



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.06.2008 Bulletin 2008/25

(51) Int Cl.:
E05B 65/08 (2006.01)

(21) Application number: **07386029.8**

(22) Date of filing: **30.11.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(71) Applicant: **Aluteam A.B.E.E.**
145 64 N. Kifisia Attikis (GR)

(72) Inventor: **Papachrisanthou, Stavros E.**
15121 Kato Peuki (GR)

(30) Priority: **01.12.2006 GR 20060100658**

(54) **Simple lock of sliding doors-windows with a system of averting damages due to violent collision at closing**

(57) A lock for aluminium framed sliding panels comprises dividable members of a lock head (1) and a connecting screw (2) onto the functional member of the lock.

The lock head is externally cylindrical with an internal square recess (1a) receiving the connecting screw.

The screw is of special manufacture, with a square head (2a), with a member (4) that passes through the head via a corresponding aperture through the internal recess.

The member of the special screw has suitable length for fitting of the lock head with the functional member of the lock and regulation of locking tolerances. A suitable spring (3) is additionally fitted that ensures smooth retrograding of the lock head, thereby averting any wear or damage thereof due to involuntary violent collision onto the collaborating pin of the lock receiving member when the sliding panel closes.

The effectiveness of the system in the safety and in the averting of wear or damages in combination with the simple manufacture provides easy installation and regulation, but also possibility of application in all new and older aluminium profile series, as element of new structures or of replacements of older defective systems of locking of framed panels.

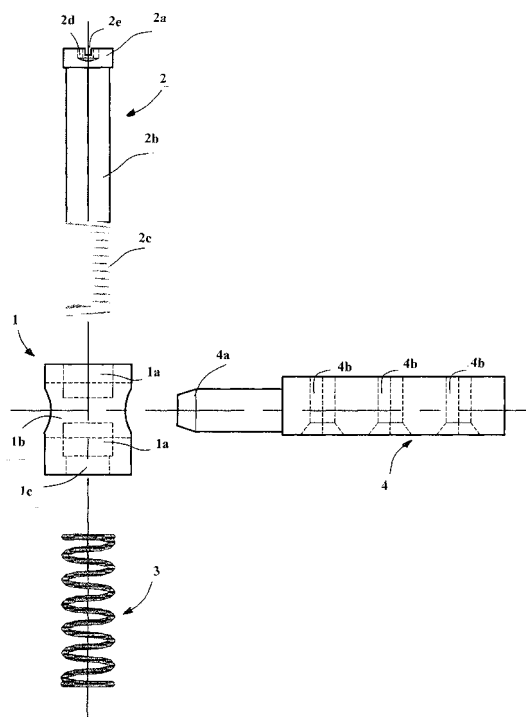


FIG. 5

Description

THE FIELD OF ART

[0001] The invention refers in the system of locking of aluminium framed sliding panels wherein it proposes a simple lock, with dividable lock head and connecting screw members, the screw effecting connection with the body of the locking mechanism. This simple system has a capacity of retrograding of the head and averting wears or damages due to its involuntary violent collision onto the collaborating pin of the lock receiving member during closure of the sliding panel.

THE STATE OF THE PRIOR ART

[0002] In previously corresponding systems it has not been presented, devised, designed, proposed or made commercially available a product, of simple manufacture with the present innovation.

[0003] Generally, in the closing-locking mechanisms of aluminium framed sliding panels, there exists the danger of wears or damages of the lock or of the locking mechanism in the case of involuntary violent collision of the lock onto the collaborating pin of the lock receiving member, when the panel closes violently but the locking mechanism has been turned (from erroneous handling or ignorance or frivolity) at locking position, prior to the movement for closure of the panel.

[0004] This might happen in frequented spaces of private or public buildings, where the use of framed sliding panels is made carelessly or indifferently by the employees or visitors.

[0005] Prior locking systems of aluminium framed sliding panels, either were not provided with a system of averting of such wears or damages, or this problem was handled by means of particularly complicated mechanisms, which could not be mounted as such integral mechanisms in all commercially available series of aluminium framed panel profiles. Instead a varied mechanism configuration was required for each different type of each series of profiles, thereby rendering an increased cost for the application thereof, particularly with respect of replacements of locks of framed panels series.

[0006] The proposed system comprises dividable lock head and connecting screw members, the screw effecting connection with the body of the locking mechanism of the sliding panel in combination with a pin of a lock receiving member of the sliding panel.

[0007] The lock head member is externally cylindrical with an internal square recess of receiving the special connecting screw.

[0008] The screw is of a special construction, with a square head, and with its body passing through the lock head through a corresponding aperture, via the square internal recess, leaving the required margin for the passage of the pin of the lock receiving member.

[0009] The body of the special screw has a suitable

length for the connection of the lock head with the functional body of the lock, and for the required regulation of locking tolerances.

[0010] In the redundant length of the screw body in between the lock head and the body of the lock, application of a suitable spring is proposed, such spring ensuring smooth retrograding of the lock head, thereby averting any wear or damage because of involuntary violent collision of the lock head onto the collaborating pin of the lock receiving member, in case that the panel closes violently whilst the locking mechanism has been turned (due to erroneous handling or ignorance or frivolity) in the locking position prior to the movement for the closure of the panel.

