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Futókocsi elrendezés tolóajtóhoz

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.

CARRIAGE FOR A SLIDING DOOR

The present invention concerns a carriage assembly for a sliding door according to the preamble of claim 1.

EP 1 298 272 discloses a carriage assembly for a lift and slide door having roller holder panel sheets arranged at each carriage, whereby the roller holder panel sheets also support a guide bolt in addition to the rollers for lifting or lowering a bearing of a sliding door. The carriage is thereby moveable by means of a pivot lever in order to be moveable in relation to the bearing. Such carriage assemblies, provide the functionality of lifting and lowering a door wing; however, problems occur if very heavy weights, for example in the case of multiple glazing, have to be lifted or lowered. In practice the rollers show unequal wear so that it is possible for the weight to be distributed unevenly to the rollers, thereby impeding a sliding movement or even causing a malfunction.

For carrying heavy weights it is proposed in the post-published document DE 10 2014 012 029 to increase the number of rollers, whereby on each side of the lifting mechanism a pair of rollers is provided so that a carriage comprises four rollers. With this construction the large construction length is a disadvantage as well as the large number of parts necessary for constructing one single carriage.

EP 044 799 A1 discloses a carriage for a sliding door having a lifting mechanism for moving a guide part from a lowered into a lifted position and back again. The lifting mechanism comprises curved disc having teeth which are moveable by means of an actuation mechanism in order to move the guide part along a guide track.

It is thus the object of the present invention to provide a carriage assembly which ensures an equal weight distribution to the rollers and which has a simple construction.

This object is achieved by means of a carriage assembly having the features of claim 1.

According to the invention the roller holder for the rollers is held at the guide part so as to be independent from actuation of the lifting mechanism so that the rollers are burdened with a weight only by means of the guide part, whereby the roller holder is not burdened with forces by means of the actuation mechanism. Thus the roller holders can pivot freely around the guide part so that an equal burdening of the rollers is ensured even if the rollers show unequal wear. The invention is thereby based on the insight that the mounting of the roller holders so as to be pivotable around the guide part can compensate unevenness on the guide part or other influences without leading to sharing forces on the roller holder.

In a preferred embodiment of the invention the rotational axis of the roller holders is located essentially in the middle between the axes of the pivotable rollers. Thus weight loads can be distributed in an essentially even manner.

The roller holder comprises two webs on which preferably the axis for the pivotable mounting of the rollers as well as a rotational axis which is connected to or formed integrally with the guide part are provided. The roller holder can thus be fixed to the guide part and the two rollers in order to execute corresponding pivoting movements. Preferably only two rollers are provided on the roller holder, namely one roller in front of the lifting mechanism and one roller behind the lifting mechanism, respectively, viewed in the direction of displacement of the rollers.

The roller holder comprises two webs which are provided on opposite sides of the rollers, viewed in axial direction of the rollers. The rollers are thus held on the roller holder between the two webs. The webs can be formed from a metal sheet for a stable absorption of the weight forces.

According to the invention the guide part is formed as a bolt which reaches through at least the guide track and the webs of the roller holder. Adjacent to the webs of the roller holder the bolt is connected to a guide element, respectively, by means of which guide element the movement of the bolt relative to the guide track can be controlled. The guide element can comprise two or more strips, for example, whereby preferably two strips are provided and one strip is located adjacent to a web of the roller holder on the outer side seen in axial direction of the rollers, respectively. The two strips of the control element thus encompass the two roller holders.

The carriage can thus be symmetrical with respect to a middle vertical plane so that a especially advantageous distribution of weight loads is provided.

The carriage assembly according to the invention can comprise one or more carriage which are coupled to each other by means of control elements for joint lifting and lowering of the support parts. For carrying high weight loads three or four carriages can be coupled to each other.

The invention will be described in greater detail with regard to an exemplary embodiment on the basis of the enclosed drawings. It is shown:

- Figure 1 a side view of a carriage assembly according to the invention, whereby a part of the control elements is omitted;
- Figure 2 a view of the carriage assembly of figure 1 with lifted support parts;
- Figure 3 a view according to figure 2 with pivoted roller holders;
- Figure 4 a perspective detailed view of a carriage of the carriage assembly of figure 2 in the lowered position;
- Figure 5 a perspective view of the carriage of figure 4 in the lifted position;
- Figure 6 a perspective view of the carriage of figure 4, and
- Figures 7A and 7B two views of the carriage of figure 4, partially in a sectional view.

