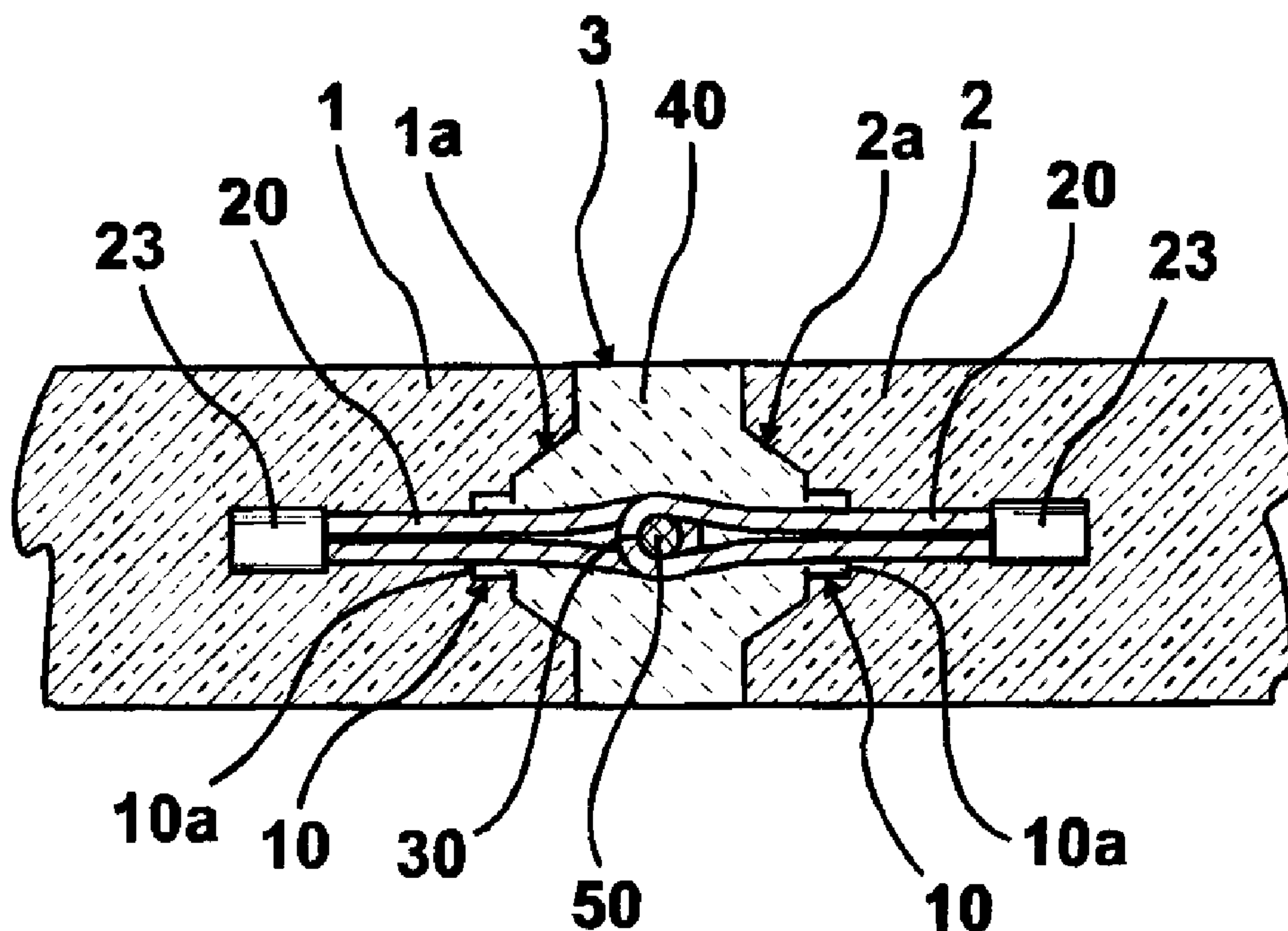




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(54) Titre : DISPOSITIF DE RACCORDEMENT DE SECTIONS DE BETON PREFABRIQUEES
 (54) Title: DEVICE FOR CONNECTING PREFABRICATED CONCRETE SECTIONS



(57) Abrégé/Abstract:

Device for joining pre-cast concrete parts, comprising a cable loop, wherein the cable sections forming the cable loop have means for keeping the cable sections in a bent-over position, characterised in that the means are plastically deformable sleeves surrounding the cable sections, wherein the material of the sleeves is such that the sleeves break under return deformation.



