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Elrendezés mozgatható bútorrész mozgatására

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.



ARRANGEMENT FOR MOVING A MOVABLE FURNITURE PART

Specification

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The invention concerns an arrangement for moving a moveable furniture part, in particular a furniture part mounted pivotably about an axis, comprising at least one ejection device for ejecting the moveable furniture part from a closed position into an open position, wherein the at least one ejection device includes at least one force storage means, and a loading device for loading the at least one force storage means by an opening or closing movement of the moveable furniture part.

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Such arrangements are known for example from application number A 322/2012 of the present applicant which is of an earlier priority date but which has not yet been published. They have relatively complicated and expensive transmission mechanisms disposed between the at least one ejection device and the loading device for the transmission of force upon loading of the at least one force storage means. Thus for example direction-changing devices or intermediate panels are required, which take up a very great deal of space. That is also disadvantageous from esthetic points of view.

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Further specifications defining the general state of the art are represented by WO 2012/000656, WO 2008/022673 and DE 20 2010 008 134.

The object of the present invention is to avoid the above-described disadvantages and to provide an arrangement for moving a moveable furniture part, that is improved over the state of the art.

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To attain that object the arrangement provides that at least one Bowden cable for transmitting force upon loading of the at least one force storage means is arranged between the at least one ejection device and the loading device.

The term Bowden cable is an established term defined for example by DIN 71986. A man skilled in the art interprets that as meaning a moveable machine element for the transmission of a mechanical movement or a tensile force. Essentially a Bowden cable comprises a so-called Bowden cable core (for example a steel wire or wire cable) surrounded a casing which is flexible but which is compression-resistant in the tensile direction. The casing acts as a mechanical guide and as a support for the tensile forces to be transmitted so that the Bowden cable can transmit forces even by way of bends.

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What is advantageous in regard to the use of a Bowden cable in connection with the subject of the present invention is that it takes up relatively little space and can be flexibly laid. It is also possible for it to be "concealed" for example in a groove or the like in relation to the exterior.

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In an advantageous embodiment of the invention it is provided that the loading device includes at least one adjusting body and at least one adjusting contour, wherein the at least one adjusting body runs against the at least one adjusting contour at least during a part of the opening or closing movement. Different kinematic conditions can be achieved by the interplay of the at least one adjusting body and the at least one adjusting contour. In particular it is also possible to implement a neutral region in which the at least one adjusting body and the at least one adjusting contour move relative to each other in such a way that the at least one force storage means is not loaded. A further great advantage arising out of the interplay of the at least one adjusting

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body and the at least one adjusting contour is the fact that the transitions between loading and non-loading of the force storage means can be of a very smooth and gentle nature.

In addition it can preferably be provided that the at least one ejection device includes at least one moveable -- preferably linearly displaceable -- ejection element which can be acted upon by the at least one force storage means. In that respect it is advantageous if the at least one ejection device includes at least one locking device for releasably locking the at least one ejection element against action thereon by the at least one force storage means. The locking device can be embodied in that case for example by means of a tilting lever. An alternative embodiment of the locking device, that is not excluded from the concept of the invention, can for example also be based on a locking contour which is of a cardioid configuration.

Protection is also claimed for an article of furniture comprising a furniture carcass, at least one furniture part mounted moveably in or on the furniture carcass and at least one arrangement according to the invention for moving the at least one furniture part. That at least one furniture part can be both a furniture part which performs a rotational movement (that is the case for example with a furniture door or a furniture flap) and also a furniture part which is moveable with a translatory movement (for example a drawer).

The use of the arrangement according to the invention presents itself in particular in relation to upper cupboards which have an external support structure and an inner carcass which can be moved up and down in relation to that support structure. Here the at least one Bowden cable, when the inner carcass is moved up, can be disposed substantially between the inner carcass and the furniture carcass so that it is not visible outwardly.

Further advantageous embodiments of the invention are defined in the appendant claims and are described more fully together with further details and advantages of the invention in the context of the specific description hereinafter with reference to the Figures in which:

Figure 1a shows a diagrammatic exploded view of an embodiment of the arrangement according to the invention,

Figures 2 -- 6 show the succession of a plurality of diagrammatic side views of the embodiment of the arrangement according to the invention for illustration of the ejection process of a furniture flap and the loading process subsequently thereto for loading the force storage means of the ejection device, and

Figures 7a -- 7e show the succession of a plurality of diagrammatic cross-sectional views of the ejection device to illustrate their mode of operation.

With reference to the exploded view shown in Figure 1 it can be seen that the ejection device 3 of the arrangement 1 includes an ejection element 12 which is moveable, more precisely linearly displaceable, and which can be acted upon by a force storage means 4 in the form of a spring, wherein the ejection element 12 has two parts 15 and 16 which are moveable relative to each other over a limited distance 14 (see Figures 7a through 7e) and wherein a compression spring 17 is arranged between the two parts 15 and 16. The ejection element 12 is arranged linearly displaceably in a parallelepipedic housing 23. A further substantial component of the ejection device 3 is a locking device 18 for releasably locking the ejection element 12 in relation to being acted upon by the force storage means 4, that locking device 18 being a locking device 18 releasable by over-pressing in opposition to the ejection direction. The core element of the locking device 18 is a tilting lever 19, wherein on one arm the tilting lever 19 has a latching projection 20 and on the other arm it has an inclined surface 21 (see Figures 7a through 7e) and it is acted upon by a compression spring 22. The precise mode of operation of the ejection device 3 will be described in greater detail with reference to Figures 7a through 7e.

