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(54) **HOLDING DEVICE FOR HOLDING A DOOR LEAF IN AN OPEN CONFIGURATION RELEASABLE THROUGH A FURTHER OPENING OF THE DOOR LEAF**

HALTEVORRICHTUNG ZUM HALTEN EINES TÜRFLÜGELS IN EINER DURCH EINE WEITERE
ÖFFNUNG DES TÜRFLÜGELS LÖSBAREN OFFENEN KONFIGURATION

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(56) References cited:
**DE-A1- 2 340 912 DE-A1- 2 702 615
DE-U1- 29 500 929 US-A- 4 984 331**

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Description

TECHNICAL FIELD

[0001] The present invention concerns a holding device for a door leaf, capable of holding a door leaf pivotally movable relative to a support in an open configuration, the holding device comprising a tubular body delimiting an internal passage area and delimiting a first fastening member for pivotally fastening the body on an element selected among the door leaf and the support, and a rod slidably mounted within the internal passage area along a longitudinal direction and delimiting a second fastening member for pivotally fastening the rod on the other element selected among the door leaf and the support, the rod being capable of occupying a first retracted position corresponding to a closed configuration of the door leaf with respect to the support and a second partially extended position corresponding to the open configuration of the door leaf with respect to the support.

[0002] The field of the invention is limited to a holding device capable of holding the door leaf in an open configuration with specific blocking means whose release is automatically performed by continuing opening the door leaf beyond the open configuration previously held by the holding device.

[0003] The invention also concerns an arrangement comprising a support, a door leaf pivotally movable relative to the support so as to switch between at least a closed configuration and an open configuration and at least one such holding device whose first fastening member delimited by the body is pivotally fastened on an element selected among the door leaf and the support and whose second fastening member delimited by the rod is fastened on the other element selected among the door leaf and the support.

[0004] The invention finds application in particular in the motor vehicles field where the door leaf is a front hood or a rear hatchback and the support is an element of the body of the vehicle. Nonetheless, it may be considered to apply the holding device described in this document to other technical fields such as for example furniture, household appliances or door- and window-frames.

PRIOR STATE OF THE ART

[0005] There are numerous solutions for holding a door leaf pivotally movable relative to a support in an open configuration. Among these solutions, there are some ones whose release is automatically performed simply by continuing opening the door leaf beyond the open configuration held by the holding device.

[0006] But the known solutions are complex, require numerous and sometimes tricky assembly operations, which increase their manufacturing and prime costs, and sometimes exhibit still perfectible reliability and ergonomics.

[0007] For example, the document US2566182A de-

scribes a holding device with a body and a rod on which blocking elements are attached and assembled. These blocking elements allow holding the rod in an extended configuration with respect to the body so as to hold the rear hatchback of a vehicle in an open configuration. The release of the blocking elements is achieved by continuing opening the rear hatchback beyond the open configuration previously held by the blocking elements.

[0008] Document DE 2 340 912 A1 discloses for example a holding device for a window of a caravan with specific blocking means whose release is automatically performed by continuing opening the door leaf.

[0009] In addition to the drawbacks already listed hereinabove, as a result of the necessity of having to assemble the parts constitutive of the blocking elements on the body and on the rod, a main drawback of this solution lies in the rotating kinematics of the blocking elements which, unfortunately, may inadvertently jam during this rotation. This jamming may result in blocking the hatchback in an open configuration and make it impossible for the user to replace the hatchback in the closed configuration, which is obviously not satisfactory in use.

DISCLOSURE OF THE INVENTION

[0010] The present invention aims at providing a holding device for a door leaf, configured so as to hold in an open configuration a door leaf pivotally movable relative to a support, which addresses all or part of the aforementioned problems.

[0011] In particular, the aim of the invention is to provide a holding device of the aforementioned type, that is to say whose release is automatically performed by continuing opening the door leaf beyond the open configuration, which is simple to manufacture and to use, which is economical and reliable

[0012] This aim is reached by providing a holding device for a door leaf, capable of holding a door leaf pivotally movable relative to a support in an open configuration, the holding device comprising a tubular body delimiting an internal passage area and delimiting a first fastening member for pivotally fastening the body on either one of the door leaf and the support, and a rod slidably mounted within the internal passage area along a longitudinal direction and delimiting a second fastening member for pivotally fastening the rod on the other one of the door leaf and the support, the rod being capable of occupying a first retracted position corresponding to a closed configuration of the door leaf with respect to the support and a second partially extended position corresponding to the open configuration of the door leaf with respect to the support, the body internally delimiting at least one longitudinal stop abutment and the rod delimiting at least one blocking notch capable of switching between a laterally retracted configuration and a laterally deployed configuration, the longitudinal sliding of the rod from the first position to the second position automatically placing the blocking notch in its deployed configuration in which the

blocking notch bears longitudinally against the stop abutment so as to unidirectionally block the rod longitudinally in its second position and to prevent the sliding of the rod in the direction of its first position, the rod being capable of occupying a third fully extended position through a longitudinal sliding from the second position in a direction opposite to the first position, the blocking notch delimiting a lateral bearing shoulder engaging with at least one linear stop system delimited by the body in the internal passage area during a longitudinal sliding of the rod from the third position to a fourth position longitudinally located between the first position and the second position, the linear stop system being configured so as to control, by driving the blocking notch at the level of its lateral bearing shoulder, the passage and the holding of the blocking notch in its retracted configuration during said longitudinal sliding of the rod from the third position to the fourth position, and wherein the blocking notch is integral with the rod and is linked to the rest of the rod thanks to an area forming a hinge for the blocking notch with respect to the rest of the rod.

[0013] The holding device may also present the following advantageous features, considered separately or in combination.

[0014] The body delimits at least one opening formed throughout one of its faces, into which the blocking notch is set when the rod occupies its second position in which the blocking notch, occupying its laterally deployed configuration, bears longitudinally against the corresponding stop abutment delimited by the body.

[0015] The body delimits at least one inner constriction protrusion arranged adjacent to a longitudinal edge of said at least one opening along the longitudinal direction and cooperating with an upper face of the blocking notch so as to cause a progressive displacement of the blocking notch to its retracted configuration when the rod is displaced from the first position to the second position, until achieving a longitudinal bearing of the blocking notch against the stop abutment, resulting from an elastic lateral return of the blocking notch back to its deployed configuration after the inner constriction protrusion so as to be set into said at least one opening.

[0016] Said at least one stop abutment is constituted by a junction area between said at least one inner constriction protrusion and said at least one opening.

[0017] The longitudinal edge of said at least one opening which is opposite to the inner constriction protrusion constitutes a bearing cooperating with the upper face of the blocking notch so as to automatically cause, through the sliding of the rod from the second position to the third position, a progressive displacement of the blocking notch from its deployed configuration to a partially retracted configuration intermediate between the deployed configuration and the retracted configuration.

[0018] The rod comprises at least one stop arranged so as to abut longitudinally against said at least one inner constriction protrusion delimited by the body when the rod occupies its third position and to block the sliding

movement of the rod unidirectionally in a direction opposite to the direction allowing sliding toward the second position.

[0019] The rod delimits two independent blocking notches arranged on two opposite lateral faces of the rod and said at least one linear stop system comprises two linear stops formed in projection toward the inside of the internal passage area so as to delimit two distinct bearing edges extending substantially parallel to each other along the longitudinal direction and facing each other laterally with a gap interposed therebetween, the cooperation between the lateral bearing shoulder of each of the two blocking notches and said at least one linear stop system resulting from a lateral contact between the lateral bearing shoulder of this blocking notch positioned in the gap and the corresponding one of the two bearing edges.

[0020] Each of the two bearing edges presents a profile progressively converging toward the other one of the two bearing edges by getting close to the first fastening member of the body so that the gap delimited between the two bearing edges presents a lateral width progressively decreasing over at least one portion of the longitudinal length of the bearing edges by getting close to the first fastening member of the body until reaching a minimum value, the variation of the lateral width of the gap to the minimum value being adapted to control the progressive passage and holding of each of the two blocking notches to its retracted configuration during the passage of the rod from the third position to the fourth position.