Abstract

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Device for joining pre-cast concrete parts, comprising a cable loop, wherein the cable sections forming the cable loop have means for keeping the cable sections in a bent-over position, characterised in that the means are plastically deformable sleeves surrounding the cable sections, wherein the
10 material of the sleeves is such that the sleeves break under return deformation.

(Fig. 1)

Device for connecting prefabricated concrete sections

The present invention relates to a device for joining pre-cast concrete parts,
5 comprising a cable loop, wherein the cable sections forming the loop
comprise means for keeping the cable sections in a bent-over position. The
subject of the invention is also a pre-cast concrete part with a device of the
aforesaid kind.

10 Devices of that kind with a cable loop for joining pre-cast concrete parts,
particularly prefabricated wall elements of concrete, are well-known from
the state of the art. Devices of that kind usually comprise a retaining part in
the form of a rail, which is of U-shaped construction and which at the end is
led into the pre-cast concrete part. It is necessary for transport and also
15 during mounting of such a pre-cast concrete part that the cable loop
substantially does not protrude beyond the end face. To that extent it has
to be achieved that the cable loop is received by the retaining part, i.e.
substantially does not protrude beyond the retaining part.

20 In this connection, various devices are known from the state of the art
which in principle do justice to this premise. Thus, for example, a receiving
box is known from EP 1 637 670 A1 which has a removable cover, wherein
the cable loop, which projects through an opening on the rear side of the
receiving box, is held under stress by a spreading spring against the
25 removable cover during transport and also during mounting. When the
cover is removed, the cable loop shoots forward not only due to the bias
through the spreading spring, but also due to the resilient characteristics of
the cable loop and goes over, for example in the case of an upright wall
element, into an approximately horizontal position. That means the cable
30 loop extends in the direction of the end face of the opposite pre-cast
concrete part.

The outlay, which is instigated in accordance with the state of the art, in order to keep the cable loop during transport and mounting in a state bent over by approximately 90° and thus parallel to the upper side of the pre-cast concrete part, is high and for that reason such devices are also very
5 expensive.

Moreover, a device is known from EP 0 914 531 B1, which similarly comprises a U-shaped retaining part which has on the rear side a passage
10 opening for the cable loop, wherein the retaining part is of approximately U-shaped construction and wherein the limbs are bent over inwardly at the end. The cable loop now projects by its loop-shaped end through the opening, which is arranged on the rear side, in the retaining part and bears from within against the bent-over portions of the limbs of the retaining part.
15 After mounting, the cable loop is pulled by the loop-shaped end out of the retaining part, wherein the cable loop snaps up.

Utility model DE 20 2007 011 243 U1 shows a similar construction insofar as there a shaped part is provided for fixing the cable loop, which shaped
20 part has a mechanically positive couple with the section, which forms the bent-over cable eye, of the cable on at least three sides and which shaped part after casting of the concrete pre-cast concrete part is withdrawable from the concrete pre-cast component and the cable eye.

In this connection the outlay for keeping the cable loop in the bent-over
25 state is relatively high, particularly because a specially constructed rail has to be produced as retaining part, wherein in addition the cable loop in the transfer to the pre-cast concrete part is kept by an insert body in the opening of the retaining part. This device is thus also comparatively
30 expensive.

Finally, a device is known from EP 0 534 475 B1 in which an insert dish part is provided as well as a cover, wherein the insert dish part receives the cover by means of a snap connection. The loop-shaped end is kept parallel to the end face of the pre-case concrete part by the insert dish part in conjunction with the cover. It is also the case here that production of such a device is complicated and costly.

A cable transport anchor having a loop at the end is known from DE 33 22 646 A1. The guiding together and bending over of central cable regions are carried out by a guiding and bending-over device which is formed by a sleeve.

The object of the invention thus consists of producing a device of the kind stated in the introduction which is particularly economic in manufacture, but nevertheless reliably fulfils the same purpose as the state of the art. In this connection reference is made to the following:

The cable loop projects, as already mentioned, by its loop-shaped end after mounting towards the end face of the opposite pre-cast concrete part. The cable loop is disposed by its other end in the pre-cast concrete part. Once the cable loop is released, i.e. has been freed from its bent-over position, it is not necessary for the cable loop to be transferred back to this starting position, but it merely has to be ensured that during transport and during mounting the cable loop remains in the bent-over position.