[0011] The advantage of the invention consists in the effectiveness that it provides in the safety and the averting of wears or damages in combination with the simple manufacture that provides for easy mounting, easy possibility of regulation of locking tolerances and a cheap solution of application per se without any modifications in all commercially available series of aluminium framed profiles, so much in new constructions, but also as a replacement system in older series of aluminium framed profiles in cases of defective systems or renovations.

[0012] On the contrary, prior locking systems of aluminium framed sliding panels, either present the disadvantage of lacking such a system of averting of such wears or damages, or they face this problem with particularly complicated mechanisms, which on the one hand cannot be mounted per se as integral mechanisms in all commercially available series of aluminium framed panels, but necessitate the use of an equivalent mechanism for each corresponding type of each series of profiles, and on the other hand this requirement renders its application more costly, particularly in relation with replacements of locks of older series of aluminium framed panels.

BRIEF DESCRIPTION OF ILLUSTRATIONS IN THE DRAWINGS

[0013]

Fig. 1 presents a frontal perspective view of the elements of the proposed embodiment prior to assembly thereof.

Fig. 2 presents a frontal perspective illustration of the elements of the proposed embodiment following assembly thereof.

Fig. 3 presents a rear perspective illustration of the elements of the proposed embodiment prior to assembly thereof.

Fig. 4 presents a rear perspective illustration of the elements of the proposed embodiment at an arrangement following assembly thereof.

Fig. 5 presents in a principal characteristic view, but also in a characteristic position, the elements of the proposed embodiment at an arrangement prior to assembly thereof.

Fig. 6 presents an analytical illustration of the proposed lock head, at a principal view, at an upper and bottom view and at a sectional view thereof.

Fig. 7 presents an analytical illustration of the proposed special lock head connecting screw, as well as the proposed spring in a principal view and an upper view.

Fig. 8 presents an analytical illustration of the pin of the lock receiving member, in a principal view, in an upper and bottom view and in a sectional view.

ANALYTICAL DESCRIPTION OF THE PROPOSED INVENTION

[0014] By reference to the accompanying drawings, we will describe the proposed invention and ways of application thereof.

[0015] In the proposed invention, as shown in Figures 1 and 3, the system of locking of framed sliding panels is a dividable lock construction constituted by the lock head (1), the special connecting screw (2), the spring (3) and the collaborating element of the lock receiving member (4).

[0016] The lock head element has an externally cylindrical configuration with a square cutting at the ends of its perimeter and an internal square recess (1a) that receives the special connecting screw (2).

[0017] Screw (2) is of special construction with a square head (2a) corresponding to the internal square recess of the lock head.

[0018] At the same time, the lock head is provided at the centre thereof with a through aperture (1b) of suitable diameter and axially perpendicular to the internal square-recess (1a), so that it is made possible for the corresponding pin (4a) of the lock receiving member (4) to pass there through.

[0019] The above internal square recess (1a) extends at a sufficient depth inside the lock head (1), but without thoroughly passing through the body thereof, so that on the one hand the square head (2a) of the special screw (2) may fit therein at a sufficient depth, but on the other hand at the desirable end thereof inside the lock head it does not restrict the opening of a through aperture (1b) for the passage of pin (4a) of the lock receiving member (4).

[0020] The passage of member (2b) of the special screw (2) through the lock head (1) is achieved with a corresponding aperture (1c) at the extension of the bottom of the internal square recess (1a).

[0021] The member (2b) of the special screw (2) has a sufficient length so that, following complete passage

of the screw through the lock head, on the one hand it may be possible to adapt the proposed spring (3), and on the other hand, member (2b) is provided at its end portion following adaptation of the spring with a threaded length (2c) of sufficient length so as to retain the lock within the body of the locking mechanism of the sliding panel and to provide for the regulation of locking tolerances.

[0022] The adaptation of the proposed spring (3) ensures the smooth retrograding of lock head (1) averting any wear or damage thereof due to its involuntary violent collision with the collaborating pin (4a) of the lock receiving member (4) in case that the panel closes violently whilst the locking mechanism has been turned (due to erroneous handling or ignorance or frivolity) at the locking position prior to the movement for closure of the panel.

[0023] The proposed lock receiving member (4) is provided with a suitable pin (4a) and apertures (4b) for mounting the same onto the opposite frame or panel of the sliding panel assembly.

[0024] The fixing of lock receiving member (4) onto the opposite frame or panel of the sliding panel assembly is implemented with at least two (and preferably three milled screws) via suitable apertures with respectively milled endings (4b).

[0025] The condition of complete assembly of the lock head (1), of the special connecting screw (2), of spring (3) and of the cooperating element of the lock receiving member (4) appears in Figures 2 and 4.

[0026] The proposed system can function with any suitable known commercially available locking mechanism, which, via handling thereof, ensures the reciprocating, vertical upward and downward movement of the dividable mechanism of the special screw and lock assembly, so as to result in the required locking of the framed panel, through engagement of the pin of the lock receiving member by the lock.

[0027] The head of the special screw (2) is provided with a reception (2d) of a screwing tool, preferably in the form of an ALLEN-3 mm, and with a notch of alignment (2e) with the through aperture (1b) of the lock head (1), in the vertical orientation, for the smooth passage of pin (4a) of the proposed lock receiving member (4).

[0028] The notch of alignment (2e) of the special screw (2) is mounted during the assembly at a position axially parallel with the through aperture (1b) of the lock head (1).

[0029] During fixing of the assembled system of the proposed embodiment within the body of the locking mechanism of the sliding panel, the special screw (2), due to its square head (2a) being adapted within the square recess (1a), effects rotation of the lock head (1) and intrusion thereof into the profile of the sliding framed panel.

