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(54) **MODULAR MECHANISM FOR MAKING JALOUSIES HAVING ORIENTABLE SUNBREAKING SLATS, AND JALOUSIE PROVIDED WITH SAID MECHANISM**

(57) Modular mechanism (33) constituted by a support (7) on which there is fitted a lid (13) in which there rotates a cap (23) through the to and fro stroke of a rod (19) which acts on a bridge (28) in an eccentric position with respect to the rotation axis of said cap according to the mechanics of a connecting rod-crank coupling. Such module (33) has the feature of being of the chain modular type with other subsequent ones through a pin (29) which allows an integral but simultaneously articulated connection along its own longitudinal axis further providing for placing, also in an articulable manner, the rods (19) con-

tained in the modules (33) in contact.

A pair of module chains (33) fitted in the tubular elements (31) of the sunbreaker slats (30) constitutes a curtain of the conventional windable type but with the particular functionality of being able to direct the slats (30) through the to and fro and simultaneous stroke of the rods (19) contained in the modules (33) and at the same time maintaining the feature of being windable in a roller thanks to the articulable connection obtained between the modules themselves.

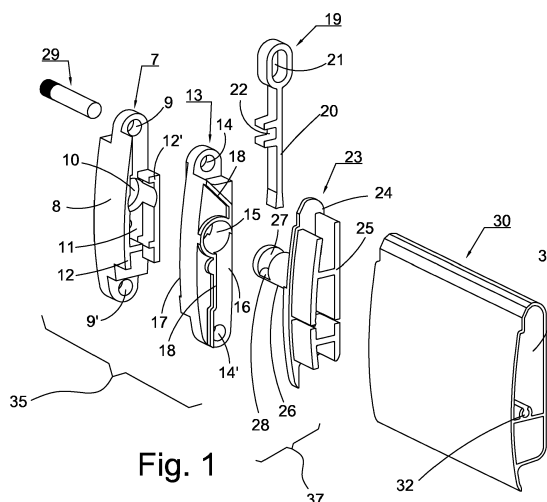


Fig. 1

Description

Field of the invention

[0001] The present invention regards a mechanism useful for orienting a sunbreaker slat, through rotation along its longitudinal median axis, with the feature of being modular and thus composable according to a number of desired slats, and also articulated one relative to another so as to allow a curtain of slats to be wound on a collection roller, such curtain resulting from the connection of the first module and the further modules.

State of the art

[0002] According to the present state of the art jalousie curtains with the slats orientable through mechanisms are already known, but these systems provide for the planarity of the curtain as well as the provision of the framework through perimeter structures containing them.

[0003] Other examples of windable jalousies with orientable slats are described in WO2013/164434A1, DE1237289B and EP189091A2.

[0004] Windable curtains are also known formed by split sunbreaker slats that, or however by sunbreaker slats made up of several elements. Depending on the position of the curtain, part of such elements can be oriented like if they were flaps by partially rotating them along the mounting axis, which is consequently the end axis. The slats are oriented together with the next slats. However such solutions are quite far from working like a typical jalousie due both to the limited orientation obtained, which limits the functionality and utility of such products, and to the aesthetic appearance of the slats thus oriented which is also far from the typical look of a traditional jalousie with orientable slats.

[0005] In addition, such products require the vertical sliding guides as well as the relative collection containers be replaced for winding the curtain with inevitable intervention on the masonry works and with relative additional costs.

[0006] Last but not least, not less important and worth to be mentioned, is the remark concerning the matter that such solution of windable curtain, besides having poor and thus useless features, its manufacturing requires a particularly specialised of the manpower and/or industrialisation, provided the numberless components forming each slat in order to allow them be partially oriented. This entails a further increase of the final costs of the product.

[0007] An object of the present invention is to overcome one or more of the said drawbacks of the prior art.

Summary of the invention

[0008] This and other objects are achieved, in a first aspect of the present invention, through a modular mechanism having the features according to claim 1.

[0009] In a second aspect of the invention such object

is achieved through a sunbreaker jalousie having the features according to claim 7.

[0010] In a third aspect of the invention such object is achieved through a modular mechanism having the features according to claim 12.

[0011] In a fourth aspect of the invention such object is achieved through a modular mechanism having the features according to claim 13.

[0012] In a particular embodiment of a modular mechanism according to claims 12 or 13, the single module can be composed according to the required length and the desired number of slats simply by fitting a pin (29) through the holes (9-9') present in the support (7) and the holes (14-14') present in the lid (13) making the coupling stable and integral but simultaneously articulable along the longitudinal axis of the pin itself and in addition such connection places the rods (19) in contact in an articulable fashion through the ovoidal ring (21) abutting with the lower end of the solid body (20) of the subsequent rod (19).

[0013] In a particular embodiment of a modular mechanism according to claims 12 or 13, the orientation of the slats (30) making up the curtain occurs with an upward thrust, for its stroke value, of the rod (19) inserted in the first module (33') at the bottom part of the curtain. Such rod, being in contact with the subsequent rods above it, pushes in the same direction and the same stroke synchronously and simultaneously all the remaining rods up to the last of the last module upwards (33) thus determining the simultaneous rotation of the caps (23) and thus of the slats (30) just like it occurs in a classic jalousie.

[0014] In a particular embodiment, the modular mechanism according to claim 12 or 13 may comprise at least one first and one second module assembled together by fitting the pin (29) of the first module:

- through the holes (9) present in the support (7) and the holes (14) present in the lid (13) of the first module; and
- through the holes (9') present in the support (7) and the holes (14') present in the lid (13) of the second module;

making the coupling stable and integral but simultaneously articulable along the longitudinal axis of the pin itself and in addition such connection places the rods (19) in contact in an articulable fashion through the ovoidal ring (21) abutting against the lower end of the solid body (20) of the subsequent rod (19).

[0015] In a particular embodiment of a modular mechanism according to claims 12 or 13, the chain connection articulable between the modules (33) obtained through the pin (29) allows the winding thereof on a roller.

[0016] In a particular embodiment, the modular mechanism according to claim 1 does not comprise the features according to claim 12 and/or 13.

[0017] In a particular embodiment, the modular mechanism according to claim 1 comprises the features ac-

cording to claim 12 and/or 13.

[0018] In a fifth aspect of the invention such object is achieved through a method for making modular жалюзи having orientable sunbreaker slats constituting a curtain windable on a roller, characterised in that the method for making a single module comprises the following operations:

- the cap (23) is inserted on the lid (13) traversing the through hole (15) thereof with the cylindrical body (26) of the cap;
- the fork (22) of the rod (19) is engaged on the offset bridge (28) of the cylindrical body through the its groove (27);
- the assembly comprising the cap (23), the rod (19), the lid (13) is fittingly arranged on the support (7) in which the end part of the cylindrical body (26) of the cap (23) is housed and where the rod (19) meets its sliding track (11).

[0019] In a particular embodiment of such method, the single module can be composed according to the necessary length and the desired number of slats by simply fitting a pin (29) through the holes (9-9') present in the support (7) and the holes (14-14') present in the lid (13) making the coupling stable and integral but simultaneously articulable along the longitudinal axis of the pin itself and in addition such connection places the rods (19) in contact in an articulable fashion through the ovoidal ring (21) abutting against the lower end of the solid body (20) of the subsequent rod (19).

[0020] In a sixth aspect of the invention such object is achieved through a method for making жалюзи having orientable sunbreaker slats constituting a curtain windable on a roller, characterised in that the method for the formation of a curtain жалюзи comprises the following steps:

- there are formed two chain rows of modules (33) by connecting each one of them to the subsequent one by inserting and fitting the pin (29) through the end holes (9-9') present in the support (7) and the holes (14-14') present in the lid (13), such connection between the modules is integrally joined but articulable along the longitudinal axis of the pin (29) and simultaneously places each ovoidal ring (21) in contact with the lower end of the solid body (20) of the rod (19).
- when the two chains of modules are formed, the sunbreaker slats (30) are fitted by inserting the mushroom-like element (25) of the caps in the recess formed by the tubular-element (31) at the ends of said slats.
- in case greater security is desired from the fitting of the cap (23) and the slat (30), the presence of the shaped cross-piece (32) of the slats (30) allows a screw be used which further secures such coupling.