[0021] The invention also relates to an arrangement comprising a support, a door leaf pivotally movable relative to the support so as to switch between at least a closed configuration and an open configuration and at least one such holding device whose first fastening member delimited by the body is pivotally fastened on either one of the door leaf and the support and whose second fastening member delimited by the rod is fastened on the other one of the door leaf and the support.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Other aspects, aims, advantages and features of the invention will appear better upon reading the following detailed description of preferred embodiments thereof, given as a non-limiting example, and made with reference to the appended drawings in which:

- Figure 1 is a perspective view of an example of a holding device according to the invention,
- Figures 2 and 3 show a portion of the body used in the holding device of Figure 1, at the level of a sectional plane denoted P1 in Figure 2, respectively in perspective view and according to the longitudinal direction X,
- Figure 4 partially represents the rod used in the holding device of Figure 1, at the level of a proximal end of the rod intended to be inserted into the body shown

in the previous figures,

- Figures 5 and 6 show a portion of the rod, at the level of a sectional plane denoted P2 in Figure 5, respectively in perspective view and according to the longitudinal direction X,
- Figures 7A to 7C partially represent the holding device in section according to a sectional plane P3 shown in Figure 2, for different positions occupied by the rod,
- Figures 7D and 7E partially illustrate the body in section according to the sectional plane P3, at the level of the proximal end into which the rod is intended to be inserted.

DETAILED DISCLOSURE OF PARTICULAR EMBODIMENTS

[0023] The appended figures 1 to 7E, briefly reviewed hereinbefore, present an example of a holding device 10 for a door leaf.

[0024] The holding device 10 is essentially composed by a body 11 and a rod 12, described in more details hereinafter.

[0025] In particular, the holding device 10 is configured so as to be able to hold a movable door leaf (not represented), pivotally mounted relative to a support (not represented), in an open configuration. In other words, the door leaf can switch, by pivoting relative to the support, between at least one closed configuration with respect to the support on the one hand and, on the other hand, one open configuration in which it is held in position thanks to the holding device 10. The door leaf also presents the capability of being open, always by pivoting relative to the support, beyond the aforementioned open configuration, up to a maximum open configuration. The passage from the open configuration to the maximum open configuration is intended to control the release of the holding device 10 in order to enable a return of the door leaf back to the closed configuration, this return being otherwise prevented.

[0026] The holding device 10 finds application in particular in the motor vehicles field where the door leaf may be a front hood or a rear hatchback of the vehicle whereas the support on which the door leaf is pivotally mounted is for example an element of the body of the vehicle. Alternatively, the holding device described in this document may be used in association with a movable door leaf used in the furniture field such as for example in the manufacture of a coffer, in the household appliances field such as for example in the manufacture of a freezer or a washing machine, or still in the door- and window-frames field such as for example in the manufacture of certain windows, typically for the production of certain travel trailers.

[0027] The body 11 presents a general tubular shape delimiting an internal passage area 13. The rod 12 is slidably mounted within the internal passage area 13 delimited by the body 11 so as to be able to slide along a

longitudinal direction denoted X, orientated along the axis of the tubular shape of the body 11. The sliding of the rod 12 may take place either in a first direction S1 corresponding to a direction tending to extend the rod 12 out of the body 11, or in a second direction S2 corresponding to a direction tending to retract the rod 12 into the body 11.

[0028] For a better understanding of the general layout of the body 11 and the rod 12, an orthogonal spatial system is associated to the holding device 10, including, in addition to the longitudinal direction X, a lateral direction Y perpendicular to the longitudinal direction X and a transverse direction Z perpendicular to the longitudinal direction X and to the lateral direction Y.

[0029] In order to ensure the sliding guidance of the rod 12 relative to the body 11, the section of the body 11, as viewed in a sectional plane (Y, Z), is provided for example so as to present over at least one portion of its length, a shape matching with the external shape of the section of the rod 12, for example with generally rectangular shapes as represented in the figures, in order to avoid a relative rotation of the rod 12 and the body 11 around the longitudinal direction X.

[0030] For reasons relating to manufacturing simplicity and costs, the body 11 may also be provided to be formed as an integral part made in one piece, in the same manner as the rod 12. Typically, the body 11 and the rod 12 may be obtained through a molding operation or through a 3D-printing operation, for example using a polyamide, polyester or polyoxymethylene type plastic material.

[0031] The body 11 delimits a first fastening member 14 for pivotally fastening the body 11 either on the door leaf, or on the support. The first fastening member 14, which is integral with the rest of the body 11, extends for example externally in projection along the lateral direction Y at the level of a distal longitudinal end of the body 11, that is to say the longitudinal end opposite to the proximal longitudinal end into which the rod 12 is inserted. The first fastening member 14 has the advantage of not requiring any assembly operation with respect to the rest of the body 11.

[0032] The rod 12 delimits a second fastening member 15 for pivotally fastening the rod 12 either on the support in the case where the body 11 is mounted on the door leaf thanks to the first fastening member 14, or on the door leaf in the case where the body 11 is mounted on the support thanks to the first fastening member 14. The second fastening member 15, which is integral with the rest of the rod 12, extends for example externally in projection along the lateral direction Y at the level of a distal longitudinal end of the rod 12, that is to say the longitudinal end opposite to the proximal longitudinal end which is inserted into the body 11. The second fastening member 15 has the advantage of not requiring any assembly operation with respect to the rest of the rod 12.

[0033] In order to obtain a setting and a fastening of the holding device 10 which are effective and at a low cost, each of the first fastening member 14 and the second fastening member 15 may be in the form of a sub-

stantially cylindrical tubular pin, provided with two transverse slots 27 to delimit two deformable portions 28. Each deformable portion 28 may be shaped so as to delimit a shoulder which is intended to hook on a rear face of a pierced wall of the support or of the door leaf.

[0034] The invention also concerns the arrangement comprising the support, the door leaf pivotally movable relative to the support so as to switch between at least a closed configuration and an open configuration and at least one such holding device 10 whose first fastening member 14 delimited by the body 11 is pivotally fastened on an element selected among the door leaf and the support and whose second fastening member 15 delimited by the rod 12 is fastened on the other element selected among the door leaf and the support.

[0035] When sliding relative to the body 11, the rod 12 may occupy at least one first retracted position (not represented) corresponding to the situation where the door leaf adopts the closed configuration with respect to the support and a second partially extended position corresponding to the situation where the door leaf adopts the open configuration with respect to the support. The rod 12 occupies the second position in Figure 1 and in Figure 7B.

[0036] The holding device 10 allows holding the door leaf in the open configuration with specific blocking means whose release is automatically performed through a displacement of the door leaf from the open configuration to the aforementioned maximum open configuration. During this displacement of the door leaf, the rod 12 is slidably driven from the second partially extended position up to a third fully extended position which will be detailed later on. In concrete terms, the release of the specific blocking means results from the displacement of the rod 12 in the first direction S1 from the second position to the third position. In order to ensure such an operation, the rod 12 is capable of occupying the third fully extended position through a longitudinal sliding along the direction X from the second position in the first direction S1 which is opposite to the second direction S2 leading to the first position.

[0037] To this end, the body 11 internally delimits at least one stop abutment 16 intended to longitudinally stop the rod 12 only in the second direction S2 and the rod 12 delimits at least one blocking notch 17 capable of switching between a laterally retracted configuration toward the inside of the rod 12 and a laterally deployed configuration toward the outside of the rod 12. In the retracted configuration, the concerned blocking notch 17 is stowed into the rod 12 along the lateral direction Y whereas in the deployed configuration, the blocking notch 17 projects laterally with respect to the rest of the rod 12.

[0038] The longitudinal sliding of the rod 12 from the first position to the second position according to the first direction S1 allows placing said at least one blocking notch 17 automatically in its deployed configuration, adopted in the second position of the rod 12, and in which this blocking notch 17 bears longitudinally against the

stop abutment 16 so as to block unidirectionally (in the second direction S2) the rod 12 along the longitudinal direction X in its second position and to prevent the sliding of the rod 12 in the direction of the first position. The number of blocking notches 17 can be equal to two as represented, or equal to a number greater than or equal to three. For example, the two blocking notches 17 independent of each other are formed on two lateral faces of the rod 12 opposite to each other along the lateral direction Y.