[0030] The required regulation is achieved on the one hand with the desirable intrusion of lock head (1) within the profile of the sliding framed panel for the achievement of the desirable locking tolerance, depending on the distance of pin (4a) of the lock receiving member (4) rela-

tively to the aperture (1b) of the lock head, that is provided through screwing, and on other hand also by means of a visual alignment of the through aperture (1b) of lock head (1) with the vertical axis for the smooth passage of pin (4a) of the proposed lock receiving member (4).

[0031] The proposed system provides effective safety and averting of wears or damages and at the same time, due to the simple mechanical construction, provides for easy mounting, possibility of handy regulation of locking tolerances and for an economical solution of installation per se without any modifications in all commercially available series of aluminium framed profiles, so much in the new constructions, but also as replaceable system in older series of aluminium framed profiles in cases of defective systems or renovations.

[0032] This constitutes the most important advantage of the invention in comparison with the prior locking systems of aluminium framed sliding panels which either present the disadvantage of non-existence of a system of averting of such wears or damages or handle this problem with the employment of particularly complicated mechanisms, which on the one hand cannot be installed per se, as integral mechanisms, in all commercially available series of aluminium framed profiles, but a corresponding mechanism must be used with each type of series of profiles, and on the other hand this particular fact renders application thereof costly particularly in replacements of locks of older series of aluminium framed panels.

[0033] It is obvious that the ideas or constructions of the invention described hereinabove might be applied with differentiations in part or in the entirety thereof in various types of locks of aluminium framed sliding panels for doors/windows, offering the same or better safety, averting of wears or operational reliability.

[0034] Modifications that can be made in the type of material, in the configuration or the form of elements of the system as indicatively and not restrictively mentioned hereinabove, as well as in the configuration of the lock head, the pin and the aperture for introduction thereof or the mounting in position and the way of fixing thereof do not alter the hereinabove exposed substance of the invention.

[0035] It should also be noted that the above description of the present invention was made by means of indicative reference of application of the same in sliding aluminium framed panels of doors-windows without its application being limited solely in these.

[0036] Thus any change or modification relating to the material of construction, the configuration, the form, size, dimensions or individual elements used in the manufacture and assembly process, as long as they do not constitute a new inventive step, are considered part of the aims and scope of the present invention.

Claims

1. Simple lock of aluminium framed sliding doors-windows with a dividable structure comprising a lock head (1) and a special connecting screw (2), said lock being adaptable to any suitable known commercially available locking mechanism, whereby it may be operated to perform a reciprocating upward-downward vertical movement so as to render the required locking of the framed sliding door-window by means of a pin (4a) of the lock receiving member (4), **characterized by** the following:

- The lock head element is of externally cylindrical configuration with squarely cut ends of its perimeter and with an internal square recess (1a) receiving the connecting screw (2);
- Screw (2) is of special manufacture with a square head (2a), corresponding to the square internal recess of the lock head;
- The lock head is provided with a through aperture (1b) at the center thereof with a suitable diameter and axially perpendicular to the internal square-recess (1a) so as to enable passage therein of the corresponding pin (4a) of the lock receiving member (4);
- The passage of member (2b) of the special screw (2) through the lock head (1) is achieved with a corresponding aperture (1c) at the extension of the bottom of the internal square recess (1a).

2. Simple lock of aluminium framed sliding doors-windows with a dividable structure comprising a lock head (1) and a special connecting screw (2), according to the above Claim 1, in which member (2b) of the special screw (2) has an appropriate length so that, following the complete passage of the screw through the lock head, on the one hand it is possible to adapt a spring (3), and on the other hand to be provided with a threaded end portion past the spring (3) so as to retain the lock within the member of the sliding door-window and provide for regulation of locking tolerances.

The adaptation of spring (3) ensures the smooth retrograding of lock head (1), thereby averting any wear or damage thereof due to its involuntary violent collision with the collaborating pin (4a) of the lock receiving member (4), in any case that the panel closes violently whilst the locking mechanism has, due to erroneous handling or ignorance or frivolity, been turned in locking position prior to the movement for closure of the panel.

3. Simple lock of aluminium framed sliding doors-windows with a dividable structure comprising a lock head (1) and a special connecting screw (2), according to the above Claims 1 and 2, wherein the pro-

posed lock receiving member (4) is provided with the suitable pin (4a) and apertures (4b) for fixing the same onto the opposite frame or panel of the sliding assembly.

The fixing of the lock receiving member (4) onto the opposite frame or panel of the sliding assembly is implemented by means of at least two and preferably three milled screws via suitable apertures with respectively milled endings (4b).