Taking this into consideration the device according to the invention is distinguished by the fact that the cable sections forming the loop comprise means in order to keep the cable sections in a bent-over position, wherein the means for keeping the cable loop in a bent-over position are plastically deformable sleeves which grip the cable section of the cable loop in the region thereof in which the bend of the cable loop is provided. In this

regard the material of the sleeves is such that the sleeves break on return deformation. To that extent there can be provided for the sleeve, in particular, a plastics material which surrounds the cable section in sleeve-like manner in order to then bend, by means of a suitable device, the sleeve inclusive of the cable section extending therein through the desired angle of approximately 90°. If the cable loop is then bent back, the sleeve breaks, which means that the cable loop erects by virtue of its resilient properties. From that it is clear that the cable sections forming the loop are kept in their bent-over position by means which are in direct connection with the cable loop itself or are part of the cable loop. This is in complete contrast to the state of the art, where in each instance a separate device is required in order to keep the cable loop in the bent-over position merely for transport and mounting. Since this separate device is omitted, such a cable loop can be produced substantially more economically. In particular, to that extent the possibility also now exists of directly letting, or concreting in place, the cable loop in the end face of a pre-cast concrete part, since - as already mentioned - separate devices for keeping the cable loop in a bent-over position during transport and during mounting are no longer required.

According to a further feature of the invention provision is made for the cable loop to have an insert body, wherein the insert body has at least one opening for the cable loop. The insert body is, in particular, constructed to be of U-profile shape in cross-section, wherein the web connecting the two limbs of the insert body of U-profile shape has the opening for the cable loop. The cable loop projects by its closed end through this opening, wherein this end is also cast in place in the pre-cast concrete part. The cable loop lies by its bent-over loop-shaped end in the rail of U-profile shape in cross-section.

The subject of the invention is equally a pre-cast concrete part, particularly a wall element of pre-cast concrete, which is distinguished by at least one

device of the aforesaid kind. In detail, it is provided in this connection that the insert body is inserted at the end in the pre-cast concrete part in such a manner that by the front edge it is flush with the surface. It is clear therefrom that through the insert body set back relative to the end face a
5 denticulation with the casting mortar occurs during filling of the casting gap. The connection is thereby in a position of accepting shearing forces. On the other hand, one or more reinforcing rods is or are pushed through the cable loops which overlap one another as a pair in such a manner that an eye results, whereby forces also acting in longitudinal direction of the cable
10 loops can be accepted by the cable loops.

The invention is explained in more detail in the following by way of example with reference to the drawings.

15 Figure 1 schematically shows two pre-cast concrete parts which, spaced from one another, form a joint;

Figure 2 shows a side view according to Figure 1;

20 Figure 3 shows the cable loop according to the invention with a sleeve in bent-over position;

Figure 4 shows an illustration according to Figure 3 with an insert body; and

25

Figure 5 shows an illustration according to the line V - V of Figure 4.

The two pre-cast concrete parts 1 and 2 according to Figure 1 are disposed at a spacing from one another with formation of a joint 3. The pre-cast
30 concrete parts 1 and 2 each have a trapezium-shaped recess 1a or 2a at the end face, wherein provided in the base of the trapezium-shaped recess

1a is an insert body 10 which is recognisably constructed to be of U-profile shape in cross-section. The insert body 10 is cast in place, with surface flushness, in the end face of the respective wall element 1 or 2. The web 9 of the insert body of U-profile shape has a passage opening 10b for the cable loop, which is designated overall by 20. The ends of the cable loop 5 20 are connected together by a pressed member 23, wherein this part of the cable loop is cast in place in the concrete of the pre-cast concrete part, just as is the insert body 10. The cable loop 20 overlaps the adjacent cable loop, wherein the eye 30 thereby formed receives a reinforcing rod 50. The joint 3 is then filled with casting mortar 40. 10

A side illustration of two pre-cast concrete parts connected together is evident from Figure 2.

15 The cable loop 20 in the bent-over state of the loop-shaped end is illustrated from Figure 3. In this connection the two cable sections 21 and 22, which in the region of the bent-over portion (arrow 25) each receive a sleeve 26, are apparent. The sleeve is made of, for example, plastics material and is configured in such a manner that it breaks when the cable 20 loop 20 is bent up in the direction of the arrow 28.

The insert body 10 with a cable loop 20 in bent-over state is depicted in the illustration according to Figure 4. The insert body 10, which is constructed to be of U-profile shape, has an opening 10b on its rear side (Figure 5).