Substantial components of the loading device 5 for loading the force storage means 4 of the ejection device 3 are a base plate 29 on which an adjusting contour 8 and a double-armed lever 10 are rotatably mounted. The corresponding axes of rotation are denoted by references 30 and 32 respectively. Provided on one arm of the lever 10 is an adjusting body 7 in the form of a pressure roller, the adjusting body 7 running against the adjusting contour 8. A characteristic feature of the adjusting contour 8 is a neutral portion 9 in which the adjusting body 7 and the adjusting contour 8 move relative to each other in such a way that the force storage means 4 of the ejection device 3 is not loaded (see also Figure 6).

A Bowden cable 6 is arranged between the ejection device 3 and the loading device 5 for the transmission of force upon loading of the force storage means 4 of the ejection device 3. The Bowden cable 6 includes a Bowden cable core 34 guided moveably in a flexible outer casing 35. A first end 11 of the Bowden cable core 34 of the Bowden cable is operatively connected to that arm of the double-armed lever 10, that does not have the adjusting body 7. The second end 13 of the Bowden cable core of the Bowden cable is connected to the rear part 16 of the ejection element of the ejection device 3.

And finally the arrangement 1 includes an adjusting drive 23 for a furniture flap 2 (see for example Figure 2), wherein that adjusting drive 23 is connected on the one hand to the furniture flap by way of an adjusting arm 26 and on the other hand is operatively connected to the loading device 5. For that purpose the base plate 29 is mounted laterally to the adjusting drive 23. A motion coupling between the adjusting arm 26 of the adjusting drive 23 -- and thus the furniture flap which is connected to the adjusting arm 26 -- and the adjusting contour 8 of the loading device 5 is afforded by way of a pin 31. The pin 31 is guided in guide tracks 27 and 28.

The mode of operation of the preferred embodiment of the arrangement according to the invention will now be described in greater detail with reference to the further Figures:

Figure 2 shows a side view of a diagrammatically illustrated article of furniture 24, the article of furniture 24 comprising a furniture carcass 25 and a furniture part 2 mounted moveably thereto in the form of a furniture flap 2 mounted pivotably about a horizontal axis. The furniture flap 2 is made up of two mutually superposed flap portions connected together by way of hinges (not shown). The upper flap portion is pivotably connected on the one hand by way of hinges (not shown) to the furniture carcass and on the other hand is connected to the adjusting arm 26 of the adjusting drive 23. In the closed condition of the furniture flap 2 the lower flap portion bears loosely against a contact surface of the front part 15 of the ejection element, wherein in that condition the ejection element is releasably locked against actuation by the force storage means 4 by way of the above-described locking device.

A further great advantage of the present invention is that, by means of the arrangement according to the invention, it is possible for the moveable furniture part 2 to be provided without a handle. For opening purposes a user merely has to apply a light pressure to the front of the furniture part 2, in this case to the lower flap portion of the folding flap, whereby the ejection element of the ejection device is unlocked and ejects the furniture part 2 to such an extent that the user can comfortably engage behind the furniture flap 2 for further opening thereof. Initiation of that ejection movement is shown in Figure 3. Due to the light pressure exerted on the lower flap portion (indicated by means of an arrow), the ejection element is over-pressed, that is to say moved in the direction opposite to the direction in which is acted upon by the compression spring 4. As a result the tilting lever 19 of the locking device is unlocked (see Figure 7b).

As a further consequence (see Figure 4) the energy stored in the force storage means 4 is liberated and as a result the ejection element of the ejection device 3 is ejected. As the front part 15 of the ejection element bears against the folding flap it moves it from the closed position into an open position.

As already stated in the course of the description of Figure 1 the second end of the Bowden cable core 34 of the Bowden cable 6 is connected to the rear part 16 of the ejection element. The result of this is that, in the ejection movement, the Bowden cable core 34 is drawn a distance through the flexible outer casing 35. That will be seen for example from the fact that the first end 11 of the Bowden cable core 34 of the Bowden cable has moved downwardly.

In the course of the ejection movement the folding flap 2 was moved away from the furniture carcass 25 to such an extent (typically 5 – 10 cm) that the user can now engage behind the folding flap without any problem and can further manually open same (see Figure 5). The adjusting drive 23 connected to the flap 2 serves in that case for the purpose of compensating for the force due to the weight of the furniture flap 2 in any position. This means that the folding flap 2 can be held in any position without it falling closed again.

It will be apparent from a comparison of Figure 4 with Figure 5 that the adjusting contour 8 rotates in the clockwise direction during the pivotal movement of the folding flap 2 in the opening direction. Due to its specific shape, in that case the adjusting contour 8 forces the double-armed lever 10 to perform a deflecting rotary movement in the opposite direction of rotation. As a result, as a further consequence the first end 11 of the Bowden cable core 34 of the Bowden cable 6 is pulled upwardly. In addition attention is to be directed to the fact that the two arms of the double-armed lever 10 are of differing lengths, thereby giving an advantageous force ratio.

