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(54) **Quick-assembling furniture hinge**

Schnellverbindungs Möbelscharnier

Charnière de meuble à montage rapide

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(56) References cited:  
**EP-A- 0 256 376** **DE-A- 3 525 279**  
**DE-A- 3 544 487** **DE-A- 4 004 197**

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## Description

The invention relates to a furniture hinge comprising a base plate, a hinge arm with a mounting assembly housed therein, said mounting assembly consisting of a mounting element and a single spring-loaded slider housed therein, said spring-loaded slider being slidable in the longitudinal direction of said hinge arm for engaging said base plate.

A furniture hinge wherein requirements of quick incorporation and also of quick dismounting are considered is known from DE 35 25 279 and the DE 35 44 487 A1. The hinge arm, whose location of incorporation resides on the furniture side wall, is connected to the latter by means of an adapted mounting plate, the latter being permanently fixed on the furniture side wall and serving as a base element for the disconnectable connection with the hinge arm, the base plate in fact serving said arm. For interconnection of the hinge arm and the base plate the hinge arm is provided with a subsidiary mounting element, i.e. that in fact the interconnection of the subsidiary mounting element of the hinge arm and the stationary base plate is in question. To this purpose the base plate is on the side oriented to the depth of the furniture element provided with a bearing projection and on the side facing the pivot of the hinge provided with a pair of clamp projections arranged perpendicularly to the system surface of the base plate. According to the rules of mating, the mounting element of the hinge arm is adapted to the above-mentioned three coupling positions so that the mounting element has an inserting projection on its front section, on its rear section it having a pair of recesses for insertion of the clamp projections. Due to the circumstance that such an interconnection, which is obviously merely of a form-locking type, would as such not suffice, there is at the antecedent solution additionally foreseen a force-locking connection of mating elements. To this end there is in the medium section of the base plate arranged a slider guided longitudinally shiftably and springily supported in guiding direction, which in fact is a supporter of the above-mentioned bearing projection. This slider is simultaneously an element which enables releasing of the connection.

An essential disadvantage of this seemingly convenient solution appears particularly at detaching the furniture wing. The wing lies in "open" position, one hand is intended to hold it and the other hand serves to release the spring connection between the mounting element and the base plate, i.e. that the actuating projection of the slider of the base plate is pushed against the spring force; consequently, no hand is available for lifting the hinge arm from the base plate.

DE 40 04 197 A1 discloses a quick-assembling furniture hinge, whose front of a base plate provides two spherical side projections for engaging two front recesses of a supporting part of a mounting assembly belonging to a hinge arm, the projections constituting, at assembling and disassembling, a pivot for the said recesses.

Besides, the base plate comprises a slanting step to be engaged by a respective counterstep of the supporting part of the mounting assembly. The mounting assembly in turn comprises a pair of transversely arranged spring-loaded sliders.

The hinge as disclosed makes no possibility for the unit composed of the hinge arm and the mounting assembly to be held by at least two fingers of a hand when disassembling the hinge. Namely, two main fingers are occupied by pressing the spring-loaded sliders, which as such are extremely small elements not to be easily approached. Thus, the pressing of release buttons is no equivalent to holding the hinge arm.

EP 0 256 376 A3 discloses a "hinge arm", whose mounting assembly incorporated into a hinge arm comprises two longitudinally serially arranged hooklike protrusions to be received by respective openings of a hinge base plate. The mounting assembly comprises a single spring-loaded slider which is slidable in the longitudinal direction of the hinge arm.

As the engagement of the hinge arm assembly and the hinge base plate proceeds in a face-to-face manner and neither the protrusions of the mounting assembly nor the openings of the base plate are visible in the course of the mounting procedure, mating difficulties occur at assembling. Additionally, since the clearances of the two hooklike protrusions of the mounting assembly and of the two openings of the base plate are rather small in comparison to the length of the base plate, the stability of the interconnection is doubtful.

The problem underlying the invention is to provide by simple means a furniture hinge which allows an easy and fast connection of a hinge arm to a base plate, the interconnection between the hinge arm and the base plate having a high stability.

Starting out from the generic prior art this problem is solved in that said mounting assembly is locked to said base plate by a first mounting element crossbeam provided at the end of said mounting element facing the pivot of said hinge arm, which engages from below a free end section of an elevated portion of said base plate, a tongue abutting against a transition piece of said base plate, the transition piece interconnecting said elevated portion of said base plate and a lower section thereof remote from the pivot of said hinge arm, and a latch provided at said slider, which engages from below a crossbeam of said base plate arranged at the end of the base plate remote from the pivot of the hinge arm.