5

10

15

20

25

30

35

40

45

50

55

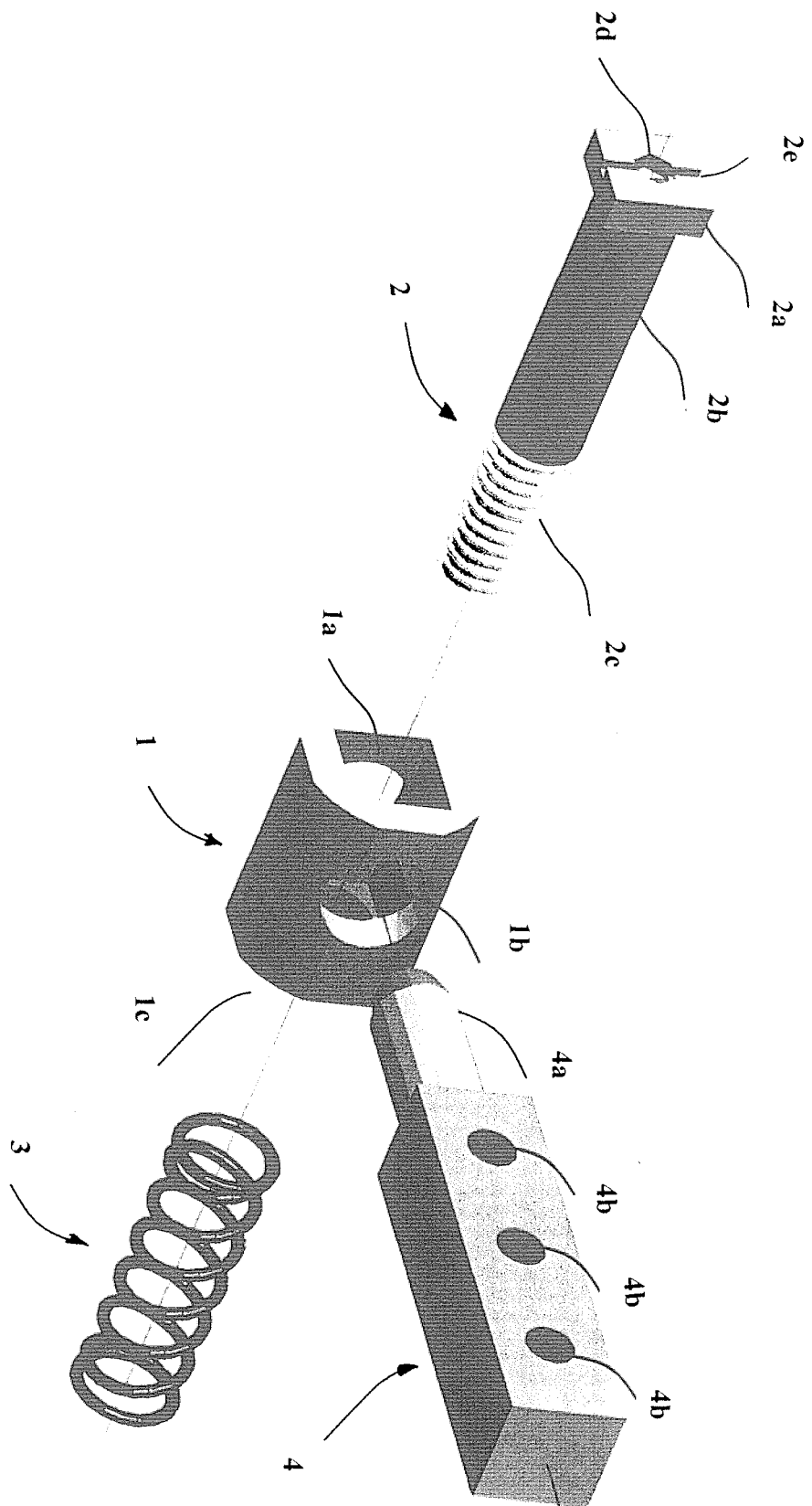