Claims

1. A device for joining pre-cast concrete sections, the device comprising:
 - a cable loop having cable sections forming bent portions of the cable loop; and
 - a sleeve surrounding at least one of the bent portions of the cable loop and maintaining the at least one bent portion in a bent-over position at an angle of 90° at least for a period after pre-casting in a precast concrete section and during transportation and storage of the concrete section by the sleeve,wherein the sleeve comprises a material which is plastically deformable before bending the cable sections and sleeve, but which breaks under return deformation of the cable sections and sleeve.
2. The device as claimed in claim 1, further comprising an insert body insertable into a recess of the pre-cast concrete section, wherein the insert body has at least one opening for the cable loop.
3. The device as claimed in claim 2, wherein the insert body has a U-shaped profile and a portion of the cable loop which will extend from the pre-cast concrete section lies in a channel of the U-shaped profile in the bent-over position.
4. The device as claimed in claim 1, wherein the sleeve comprises a strap having at each end two protruding wings for engaging around portions of a cable section of the cable loop.
5. The device as claimed in claim 4, wherein the strap has a form of a strip curved parallel to a longitudinal axis of the strap and has a notch in a region of the bent-over cable loop.
6. The device as claimed in claim 5, wherein the notch extends over a substantial part of a width of the strap, and wherein end halves of the strap are connected on either side of the notch by a web.

7. The device as claimed in claim 5, wherein the notch is formed in the strap in the bent state of the strap.
8. The device as claimed in claim 1, wherein the sleeve comprises a metal.
9. A pre-cast concrete section comprising a device as claimed in claim 2, wherein the cable loop has a loop-shaped end, which for joining to another pre-cast concrete section projects towards an opposite edge face of the other pre-cast concrete section, and a pressed end embedded in an edge portion of the pre-cast concrete section.
10. The pre-cast concrete section as claimed in claim 9, wherein the insert body has a U-shaped profile and is inserted into a recess of the pre-cast concrete section such that an open front edge of the U-shaped profile is flush with a surface of an edge face of the pre-cast concrete section.
11. The pre-cast concrete section as claimed in claim 9, wherein the concrete section is a wall element.
12. A device for joining pre-cast concrete sections, the device comprising:
 - a cable loop having a first cable section which forms a first bent portion of the cable loop and a second cable section which forms a second bent portion of the cable loop;
 - a first sleeve surrounding the first bent portion of the cable loop, the first sleeve having a bent portion and retaining the first bent portion of the cable loop in a bent-over position at an angle of 90° at least for a period of time; and
 - a second sleeve surrounding the second bent portion of the cable loop, the second sleeve having a bent portion and retaining the second bent portion of the cable loop in a bent-over position at an angle of 90° at least for a period of time;wherein the first and second sleeves comprise a plastically deformable material, such that the first and second sleeves deform with the first and second cable sections

for formation of the first and second bent portions and break upon return deformation of the first and second cable sections.

13. A device for joining pre-cast concrete sections, the device comprising:

a cable loop having cable sections forming bent portions of the cable loop; and

a sleeve surrounding and forming a closed perimeter around at least one of the bent portions of the cable loop and maintaining the at least one bent portion in a bent-over position at an angle of 90° at least for a period after pre-casting in a precast concrete section and during transportation and storage of the concrete section by the sleeve,

wherein the sleeve comprises a material which is plastically deformable before bending the cable sections and sleeve, but which breaks under return deformation of the cable sections and sleeve.