Because a pulling force is applied to the first end 11 of the Bowden cable core 34 of the Bowden cable the second end 13 of the Bowden cable core 34 of the Bowden cable and thus the ejection element of the ejection device 3 moves back in the direction of the original position (see Figure 2). At the same time the compression spring 4 which is fixedly held between the rear part 16 of the ejection element and the housing 33 is loaded. Considered overall therefore a part of the force applied by the user for opening the folding flap 2 is used for loading the force storage means 4 of the ejection device 3. In that case transmission of that part of the force is effected by means of the Bowden cable 6.

The loading process for the force storage means 4 takes place until the ejection element has again reached its locking position. At that moment the pressure roller 7 is at the location 36 on the control contour 8 (see Figure 6). At the same time the folding flap 2 assumes a central position between the closed position (see Figure 2) and the completely opened position (see Figure 6). In the further opening movement of the folding flap 2 the force storage means 4 is not further loaded. That is achieved by the arrangement on the control contour 8 of a neutral portion 9 which is so adapted that the spacing of the peripheral surface relative to the point of rotation 30 does not further increase between the points 36 and 37. Upon a further rotary movement of the control contour 8 therefore the position of the double-armed lever 10 does not change.

When the folding flap 2 is closed the control contour 8 and the lever 10 perform the oppositely directed movements -- in comparison with opening of the flap --. The first end 11 of the Bowden cable core 34 of the Bowden cable 6 however remains in its position as the ejection element is locked.

Figures 7a through 7e show a succession of diagrammatically illustrated cross-sectional views of the ejection device 3. In this respect Figure 7a and 7e show that condition of the ejection device 3, in which the

ejection element is locked. Figures 7b through 7d show those conditions of the ejection device 3, that it assumes in Figures 3 through 5.

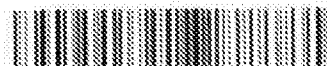
Locking of the ejection element of the ejection device 3 is effected in that (see Figures 7a through 7e) the right-hand arm of the tilting lever 19 mounted rotatably about the axis of rotation 38 on the rear part 16 of the ejection element is pressed by way of the compression spring 22 with the latching projection 20 in positively locking relationship against a corresponding edge 39 on the housing 33 of the ejection device 3.

Unlocking is effected in that (see Figure 7b) the front part 15 of the ejection element is moved towards the rear part 16 over the distance 14 in opposition to the direction of action of the compression spring 17 arranged between the two parts 15 and 16. Arranged on the front part 15 of the ejection element is an inclined surface (see also Figure 1) which in the course of the unlocking movement bears against a corresponding inclined surface 21 arranged on the second arm of the tilting lever 19, which arm does not have the latching projection 20. As a result the arm of the tilting lever 19, that has the inclined surface 21, is moved downwardly and the opposite arm is moved upwardly against the direction of action of the compression spring 22, more specifically until the latching projection 20 has moved beyond the edge 39 on the housing 33. The ejection element can now move unimpededly in the ejection direction under the energy which is liberated from the force storage means 4 (see Figure 7c).

During the loading operation (see Figure 7a) the ejection element is again pulled in the direction of its original position by the Bowden cable 6, more specifically until the arm of the tilting lever 19, that has the latching projection 20, can move back into the locking position again under the action of the compression spring

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ELRENDEZÉS MOZGATHATÓ BÚTORRÉSZ MOZGATÁSÁRA



SZTNH-100040778

Szabadalmi igénypontok

1. Elrendezés (1) mozgatható bútorrész (2), különösen tengely körül elfordulón ágyazott bútorrész mozgatására, amely tartalmaz

- legalább egy kilőköeszközt (3) a mozgatható bútorrész (2) zárt helyzetből nyitott helyzetbe történő kilőkéséhez, ahol a legalább egy kilőköeszköznek (3) legalább egy erőátviteli eleme (4) van, valamint
- terhelőeszközt (5) a legalább egy erőátviteli elemnek (4) a mozgatható bútorrész (2) nyitó- vagy zárómozgása révén való terheléséhez,

azzal jellemezve, hogy a legalább egy kilőköeszköz (3) és a terhelőeszköz (5) között a legalább egy erőátviteli elem (4) terhelésénél történő erőátvitelhez legalább egy bowden-huzal (6) van elrendezve.

2. Az 1. igénypont szerinti elrendezés (1), azzal jellemezve, hogy a terhelőeszköznek (5) legalább egy állítótete (7) és legalább egy állítókontúrja (8) van, ahol a legalább egy állítótet (7) a nyitó- vagy zárómozgás legalább egy részében a legalább egy állítókontúr (8) fut végig.

3. A 2. igénypont szerinti elrendezés (1), azzal jellemezve, hogy a legalább egy állítókontúr (8) legalább egy semleges szakasza (9) van, melyen a legalább egy állítótet (7) és a legalább egy állítókontúr (8) egymáshoz képest a legalább egy erőátviteli elem (4) terhelése nélkül mozdul el.

