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(54) **WINDOW BLIND FOR MOUNTING TO THE OUTSIDE OF A WINDOW**

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STORE DE FENÊTRE À MONTER À L'EXTÉRIEUR D'UNE FENÊTRE

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Description

Technical field

[0001] The invention relates to the guiding of outside-mount window slats of the blind, mounted in particular on inclined windows, with a control device for adjusting their position, i.e. sliding and rotation.

State of the art

[0002] By the construction of the slats of the outside-mount window blinds, there are basically two systems used. In both systems, frames with slots for guiding side pins of the slats are usually arranged on both sides of the blinds assembly. The first system, so called roller shutters, consists of a storage box arranged in the upper part of the frame in which the individual slats are wound and connected together and they are dropped or raised in the slots of the said side frames. The disadvantage of this system is that the slats cannot be individually positioned and they are therefore either pulled down, because of complete shading at night or for safety reasons, or pulled up partially to let some light through, or rolled up to the top position into the storage box when it is desired to keep the window uncovered. Such a system is described, for example, in CZ 1993-636 A1.

[0003] In the second system, rails are arranged along the sides of the window opening only for guiding the side pins of the slats, the blinds are terminated at the bottom by a massive rail on which the lowering or raising belts are anchored, which pass through the individual slats and which are wound on winding wheels arranged at the top of the assembly.

[0004] The slats are also connected via string ladders, which can also be operated and which can tilt the slats. The disadvantage of this system is the relatively low rigidity, which can threaten the compactness of the assembly by strong wind. Furthermore, this system works on the principle of gravity and therefore cannot be used for tilted windows. The slats can be pushed by the bottom rail to the stacking position at the top of the window. Such a system is described, for example, in EP 2669462 A1, AT 007694 U1, AT 501293 B1 or DE 29913131 U1.

[0005] WO 2006/077543 A1 relates to a window blind for mounting to the outside of a window, comprising slats and a frame with a control device for adjusting the position of the slats, wherein the frame further comprises two vertical parallel mirror-symmetrical guide rails and pulling means, wherein the slats are arranged between said guide rails, wherein each of said guide rails is provided with a central cam slot and a driving worm, wherein the pulling means comprise control arms for positioning of the slats, each control arm comprising a respective cam, wherein there is a space in each guide rail for the cams of the control arms, wherein each slat is fixed to a respective control arm, and wherein each driving worm is arranged on the side of each of the guide rails.

[0006] The aim of the invention is to provide an outside-mount window blind created by a frame with a control device for adjusting the position of the slats, i.e. a system for both sliding and rotating the slats, where the system has a compact structure which can reliably withstand heavy weather and which would also provide suitable shading for buildings and would be able to reduce the temperature inside without additional air-conditioning means.

Summary of the invention

[0007] The above mentioned deficiencies are eliminated by the window blind according to claim 1.

[0008] In a preferred embodiment, on the control arm the slat of the blind is arranged such, that on the chain connecting pin put in the chain links and in one of arm openings and on the supporting pin in the other arm opening, the holder is arranged on which the slat is fixed.

[0009] In another preferred embodiment are the control arms provided with recesses at the edges of their fingers to allow the control arms to fit tightly when the slats of the blind are in the stacked position.

Brief description of drawings

[0010] The invention will be explained by use to drawings, where Fig. 1 shows an outside-mount window blind according to the invention, where all slats of the blind are stacked in a basic position, Fig. 2 shows a detail of the internal arrangement of the control device from Fig. 1, Fig. 3 is a view of the dropping the slats in the initial phase, Fig. 4 is a view of the dropping in the advanced phase, Fig. 5 is a view of the slats in the final phase of dropping, when the slats are in the maximum open position, Fig. 6 is a view of the slats in the final stage of lowering, but the slats are in the half-open position, Fig. 7 is a detail of the control arm of the slats, Fig. 8 is a detail of the cam of arm from Fig. 7, Fig. 9 is a schematic section of the frame according to the line A-A of Fig. 1 with elements of the control device, Fig. 10 is the chain and control arm assembly corresponding to the arrangement in Fig. 9, Fig. 11 shows a situation where all the slats in the horizontal position are dropped to the fully shaded position, Fig. 12 shows a situation where all slats in the vertical position are pulled up to the fully stacked position, Fig. 13 to 18 show the individual stages of controlling the position of the slats by the arms from Figures 7 and 8.

Preferred embodiment of the invention

[0011] Outside-mount window blind 33 with frame 32 is used for tilted roof windows. Fig. 1 shows the basic frame 32 for guiding the outside-mount window slats 21 of the blind 33 operated by the control device 1 for sliding and rotating them. All slats 21 of the blind 33 are here stacked in a packet in the upper base position. The basic elements of the device are arranged in two vertical parallel

and mirror-symmetrical guide rails 2, each of which is provided with a central cam slot 10 and a side chain slot 9 which, when mounted, is closer to the window glass. The control arm 4 of the slats 21 is partially visible, and perpendicular lateral slots 11 project from the cam slots 10 at regular intervals therefrom.

[0012] Fig. 2 shows in detail that each slat 21 has a holder 6 on both sides which is fixed to the control arm 4. Furthermore, the links of the chain 3 in the stacked position and also the control arms 4 in the stacked position are shown. At the side of each guide rails 2 a worm 5, driven via a distribution shaft and an angular motor gearbox is arranged. Flexible little sheets 7, 8, the function of which will be discussed later, are also visible. This worm drive 29 of the worm 5 can be seen in Fig. 3 and is located under the transverse connecting beam. Chain connecting pins 16 protrude from the chain 3, and the worm 5 always catches one pin 16 and thus always moves this one pin downwardly when the slats 21 are moved downwardly, and conversely, when the direction of rotation of the worm is reversed, it pulls the chain 3 with the slats 21 upwardly by these chain connecting pins 16.

[0013] Fig. 3 shows the stacked slats 21 and the assembly of slats 21 of the blind 33 in a state in which the first slat 21 is rotated by the control device 1 to the fully shading position, i.e. perpendicular to the stacked position. The mechanism for dropping and rotating the slats 21 will be described in detail later. The holder 6 on which the slats 21 of the blind 33 are fixed is also clearly visible, and this holder 6 is arranged on the arm 4 via the chain connecting pin 16 and the supporting pin 14. This can be clearly seen in Fig. 10. The slat 21 may be fixed directly on the arm 4, or preferably the slat 21 of the blind 33 may be arranged such that on the chain connecting pin 16 put in the chain links 17, 18 and in one of arm openings 22 and on the supporting pin 14 in the other arm opening 22, the holder 6 is arranged on which the slat 21 is fixed - see Fig. 10.

[0014] Fig. 4 shows the situation in the dropping phase of the slats 21, when several slats 21 of the blind 33 are lowered to the fully shaded position. Both the chain slot 9 and the cam slot 10 can be seen here, as well as perpendicular lateral slots 11 which are arranged at regular intervals. When all of the stacked slats 21 of the blind 33 are shifted to a fully shading position, the shading will be completed, so all the slats 21 are in fully shading vertical position.

[0015] This can be clearly seen in Fig. 5, where all the slats 21 of the blind 33 are already dropped in the final dropping phase. Prior to the dropping position shown here, all slats 21 were in the fully shaded position. Here they are shown already in the maximum open position, when the most light is let in. How this change of position is achieved will again be explained later.

[0016] In Fig. 6, it can be seen that the slats 21 can also be brought into any slightly open position within the range of 90° where the slats 21 are tilted and when they are shading partially.

[0017] Fig. 7 shows a detail of the control arm 4. This serves to fix the holder 6 for the slat 21 of the blind 33 and to connect it to the chain 3, thereby also ensuring the rotation of the slat 21 of the blind 33. The control arm 4 is substantially V-shaped, consisting of two fingers 31 and at its ends is the control arm 4 provided with chain openings 15 for pins 14, 16 and are provided with recesses 23. The recesses 23 serve to allow stacked control arms 4 to fit tightly together in the stacked position of the blind 33. On the peak, the control arm 4 is provided with a cam 12 mounted on a cam pin 13.

[0018] As can be seen in detail in Fig. 8, the cam 12 is cylindrical and its upper face is provided with two wedge sectors 19 and one rectangular flat sector 20 of the full thickness of the cam 12.

[0019] Fig. 9 is a schematic section of the guide rail 2 according to line A-A of Fig. 1. The guide rail 2 consists of a base 27 and a guide rail cover 28. The chain 3 is guided in the chain slot 9 of the guide rail 2, the chain 3 consists of a base guide chain links 17 which connect connecting chain links 18 arranged above. Through the chain openings 15 of the chain links the chain connecting pins 16 are put in. On the chain connecting pin 16 the control arm 4 is put in by one of its arm openings 22, and the cam pin 13 is guided in the cam slot 10. In the base 27 of the guide rail 2 there is a storage slot 26 for the fixing parts 24 of the flexible little sheets 7, 8 mentioned in Fig. 2.

[0020] Fig. 10 is an assembly of two chain links and the control arm 4 corresponding spatially to the arrangement of Fig. 9. The chain 3 consists of guide chain links 17 and connecting chain links 18, the connecting chain link 18 is closer to the control arm 4. In the chain openings 15 and in one of the arm openings 22 there is a chain connecting pin 16 which connects both chain links 17, 18 and also carries at one end the blind slat holder 6 of the slat 21 of the blind 33. In the other arm opening 22, a supporting pin 14 is arranged for the other end of the blind slat holder 6.

