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(54) **Adjustable hinge support and method for adjusting the position of said support**

(57) Adjustable hinge support designed to allow rotation of a leaf, in particular a gate, comprising a support plate intended to be fixed to a pillar, an internally threaded bush which is inserted inside an eyelet formed in the plate and has a threaded inner surface inside which the shank of the eye-piece of the hinge engages and a threaded outer surface on which an adjusting ring engages, said ring being able to be fixed at the desired height by means of retaining grub screws. A tightening ring is also envisaged, said ring being engaged by means of screwing on the shank of the eye-piece and being able to fix the latter against the bush, coming into contact against the free edge of the said bush.

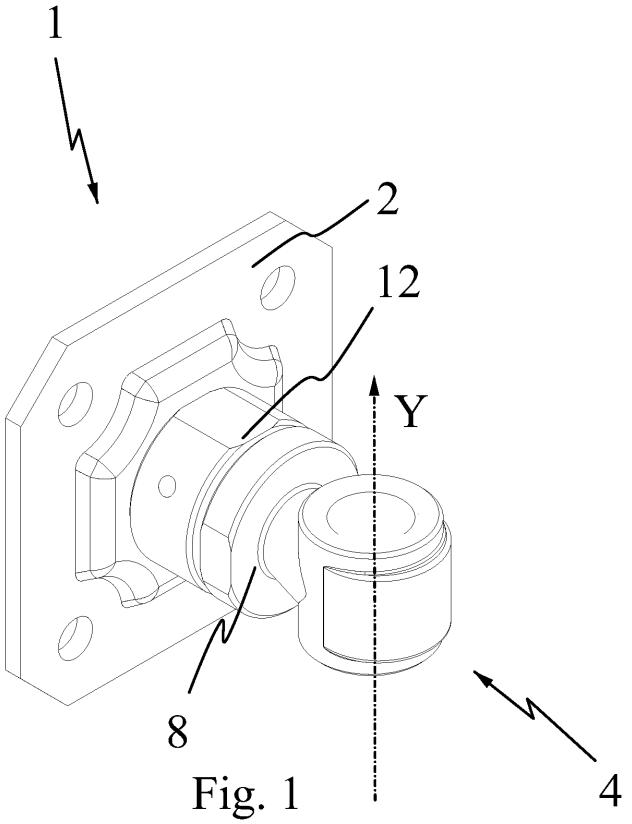

Fig. 1

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Description

Field of application

[0001] The present invention concerns an adjustable hinge support and a method for adjusting the position of said support.

[0002] The support in question is intended to be used advantageously for supporting rotatably leaves of fixtures of all kinds and in particular gates or main entrance doors between an open position and a closed position.

[0003] Obviously the support may be arranged at different heights on the upright or pillar intended to support the leaf of the fixture or gate.

Background art

[0004] At present, as is known, numerous different adjustable hinge supports are available commercially, these being traditionally associated with a metal support bracket fastened to the fixed - for example masonry - pillar so as to support a gate.

[0005] In accordance with a constructional solution of the known type, this bracket is fitted with a bearing inside which the hinge of the gate leaf is pivotably mounted so as to allow the latter to perform a rotational closing and opening movement about a generally vertical axis.

[0006] The bearing is advantageously connected to the bracket by means of adjustable fixing means which allow a variation in the position of the hinge with respect to the bracket during mounting of the gate in order to allow control over the height of the said gate.

[0007] It is also known for example from the patent IT PD2003A000268 in the name of the same applicant to use adjustment means to vary the position of the hinge along the projecting portion of the bracket.

[0008] The abovementioned adjustment system, while offering certain advantages, can be used only for the particular type of hinge support described above.

[0009] Other types of hinge supports of the known type comprise an internally threaded bush rigidly fastened to a plate to be fixed to the pillar of the gate.

[0010] The threaded shank of the eye-piece of the leaf support hinge engages inside this bush. By means of a nut/lock-nut mechanism it is possible to fix at different depths the shank of the eye-piece inside the bush, allowing adjustment of the position of the leaf support hinge.

[0011] This solution allows adjustment of the position of the hinge only along the axis of the eye-piece and in practice has proved to be entirely insufficient for fully satisfying the mounting requirements of gates or main entrance doors.