[0039] Advantageously, each blocking notch 17 delimits a lateral bearing shoulder 18 engaging with at least one linear stop system 19 delimited by the body 11 in the internal passage area 13 during a longitudinal sliding of the rod 12 according to the second direction S2 so as to switch from the third position to a fourth position longitudinally located between the first position and the second position (Figure 7A). Each lateral bearing shoulder 18 extends in projection along the lateral direction Y in the direction of the inside of the rod 12.

[0040] According to a non limiting embodiment as illustrated in Figure 3, promoting an effective and reliable operation of the holding device 10, the body 11 delimits two distinct linear stop systems 19, arranged facing each other in the transverse direction Z while being formed in walls of the body 11 transversely opposite to each other. The holding device 10 is arranged so that each of the lateral bearing shoulders 18 engages simultaneously into the two linear stop systems 19 during the sliding of the rod 12 from the third position to the fourth position. Nonetheless, the number of linear stop systems 19 still may be strictly equal to one. The simultaneous cooperation of the two lateral bearing shoulders 18 with the two linear stop systems 19 is illustrated by Figure 6.

[0041] Each linear stop system 19 is configured so as to control, by driving the blocking notch 17 at the level of its engaged lateral bearing shoulder 18, the passage and the holding of the blocking notch 17 in its retracted configuration during the longitudinal sliding of the rod 12 from the third position to the fourth position. This results in that, during this displacement of the rod 12 according to the second direction S2 from the third position to the fourth position, the blocking notches 17, which are placed and held in their laterally retracted configuration by the effect of the action imparted by each linear stop system 19, do not abut longitudinally against the longitudinal stop abutments 16 delimited by the body 11.

[0042] According to a particular embodiment, the body 11 delimits two openings 20 formed throughout its two lateral faces. Each of the two blocking notches 17 is set in a corresponding one of these two openings 20 when the rod 12 occupies its second position, that is to say when the door leaf adopts its open configuration. When the rod 12 occupies the second position, each blocking notch 17 adopts its deployed configuration and bears longitudinally against the corresponding stop abutment 16 delimited by the body 11 (situation of Figure 7B and Figure 1). The door leaf being attached to the body 11 or to

the rod 12, the weight of the door leaf guarantees the blocking of the blocking notches 17 with respect to the body 11.

[0043] According to a particular embodiment, each blocking notch 17 is integral with the rod 12 and is linked to the rest of the rod 12 thanks to an area forming a hinge 24 for the blocking notch 17 with respect to the rest of the rod 12.

[0044] As shown in Figures 7A to 7C, the body 11 delimits an inner constriction protrusion 21 arranged adjacent to a longitudinal edge of each opening 20 along the longitudinal direction X and cooperating with an upper face of the blocking notch 17 so as to cause a progressive displacement of the blocking notch 17 to its retracted configuration when the rod 12 is displaced from the first position to the second position. The inner constriction protrusion 21 is configured so as to place the blocking notch 17 in its retracted configuration until the rod 12 reaches the second position, the blocking notch 17 being then released by the inner constriction protrusion as soon as the rod 12 reaches the second position during a displacement in the first direction S1. In Figure 7A, the rod 12 is displaced in the first direction S1 by the effect of a force F1 resulting, in turn, from an opening movement of the door leaf so as to displace it from the closed configuration to the open configuration.

[0045] When the second position is reached (Figure 7B), a longitudinal bearing of the blocking notch 17 against the stop abutment 16, resulting from an elastic lateral return of the blocking notch 17 back to its deployed configuration, is obtained after having longitudinally overpassed the inner constriction protrusion 21. By adopting its deployed configuration after having been released by the inner constriction protrusion 21, the blocking notch 17 is set in the corresponding opening 20.

[0046] In practice, the stop abutment 16 may be constituted in particular by the connection area between the inner constriction protrusion 21 and the immediately adjacent opening 20.

[0047] Referring to Figure 7C, the longitudinal edge of each opening 20 which is opposite to the longitudinal edge adjacent to the inner constriction protrusion 21 constitutes a bearing 22 cooperating with the upper face of the blocking notch 17 so as to automatically cause, through the sliding of the rod 12 in the first direction S1 from the second position to the third position, a progressive lateral displacement of the blocking notch 17 from its deployed configuration to a partially retracted configuration intermediate between the deployed configuration and the retracted configuration. This partially retracted configuration is held during the displacement of the rod 12 in the first direction S1 when switching from the second position to the third position. In Figure 7C, the rod 12 is displaced in the first direction by the effect of a force F2 resulting, in turn, from the opening movement of the door leaf so as to displace it from the open configuration to the already mentioned maximum open configuration.

[0048] Conversely, when the rod 12 is displaced in the

second direction S2 so as to switch from the third position to the second position, and even to the fourth position, each blocking notch 17 adopts its retracted configuration as has been already described before because of the presence of the lateral bearing shoulders 18 and the linear stop systems 19.

[0049] It is also specified that each blocking notch 17 adopts its partially retracted configuration when the rod 12 is positioned between the fourth position and the first position, regardless of the sliding direction S1, S2 of the rod 12. In practice, the partially retracted configuration adopted by each blocking notch 17 results from its natural tendency to be elastically biased toward its deployed configuration because of the presence of the area forming a hinge 24, without being able to reach the deployed configuration because of internal contact of the upper face of the blocking notch 17 against one of the lateral faces of the body 11.

[0050] For an effective and progressive operation of each blocking notch 17 on the one hand with the inner constriction protrusion 21 and on the other hand with the bearing 22, the upper face of each blocking notch 17 may advantageously present an inclined profile in the same manner as a cutaway, orientated so as to get close to the inside of the rod 12 along the lateral direction Y by getting close to the distal end of the rod 12. The inner constriction protrusion 21 presents a matching cutaway.

[0051] As shown for example in Figures 4 and 5, the rod 12 comprises at least one stop 23 arranged so as to abut longitudinally against the inner constriction protrusions 21 when the rod 12 occupies its third position in order to block the sliding movement of the rod 12 unidirectionally in the first direction S1.

[0052] Referring now to Figures 2, 3, 7D and 7E, each of the two linear stop systems 19 comprises two linear stops formed in projection toward the inside of the internal passage area 13 so as to delimit two distinct bearing edges 191, 192 extending substantially parallel to each other along the longitudinal direction X and facing each other along the lateral direction Y with a gap 26 interposed therebetween. The cooperation between the lateral bearing shoulder 18 of each of the two blocking notches 17 and each linear stop system 19 results from a lateral contact between this lateral bearing shoulder 18, then positioned in the gap 26, and the corresponding one of the two bearing edges 191, 192.

[0053] For example, the two linear stops constitutive of each linear stop system 19 are in the form of two non-straight walls obtained by cutting and then folding inwardly the internal passage area 13; this is the reason of the presence of the openings 25 in the embodiment of Figures 1 to 7E.

[0054] According to a particular embodiment, each of the two bearing edges 191, 192 of each linear stop system 19 presents a profile progressively converging toward the other one of the two bearing edges 191, 192 of this system by getting close to the first fastening member 14 of the body 11 so that the gap 26 delimited between

the two bearing edges 191, 192 presents a width considered laterally which progressively decreases over at least one portion of the longitudinal length of the bearing edges 191, 192 by getting close to the first fastening member 14 of the body 11 until reaching a minimum value denoted E2. The variation of the lateral width of the gap 26 to pass from the maximum value denoted E1 (at the inlet of the linear stop system 19 when the rod slides in the second direction S2 so as to switch from the third position to the fourth position) down to the minimum value E2 is adapted to control the progressive passage and holding of each of the two blocking notches 17 to its retracted configuration during the passage of the rod 12 from the third position to the fourth position.

[0055] The previously-described holding device 10, whose release is automatically performed by continuing opening the door leaf beyond the open configuration previously held by the holding device 10 itself, is advantageously simple to manufacture and use, is economical and reliable. The blocking means capable of holding the door leaf in the open configuration and their automatic unlocking means are all integrated into the body 11 and into the rod 12, which allows getting rid of assembly operations and reduces the costs. The operation of these blocking means and of their unlocking means is very reliable, freeing from any possible inadvertent jamming.