FIG. 1

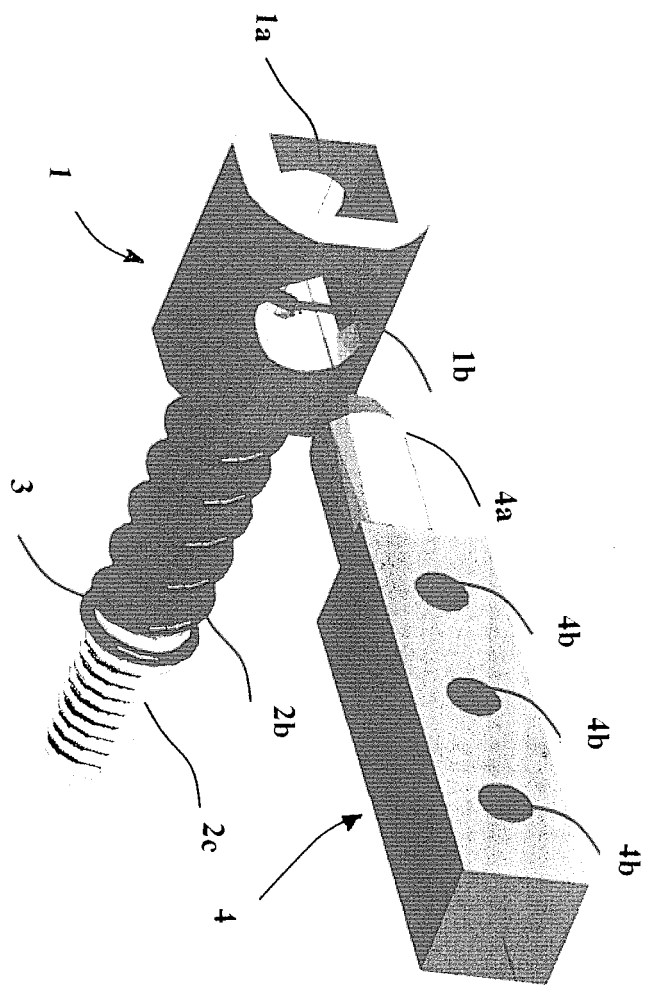


FIG. 2

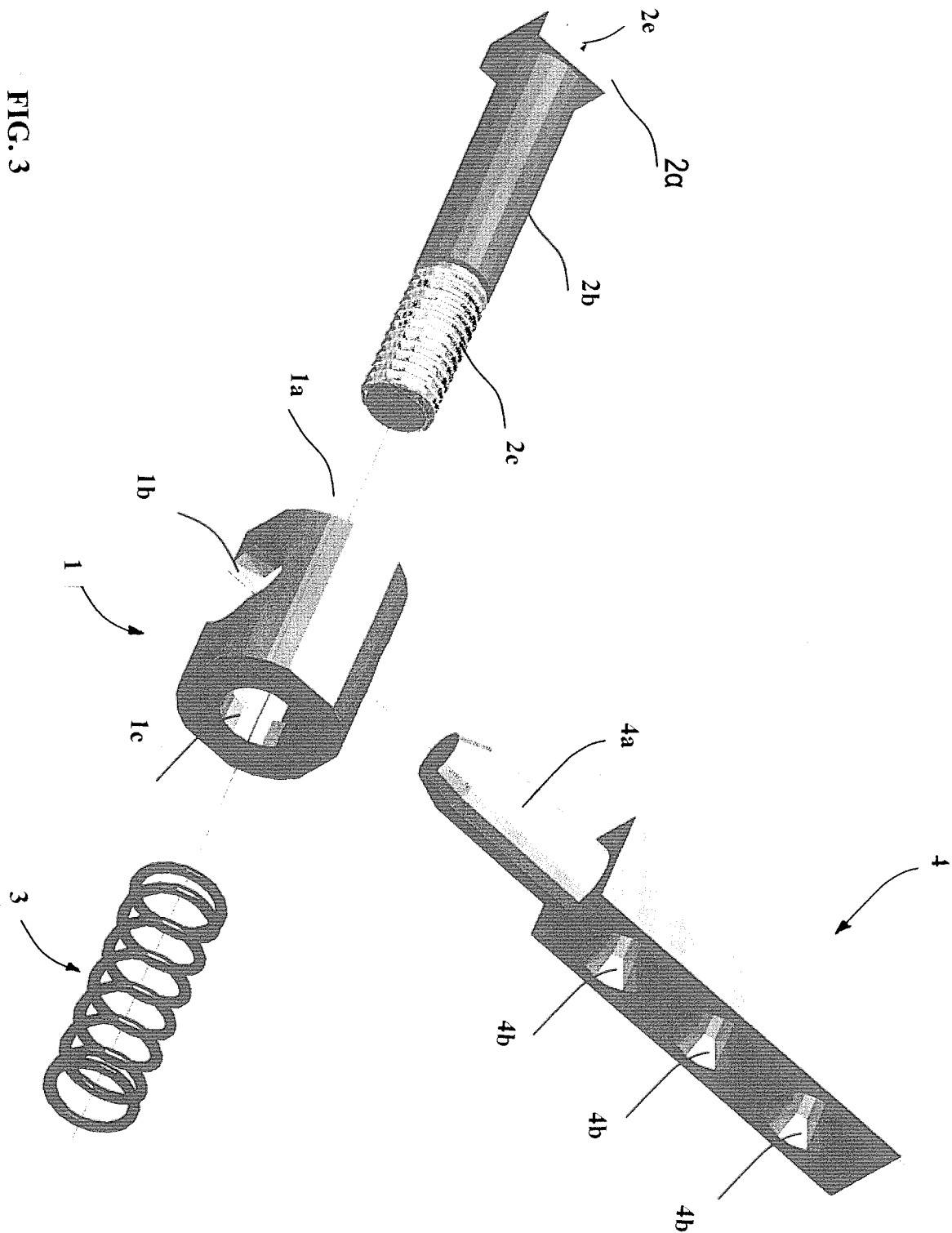