The design of the furniture hinge of the present invention allows an easy and fast connection of the elements concerned by a turning movement with the weight of the furniture element partly carried by the base plate combined with a hooking effect between the base plate and the mounting element. The tongue abutting against the transition piece has a guiding function during assembling of the furniture hinge and provides a high stability of the interconnection between the hinge arm and the base plate.

In a preferred embodiment of the invention the slider comprises a pusher stud arranged in the axis of the spring, the pusher stud being separated from the latch by a slot.

Advantageously a second mounting element crossbeam is provided at the end of the mounting element which is opposite to the end where the first mounting element crossbeam is provided, the dimension and position of the slot corresponding to the second mounting element crossbeam.

An embodiment of the invention is explained in detail by means of the accompanying drawings, wherein

- Fig. 1 shows a longitudinal sectional view of a hinge arm assembly fixed on a furniture wall;
- Fig. 2 shows an assembly of Fig. 1 in the state immediately prior to locking or immediately after unlocking, respectively;
- Fig. 3 shows a detail of Fig. 1 or Fig. 2, respectively, relating to the mounting element of the hinge arm;
- Fig. 4 shows a detail of Fig. 1 or Fig. 2, respectively, relating to the interrelation of the mounting element of Fig. 3 and the hinge arm;
- Fig. 5 shows a detail of Fig. 1 or Fig. 2, respectively, relating to a base plate and to the connection thereof with the furniture side wall, separately shown a sectional view along the line A-A; and
- Fig. 6 shows a detail of Fig. 1 or Fig. 2, respectively, relating to the interrelation of the mounting element of the hinge arm of Fig. 3 and the assembly of the base plate and the furniture side wall of Fig. 5.

From Fig. 1 the connection of the furniture side wall 9 and the hinge arm 1 is evident. The connection is created indirectly by the base plate 4, which is fixed by two screws 8 to the side wall 9 and with which is connectable or from which is disconnectable the mounting element 2, which is permanently, but disconnectably, joined to the hinge arm 1. The assembly of the hinge arm 1 and the mounting element 2 can at one end be connected to the base plate 4 by a form-locking interconnection and at the other end connected by a force-locking interconnection which is based on spring elasticity.

The hinge arm 1 and the mounting element 2 are mutually connected by a screw 5. The mating surfaces of the hinge arm 1 and the mounting element 2 are uniformly ribbed or indented, the ribs or teeth of one element mating the spaces of teeth of the other one. Conveniently, a tapped hole for the screw 5 is provided in the mounting element 2, whereas the hinge arm 1 is provided with an elongated recess 1<sup>I</sup> which enables attaining optimum mutual position of the hinge arm 1 to the mounting element 2 with respect to the state of incorporation. In order to avoid complete unscrewing of the screw 5 at every mounting operation the recess 1<sup>I</sup> is at one end suitably widened with respect to the outline of the head of the

screw 5.

To enable adjustment of the slope of the hinge arm 1 to the mounting element 2 the hinge arm 1 is in the area between the screw 5 and its end provided for the pivoted connection to the wing part of the hinge provided with a tapped hole into which a screw 6 is inserted which regarding its head is not standardized; it namely ends in the direction towards the mounting element 2 by a club-shaped termination of cylindrical cross-section, the latter being separated from the threaded part of the screw 6 by a circular neck part the length of which corresponds to the thickness of the respective wall of the mounting element 2, whereby the diameter of the neck part corresponds to the nominal width of an elongated open recess in said wall of the mounting element 2 so that between the screw 6 and the mounting element 2 a form-locking connection is formed.

Advantageously, the mounting element 2 is formed as a capsized trough having open end sections and an inside attachment projecting from the roof wall and provided with said tapped hole for the screw 5. The longitudinal side walls of the mounting element 2 are close to their bottom edges at the free end below the elongated open recess serving the screw 6 interconnected by means of a crossbeam 2<sup>I</sup> whose function is disclosed hereinafter. The side longitudinal walls of the mounting element 2 are mutually connected also at the end opposite to the crossbeam 2<sup>I</sup>; the connection is realized by an analogous crossbeam 2<sup>II</sup> whose function is disclosed hereinafter.

Into the space 2<sup>V</sup> between the longitudinal walls of the mounting element 2, an attachment for the tapped hole for the screw 5 and said crossbeam 2<sup>II</sup> there is inserted a slider 3 which combines several functions. Between the slider 3 and said tapped-hole attachment is inserted a pressure (spreading) spring 7 for which in the slider 3 is foreseen a scuttled bearing 3<sup>III</sup>, an analogous bearing being foreseen in the wall of the tapped-hole attachment.