4. A 2. vagy a 3. igénypont szerinti elrendezés (1), **azzal jellemezve**, hogy a terhelőeszköznek (5) forgathatón ágyazott kétkarú emeltyűje (10) van, ahol a legalább egy állítótest (7) az emeltyű (10) egyik karján van elrendezve, továbbá az emeltyű (10) másik karja a legalább egy bowden-huzal (6) első végével (11) van hatóképes összeköttetésben.
5. A 2-4. igénypontok bármelyike szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy állítótest (7) hengertestként – előnyösen nyomógörgőként – vagy síklótestként van kiképezve.
6. Az 1-5. igénypontok bármelyike szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy erőátviteli elem (4) legalább egy rugót tartalmaz.
7. Az 1-6. igénypontok bármelyike szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy kilőköeszköznek (3) legalább egy mozgatható – előnyösen lineárisan vezethető – és a legalább egy erőátviteli elem (4) révén működtethető kilőköeleme (12) van.
8. A 7. igénypont szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy bowden-huzal (6) második vége (13) a legalább egy kilőköelemmel (12) van összekapcsolva.
9. A 7. vagy a 8. igénypont szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy kilőköelemnek (12) korlátozott távolságon (14) egymással szemben mozgatható legalább két darabja (15, 16) van, ahol a két darab között (15, 16) előnyösen legalább egy rugó (17) van elrendezve.
10. A 7-9. igénypontok bármelyike szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy kilőköeszköz (3) a legalább egy kilőköelemnek (12) a ráható legalább egy erőátviteli elem (4) hatásával szemben történő oldható reteszeléséhez legalább egy reteszelőeszközt (18) tartalmaz, ahol a legalább egy reteszelőeszközt (18) előnyösen egy a kilőkési iránnyal ellentétes túlnyomással oldható reteszelőeszköz képezi.
11. A 10. igénypont szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy reteszelőeszköznek (18) legalább egy himbája (19) van.
12. A 11. igénypont szerinti elrendezés (1), **azzal jellemezve**, hogy a legalább egy himbának (19)
- reteszorra (20) van,
 - ferde felülete (21) van, és/vagy
 - legalább egy rugó (22) hat rá.
13. Az 1-12. igénypontok bármelyike szerinti elrendezés (1), **azzal jellemezve**, hogy az elrendezésnek (1) a mozgatható bűtörészhez (2) legalább egy állítóhajtása (23) van, ahol a legalább egy állítóhajtás (23) a terhelőeszközzel (5) hatóképes összeköttetésben van.
14. Bűtör (24), melynek bűtörtete (25) és legalább egy a bűtörtetben vagy a bűtörteten (25) mozgathatón ágyazott bűtörész (2) van, **azzal jellemezve**, hogy a bűtörnek (24) a bűtörész (2) mozgatásához legalább egy az 1-13. igénypontok bármelyike szerinti elrendezése (1) van, ahol a legalább egy bűtörész (2) előnyösen – különösen előnyösen vízszintes – tengely körül elfordulón van ágyazva.

15. A 14. igénypont szerinti bútor (24), azzal jellemezve, hogy a bútornak (24) egy a bútortesthez (25) képest fel-le mozgatható belső teste van, továbbá a legalább egy bowden-huzal (6) a belső test felfelé mozgásakor lényegében a belső test és a bútortest (25) között van elrendezve.