FIG. 3

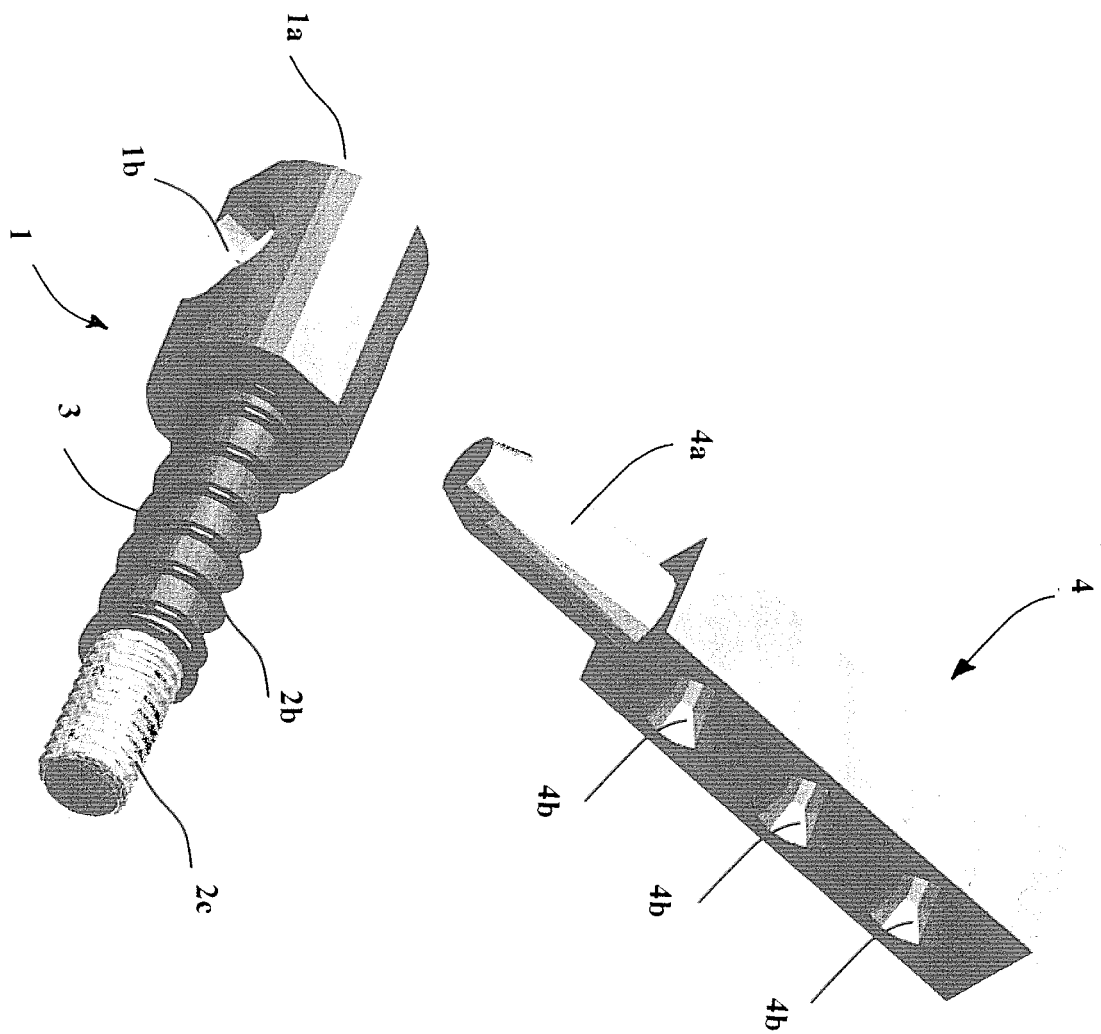


FIG. 4

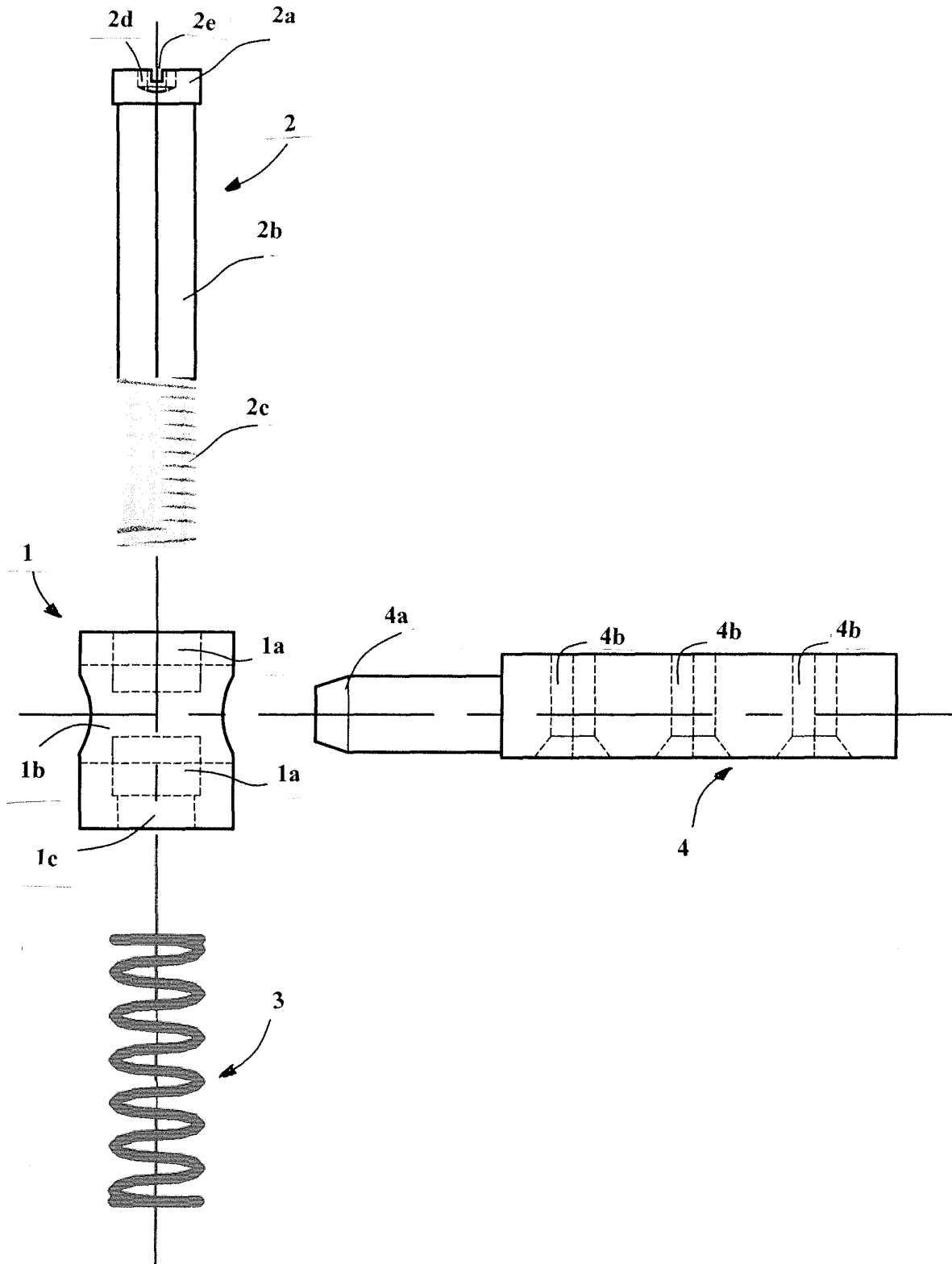


