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(54) **Improved light fitting**

(57) Improved light fitting (1) consisting of a lamp holder (3), a support (4) and an adjusting mechanism (5), which makes it possible to position the lamp holder (3) in relation to the support (4), whereby the adjusting mechanism (5) comprises at least a hinged joint (6) provided between the lamp holder (3) and the support (4), characterised in that the adjusting mechanism (5) also com-

prises a first support (7) and a second support (8), whereby the first support (7) is provided in a rotating manner on the support (4) and the second support (8) is provided in a rotating manner on the first support (7), and whereby the hinged joint (6) comprises at least two hinged arms (24,25) which are fixed with one far end to the second support (8) by means of hinges (26-29), and with the other far end to the lamp holder (3).

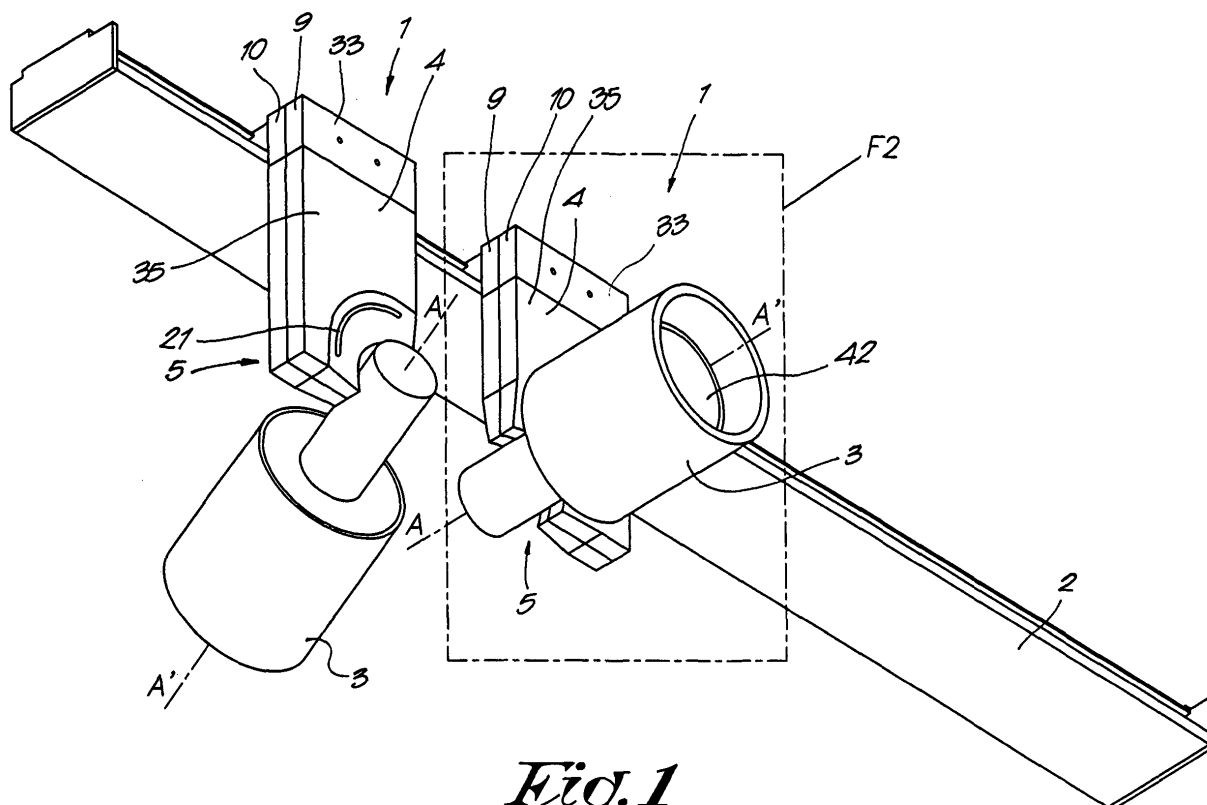


Fig. 1

Description

[0001] The present invention concerns an improved light fitting.

[0002] Without limiting the invention hereto, however, the present invention in particular concerns a light fitting consisting of a lamp holder, for example for a spotlight, a support with which the light can be fixed to a supporting structure, such as for example a feeder rail or the like, and an adjusting mechanism which makes it possible to position the lamp holder in relation to the support, whereby the adjusting mechanism comprises at least a hinged joint provided between the lamp holder and the support.

[0003] Such light fittings are already known, for example in the shape of one or several spotlights provided on a ceiling, which can either or not shift on a feeder rail, whereby an adjusting mechanism is provided between the lamp holder and the support, for example in the shape of a hinge that can be fixed by means of a screw, such that the lamp holder can be aligned in the required direction.

[0004] A disadvantage of these known light fittings, however, is that with the adjusting mechanism, the lamp holder as well as the support turns.

[0005] Further, the setting of the adjusting mechanism in the required direction is not so sensitive, and it is difficult to keep the lamp holder in the desired position, as a result of which it is difficult to illuminate objects at a relatively large distance with accuracy.

[0006] Further, in the case of the known light fittings, when several of such lights are fixed to a rail and are all aligned in another direction, the result will look rather chaotic and non-aesthetical from an architectural point of view.

[0007] Also, the present invention aims to remedy one or several of the above-mentioned and other disadvantages.

[0008] To this end, the present invention concerns an improved light fitting of the above-mentioned type, whereby the adjusting mechanism also comprises a first and a second support, whereby the first support is provided in a rotating manner on the support and the second support is provided in a rotating manner on the first support and whereby the hinged joint comprises at least two hinged arms fixed with one far end to the second support by means of hinges and with the other far end to the lamp holder.

[0009] An advantage of such an improved light fitting according to the invention is that it becomes possible to align the lamp holder in strongly divergent directions, at least in all the radial directions of a semi-sphere round the lamp holder.

[0010] According to a preferred embodiment, an improved light fitting according to the invention has a support provided with an electrical junction box and a sliding contact with which the support can be shifted over a feeder rail, and the above-mentioned junction box and the remaining part of the support can rotate in relation to

each other according to an axis that is perpendicular to the feeder rail.

[0011] An advantage of this embodiment of a light fitting is that it further increases the flexibility with which the lamp holder can be aligned.

[0012] This embodiment in particular makes it possible to align the lamp holder at least in any radial direction of a semi-sphere round the lamp holder.

[0013] This means that, when the light is fixed to the ceiling for example, the lamp holder can be aligned in any possible direction.

