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Remarks:
Amended claims in accordance with Rule 86 (2) EPC.

(54) **Guide for a drawer with a spring and shock absorber**

(57) The object of the present invention is a guide for a drawer with a spring and shock absorber which enables the drawer to be easily opened without brusque knocks when it is inserted, as the guide has a spring (7) and a shock absorber (6) which are joined by their ends to a trigger (5), so that the movement of the two components is synchronised, so that there is no instability in the guide as the recovery of the spring is compensated by the retention of the shock absorber from the moment in which the trigger movement is released.

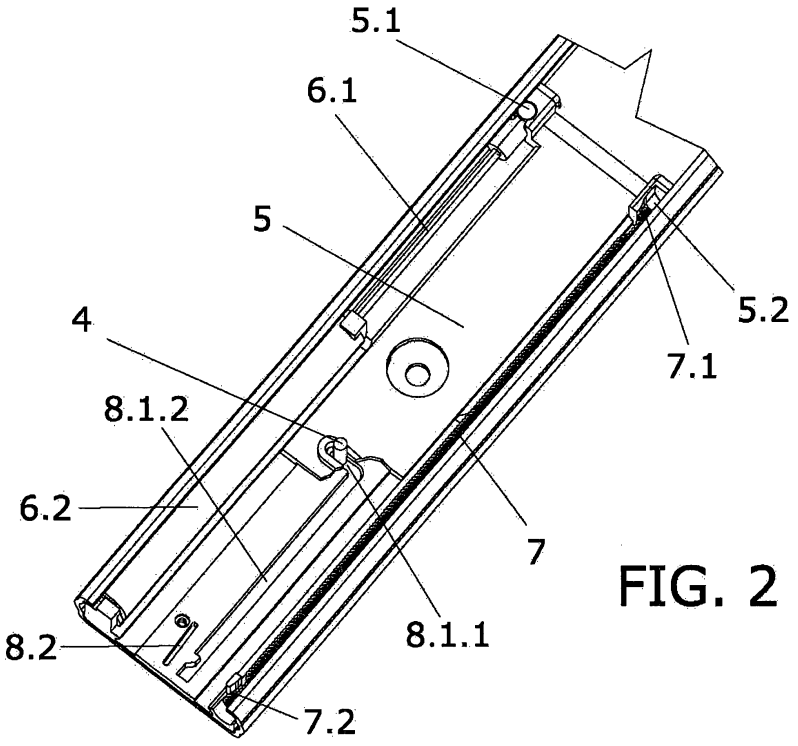

FIG. 2

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Description

OBJECT OF THE INVENTION

[0001] The object of the present invention is a guide for a drawer with a spring and shock absorber which enables the drawer to be easily opened avoiding brusque movements or knocks when closing the drawer.

[0002] Due its special configuration, the guide is provided with a spring which enables the drawer to be closed and a shock absorber which eases closing ensuring a smooth movement.

[0003] In addition due to the fact that both the spring and the shock absorber are joined at their ends to a trigger the movements of the two components is synchronised so that there is no instability in the guide, as the recovery of the spring is compensated by the retention of the shock absorber from the moment in which the trigger movement is released.

BACKGROUND TO THE INVENTION

[0004] Guides for drawers with a spring and shock absorber are well known in the state of the art which, when the drawer is pulled out have an extended spring whose movement for returning the drawer is released due to the action of the interior profile of the guide on the part joined to the spring.

[0005] These guides include European Patent no. EP1561398 which, in addition to a shock absorber is provided with a moveable housing in which the movement of the spring and the shock absorber is uncoupled, so that the shock absorber movement does not begin until a period of time has passed from the start of recovery of the spring. 19/06/2007

In this case, when the drawer is inserted the guide accelerates when the spring is released to subsequently be suddenly stopped by the shock absorber which affects the uniformity of the movement.

[0006] There are other cases in which the movement of the spring or the shock absorber are associated with the rotation of a tracker so that the spring or shock absorber are required to absorb forces not only in the longitudinal direction of the guide, but also transversally so that these elements are subject to the problem of wear.

[0007] The guide for a drawer with a spring and shock absorber of the present invention overcomes all the previous inconveniences by presenting a synchronised movement or passage of the spring and shock absorber.

DESCRIPTION OF THE INVENTION

[0008] The present invention refers to a guide for a drawer with a spring and shock absorber where the spring recovery is compensated by retention of the shock absorber from the moment in which they begin to act both when inserting and pulling out the drawer.

[0009] The guide is provided with an interior profile with an oblique grooving in its interior end, which enters into contact with a tracker housed in a mobile part when the drawer is arranged in the interior profile of the guide, or vice versa when the drawer is arranged in the external profile of the guide.

[0010] The remainder of the description shall be made taking into consideration the case in which the drawer is arranged in the interior profile considering that it is not necessary in each characteristic to mention in this context that the drawer is arranged in the external profile. In this case, the external profile, together with all the elements joined to it at any time, moves towards the internal profile which remains fixed.

[0011] When the drawer is inserted, the interior profile moves towards the back of said drawer, with the spring in a state of deformation in the moment prior to when the oblique grooving of the guide interior profile enters into contact with the tracker.