[0021] In a particular embodiment of the method according to the sixth aspect of the invention, the orientation of the slats (30) forming the curtain occurs through an upward thrust, for a stroke value thereof, of the rod (19) inserted in the first module (33') at the bottom of the curtain, and such rod, being at contact with the subsequent ones above it, provides for pushing in the same direction and for the same stroke synchronously and simultaneously all the remaining ones up to the last of the last module at the top part (33) determining the simultaneous rotation of the caps (23) and thus of the slats (30) just like it occurs in a classic жалюзи.

[0022] In a particular embodiment of the aforementioned methods, the chain connection articulable between the modules (33) obtained through the pin (29) allows the winding thereof on a roller.

[0023] Lastly, further features of the modular mechanism for making жалюзи with slats orientable constituting a curtain or a curtain windable on a roller are subject of the dependent claims.

[0024] A preferred embodiment of the invention comprises a modular mechanism comprising:

- a bearing support, formed by a solid body with elliptic base provided with through holes at the ends, with a cylindrical-shaped recessed seat in median position and a grooved track in a longitudinal position along the greater axis of the elliptic base;
- a lid, useful to be fittingly coupled with the support, also comprising a solid body with elliptic-shaped base, also having two through holes at the ends, a cylindrical through hole in median position and on a face shaped reliefs which traverse it longitudinally along the greater axis of the elliptic base;
- a rod having at an end an ovoidal ring and a fork in the middle ;
- a cap useful to be fitted with the sunbreaker slat provided with a mushroom-like element, for such fitting, positioned on a face of a shaped plate, while on the other face of said plate and in median position there is positioned a cylindrical body having an undercut recess where, in an eccentric position with respect to the axis of said cylinder, a bridge is present, cylindrical as well, shaped so as to be inserted in the fork of the rod;
- a tubular-shaped sunbreaker slat having the most preferred aesthetic shape; the slat has the unique feature of being provided with a shaped crosspiece so that it can be the seat of a fixing and safety screw;
- a pin useful for engaging the end holes obtained on the support and on the relative lid which represents the fitting and connection system between one module and the subsequent one.

[0025] Another aspect of the invention relates to the method for making a single module of the mechanism characterised in that it traverses the median hole of the lid with the cylindrical body of the cap, fitting the fork of

the rod in the eccentric bridge of such body and positioning the entirety on the support where the rod will find the sliding track for a to and fro movement. Such movement which will act, through the fork of the rod, on the eccentric bridge of the cylindrical body of the cap will determine the rotation of the latter along the axis of the said cylindrical body.

[0026] Another aspect of the invention relates to the method for making a curtain jalousie characterized by:

- assembling together the modules of mechanism, as defined above, in the desired number through the pin which is fitted in the end through holes;

arranging such assembly in two rows and then mounting such assembly on the sunbreaker slats so as to form the curtain.

[0027] It is clear that moving to and fro any of the rods comprised in each module such slat causes the rotation of the relative cap and thus of the slat fitted thereto integrally, and the rod itself will act by pushing against the corresponding rods of the other connected modules thus determining the same synchronous movement thereof and thus the synchronous rotation of the corresponding slats.

[0028] The advantages of the present invention are already evincible from this first brief description, that is:

- the sunbreaker slat comprises a tubular single body and the rotation for its orientation occurs along the longitudinal median axis exactly like it occurs in the classic and conventional orientable jalousies mounted on rigid and flat structures;
- the system for coupling the modules necessary to cover the desired dimension guarantees the articulated movement thus allowing the winding on a roller of the curtain composed like a normal windable curtain but maintaining the feature and the aspect of a flat orientable jalousie;
- the mechanism module is completely autonomous in its operation and interacts with the other modules solely by contact, also articulated, of the rods which slide therein and such contact guarantees, in case of manoeuvre of a single rod, the synchronous movement of all the other rods and thus the synchronous rotation of all the sunbreaker slats exactly like it occurs in conventional jalousies with orientable slats; this greatly facilitates and reduces the costs of making sunbreaker jalousies of the length suitable for specific windows or doors or other target windows or door closures;
- having the previously mounted modules, the constitution of the curtain or curtain for the desired measurement, allows reducing the work steps characterised by simple and quick operations thus enormously reducing the industrial costs of the obtained product;
- lastly, the autonomous operation of the modules, which does not require any apparatus outside the

curtain itself, allows laying on the sliding vertical guides and pre-existing roller shutter boxes, when replacing an old conventional windable curtain, thus avoiding any masonry works which would instead be required for setting special guides and roller shutter boxes, while for a new construction it will not be required to provide special guides or roller shutter boxes but the same and cheap ones may be installed, which are always used for a common windable curtain.

[0029] Further advantages that can be achieved with the present invention shall be more apparent, to a man skilled in the art, from the following detailed description of a non-limiting embodiment illustrated with reference to the following schematic drawings.

List of figures

[0030]

Figure 1 shows an exploded perspective view of the mechanism module with an example of a sunbreaker slat according to a first embodiment of the invention. Figure 2 shows a perspective view of the mechanism module of Figure 1 in a closure position with the cap at 0° of rotation.

Figure 3 shows a perspective view of the mechanism module of Figure 1 in an opening position with the cap at 90° of rotation.

Figure 4 shows an exploded perspective view of a curtain or curtain outlining its composition, obtained by assembling several mechanism modules of Figure 1.

Figure 5 shows a perspective view of the curtain or a curtain of Figure 4 with the sunbreaker slats in a closure position and thus at 0° of rotation.

Figure 6 shows a perspective view of the curtain or a curtain of Figure 4 with the sunbreaker slats in an opening position and thus at 90° of rotation.

Figure 7 shows an exploded perspective view of a modular mechanism according to a second embodiment of the invention.

Figure 8 shows a lateral view of two driving tension rods, aligned with respect to each other, of the sunbreaker jalousie of Figure 10.

Figure 9 shows a lateral view of the two tension rods of Figure 8, inclined with respect to each other.

Figure 10 shows a perspective view of a sunbreaker jalousie comprising the modular mechanism of Figure 7, with the slats closed.

Figure 11 shows a perspective view of the sunbreaker jalousie of Figure 10, with the slats open.

Detailed description

[0031] Figures 1-6 regard a modular mechanism and a sunbreaker curtain or jalousie according to a first em-

bodiment of the invention.

Such modular mechanism preferably in turn comprises:

- a support element (7);
- a lid element (13);
- a rod element (19);
- a cap element (23);
- a pin element (29);
- a sunbreaker slat element (30).

[0032] The support element 7 may comprise an elongated solid element provided for example with one or more of the following elements:

- a rounded, elliptic (8) or more generally curved base, ;
- one, two or more through holes 9, 9' each preferably located at an end of the support element 7 and located for example along the longitudinal axis, ;
- a seat for example recessed cylindrical (10) arranged for example at or in proximity of the middle of the support element 7;
- a grooved longitudinal track (11) which is formed by at least two reliefs (12-12') which are longitudinal as well.

[0033] The lid element (13) is suitable to be coupled for example fittingly with the support element (7), and comprises for example a solid body with a for example rounded, elliptic or more generally curved base, substantially equal to that of the support (7).

[0034] The lid element 13 is preferably provided, at the ends thereof, of one or more of the following elements: two through holes (14-14') located along the longitudinal axis of the lid element 13 and concentric, or coaxial, with those of the support (9-9');

- a through hole (15) preferably in median position and concentric, or coaxial, with that of the support (10);
- shaped reliefs (18) located on the face (16) opposite to the coupling face (17); the reliefs 18 traverse the face 16 longitudinally along the greater axis of the elliptic base serving as a barrier to the passage of light and air.