[0012] On some occasions, for example, the operator, when making holes in the pillar in order to fix the support plate, comes up against stones or steel rods in the case of reinforced concrete pillars. These circumstances mean that the operator must fix the support plate so that it is slightly displaced laterally with respect to the desired position.

[0013] This lateral displacement of the support plate results in imprecise closing of the leaf and constitutes a major drawback which can only be overcome by means of very costly and laborious measures.

[0014] Therefore, essentially, with the solutions known hitherto there does not exist an adequate possibility for adjusting the position of the eye-piece and therefore the position of the hinge pin supporting the leaf.

Disclosure of the invention

[0015] The main object of the present invention is therefore to eliminate the drawbacks of the art known hitherto by providing an adjustable hinge support which allows easy and complete adjustment of the hinge position.

[0016] Another object of the present invention is to provide a support resulting in limited costs for installation of the leaves of a gate or the like.

[0017] A further object of the present invention is to provide a support which is constructionally simple, low-cost and operationally entirely reliable.

[0018] Another object of the present invention is to provide a method for adjusting the hinge support which is particularly easy to implement and is able to vary precisely the position of the hinge.

Brief description of the drawings

[0019] The technical features of the invention, in accordance with the abovementioned objects, may be clearly determined from the contents of the claims indicated below and the advantages thereof will emerge more clearly from the detailed description which follows, provided with reference to the accompanying drawings which show a purely exemplary and non-limiting embodiment thereof in which:

FIG. 1 shows a perspective view of an example of embodiment of the adjustable hinge support according to the present invention;

FIG. 2 shows an exploded view of the support according to Figure 1;

FIG. 3 shows a front view of the support according to Figure 1;

FIG. 4 shows a side view of the support according to Figure 1;

FIG. 5 shows a top plan view of the support according to Figure 1;

FIG. 6 shows a cross-sectional view, along the line III-III in Figure 3, of the adjustable support according to the present invention with some parts removed so that other parts thereof may be seen more clearly.

Detailed description of a preferred example of embodiment

[0020] With reference to the accompanying drawings 1 denotes in its entirety the adjustable support according to the present invention.

[0021] It is conventionally intended to engage with the hinge of a leaf (not shown) of a gate, a main entrance door or the like so as to support it rotatably on the upright of a frame or on a masonry pillar which are fixed relative to the ground.

[0022] Obviously the adjustable hinge support according to the present invention may be used to support leaves or movable parts of fixtures of any kind without thereby departing from the scope of protection of the present patent.

[0023] With reference to the accompanying drawings, the hinge support 1 comprises, in a manner conventional per se, a support plate 2 intended to be fixed to the leaf support upright or pillar, and a bush 3 which is internally threaded and projects perpendicularly from the plate 2 in the direction indicated by Z.

[0024] The plate 2 has a flat, for example a polygonal, form and defines a visible outer surface 2' and an inner surface 2" intended to be fixed to the wall of the upright or the pillar.

[0025] Preferably, the plate 2 is fixed to the pillar by means of fixing screws which can be inserted in through-holes 20 formed in the corners of the plate 2.

[0026] The support 1 also comprises an eye-piece 4 which engages by means of screwing of its threaded shank 5 with the threaded inner surface 3' of the bush 3 and has an enlarged head 6 with a seat 7, in particular consisting of a through-hole, for rotatably receiving the pin of a hinge fastened to the leaf and for allowing it to rotate about a vertical axis indicated by Y.

[0027] A locking ring 8 is screwed onto the shank 5 of the eye-piece 4 and, coming into contact against the free edge 9 of the bush 3, has the function of acting as a counter lock-nut for rigidly fixing the eye-piece 4 with respect to the bush 3, preventing the said eye-piece 4 from being freely unscrewed or screwed.

[0028] According to the idea forming the basis of the present invention the support plate 2 is provided with a through-eyelet 10 and the bush 3 is inserted inside the through-eyelet 10 as far as an end-of-travel position defined by its head 11 coming into contact against the rear surface 2' of the plate. Furthermore, the bush 3 has a threaded outer surface 3" on which an adjusting ring 12 can be screwably engaged, said ring being able to be fixed at the desired height by means of removable retaining means 13.

