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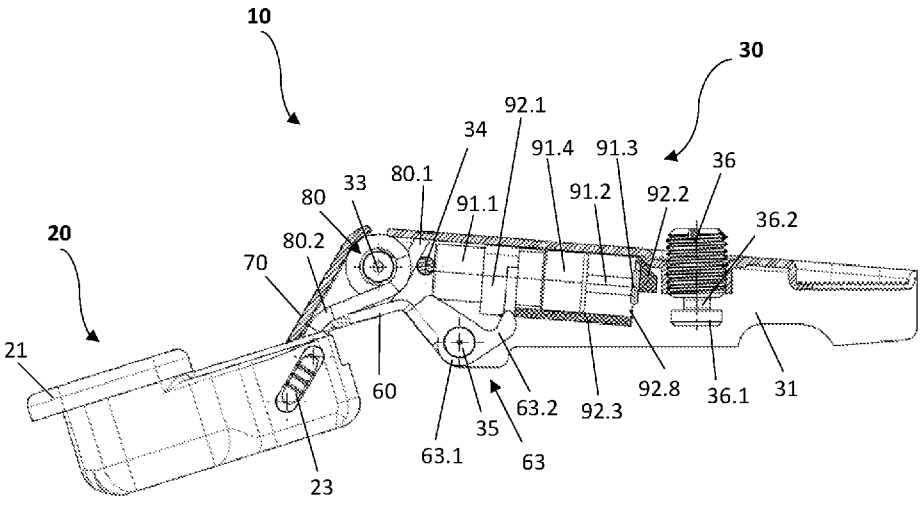


Figure 8

(57) Abstract: The present invention relates to a furniture hinge having a damping function which comprises a first bracket adapted to be secured to a furniture door; a second bracket adapted to be secured to a furniture cabin by a mounting plate; a first linkage member and a second linkage member which are connected between the first bracket and the second bracket in a pivotable manner; a torsion spring which is fitted around a first pin for urging the furniture door to move from an opened position to a closed position relative to the furniture cabin; a damping mechanism having a damper and a housing being slidebly holded within the second bracket and supported by the first linkage member; the damper having a cylinder body which is partially extended out from the housing and abuts against to a second pin wherein the damping mechanism is configured such that when the furniture door is closed onto the furniture cabin, the first linkage member drives the housing over the cylinder body.

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FURNITURE HINGE HAVING A DAMPING MECHANISM

Description

Technical Field of the Invention

The present invention relates to a furniture hinge with a damping mechanism for deceleration of a door while being closed onto a furniture cabin. The present invention particularly relates to a furniture hinge having a compact damping mechanism requiring a very small place within the hinge body and adaptable to be used in variable traditional furniture hinges.

Prior Art

Hinges having a damping member are well known from the prior art. Such hinges provides a first bracket generally known as a hinge cup which is secured to a door of a furniture; a second bracket generally known as a hinge body which is secured to a furniture cabin; linkage member(s) which connect(s) the first bracket and the second bracket; a torsion spring which provides a closing force on the linkage member(s); and a damping member which generates a damping action while the door is closed onto the furniture cabin. Such hinges may comprise the damping member either within the first bracket or the second bracket.

Such known hinges with the damping member have some disadvantages such that providing the damping member within the hinge body increases the hinge dimensions which is not preferable for the manufacturers and as well as the consumers. The present furniture hinge provides a compact damping mechanism which is easily accommodated in variable hinge bodies. In order to provide such an advantage, the damping mechanism having a damper and a housing is located inside the hinge body such that the housing is slidebly guided within the hinge body by means of a linkage member and a cylinder body of the damper which is extended out from the housing is securely supported by a pin provided in the hinge body and when the hinge cup is

articulated in relation to the hinge body, the housing is driven over the damper with the help of the linkage member in order to damp the movement of the furniture door.

Brief Description of the Invention

The present invention relates to a furniture hinge having a damping function which comprises a first bracket adapted to be secured to a furniture door; a second bracket adapted to be secured to a furniture cabin by a mounting plate; a first linkage member, one end of which is adapted to be rotationally connected to the second bracket by means of a third pin and the other end of which is rotationally connected to the first bracket by means of one arm of a u-shaped connector; a second linkage member, one end of which is adapted to be rotationally connected to the second bracket by means of a first pin and the other end of which is rotationally connected to the first bracket by means of the other arm of a u-shaped connector; a torsion spring which is fitted around the first pin for urging the furniture door to move from an opened position to a closed position relative to the furniture cabin wherein one end of the torsion spring is secured to the second bracket so as to be retained immovable by a second pin and the other end of the torsion spring leans onto the u-shaped connector; a damping mechanism having a damper and a housing which is slidebly holded within the second bracket and supported by the first linkage member. The damping mechanism is configured such that when the furniture door is closed onto the furniture cabin, the first linkage member drives the housing over the damper, thereby the damping effect is achieved. The damper comprises a cylinder body which is partially extended out from the housing and abuts against the second pin at its free end and a piston rod which moves in relation to the cylinder body and is supported within the housing from its free end. The piston rod is slidebly moved relative to the cylinder body resulted from the sliding movement of the housing. Advantageously, the piston rod may have a knob at the free end which is supported by the housing.

The furniture hinge further comprises a first adjustment element by means of which an outer body of the second bracket is connected to the mounting plate or an inner body and a second adjustment element by means of which the second bracket is aligned in relation to the mounting plate in the transverse direction.

The housing of the furniture hinge comprises a rim supported by the first linkage member such that when the furniture door is closed onto the furniture cabin the first linkage member pulls the housing over the cylinder body by means of the rim in order to provide a damping effect.

The housing further comprises a limiting surface whereby the free end of the piston rod is supported. The housing also comprises a front opening through which the cylinder body is extended out from the housing and a rear opening which is partially closed with a limiting surface.

In one embodiment, the first linkage member comprises a supporting portion interacting with the housing such that when the furniture door is closed onto the furniture cabin the supporting portion pulls the housing on the cylinder body in order to damp the movement of the furniture door.

The supporting portion may comprise two claws provided correspondingly on both end sides of the first linkage member, the claws being supported by a rim of the housing in order to drive the housing over the cylinder body.

The housing comprises guiding webs on each side which are supported via connection flaps formed on the second bracket such that the guiding webs slide on the connection flaps. The second bracket may comprise an inner body where a track mechanism is introduced, the track mechanism having a spring and a latching for detachably connecting the second bracket to the mounting plate.

Description of the Figures

The invention will be explained in more detail hereinbelow with the exemplary embodiments that are illustrated in the drawings;

Figure 1 shows an embodiment of the furniture hinge of the present invention in a perspective view wherein the furniture hinge having a first bracket, a second bracket which is pivotally connected to the first bracket and a mounting plate to which the second bracket is fastened.

Figure 2 shows the furniture hinge of the figure 1 in a side view.

Figure 3 is an exploded view of the furniture hinge of the figure 1.

Figure 4 is a perspective view of the damping mechanism having a damper and a housing wherein the damper is placed within the housing.

Figure 5 is a perspective view of the damping mechanism wherein the damper faces the housing in a insertion direction.

Figure 6 shows the perspective views of the housing both from a rear view and a front view.

Figure 7 is a sectional view of the damping mechanism wherein the damper inserted into the housing in a released position.

Figure 8 shows a sectional view of the second bracket detached from the mounting plate and being pivotally mounted to the first bracket.

Figure 9 shows another embodiment of the furniture hinge of the present invention in a perspective view wherein the second bracket is fastened to the mounting plate with the help of a track mechanism.

Figure 10 shows the furniture hinge of the figure 9 in a perspective view wherein the second bracket is detached of the mounting plate.

Figure 11 is an exploded view of the second bracket of the furniture hinge with the track mechanism detached from the mounting plate.