[0012] Both the spring and the shock absorber are joined at one of their ends to the mobile part, so that when the oblique grooving of the interior profile of the guide enters into contact with the tracker, it is able to follow the trajectory defined by a main grooving present in a fixed part or support of the external profile of the guide. The tracker may at that moment move longitudinally along the guide due to the force of recovery to the position of balance by the spring which drags the mobile part in its movement and at the same time the shock absorber. In this way the movement of the spring and the shock absorber is produced in a synchronised manner and thus there are no changes in the speed of insertion in the drawer. In addition, both the spring and the shock absorber follow a rectilinear trajectory as each one is situated on each side of the interior profile of the guide, and thus the forces to be absorbed only have a component in the longitudinal direction of the guide.

[0013] The system is recoverable as in the event of accidental falling of the tracker and subsequent dragging of the mobile part, the interior profile of the guide may enter once more and places the tracker in the position of extraction due to a secondary channel present in the fixed part and parallel to the principal channel which permits deformation of said fixed part.

[0014] The system is also provided with a blocking device which permits should the drawer form part of a chest of drawers, that only one of these can be extracted in turn, preventing accidentally upsetting the chest of drawers due to the weight in projection of various drawers open at the same time.

DESCRIPTION OF THE DRAWINGS

[0015] The present descriptive report is supplemented by a series of drawings illustrative of a preferred embodiment but not however restricting the invention in any way.

Figure 1 shows a perspective view of the guide for drawer with spring and shock absorber which is the

object of the present invention.

Figure 2 shows a perspective view of the guide for a drawer with spring and shock absorber in an extracted arrangement of the drawer when this is arranged in the interior profile.

Figure 3 shows a perspective view of the guide for a drawer with spring and shock absorber in the moment prior to the interior profile entering into contact with the tracker when it is introduced in the drawer, when this is arranged in the interior profile.

Figure 4 shows a perspective view of the guide for a drawer with spring and shock absorber in the moment when the tracker travels along the longitudinal section of the main grooving of the support.

Figure 5 shows a perspective view of the mobile part of the guide for a drawer with spring and shock absorber which is the object of the present invention, when the interior profile is completely inserted in the external profile.

Figure 6 shows a perspective view of the device blocking the remainder of the drawers in the piece of furniture.

PREFERRED EMBODIMENT OF THE INVENTION

[0016] In the light of the foregoing, the present invention refers to a guide for a drawer with spring and shock absorber which permits easy insertion of the drawer so that the drawer is not subject to any brusque knocks when it is inserted.

First example of a preferred embodiment.

[0017] The guide presents an interior profile (1) which slides along an intermediate profile (2) which in turn slides on an external profile (3) with the drawer (not shown in the Figures) joined to the interior profile (1).

[0018] This interior profile (1) is provided with an oblique grooving (1.1)in its interior end which enters into contact with a tracker (4) housed in a mobile part which hereinafter shall be referred to as a trigger (5).

[0019] The trigger (5) is provided with a slot or recess (5.1) which houses the end of the piston (6.1) of a shock absorber (6) and another slot (5.2) where the external end (7.1) of a spring is coupled.

[0020] The housing (6. 2) of the shock absorber (6) and the interior end (7.2) of the spring (7) in this example of a preferred embodiment are fixed, as they are situated in a support (8) which is solid to the external profile (3), so that both elements, the shock absorber (6) and the spring (7) act in a longitudinal direction of the guide with the spring (7) in a deformed state, expanded in this example of a preferred embodiment, when the guide is in its extracted position.

[0021] When the drawer is inserted, the oblique grooving (1.1) of the interior profile (1) enters into contact with the tracker (4) which may move in a transversal hole (5.3) in the trigger (5) and a transversal section (8.1.1) of a main groove (8.1) of the support (8) as in that initial moment in which there is contact, both (5.3, 8.1.1) coincide.

[0022] Subsequently, the tracker (4) is facing and runs through a longitudinal section (8.1.2) of the main grooving (8.1) so that the trigger (5) is displaced towards the interior of the guide, compressing in this example of a preferred embodiment, both spring (7)
and shock absorber (6) which work without any time lags and thus the insertion movement of the guide does not produce any change of speed.

[0023] When the guide is extracted from its fully closed position, the oblique grooving (1.1) of the interior profile (1) pushes the tracker (4) along the longitudinal section (8.1.2) of the main grooving (8.1) of the support (8), expanding both spring (8) and shock absorber (7) in this example of an embodiment until the tracker (4) enters into contact with the transversal section (8.1.1) of the main grooving (8.1) of the support (8), with the trigger (5) remaining ready for the subsequent insertion in the guide.

[0024] The guide is recoverable, as in the event of accidental falling of the tracker (4) and the subsequent dragging of the trigger (5), the interior profile (1) of the guide may enter once more and place the tracker (4) in the extraction position due to a secondary grooving (8.2) present in the support (8) and parallel to the main grooving (8.1) which enables the deformation of said support (8).

Second example of a preferred embodiment.

[0025] In this second example of a preferred embodiment the drawer is joined to the external profile (3)which slides on an intermediate profile (2) which in turn slides on an interior profile (1).

[0026] Subsequently, the tracker (4) pushes the oblique grooving (1.1) of the internal profile (1) so that the trigger (5) is placed towards the exterior of the guide in this case, compressing both the spring (7) and the shock absorber (6) which work without time lags and thus the insertion movement of the guide does not produce any change of speed.

Third example of a preferred embodiment.

[0027] In this third example of a preferred embodiment, shown in figure 6, a blocking device may be seen, which ensures, in the event that the drawer forms part of a chest of drawers, that only one of these can be extracted at one time, preventing the accidental overturning of the furniture, due to the weight of the projection of various drawers open at once.

