(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 985 220 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
15.05.2024 Bulletin 2024/20

(21) Application number: **21202248.7**

(22) Date of filing: **12.10.2021**

(51) International Patent Classification (IPC):
E06B 7/20 *(2006.01)* ***E06B 7/21*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E06B 7/21; E06B 7/20

(54) **MOVABLE DOOR LEAF SEALING STRIP ASSEMBLY AND A DOOR LEAF WITH THIS ASSEMBLY**

BEWEGBARE TÜRBLATTDICHTUNGSSTREIFENANORDNUNG UND TÜRBLATT MIT DIESER ANORDNUNG

ENSEMBLE DE BANDE D'ÉTANCHÉITÉ MOBILE POUR BATTANT DE PORTE ET BATTANT DE PORTE AVEC CET ENSEMBLE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **13.10.2020 CZ 20200558**

(43) Date of publication of application:
20.04.2022 Bulletin 2022/16

(73) Proprietor: **Göndör, René**
34022 Chudenin (CZ)

(72) Inventor: **Göndör, René**
34022 Chudenin (CZ)

(74) Representative: **Zmeskal, Lukas**
Langrova, s.r.o
Skrétova 1011/48
301 00 Plzen (CZ)

(56) References cited:
CN-A- 110 397 387
DE-A1- 2 657 279
DE-C- 592 020
DE-U1- 29 720 978
JP-A- H1 096 380

EP 3 985 220 B1

Description

Field of the invention

[0001] The present invention relates to the field of construction engineering, in particular to the means for barrier-free sealing of space under door.

Background of the invention

[0002] For sealing of the space under closed door, i.e., between a door leaf and a floor, a so-called doorsill is currently used in many variations. The door sill is an object of which one horizontal dimension is substantially larger than the other horizontal dimension and height.

[0003] A standard design is a fixed doorsill attached to the floor in the space of a door frame, i.e., in the place where the closed door is located. A disadvantage is that for operation as intended, it is protrudes from the floor, makes the cross-section of the door frame smaller, and causes unevenness of the floor. This is in particular troublesome for immobile people (wheel-chair bound people, hospital beds, and more), however, they may be annoying for walking people as well.

[0004] Alternatively, the bottom of the door leaf may be provided with a sealing strip, preferably vertically movable so that it responds to unevenness of the floor when opening of the door leaf. The sealing strip may comprise a flexible material or a brush. A disadvantage being common to all these designs is the rugging against the floor when the door leaf moves. The floor surface damage may result.

[0005] Another possibility for sealing of the space under the door is a movable doorsill sunk inside the floor in the door area. The door sill may be controlled by the door to change its height depending on whether the door leaf is open or closed. This is known e.g., from DE 102017101559 A1 and DE 102017101553 A1. A disadvantage of the design is the necessity of the floor modifications in order to allow sinking of the door sill height change mechanism. Despite reduced door sill height when the door is open, there is a protruding element in the form of a sealing strip or partially protruding door sill. Hence, this is not a pure barrier-free solution. Any gap between the movable components undesirably traps impurities, as well as it is sensitive to ingression of water during the floor wiping, and more. Alternatively, a movable strip sunk directly into the door leaf may be used, which lift up from the floor after the door is open and moved away from the door frame. For example, this solution is known from EP 3699386. A mechanism disclosed herein comprises a vertically movable sealing strip of which movement is controllable by a push bar ending in a vertical edge of a door leaf by a door frame. When the door leaf is partially open, a gap between the door leaf and the door frame is created into which the push bar is shifted by a spring. The sealing strip is hereby lifted from the floor and free movement of the door leaf is possible. When closing the door leaf, nearing to the door frame causes pushing of the push bar, and hence lowering of the sealing strip onto the floor still before full closing of the door leaf. A disadvantage is in particular late lifting of the sealing strip only after partial opening of the door leaf, which results in shear movement of the sealing strip on the floor by the door leaf being open. The floor damage may result. It is impossible to arrest the door leaf at any angle of opening without an additional device. Most often, a small separate retention braking piston (usually controlled by foot), which is pushed towards the floor, and which can be released again by foot, is used for arresting of a door leaf in a partially open position.