[0029] Preferably, the removable retaining means 13 are formed by means of one or more grub screws which can be inserted inside transverse threaded through-holes formed in the adjusting ring 12 and able to fix or free the latter with respect to the bush 3.

[0030] In greater detail, the eyelet 10 extends along an axis X which is substantially horizontal when the plate 2 is fixed to the leaf support upright or pillar so as to allow right-hand or left-hand adjustment of the position of the hinge.

[0031] The eyelet 10 is arranged centred in the bottom of a depression 18 formed by means of deep-drawing in the central portion of the plate 2, the depth of which has a height sufficient to seat the head 11 of the bush 3, preferably consisting of a perimetrally projecting ring.

[0032] The present invention also relates to a method for adjusting the position of the support 1 described above, which allows variation in the position of the hinge both along the horizontal axis X in order to perform a right-hand or left-hand adjustment and along the axis Z in order to vary the distance of the hinge from the support upright or pillar.

[0033] In order to perform the right-hand or left-hand adjustment the method envisages loosening the adjusting ring 12 on the plate 2 and then performing positioning of the bush 3 inside the eyelet 10 in order to obtain the desired position thereof along the axis X.

[0034] Then, once the position of the bush 3 has been defined, the adjustment envisages performing tightening the adjusting ring 12 against the plate 2 so as to fasten the bush 3 to the support plate 2 itself.

[0035] At this point the adjusting ring 12 and the bush are fastened together by means of a locking operation involving engagement of the retaining means 13, which requires in particular screwing of the grub screws inserted inside the threaded holes of the adjusting ring 12 against the outer surface of the bush 3.

[0036] Adjustment of the axial position of the eye-piece 4 along its axis Z is performed starting from the condition where the adjusting ring 12 is slack on the support plate 2 and the tightening ring 8 is slack on the free edge 9 of the bush.

[0037] At this point locking of the adjusting ring 12 on the bush 3 is performed via the retaining means 13 and then axial adjustment of the eye-piece 4 is performed by means of a rotation of the adjusting ring 12.

[0038] The latter has, integrally fixed to it, the bush 3 and therefore causes, with its rotation, the eye-piece to be displaced axially inside the bush 3 by means of screwing or unscrewing in both senses of the direction Z.

[0039] Once the position of the eye-piece along the axis Z has been determined it will be possible to release the adjusting ring 12 from the bush 3 by means of disengagement, from the bush 3, of the grub screws 13 inserted in the threaded holes of the ring 12.

[0040] Then it will be possible to perform tightening of the adjusting ring 12 against the plate 2 so as to fix the bush 3 to the support plate 2 and then locking of the adjusting ring 12 by means of engagement of the grub screws 13 against the outer surface 3" of the bush 3.

[0041] The invention thus conceived therefore achieves the predefined objects.

[0042] Obviously it may assume in its practical embodiment also forms and configurations different from that

illustrated above without thereby departing from the present scope of protection.

[0043] Moreover all the details may be replaced by technically equivalent elements and the dimensions, the forms and the materials used may be of any nature according to requirements.

Claims

1. Adjustable hinge support designed to allow rotation of a leaf, in particular a gate, comprising:

   - a support plate intended to be fixed to an upright or to a pillar for supporting said leaf;
   - at least one internally threaded bush which is mechanically associated with said plate and projects from it;
   - at least one eye-piece which has a threaded shank able to engage with the threading of said bush and a head having a seat able to receive the pin of a hinge fastened to the leaf;
   - at least one tightening ring engaged by means of screwing on the shank of said eye-piece and able to fix the latter on said bush, coming into contact against the free edge of said bush;

   characterized in that:

   - said plate has a through-eyelet;
   - said bush is inserted inside eyelet as far as an end-of-travel position defined by contact of its head against the rear surface of said plate and has a threaded outer surface on which an adjusting ring is screwably engaged, said ring being able to be fixed at the desired height by means of removable retaining means.

2. Adjustable support according to Claim 1, **characterized in that** said removable retaining means are formed by means of one or more grub screws which can be inserted in transverse through-holes formed in said adjusting ring and able to act on said bush so as to fix or free said adjusting ring with respect to said bush.