A carriage assembly 1 is used for moving a door wing of a window or a door, for example for a lift-sliding door or a lift-slide-tilting door. A guide rail is provided inside of the blind frame at a bottom side on which two or more carriage 2 and 2' are moveably held.

A first carriage 2 comprises a support part 3, and a second carriage 2', which is located at a distance from the first carriage 2 on the guide rail, also comprises a support part 3. The moveable door wing is supported on the support parts 3 of the carriage 2 and 2'.

A lifting mechanism 4 is provided on each carriage 2 and 2', by means of which lifting mechanism 4 the support part 3 can be moved from a lowered position into a lifted position. Each carriage 2 and 2' further comprises two rollers 5 and 6 which are situated on opposite sides of the lifting mechanism 4. The rollers 5 and 6 are thereby connected to each other by means of a common roller holder 7.

For actuation of the lifting mechanisms 4 an actuating mechanism comprising a lever 8 is provided which is held pivotably at a fitting 9 of the door wing. By means of the lever 8 the a driving rod 10 can be lifted and lowered in vertical direction, whereby said driving rod 10 actuates a corner redirection 11. By means of the corner redirection 11 a control element is actuated by means of a chain link 23 for lifting or lowering the support part 3 by means of the lifting mechanism 4. By means of the actuation mechanism all support parts 3 on the carriage 2 and 2' are lifted or lowered at the same time. For this purpose the control element of the first carriage 2 is connected by means of a connecting rod 12 with a control element of the second carriage 2'. IN this manner

it is possible to connect more than two carriages 2 and 2' to the actuating mechanism, for example three carriages or four carriages.

Figure 1 shows the lowered position of the support parts 3 and figure 2 shows the lifted position of the support parts 3.

Figure 3 shows that the roller holders 7 of the carriages 2 and 2' are held pivotably around a guide part 20 of the lifting mechanism 4. Each roller holder 7 holds a roller 5 or 6 respectively, at opposite ends, whereby the guide part 20 is located between the rotational axes of the rollers 5 and 6. The roller holder 7 of the left carriage 2 has been moved in a counterclockwise direction, wherein the roller holder 7 of the right carriage 2' was rotated around the guide part 20 in a clockwise direction.

Figure 4 shows an enlarged view of the carriage 2. It can be seen that the corner redirection 11 is connected to the chain link 23 by means of a bolt 26, whereby the chain link 23 is connected to the strip-shaped control element 13 by means of a further bolt 22. The strip-shaped control element 13 can have the geometry of a strip, especially a metal strip, which is connected in a middle region to the guide part 20 so that by pulling the chain link 23 the guide part 20 is moved along a guide track 21 being arranged obliquely to a horizontal plane for lifting the support part 3. The lowering of the support part 3 is performed by moving the control element 13 into the opposite direction.

The control element 13 is connected to a coupling part 25 by means of a sleeve 24 on the side facing away from the chain link 23, the connecting rod being connected to the coupling part 25. By means of the connecting rod 12 a control element 13 is being coupled to the carriage 2' so that the support parts 3 of the carriages 2 and 2' are moved together. The carriage 2' can be constructed in the same way as the carriage 2.

In figure 5 the control element 13 is omitted in the same way as in figures 1 to 3 for better showing the suspension of the rollers 5 and 6. An axis 50 or 60, respectively, of one of the rollers 5 and 6 reach through the strip-shaped roller holder 7 at opposite ends, respectively, and between the axes 50 and 60 in an approximately middle position the guide part 20 reaches through an opening in the roller holder 7. In addition the guide track 21 of the guide part 20 being arranged obliquely with regard to a horizontal plane is partially visible, by means of which guide track the support part 3 can be lifted and lowered. Adjacent to the roller 6 the coupling part 25 is provided, by means of which coupling part 25 the carriage 2 can be connected to a further carriage 2'.

In figure 6 the carriage 2 is seen from an oblique lower position. It can be seen that the carriage 2 is essentially symmetrical to a middle vertical plane. The rollers 5 and 6 can be pivoted around the guide part 20 together with the roller holder 7, whereby the roller holder 7 is formed by two webs which reach through the rollers 5 and 6. Furthermore it can be seen that the control element is formed by two strip-shaped strips which are, respectively, located on an outer side of a web of the roller holder 7, whereby the strips of the control element 13 have a greater length than the roller holder 7. The two strips of the control element 13 are coupled by means of the bolt 22 with the chain link 23 and can relay a movement of the actuating mechanism to the adjacent carriage 2' as well as to the roller holder 7 by means of the coupling part 25. The roller holder 7, however, is held independently of the control element 13 at the guide part 20 in a pivotable manner.