[0021] As can be seen in Fig. 7 and 8, the wedge sectors 19 of the cam 12 are oriented opposite the fingers 31 of the control arm 4. This is very important for explanation why the cams 12 do not interfere when dropping the slats 21 to the shading position or, conversely, when pulling the slats 21 to the stacked position. If the cams 12 were not provided with these wedge sectors 19, the cam would lift and pass under one of the flexible little sheets 7, 8, but against the following flexible little sheet, or stop 25 thereof, preloaded towards the bottom surface of the cam slot 10, the cam 12 and the slat 21 would strike and could not continue in straight direction. This is explained with reference to Figs. 11 and 12, wherein Fig. 11 represents a situation in which all the slats 21 in the horizontal position are dropped to a fully shaded position. When dropped in the direction of the arrow, the cam 12 of the control arm 4 is oriented such, it has in the indicated direction of movement the wedge sector 19 oriented downwardly. The upper flexible little sheet 8 is easily passed under by the cam 12, since the arm 30' of the sheet 8 is raised from the cam slot 10 and the press arm 30 of the lower

flexible little sheet 7 is raised due this wedge sector 19. This situation is the same for all the cams 12 of other slats 21 of the blind 33, and therefore they all descend easily to a completely shaded position.

[0022] Fig. 12, on the other hand, shows a situation in which all slats 21 of the blind 33 in the vertical position are pulled up to a fully stacked position. When pulling in the direction of the arrow, the cam 12 of the control arm 4 is oriented so that it has in the indicated direction of movement the wedge sector 19 oriented upwards. The lower flexible little sheet 7 is easily passed under by the cam 12, since the press arm 30 is raised from the cam slot 10 and the press arm 30' of the upper flexible sheet 8 is raised due to this wedge sector 19. This situation is the same for all the cams 12 of the other slats 21, and therefore, all of them, thus easily rise to the fully stacked position.

[0023] Figs. 13 to 18 show the various stages of operation of the slats 21 of the blind 33. This detailed description follows Fig. 1 to 6, starting from the situation shown in Fig. 4. The slats 21, originally stacked in the upper part of the frame 32, are after turnover from the horizontal to the vertical position by the worm 5 dropped due to the pull of the chain 3, and all of them drop down.

[0024] How the slats 21 of the blind 33 are rotated from the vertical to the horizontal position will be explained by analogous movement in reverse alignment from the vertical to the horizontal position, as illustrated in Figs. 5 and 6, wherein the slats 21 can be rotated between these extreme positions, thereby regulating light entrance.

[0025] The most important components of the control device 1 are the control arms 4 with cams 12, wherein the cam 12 is moved by its cam pin 13 in the cam slot 10, under the surface of the guide rail 2. In the base 27 of the guide rail 2, the fixing parts 24 of the flexible little sheets 7, 8 are arranged in the storage slots 26, and these, by means of their press arms 30, 30', elastically abut from below the cam slot 10 and are centred relative thereto. The press arms 30, 30' of the flexible little sheets 7, 8 are terminated by stops 25 which project away from the guide rail 2 and have the same orientation as the fixing parts 24 of the flexible little sheets 7, 8. The basic mechanism for controlling the rotation of the slats 21 of the blind 33 is the interaction between the cam 12, respectively its shaped parts such as the wedge sector 19 and the flat sector 20, and flexible little sheets 7, 8, respectively their stops 25.

[0026] As noted in description of Fig. 8, the cam 12 is cylindrical and its upper face is provided with two wedge sectors 19 and one rectangular flat sector 20 which has the full thickness of the cam 12. The wedge sectors 19 decrease in thickness from the upper face to the lower face, thereby forming a sharp ramped wedge.

[0027] Thus, if the cam 12 comes into contact with the flexible little sheets 7, 8 by means of its wedge sector 19, then, due to this wedge, the press arm 30 of the flexible little sheet 7 with the stop 25 is easily lifted, the cam 12 passes under it and continues to move without being forced to rotate, and thus to rotate the entire control arm 4, and thus the holder 6, and thus the slat 21 itself. In this

movement, one of the flexible little sheet 7, 8 is very easily underrun, since the press arm 30 of the lower flexible little sheet 7 is at an angle and therefore the chamfer of the wedge sector 19 is not so important, but the other flexible little sheet 8, which by its stop 25 abuts to the surface of the cam slot 10, must be, by this wedge, actively lifted and passed under. In this way the individual slats 21 are allowed to slide down one after the other into their basic shaded position without changing their vertical orientation. The above-described situation is illustrated in Fig. 13, at the moment, when by moving from above, the cam 12 has easily passed under the upper flexible little sheet 8, and then has lifted the lower flexible little sheet 7 and passed it under.

[0028] However, if the cam 12 comes into contact with flexible little sheets 7, 8 by its flat sector 20, the first flexible little sheet 7 is easily lifted, because the press arm 30 of the flexible little sheet 7 is at an angle and therefore the thickness of the flat sector 20 does not interfere while lifting, however, in the case of the second flexible little sheet 8, which with its stop 25 abuts the surface of the cam slot 10, the flat sector 20 hits this stop 25 and cannot continue to move. This can be seen in Fig. 14.

[0029] As can be seen in Fig. 15, as a result of the continued tension of the chain 3, the cam 12 is forced to drive completely into the lateral slot 11 which is at a level between the stops 25 of the flexible little sheets 7, 8. And since the control arm 4 is connected to the chain 3 at one end, the control arm 4 is rotated, thereby rotating the holder 6 of the slats 21 of the blind 33, and also the slats 21 themselves. The lateral slot 11 is not visible here, as it is completely hidden by the control arm 4. The slats 21 are partially changed from a vertical position to an inclined position, as can be seen in the partial rotation in Fig. 6.

[0030] Fig. 17 then shows a situation in which, during the further movement of the chain 3, the cam 12, together with the entire control arm 4 and together with the slat 21 of the blind 33, continues to rotate and, after the complete exit of the lateral slot 11 back into the cam slot 10, the slat 21 reaches a complete horizontal position. The cam 12, having already left the lateral slot 11 and rotated, is now oriented with respect to the stop 25 of the upper flexible little sheet 8 by its wedge sector 19, as shown in Fig. 17.

[0031] In Fig. 18, it can be seen that rotation of the cam 12 by its wedge sector 19 easily lifts the stop 25 of the upper flexible little sheet 8 and the cam 12 passes under this upper flexible little sheet 8 and continues in the cam slot 10 further upwards, with the slats 21 already rotated to a horizontal position.

[0032] The above phase staged rotation will be the most common operation in practice when adjusting the position of the dropped slats 21 of the blind 33, i.e. in the basic position of the vertically rotated slats 21.

List of reference signs

[0033]

1 control device	
2 guide rail	
3 chain	
4 control arm	
5 worm	5
6 blinds slat holder	
7 lower flexible little sheet	
8 upper flexible little sheet	
9 chain slot	
10 cam slot	10
11 lateral slot	
12 cam	
13 cam pin	
14 supporting pin	
15 chain opening	15
16 chain connecting pin	
17 guide chain link	
18 connecting chain link	
19 wedge sector	
20 flat sector	20
21 slat of blinds	
22 arm opening	
23 recess	
24 fixing part of the little sheet	
25 stop of the little sheet	25
26 storage slot	
27 base of the guide rail	
28 guide rail cover	
29 worm drive	
30 press arm of the lower flexible little sheet	30
30' press arm of the upper flexible little sheet	
31 finger	
32 frame	
33 blind	

Claims

1. Window blind (33) for mounting to the outside of a window, the window blind comprising slats (21) and a frame (32) with a control device (1) for adjusting the position of the slats, wherein the frame further comprises two vertical parallel mirror-symmetrical guide rails (2) and pulling means, wherein the slats (21) are arranged between said guide rails (2), wherein each of said guide rails (2) is provided with a side chain slot (9), a central cam slot (10) and a driving worm (5), wherein the pulling means are accommodated in each slot (9, 10), wherein the pulling means comprise a chain (3) with links (17, 18) and control arms (4) for positioning of the slats (21), each control arm (4) comprising a respective cam (12), wherein there is a space in each guide rail (2) for the links of the chain (3) and for the cams (12) of the control arms (4), wherein each slat (21) is fixed to a respective control arm (4), wherein perpendicular lateral slots (11) protrude from the central cam slot (10) at regular intervals and two flexible little sheets (7, 8) are arranged

opposite to each lateral slot (11), wherein each flexible little sheet (7, 8) comprises a fixing part (24), a press arm (30, 30') and a stop (25), each flexible little sheet (7, 8) being fixed by its fixing part (24) in the base (27) of the respective guide rail (2), the press arms (30, 30') being preloaded towards the bottom surface of the central cam slot (10) and being oriented with their stops (25) facing each other, wherein each control arm (4) is placed in the central cam slot (10) through a cam pin (13) of the respective cam (12), wherein each control arm (4) comprises two fingers (31), at least one of the fingers (31) is provided at its end with at least one opening (22) for a chain connecting pin (16) which connects the chain links (17, 18) and which connects the respective control arm (4) with the chain links (17, 18), wherein each cam (12) is provided with two wedge sectors (19) whose thickness decreases from the upper to the lower surface of the cam (12) and one rectangular flat sector (20) of the full thickness of the cam (12), whereby the wedge sectors (19) are oriented against the fingers (31) of the control arm (4), wherein each driving worm (5) is arranged on the side of each of the guide rails (2) for engagement with a respective chain connecting pin (16).

2. Window blind according to claim 1, **characterized in that** on the control arm (4) the slat (21) of the blind (33) is arranged such, that on the chain connecting pin (16) put in the chain links (17, 18) and in one of arm openings (22) and on the supporting pin (14) in the other arm opening (22), the holder (6) is arranged on which the slat (21) is fixed.
3. Window blind according to claim 1 or 2, **characterized in that** the control arms (4) are provided with recesses (23) at the edges of their fingers (31) to allow the control arms (4) to fit tightly when the slats (21) of the blind (33) are in the stacked position.