[0028] The blocking device is formed by a rod (9) arranged vertically and perpendicular to all the guides of

the drawers which form part of the furniture. The rod (9) is provided with inclined grooves (9.1) inside which the tracker (4) also passes during its movement.

[0029] In the situation with the drawer inside the piece of furniture, the guides are contained in such a way that the trackers (4) are facing an opening of the inclined grooves (9.1).

[0030] When a drawer is extracted, the tracker (4), in its movement, enters the groove (9.1) which it faces and pushes on this (9.1) producing a raising or lowering of the rod (9), depending on the inclination of the inclined grooves (9.1).

[0031] In this way, when one of the drawers is open, the other trackers (4) of the drawer guides above and below the drawer which has been extracted are limited in their movement as they are in contact with the wall (9.2) of the strip (9) which prevents their extraction.

[0032] The essential nature of this invention corresponds to a guide for a draw with a spring and shock absorber of the kind which are provided with an interior profile (1) which slides on an intermediate profile (2) which in turn slides on an external profile (3) or vice versa, with the drawer joined to the interior profile (1) or to the exterior profile (3) respectively, where the interior profile (1) is provided with an oblique grooving (1.1) at one end which enters into contact with a tracker (4) housed in a trigger(5) when the drawer is entered, characterised in that the trigger(5) is displaced to the inside or outside of the guide respectively housing a mobile end of a shock absorber (6) and a mobile end (7.1) of a spring (7) so that these act simultaneously following a rectilinear trajectory in the longitudinal direction of the guide from a deformed state of the spring, with both the spring (7)and the shock absorber (6) having two ends fixed solidly to the external profile (3).

[0033] The essential nature of this invention is not altered in any way by variations in materials, form, shape and arrangement of the component elements, which are described in a manner which is in no way restrictive but which is sufficient to for an expert to proceed to its reproduction.

Claims

1. guide for a drawer with a spring and shock absorber of the kind which are provided with an interior profile (1) which slides on an intermediate profile which in turn slides on an external profile (3) or vice versa, with the drawer joined to the internal profile (1) or to the external profile (3) respectively, where the interior profile is provided with an oblique grooving (1.1) in one end which enters in contact with a tracker (4) housed in a trigger (5) when the drawer is entered, **characterised in that** the trigger (5) is moved towards the inside or outside of the guide respectively housing the mobile end of a shock absorber (6) and the mobile end (7.1) of a spring (7) so that these act simultaneously following a rectilinear trajectory in the longitudinal direction of the guide from the deformed state of the spring, with both spring (7) and shock absorber (6) having two ends fixed solidly to the external profile (3).and the shock absorber (6) two ends fixed solidly to the external profile (3).

2. Guide for guide for a drawer with a spring and shock absorber according to claim 1 **characterised in that** the fixed ends of both the spring (7) and the shock absorber (6) are located in a support (8) solidly attached to the external profile (3).

3. Guide for a drawer with a spring and shock absorber according to claim 2 **characterised in that** the tracker (4) moves first through a transversal hole (5.3) of the trigger (5) and a transversal section (8.1.1) of a main groove (8.1) of the support (8) coinciding at that moment, and subsequently the tracker (4) passes through a longitudinal section (8.1.2) of the main groove (8.1) of the support (8) lateral sides of the support.

4. Guide for a drawer with spring and shock absorber according to claim 1 **characterised in that** the trigger (5) is provided with a recess or slot (5.1) which houses a horizontal profile (5.1) with both the piston (6.1) of the shock absorber (6) as mobile end and a recess (5.2) where it couples to the mobile end (7.1) of the spring (7).

5. Guide for a drawer with a spring and shock absorber according to claim 1 **characterised in that** the fixed end of the shock absorber is its housing (6.2).

6. Guide for a drawer with a spring and shock absorber according to claim 1 **characterised in that** the deformed state corresponds to the expanded spring (7).

7. Guide for a drawer with a spring and shock absorber according to claim 2, **characterised in that** when extracting the guide from its completely closed position, the oblique groove (1.1) of the interior profile (1) pushes the tracker (4) along the longitudinal section (8.1.2) of the main grooving (8.1) of the support 88), so that the spring (7) is once more deformed until the tracker (4) enters into contact with the transversal section (8.1.1) (8.1.1) of the main grooving (8.1) of the support (8), with the trigger (5) remaining ready for subsequent insertion in the guide.

8. Guide for a drawer with a spring and shock absorber according to claim 3, **characterised in that** the guide is recoverable as in the event of accidental falling of the tracker (4) and the subsequent dragging of the trigger (5), the interior profile (1) of the guide may enter once more and place the tracker (4) in the

position of extraction due to a secondary grooving (8.2) present in the support (8) and parallel to the main groove (8.1) which enables deformation of the support (8).

9. Guide for a drawer with a spring and shock absorber according to claim 1, **characterised in that** the system is also provided with a blocking device which, should the drawer form part of a chest of drawers, permits only one of these to be extracted at once, consisting of a rod (9) arranged vertically and perpendicular to all the guides of the drawers which are provided with inclined grooves (9.1) through the interior of which the tracker (4) passes during its movement, in such a way that when the drawer is inside the chest of drawers or furniture, the guides are contained, with the trackers (4) facing an opening in the inclined grooves (9.1) so that when a drawer is extracted, the tracker, (4) in its movement enters the groove (9.1) which it faces and pushes on it (9.1) causing the rod (9) to rise or fall, depending on the inclination of the inclined grooves (9.1) and restricting the movement of the other trackers (4) of the drawer guides above and below the drawer which has been extracted, as they are in contact with the wall (9.2) of the strip (9) which prevents their extraction.