As can be seen from figures 7A and 7B, the guide part 20 reaches through the guide track 21, the two webs of the roller holder 7 as well as the two strips of the control element 13. The guide part 20 is formed as a bolt, preferably made from metal or a hard plastic material, whereby the guide part 20 can have a cylindrical shape or, as shown in the present embodiment, having cylindrical parts which taper in stepped manner towards the

ends, respectively. Thus the guide part can be mounted first at the guide track 21, whereby then an opening at the web of the roller holder 7 can be slid onto a stepped part of the bolt and a strip of the control element 13 can be slid with an opening onto another step of the bolt. By forming steps on the guide part 20 is ensured that the roller holder 7 is held with some allowance between the guide track 21 and the control element 13 and can thus pivot freely without clamping. In axial direction corresponding securing means can be provided at the guide part 20 which ensure a permanent connection inside of the two strips of the control element 13. The guide part 20 can furthermore be provided in several parts.

In the present embodiment two carriages 2 and 2' are used for supporting a sliding door, especially a lift-sliding door. It is of course also possible to provide more than two carriages 2 and 2' for a carriage assembly according to the invention.

Reference signs

| | |
|-------|--------------------|
| 1 | carriage assembly |
| 2, 2' | carriage |
| 3 | support part |
| 4 | lifting mechanism |
| 5 | roller |
| 6 | roller |
| 7 | roller holder |
| 8 | lever |
| 9 | fitting |
| 10 | driving rod |
| 11 | corner redirection |
| 12 | connecting rod |
| 13 | control element |
| 20 | guide part |
| 21 | guide track |
| 22 | bolt |
| 23 | chain link |
| 24 | sleeve |
| 25 | coupling part |
| 26 | bolt |
| 50 | axis |
| 60 | axis |

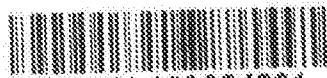
FUTÓKOCSI ELRENDEZÉS TOLÓAJTÓHOZ

SZABADALMI IGÉNYPONTOK

1. Futókocsi elrendezés (1) tolóajtóhoz, különösen emelő-toló ajtóhoz, legalább egy futókocsival (2, 2'), ami tartalmaz egy vonószerkezetet (4) egy, a futókocsi elrendezés (1) egy kulisszavezetéke (21) mentén ágyazott vezető résszel (20) egy támasztóelem (3) emelésére és süllyesztésére, amin egy ajtószárny feltámasztható, ahol a vonószerkezet (4) mindkét oldalán legalább egy görgő (5, 6) van forgathatóan ágyazva, amik egy vezetőcsínen mozgathatók, és a görgők (5, 6) a vonószerkezet (4) szemben fekvő oldalán egy közös görgőtartón (7) vannak megtartva, ahol a görgőtartó (7) két bordát tartalmaz, amik a görgők (5, 6) tengelyirányában a görgők (5, 6) két oldalán vannak elhelyezve, ahol a görgőtartó (7) függetlenül a vonószerkezet (4) meghajtó berendezésétől forgathatóan vannak a vezető részen (20) ágyazva, ahol a vezető rész (20) csapként van kialakítva, ami legalább a kulisszavezetéken (21) és a görgőtartó (7) bordáin nyúlik keresztül, azzal jellemezve, hogy a csap a görgőtartó (7) bordáival szomszédosan egy lécz formájú vezérlő elemmel (13) van összekötve, amivel a csap mozgása a kulisszavezetékekhez (21) képest vezérelhető.
2. Az 1. igénypont szerinti futókocsi elrendezés, azzal jellemezve, hogy a görgőtartó (7) forgástengelye középen van elrendezve a görgőket (5, 6) forgathatóan ágyazó tengelyek (50, 60) között.
3. Az 1. vagy 2. igénypont szerinti futókocsi elrendezés, azzal jellemezve, hogy a görgőtartó (7) bordáin a görgőket (5, 6) forgathatóan ágyazó tengelyek (50, 60) és egy, a vezető résszel (20) összekötött vagy abba integráltan kialakított forgástengely van(nak).
4. Az előző igénypontok bármelyike szerinti futókocsi elrendezés, azzal jellemezve, hogy a görgőtartó (7) bordái egy fémlemezről vannak kialakítva.
5. Az előző igénypontok bármelyike szerinti futókocsi elrendezés, azzal jellemezve, hogy a vonószerkezet (4) vezérlő eleme (13) csak a vezető részen (20) keresztül vannak a görgőtartóval (7) összekötve.
6. Az előző igénypontok bármelyike szerinti futókocsi elrendezés, azzal jellemezve, hogy a vezérlő elem (13) két léccel van ellátva, és mindegyik lécz a görgőtartó (7) egyik bordájával szomszédosan a görgők (5, 6) tengelyirányában kívül vannak elrendezve.
7. Az előző igénypontok bármelyike szerinti futókocsi elrendezés, azzal jellemezve, hogy több futókocsit (2, 2') tartalmaz, amik vezérlő elemeken (13, 25, 12) keresztül vannak egymással összekötve a támasztóelemek (3) emelésére és süllyesztésére.