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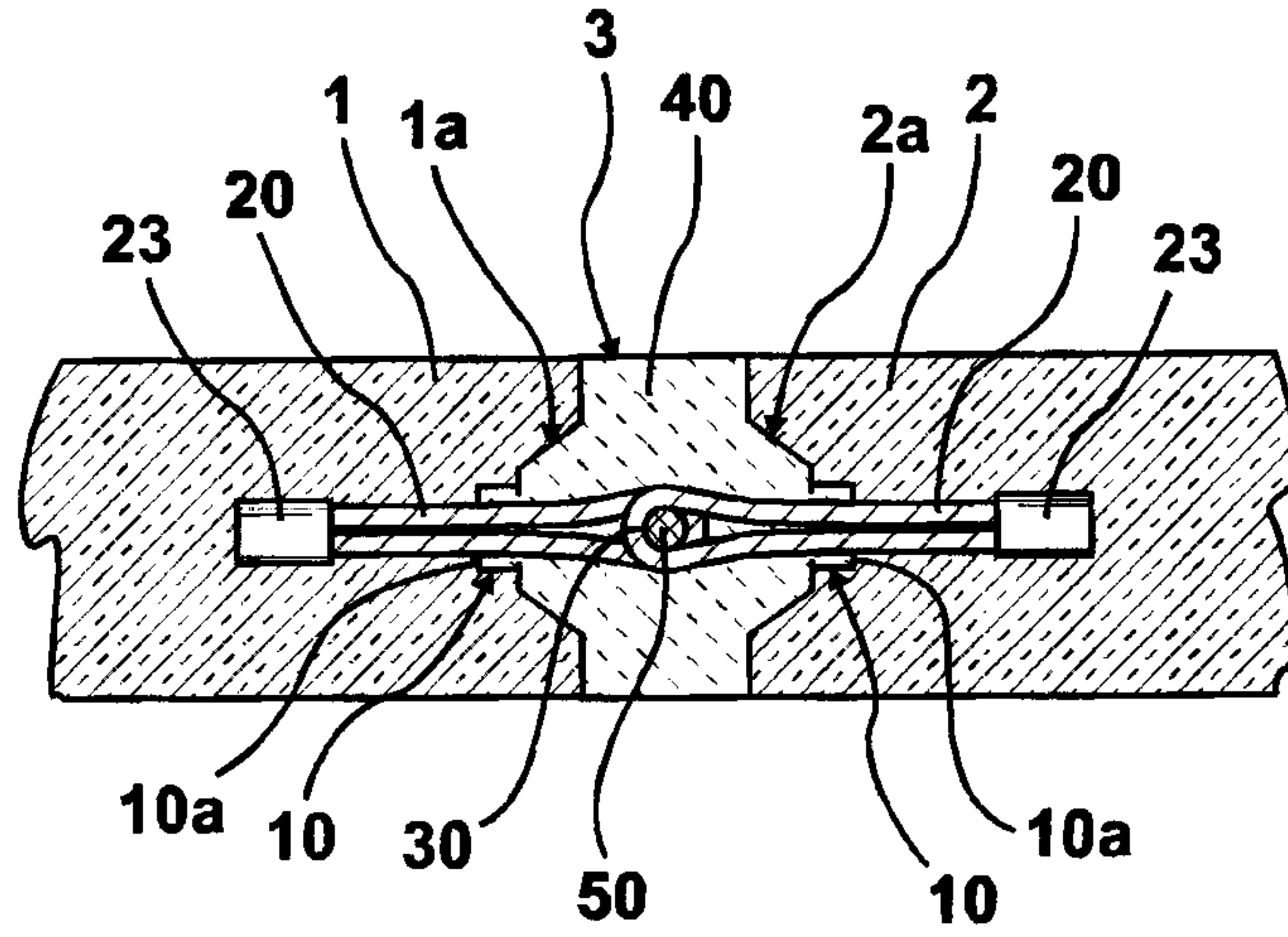