Fig. 1

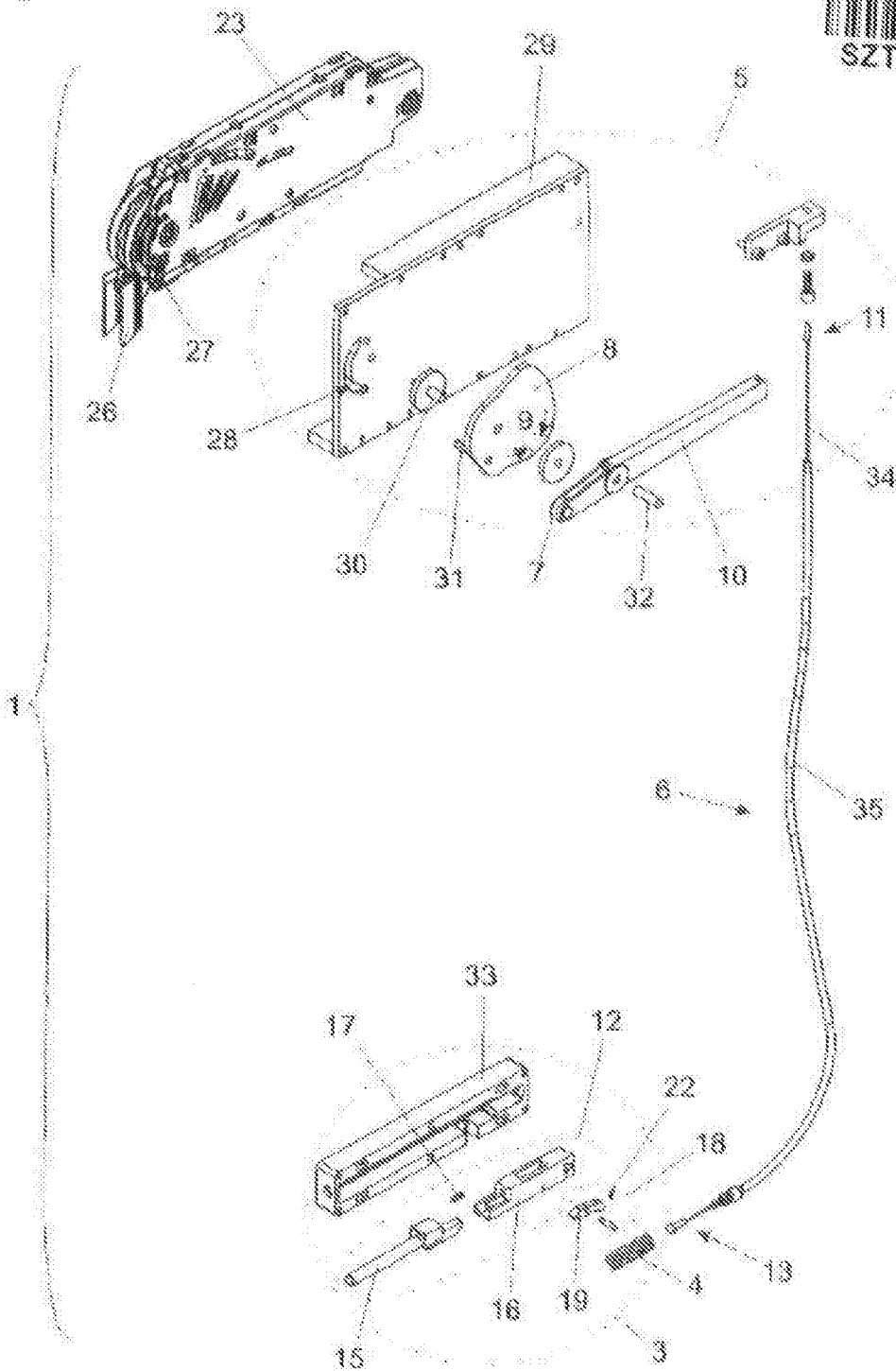


Fig. 2

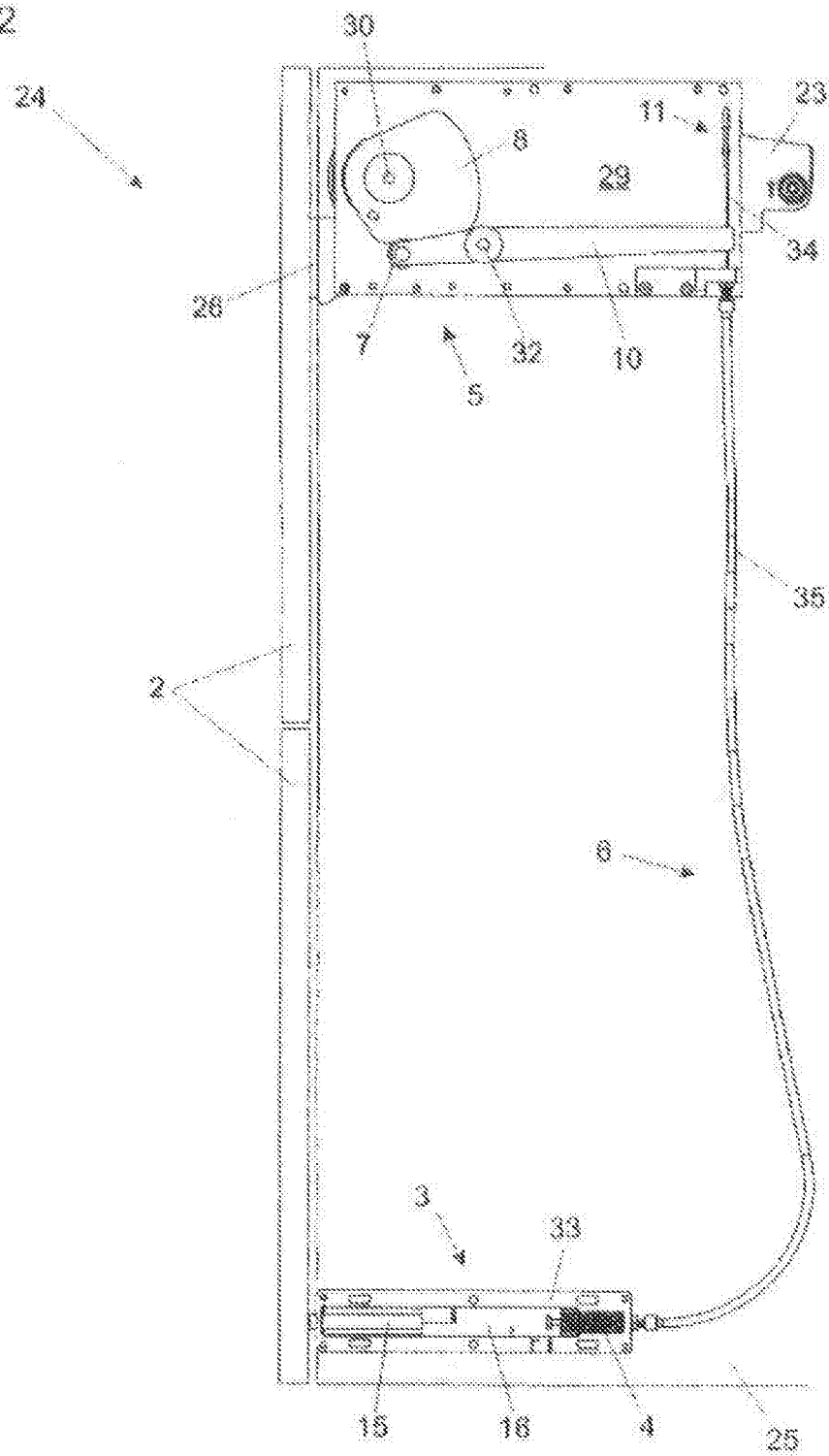


Fig. 3

