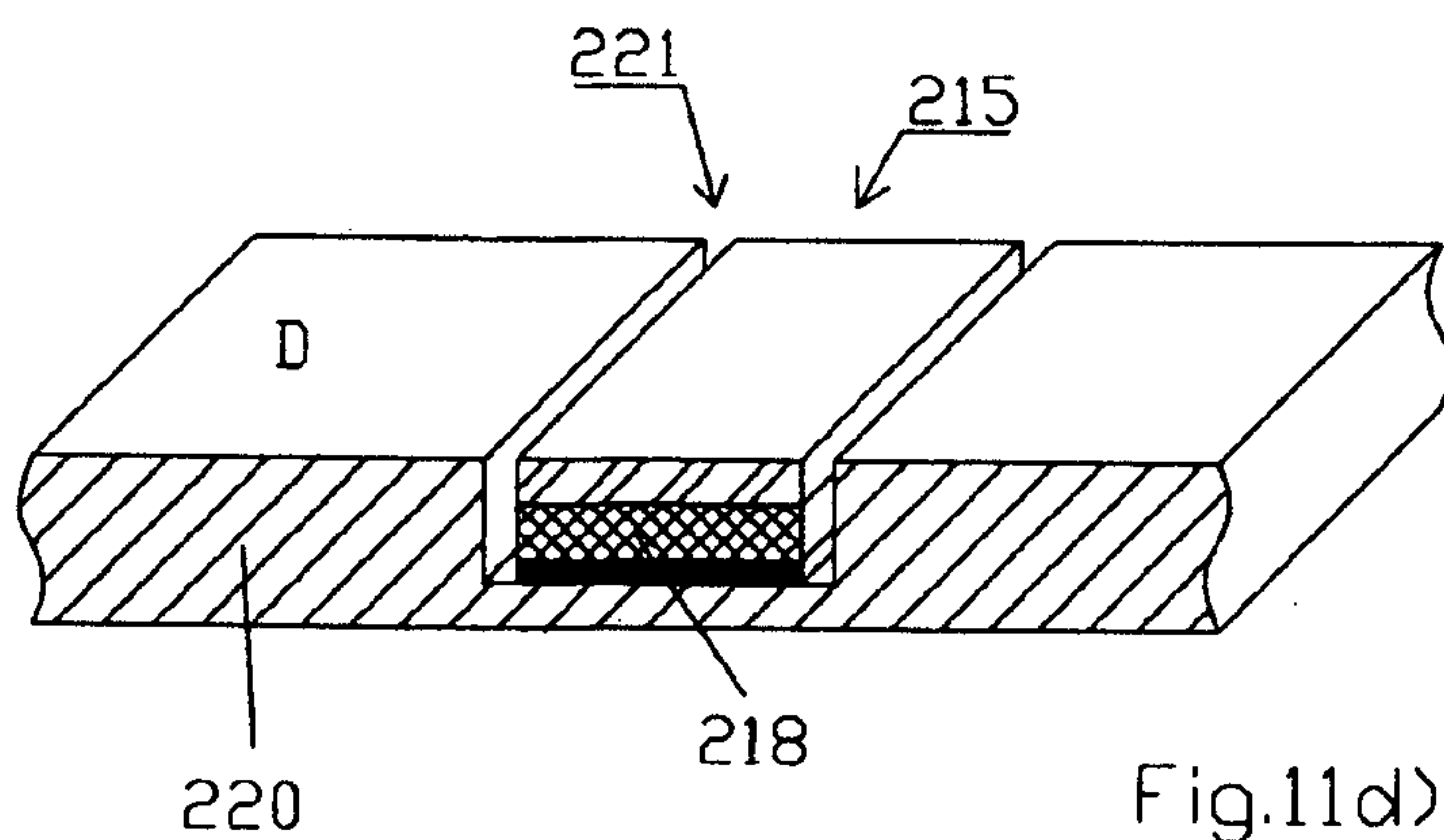


Fig. 11d)