Fig. 1

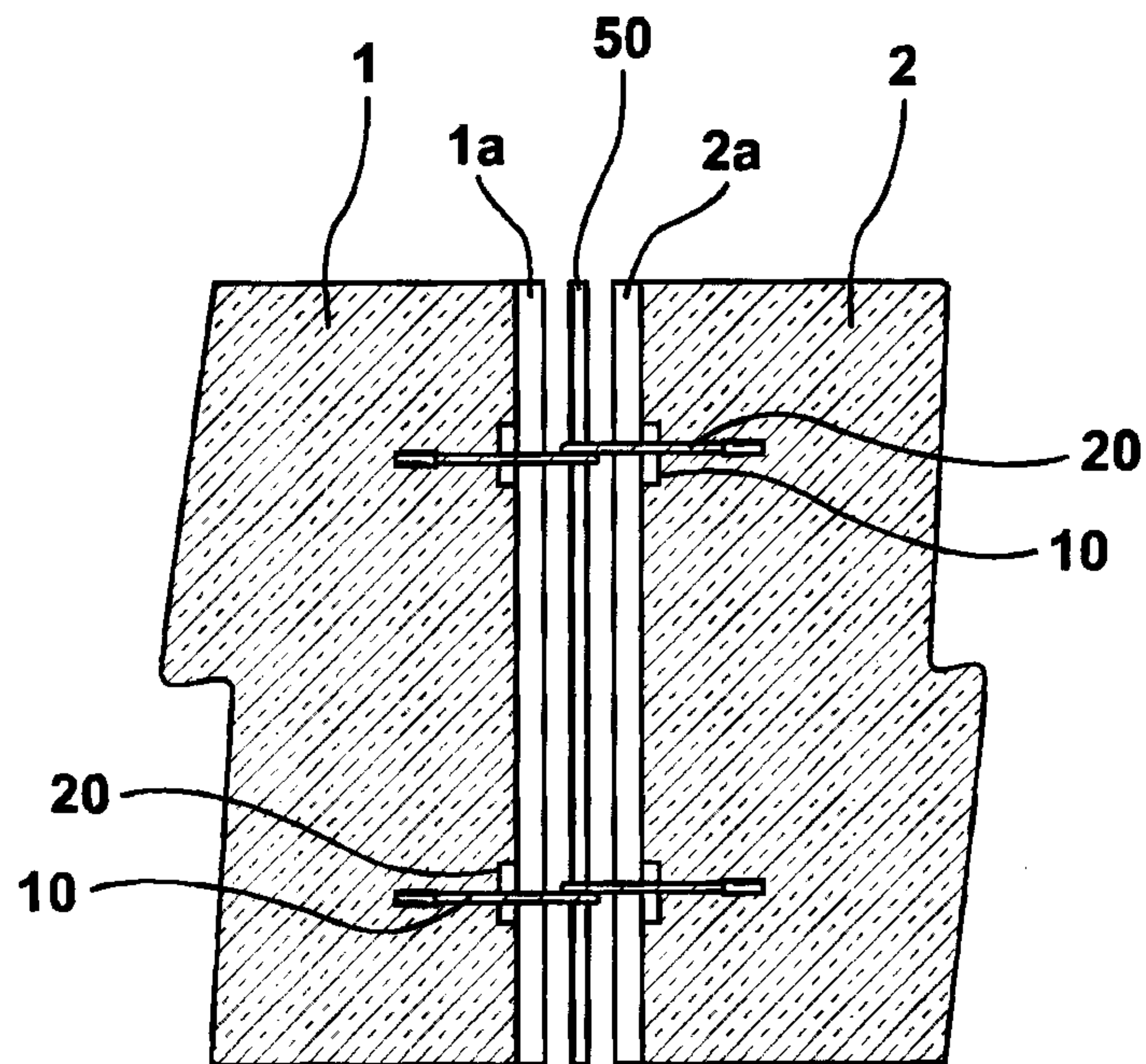


Fig. 2