In the axis of the spring 7 the slider 3 is from the outer side formed as a pusher stud 3<sup>II</sup>. Separated by a slot 3<sup>IV</sup> from the pusher stud 3<sup>II</sup> is a latch 3<sup>I</sup>. The slot 3<sup>IV</sup> is regarding shape and location adapted to the crosspiece 2<sup>II</sup>, the length of the latch 3<sup>I</sup> being adapted to the available stroke of the slider 3 and enlarged for the necessary locking length. Advantageously, the pusher stud 3<sup>II</sup> is with respect to the object embodied so that in the pushed-in position the actuation surface thereof is essentially coplanar to the end surface of the assembled hinge arm 1 and the mounting element 2. The freedom of movement of the slider 3 is thus precisely defined.

It is understood that the base plate 4 is adapted to be fixed to the furniture side wall 9 and to receive the mounting element 2 as well as the hinge arm 1 joined to the latter. According to the inventive idea the base plate 4 is systematically divided into two functional sections: A first section arranged in the area beneath the screw 6, and a second section arranged in the area beneath the

spring 7. The first section is characterized by the location of an elevated portion 4<sup>II</sup> over the system plane of the base plate 4, beneath which elevated portion 4<sup>II</sup> a recess is provided in the plate, the second section being characterized by an arrangement of a crossbeam 4<sup>I</sup> also arranged over the system plane of the plate 4 and beneath which a recess 4<sup>V</sup> is foreseen as well. A hole for inserting a fastening screw 8 is foreseen both in the area preceding the free end 4<sup>III</sup> of the elevated portion 4<sup>II</sup> and in the middle between the above-mentioned sections. A transition piece 4<sup>IV</sup> interconnecting the 4<sup>II</sup> elevated portion at its opposite side of the free end 4<sup>III</sup> and the second section of the base plate 4 is embodied with a solid wall providing an abutment for a respective tongue 2<sup>III</sup> of the mounting element 2.

The side walls of the trough-shaped mounting element 2 are in the area of the screw 5 each provided with a band appendage 2<sup>IV</sup> which at mating the mounting element 2 with the base plate 4 cooperate with a recess 4<sup>V</sup> of the latter. With the aim that the lengths of the band appendages 2<sup>IV</sup> and the recess 4<sup>V</sup> be registered the latter is longitudinally enlarged laterally on both sides of the screw 8 with respect to the longitudinal plane of symmetry of the assembly (not evident from the drawing).

When positioning the assembly of the hinge arm 1 and the mounting element 2 with the corresponding equipment onto the base plate 4, the crossbeam 2<sup>I</sup> is approached to the free end 4<sup>III</sup> of the elevated portion 4<sup>II</sup> and placed below it. In this position the latch 3<sup>I</sup> strikes the crossbeam 4<sup>I</sup>. In the preferred embodiment of the invention the cooperating front edges of the latch 3<sup>I</sup> and the crossbeam 4<sup>I</sup> are conveniently rounded off or beveled, such characteristic properties of the spring 7 being chosen that the latch 3<sup>I</sup> slides below the crossbeam 4<sup>I</sup> without necessity of the pusher stud 3<sup>II</sup> to be pushed. It is understood that thereby the two band appendages 2<sup>IV</sup> and the corresponding recess 4<sup>V</sup> provide flawless guiding of one element against the other also in the direction transversely to the longitudinal axis.

Dismounting the assembly of the hinge arm 1 and the mounting element 2 as well as the corresponding equipment from the base plate 4, which practically means taking off the door wing from a furniture side wall, represents a reverse operation: One pushes the pusher stud 3<sup>II</sup>, i.e. one causes a stroke of the latch 3<sup>I</sup> from below the crossbeam 4<sup>I</sup>, simultaneously two fingers of the same hand grip the removable assembly, lift it from the base plate 4 and move it in the direction to the operator, thereby disengaging the crossbeam 2<sup>I</sup> from the elevated portion 4<sup>II</sup>.

It is obvious that all needed movements can be realized with one hand, the other hand being free to hold the door wing. No additional operator is necessary.