3. Adjustable support according to Claim 1, **characterized in that** the head of said bush consists of a projecting perimetral ring.

4. Adjustable support according to Claim 1, **characterized in that** said plate has a depression inside which said eyelet is formed, said depression having a depth greater than or equal to the height of the head of said bush.

5. Adjustable support according to Claim 1, **characterized in that** said eyelet has an extension mainly along a substantially horizontal X axis when said plate is fixed to the leaf support upright or pillar so as to allow right-hand or left-hand adjustment of the position of the hinge.

6. Method for adjusting the position of said support according to Claim 1, **characterized in that** it comprises the following operating steps:

   - positioning the bush inside the eyelet with said adjusting ring loose on the plate;
   - tightening the adjusting ring against the plate so as to fix said bush to the support plate;
   - locking said adjusting ring by means of engagement of said retaining means against the outer surface of said bush.

7. Method for adjusting the position of said support according to Claim 1, **characterized in that** it comprises the following operating steps:

   - locking said adjusting ring with said bush by means of said retaining means with said adjusting ring slack on the support plate and said tightening ring loose on the free edge of said bush;
   - rotating said adjusting ring on which said bush is integrally fixed so as to displace axially said eye-piece inside said bush;
   - releasing said ring from said bush by means of disengagement of said retaining means from said bush;
   - tightening the adjusting ring against the plate so as to fix said bush to the support plate;
   - locking said adjusting ring by means of engagement of said retaining means against the outer surface of said bush.