Claims

1. A holding device (10) for a door leaf, capable of holding a door leaf pivotally movable relative to a support in an open configuration, the holding device (10) comprising a tubular body (11) delimiting an internal passage area (13) and delimiting a first fastening member (14) for pivotally fastening the body (11) on either one of the door leaf and the support, and a rod (12) slidably mounted within the internal passage area (13) along a longitudinal direction (X) and delimiting a second fastening member (15) for pivotally fastening the rod (12) on the other one of the door leaf and the support, the rod (12) being capable of occupying a first retracted position corresponding to a closed configuration of the door leaf with respect to the support and a second partially extended position corresponding to the open configuration of the door leaf with respect to the support, the body (11) internally delimiting at least one longitudinal stop abutment (16) and the rod (12) delimiting at least one blocking notch (17) capable of switching between a laterally retracted configuration and a laterally deployed configuration, the longitudinal sliding of the rod (12) from the first position to the second position automatically placing the blocking notch (17) in its deployed configuration in which the blocking notch (17) bears longitudinally against the stop abutment (16) so as to block unidirectionally the rod (12) longitudinally in its second position and to prevent

the sliding of the rod (12) in the direction of its first position, the rod (12) being capable of occupying a third fully extended position through a longitudinal sliding from the second position in a direction (S1) opposite to the first position, the blocking notch (17) delimiting a lateral bearing shoulder (18) engaging with at least one linear stop system (19) delimited by the body (11) in the internal passage area (13) during a longitudinal sliding of the rod (12) from the third position to a fourth position longitudinally located between the first position and the second position, the linear stop system (19) being configured so as to control, by driving the blocking notch (17) at the level of its lateral bearing shoulder (18), the passage and the holding of the blocking notch (17) in its retracted configuration during said longitudinal sliding of the rod (12) from the third position to the fourth position, and wherein the blocking notch (17) is integral with the rod (12) and is linked to the rest of the rod (12) thanks to an area forming a hinge (24) for the blocking notch (17) with respect to the rest of the rod (12).

2. The holding device (10) according to claim 1, **characterized in that** the body (11) delimits at least one opening (20) formed throughout one of its faces, into which the blocking notch (17) is set when the rod (12) occupies its second position in which the blocking notch (17), occupying its laterally deployed configuration, bears longitudinally against the corresponding stop abutment (16) delimited by the body (11).
3. The holding device (10) according to claim 2, **characterized in that** the body (11) delimits at least one inner constriction protrusion (21) arranged adjacent to a longitudinal edge of said at least one opening (20) along the longitudinal direction (X) and cooperating with an upper face of the blocking notch (17) so as to cause a progressive displacement of the blocking notch (17) to its retracted configuration when the rod (12) is displaced from the first position to the second position.
4. The holding device (10) according to claim 3, **characterized in that** said at least one stop abutment (16) is constituted by a junction area between said at least one inner constriction protrusion (21) and said at least one opening (20).
5. The holding device (10) according to any one of claims 3 or 4, **characterized in that** the longitudinal edge of said at least one opening (20) which is opposite to the inner constriction protrusion (21) constitutes a bearing (22) cooperating with the upper face of the blocking notch (17) so as to automatically cause, through the sliding of the rod (12) from the second position to the third position, a progressive

displacement of the blocking notch (17) from its deployed configuration to a partially retracted configuration intermediate between the deployed configuration and the retracted configuration.

6. The holding device (10) according to any one of claims 3 to 5, **characterized in that** the rod (12) comprises at least one stop (23) arranged so as to abut longitudinally against said at least one inner constriction protrusion (21) delimited by the body (11) when the rod (12) occupies its third position and to block the sliding movement of the rod (12) unidirectionally in a direction (S1) opposite to the direction (S2) allowing sliding to the second position.
7. The holding device (10) according to any one of claims 1 to 6, **characterized in that** the rod (12) delimits two independent blocking notches (17) arranged on two opposite lateral faces of the rod (12) and **in that** said at least one linear stop system (19) comprises two linear stops formed in projection toward the inside of the internal passage area (13) so as to delimit two distinct bearing edges (191, 192) extending substantially parallel to each other along the longitudinal direction (X) and facing each other laterally with a gap (26) interposed therebetween, the cooperation between the lateral bearing shoulder (18) of each of the two blocking notches (17) and said at least one linear stop system (19) resulting from a lateral contact between the lateral bearing shoulder (18) of this blocking notch positioned in the gap (26) and the corresponding one of the two bearing edges (191, 192).
8. The holding device (10) according to claim 7, **characterized in that** each of the two bearing edges (191, 192) presents a profile progressively converging toward the other one of the two bearing edges (191, 192) by getting close to the first fastening member (14) of the body (11) so that the gap (26) delimited between the two bearing edges (191, 192) presents a lateral width progressively decreasing over at least one portion of the longitudinal length of the bearing edges (191, 192) by getting close to the first fastening member (14) of the body (11) until reaching a minimum value (E2), the variation of the lateral width of the gap (26) to the minimum value (E2) being adapted to control the progressive passage and holding of each of the two blocking notches (17) to its retracted configuration during the passage of the rod (12) from the third position to the fourth position.
9. An arrangement comprising a support, a door leaf pivotally movable relative to the support so as to switch between at least a closed configuration and an open configuration and at least one holding device (10) according to any one of the preceding claims whose first fastening member (14) delimited

by the body (11) is pivotally fastened on either one of the door leaf and the support and whose second fastening member (15) delimited by the rod (12) is fastened on the other one of the door leaf and the support.

Patentansprüche

1. Haltevorrichtung (10) für einen Türflügel, die zum Halten eines Türflügels imstande ist, der in Bezug auf eine Halterung in eine offene Konfiguration schwenkbeweglich ist, wobei die Haltevorrichtung (10) einen röhrenförmigen Körper (11) umfasst, der einen Innendurchgangsbereich (13) begrenzt und ein erstes Befestigungsorgan (14) zum schwenkbaren Befestigen des Körpers (11) an dem einen von dem Türflügel und der Halterung, und eine Stange (12), die innerhalb des Innendurchgangsbereichs (13) entlang einer Längsrichtung (X) verschiebbar montiert ist, und ein zweites Befestigungsorgan (15) zum schwenkbaren Befestigen der Stange (12) an dem anderen von dem Türflügel und der Halterung, wobei die Stange (12) in der Lage ist, eine erste eingezogene Position, die einer geschlossenen Konfiguration des Türflügels in Bezug auf die Halterung entspricht, und eine zweite, teilweise ausgefahrene Position einzunehmen, die der offenen Konfiguration des Türflügels in Bezug auf die Halterung entspricht, wobei der Körper (11) intern mindestens einen Längsstoppanschlag (16) begrenzt und die Stange (12) mindestens eine Blockierkerbe (17) begrenzt, die in der Lage ist, zwischen einer seitlich eingezogenen Konfiguration und einer seitlich ausgefahrenen Konfiguration zu wechseln, wobei die Längsverschiebung der Stange (12) von der ersten Position in die zweite Position die Blockierkerbe (17) automatisch in ihre ausgefahrene Konfiguration platziert, in der die Blockierkerbe (17) längs am Stoppanschlag (16) anliegt, um die Stange (12) in einer Richtung längs in ihrer zweiten Position zu blockieren, und die Verschiebung der Stange (12) in die Richtung ihrer ersten Position zu verhindern, wobei die Stange (12) in der Lage ist, eine dritte, voll ausgefahrene Position durch eine Längsverschiebung von der zweiten Position in einer Richtung (S1) entgegengesetzt zur ersten Position einzunehmen, wobei die Blockierkerbe (17) eine seitliche Lagerschulter (18) begrenzt, die in mindestens ein lineares Stoppsystem (19) eingreift, das durch den Körper (11) in dem Innendurchgangsbereich (13), während einer Längsverschiebung der Stange (12) von der dritten Position in eine vierte Position, begrenzt wird, die sich längs zwischen der ersten Position und der zweiten Position befindet, wobei das lineare Stoppsystem (19) konfiguriert ist, um durch Antreiben der Blockierkerbe (17) auf die Stufe ihrer seitlichen Lagerschulter (18) den Durchgang und das Halten der

Blockierkerbe (17) während der Längsverschiebung der Stange (12) von der dritten Position in die vierte Position in ihrer eingezogenen Konfiguration zu steuern, und wobei die Blockierkerbe (17) in einem Stück mit der Stange (12) ist, und dank eines ein Scharnier (24) für die Blockierkerbe (17) in Bezug auf den Rest der Stange (12) bildenden Bereichs mit dem Rest der Stange (12) verbunden ist.