## Claims

### 1. Furniture hinge comprising

- a base plate (4),
  - a hinge arm (1) with a mounting assembly housed therein,
  - said mounting assembly consisting of a mounting element (2) and a single spring-loaded slider (3) housed therein, said spring-loaded slider (3) being slidable in the longitudinal direction of said hinge arm (1) for engaging said base plate (4),
- characterized in that said mounting assembly is locked to said base plate (4) by

a) a first mounting element crossbeam (2<sup>I</sup>) provided at the end of said mounting element (2) facing the pivot of said hinge arm (1), which engages from below a free end section (4<sup>III</sup>) of an elevated portion (4<sup>II</sup>) of said base plate (4),

b) a tongue (2<sup>III</sup>) abutting against a transition piece (4<sup>IV</sup>) of said base plate (4), the transition piece (4<sup>IV</sup>) interconnecting said elevated portion (4<sup>II</sup>) of said base plate (4) and a lower section thereof facing away from the pivot of said hinge arm (1), and

c) a latch (3<sup>I</sup>) provided at said slider (3), which engages from below a crossbeam (4<sup>I</sup>) of said base plate (4) arranged at the end of the base plate (4) remote from the pivot of the hinge arm (1).

2. Furniture hinge according to claim 1, characterized in that the slider (3) comprises a pusher stud (3<sup>II</sup>) arranged in the axis of the spring (7), the pusher stud (3<sup>II</sup>) being separated from the latch (3<sup>I</sup>) by a slot (3<sup>IV</sup>).

3. Furniture hinge according to claim 2, characterized in that a second mounting element crossbeam (2<sup>II</sup>) is provided at the end of the mounting element (2) which is opposite to the end where the first mounting element crossbeam (2<sup>I</sup>) is provided, the dimension and position of the slot (3<sup>IV</sup>) corresponding to the second mounting element crossbeam (2<sup>II</sup>).

## Patentansprüche

### 1. Möbelscharnier mit

- einer Grundplatte (4),
- einem Scharnierarm (1) mit einer darin aufgenommenen Befestigungsanordnung,
- wobei die Befestigungsanordnung aus einem Befestigungselement (2) und einem darin aufgenommenen einzelnen, unter Federspannung stehenden Schieber (3) besteht, wobei der unter Federspannung stehende Schieber (3) in

der Längsrichtung des Scharnierarms (1) verschiebbar für einen Eingriff an der Grundplatte (4) ist, dadurch gekennzeichnet, daß die Befestigungsanordnung an der Grundplatte (4) durch

a) einen ersten Quersteg (2<sup>I</sup>) des Befestigungselements, der an dem Ende des Befestigungselements (2) vorgesehen ist, das dem Drehpunkt des Scharnierarms (1) zugewandt ist, der von unten an einem freistehenden Endabschnitt (4<sup>III</sup>) eines erhöhten Abschnitts (4<sup>II</sup>) der Grundplatte (4) eingreift,

b) eine gegen ein Übergangsstück (4<sup>IV</sup>) der Grundplatte (4) anschlagende Zunge (2<sup>III</sup>), wobei das Übergangsstück (4<sup>IV</sup>) den erhöhten Abschnitt (4<sup>II</sup>) und einen tiefer liegenden Abschnitt der Grundplatte (4), der von dem Drehpunkt des Scharnierarms (1) abgewandt ist, miteinander verbindet, und c) einen an dem Schieber (3) vorgesehenen Riegel (3<sup>I</sup>) festgelegt ist, der von unten an einem Quersteg (4<sup>I</sup>) der Grundplatte (4) eingreift, der an dem Ende der Grundplatte (4) von dem Drehpunkt des Scharnierarms (1) entfernt angeordnet ist.

2. Möbelscharnier nach Anspruch 1, dadurch gekennzeichnet, daß der Schieber (3) einen Schiebelbolzen (3<sup>II</sup>) aufweist, der in der Achse der Feder (7) angeordnet ist, wobei der Schiebelbolzen (3<sup>II</sup>) von dem Riegel (3<sup>I</sup>) durch einen Schlitz (3<sup>IV</sup>) getrennt ist.

3. Möbelscharnier nach Anspruch 2, dadurch gekennzeichnet, daß ein zweiter Quersteg (2<sup>II</sup>) des Befestigungselements an dem Ende des Befestigungselements (2) vorgesehen ist, das dem Ende gegenüberliegt, an dem der erste Quersteg (2<sup>I</sup>) des Befestigungselements vorgesehen ist, wobei die Abmessung und Position des Schlitzes (3<sup>IV</sup>) dem zweiten Quersteg (2<sup>II</sup>) des Befestigungselements entsprechen.