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Fig. 1

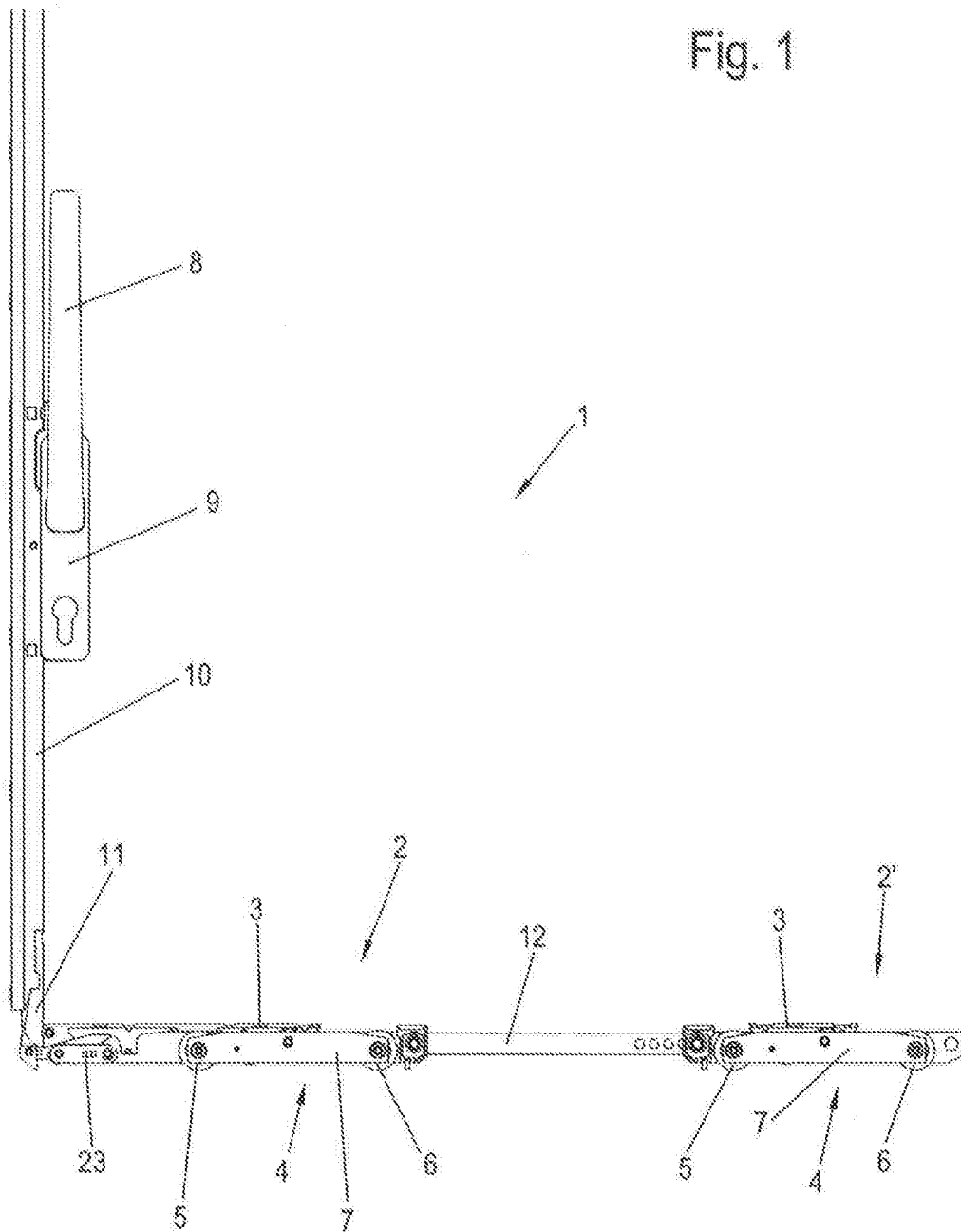


Fig. 2