Figure 12 shows a sectional side view of the second bracket with the track mechanism detached from the mounting plate, and being pivotally mounted to the first bracket.

Reference List

10 Furniture hinge

10.1 Connection holes

10.2 Pin hole

20 First bracket

21 Mounting flange

22 Cup region

22.1 Base

22.2 Wall

22.3 Central region

22.4 Connection region

22.5 External face

23 U-shaped connector

30 Second bracket

31 Outer body

31.1 Connection flaps

32 Inner body

32.1 Second mounting slot

32.2 Fourth screw hole

32.3 Body slot

32.4 Hook

32.5 Knurled surface

32.6 Clamping nails

32.7 Anchoring pins

32.8 Second seating surface

33 First pin

34 Second pin

35 Third pin

36 First adjustment element

36.1 Stopper head

36.2 Guide portion

37 Second adjustment element

38 First screw hole

39 Second screw hole

39.1 Knurled area

40 Mounting plate

41 First Mounting slot

41.1 First seating surface

42 Third screw hole

42.1 Knurled ways

43 Connection channels

44 Openings

45 Housing slot

50 Track mechanism

51 Spring

52 Latching

53 Fifth screw hole

54 Nest

55 Pressing point

60 First linkage member

61 Main body

62 Fastening hole

63 Supporting portion

63.1 Claws

63.2 Nail portion

70 Second Linkage member

80 Torsion spring

80.1 Short arm

80.2 Long arm

90 Damping mechanism

91 Damper

91.1 Cylinder body

91.2 Piston rod

91.3 Knob

91.4 Enlarged body portion

92 Housing

92.1 Rim

92.2 Limiting surface

92.3 Dished face

92.4 Flat face

92.5 Guiding webs

92.6 Ramp

92.7 Front opening

92.8 Rear opening

Detailed Description of the Invention

Figure 1 shows one embodiment of a furniture hinge (10) for connecting a furniture door to a furniture cabin in a pivotable manner. The furniture hinge (10) comprises a first bracket (20) and a second bracket (30) mounted on a mounting plate (40). The furniture hinge (10) also comprises a first linkage member (60) and a second linkage member (70) which are articulated within the first bracket (20) and the second bracket (30) and connect them each other in a pivotable manner. The second bracket (30), generally known as a hinge arm/hinge body, is configured to be mounted to a furniture cabin via the mounting plate (40) while the first bracket (20), generally known as a hinge cup, is configured to be mounted to a furniture door. On account thereof, the furniture door is pivoted on a furniture cabin between an opened position and a closed position via the furniture hinge (10).

The mounting plate (40) is fastened to the furniture cabin via screws through connection holes (10.1) and the second bracket (30) is connected to the mounting plate (40) and aligned therewith by means of first and second adjustment elements (36, 37). The first bracket (20) is set in a bore in the furniture door and connected thereto via screws guided through connection holes (10.1) cut out on a mounting flange (21) that is molded on the first bracket (20).

Figure 2 shows the furniture hinge (10) in an assembled position from a side view. Herein the first bracket (20) is connected to the second bracket (30) in an articulated manner via the first and the second linkage members (60, 70) and the second bracket (30) is mounted onto the mounting plate (40). One end of the second linkage member (70) is fastened to the second bracket (30) by means of a first pin (33) and the other end of the second linkage member (70) is fastened to the first bracket (20) by means of one arm of a u-shaped connector (23). On the other hand, one end of the first linkage member (60) is fastened to the second bracket (30) by means of a third pin (35) and

the other end of the first linkage member (60) is fastened to the first bracket (20) by means of the other arm of the u-shaped connector (23). The first linkage member (60) and the second linkage member (70) are connected between the first bracket (20) and the second bracket (30) such that the first linkage member (60) and the second linkage member (70) are spaced apart each other. Preferably, the side walls of the second linkage member (70) enclose the first linkage member (60).

Figure 3 shows the furniture hinge (10) of the Figure 2 in an exploded state and the components of the furniture hinge (10) are seen here in a greater detail. The first bracket (20) comprises a cup region (22) formed as a depression proceeding from an external face (22.5) which defines a stop for the mounting travel of the first bracket (20) into the bore opened on the furniture door. The cup region (22) which has a base (22.1) and a wall (22.2) rising up to the external face (22.5) is formed by a central region (22.3) and a connection region (22.4) that has a narrower internal space than the those of the central region (22.3) and transitions to the central region (22.3) in the same depression. The connection region (22.4) is embodied in the same cup region (22) with the central region (22.3) which is formed substantially in a rounded manner, while the connection region (22.4) provides an outwardly extended form in relation to the central region (22.3). When the furniture door is closed onto the furniture cabin, the first bracket (20) is articulated relative to the second bracket (30), the first and second linkage members (60, 70) are pivoted at the connection region (22.4) and housed in the cup region (22). The connection region (22.4) includes two pin holes (10.2) cut-out in the wall (22.2) which correspond to other two pin holes (10.2) formed on the opposite wall (22.2), by means of those pin holes (10.2) the first linkage member (60) and the second linkage member (70) are connected to the first bracket (20) via the u-shaped connector (23) so as to be spaced apart each other, as seen in figure 8.

The second linkage member (70) includes two pin holes (10.2) as cut-out in a side wall of the second linkage member (70) which correspond to two pin holes (10.2) in the opposite side wall. Said pin holes (10.2) are advantageously provided near ends of the side walls of the second linkage member (70). By way of those opposed pin holes (10.2) the second linkage member (70) is pivotally connected to the second bracket (30) with the help of the first pin (33), and to the first bracket (20) with the help of one arm of the u-shaped connector (23), as seen in figure 2.

As seen in the figure 3, the first linkage member (60) comprises a main body (61) having a fastening hole (62) at one end which may be formed by being bended of the main body (61). The first linkage member (60) is connected to the first bracket (20) by means of one arm of the u-shaped connector (23) which passes through the respective pin holes (10.2) in the connection region (22.4) and the fastening hole (62).

The first linkage member (60) further comprises a supporting part (63) formed on the other end of the main body (61). The supporting part (63) comprises two claws (63.1) disposed at sides of the end of the main body (61). Each of said claws (63.1) comprises a pin hole (10.2) and a nail portion (63.2). The first linkage member (60) is pivotally connected to the second bracket (30) by means of the third pin (35) which is guided through the pin holes (10.2) cut out in the claws (63.1). The further aims of the supporting portions (63) of the first linkage member (60) will be explained later in the following.

The furniture hinge (10) further comprises a torsion spring (80) fitted around the first pin (33) for urging the furniture door to move from an opened position to a closed position relative to the furniture cabin. The torsion spring (80) is connected around the first pin (33) to be strained in the space between the first linkage member (60) and the second linkage member (70) and has a short arm (80.1) configured to be secured to internal face of the second bracket (30) so as to be retained immovably there by a second pin (34) and a long arm (80.2) configured to lean on the u-shaped connector (23).

The second bracket (30) comprises an outer body (31) having a first screw hole (38) and a second screw hole (39) formed as a slot surrounded by a knurled area (39.1). The second bracket (30) is connected to the mounting plate (40) by means of the first adjustment element (36) which is guided through the first screw hole (38). Further the second bracket (30) is also connected to the mounting plate (40) and aligned therewith by means of the second adjustment element (37) which is guided through the second screw hole (39). The transverse adjustment of the outer body (31) according to the mounting plate (40) is realized via the second adjustment element (37) interacting with the knurled area (39.1). The first screw hole (38) corresponds to a first mounting slot (41) formed on the mounting plate (40), while the second screw hole (39) corresponds to a third screw hole (42) of the mounting plate (40).