## Revendications

1. Charnière de meuble comprenant

- une plaque de base (4),
- un bras de charnière (1) muni d'un ensemble de montage logé dans celui-ci,
- ledit ensemble de montage étant constitué d'un élément de montage (2) et d'un coulisseau unique à ressort (3) logé dans celui-ci, ledit coulisseau à ressort (3) pouvant coulisser dans le sens longitudinal dudit bras de charnière (1)

pour engager ladite plaque de base (4), caractérisée en ce que ledit ensemble de montage est bloqué sur ladite plaque de base (4) par

a) une première traverse d'élément de montage (2<sup>I</sup>) prévue à l'extrémité dudit élément de montage (2) faisant face au pivot dudit bras de charnière (1), qui s'engage de dessous une section à extrémité libre (4<sup>III</sup>) d'une partie surélevée (4<sup>II</sup>) de ladite plaque de base (4),

b) une languette (2<sup>III</sup>) s'appuyant contre un raccord de réduction (4<sup>IV</sup>) de ladite plaque de base (4), le raccord de réduction (4<sup>IV</sup>) interconnectant ladite partie surélevée (4<sup>II</sup>) de ladite plaque de base (4) à une partie inférieure de celle-ci opposée au pivot dudit bras de charnière (1), et

c) un loquet (3<sup>I</sup>) prévu sur ledit coulisseau (3), qui s'engage de dessous une traverse (4<sup>I</sup>) de ladite plaque de base (4), disposé à l'extrémité de la plaque de base (4) à distance du pivot du bras de charnière (1).

2. Charnière de meuble selon la revendication 1, caractérisée en ce que le coulisseau (3) comprend une cheville de poussoir (3<sup>II</sup>) disposée dans l'axe du ressort (7), la cheville de poussoir (3<sup>II</sup>) étant séparée du loquet (3<sup>I</sup>) par une fente (3<sup>IV</sup>).

3. Charnière de meuble selon la revendication 2, caractérisée en ce qu'une seconde traverse d'élément de montage (2<sup>II</sup>) est prévue à l'extrémité de l'élément de montage (2) opposée à l'extrémité sur laquelle la première traverse d'élément de montage (2<sup>I</sup>) est prévue, la dimension et la position de la fente (3<sup>IV</sup>) correspondant à la seconde traverse d'élément de montage (2<sup>II</sup>).