FIG. 5

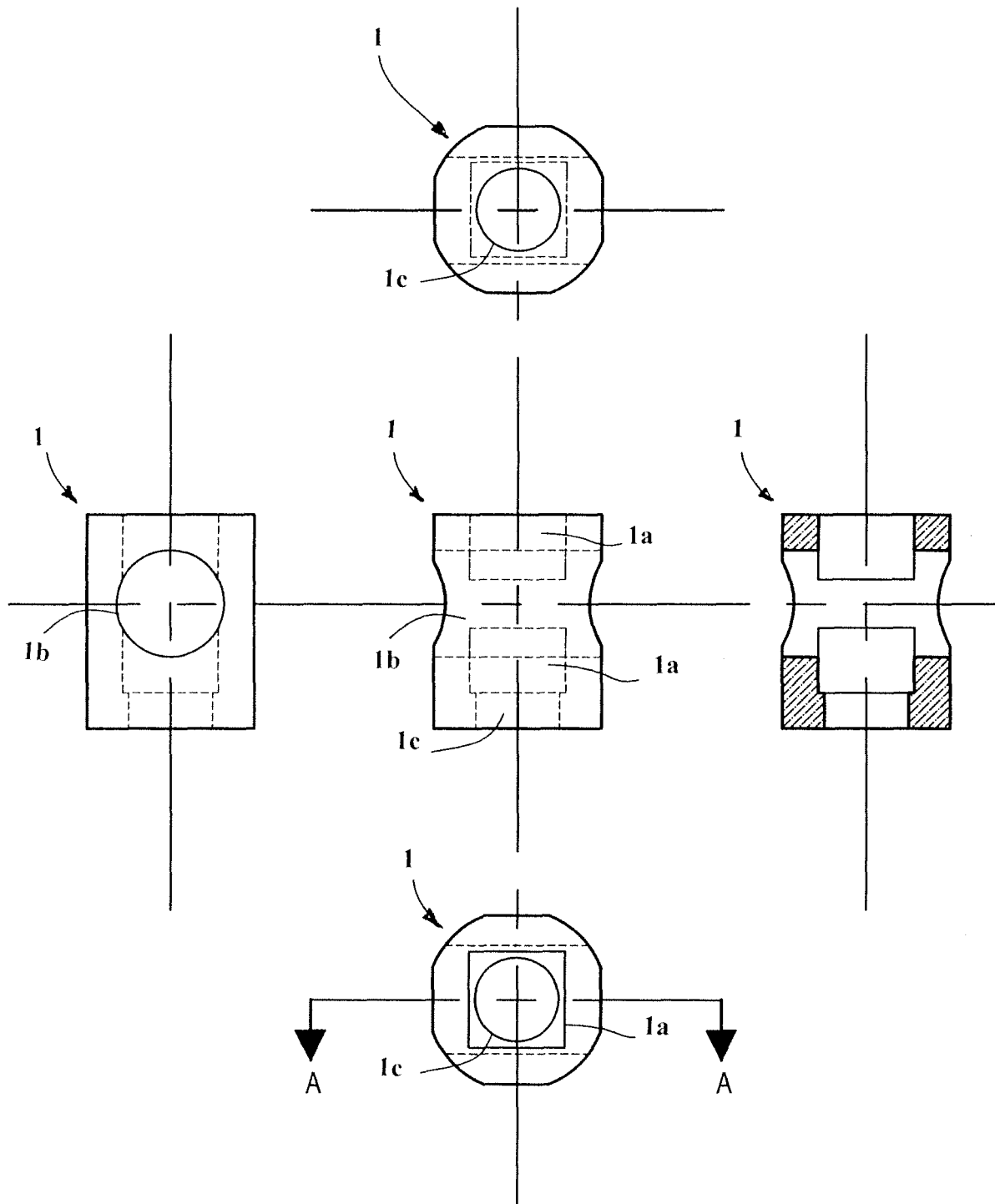


FIG. 6