The first adjustment element (36) includes a stopper head (36.1) and a guide portion (36.2) to which a first seating surface (41.1) of the first mounting slot (41) is introduced such that the stopper head (36.1) is located underside of the first seating surface (41.1) in the mounting position and prevents detachment of the second bracket (30) from the mounting plate (40). The third screw hole (42) includes straight knurled ways (42.1) at its both sides which cooperate with the knurled area (39.1) of second screw hole (39). By way of screwing the second adjustment element (37) through the second screw hole (39) and the third screw hole (42), the knurled area (39.1) and the knurled ways (42.1) allow the longitudinal progress of the second adjustment element (37) thereon and provide transverse adjustment of the second bracket (30) according to the mounting plate (40).

The second bracket (30) further comprises connection flaps (31.1) incorporated in the side walls of the outer body (31) and by way of which a damping mechanism (90) having a damper (91) and a housing (92) is slidebly held inside the second bracket (30). The connection flaps (31.1) may be formed as protrusion by inwardly bending of a portion of the side walls of the outer body (31). A housing slot (45) is disposed on the mounting plate (40) into which the housing (92) is introduced in a linearly movable manner.

Figure 4 shows the damping mechanism (90) removed from the second bracket (30) wherein the damper (91) in the released state is partially extended out from the housing (92). Figure 5 shows the damper (91) and the housing (92) for receiving the damper (91) in a perspective exploded illustration. The illustration shows the damper (91) facing the housing (92) in an insertion direction. The damper (91) comprises a cylinder body (91.1) and a piston rod (91.2) received into the cylinder body (91.1) in a slideble manner. The damper (91) advantageously provides an enlarged body portion (91.4) surrounding the end of the cylinder body (91.1) opposite to the free end thereof. The enlarged body portion (91.4) may be the contact surface with the inner periphery of the housing (92) in order to reduce the friction surface between the cylinder body (91.1) and the housing (92) while damping movement. This results in the reduction of the wearing between the components as well as noise during damping.

In a mounted position of the damping mechanism (90) within the second bracket, the free end of the cylinder body (91.1) which is extended out from the housing (92) bears on the second pin (34) and the free end of the piston rod (91.2) is supported inside the

housing (92). The piston rod (91.2) may have a knob (91.3) in the free end thereof. In this case, the knob (91.3) is supported in the housing (92). Thereby, in case the articulation of the first bracket (20) in relation to the second bracket (30), the movable housing (92) drives the piston rod (91.2) into the cylinder body (91.1) which is securely supported by the second pin (34) on the free end thereof.

The housing (92) comprises a flat face (92.4) molded onto a dished face (92.3) into which the damper (91) is introduced. In the assembled position, the flat face (92.4) slidebly seats on the inner face of the outer body (31). The flat face (92.4) provides guiding webs (92.5) on both sides, by way of which the housing (92) is slidebly held onto the connection flaps (31.1) of the second bracket (30). A ramp (92.6) may be disposed on the rear end of the flat face (92.4) for providing more compact form besides ease of sliding movement of the housing (92) within the second bracket (30).The rear side of the housing (92) is received within the housing slot (45) of the mounting plate (40) in a linearly movable manner in relation to therein.

The figure 6 shows the housing (92) in both rear view and front view respectively in a perspective manner. As seen in the figure, the dished face (92.3) is formed with a front opening (92.7) through which the damper (91) is introduced into the housing (92) and with a rear opening (92.8) partially closed with a limiting surface (92.2) which is molded on the rear side of the flat face (92.4) and supports the free end of the piston rod (91.2), preferably the knob (91.3).

The housing (92) further comprises a rim (92.1) molded on the front side of the flat face (92.4) opposite to the limiting surface (92.2). The front opening (92.7) of the dished face (92.3) is incorporated into the rim (92.1) of the housing (92), thereby the cylinder body (91.1) of the damper (91) is extended out from the front opening (92.7) on the rim (92.1). To this end, the damper (91) is supported between the limiting surface (92.2) of the housing (92) onto which the free end of the piston rod (91.2) bears and the second pin (34) pivotably mounted on the second bracket (30) onto which the free end of the cylinder body (91.1) bears.

The figure 7 shows a sectional view of the damping mechanism (90) wherein the damper (91) is extended out from the housing (92) in the released position. The damper (91) is housed within the housing (92) by being supported by the limiting surface (92.2) over the end of the piston rod (91.2), preferably the knob (91.3). The

enlarged body portion (91.4) of the cylinder body (91.1) is in contact with the inner periphery of the housing (92), and the rest portion may advantageously provide a clearance from inner periphery of the housing (92).

The figure 8 shows the sectional view of the furniture hinge (10) in the assembled form without a mounting plate (40). The damping mechanism (90) is slidebly secured inside the outer body (31) via the connection flaps (31.1) such that the guiding webs (92.5) are engaged on the connection flaps (31.1) of the second bracket (30) and the free end of the cylinder body (91.1) bears onto the second pin (34). The knob (91.3) of the damper (91) is supported by the limiting surface (92.2) of the housing (92). The supporting portion (63) of the first linkage member (60) rests against to the rim (92.1) of the housing (92). In the articulation of the first bracket (20) in relation to the second bracket (30), the housing (92) is pulled by the supporting portion (63) of the first linkage member (60) with the help of the rim (92.1) of the housing (92) and the piston rod (91.2) is pushed into the cylinder body (91.1), the free end of which is secured on the second pin (34). Thereby the damping impact occurs on the furniture door while being closed onto the furniture cabin.

The figure 9-12 show another embodiment of the furniture hinge (10) which comprises the damping mechanism (90) within the second bracket (30) wherein the second bracket (30) is detachably connected to the mounting plate (40) with a track mechanism (50) having a spring (51) and a latching (52).

The figure 9 shows the furniture hinge (10) wherein the second bracket (30) mounted onto the mounting plate (40) with the help of the track mechanism (50). In figure 10, the second bracket (30) of the furniture hinge (10) is unfastened from the mounting plate (40).

The furniture hinge (10) with the track mechanism (50) comprises an inner body (32) cooperating with the track mechanism (50) for the alignment of the second bracket (30) according to the mounting plate (40). The furniture hinge (10) with the track mechanism (50) is shown in figure 11 in an exploded manner and in figure 12 in an assembled manner. The inner body (32) comprises a second mounting slot (32.1) for receiving the first adjustment element (36) in order to provide a connection between the outer body (31) and the inner body (32). The guide portion (36.2) of the first adjustment element (36) is driven to a second seating surface (32.8) of the second mounting slot (32.1)

such that the stopper head (36.1) is located underside of the second seating surface (32.8) in the mounting position and prevents detachment of the outer body (31) from the inner body (32).

The inner body (32) also provides a fourth screw hole (32.2) surrounded by a knurled surface (32.5) which cooperates with the knurled area (39.1) of the second screw hole (39) and the second adjustment element (37). By way of screwing the second adjustment element (37) through the second screw hole (39) and the fourth screw hole (32.2), the knurled area (39.1) and the knurled surface (32.5) allow the axially longitudional progress of the second adjustment element (37) thereon and provide transverse adjustment of the second bracket (30) in relation to the mounting plate (40).

The inner body (32) further comprises clamping nails (32.6) cooperating with connection channels (43) provided on the mounting plate (40). There is also formed on the inner body (32) anchoring pins (32.7) which are engaged with openings (44) cut out in the mounting plate (40) in order to stabilize the position of the second bracket (30) onto the mounting plate (40). The inner body (32) provides a body slot (32.3) in the insertion direction into the outer body (31) for receiving the rear side of the housing (92) of the damping mechanism (90) by cooperating with the housing slot (45) formed on the mounting plate (40).

The track mechanism (50) is received into the inner body (32) and secured there with the second adjustment element (37) which reaches into the fifth screw hole (53). The spring (51) of the track mechanism (50) is placed between a hook (32.4) which is formed as a protrusion bended down and a nest (54) formed in the latching (52). The track mechanism (50) also includes a pressing point (55) when an operator pushes on the pressing point (55), the spring (51) is strained between the hook (32.4) and the nest (54) and release the second bracket (30) from the mounting plate (40).