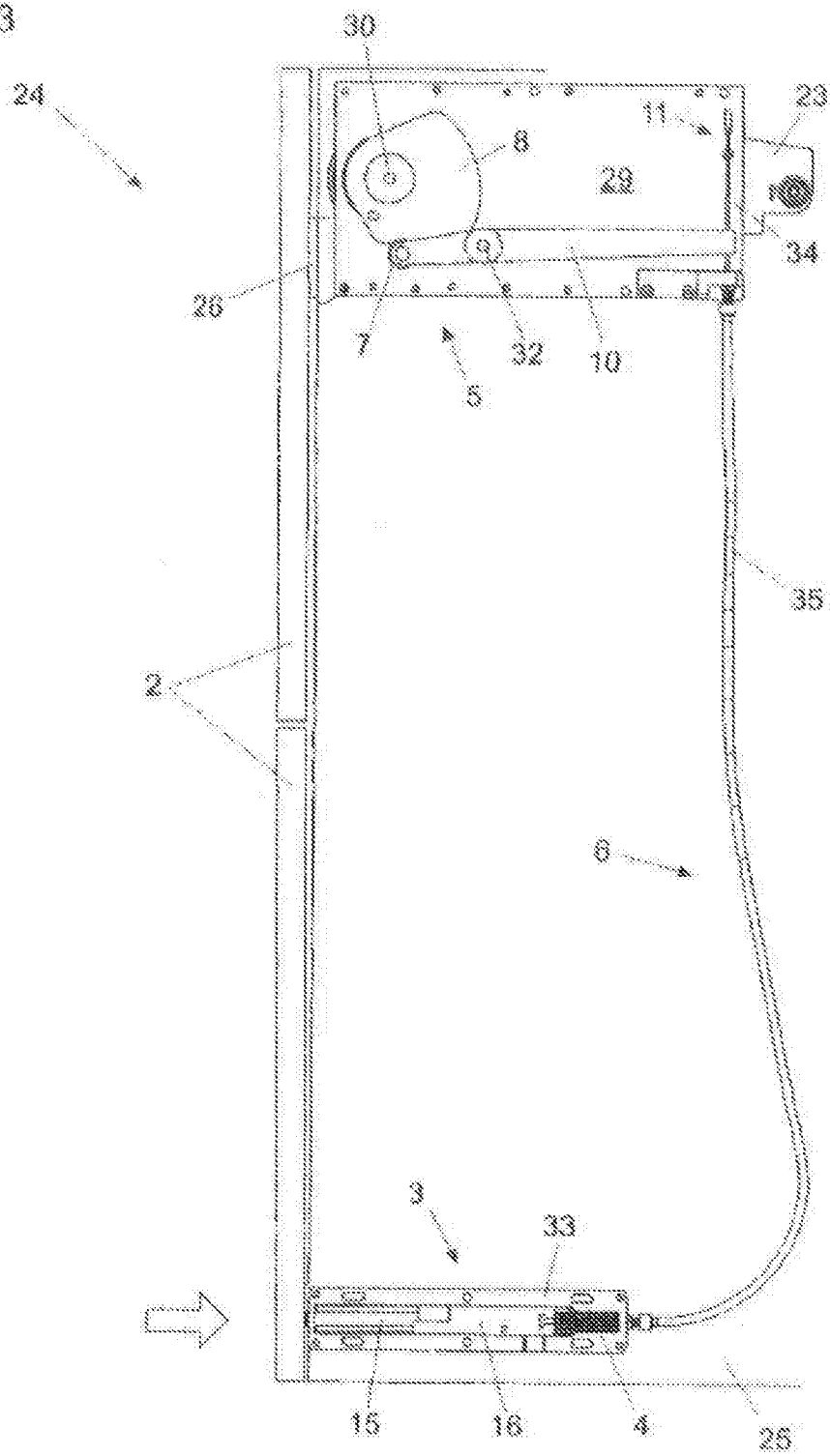


Fig. 5

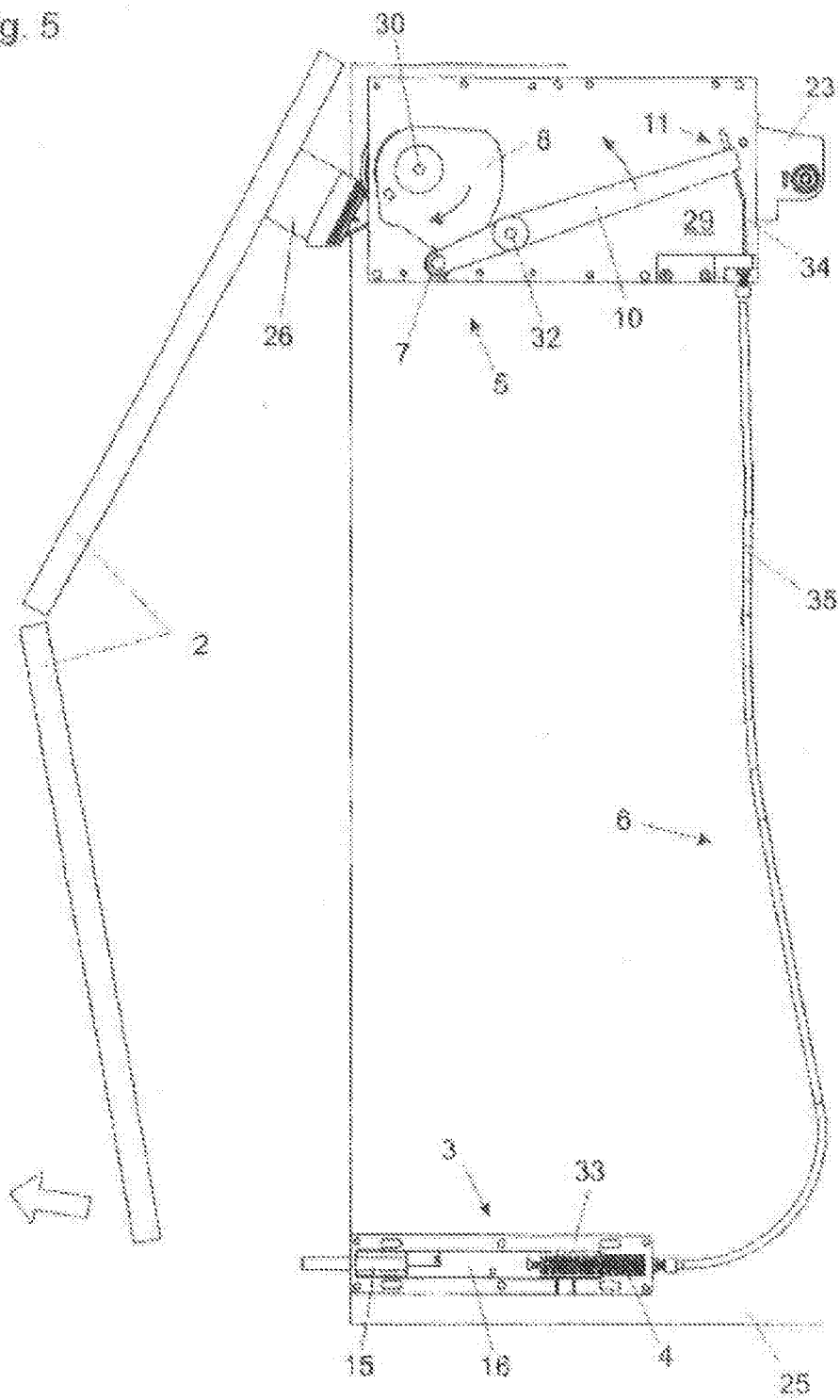


Fig. 6

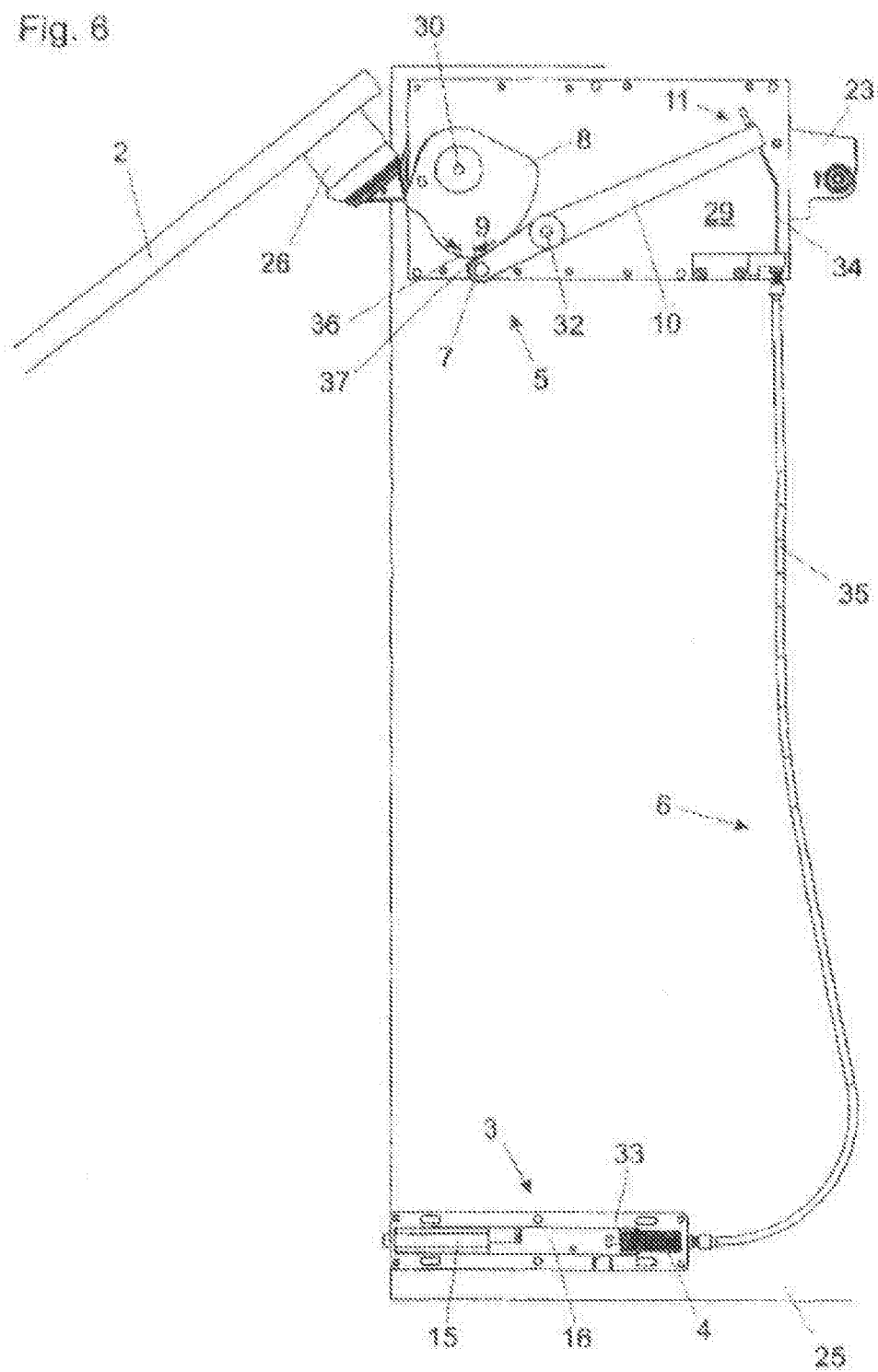