[0035] The rod element (19), also referred to as "driving tension rod 19" in the present description, comprises preferably an elongated solid body (20) having - at an end - a preferably ovoidal ring (21) and - in the middle - a fork (22) with the opening facing in the orthogonal direction with respect to the body (20) of the rod itself;

[0036] The cap element (23) comprises preferably a shaped plate (24) provided on a face of a mushroom-like element -or another relief - for relief fitting (25). On the opposite face, and preferably in median position, on the cap element 23 there is obtained a cylindrical body (26), concentric or coaxial to the hole (15) of the lid (13) and to the seat (10) of the support (7), and such body 26 is

provided of a groove (27) in undercut where there is positioned a bridge (28) having the longitudinal axis in a position eccentric to that of the cylindrical body (26) and dimensioned so as to be inserted in the fork (22) of the rod (19);

[0037] The pin element (29) is dimensioned to be engaged in the end holes (9-9') of the support (7) as well as in the holes (14-14') of the lid (13) and lastly suitable to traverse the ovoidal ring (21) of the rod (19) ;

[0038] The sunbreaker slat element (30) preferably comprises a tubular element (31), with shape suitable to receive the mushroom-like element (25) of the cap (23) and preferably provided of a shaped crosspiece (32) having the functions of reinforcement and being a seat for a possible fixing and safety screw (not shown).

[0039] The mounting of the module (33) shown in figure 2 with the cap (23) in a closure position at 0°, and in figure 3 with the cap (23) in an opening position at 90° preferably occurs according to the following method:

- the cap (23) is inserted on the lid (13) traversing the through hole (15) of the latter with the cylindrical body (26) of the cap;
- the fork (22) of the rod (19) is engaged on the offset bridge (28) of the cylindrical body through the groove (27) thereof;
- the assembly is arranged on the support (7) in which the end part of the cylindrical body (26) of the cap (23) is inserted and where the rod (19) finds the sliding track (11).

[0040] With reference to figure 2 it should be observed that the ovoidal ring (21) of the rod (19) is arranged flushed with the shape of the support (7) and lid (13) assembly, while in figure 3, where the cap is in a maximum opening position and thus rotated by 90°, the same ring (21) instead projects with respect to the body of the module (33).

[0041] Such projection represents the stroke of the rod (19) along the track (11) useful to act on the bridge (28), of the cap (23), which being offset with respect to the rotation axis of the cap itself determines the rotation thereof according to the mechanical effect of the assembly crank-connecting rod.

[0042] The method for making a curtain jalousie windable, obtained through the use of the module mechanism subject of the present invention, may occur according to the description below with reference to figure 4.

[0043] There are composed two module chain rows (33) connecting each of them with the subsequent one by inserting and fitting the pin (29) through the end holes (9-9') present in the support (7) and the holes (14-14') present in the lid (13).

[0044] The connection between the modules shall be integral with but articulable along the longitudinal axis of the pin (29) and simultaneously will place each ovoidal ring (21) in contact with the lower end of the solid body (20) of the rod (19).

[0045] After the two chains of modules have been formed, all that still needs to be done is to fit the two chains of modules¹ on the sunbreaker slats (30) by inserting the mushroom-like element (25) of the caps in the recess formed by the tubular-element (31) of the slats.

[0046] Exploiting the presence of the shaped cross-piece (32) of the slats (30) in case a greater safety of the cap (23) and slat (30) fitting is desired, a screw (not shown) may for example be used ensuring such coupling.

[0047] Figure 5 shows a curtain or a previously assembled curtain with the sunbreaker slats in a closure position and thus with rotation equal to 0°, while figure 6 shows the same curtain or curtain but with the sunbreaker slats in an opening position and thus with rotation equal to 90°.

[0048] In Figure 5 it should be observed that the ovoidal ring (21) of the last module (33) at the top part is positioned flush with the assembled body of the module itself, while in figure 6 the ovoidal ring (21) of the last module (33) projects with respect to the body made up of the latter.

[0049] As previously mentioned, such projection represents the stroke made by the rod (19) to allow the rotation action of the cap (23), and thus of the slat (30), by engaging the fork (22) on the bridge offset (28).

[0050] Basically, in order to obtain the rotation of the slats synchronously, it will be sufficient to push the rod (19) of the first module at the bottom part (33') upwards, substantially translating the rod 19 longitudinally to itself, to obtain the same simultaneous action of all the remaining rods 19, being at contact one with respect to the subsequent one, with ensuing rotation of all caps (23) and consequently all slats (30).

[0051] In particular the upper end of a first rod 19 pushes the lower end of a second rod 19 which is located immediately above the first rod 19 upwards.

[0052] Such thrust action may be obtained in various ways. For example it can be obtained by extending the body of the rods 19' of the module at the bottom part which - touching the floor before the curtain itself - would act as thrust pistons due to the weight of the curtain itself.

[0053] Like in the embodiment of Figures 7-11 this may be obtained through particular end meshes 35" (Figures 10, 11) which, resting against the floor push the lower rod 19, 19' and thus all the others upwards, opening the slats 30. In particular the end meshes 35" may be fixed to the driving chain link 35' lower through a pin 29' housed in an oblong slot 21 made in the end mesh 35". A suitable projection, not shown, obtained on the end mesh 35" approaching the mesh 35' at the lower part would actuate the relative rod 19' as if it were a rod itself.

[0054] Alternatively, it could be a pair of small jacks controlled by a control which would cause the thrust on the bodies of the aforementioned rods. Lastly, as one of the most sophisticated solutions, an electrically controlled mechanical device could be considered but in any case for such actuation examples and further possible examples the object of the invention is fundamental, consisting in the assemblable mechanism module in an ar-

ticulated fashion to allow the formation of a curtain jalousie windable on a roller like a normal windable curtain.

[0055] From the description above, it is clear that the invention achieves the preset objections.

5 **[0056]** The previously described embodiments can be subjected to various modifications and variants without departing from the scope of protection of the present invention.

10 **[0057]** For example, a modular mechanism according to the invention for providing jalousies having orientable sunbreaker slats forming a curtain for example windable on a roller, may generally comprise:

- a driving chain link (35);
- 15 - a sunbreaker slat (30) substantially oblong-shaped and fixed to the driving chain link (35).

20 **[0058]** The driving chain link (35) preferably comprises the lid 13 and the cap 23; advantageously it further comprises within itself an driving tension rod (19) arranged for driving the sunbreaker slat (30) by causing it to rotate on itself longitudinally to itself.

25 **[0059]** Preferably the sunbreaker slat (30) is fixed to the driving chain link (35) at an end of the sunbreaker slat (30) itself.

30 **[0060]** Preferably the aforementioned modular mechanism comprises an eccentric mechanism through which the driving tension rod (19) actuates the sunbreaker slat (30). The eccentric mechanism may comprise an actuation shaft (37) arranged longitudinally to the sunbreaker slat (30).

35 **[0061]** Preferably the actuation shaft (37) comprises a first section (26), and a second section (28) longitudinal but offset with respect to the first section (26). The axis of the actuation shaft 37 preferably passes through the middle of the transverse sections of the relative sunbreaker slat 30.

40 **[0062]** Preferably the driving tension rod (19) is engaged, for example through a fork seat 22 or other seat or recess, with the second section (28) of the actuation shaft (37) forming a sort of crank mechanism which drives the shaft (37) causing the latter to rotate on itself.

45 **[0063]** A sunbreaker jalousie according to the invention may comprise several modular mechanisms of the type previously described. In such sunbreaker jalousie:

- a plurality of driving chain links (35) may be connected one to another so as to substantially form a driving chain;
- 50 - at least one first driving tension rod (19) of a first driving chain link (35) is actuated by a second driving chain link (35) adjacent to the first driving chain link (35).

55 **[0064]** In the aforementioned sunbreaker jalousie the at least one first driving tension rod (19) of the first driving chain link (35) may be actuated by a second driving tension rod (19) belonging to the second driving chain link

(35) adjacent to the first driving chain link (35).