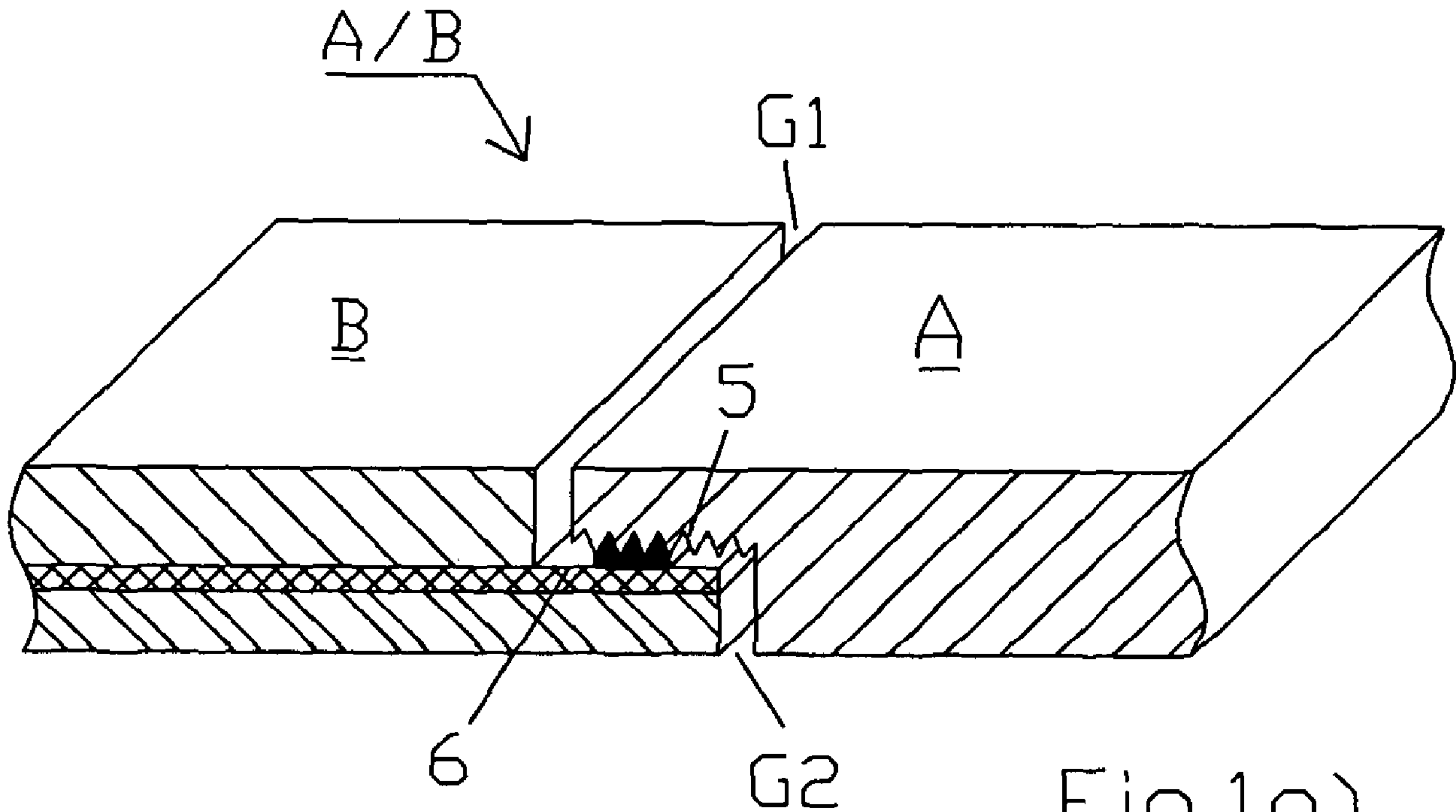


Fig.19)