CLAIMS

1. A furniture hinge (10) having a damping function, comprising:
a first bracket (20) adapted to be secured to a furniture door;
a second bracket (30) adapted to be secured to a furniture cabin by a mounting plate (40);
a first linkage member (60), one end of which is adapted to be rotationally connected to the second bracket (30) by means of a third pin (35) and the other end of which is rotationally connected to the first bracket (20) by means of one arm of a u-shaped connector (23);
a second linkage member (70), one end of which is adapted to be rotationally connected to the second bracket (30) by means of a first pin (33) and the other end of which is rotationally connected to the first bracket (20) by means of the other arm of a u-shaped connector (23);
a torsion spring (80) which is fitted around the first pin (33) for urging the furniture door to move from an opened position to a closed position relative to the furniture cabin wherein one end of the torsion spring (80) is secured to the second bracket (30) so as to be retained immovable there by a second pin (34) and the other end of the torsion spring (80) leans onto the u-shaped connector (23);
a damping mechanism (90) having a damper (91) and a housing (92) being slidebly holded within the second bracket (30) and supported by the first linkage member (60), the damper (91) having a cylinder body (91.1) which is partially extended out from the housing (92) and abuts against to the second pin (34) characterized in that;
the damping mechanism (90) is configured such that when the furniture door is closed onto the furniture cabin, the first linkage member (60) drives the housing (92) over the cylinder body (91.1).

2. A furniture hinge (10) according to claim 1 wherein the housing (92) comprises a rim (92.1) supported by the first linkage member (60) such that when the furniture door is closed onto the furniture cabin the first linkage member (60) pulls the housing (92) over the cylinder body (91.1) by means of the rim (92.1) in order to provide a damping action.

3. A furniture hinge (10) according to claim 1 wherein the first linkage member (60) comprises a supporting portion (63) interacting with the housing (92) such that when the furniture door is closed onto the furniture cabin the supporting portion (63) pulls the housing (92) over the cylinder body (91.1) in order to damp the movement of the furniture door.

4. A furniture hinge (10) according to claim 3 wherein the supporting portion (63) comprises two claws (63.1) provided correspondingly on both end sides of the first linkage member (60), the claws (63.1) being supported by a rim (92.1) of the housing (92) in order to drive the housing (92) over the cylinder body (91.1).

5. A furniture hinge (10) according to claim 1 wherein the housing (92) comprises guiding webs (92.5) on each side which are supported via connection flaps (31.1) formed on the second bracket (30) such that the guiding webs (92.5) slide on the connection flaps (31.1).

6. A furniture hinge (10) according to claim 1 wherein the damper (91) comprises a knob (91.3) at the free end of the piston rod (91.2).

7. A furniture hinge (10) according to claim 1 wherein the housing (92) comprises a limiting surface (92.2) whereby the free end of the piston rod (91.2) is supported.

8. A furniture hinge (10) according to claim 1 wherein the housing (92) comprises a front opening (92.7) through which the cylinder body (91.1) is extended out from the housing (92) and a rear opening (92.8) which is partially closed with a limiting surface (92.2).

9. A furniture hinge (10) according to claim 1 wherein the second bracket (30) comprises an inner body (32) where a track mechanism (50) is introduced, the track mechanism (50) having a spring (51) and a latching (52) for detachably connecting the second bracket (30) to the mounting plate (40).

10. A furniture hinge (10) according to claim 1 wherein the furniture hinge (10) comprises a first adjustment element (36) by means of which an outer body (31) of the second bracket (30) is connected to the mounting plate (40) or an inner body (32) and a second adjustment element (37) by means of which the second bracket (30) is aligned in relation to the mounting plate (40) in the transverse direction.