Amended claims in accordance with Rule 86(2) EPC.

1. guide for a drawer with a spring and shock absorber of the kind which are provided with an interior profile (1) which slides on an intermediate profile which in turn slides on an external profile (3) or vice versa, with the drawer joined to the internal profile (1) or to the external profile (3) respectively, where the interior profile is provided with an oblique grooving (1.1) in one end which enters in contact with a tracker (4) housed in a trigger (5) when the drawer is entered, where the trigger (5) is moved towards the inside or outside of the guide respectively housing the mobile end of a shock absorber (6) and the mobile end (7.1) of a spring (7) so that these act simultaneously following a rectilinear trajectory in the longitudinal direction of the guide from the deformed state of the spring, with both spring (7) and shock absorber (6) having two ends fixed solidly to the external profile (3), **characterised in that** the internal profile (1) moves towards the back of said drawer, up to the end of the external profile (3).

2. Guide for a drawer with a spring and shock absorber according to claim 1 **characterised in that** the trigger (5) is provided with a recess or slot (5.1) which houses the end of the piston (6.1) of the stock absorber (6) as mobile end and a recess or slot (5.2) where it couples to the mobile end (7.1) of the spring (7) being each one, shock absorber (6) and spring (7) situated on each side of the internal profile (1) of the guide.

3. - Guide for a drawer with a spring and shock absorber according to claim 1 **characterised in that** the fixed ends of both the spring (7) and the shock absorber (6) are located in a support (8) solidly attached to the external profile (3).

4. Guide for a drawer with a spring and shock absorber according to claim 3 **characterised in that** the tracker (4) moves first through a transversal hole (5.3) of the trigger (5) and a transversal section (8.1.1) of a main groove (8.1) of the support (8) coinciding at that moment, and subsequently the tracker (4) passes through a longitudinal section (8.1.2) of the main groove (8.1) of the support (8) lateral sides of the support.

5. Guide for a drawer with a spring and shock absorber according to claim 1 **characterised in that** the fixed end of the shock absorber is its housing (6.2).

6. Guide for a drawer with a spring and shock absorber according to claim 1 **characterised in that** the deformed state corresponds to the expanded spring (7).

7. Guide for a drawer with a spring and shock absorber according to claim 4, **characterised in that** when extracting the guide from its completely closed position, the oblique groove (1.1) of the interior profile (1) pushes the tracker (4) along the longitudinal section (8.1.2) of the main grooving (8.1) of the support (8), so that the spring (7) is once more deformed until the tracker (4) enters into contact with the transversal section (8.1.1) (8.1.1) of the main grooving (8.1) of the support (8), with the trigger (5) remaining ready for subsequent insertion in the guide.

8. Guide for a drawer with a spring and shock absorber according to claim 4, **characterised in that** the guide is recoverable as in the event of accidental falling of the tracker (4) and the subsequent dragging of the trigger (5), the interior profile (1) of the guide may enter once more and place the tracker (4) in the position of extraction due to a secondary grooving (8.2) present in the support (8) and parallel to the main groove (8.1) which enables deformation of the support (8).

9. Guide for a drawer with a spring and shock absorber according to claim 1, **characterised in that** the system is also provided with a blocking device which, in the event that the drawer form part of a chest of drawers, permits only one of these to be

extracted at once, consisting of a rod (9) arranged vertically and perpendicular to all the guides of the drawers which are provided with inclined grooves (9.1) through the interior of which the tracker (4) passes during its movement, in such a way that when the drawer is inside the chest of drawers or furniture, the guides are contained, with the trackers (4) facing an opening in the inclined grooves (9.1) so that when a drawer is extracted, the tracker, (4) in its movement enters the groove (9.1) which it faces and pushes on it (9.1) causing the rod (9) to rise or fall, depending on the inclination of the inclined grooves (9.1) and restricting the movement of the other trackers (4) of the drawer guides above and below the drawer which has been extracted, as they are in contact with the wall (9.2) of the strip (9) which prevents their extraction.