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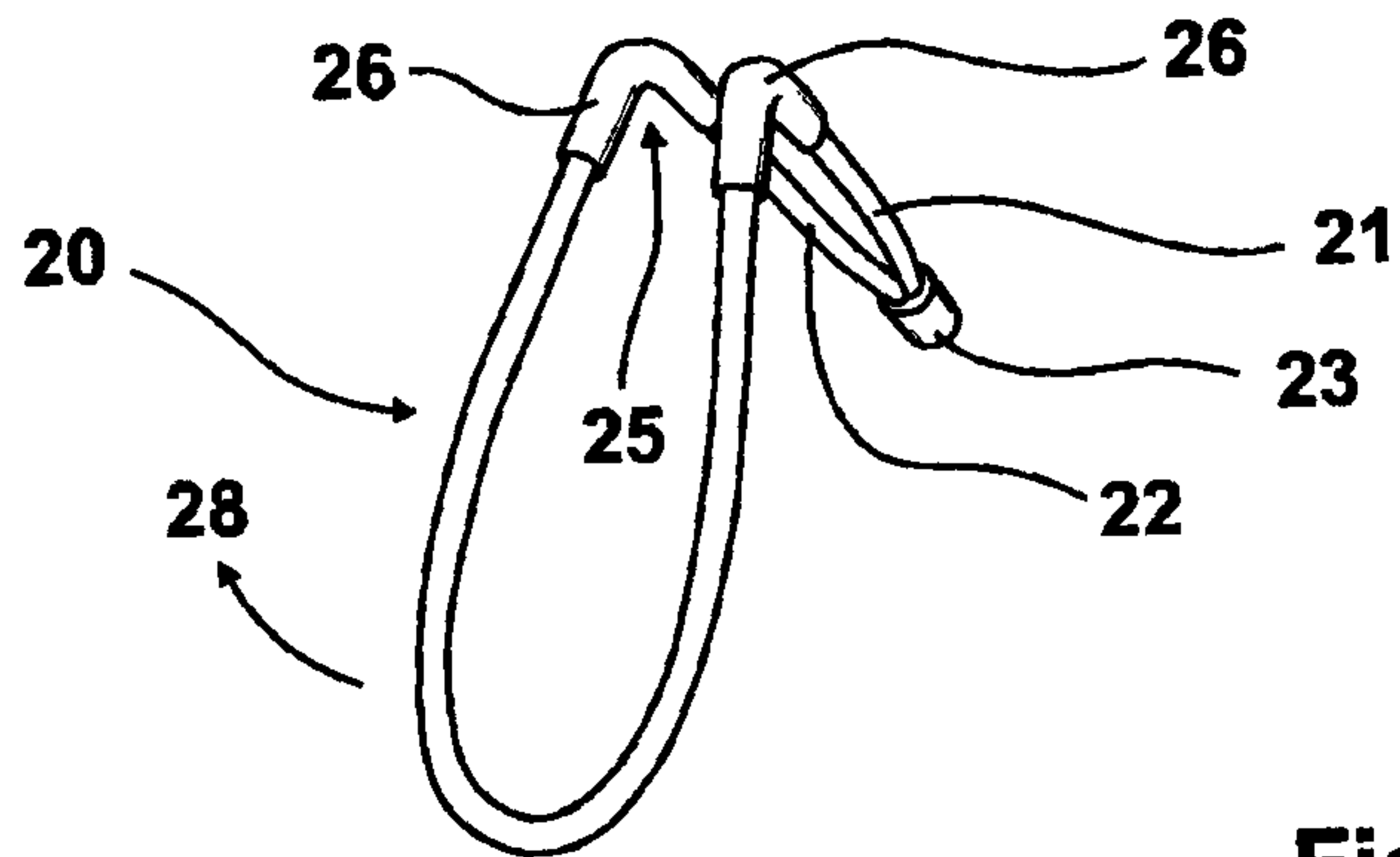