[0065] In the aforementioned sunbreaker jalousie the second driving tension rod (19) belonging to the second driving chain link (35) may actuate the first driving tension rod (19) pushing or pulling it.

[0066] In the aforementioned sunbreaker jalousie the driving tension rods (19) of the plurality of driving chain links (35) may be arranged in a row one after the other and each substantially longitudinal to the driving tension rod or rods (19) adjacent thereto.

[0067] In the aforementioned sunbreaker jalousie a plurality of driving chain links (35) may each comprise a hinging pin (29) through which a first driving chain link (35) is hinged to an adjacent second driving chain link (35) so as to form the driving chain; in addition a plurality of driving tension rods (19) may each form an oblong slot (21) in which there is inserted a hinging pin (29). Preferably such oblong slot is arranged at an end of the relative driving tension rod 19.

[0068] Preferably the width of each driving chain link 35 is smaller than the length of the sunbreaker slats 30, where such width and such length are measured according to a direction perpendicular to the direction for unwinding and winding the jalousie itself. More preferably the width of each driving chain link 35 is equal or smaller than a fifth of the length of the sunbreaker slats 30, even more preferably equal to or smaller than one tenth or one twentieth of the length of the sunbreaker slats 30, so as to allow a greater passage of light when the slats 30 are open.

[0069] Figures 7-11 regard a modular mechanism and a curtain or sunbreaker jalousie according to a second embodiment of the invention.

[0070] In such modular mechanism the oblong slot 21' of each rod element 19', or of each driving tension rod 19', has an upper edge 210 forming a sort of guide or track, while the lower end 212 of each driving tension rod 19 advantageously forms a concave seat arranged for being coupled to the track edge of the upper edge of an adjacent tension rod 19', so as to be able to slide along it without slipping off in the direction perpendicular to the edge itself (Figures 7-9).

[0071] Thus, all the rods 19' are coupled one to another substantially forming an internal chain and considerably improving the synchronous aspect of the opening and closure of the slats 30 and generally the operating fluidity of the mechanism. For such purpose, the upper edge 210 may have substantially T-shaped transverse sections, while the lower end 212 may have substantially C-shaped transverse sections.

[0072] In particular, the upper edge 210 which forms a sort of guide or track also extends around the upper curved portion of the slots 21', so as to allow two adjacent tension rods 19' to rotate with respect to each other. This allows maintaining the rods 19' coupled to each other even when the curtain of the jalousie is rolled, thus improving reliability thereof.

[0073] The two teeth forming the fork 22' advantageously

have the ends folded in the direction longitudinal to the body of the rod 19', thus facilitating the sliding in the relative driving chain link 35 thus maintaining it more firmly in one position and reducing the risk of the eccentric pin 28' projecting from the fork 22'.

[0074] Due to the mechanical constructions described above, all the slats of the jalousies according to the invention open silently and substantially simultaneously and without detectable delays with respect to each other. The variant of Figure 8, 9 functions in a particularly fluid manner.

[0075] In addition all details may be replaced by other technically equivalent elements, and in practice, both the materials used, the alternative aesthetic shapes as well as the dimensions may vary according to the specific technical requirements. It should be observed that the expression like "A comprises B, C, D" or "A is formed by B, C, D" comprises and also describes the particular case in which "A is constituted by B, C, D". The examples and lists of possible variants of the present application shall be deemed as non-exhaustive lists.

Claims

1. Modular mechanism for making jalousies having orientable sunbreaker slats forming a windable curtain for example on a roller, where the modular mechanism comprises:

- a driving chain link (35);
- a sunbreaker slat (30) substantially oblong-shaped and fixed to the driving chain link (35);

and wherein:

- the driving chain link (35) comprises - there-within - an driving tension rod (19) arranged for driving the sunbreaker slat (30) by rotating it on itself longitudinal with respect thereto.

2. Mechanism according to claim 1, wherein an end of the sunbreaker slat (30) is fixed to the driving chain link (35).

3. Mechanism according to claim 1, comprising an eccentric mechanism through which the driving tension rod (19) actuates the sunbreaker slat (30).

4. Mechanism according to claim 1, wherein the eccentric mechanism comprises an actuation shaft (37) arranged longitudinally to the sunbreaker slat (30).

5. Mechanism according to claim 4, wherein the actuation shaft (37) comprises a first section (26), and a second section (28) longitudinal but offset with respect to the first section (26).

6. Mechanism according to claim 5, wherein the driving tension rod (19) is engaged with the second section (28) of the actuation shaft (37) so as to rotate the actuation shaft (37) on itself. 5
7. Sunbreaker jalousie, comprising a plurality of modular mechanisms according to claim 1, and wherein:
- a plurality of driving chain links (35) are connected with each other so as to substantially form an driving chain; 10
 - at least one first driving tension rod (19) of a first driving chain link (35) is actuated by a second driving chain link (35) adjacent to the first driving chain link (35). 15
8. Sunbreaker jalousie according to claim 7, wherein the at least one first driving tension rod (19) of the first driving chain link (35) is actuated by a second driving tension rod (19) belonging to the second driving chain link (35) adjacent to the first driving chain link (35). 20
9. Sunbreaker jalousie according to claim 8, wherein the second driving tension rod (19) belonging to the second driving chain link (35) actuates the first driving tension rod (19) by pushing or pulling it. 25
10. Sunbreaker jalousie according to claim 7, wherein the driving tension rod s (19) of the plurality of driving chain links (35) are arranged in a row one after the other and each substantially longitudinal to the tension rod or to the driving tension rod s (19) adjacent thereto. 30
11. Sunbreaker jalousie according to claim 7, wherein:
- a plurality of driving chain links (35) each comprise a hinging pin (29) through which a first driving chain link (35) is hinged to an adjacent second driving chain link (35) so as to form the driving chain; 35
 - a plurality of driving tension rod s (19), each of which forming an oblong slot (21) in which a hinging pin (29) is inserted. 40
12. Modular mechanism for making jalousies having orientable sunbreaker slats forming a curtain for example windable on a roller, where the modular mechanism comprises: 45
- a support element (7) comprising an elongated solid element having an elliptic-shaped base (8) provided at its ends, and arranged along the longitudinal axis, with two through holes (9-9'), with a recessed cylindrical seat (10) arranged in the middle and with a grooved longitudinal track (11) which is formed by at least two x reliefs (12-12') 50

which are longitudinal as well;

- a lid element (13), suitable to be fittingly coupled with the support element (7), comprising a solid body with elliptic-shaped base, substantially equal to that of the support (7), provided with two through holes (14-14') at the ends with arrangement along the longitudinal axis and concentric with those of the support (9-9'), a through hole (15) in median position and concentric with that of the support (10) and on the face (16) opposite to the coupling face (17), shaped reliefs (18) which traverse it longitudinally along the greater axis of the elliptic base serving as a barrier to the passage of light and air;
- a rod element (19) comprising a solid elongated body (20) having at an end an ovoidal ring (21) and in the middle a fork (22) having its opening facing in the orthogonal direction with respect to the body (20) of the rod itself;
- a cap element (23) comprising a shaped plate (24) provided on a face of a relief fitting mushroom-like-like element (25), while on the opposite face, and in median position, it carries a cylindrical body (26), concentric to the hole (15) of the lid (13) and to the seat (10) of the support (7), and such body provided with a groove (27) in undercut where there is positioned a bridge (28) having the longitudinal axis in a position eccentric to that of the cylindrical body (26) and dimensioned so as to be inserted in the fork (22) of the rod (19);
- a pin element (29) dimensioned to be used in the end holes (9-9') of the support (7) as well as in the holes (14-14') of the lid (13) and suitable to traverse the ovoidal ring (21) of the rod (19);
- a sunbreaker slat element (30) comprising a tubular element (31), suitably shaped to be fitted by the mushroom-like element (25) of the cap (23) and provided with a shaped crosspiece (32) with reinforcement functions and with a seat for a possible fixing and safety screw.