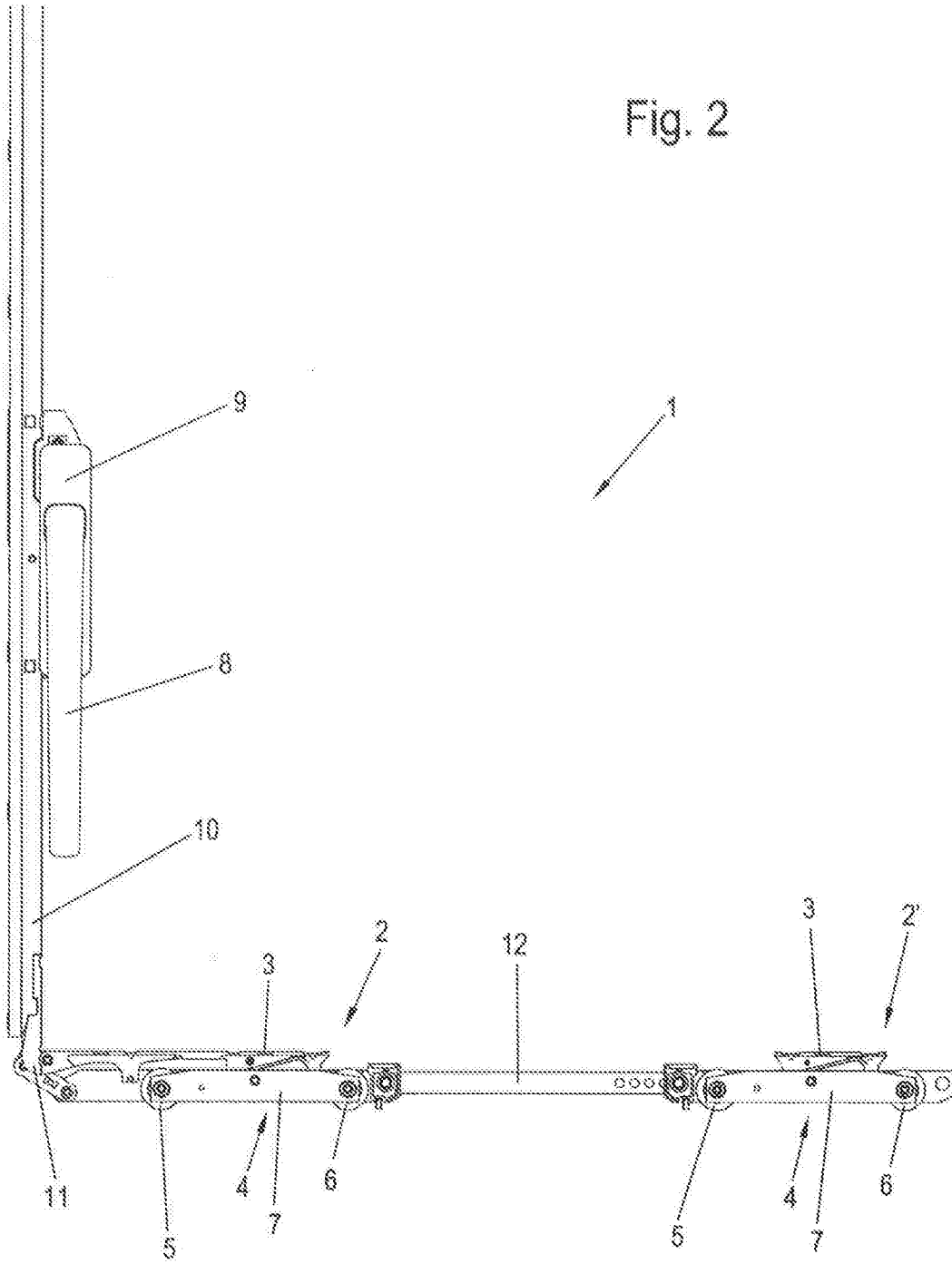
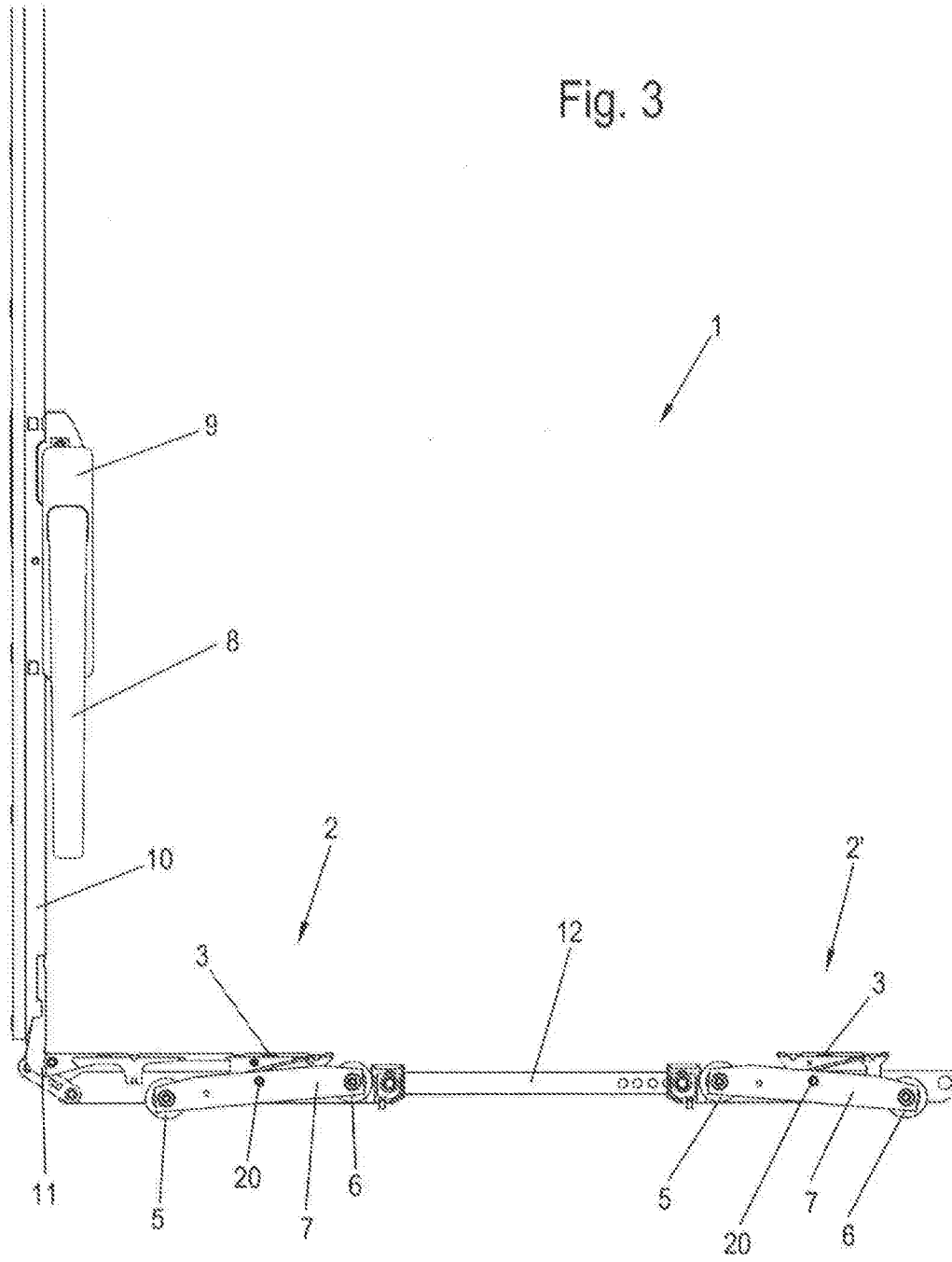