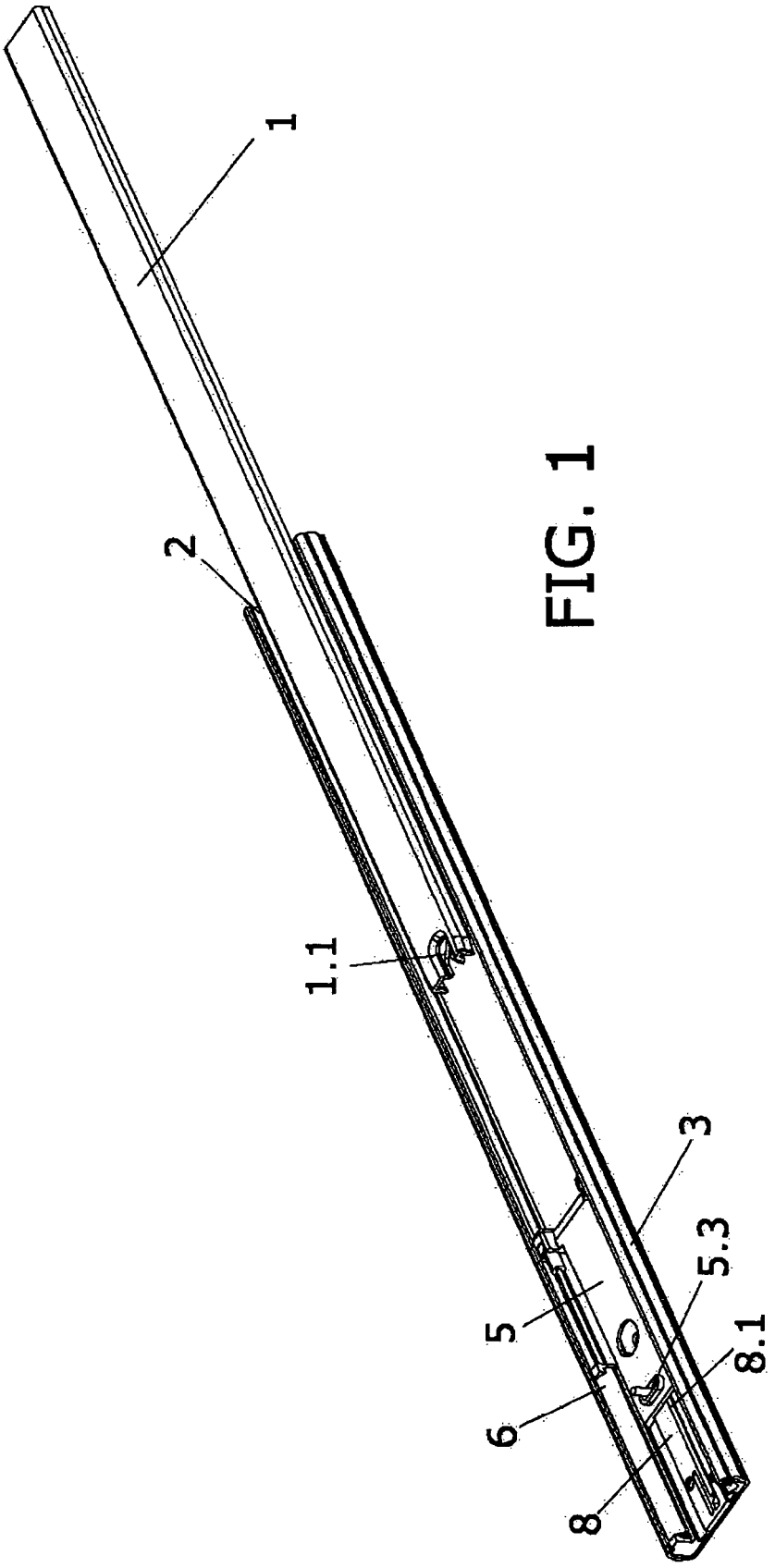


FIG. 1

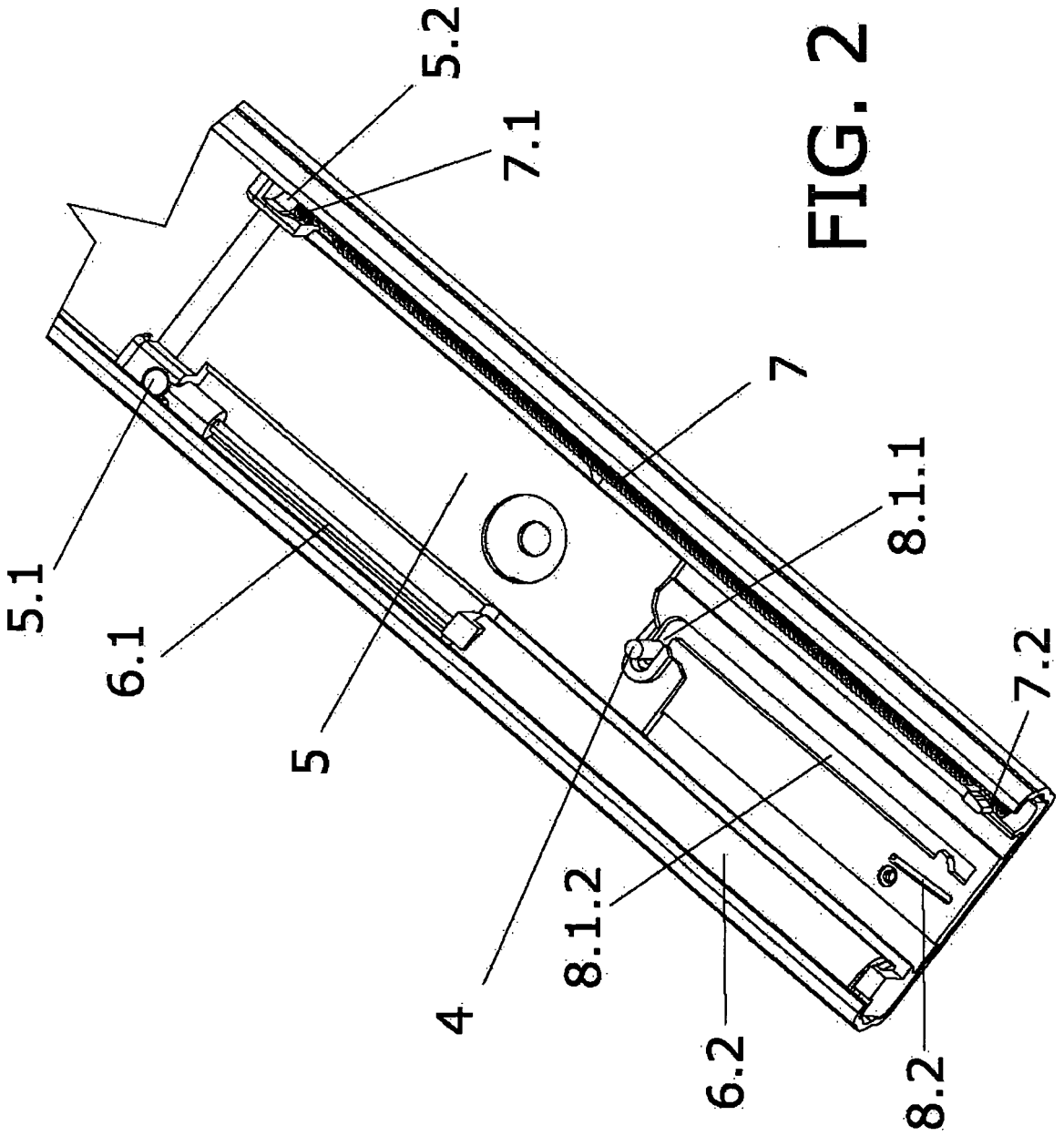