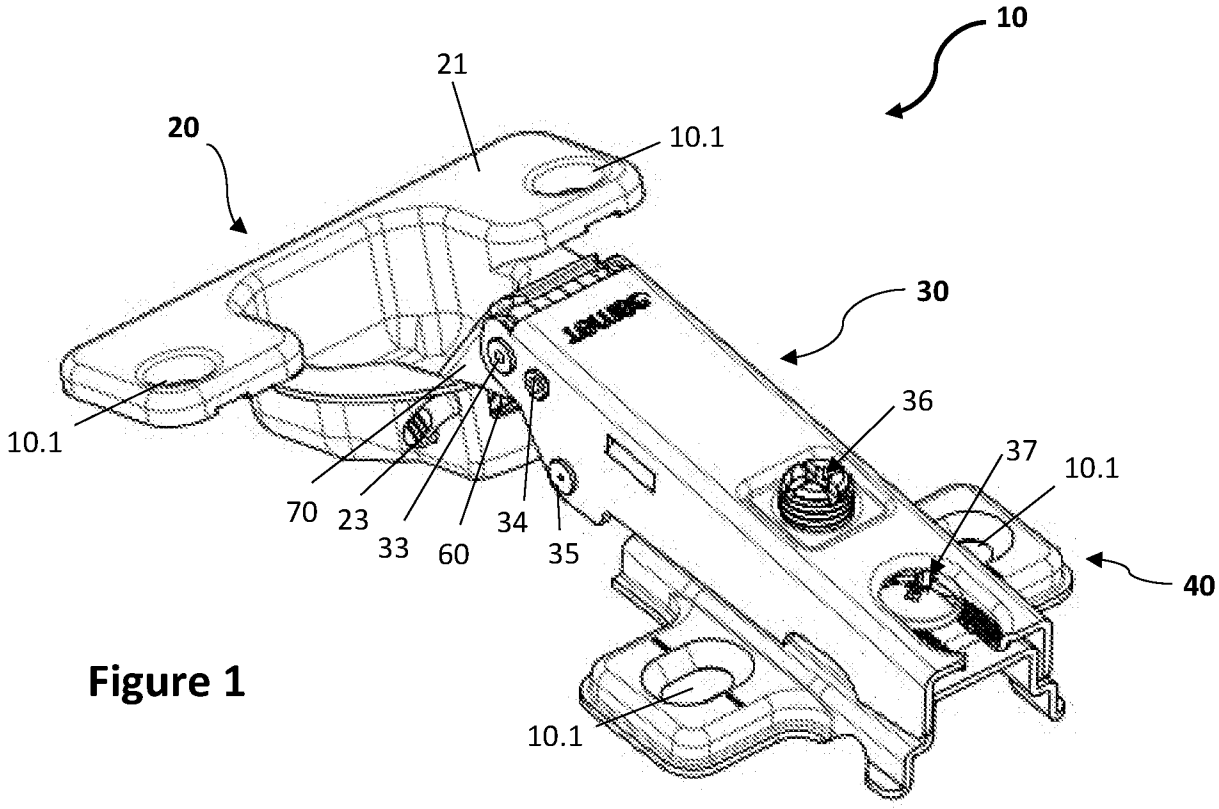


Figure 1

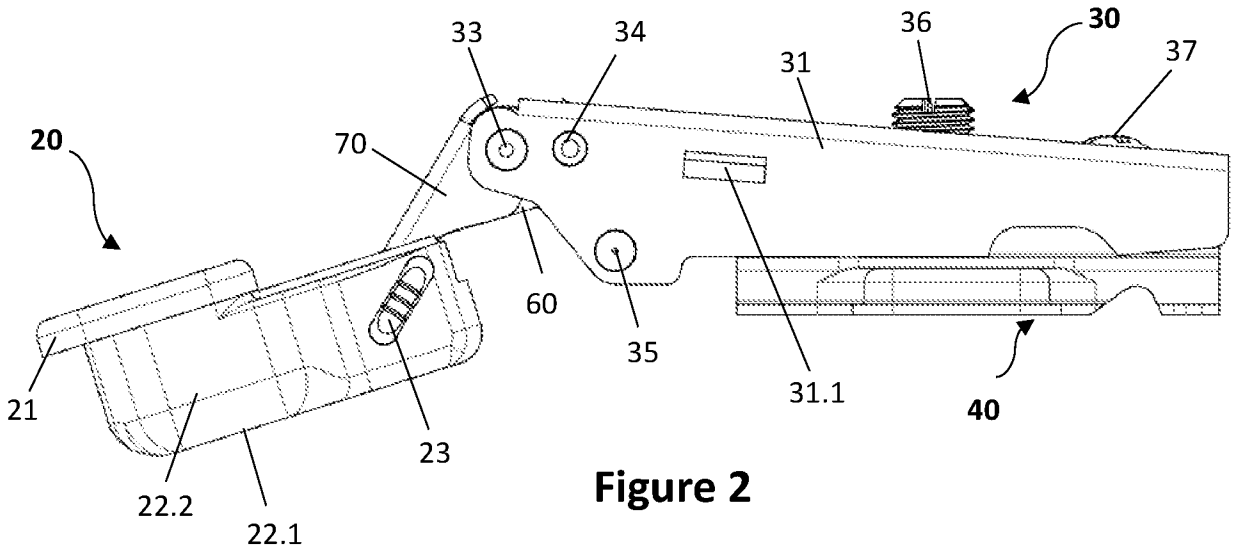


Figure 2

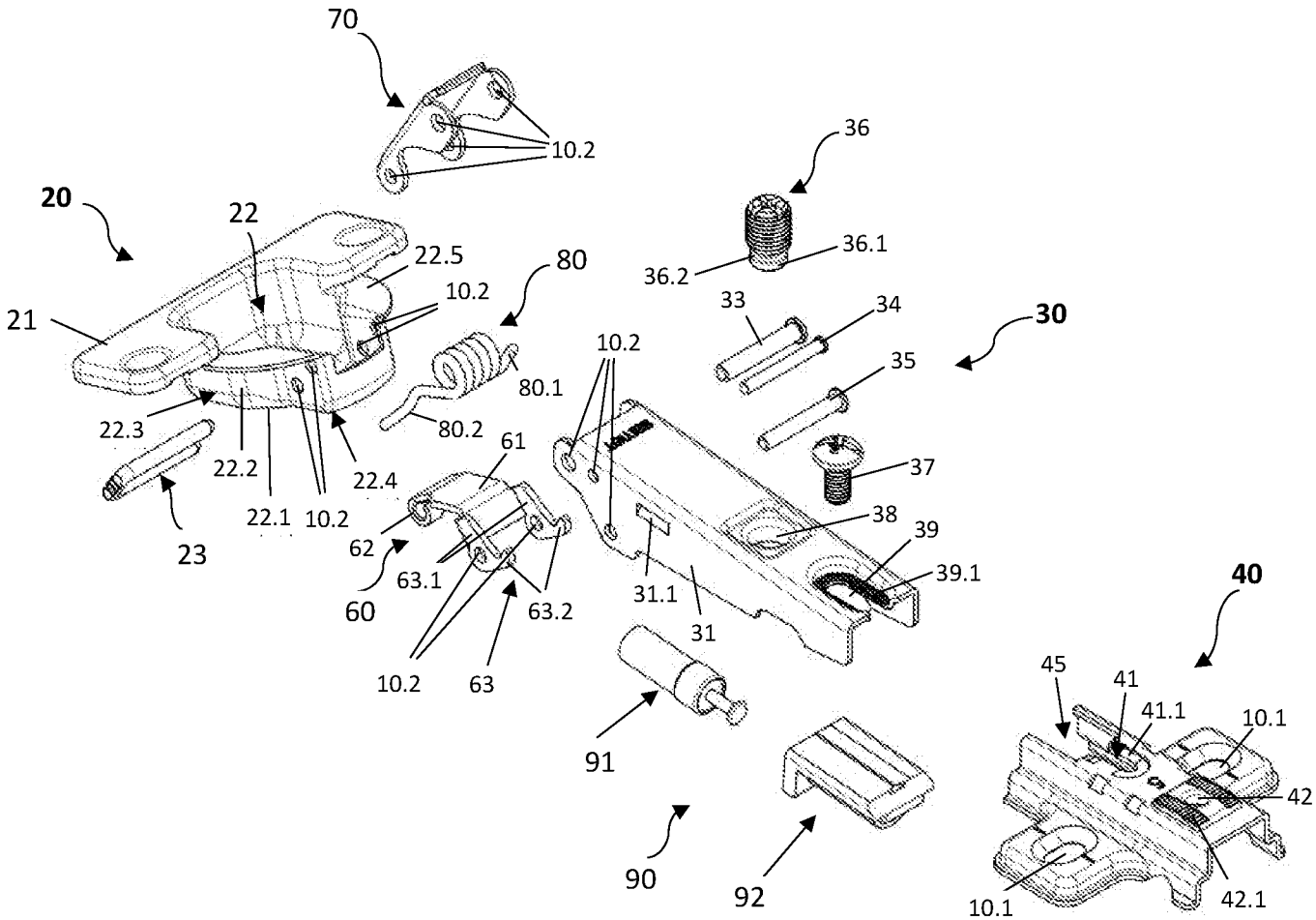

70
10.2
20
22
22.5
21
10.2
80
80.1
80.2
22.3
22.2
22.1
10.2
22.4
23
61
62
60
63.1
63.2
10.2
63
10.2
36
36.2
36.1
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34
30
35
37
38
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42
10.1
42.1