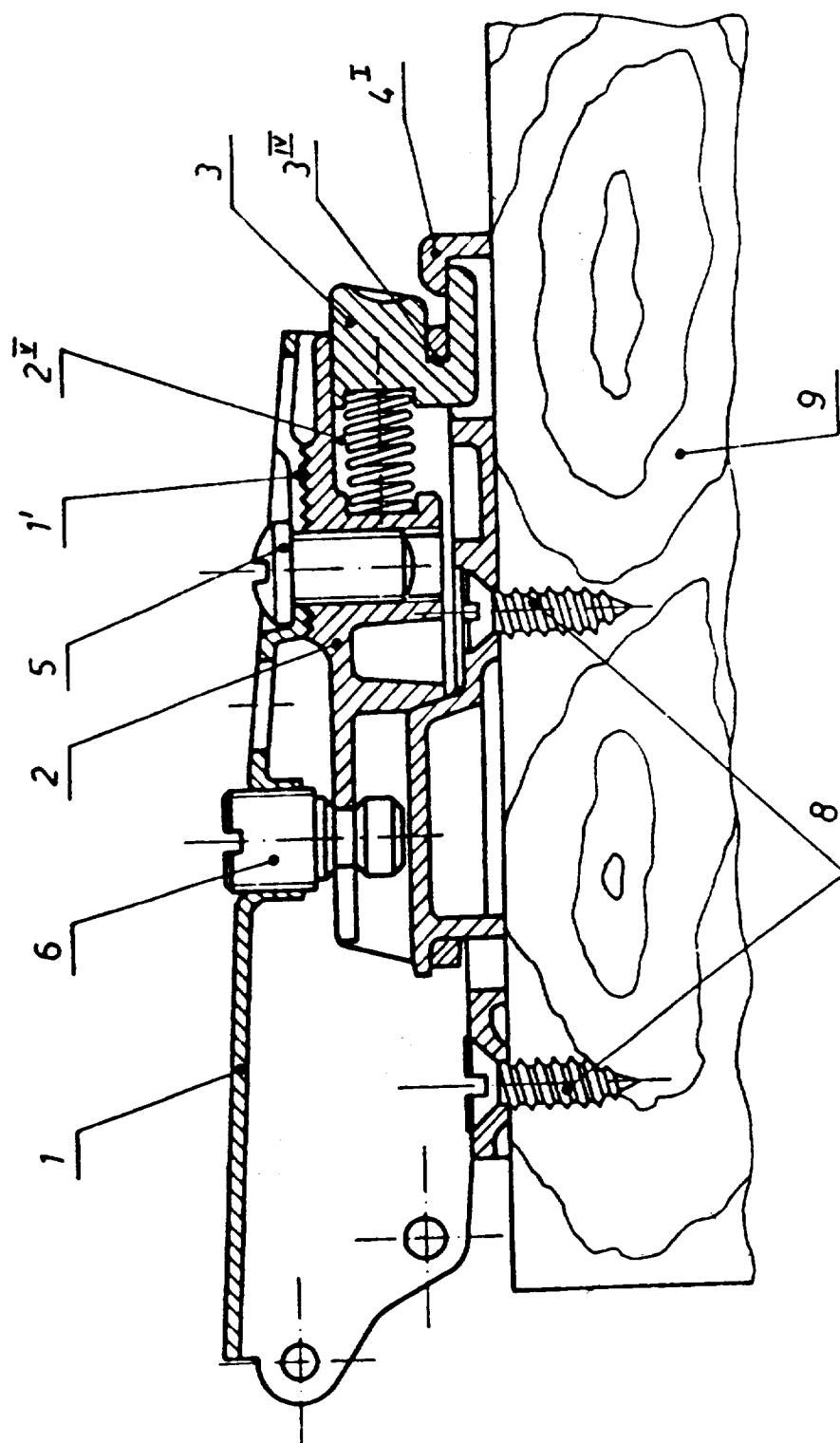
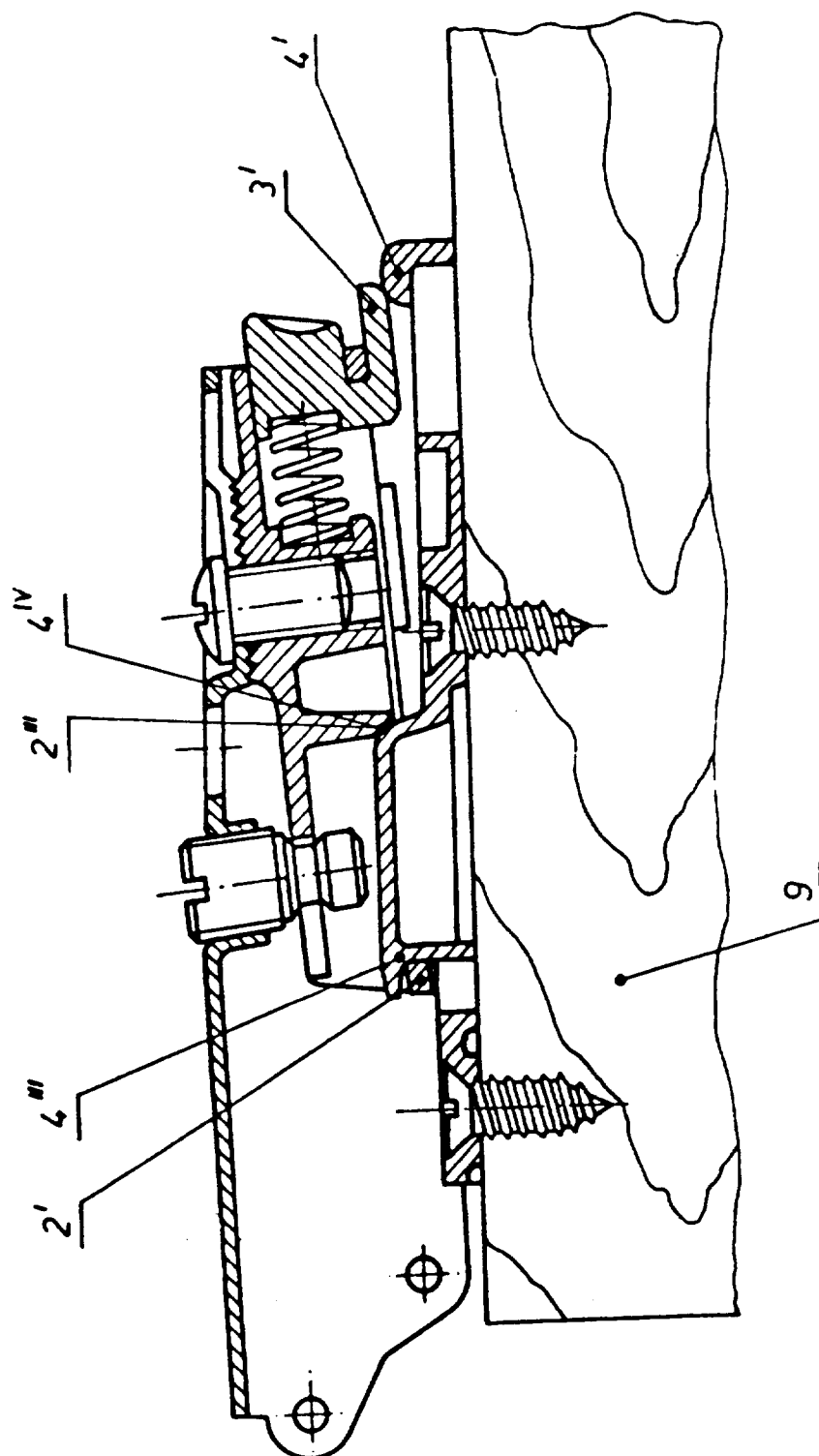