2. Haltevorrichtung (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Körper (11) mindestens eine Öffnung (20) begrenzt, die durch eine ihrer Seiten hindurch gebildet ist, in die die Blockierkerbe (17) gesetzt wird, wenn die Stange (12) ihre zweite Position einnimmt, in der die Blockierkerbe (17), die ihre seitlich ausgefahrene Konfiguration einnimmt, längs am Stoppanschlag (16) anliegt, der durch den Körper (11) begrenzt wird.
3. Haltevorrichtung (10) nach Anspruch 2, **dadurch gekennzeichnet, dass** der Körper (11) mindestens einen Innenverengungsvorsprung (21) begrenzt, der angrenzend an eine Längskante der mindestens einen Öffnung (20) entlang der Längsrichtung (X) angeordnet ist und mit einer Oberseite der Blockierkerbe (17) zusammenwirkt, um eine progressive Verschiebung der Blockierkerbe (17) in deren eingezogene Konfiguration zu bewirken, wenn die Stange (12) von der ersten Position in die zweite Position verschoben wird.
4. Haltevorrichtung (10) nach Anspruch 3, **dadurch gekennzeichnet, dass** der mindestens einen Stoppanschlag (16) durch einen Anschlussbereich zwischen dem mindestens einen Innenverengungsvorsprung (21) und der mindestens einen Öffnung (20) gebildet wird.
5. Haltevorrichtung (10) nach einem der Ansprüche 3 oder 4, **dadurch gekennzeichnet, dass** die Längskante der mindestens einen Öffnung (20), die sich entgegengesetzt zum Innenverengungsvorsprung (21) befindet, ein Lager (22) bildet, das mit der Oberseite der Blockierkerbe (17) zusammenwirkt, um automatisch, durch das Verschieben der Stange (12) von der zweiten Position in die dritte Position eine progressive Verschiebung der Blockierkerbe (17) von ihrer ausgefahrenen Konfiguration in eine teilweise eingezogene Konfiguration, zwischenliegend zwischen der ausgefahrenen Konfiguration und der eingezogenen Konfiguration zu bewirken.
6. Haltevorrichtung (10) nach einem der Ansprüche 3 bis 5, **dadurch gekennzeichnet, dass** die Stange (12) mindestens einen Stopp (23) umfasst, der angeordnet ist, um längs an den mindestens einen Innenverengungsvorsprung (21) anzuliegen, der durch den Körper (11) begrenzt wird, wenn die Stan-

ge (12) ihre dritte Position einnimmt, und die Verschiebewegung der Stange (12) unidirektional, in einer Richtung (S1) entgegengesetzt zur Richtung (S2) zu blockieren, die ein Verschieben in die zweite Position erlaubt.

7. Haltevorrichtung (10) nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die Stange (12) zwei unabhängige Blockierkerben (17) begrenzt, die an zwei entgegengesetzten seitlichen Seiten der Stange (12) angeordnet sind, und dadurch, dass das mindestens eine lineare Stoppsystem (19) zwei lineare Stopps umfasst, die zur Innenseite des Innendurchgangsbereichs (13) vorspringend gebildet sind, um zwei getrennte Lagerkanten (191, 192) zu begrenzen, die sich im Wesentlichen parallel zueinander, entlang der Längsrichtung (X) erstrecken, und einander seitlich, mit einer dazwischen eingezogenen Lücke (26), zugewandt sind, wobei das Zusammenwirken zwischen der seitlichen Lagerschulter (18) jeder der beiden Blockierkerben (17) und dem mindestens einen linearen Stoppsystem (19) aus einem seitlichen Kontakt zwischen der seitlichen Lagerschulter (18) dieser Blockierkerbe, die in der Lücke (26) positioniert ist, und der entsprechenden der beiden Lagerkanten (191, 192) resultiert.
8. Haltevorrichtung (10) nach Anspruch 7, **dadurch gekennzeichnet, dass** jede der beiden Lagerkanten (191, 192) ein Profil aufweist, das progressiv zur anderen der beiden Lagerkanten (191, 192) zusammenläuft, dem ersten Befestigungsorgan (14) des Körpers (11) nahekommend, sodass die Lücke (26), die zwischen den beiden Lagerkanten (191, 192) begrenzt wird, eine seitliche Breite aufweist, die progressiv über mindestens einen Abschnitt der länglichen Länge der Lagerkanten (191, 192) abnimmt, indem sie dem ersten Befestigungsorgan (14) des Körpers (11) nahekommend, bis ein Mindestwert (E2) erreicht wird, wobei die Variation der seitlichen Breite der Lücke (26) zum Mindestwert (E2) ausgeführt ist, um den progressiven Durchgang und das Halten jeder der beiden Blockierkerben (17) in ihrer eingezogenen Konfiguration während des Durchgangs der Stange (12) von der dritten Position in die vierte Position zu steuern.
9. Anordnung, umfassend eine Halterung, einen Türflügel, der in Bezug auf eine Halterung schwenkbar beweglich ist, um zwischen mindestens einer geschlossenen Konfiguration und einer offenen Konfiguration zu wechseln, und mindestens eine Haltevorrichtung (10) nach einem der vorstehenden Ansprüche, deren erstes Befestigungsorgan (14), das von dem Körper (11) begrenzt wird, schwenkbar an dem einen von dem Türflügel und der Halterung befestigt ist und deren zweites Befestigungsorgan (15),

das von der Stange (12) begrenzt wird, an dem anderen von dem Türflügel und der Halterung befestigt ist.

Revendications

1. Dispositif de maintien (10) pour un vantail de porte, apte à maintenir un vantail de porte mobile de manière pivotante par rapport à un support dans une configuration ouverte, le dispositif de maintien (10) comprenant un corps tubulaire (11) délimitant une zone de passage interne (13) et délimitant un premier élément de fixation (14) pour fixer de manière pivotante le corps (11) sur l'un du vantail de porte et du support, et une tige (12) montée de manière coulissante dans la zone de passage interne (13) le long d'une direction longitudinale (X) et délimitant un deuxième élément de fixation (15) pour fixer de manière pivotante la tige (12) sur l'autre du vantail de porte et du support, la tige (12) étant apte à occuper une première position rétractée correspondant à une configuration fermée du vantail de porte par rapport au support et une deuxième position partiellement étendue correspondant à la configuration ouverte du vantail de porte par rapport au support, le corps (11) délimitant intérieurement au moins une butée d'arrêt longitudinale (16) et la tige (12) délimitant au moins une encoche de blocage (17) apte à basculer entre une configuration latéralement rétractée et une configuration latéralement déployée, le coulisement longitudinal de la tige (12) de la première position à la deuxième position plaçant automatiquement l'encoche de blocage (17) dans sa configuration déployée dans laquelle l'encoche de blocage (17) prend longitudinalement appui contre la butée d'arrêt (16) de manière à bloquer de façon unidirectionnelle la tige (12) longitudinalement dans sa deuxième position et pour empêcher le coulisement de la tige (12) dans la direction de sa première position, la tige (12) étant apte à occuper une troisième position complètement étendue par coulisement longitudinal depuis la deuxième position dans une direction (S1) opposée à la première position, l'encoche de blocage (17) délimitant un épaulement d'appui latéral (18) s'engageant avec au moins un système d'arrêt linéaire (19) délimité par le corps (11) dans la zone de passage interne (13) lors d'un coulisement longitudinal de la tige (12) de la troisième position à une quatrième position située longitudinalement entre la première position et la deuxième position, le système d'arrêt linéaire (19) étant configuré de manière à commander, par entraînement de l'encoche de blocage (17) au niveau de son épaulement d'appui latéral (18), le passage et le maintien de l'encoche de blocage (17) dans sa configuration rétractée lors dudit coulisement longitudinal de la tige (12) de la troisième position à la quatrième position, et

où l'encoche de blocage (17) est solidaire de la tige (12) et est liée au reste de la tige (12) grâce à une zone formant charnière (24) pour l'encoche de blocage (17) par rapport au reste de la tige (12).