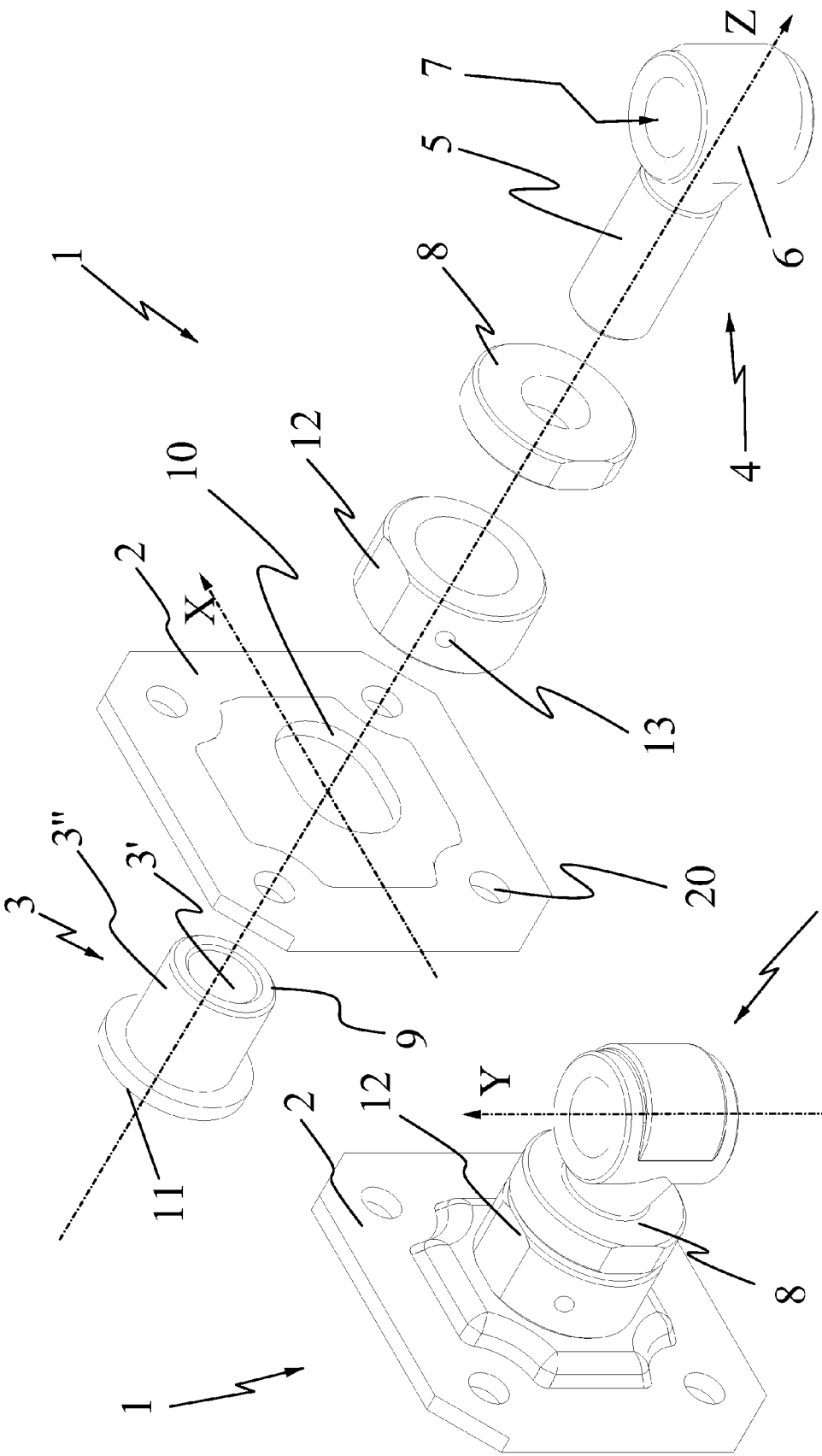

Fig. 1

Fig. 2

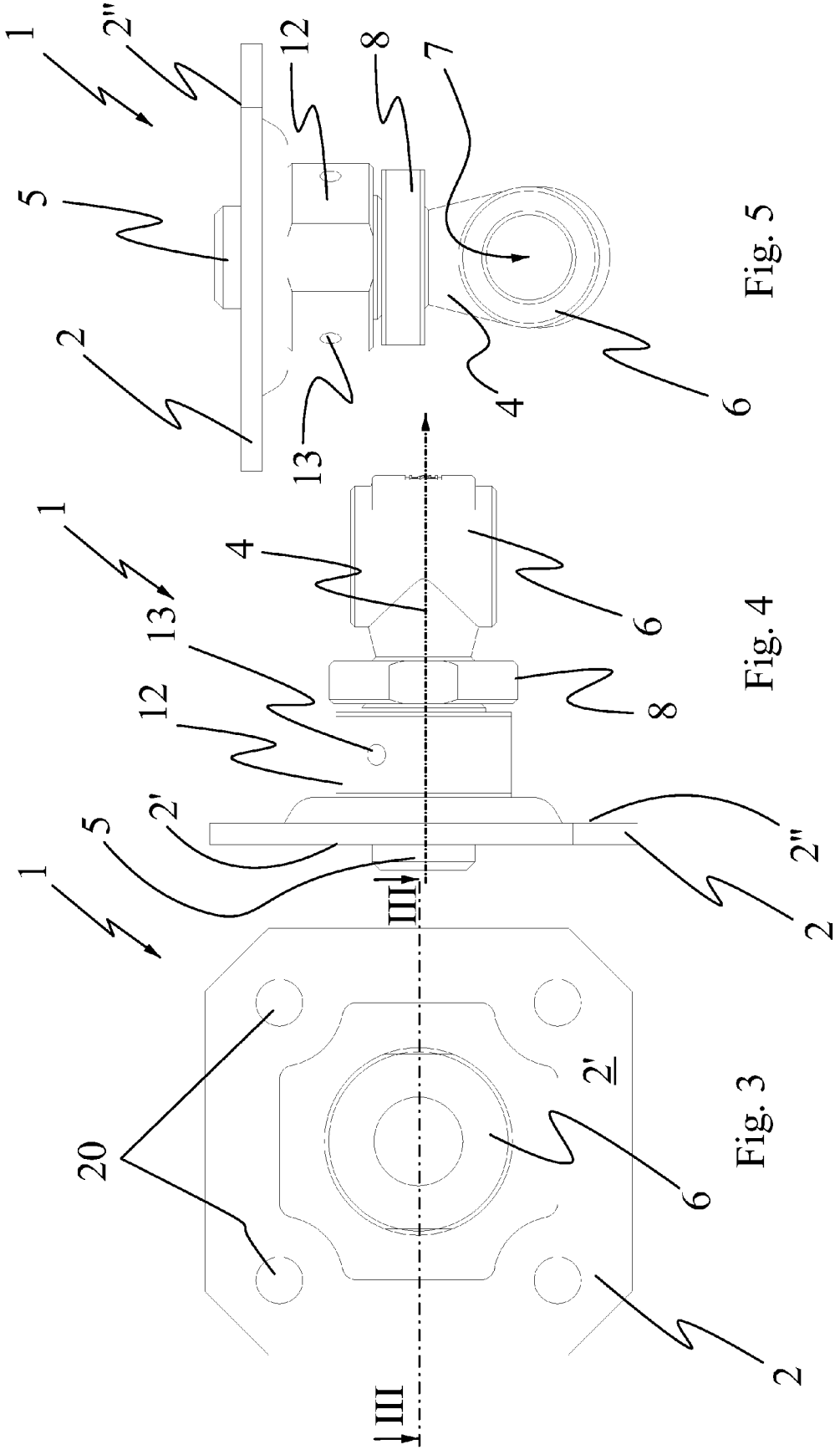

Fig. 5

Fig. 4

Fig. 3