[0014] An additional advantage of this embodiment of an improved light fitting according to the invention is that the lamp holder can be aligned in any direction whatsoever without the supports being placed criss-cross in relation to the feeder rail, which looks less chaotic, which is important in interiors having a predominantly modern design.

[0015] In order to better explain the characteristics of the invention, the following preferred embodiment of an improved light fitting according to the invention is given as an example only without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 represents some improved light fittings according to the invention that have been provided on a feeder rail and that are positioned in any random position;

figure 2 represents the part from figure 1 that is indicated by F2, whereby a first possible rotation of the lamp holder in relation to the support is illustrated;

figures 3 to 5, analogous to figure 2, but for another position, illustrate other possible rotations of the lamp holder;

figures 6 and 7 are sections according to lines VI-VI and VII-VII respectively from figure 2; and,

figures 8 to 11 schematically represent the different parts of a space that can be illuminated by the light, depending on the position in which the lamp holder is placed.

[0016] The improved light fittings 1 according to the invention represented in figures 1 to 7 are mounted on a feeder rail 2 and consist of a lamp holder 3, a support 4 and an adjusting mechanism 5 which makes it possible to position the lamp holder 3 in relation to the support 4 and the feeder rail 2.

[0017] As is known, such an adjusting mechanism 5 in light fittings often comprises a hinged joint 6 provided between the lamp holder 3 and the support 4.

[0018] According to the invention, the adjusting mechanism 5 also comprises a first support 7 and a second support 8, whereby the first support 7 is provided in a rotating manner on the support 4 and the second support

8 is provided in a rotating manner on the first support 7.

[0019] In the given example, the support 4 is made mainly beam-shaped and hollow, and said support 4 consists of two halves 9 and 10, whereby the above-mentioned first support 7 can be shifted between the two halves 9 and 10.

[0020] The support 4 is further provided with at least one circular slot 11 and 12 in which the first support 7 can be shifted.

[0021] As a result, the first support 7 can be rotated in relation to the centre C of the circular slots 11 and 12.

[0022] In the given embodiment, the first support 7 is a plate-shaped element 7 which is provided with three shafts 13, 14 and 15.

[0023] On these shafts 13 to 15 are provided pairs of wheels 16 to 18 on either side of the first support 7 which fit exactly in concentric, circular slots 11 and 12 provided in each of the halves 9 and 10 of the support 4.

[0024] The pairs of wheels 16 and 17 are smooth and only serve as a guide for the first support in the slot 12.

[0025] The wheels 18 are made as a gear wheel 18, whereby these gear wheels 18 co-operate with teeth 19 provided on the edge of the slots 12.

[0026] These gear wheels 18 make sure that the first support 7 can be positioned in a fixed manner in the slots 11 and 12.

[0027] The shaft 15 of the gear wheels 18 is provided with recessed holes 20 to put in a hexagonal key, such that the gear wheels 18 can be turned.

[0028] As these recessed holes 20 must be accessible from the outside of the support 4, circular openings 21 are provided in each half 9 and 10 of the support 4 which are aligned with the shaft 15 of the gear wheels 18.

[0029] The first support 7 is further provided with a radial shaft 22 aligned in a radial direction RR' to the centre C of the circular slots 11 and 12, whereby the second support 8 is provided in a rotating manner round this radial shaft 22.

[0030] Naturally, the three pairs of wheels 16 to 18 make sure that the radial shaft 22 is always directed to the centre C, but other embodiments are not excluded.

[0031] The second support 8 is provided with locking means 23 with which the second support 8 can be positioned in a fixed manner in relation to the first support 7.

[0032] In the given example, the above-mentioned locking means 23 of the second support 8 are formed of a screw or bolt 23 which can be screwed through a threaded hole in the second support 8 up to the radial shaft 22 on the first support 7.

[0033] The second support 8 is fixed to the lamp holder 3 by means of a hinged joint 6.

[0034] This hinged joint 6 comprises two hinged arms 24 and 25 which are fixed with one far end to the second support by means of hinges 26 to 29 and with the other far end to the lamp holder 3.

[0035] The hinged arm 29 is bent somewhat to conceal the hinged joint 6 as much as possible.

[0036] The hinged joint 6 also comprises a third hinged

arm 30 provided between the lamp holder 3 and the second support 8 and which is provided with locking means 31 with which the lamp holder 3 can be positioned in a fixed manner in relation to the second support 8.

[0037] This third hinged arm 30 is connected to the second support 8 with one far end by means of the hinge 26.

[0038] Further, the locking means 31 are formed of a screw or bolt 31 provided in a groove 32 in the third hinged arm 30 and which can be fixed in a threaded hole in the lamp holder 3, but of course many alternative embodiments are possible for that as well.

[0039] The shafts of the hinges 25 to 28 of the hinged joint 6 are aligned in a direction DD' which is mainly perpendicular to the above-mentioned radial shaft 22 of the first support 7 and perpendicular to the axial direction AA' of the lamp holder 3, such that the lamp holder 3 can rotate in relation to the second support 8 in a plane which comprises the radial shaft 22 and the axial axis AA' of the lamp holder 3.

[0040] The support 4 is further provided with an electrical junction box 33 with a horizontal adapter with a sliding contact 34 with which the support 4 can be shifted over a feeder rail 2.

[0041] According to a preferred embodiment of an improved light fitting in correspondence with the invention, the junction box 33 and the remaining part 35 of the support 4 can rotate in relation to each other according to an axis BB' which is perpendicular to the feeder rail 2.

[0042] That is why, in the given example, the connection between the junction box 33 and the remaining part 35 of the support 4 is realised by means of a bush 36 round which the remaining part 35 can be turned, whereby washers 37 and a bolt 38 and nut 39 provide for the actual connection.

[0043] Moreover, the junction box 33 is perpendicular to the remaining part 35 of the support 4.

[0044] Naturally, the electric power supply is transmitted from the feeder rail to the junction box via the sliding contacts and further via electric wires 40 and 41 to a choke or lamp 42 in the lamp holder 3.

[0045] The bolt 38 is made hollow to provide for a passage for the electric wires 40 and 41 from the junction box 33 into the remaining part 35 of the support 4.

[0046] For that same reason, the first support 7 is provided with recesses 43 to put in the electric wires 40 and 41, and the radial shaft 22 is also made hollow, such that the electric wires 40 and 41 can be fed from the remaining part 35 of the support 4 into the lamp holder 3.

[0047] The use of an improved light fitting 1 according to the invention is simple and will be illustrated hereafter by means of figures 2 to 5 and 8 to 11.

[0048] As is indicated in figure 2, it is possible to rotate the lamp holder 3 in relation to the support from a position that is perpendicular to the support 4 into a position that is parallel to the support 4.