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2. Dispositif de maintien (10) selon la revendication 1, **caractérisé en ce que** le corps (11) délimite au moins une ouverture (20) ménagée à travers l'une de ses faces, dans laquelle l'encoche de blocage (17) est définie lorsque la tige (12) occupe sa deuxième position dans laquelle l'encoche de blocage (17), occupant sa configuration latéralement déployée, prend longitudinalement appui contre la butée d'arrêt correspondante (16) délimitée par le corps (11).
3. Dispositif de maintien (10) selon la revendication 2, **caractérisé en ce que** le corps (11) délimite au moins une saillie de rétrécissement interne (21) agencée de manière adjacente à un bord longitudinal de ladite au moins une ouverture (20) le long de la direction longitudinale (X) et coopérant avec une face supérieure de l'encoche de blocage (17) de manière à provoquer un déplacement progressif de l'encoche de blocage (17) vers sa configuration rétractée lorsque la tige (12) est déplacée de la première position à la deuxième position.
4. Dispositif de maintien (10) selon la revendication 3, **caractérisé en ce que** ladite au moins une butée d'arrêt (16) est constituée par une zone de jonction entre ladite au moins une saillie de rétrécissement interne (21) et ladite au moins une ouverture (20).
5. Dispositif de maintien (10) selon l'une quelconque des revendications 3 et 4, **caractérisé en ce que** le bord longitudinal de ladite au moins une ouverture (20) qui est opposé à la saillie de rétrécissement interne (21) constitue un palier (22) coopérant avec la face supérieure de l'encoche de blocage (17) de manière à provoquer automatiquement, par coulisement de la tige (12) de la deuxième position à la troisième position, un déplacement progressif de l'encoche de blocage (17) de sa configuration déployée vers une configuration partiellement rétractée intermédiaire entre la configuration déployée et la configuration rétractée.
6. Dispositif de maintien (10) selon l'une quelconque des revendications 3 à 5, **caractérisé en ce que** la tige (12) comprend au moins un élément d'arrêt (23) agencé de manière à venir longitudinalement en butée contre ladite au moins une saillie de rétrécissement interne (21) délimitée par le corps (11) lorsque la tige (12) occupe sa troisième position et de manière à bloquer le mouvement de coulisement de la tige (12) de façon unidirectionnelle dans une direction (S1) opposée à la direction (S2) permettant le coulisement vers la deuxième position.

7. Dispositif de maintien (10) selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** la tige (12) délimite deux encoches de blocage indépendantes (17) agencées sur deux faces latérales opposées de la tige (12) et **en ce que** ledit au moins un système d'arrêt linéaire (19) comprend deux éléments d'arrêt linéaires formés en saillie vers la partie intérieure de la zone de passage interne (13) de manière à délimiter deux bords d'appui distincts (191, 192) s'étendant sensiblement parallèlement l'un à l'autre le long de la direction longitudinale (X) et se faisant face latéralement avec un espace (26) interposé entre eux, la coopération entre l'épaule d'appui latéral (18) de chacune des deux encoches de blocage (17) et ledit au moins un système d'arrêt linéaire (19) résulte d'un contact latéral entre l'épaule d'appui latéral (18) de cette encoche de blocage positionnée dans l'espace (26) et le bord d'appui correspondant des deux bords d'appui (191, 192).
8. Dispositif de maintien (10) selon la revendication 7, **caractérisé en ce que** chacun des deux bords d'appui (191, 192) présente un profil convergeant progressivement vers l'autre des deux bords d'appui (191, 192) en se rapprochant du premier élément de fixation (14) du corps (11) de sorte que l'espace (26) délimité entre les deux bords d'appui (191, 192) présente une largeur latérale progressivement décroissante sur au moins une partie de la longueur longitudinale des bords d'appui (191, 192) en se rapprochant du premier élément de fixation (14) du corps (11) jusqu'à atteindre une valeur minimale (E2), la variation de la largeur latérale de l'espace (26) jusqu'à la valeur minimale (E2) étant adaptée pour commander le passage progressif et le maintien de chacune des deux encoches de blocage (17) dans sa configuration rétractée lors du passage de la tige (12) de la troisième position à la quatrième position.
9. Agencement comprenant un support, un vantail de porte mobile de manière pivotante par rapport au support de manière à basculer entre au moins une configuration fermée et une configuration ouverte et au moins un dispositif de maintien (10) selon l'une quelconque des revendications précédentes dont le premier élément de fixation (14) délimité par le corps (11) est fixé de manière pivotante sur l'un du vantail de porte et du support et dont le deuxième élément de fixation (15) délimité par la tige (12) est fixé sur l'autre du vantail de porte et du support.