Patentansprüche

1. Fensterjalousie (33) zur Montage an der Aussen-seite eines Fensters, bestehend aus Lamellen (21) und einem Rahmen (32) mit einer Betätigungseinrichtung (1) zur Verstellung der Lamellen (21), wobei der Rahmen ferner zwei vertikale parallele spiegel-symmetrische Führungsschienen (2) und Zugmittel aufweist, wobei die Lamellen (21) zwischen den beiden Führungsschienen (2) angeordnet sind, und wobei jede der Führungsschienen (2) mit einer seitlichen Kettennut (9), einer zentralen Nockennut (10) und einer Antriebsschnecke (5) versehen ist, wobei die Zugmittel in jeder der Nuten (9, 10) angeordnet sind, wobei die Zugmittel eine Kette (3) mit Kettengliedern (17, 18) und einen Steuerarm (4) für die Position der Lamellen (21) umfassen, wobei

jeder Steuerarm (4) einen Nocken (12) umfasst, wobei jede Führungsschiene (2) einen Raum für die Kette (3) und den Nocken (12) des Steuerarms (4) aufweist, wobei jede Lamelle (21) an dem Steuerarm (4) befestigt ist, wobei sich von der Nockennut (10) in regelmäßigen Abständen senkrecht dazu Seitennuten (11) erstrecken und gegenüber den Seitennuten (11) zwei flexible Laschen (7, 8) einander gegenüberliegend angeordnet sind, wobei jede flexible Lasche (7, 8) ein Befestigungsteil (24), einen Druckarm (30, 30') und einen Anschlag (25) aufweist und jede flexible Lasche (7, 8) mit ihrem Befestigungsteil (24) am Boden (27) der Führungsschiene (2) befestigt ist, wobei die Druckarme (30, 30') der flexiblen Laschen (7, 8) zur Bodenfläche der Nockennut (10) hin vorgespannt und durch ihre Anschläge (25) zueinander ausgerichtet sind, wobei in der zentralen Nockennut (10) der Betätigungsarm (4) über dem Stift (13) des Nockens (12) angeordnet ist, wobei der Betätigungsarm (4) zwei Finger (31) aufweist, wobei mindestens einer der Finger (31) an seinem Ende mit einer Schulteröffnung (22) für einen Verbindungsstift (16) versehen ist, der die Kettenglieder (17, 18) verbindet und der den Betätigungsarm (4) mit den Kettengliedern (17, 18) verbindet, und jeder Nocken (12) mit zwei keilförmigen Ausschnitten (19) versehen ist, die von der oberen zur unteren Fläche des Nockens (12) in ihrer Dicke abnehmen, und einen rechteckigen massiven Abschnitt (20) mit der vollen Dicke des Nockens (12) aufweist, wobei die keilförmigen Abschnitte (19) gegen die Finger (31) des Betätigungsarms (4) und an der Kante jeder der Führungsschienen (20) die Antriebschraube (5) für den Eingriff mit dem Verbindungsstift (16) angeordnet sind.

2. Fensterjalousie nach Anspruch 1, **dadurch gekennzeichnet, dass** am Betätigungsarm (4) die Lamelle (21) der Jalousie (33) derart angeordnet ist, dass an einem in den Gliedern (17, 18) der Kette und in der einen Schulteröffnung (22) angeordneten Bolzen (16) ein Träger (6) und in der anderen Öffnung (22) des Betätigungsarms (4) ein Tragbolzen (14) angeordnet ist, an dem die Lamelle (21) der Jalousie (33) befestigt ist.
3. Jalousie nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Betätigungsarme (4) an den Rändern ihrer Finger (31) mit Aussparungen (23) versehen sind, damit die Betätigungsarme (4) eng anliegen, wenn sich die Lamellen (21) der Jalousie (33) in der aufrechten Position befinden.

Revendications

1. Store de fenetre a monter iexterieur dun fenetre, comprenant des lamelles (21) et un cadre (32) avec

un dispositif d'actionnement (1) pour ajuster la position des lamelles (21), dans lequel le cadre comprend en outre deux rails de guidage (2) verticaux, parallèles et symétriques par rapport à un miroir, et des moyens de traction, dans lequel les lames (21) sont disposées entre les deux rails de guidage (2), et dans lequel chacun des rails de guidage (2) est pourvu d'une rainure (9) de chaîne latérale, d'une rainure de came centrale (10) et d'une vis sans fin d'entraînement (5), les moyens de traction étant disposés dans chacune des rainures (9, 10), dans lequel les moyens de traction comprennent une chaîne (3) avec des maillons (17, 18) et un bras de commande (4) de la position des lames (21), dans lequel chaque bras de commande (4) comprend une came (12), dans lequel chaque barre de guidage (2) a un espace pour la chaîne (3) et la came (12) du bras de commande (4), dans lequel chaque latte (21) est fixée au bras de commande (4), dans lequel des rainures latérales (11) s'étendent à partir de la rainure de came (10) à intervalles réguliers et perpendiculaires à celle-ci et deux languettes flexibles (7, 8) sont disposées l'une en face de l'autre à l'opposé des rainures latérales (11), chaque languette flexible (7, 8) comprend une pièce de fixation (24), un bras de pression (30, 30') et une butée (25) et chaque patin flexible (7, 8) est fixé par sa pièce de fixation (24) à la base (27) du rail de guidage (2), les bras de pression (30, 30') des patins flexibles (7, 8) étant orientés vers le fond de la rainure (10, 8) sont orientés vers la surface inférieure de la rainure de came (10) et sont orientés par leurs butées (25) l'un vers l'autre, dans lequel dans la rainure de came centrale (10) le bras d'actionnement (4) est disposé sur l'axe (13) de la came (12), le bras d'actionnement (4) comprenant deux doigts (31), dans lequel au moins un des doigts (31) est pourvu à son extrémité d'un trou (22) pour une goupille de connexion (16) qui relie les maillons de la chaîne (17, 18) et qui relie le bras d'actionnement (4) aux maillons de la chaîne (17, 18) et chaque came (12) est pourvue de deux découpes cunéiformes (19), dont l'épaisseur diminue de la surface supérieure à la surface inférieure de la came (12) et d'une section pleine rectangulaire (20) de la pleine épaisseur de la came (12), les sections en forme de coin (19) étant orientées contre les doigts (31) du bras de manœuvre (4) et sur le bord de chacun des guides (19) des rails (2) est disposée la vis d'entraînement (5) pour l'engagement avec la broche de connexion (16).

2. Store de fenetre selon la revendication 1, **caractérisé par le fait que** la lamelle (21) du store (33) est disposée sur le bras de manœuvre (4) de telle sorte qu'un support (6) est disposé sur une goupille (16) disposée dans la chaîne maillons (17, 18) et dans une ouverture d'épaulement (22) et une goupille de support (14) dans l'autre ouverture (22) du bras de

manœuvre (4), sur laquelle la lamelle (21) du store (33) est fixée.

3. Stores de fenêtre selon la revendication 1 ou 2, **caractérisés par le fait que** les bras de manœuvre (4) sont pourvus d'évidements (23) sur les bords de leurs doigts (31) pour permettre aux bras de manœuvre (4) de s'ajuster fermement lorsque les lamelles (21) du store (33) sont en position verticale.

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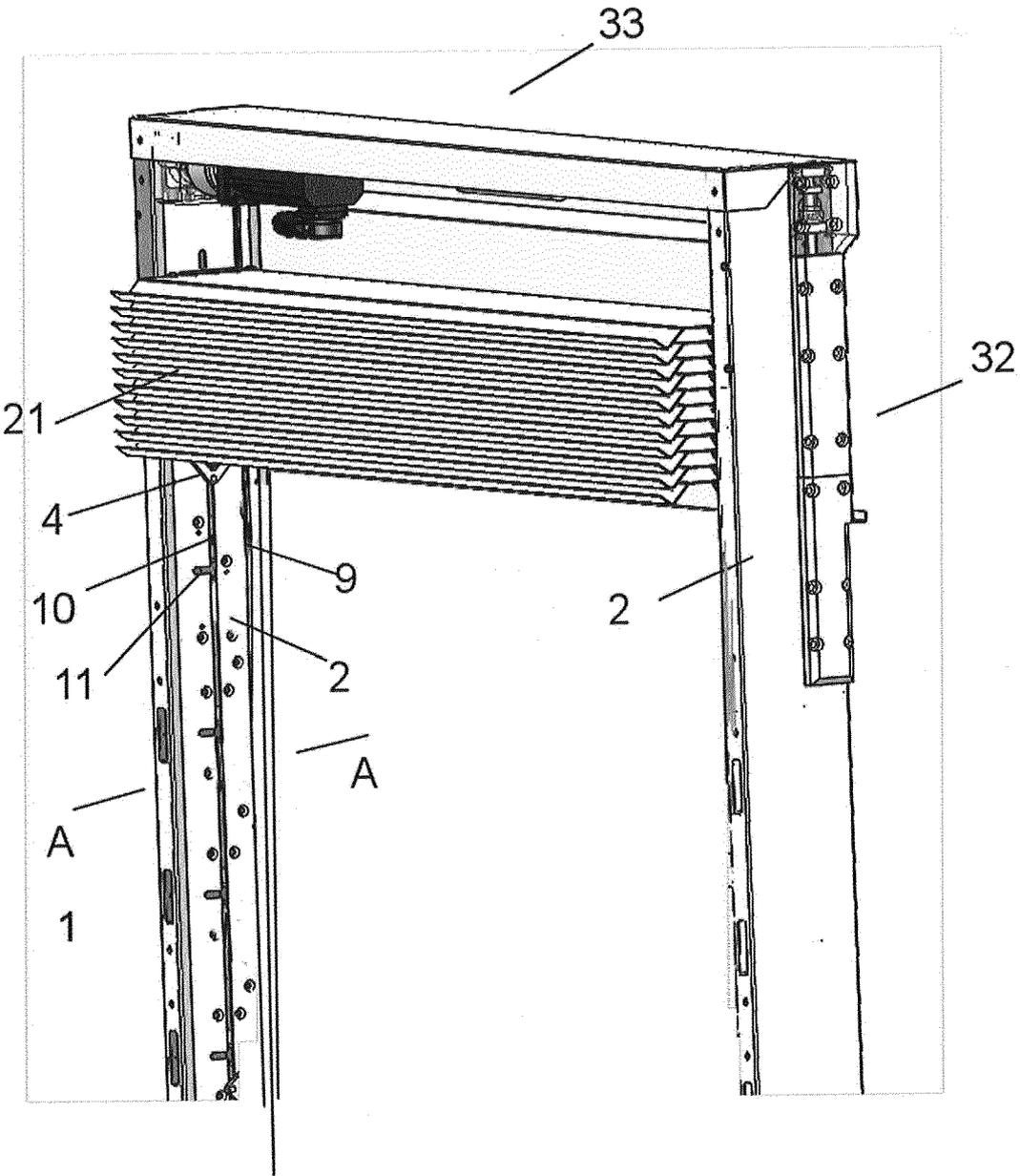