Figure 3

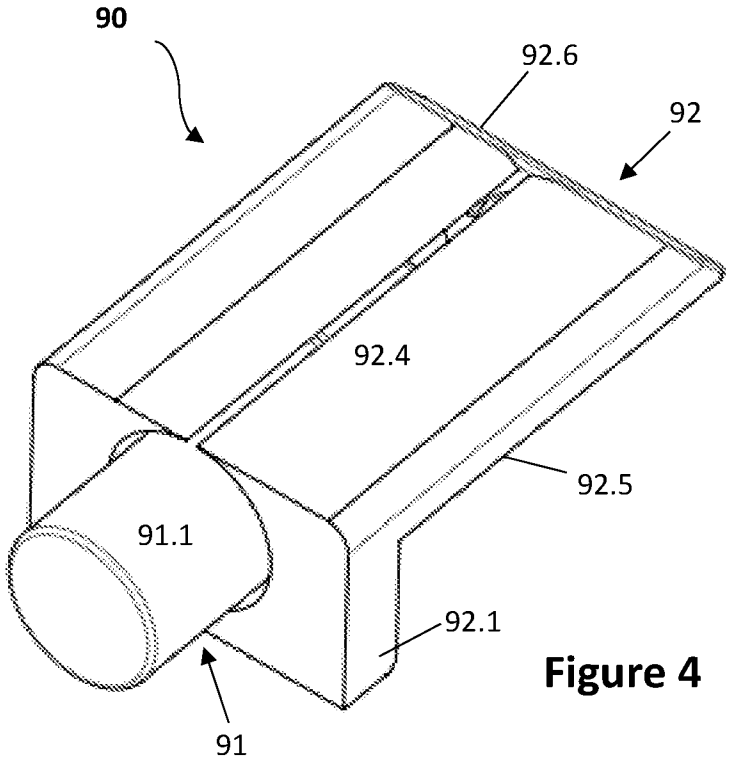


Figure 4

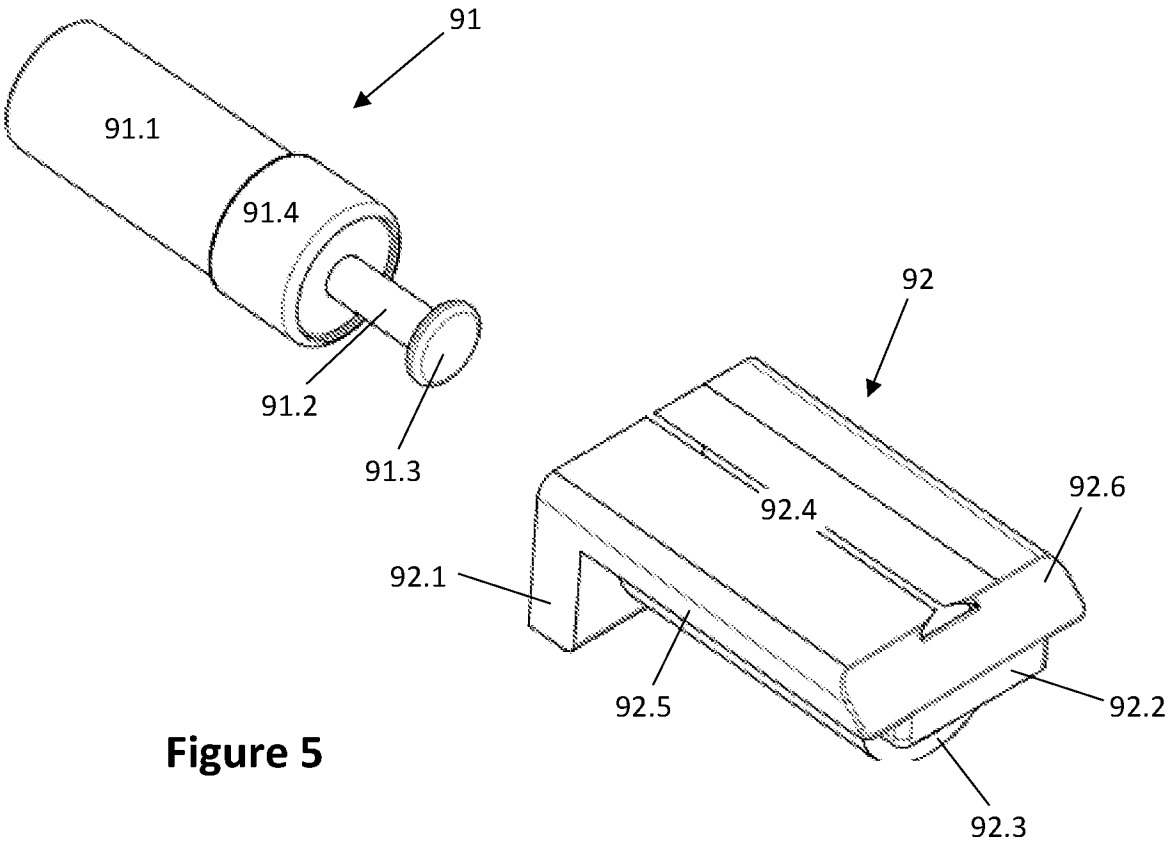


Figure 5

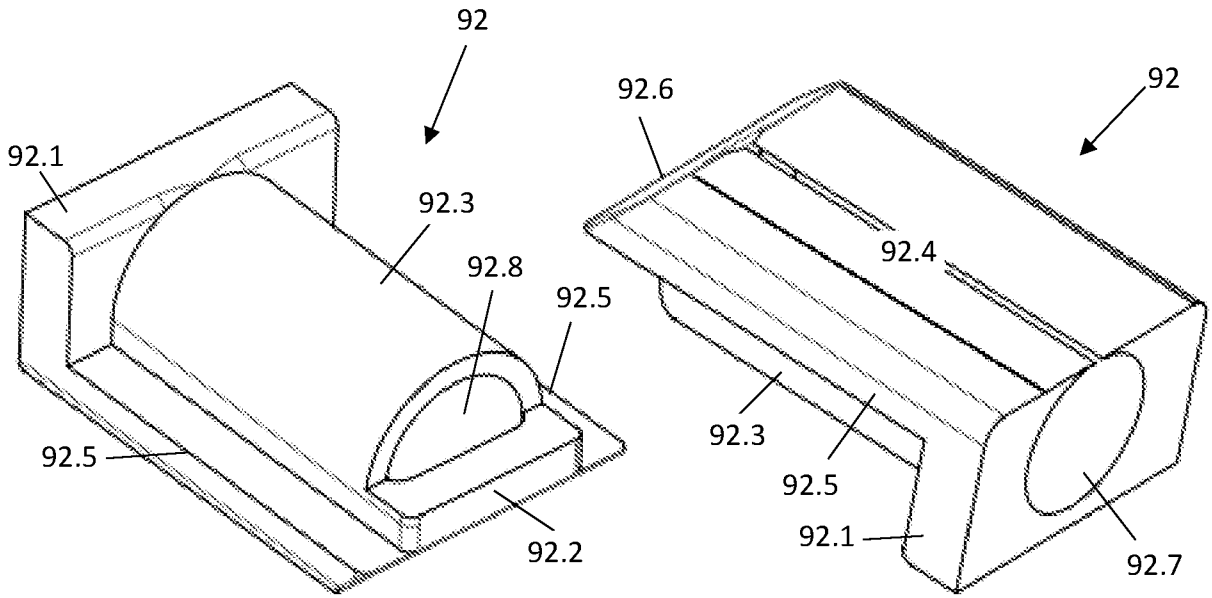


Figure 6

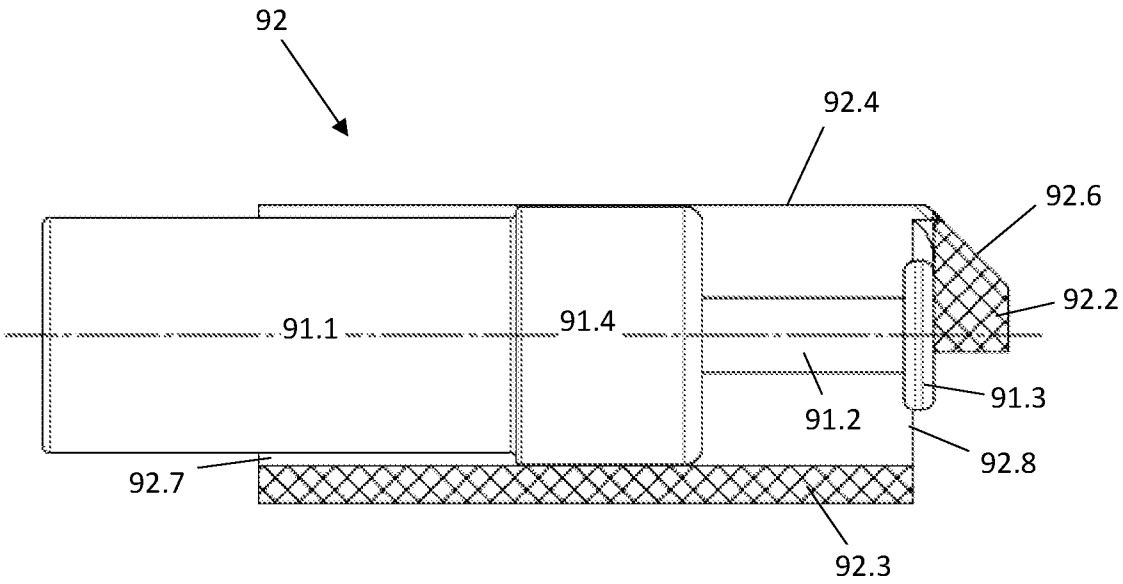


Figure 7

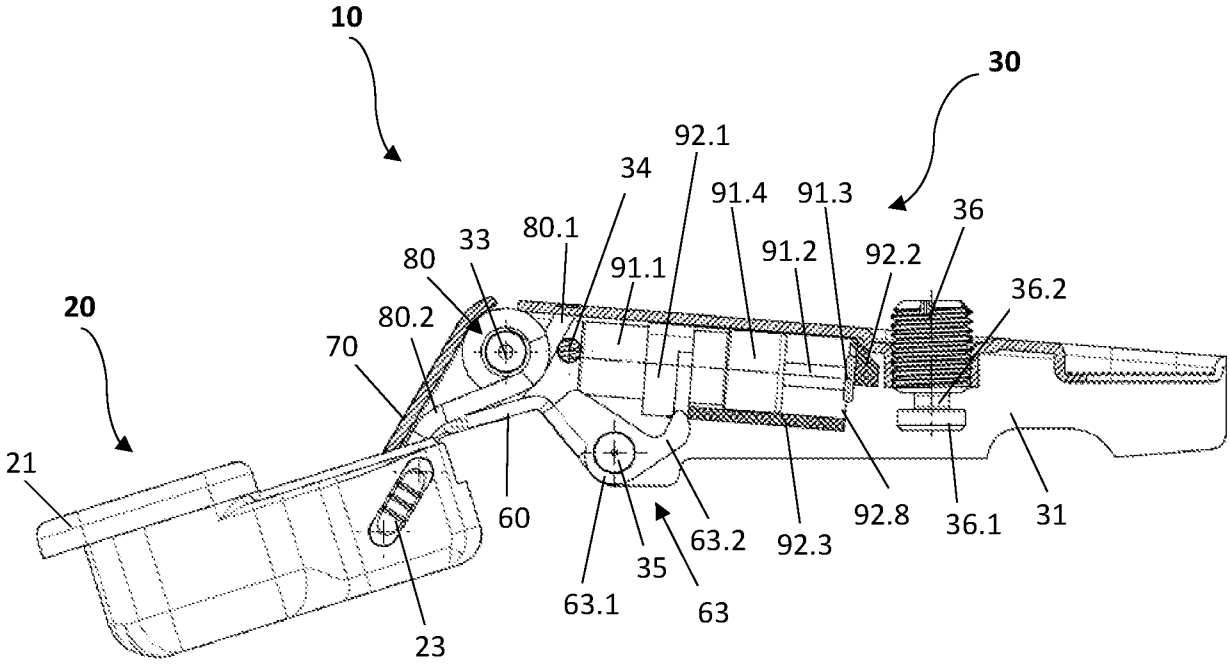


Figure 8

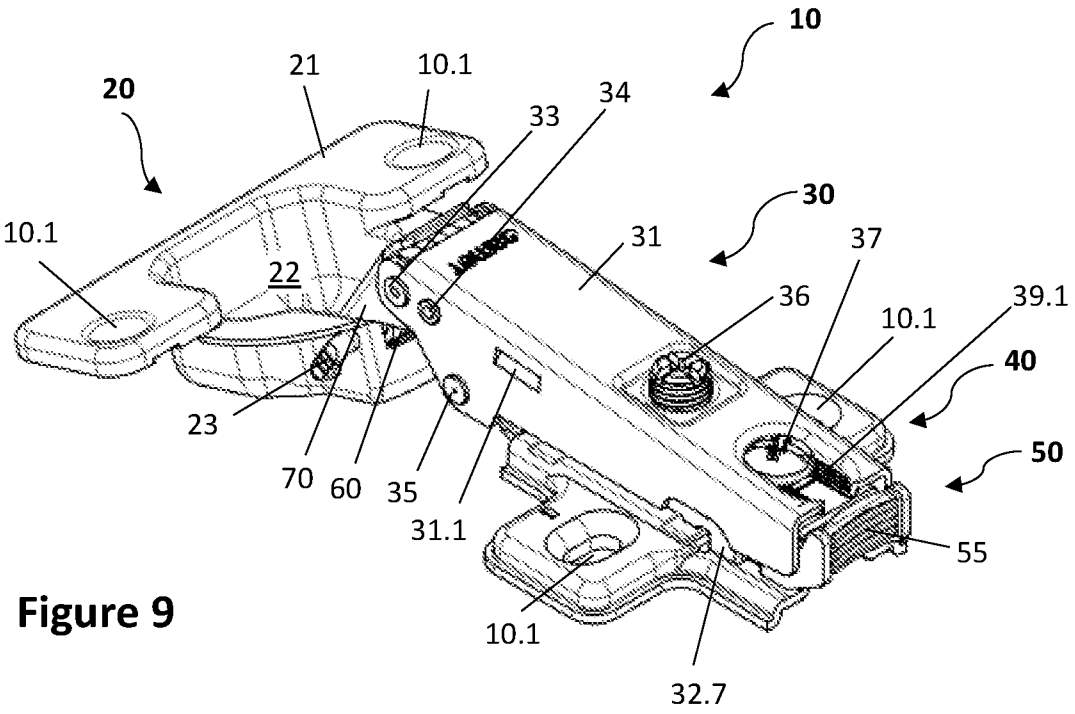


Figure 9

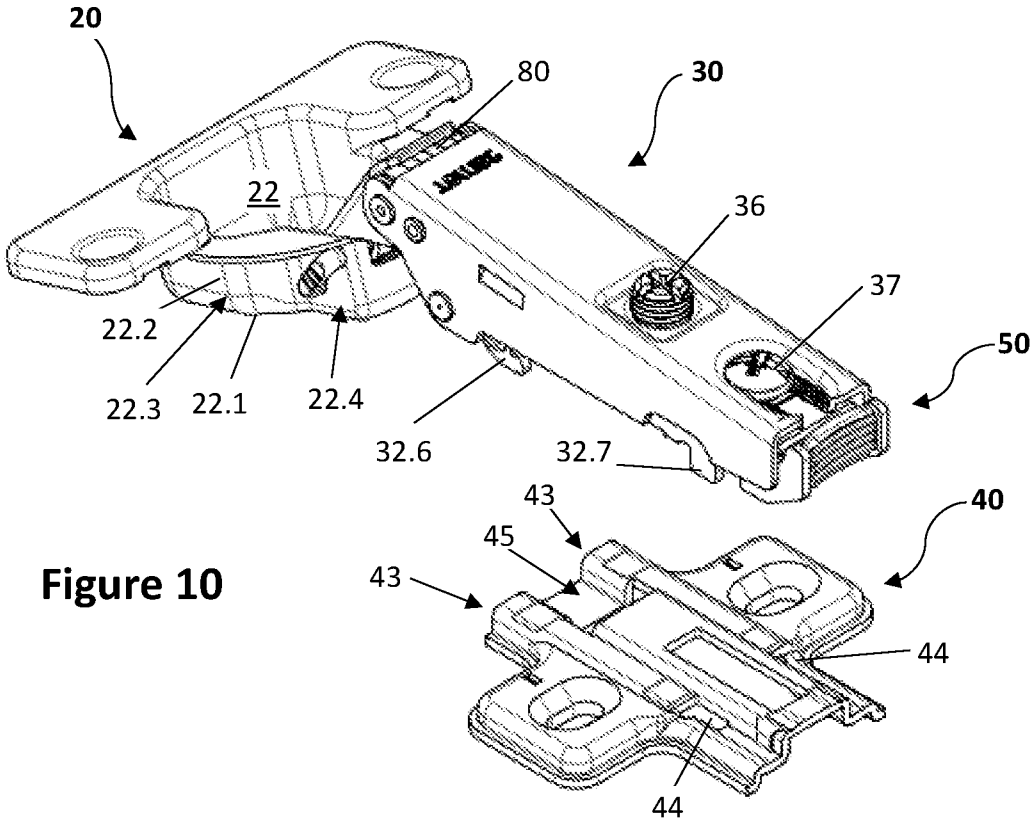


Figure 10

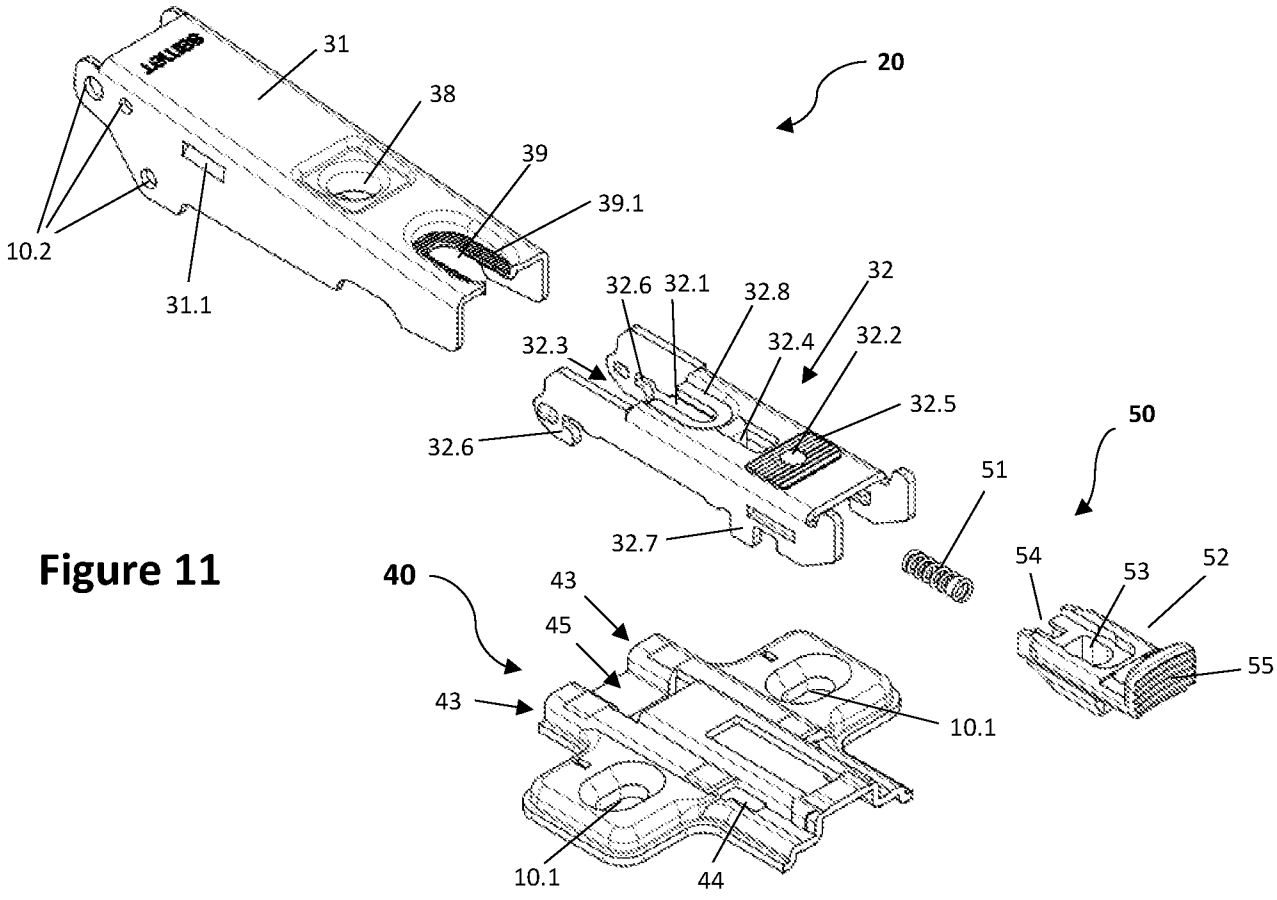


Figure 11

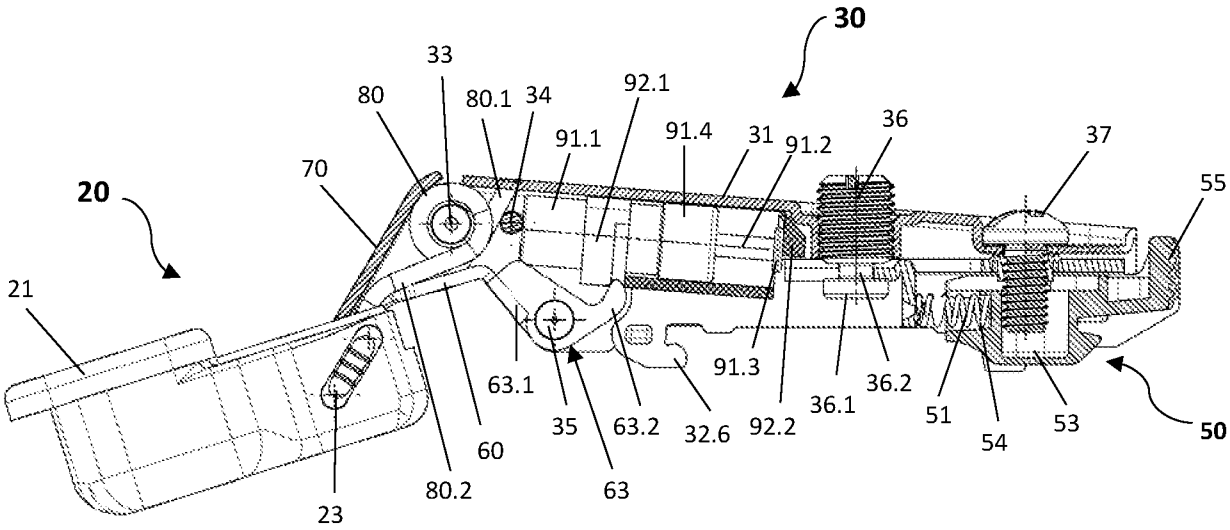

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33
80
80.1
34
92.1
91.1
91.4
31
91.2
36
37
55
20
70
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63.1
35
63.2
32.6
91.3
92.2
36.1
36.2
51
54
53
50
60
80.2
63
23

Figure 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/TR2019/050726