FIG. 1



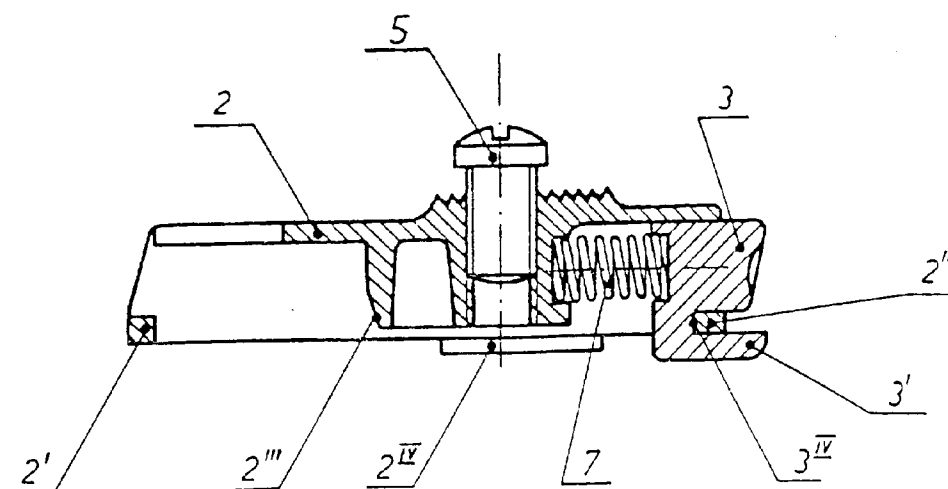


FIG. 3

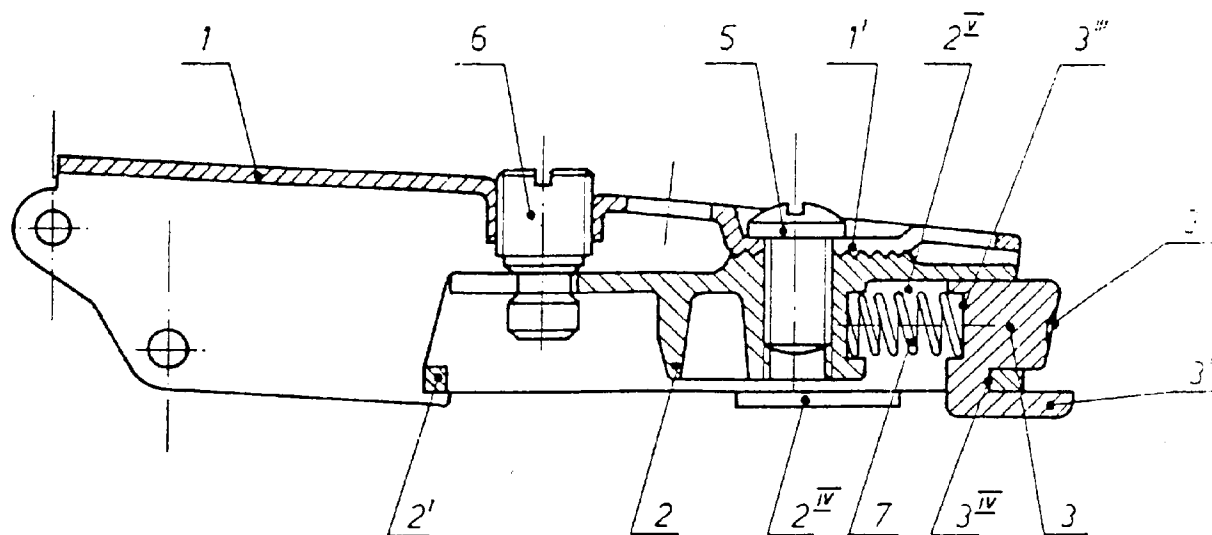