[0049] This is a more or less rotational movement, as indicated by means of a dashed line with the letter U in

figure 2, around the above-mentioned axis DD' of the hinges 26 to 29 of the hinged joint 6.

[0050] The hollow space between the two halves 9 and 10 of the support 4 define a technical space in which an electric element 44 represented by means of a dashed line in figure 6, such as a transformer, a dimmer or the like, can be provided and whose heat can be easily discharged to the outside.

[0051] To that end, the locking means 31 of the third hinged arm 30, which lock the lamp holder 3 in relation to the support 4, must be disconnected, after which the lamp holder 3 can be tilted at the required angle.

[0052] In other words, the angle at which the lamp holder 3 can turn in relation to the second support 8 amounts to at least 90°.

[0053] As is illustrated by means of figure 3, another rotation of the lamp holder 3 in relation to the support 4 is possible, in particular a rotation V round an axis EE' perpendicular to the support 4 and through the centre C of the circular slots 11 and 12 in the support 4.

[0054] This rotation V can be obtained by providing a hexagonal key through the openings 21 in the support 4 in a recessed hole 20 of the shaft 15 of the gear wheels 18 and by rotating the gear wheels 18 with the hexagonal key such that, thanks to the co-operation of the gear wheels 18 with the teeth 19, the first support 7 is rotated in the support.

[0055] It is clear that, in the given example, the angle at which the first support can be turned in relation to the support 4 also amounts to 90°.

[0056] Thanks to a combination of the rotation U of the lamp holder 3 in relation to the second support 8, as is illustrated in figure 2, and a rotation V of the first support 7 in relation to the support 4, as is illustrated in figure 3, the lamp holder 3 can be aligned in any possible radial direction of an imaginary 1/8 sphere round the lamp holder 3 with the centre C.

[0057] This is schematically illustrated in figure 8.

[0058] As is represented in figure 4, it is further possible to rotate the lamp holder 3 round the radial shaft 22 which is situated in a radial direction RR' in relation to the circular slots 11 and 12 in the support 4, whereby the second support 8 undergoes a rotation W in relation to the first support 7.

[0059] The angle at which the second support 8 can turn in relation to the first support 7 amounts to at least 180°.

[0060] For example, the lamp holder 3 can be turned in this manner from the position represented in figure 2 into the position represented in figure 4, such that the lamp holder 3 can be aligned in any direction whatsoever of the imaginary 1/8 sphere round the lamp holder 3 with centre C this time, which is represented in figure 9.

[0061] It is clear that, by combining the rotation W with the rotations U and V, the lamp holder 3 can be aligned in any possible radial direction of the imaginary quarter sphere round the lamp holder 3 with centre C, schematically represented in figures 8 and 9.

[0062] In order to be able to illuminate the areas represented in figures 10 and 11, another last rotational movement X has to be made provided by the adjusting mechanism 5 of the improved fitting 1.

[0063] This rotation X consists in rotating the remaining part 35 of the support 4 in relation to the junction box 33 according to the axis BB' that is perpendicular to the feeder rail 2.

[0064] The maximum angle at which the remaining part 35 of the support 4 can turn in relation to the junction box 33 amounts to at least 180°.

[0065] In this way, it is possible for example to turn the lamp holder 3 as of the position represented in figure 4 into the position represented in figure 5.

[0066] It is clear that, by combining all the above-mentioned rotations U, V, W and X, the lamp holder can be aligned in any possible radial direction of an imaginary semi-sphere with centre C, which is one of the major advantages of the improved light fitting 1.

[0067] Further, the lamp holder can be aligned in any possible direction without the support 4 having to be necessarily placed in a slanting position in relation to the feeder rail 2.

[0068] As a result, the light fittings 1 will look more or less the same in any random position from an aesthetical point of view.

[0069] As the junction box 33 is at right angles to the remaining part 35 of the support 4, the feeder rail itself is hidden from view, which also promotes the aesthetical aspect of the light.

[0070] By realising the first support 7 with gear wheels 18 that can be adjusted by means of a hexagonal key, the lamp holder 3 can be aligned in a very precise manner, which is very practical when objects at a large distance from the lamp 42 must be illuminated.

[0071] It is clear that many alternative embodiments are conceivable for an improved light fitting 1 according to the invention.

[0072] Thus, it is not excluded, for example, to make the first support 7 in one piece which can slide in a slot in the support 4.

[0073] Also many other forms can be conceived for the connection between the junction box 33 and the remaining part 35 of the support 4, for example in the shape of a bush with projections which keeps the respective parts of the support 4 together.

[0074] The support 4 does not necessarily have to be beam-shaped either.

[0075] Moreover, one can make sure that the different parts of the adjusting mechanism 5 can be turned over larger or smaller angles in relation to each other.

[0076] The present invention is by no means restricted to the embodiment described as an example and represented in the accompanying drawings; on the contrary, such an improved light fitting according to the invention can be made in different shapes and dimensions while still remaining within the scope of the invention.