Fig. 1

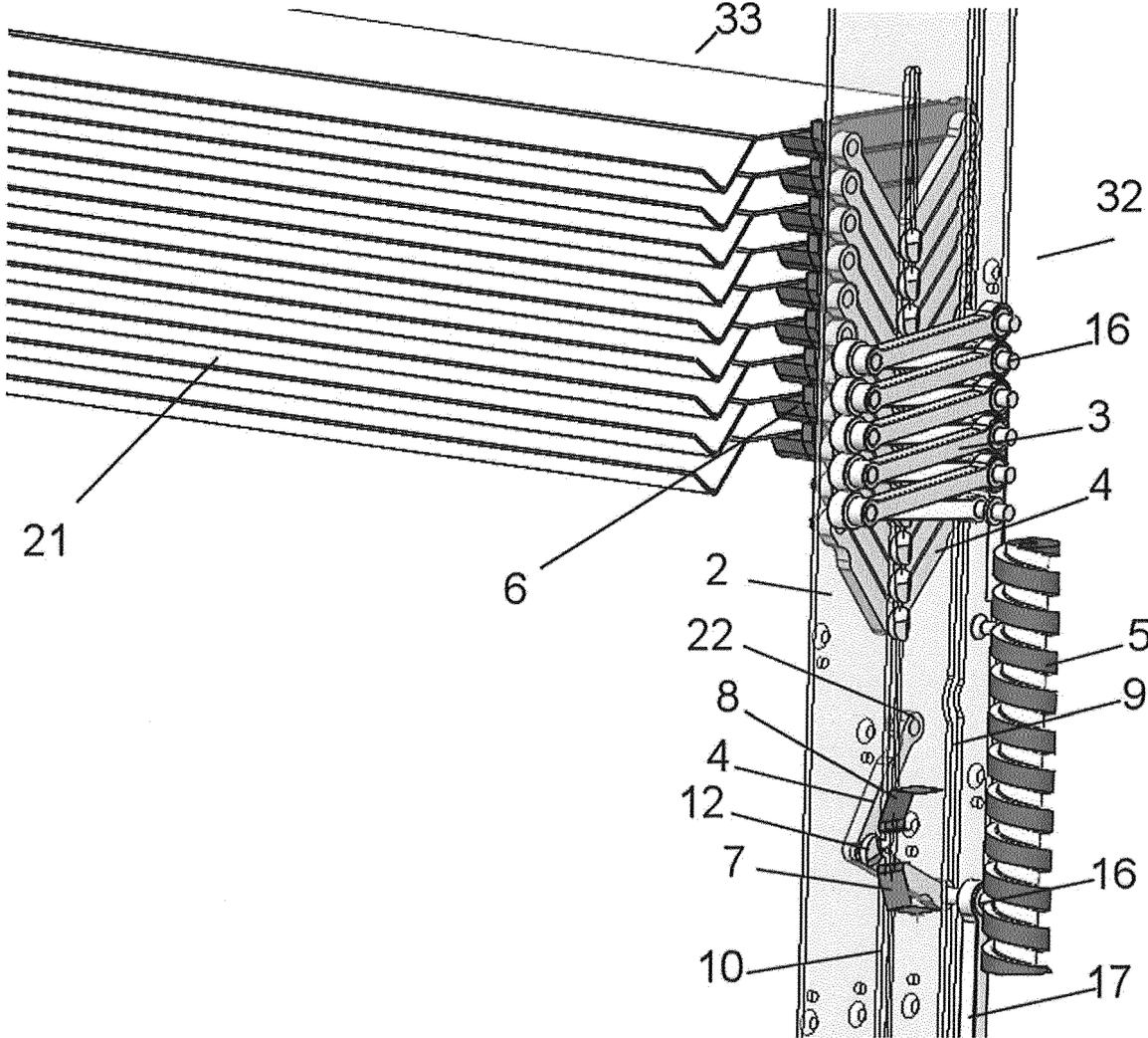


Fig. 2

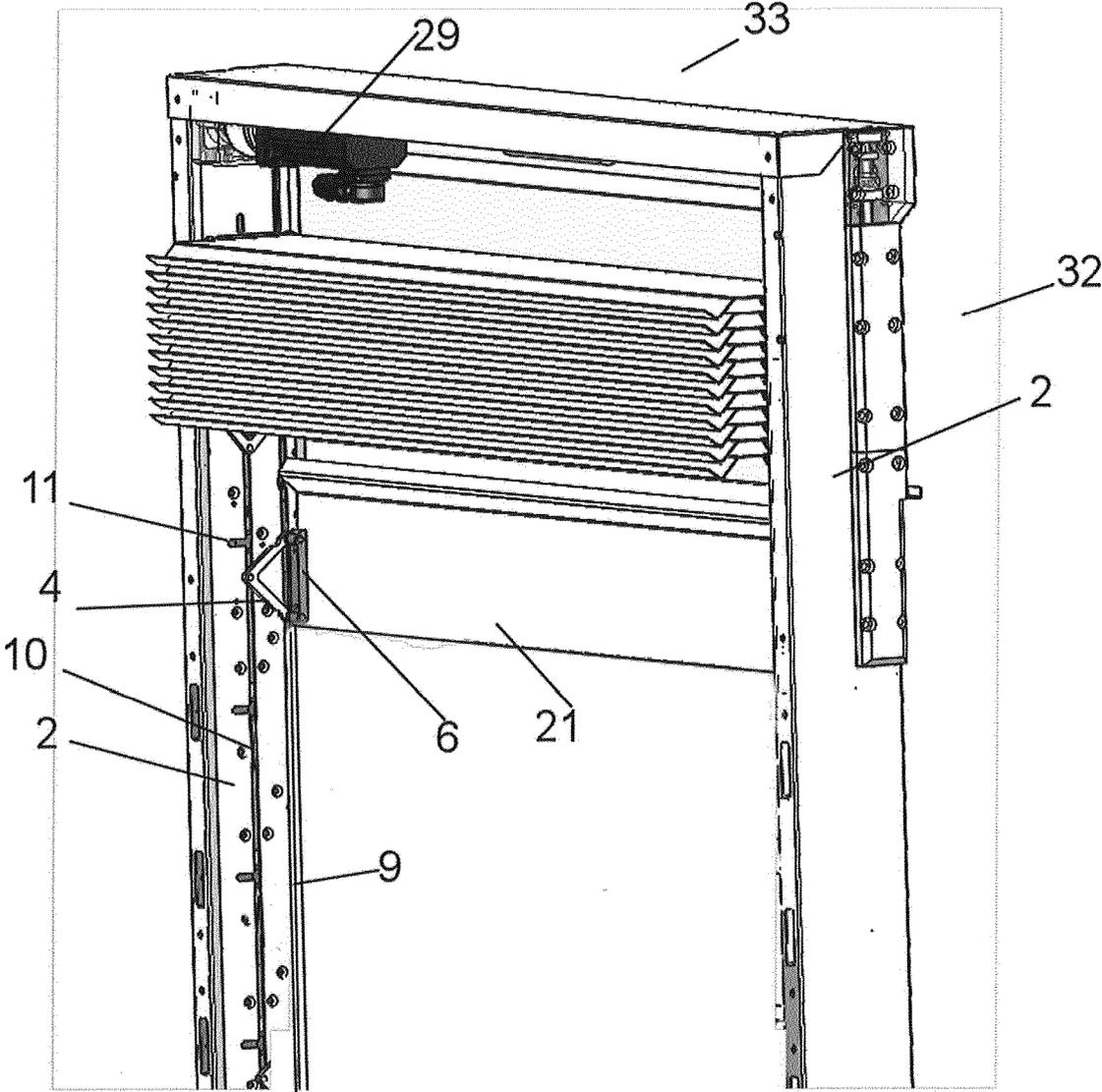


Fig. 3

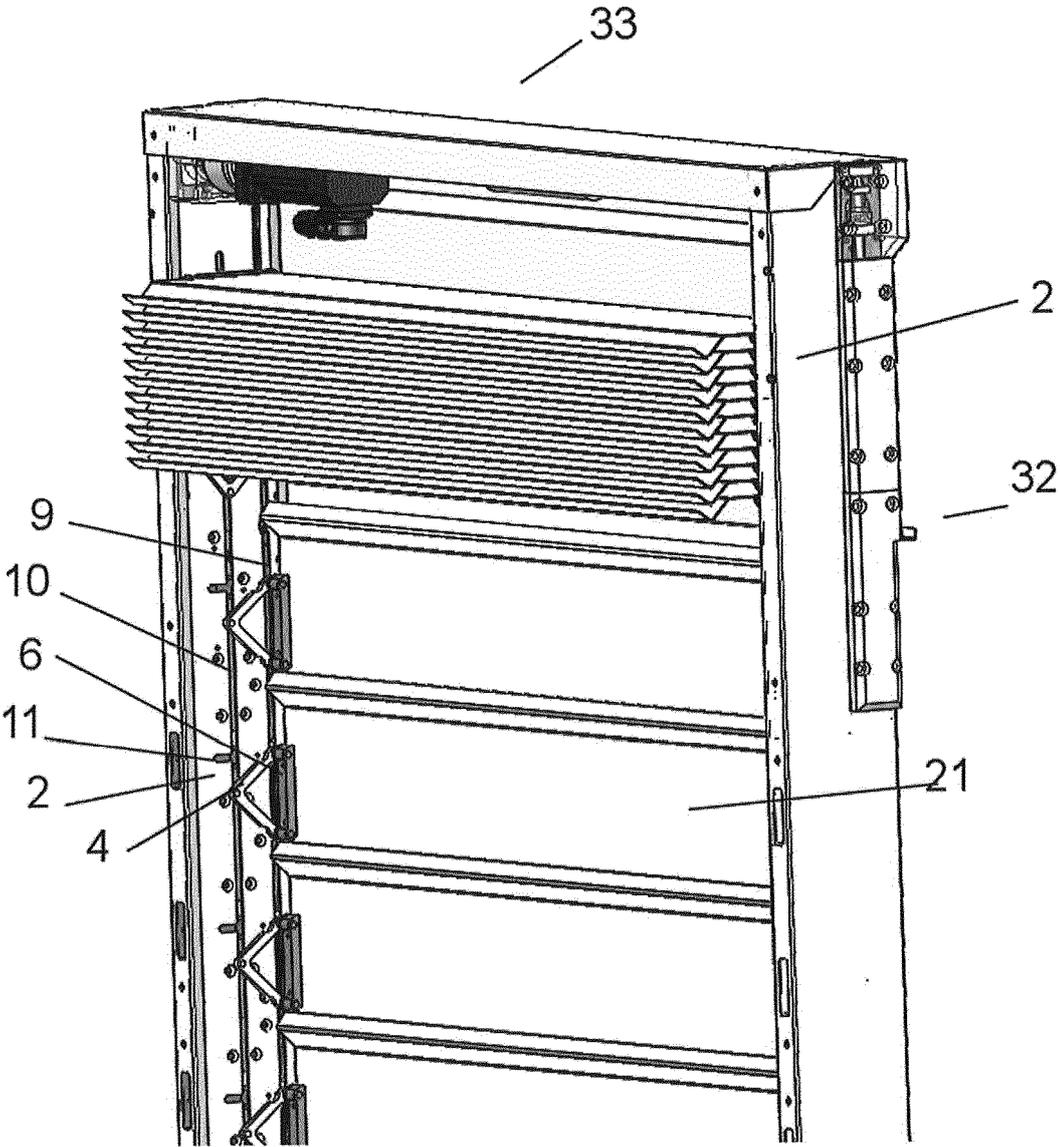


Fig. 4