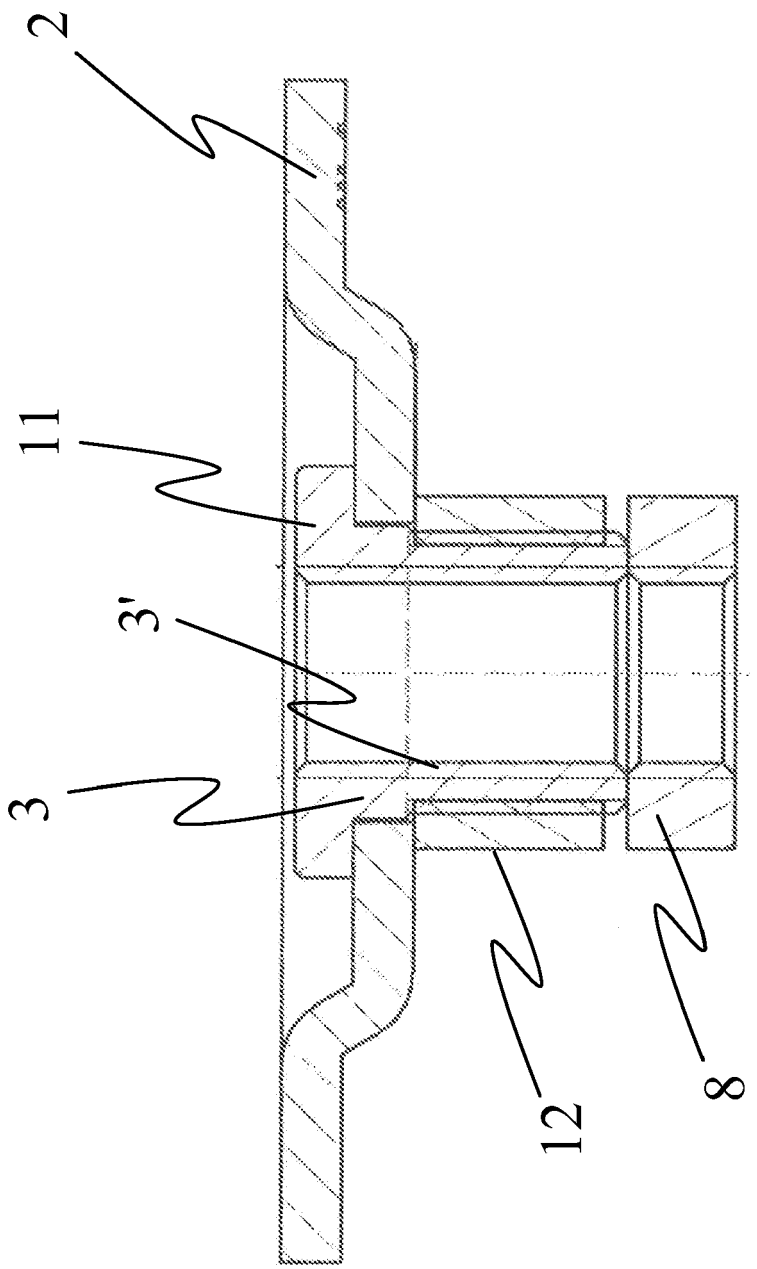

Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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