Claims

1. Improved light fitting (1) consisting of a lamp holder (3), a support (4) and an adjusting mechanism (5), which makes it possible to position the lamp holder (3) in relation to the support (4), whereby the adjusting mechanism (5) comprises at least a hinged joint (6) provided between the lamp holder (3) and the support (4), **characterised in that** the adjusting mechanism (5) also comprises a first support (7) and a second support (8), whereby the first support (7) is provided in a rotating manner on the support (4) and the second support (8) is provided in a rotating manner on the first support (7), and whereby the hinged joint (6) comprises at least two hinged arms (24,25) which are fixed with one far end to the second support (8) by means of hinges (26-29), and with the other far end to the lamp holder (3).
2. Improved light fitting according to claim 1, **characterised in that** the first support (7) is provided in a rotating manner on the support (4) as the support (4) is provided with at least one circular slot (11,12) in which the first support (7) can be shifted, such that the first support (7) can undergo a rotation (V) in relation to the centre (C) of the circular slot (11,12).
3. Improved light fitting according to claim 2, **characterised in that** the first support (7) is provided with a radial shaft (22) aligned in the radial direction (RR') towards the centre (C) of the above-mentioned circular slot (11,12), whereby the second support (8) can rotate round this radial shaft (22).
4. Improved light fitting according to claim 3, **characterised in that** the second support (8) is provided with locking means (31) with which the second support (8) can be positioned in a fixed manner in relation to the first support (7).
5. Improved light fitting according to claim 3, **characterised in that** the axes of the hinges (26-29) of the hinged joint (6) follow a direction (DD') that is mainly perpendicular to the above-mentioned radial shaft (22) of the first support (7) and perpendicular to the axial direction (AA') of the lamp holder (3), such that the lamp holder (3) can rotate in relation to the second support (8) in a plane comprising the radial axis (RR') on the first support (7) and the axial axis (AA') of the lamp holder (3).
6. Improved light fitting according to any one of the preceding claims, **characterised in that** the hinged joint (6) comprises a third hinged arm (30) provided between the lamp holder (3) and the second support (8) and which is provided with locking means (31) with which the lamp holder (3) can be positioned in a fixed manner in relation to the second support (8).
7. Improved light fitting according to claim 6, **characterised in that** the third hinged arm (30) is connected at one far end to the second support (8) by means of a hinge (26), and **in that** the locking means (31) are formed of a screw or bolt (31) provided through a groove (32) in the third hinged arm (30) and which can be fixed in a threaded hole in the lamp holder (3).
8. Improved light fitting according to any one of the preceding claims, **characterised in that** the support (4) is mainly beam-shaped and hollow and consists of two halves (9,10) whereby the above-mentioned first support (7) is provided in a shifting manner between the two halves (9,10).
9. Improved light fitting according to claim 8, **characterised in that** the first support (7) is provided with at least three shafts (13-15) which fit in two concentric, circular slots provided in the halves of the support.
10. Improved light fitting according to claim 9, **characterised in that** one of the above-mentioned shafts (15) is provided with at least one gear wheel (18) that works in conjunction with teeth (19) in one of the above-mentioned slots (12).
11. Improved light fitting according to claim 10, **characterised in that** in the shaft (15) of the gear wheel (18) is provided a recessed hole (20) which is accessible from the outside of the support (4) to put in a hexagonal key, such that the gear wheels (18) can be turned.
12. Improved light fitting according to any one of the preceding claims, **characterised in that** the support (4) is provided with an electrical junction box (33) with a horizontal adapter with sliding contact (34), with which the support (4) can be shifted over a feeder rail (2).
13. Improved light fitting according to claim 10, **characterised in that** the junction box (33) and the remaining part of the support (35) can rotate in relation to each other according to an axis (BB') that is perpendicular to the feeder rail (2).
14. Improved light fitting according to claim 10 or 11, **characterised in that** the junction box (33) is at right angles to the remaining part (35) of the support (4).
15. Improved light fitting according to any one of the preceding claims, **characterised in that** the angle at which the first support (7) can rotate in relation to the support (4) amounts to 90°.
16. Improved light fitting according to any one of the preceding claims, **characterised in that** the angle at

which the second support (8) can rotate in relation to the first support (7) amounts to 180°.

17. Improved light fitting according to any one of the preceding claims, **characterised in that** the angle at which the lamp holder (3) can rotate in relation to the second support (8) amounts to 90°.
18. Improved light fitting according to claim 13, **characterised in that** the angle at which the remaining part (35) of the support (4) can rotate in relation to the junction box (33) amounts to 180°.

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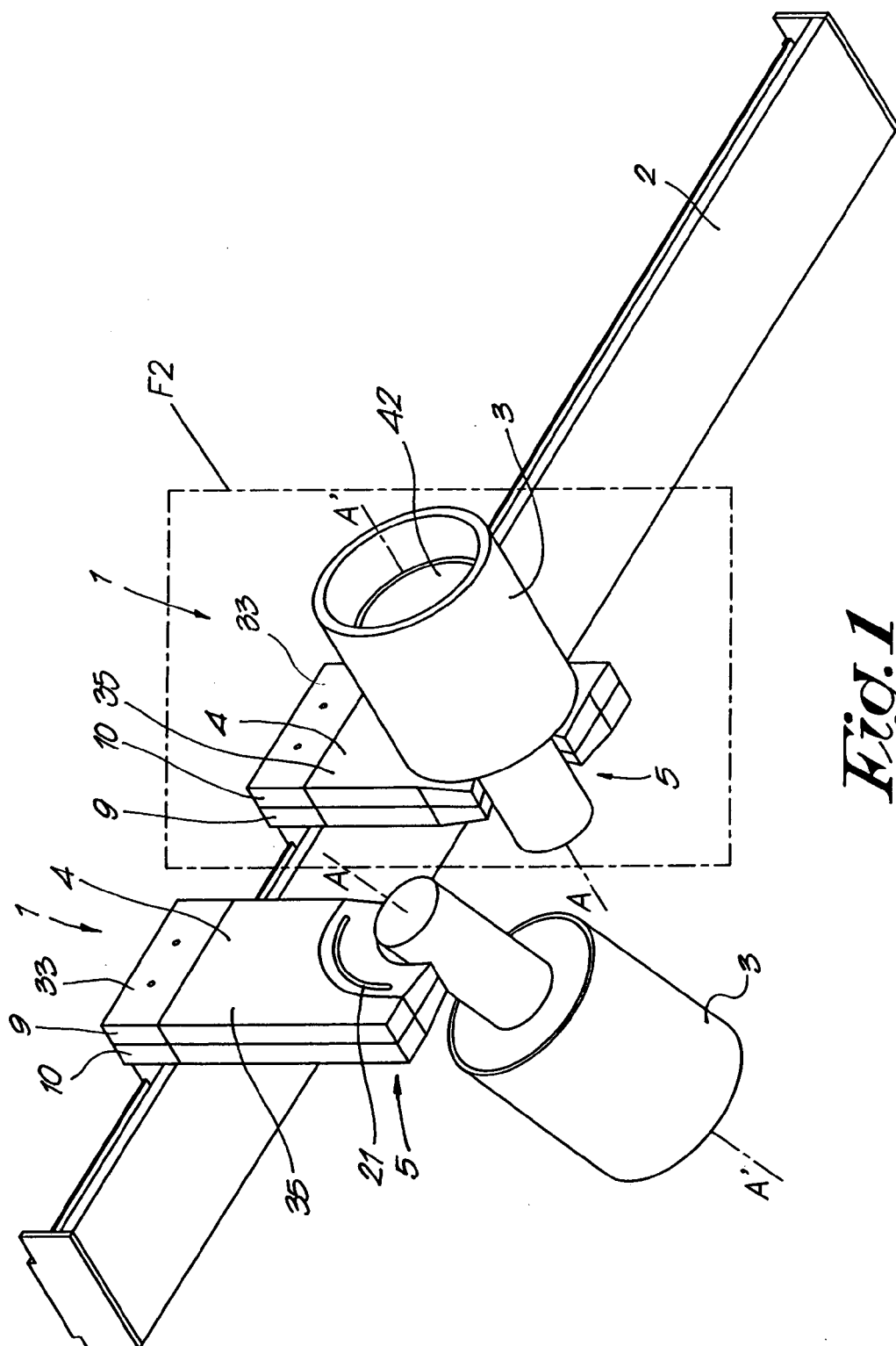