13. Modular mechanism for making jalousies having orientable sunbreaker slats constituting a curtain windable on a roller **characterised in that** each module comprises:

- a support element (7) comprising an elongated solid element having an elliptic-shaped base (8) provided at the ends, and arranged along the longitudinal axis, with two through holes (9-9'), with a recessed cylindrical seat (10) arranged in the middle and with a grooved longitudinal track (11) which is formed by at least two reliefs (12-12') which are longitudinal as well;
- a lid element (13), suitable to be fittingly coupled with the support element (7), comprising a

solid body having an elliptic-shaped base, substantially equal to that of the support (7), provided with two through holes (14-14') at the ends with arrangement along the longitudinal axis and concentric with those of the support (9-9'), a through hole (15) in median position and concentric with that of the support (10) and on the face (16) opposite to the coupling face (17), shaped reliefs (18) which cross it longitudinally along the major axis of the elliptic base working as a barrier against the passage of light and air;

- a rod element (19) comprising a solid body extended (20) having at an end an ovoidal ring (21) and in the middle a fork (22) having the opening facing in the orthogonal direction with respect to the body (20) of the rod itself;
- a cap element (23) comprising a shaped plate (24) provided on a face with a relief fitting mushroom-like element (25), while on the opposite face, and in median position, it carries a cylindrical body (26), concentric to the hole (15) of the lid (13) and to the seat (10) of the support (7), and such body provided with a groove (27) in undercut where there is positioned a bridge (28) having the longitudinal axis in a position eccentric to that of the cylindrical body (26) and dimensioned so as to be inserted in the fork (22) of the rod (19);
- a pin element (29) dimensioned to engage the end holes (9-9') of the support (7) as well as the holes (14-14') of the lid (13) and suitable to cross the ovoidal ring (21) of the rod (19);
- a sunbreaker slat element (30) comprising a tubular element (31), suitably shaped to be fitted by the mushroom-like element (25) of the cap (23) and provided with a shaped crosspiece (32) having the functions of reinforcement functions and seat for a possible fixing and safety screw.

14. Modular mechanism for making jalousies having orientable sunbreaker slats according to claim 12 or 13 **characterised in that** it rotates the sunbreaker slat (30) along its median longitudinal axis with respect to its body itself, and such rotation ranges between the values of 0° and at least 90° in an opening position.
15. Modular mechanism for making jalousies having orientable sunbreaker slats according to claim 12 or 13, **characterised in that** the to and fro movement according to a stroke value of the rod (19) along the track (11) obtained by the coupling support (7) and lid (13) it is useful to act on the bridge (28) of the cap (23), which, being offset with respect to the rotation axis of the cap itself, it determines its rotation according to the effect of an assembly connecting rod-crank which thus determines said stroke.