FIG. 2

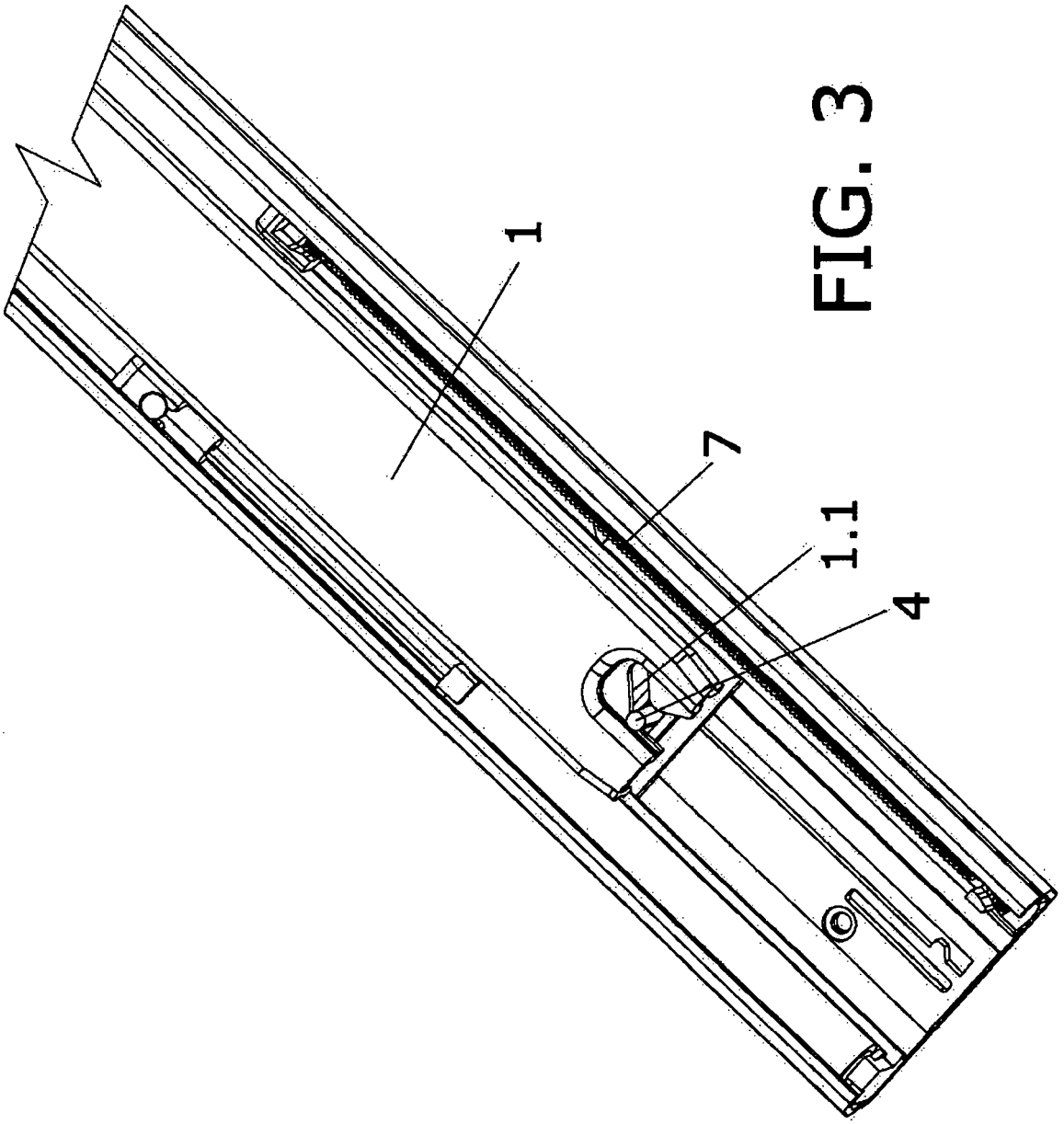


FIG. 3

FIG. 4