Fig. 1

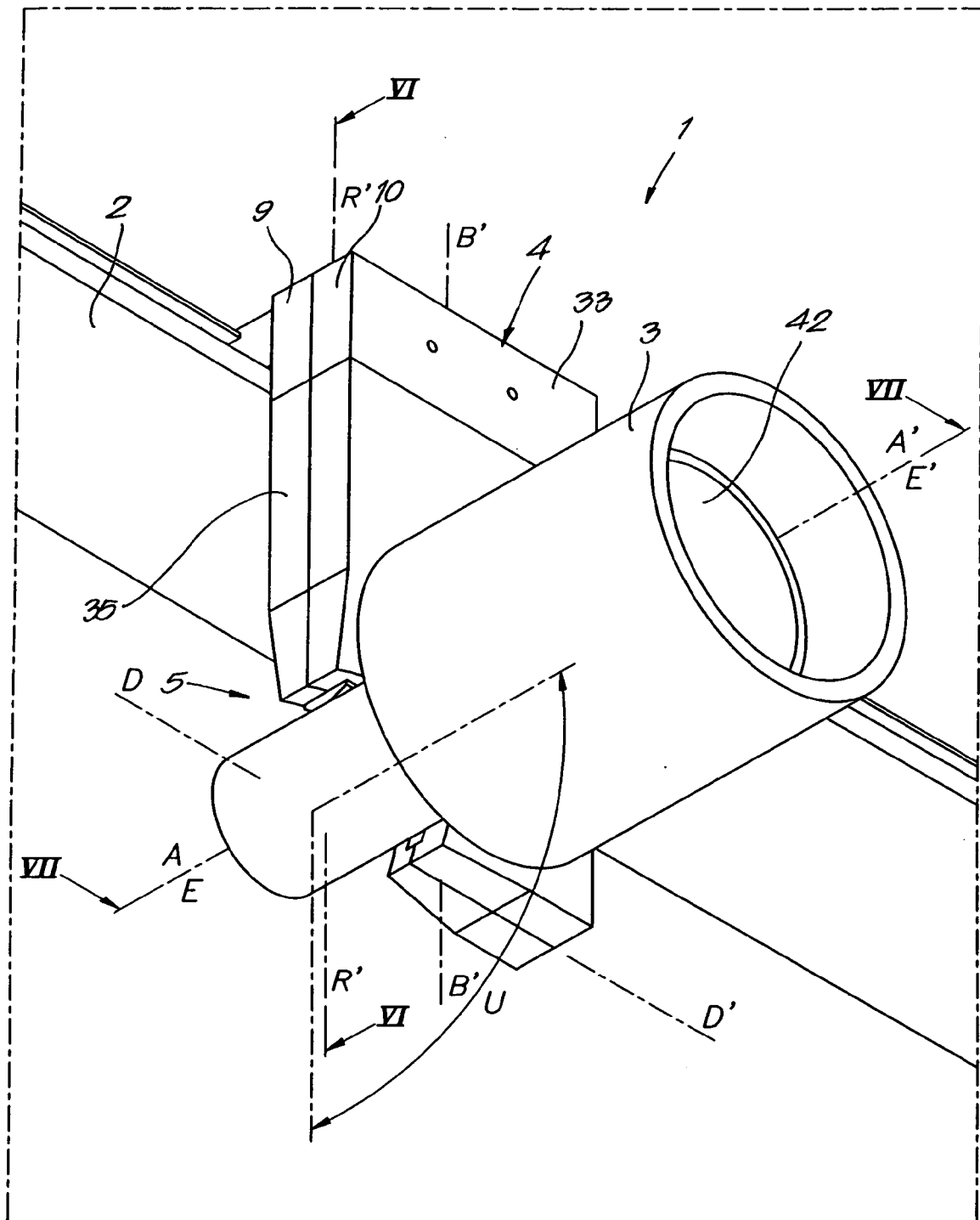


Fig. 2

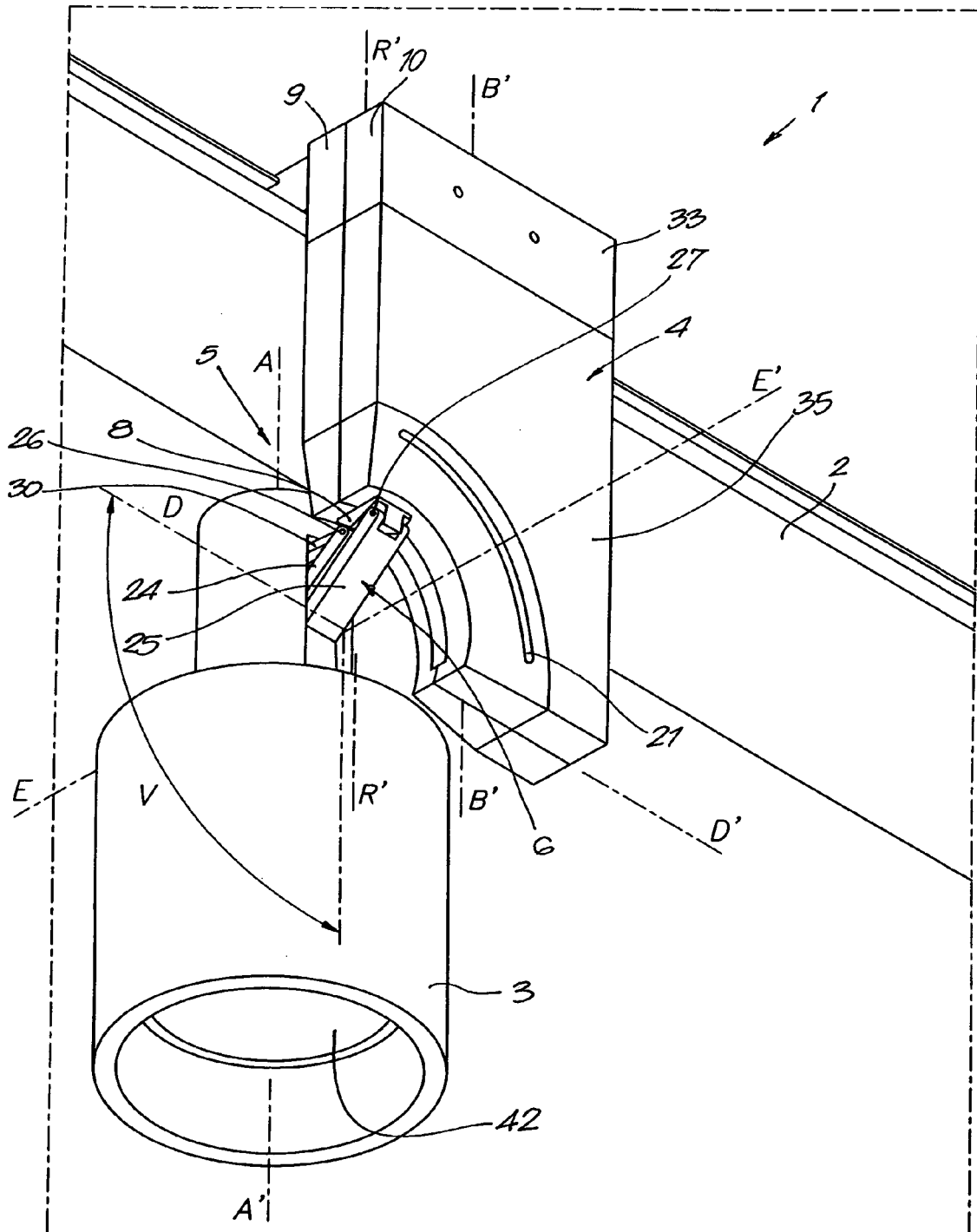


Fig.3

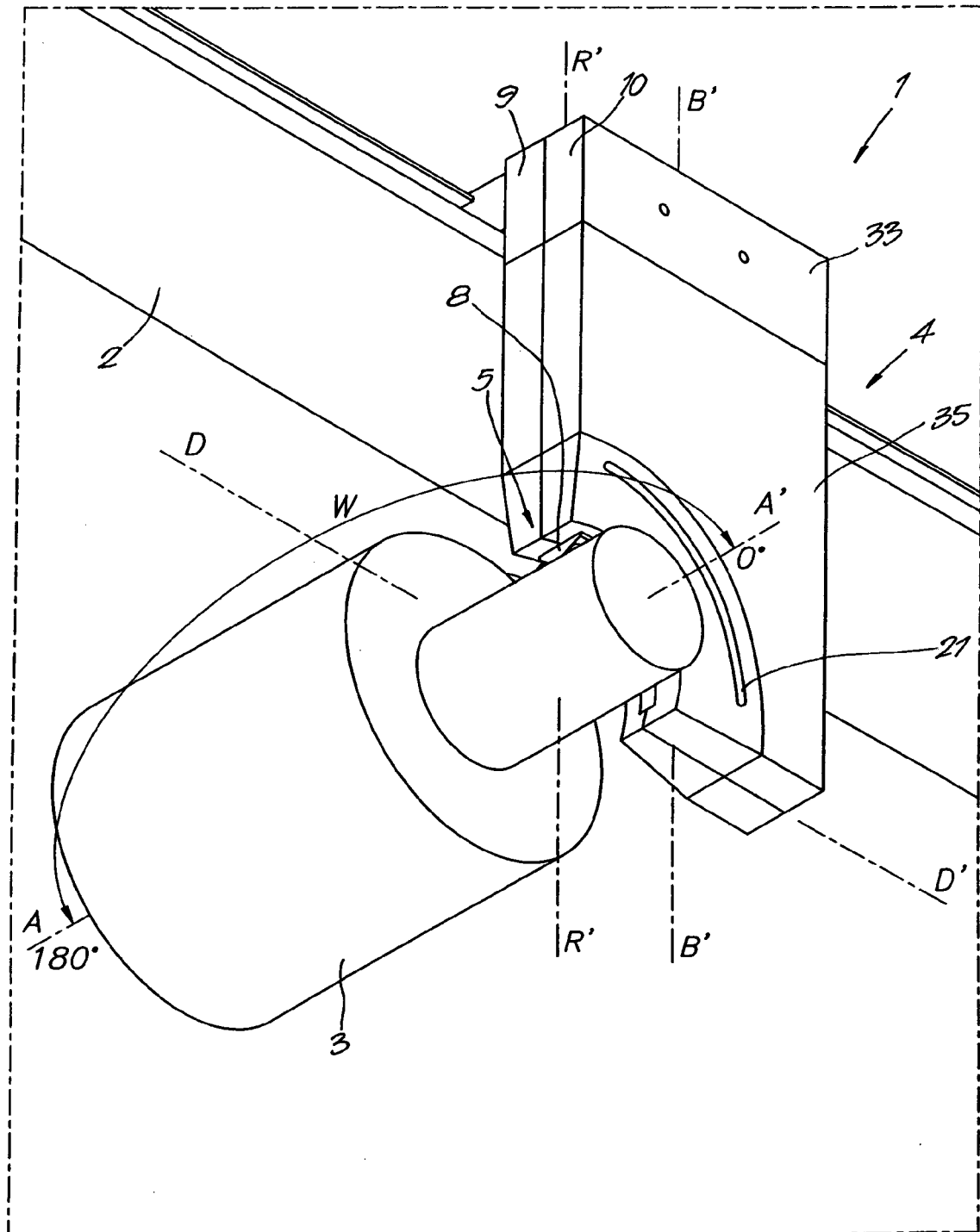


Fig. 4

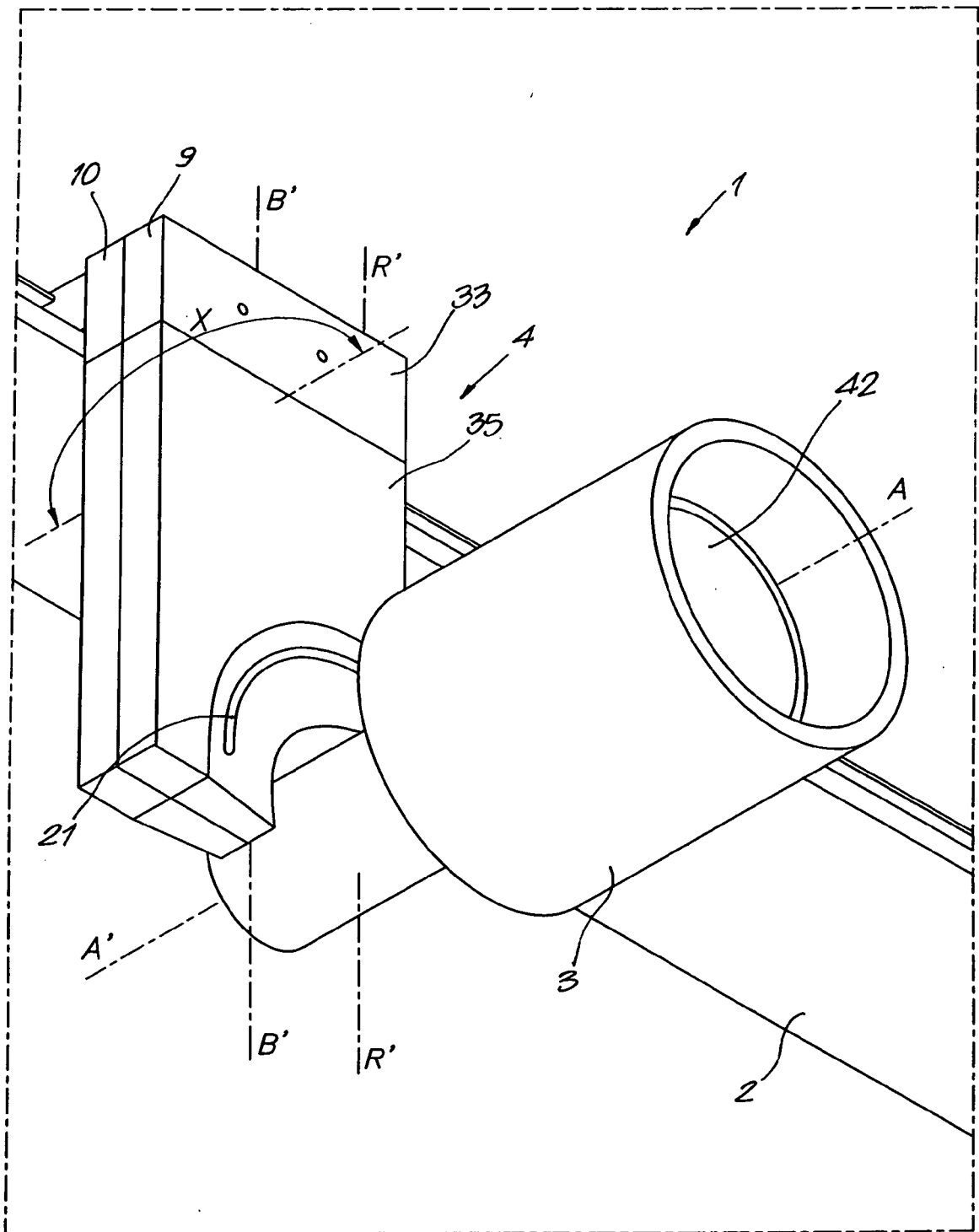