Fig. 3

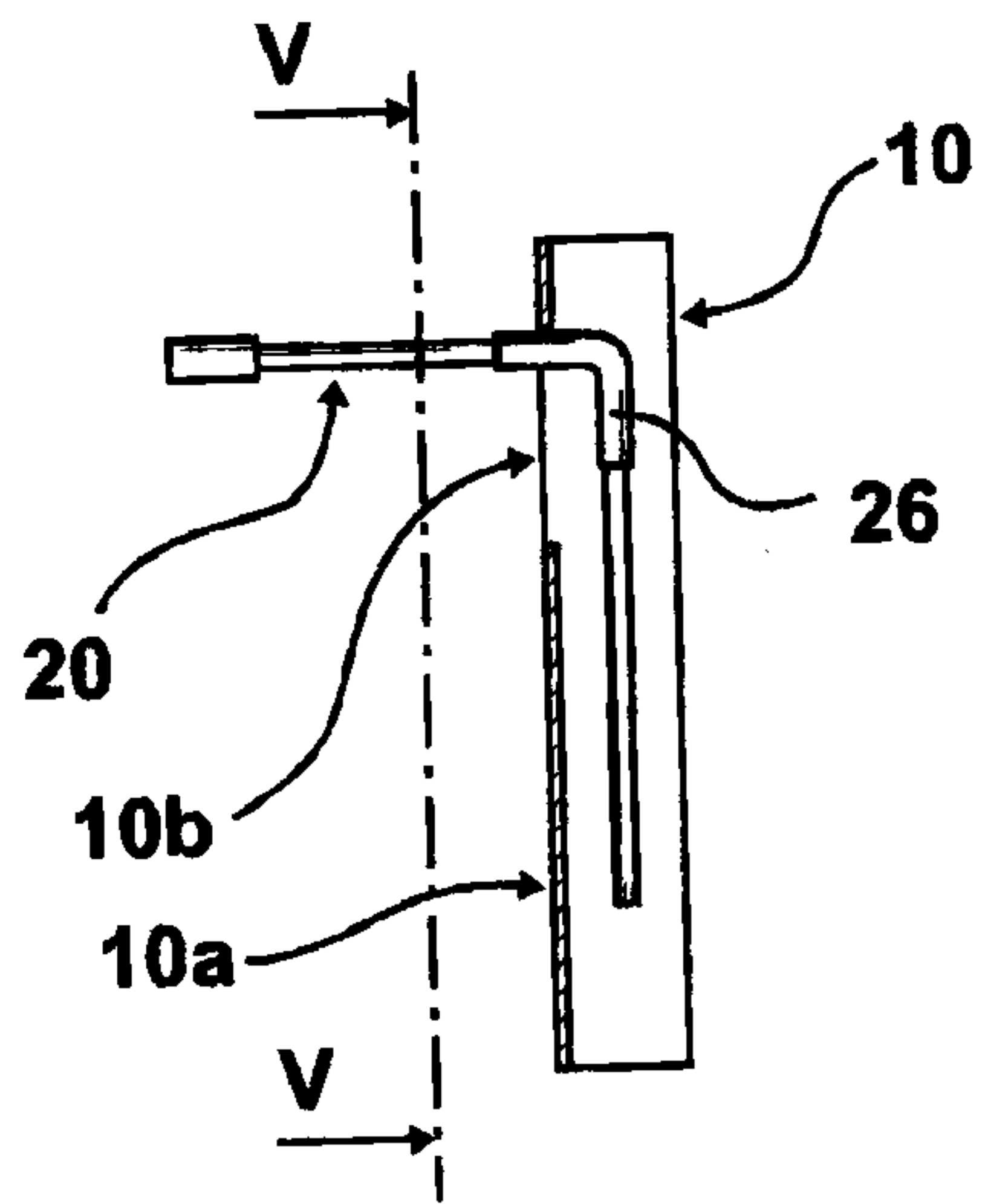


Fig. 4

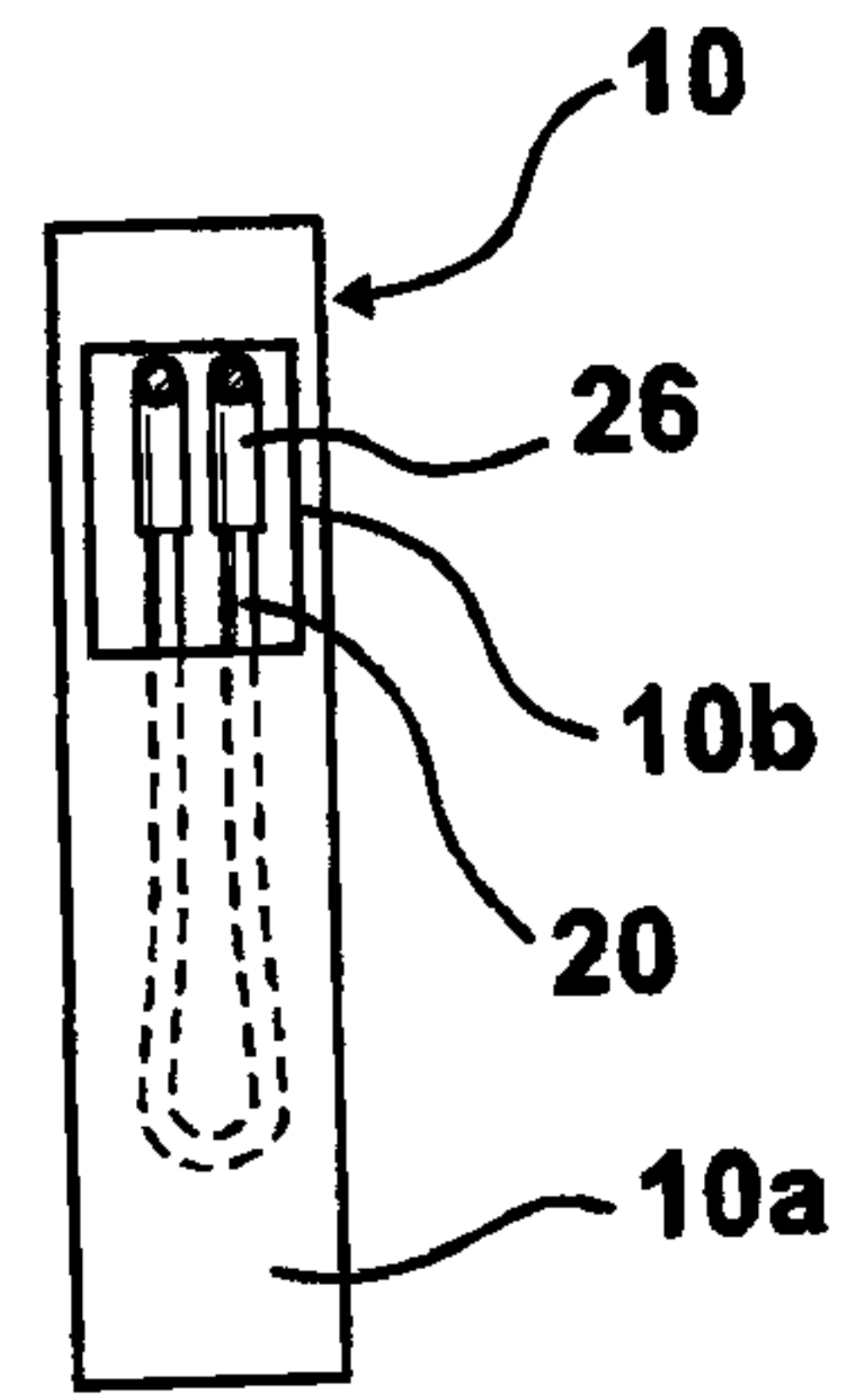


Fig. 5