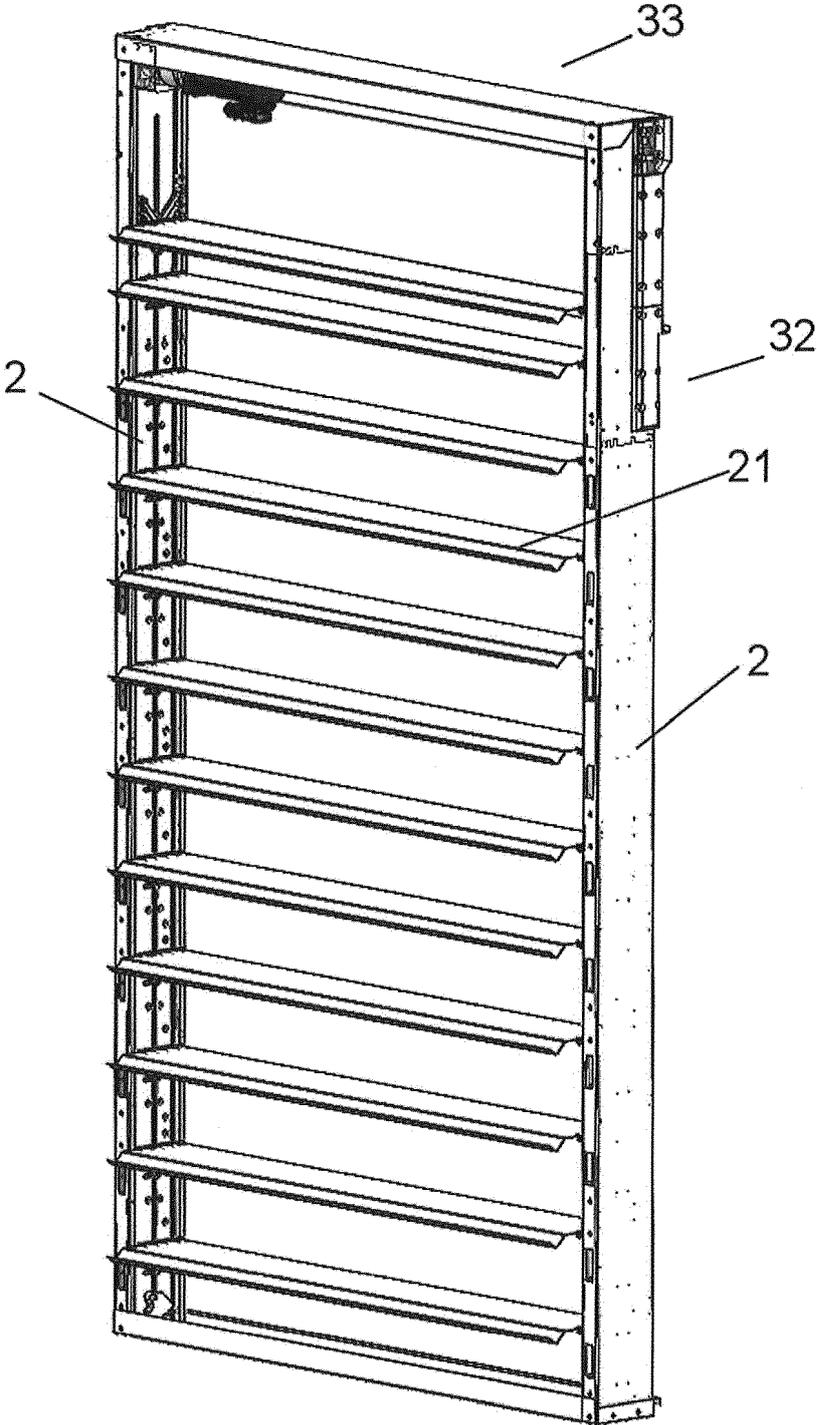


Fig. 5

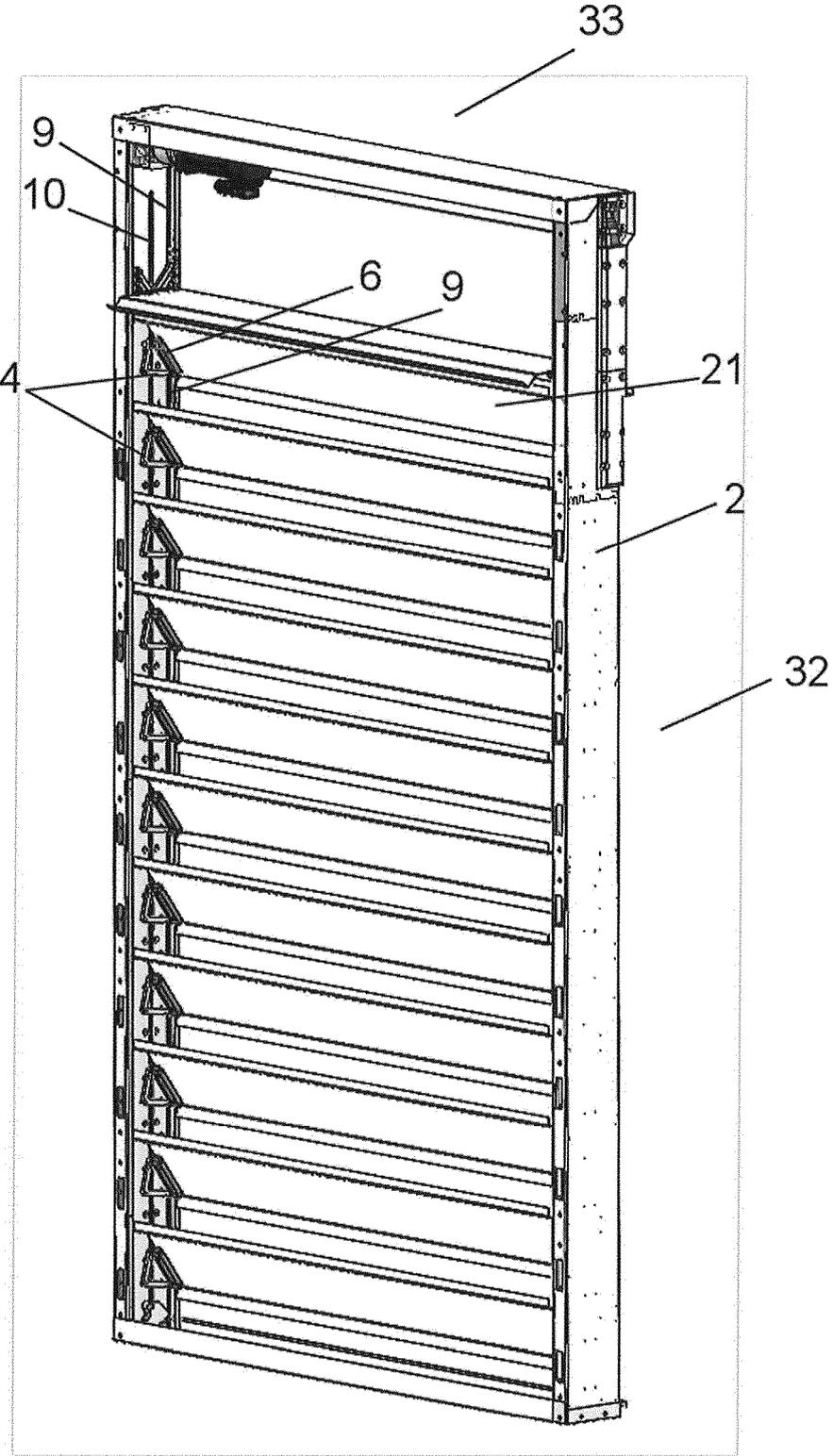


Fig. 6

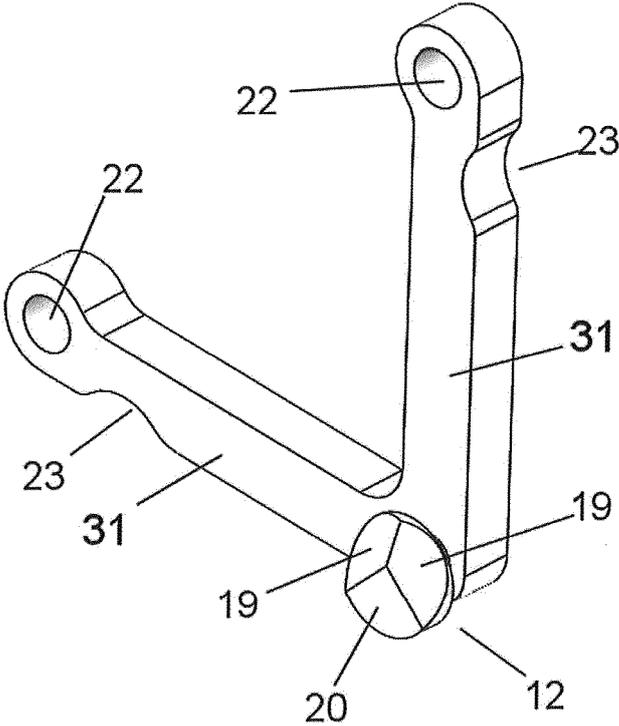


Fig. 7

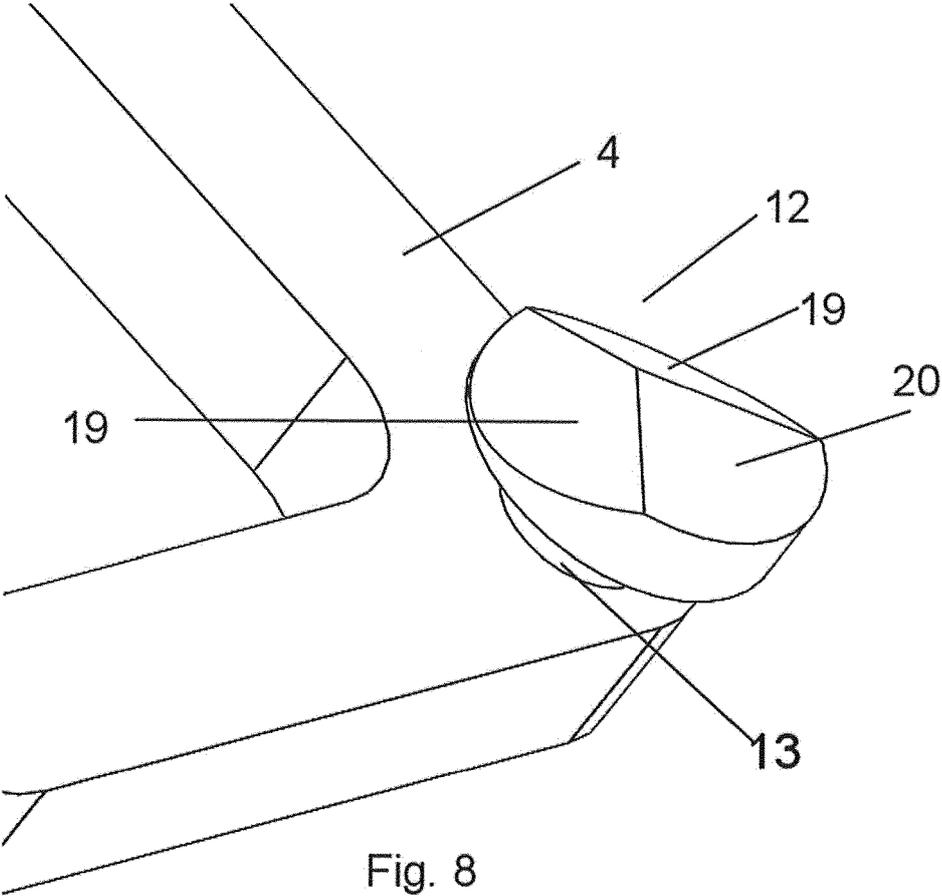