Fig.5

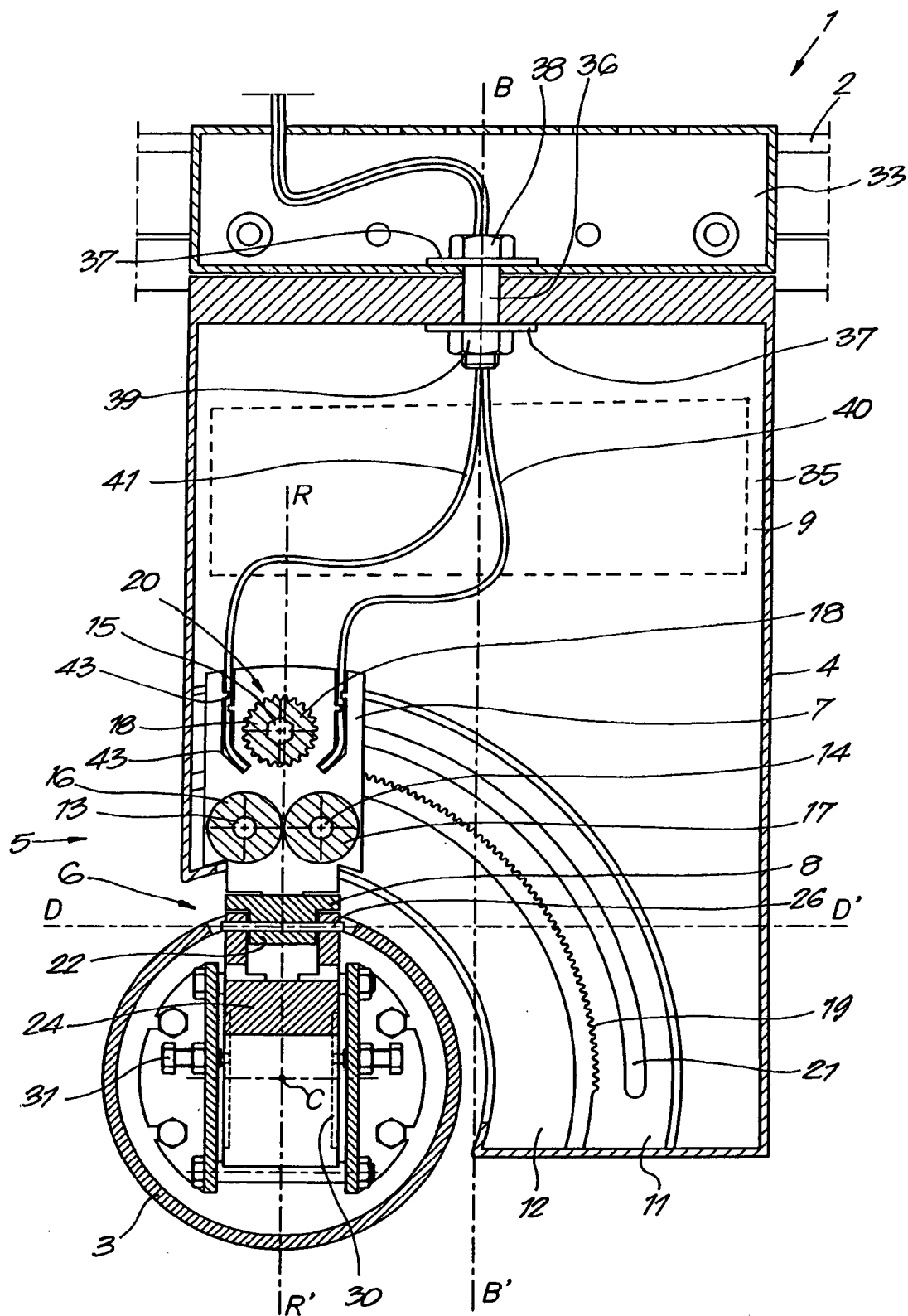


Fig. 6

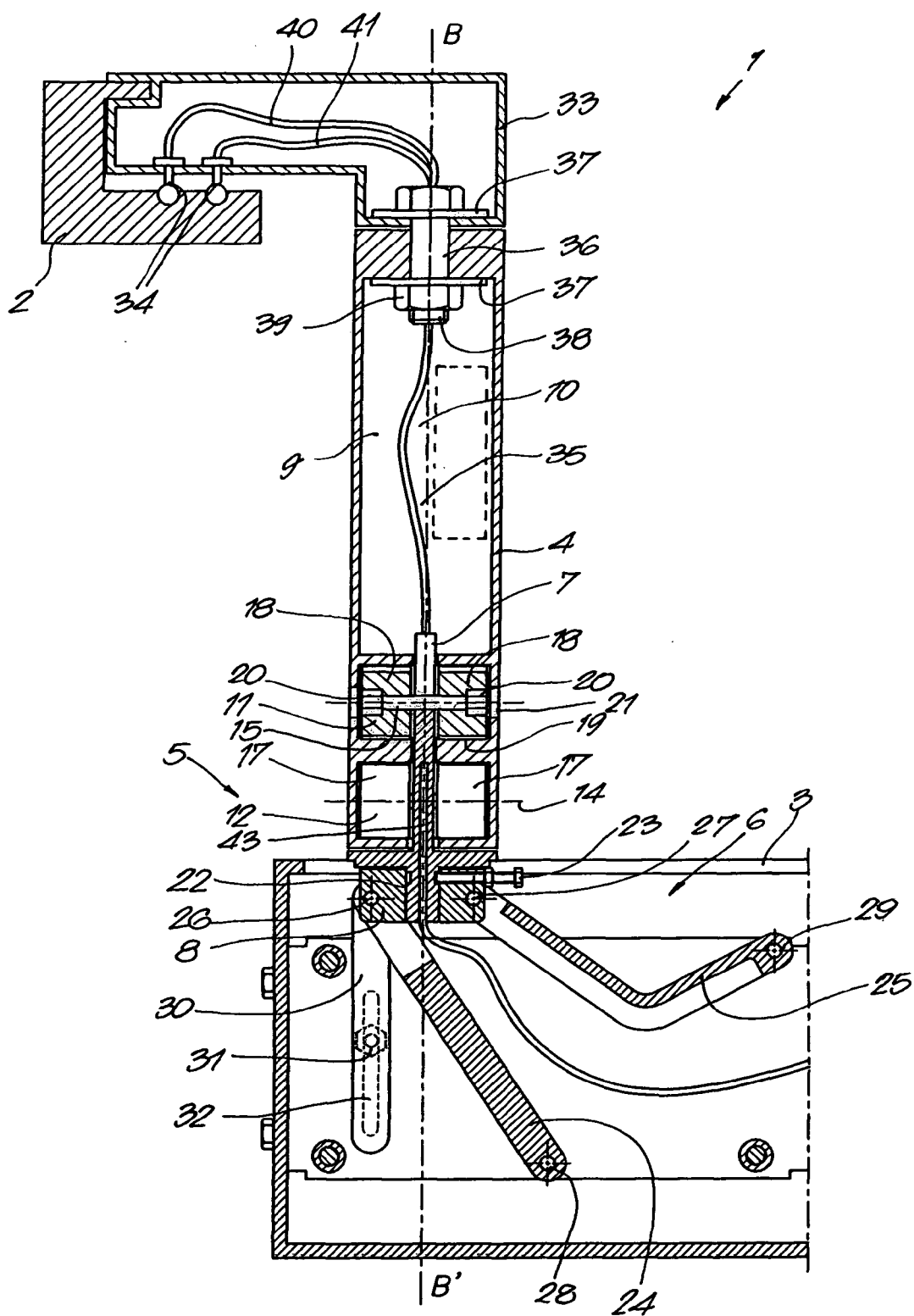


Fig. 7

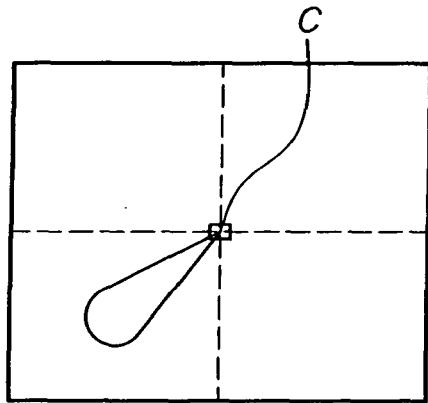


Fig. 8

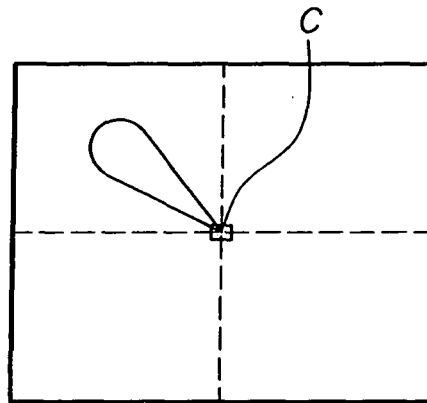