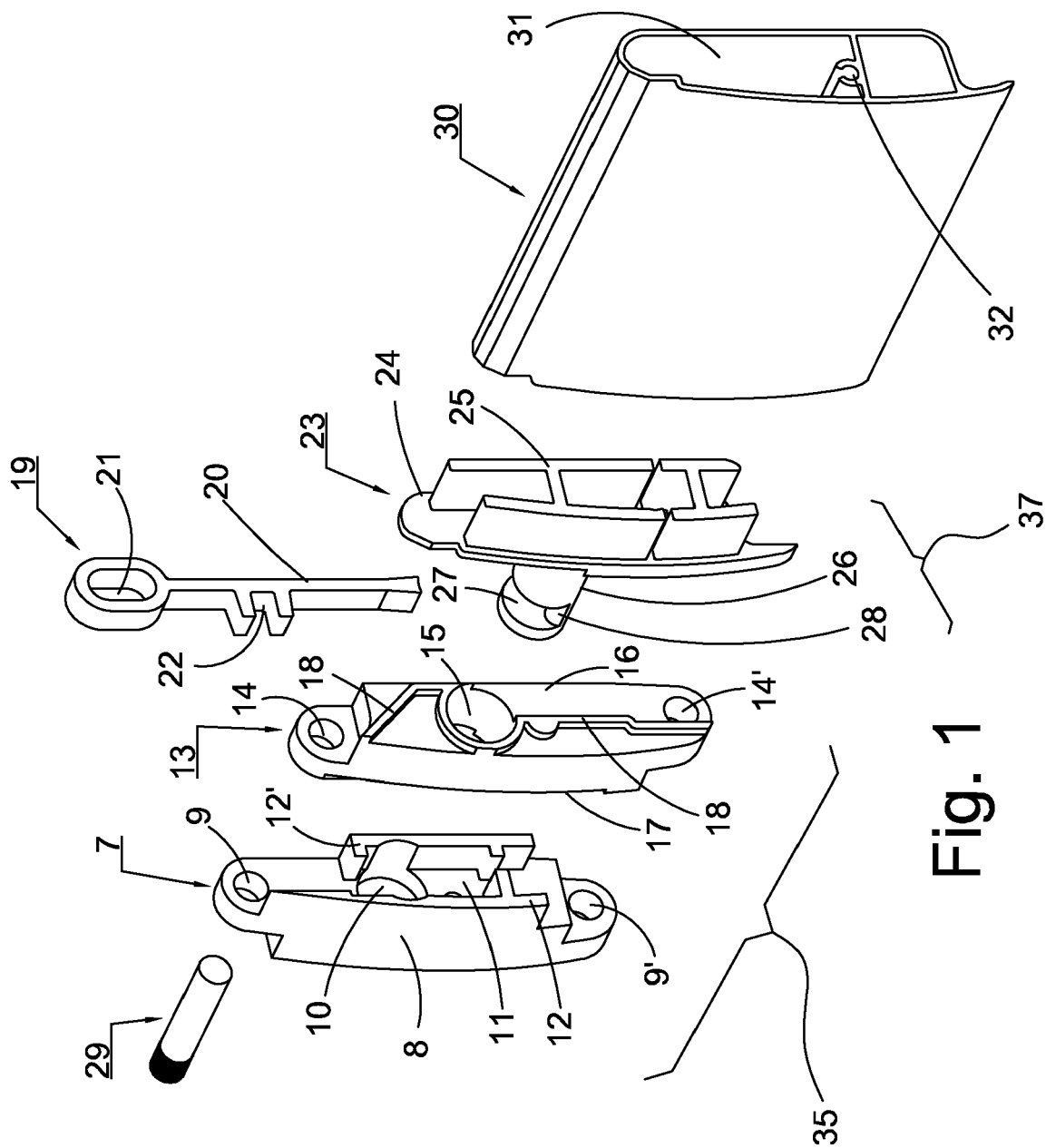


Fig. 1

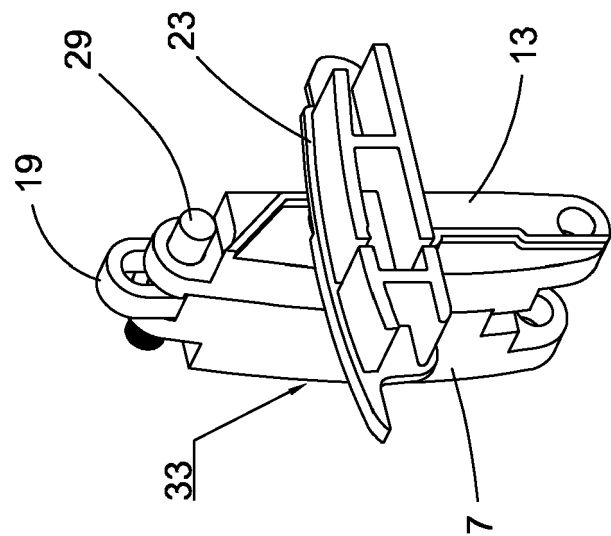


Fig. 3

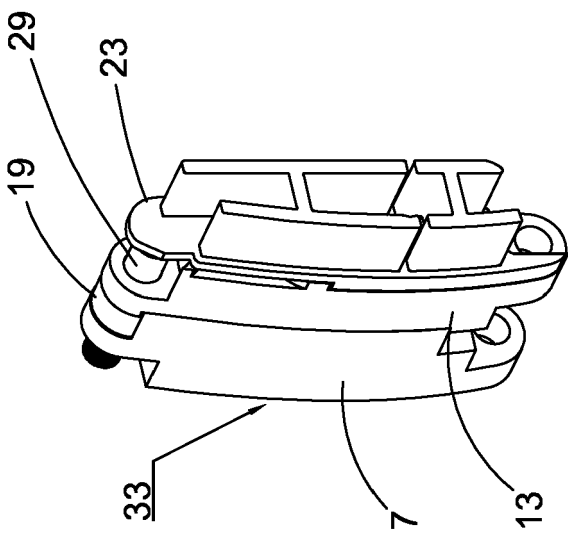


Fig. 2

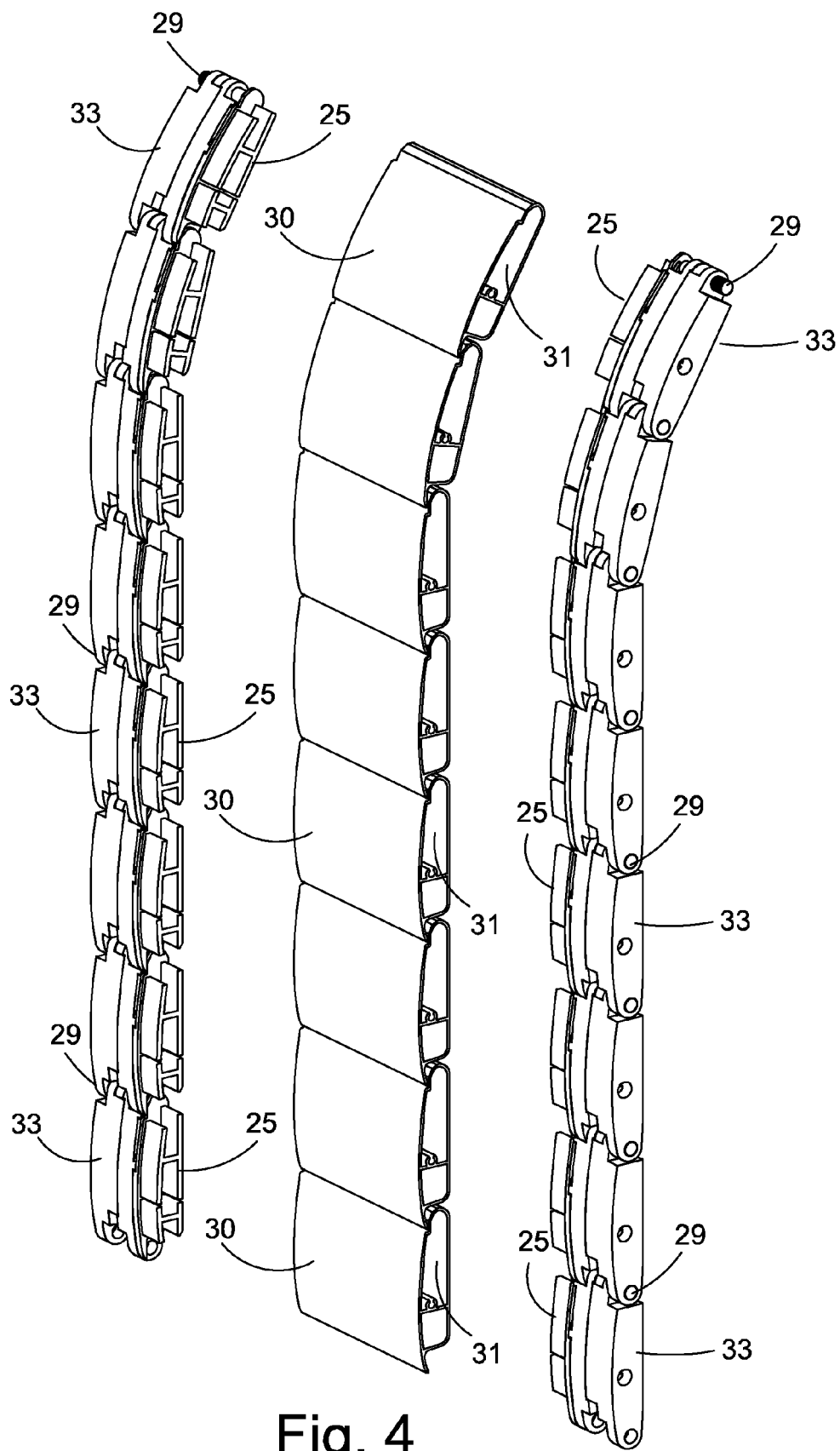


Fig. 4

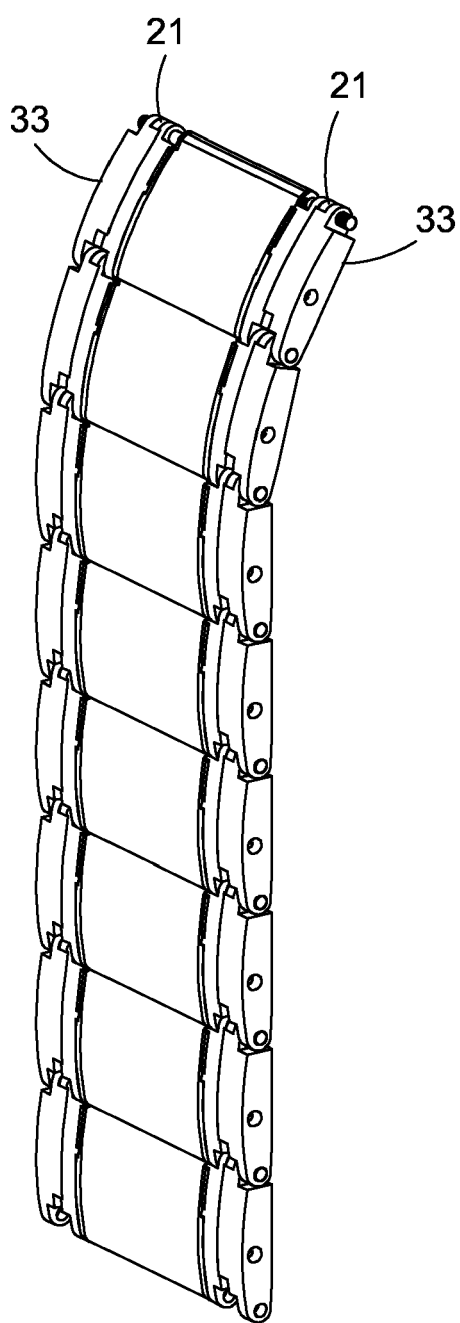


Fig. 5

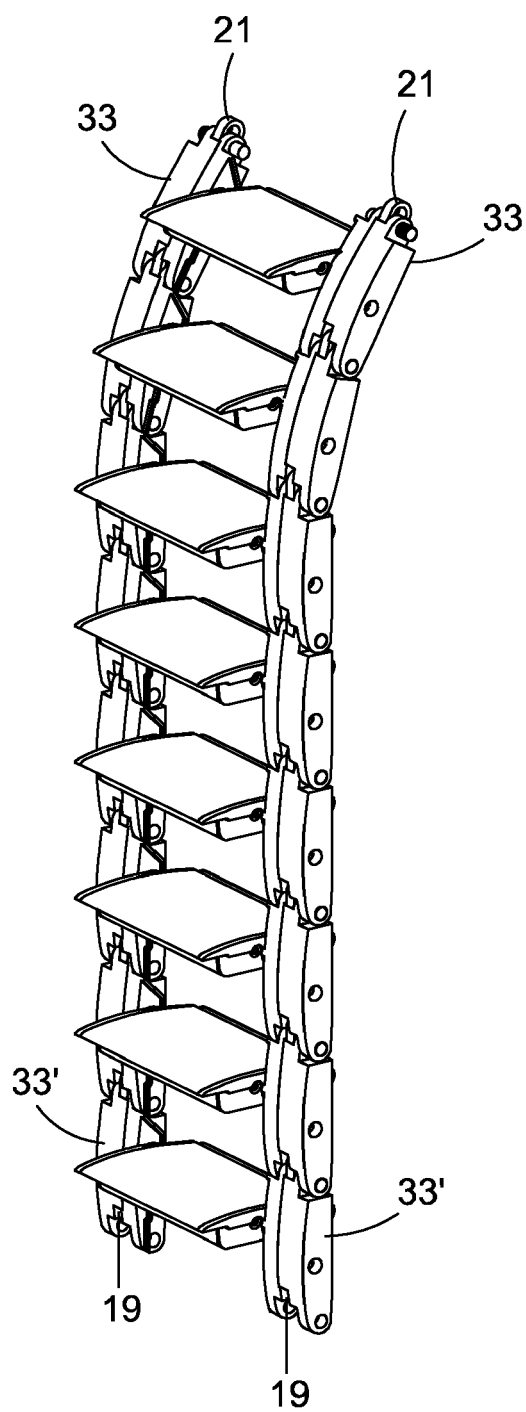