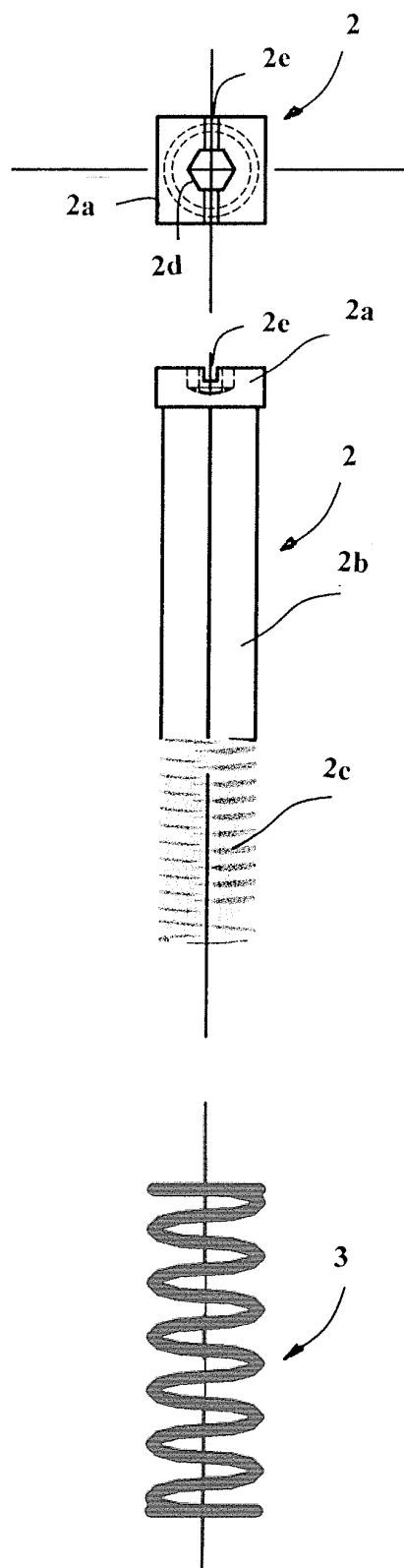


FIG. 7

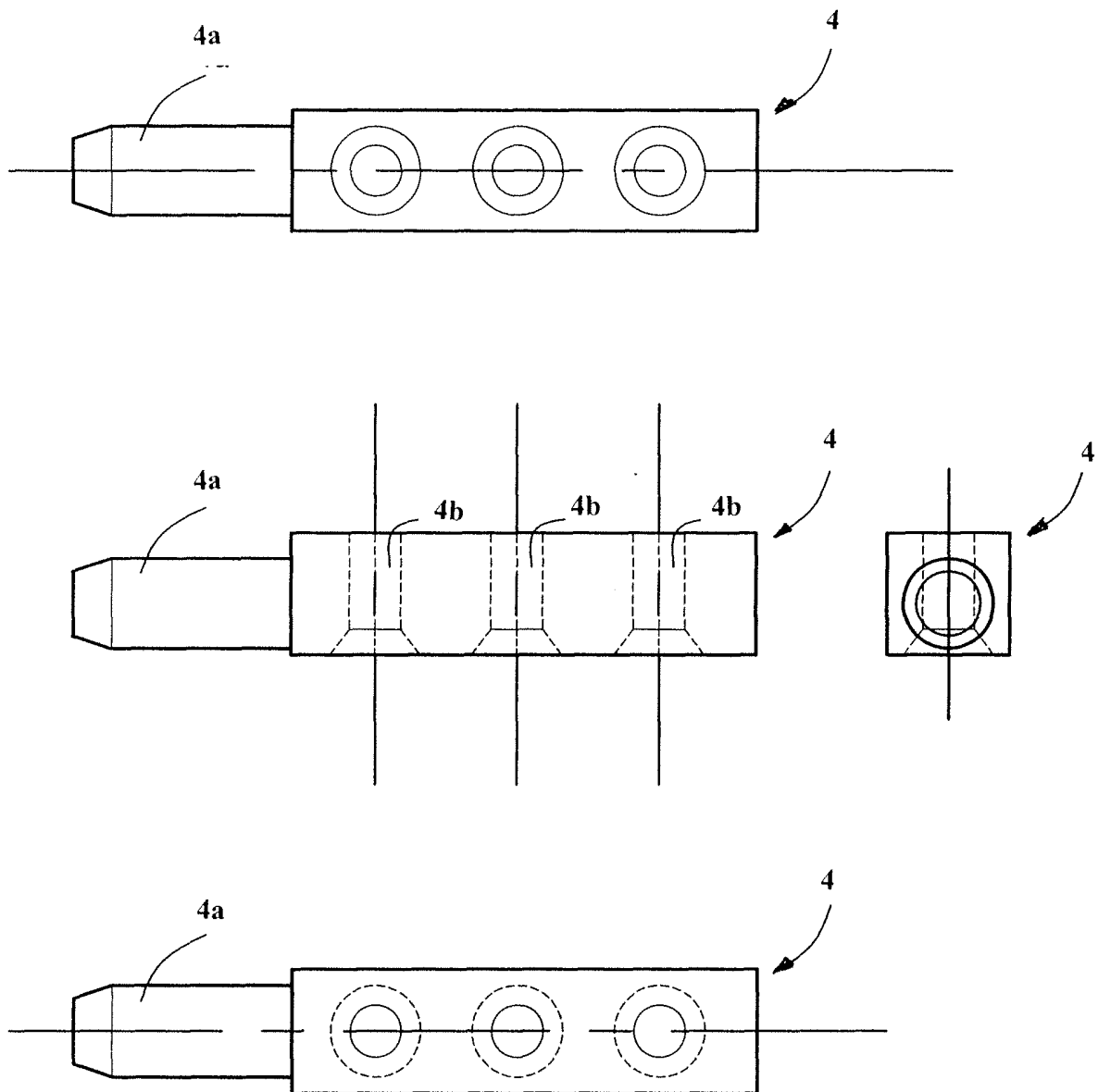


FIG. 8