Fig. 9

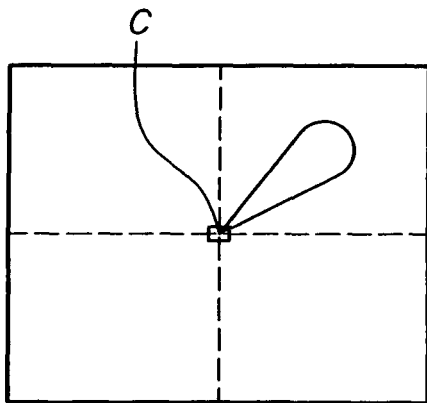


Fig. 10

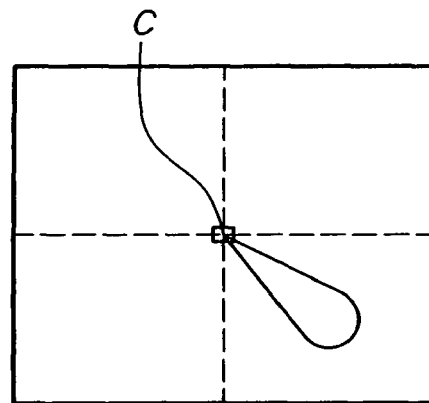


Fig. 11



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 07 5746

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The Hague		14 February 2008	Lange, Christian
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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