Fig. 8

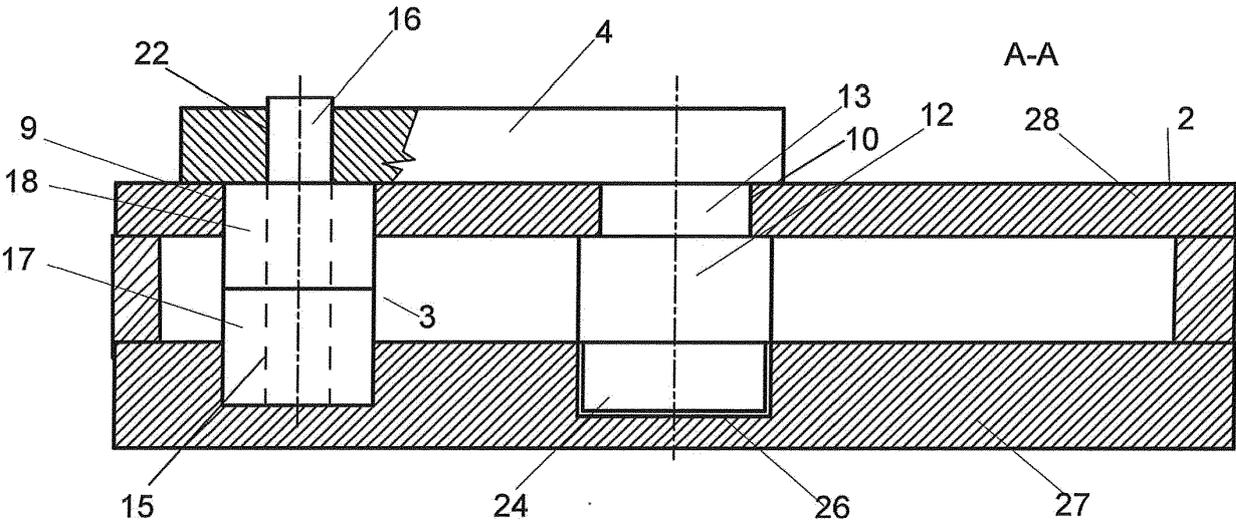


Fig. 9

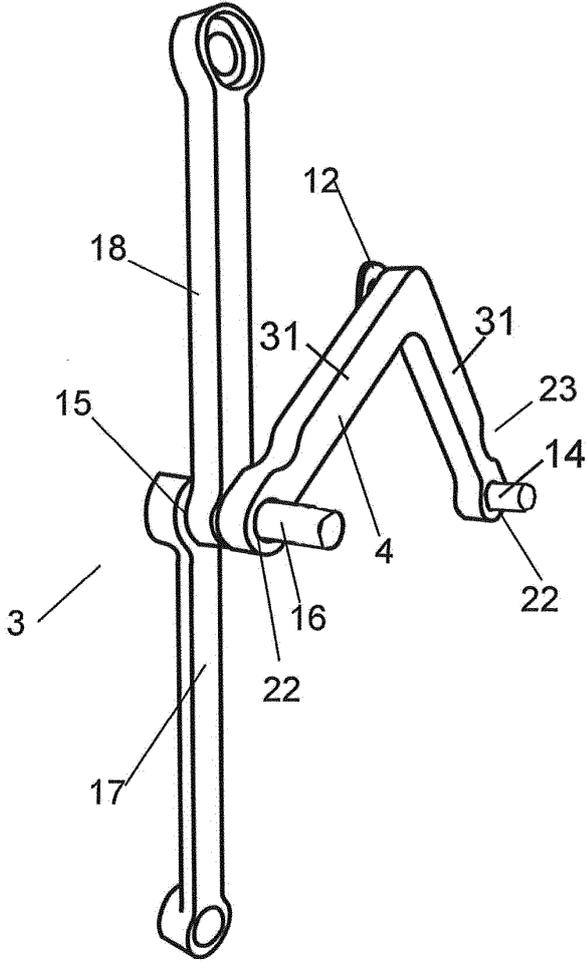
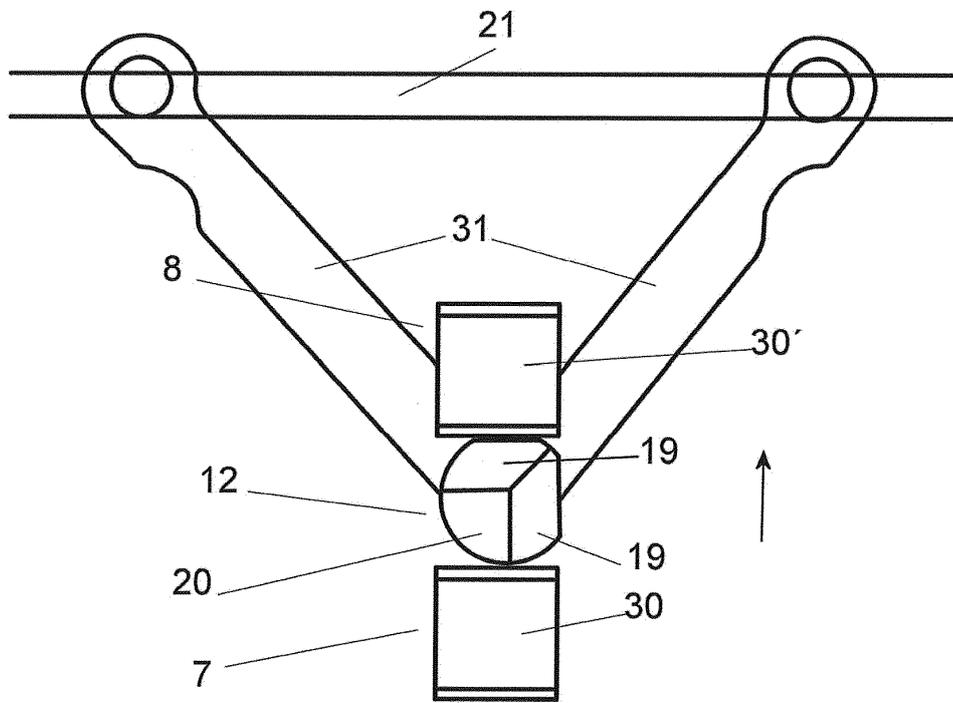
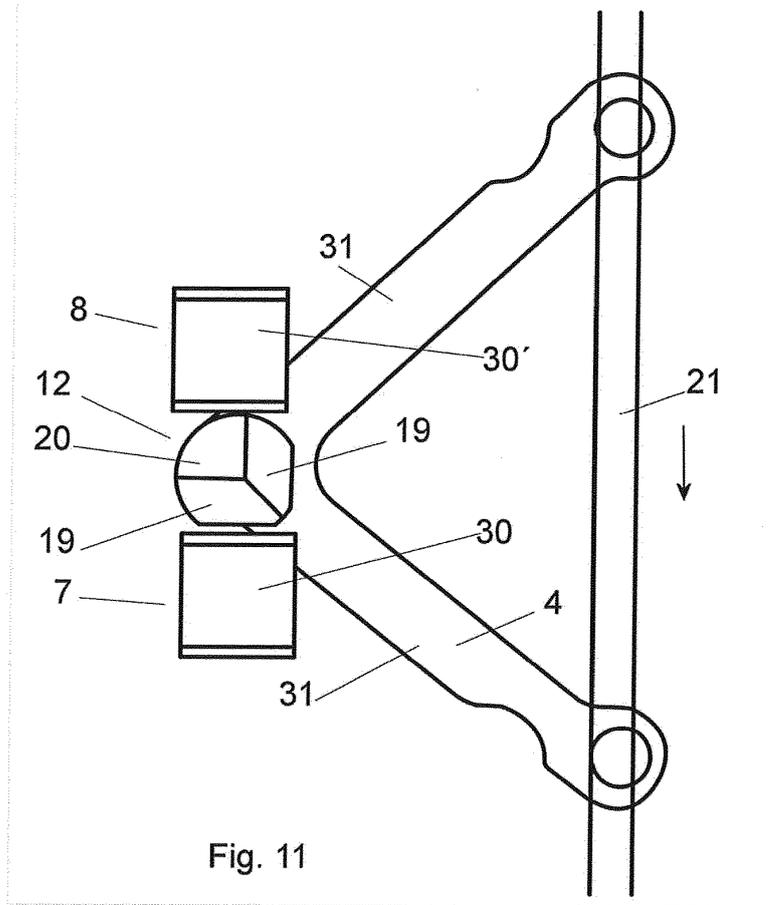