Fig. 3



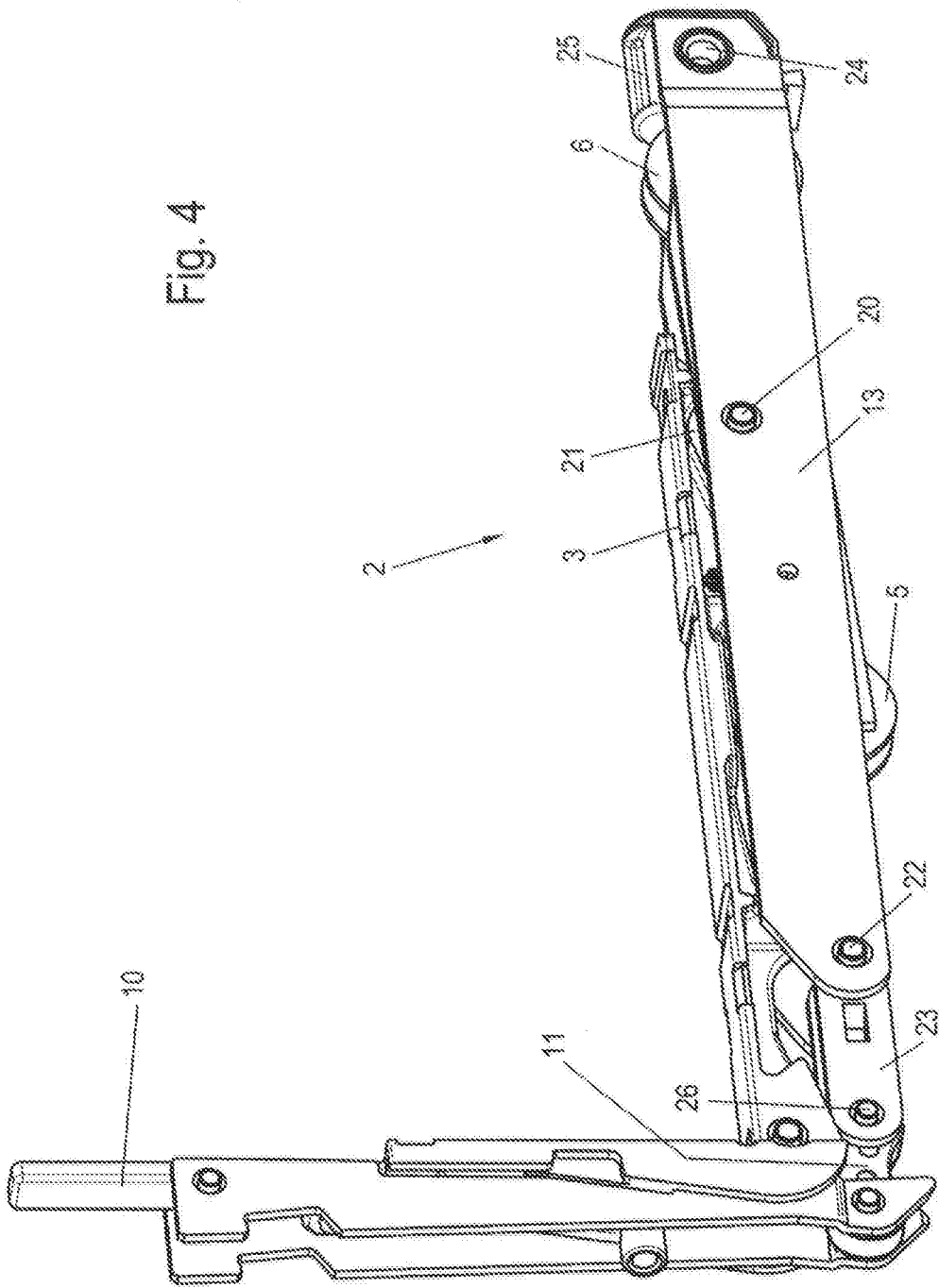


Fig. 4

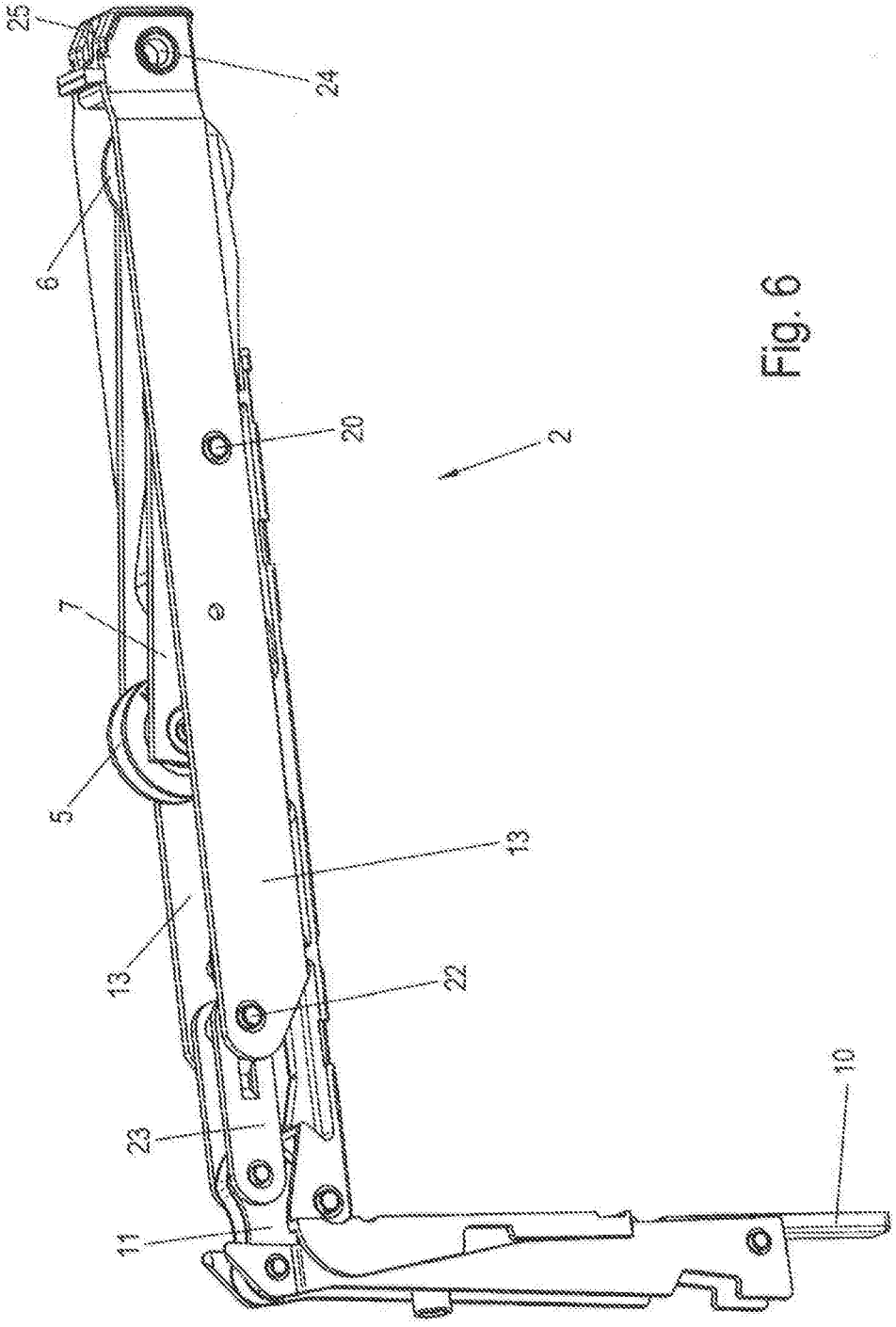