A. CLASSIFICATION OF SUBJECT MATTER

E05F 5/02 (2006.01)i; E05F 3/20 (2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E05F 5/02; E05F 3/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	DE 202007011194 U (HETTICH ONI GMBH & CO KG [DE]) 24 December 2008 (2008-12-24)	
X	Figures 3, 4, 5A-5G	1
Y		9-10
A		2-8
	WO 2009127335 A1 (GRASS GMBH & CO KG [DE]; KRUEDENER BORIS [DE]) 22 October 2009 (2009-10-22)	
Y	Description, paragraph 22; Figure 1	10
	US 2011072617 A1 (LIN XIN-HONG [CN]; LIN SHU-HUA [CN]; LIN SHU-JUAN [CN]; DU SHU-JUN [CN]; KUNSHAN HU HUA METAL PRODUCTS CO LTD [CN]) 31 March 2011 (2011-03-31)	
Y	Description, paragraph 20; Figures 1 and 4;	9

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
02 June 2020	**02 June 2020**

Name and mailing address of the ISA/TR	Authorized officer
Turkish Patent and Trademark Office (Turkpatent) **Hipodrom Caddesi No. 13** **06560 Yenimahalle** **Ankara** **Turkey**	**Dr. Fatih TUNÇDEMİR**
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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/TR2019/050726

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				CN	101861441	B	27 March 2013
				ES	2385802	T3	01 August 2012
				TW	200925380	A	16 June 2009
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				EP	2268882	A1	05 January 2011
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				AT	506756	B1	15 March 2013
				CN	102084078	A	01 June 2011
				CN	102084078	B	21 October 2015
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				JP	3156516	U	07 January 2010
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