Fig. 10



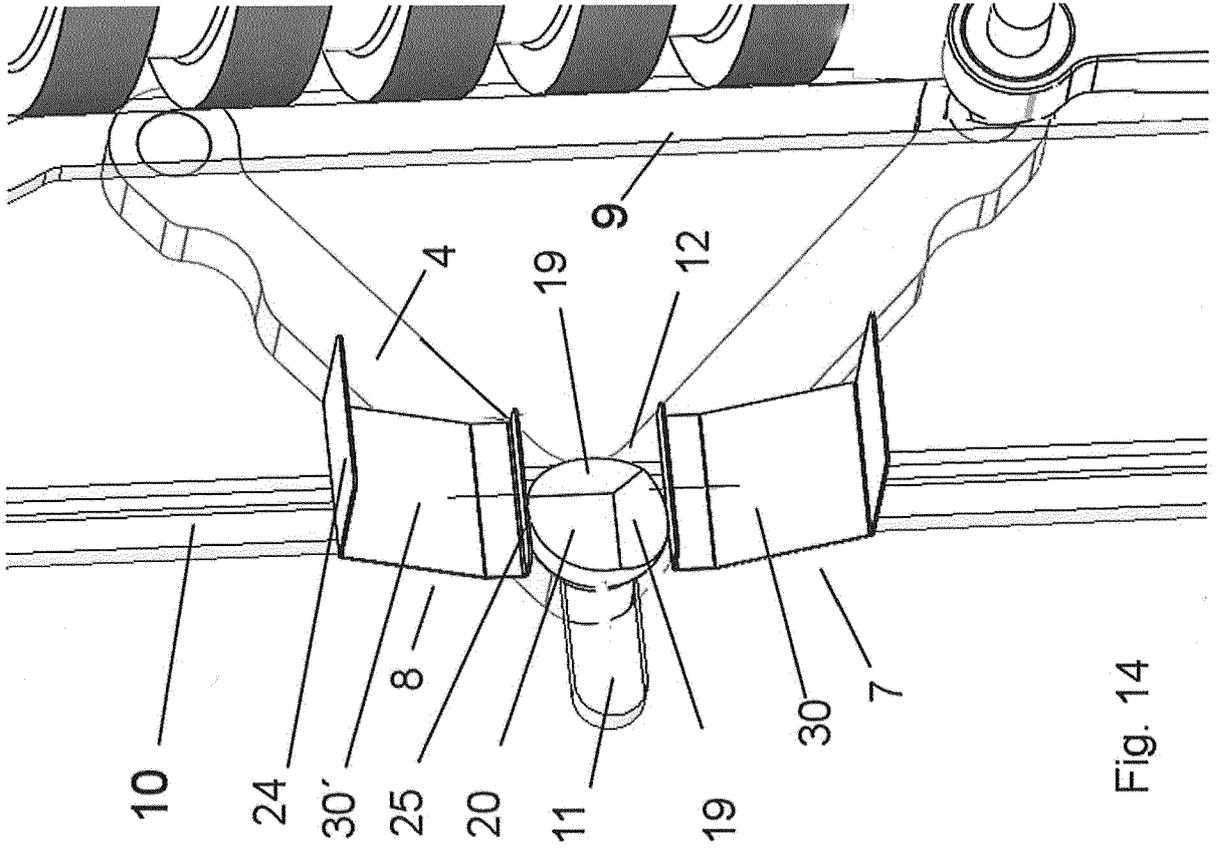


Fig. 14

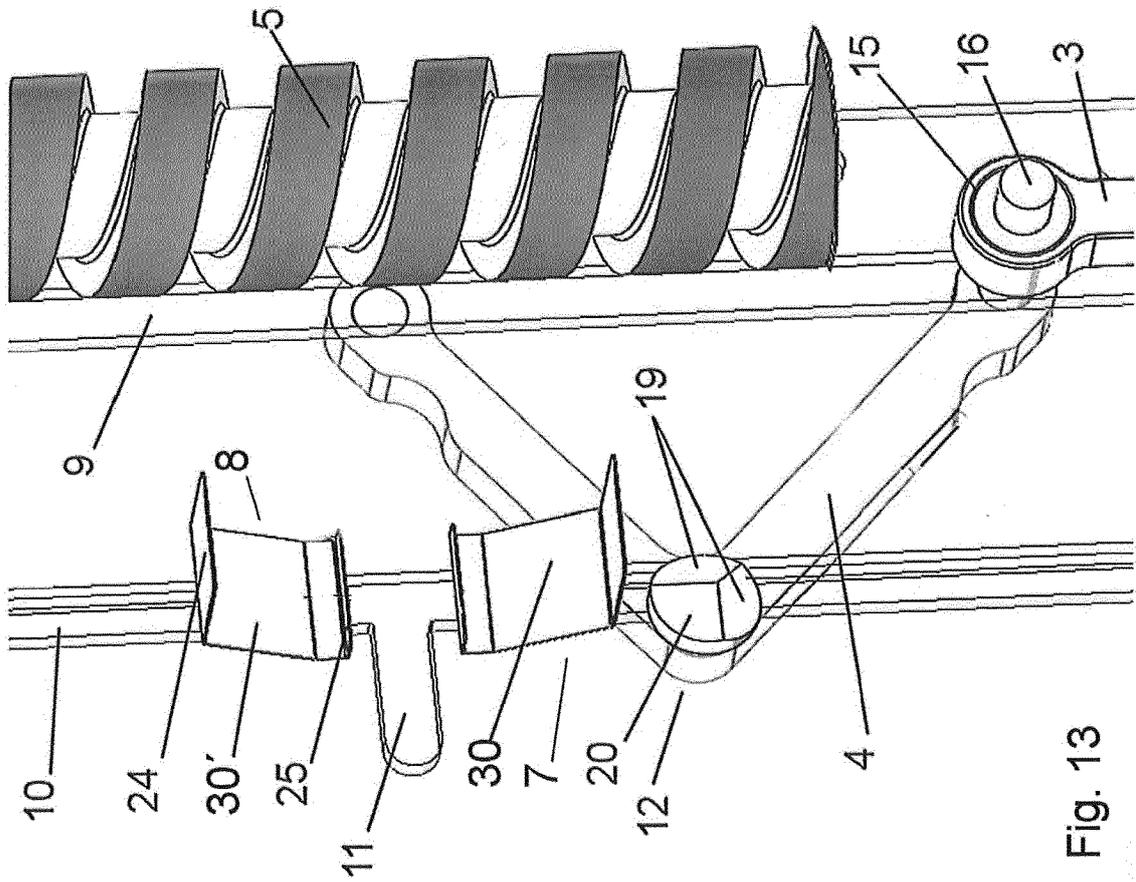
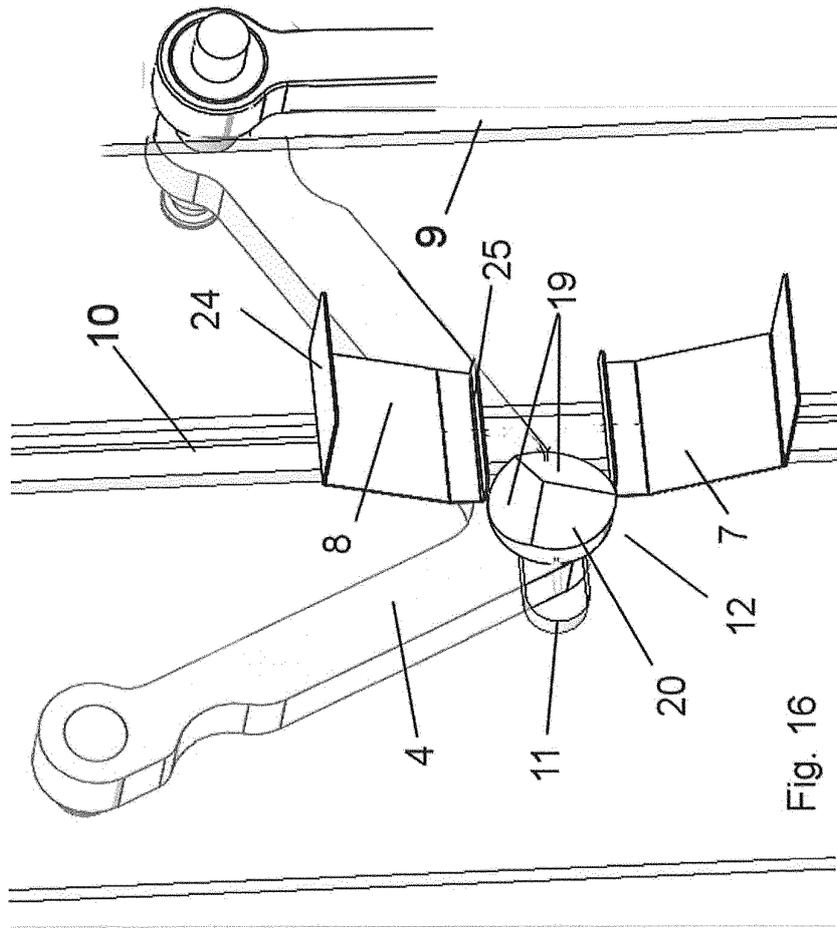
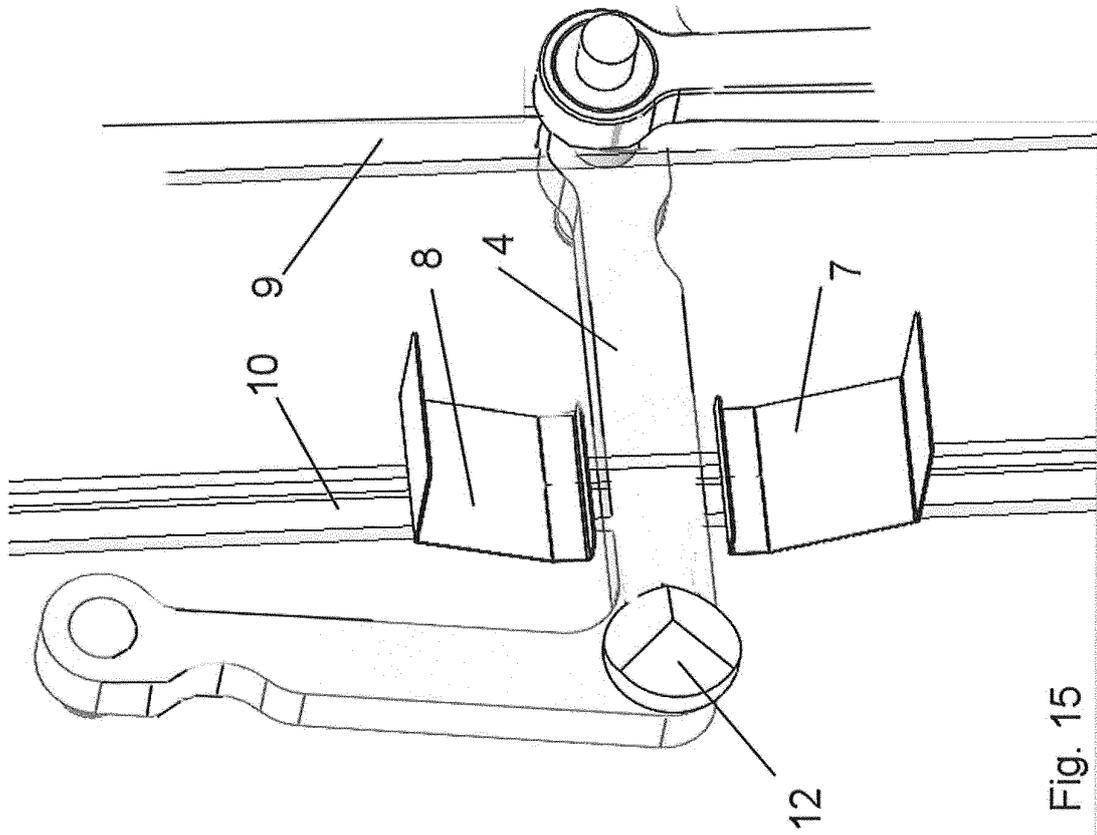


Fig. 13