Fig. 7a

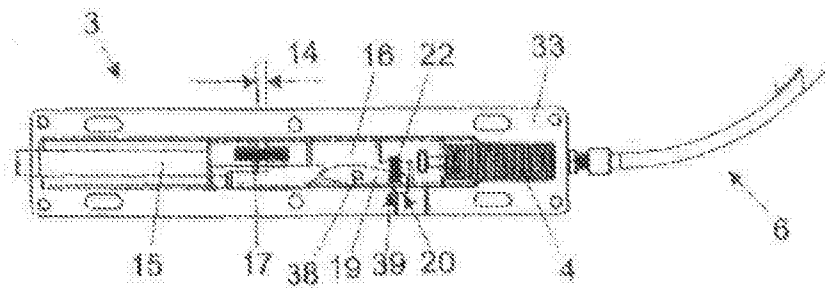


Fig. 7b

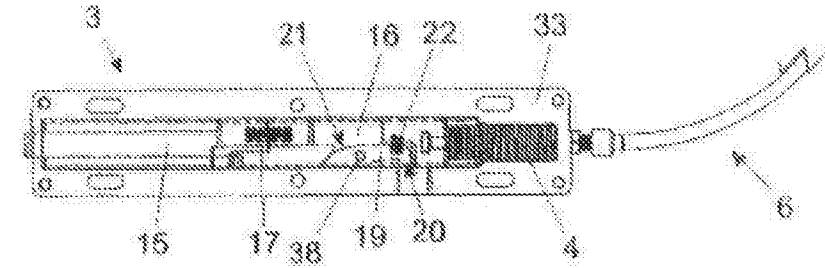