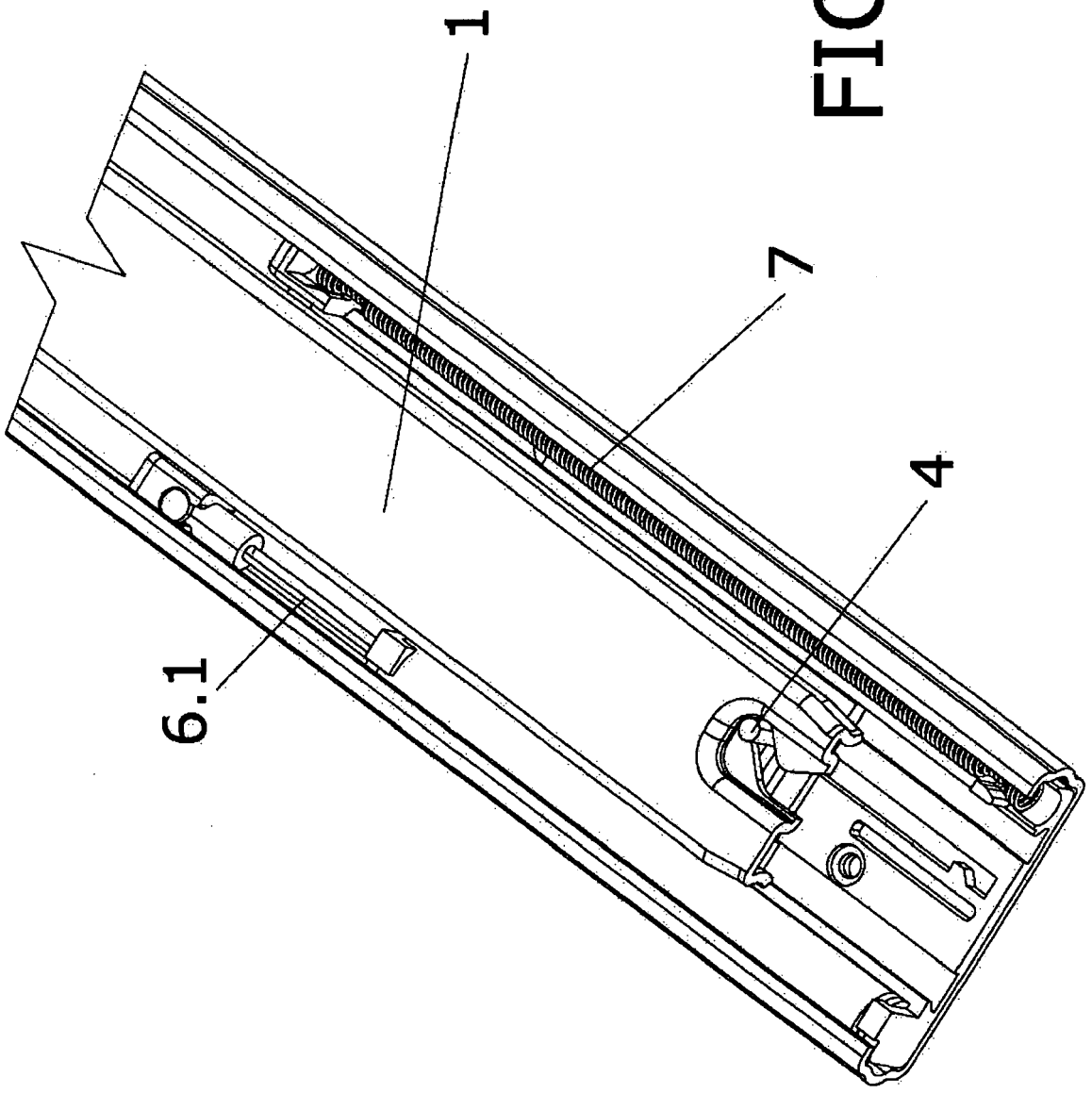
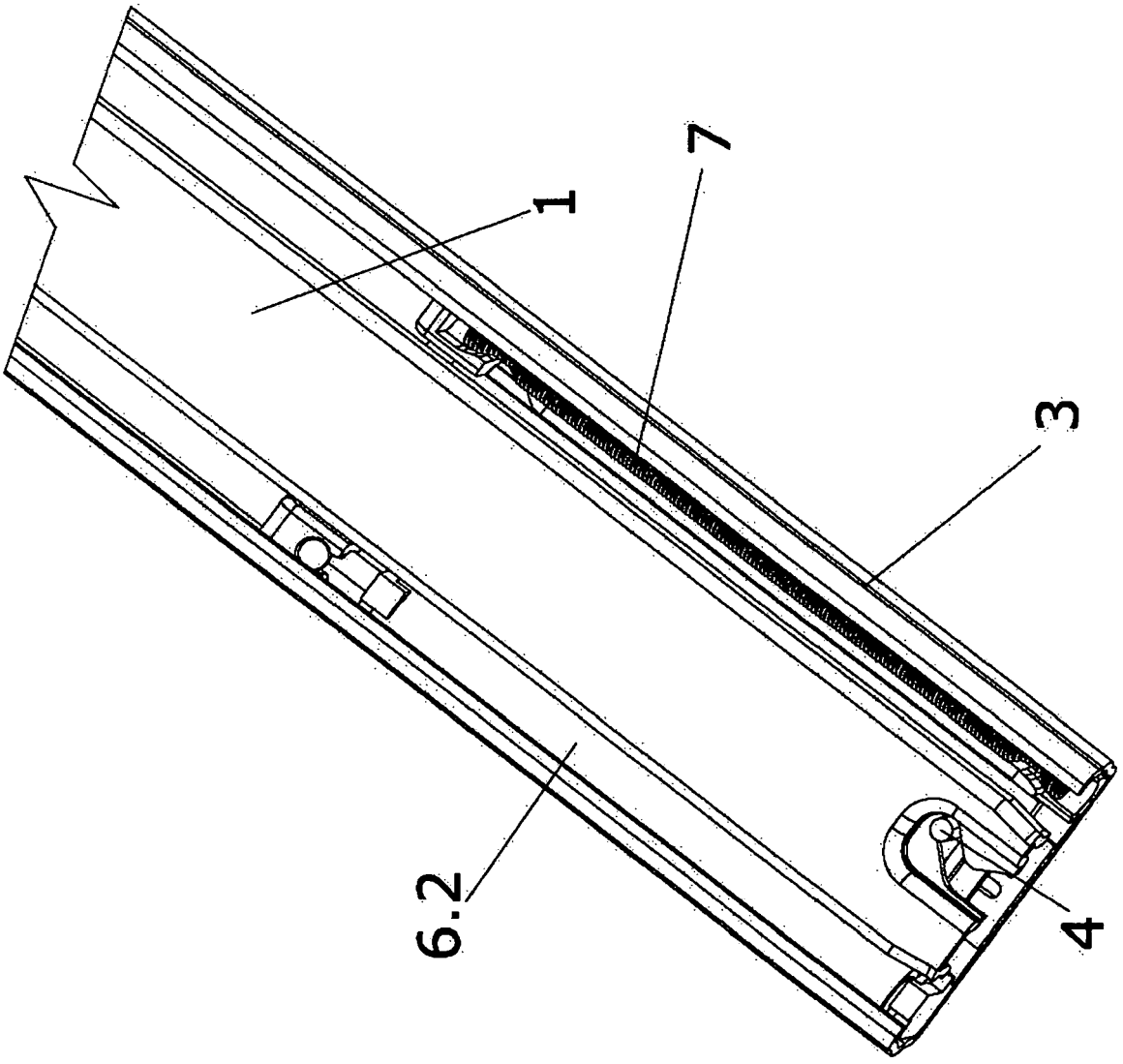