FIG. 4



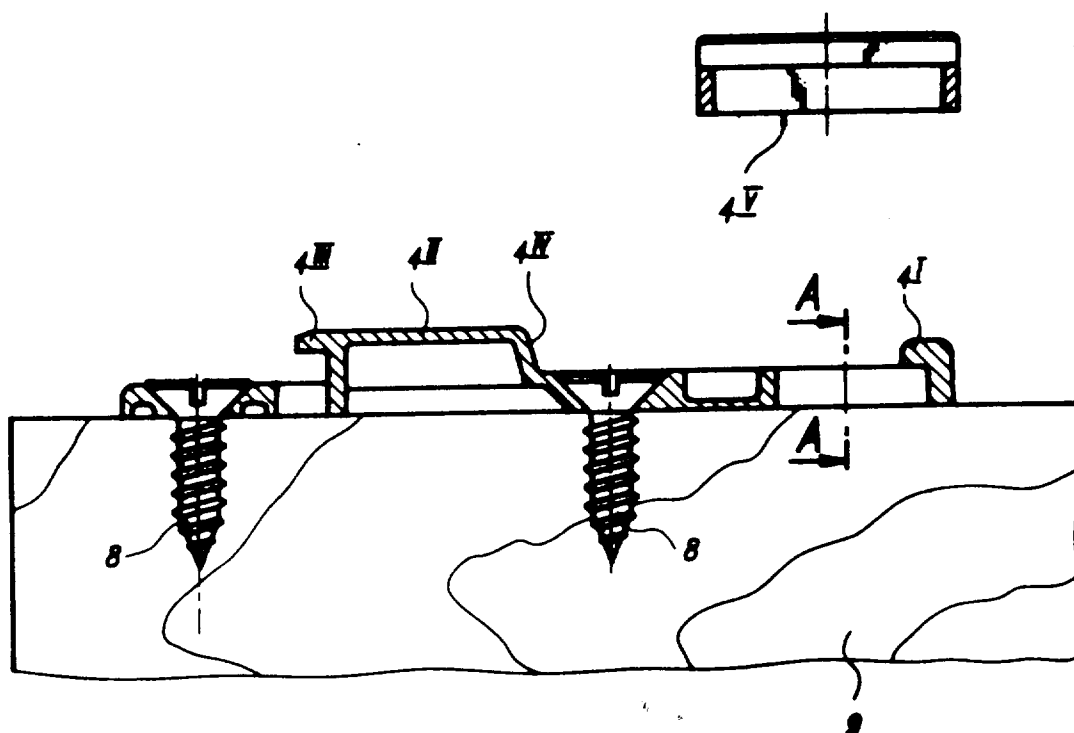


FIG. 5

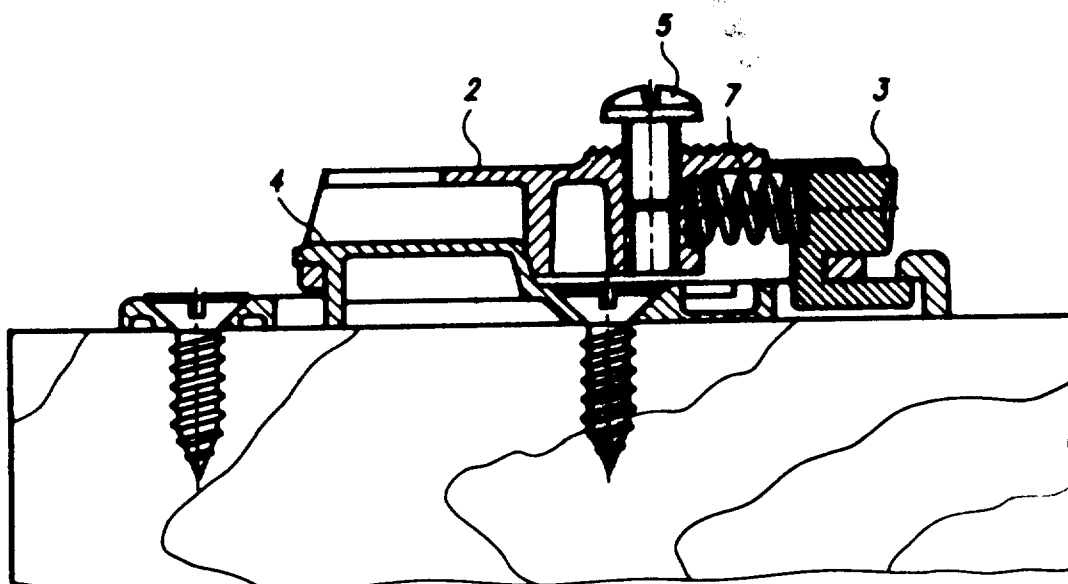


FIG. 6