Fig. 7c

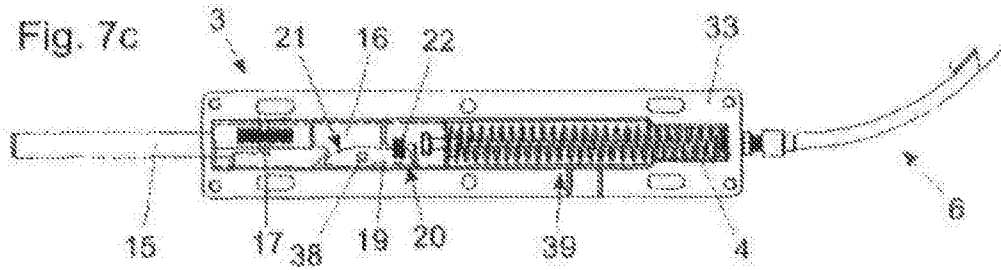


Fig. 7d

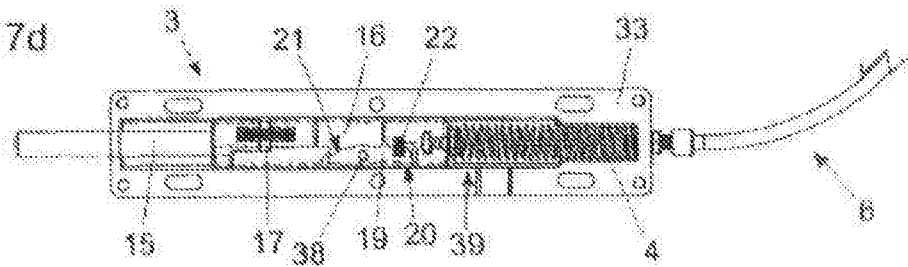


Fig. 7e