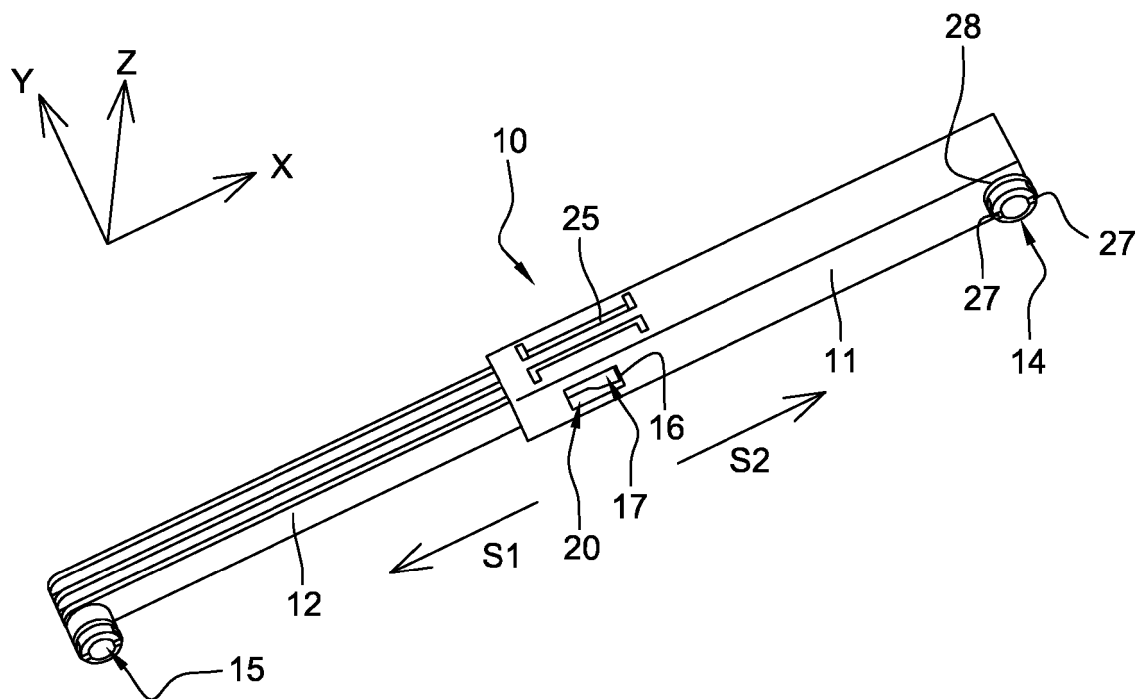


Fig. 1

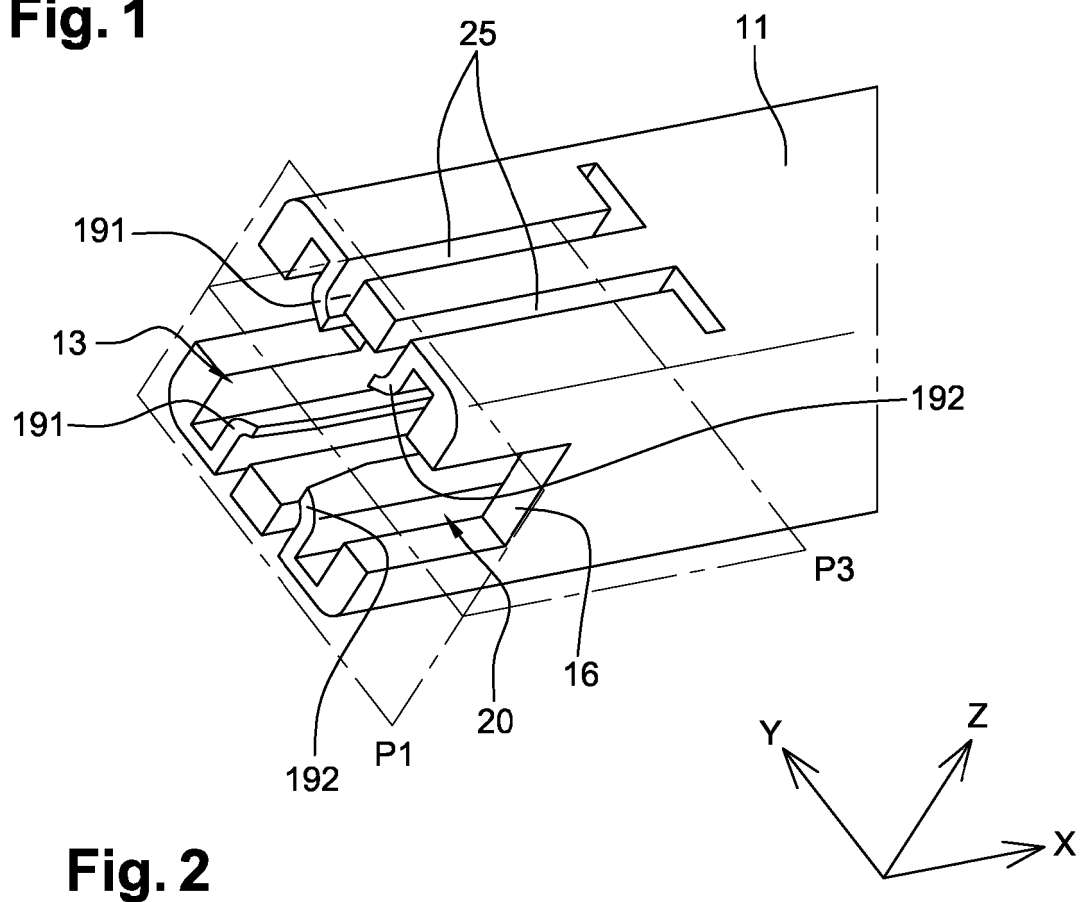


Fig. 2

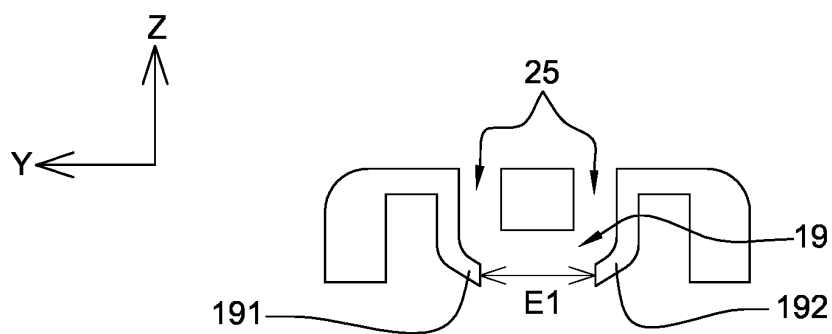


Fig. 3

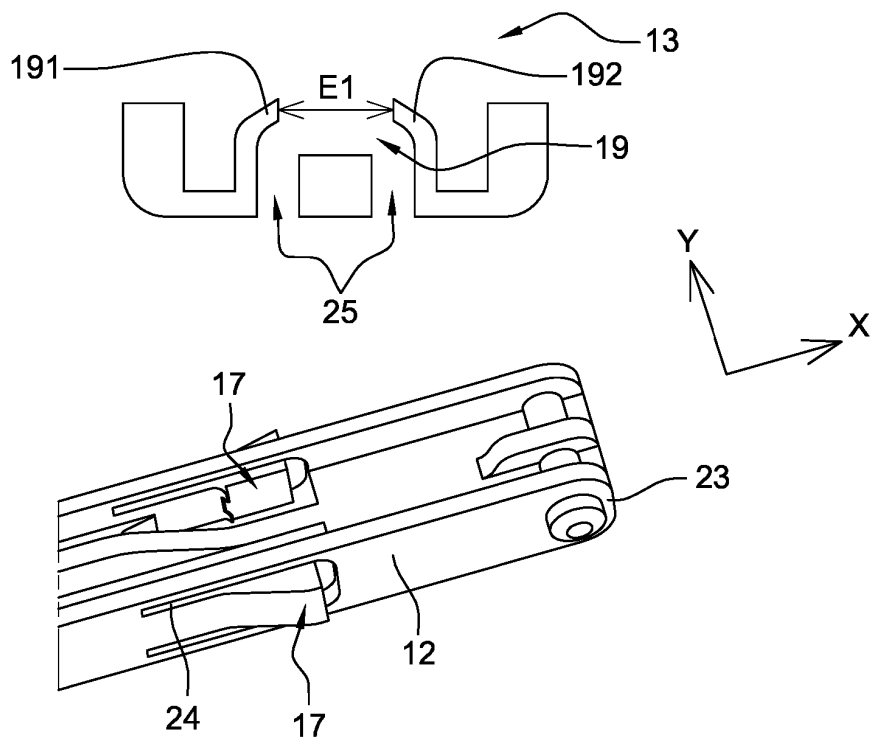


Fig. 4

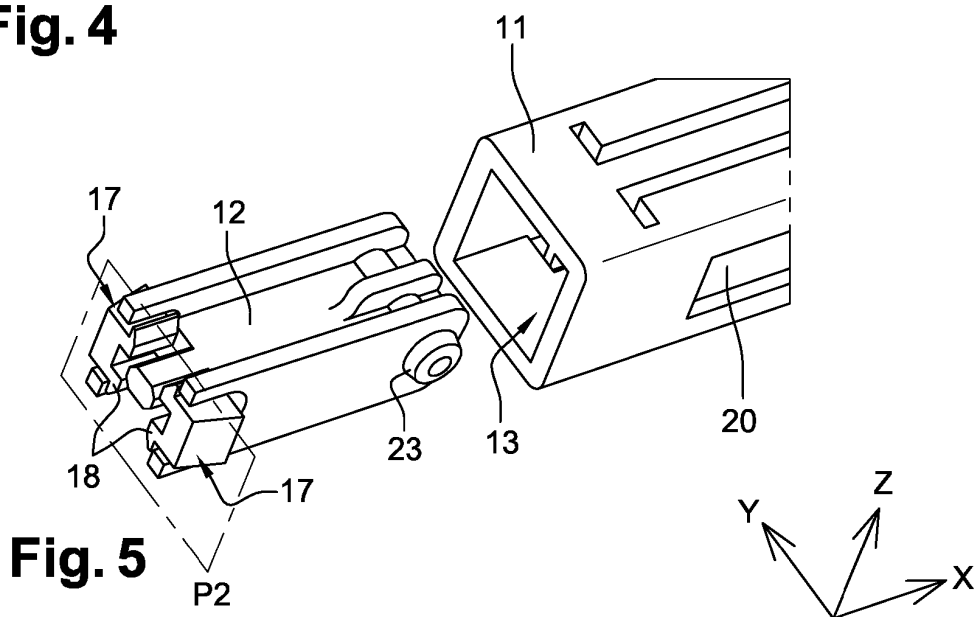


Fig. 5

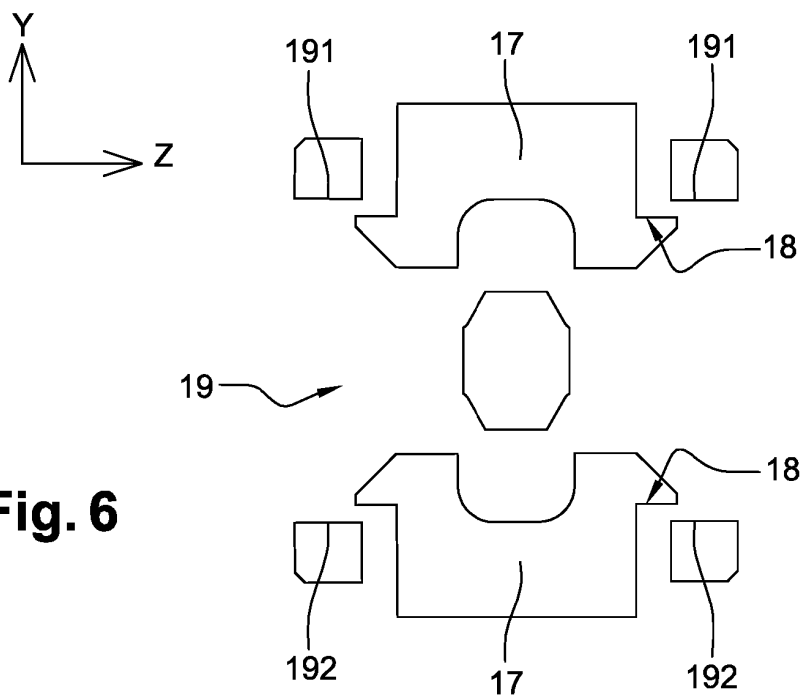


Fig. 6

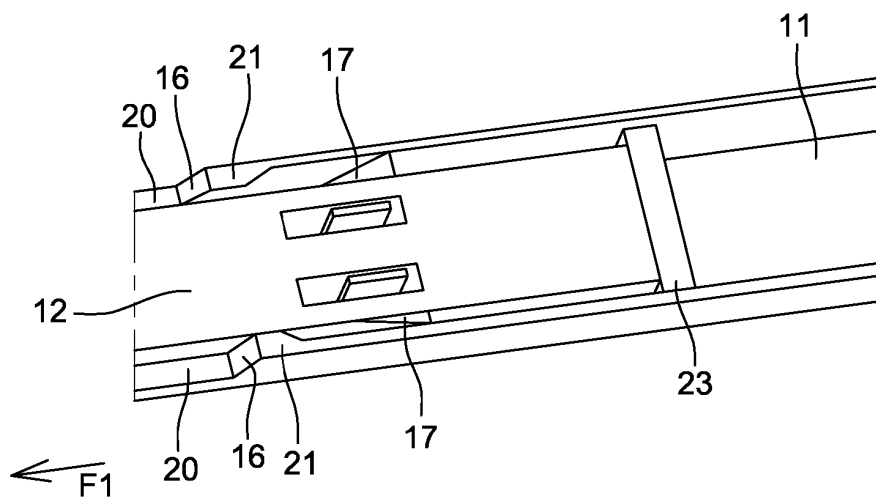