Fig. 6

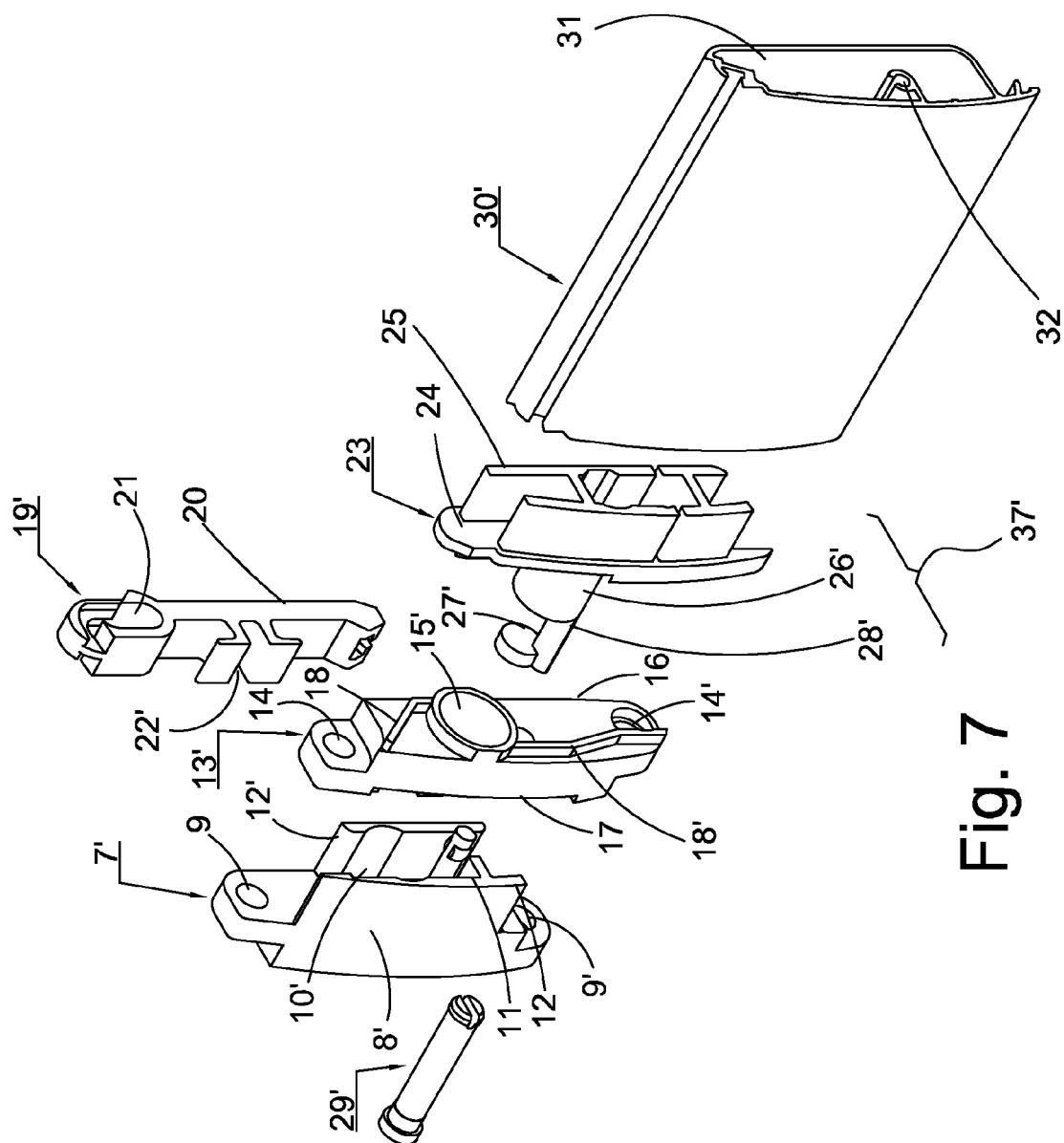


Fig. 7

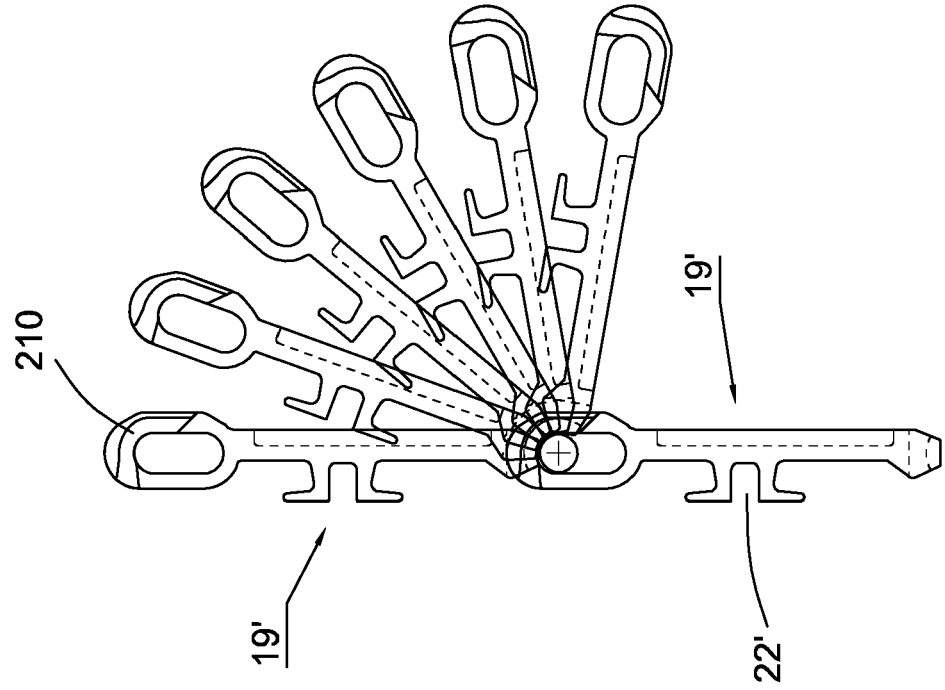


Fig. 9

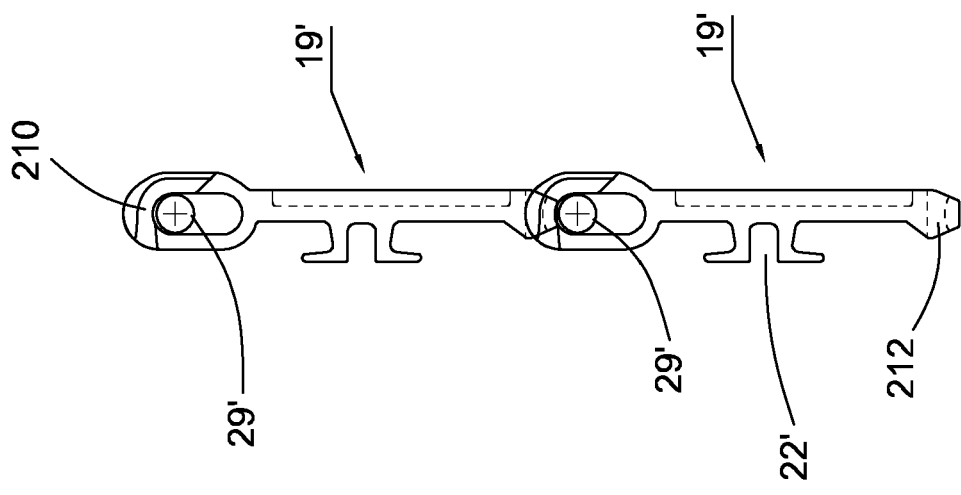


Fig. 8

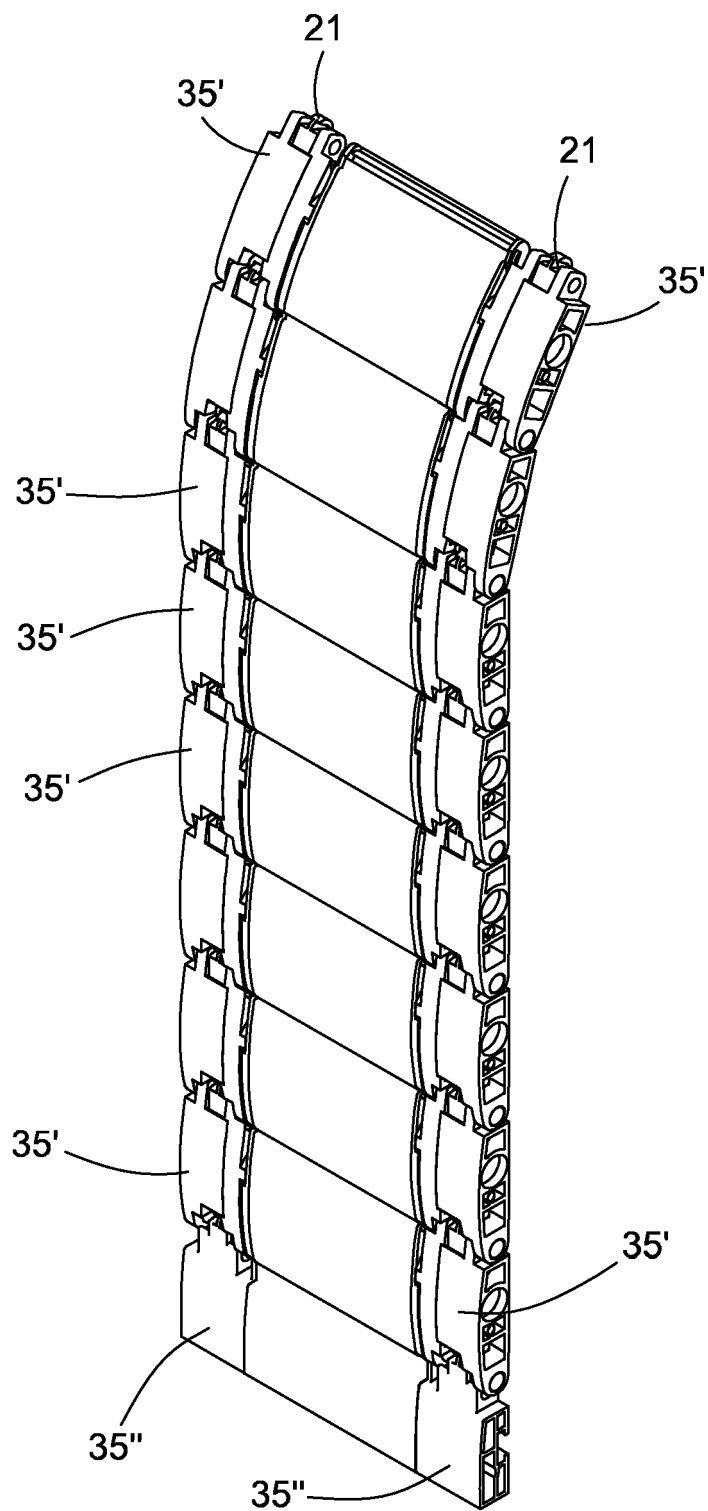


Fig. 10

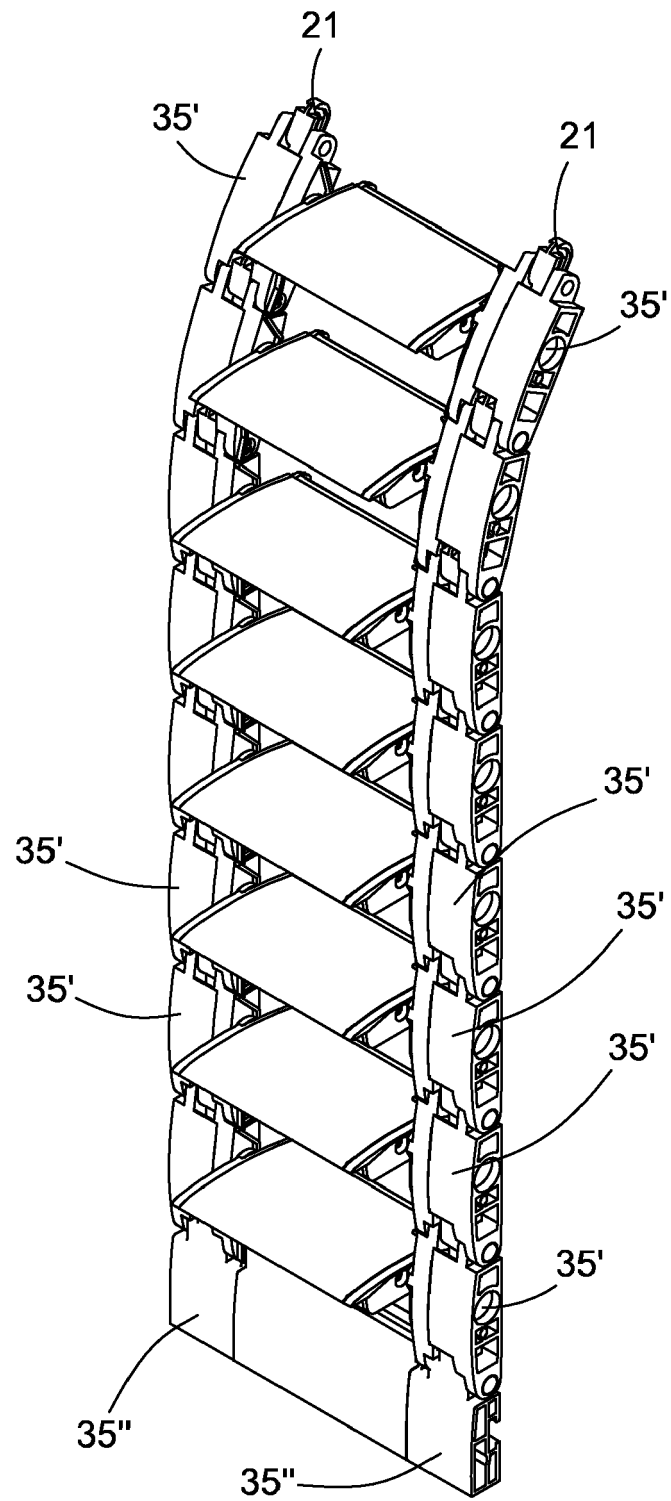


Fig. 11



EUROPEAN SEARCH REPORT

Application Number
EP 15 17 3297

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			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 January 2016	Examiner Kofoed, Peter
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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