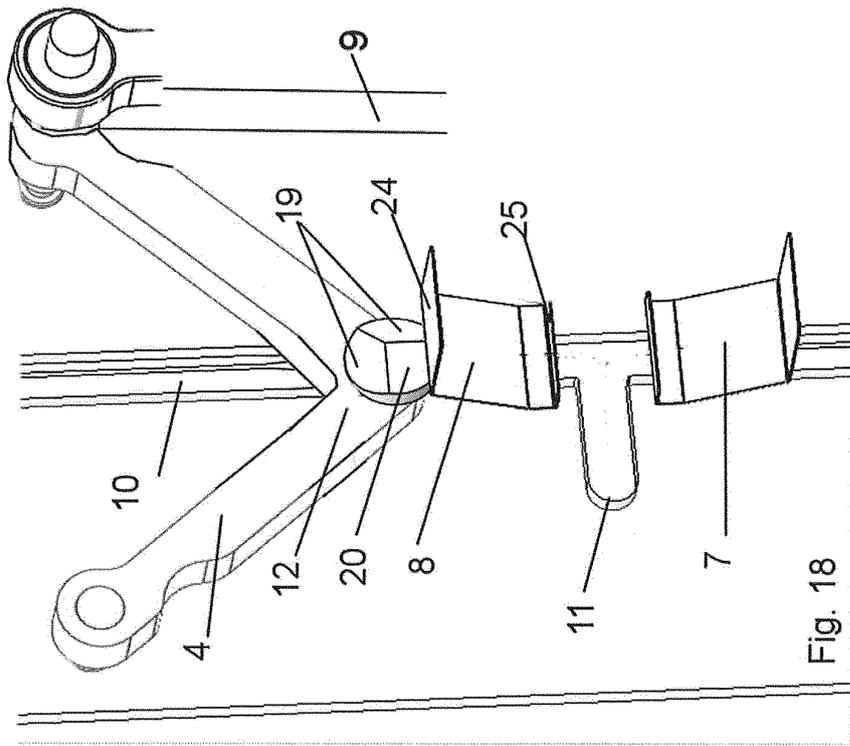


Fig. 18

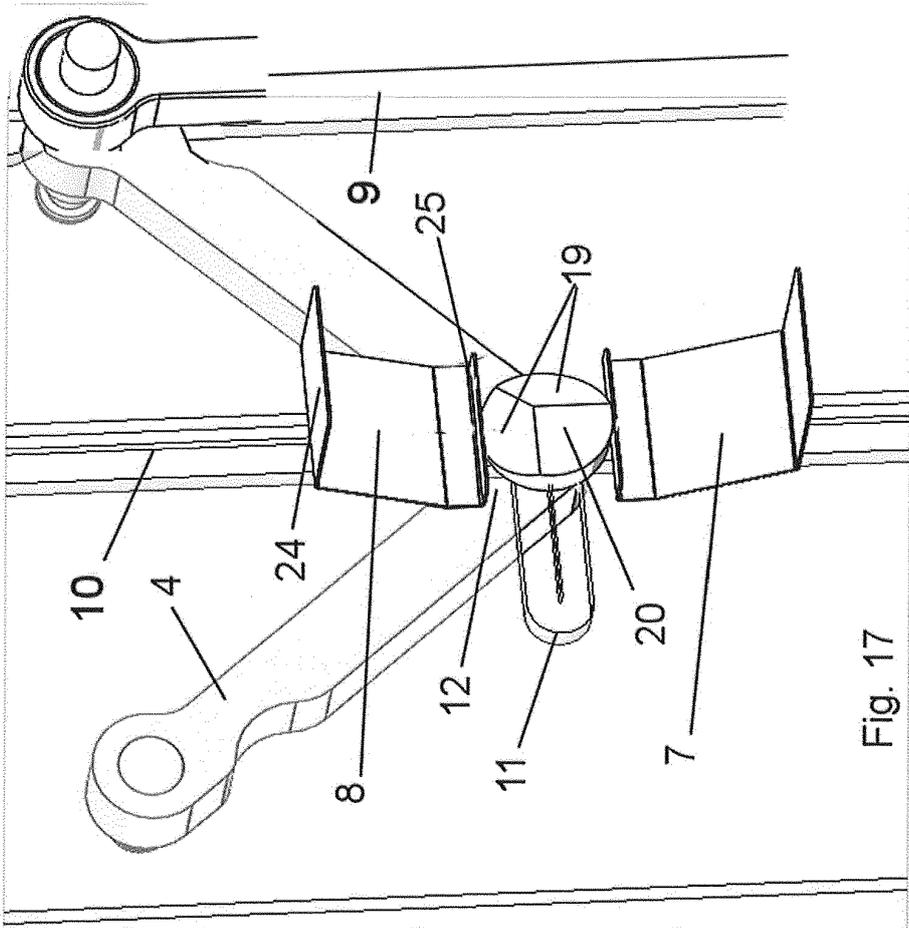


Fig. 17

REFERENCES CITED IN THE DESCRIPTION

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