Fig. 7A

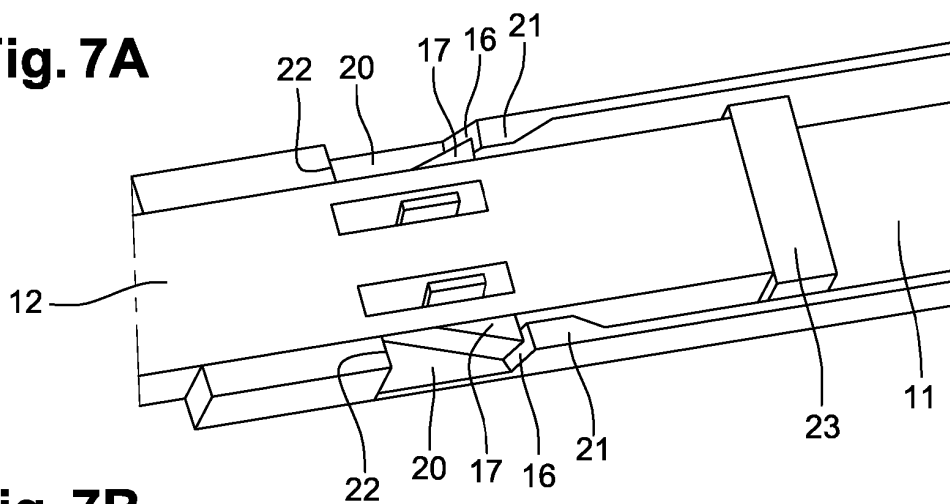


Fig. 7B

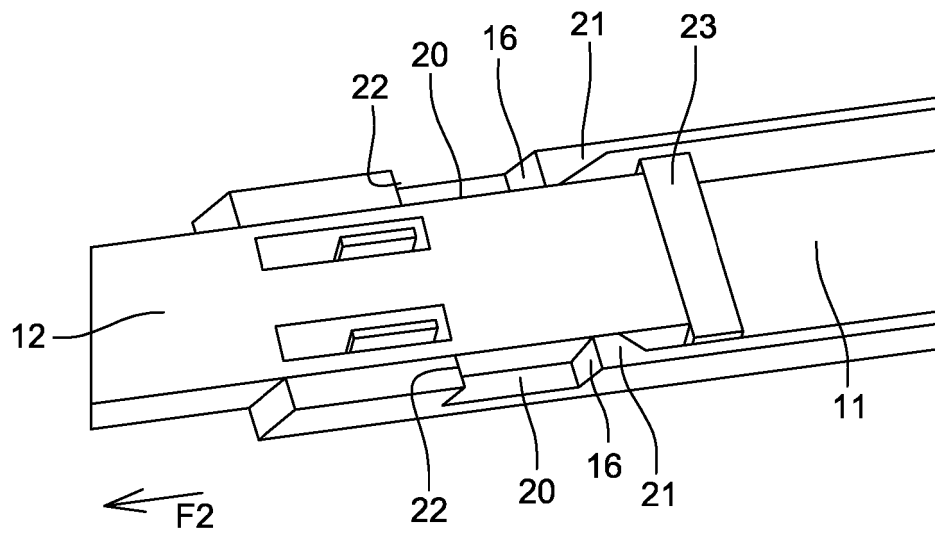


Fig. 7C

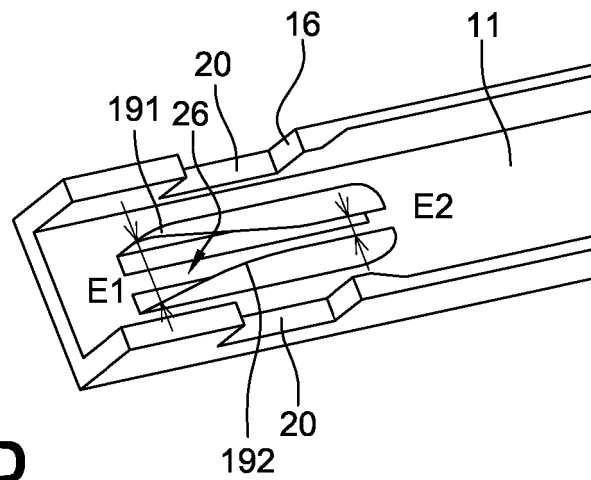


Fig. 7D

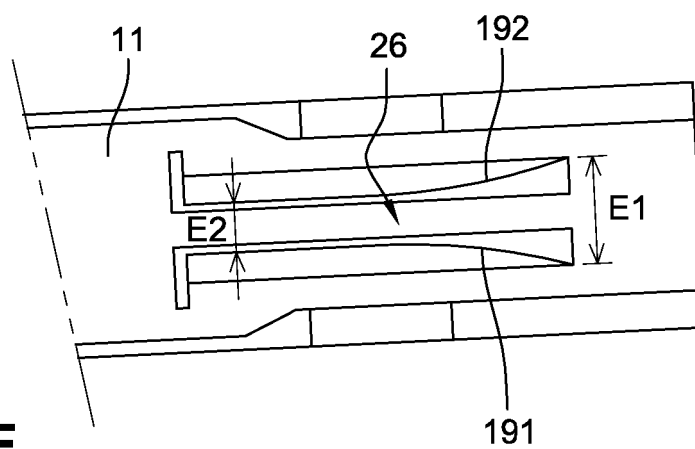


Fig. 7E

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 2566182 A [0007]
- DE 2340912 A1 [0008]