Fig. 6

Fig. 7A

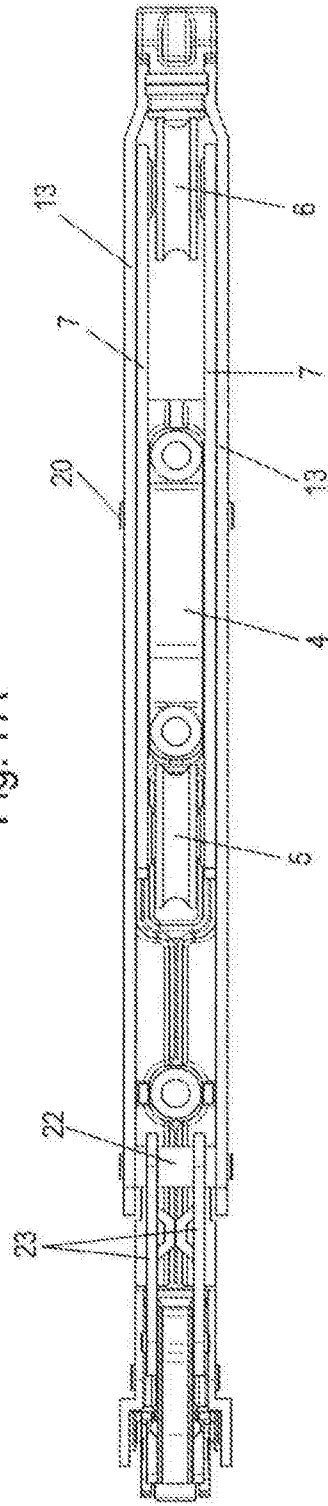


Fig. 7B