FIG. 5



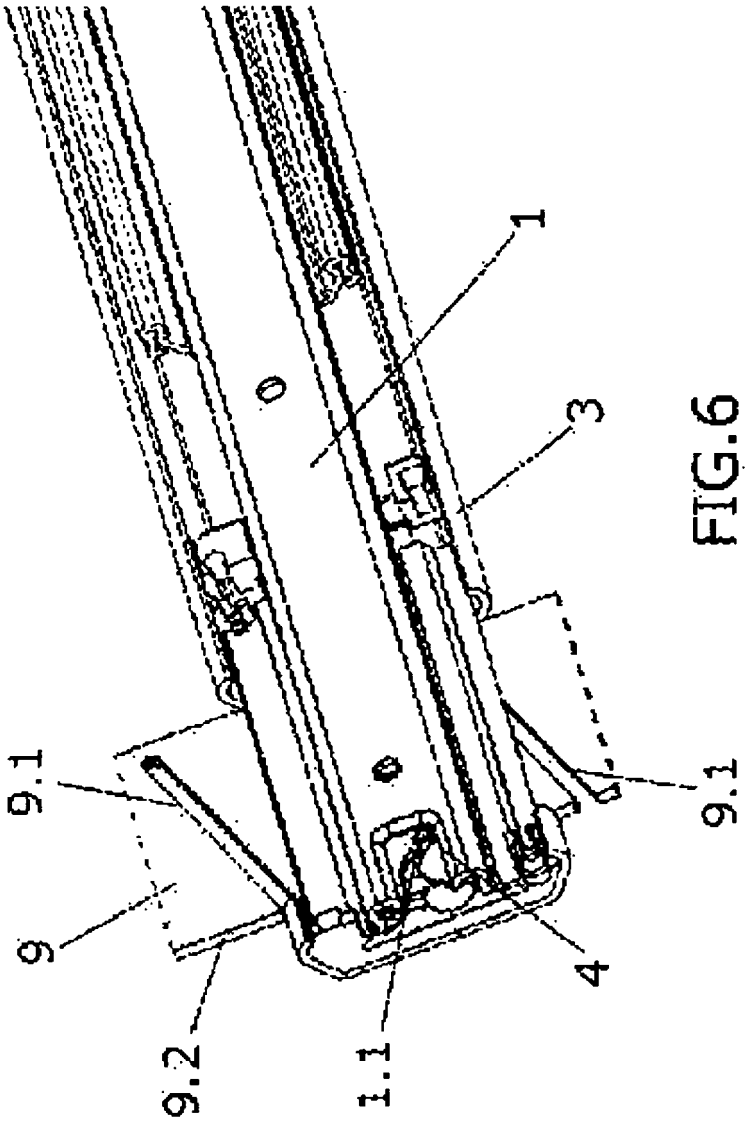


FIG.6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 38 1044

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2006 001557 U1 (MARTAS PREC SLIDE CO [TW]) 20 April 2006 (2006-04-20)	1-8	INV. A47B88/04
A	* paragraph [0014] - paragraph [0023]; figures 1-5 *	9	

A,D	EP 1 561 398 A (SCHOCK METALLWERK [DE]) 10 August 2005 (2005-08-10) * paragraph [0059] - paragraph [0124]; figures 1-19 *	1-9	

TECHNICAL FIELDS SEARCHED (IPC)

A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	4 September 2007	Klintebäck, Daniel

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202006001557 U1	20-04-2006	NONE	
EP 1561398 A	10-08-2005	DE 102004006092 A1	25-08-2005

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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Patent documents cited in the description

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