[0006] A similar design is known from CN 211573297U. The door leaf disclosed therein is also provided with a movable sealing strip. It uses a distance sensor that detects in real time if objects are near a door leaf. If yes, a microprocessor instructs an electric motor to make a move to lower the sealing strip automatically. Lowering of the sealing strip onto the floor occurs only if the distance sensor detects that the object, which is normally a door frame, is nearby. The disclosed sealing strip is capable of arresting the door in a given place only if the door is closed in the door frame. If the door leaf is open, the distance sensor detects no present object (the door frame), and the sealing strip is in its upper position.

[0007] DE 3037805A1 discloses a system for closing of a door or window leaf with a full-perimeter sealing. The system is adapted to push a seal to a door frame or a window frame after the door leaf or the window leaf is closed. However, it does not deal with arresting of the door leaf or window leaf open.

[0008] DE 592020C discloses a door lock which acts by means of a pulling means on a liftable and lowerable sealing strip arranged in a door. The door lock consists of a door handle which, when the door is opened, presses a disengaging lever arranged on its shaft against a casing surrounding the shaft, whereby the lock opener attached to the casing is moved. The lock opener thereby rests against the bent bridge of the lock latch, causing the latch to be retracted and the lock to be opened. The lock latch is toothed on the underside and is in engagement with a gear wheel, on the shaft of which a drum is fastened which receives the pulling means leading to the sealing strip. During its inward movement, the lock latch causes the gear wheel to rotate, as a result of which the traction means fastened to the drum is wound onto the drum. The traction means consisting of wire is attached to a U-shaped rail which accommodates a sealing strip.

[0009] DE 2657279A1 discloses sealing device for door suitable for sealing gaps between the lower edge of the door and the floor of a large height, namely of about 30 mm and more. The device comprises a rotating body (latch) to which one end of the tension member is attached. The rotating body is under the action of a latching device (catch) which locks it in its two positions, namely the sealing position and the ventilation position. The ro-

tating body has a handle part on one side of the door leaf with which it can be twisted by hand.

[0010] DE 29720978U1 discloses a device for locking door in any desired angle. The device comprises locking rail which is integrated in the floor-side region of the door. It can be lowered from an inactive position without floor contact into an active locking position with floor contact. The device further comprises a movement mechanism for lowering the locking rail at any door angle position towards the floor into the active locking position and for raising it into the inactive position, and an actuating device for actuating the movement mechanism. Furter documents being at least partially relevant to the present invention are disclosed in JPH 1096380A and CN 110397387A.

Summary of the invention

[0011] Disclosed is a movable sealing strip assembly for attaching to a door leaf. In the basic embodiment, the assembly includes a bottom mechanism adapted for attachment to bottom portion of a door leaf. As used herein, a bottom portion refers to the bottom half of a door leaf; obviously, the lower the bottom mechanism is attached to the door leaf, the better. The bottom mechanism comprises at least one movable sealing strip being movable between an upper position and a lower position. The sealing strip is an elongated member, preferably provided at least on its bottom side with a soft ribbon (seal). When in lower position, the sealing strip rests on the floor and seals the gap under the door leaf. When in upper position, the sealing strip is not in contact with the floor, the gap under the door leaf is free, and the sealing strip does not hinder the door leaf from movement.

[0012] Additionally, the assembly includes at least one guiding element for vertical guiding of the movable sealing strip movement. The movable sealing strip is adapted to vertical movement in the bottom mechanism. Further, the assembly includes a technical means for temporary lifting up the movable sealing strip from the lower position before opening of the door leaf. The technical means include a cable. It is essential that the means can be mounted on the door leaf with the bottom mechanism and that it is capable of lifting the sealing strip up from the lower position before opening of the door leaf and releasing after closing of the door leaf so that repeated and repeatable return of the sealing strip to the lower position is allowed. Temporary lifting of the movable sealing strip up occurs upon user's instruction by pressing the door handle.

[0013] Further, the assembly includes an upper mechanism being controllable by a door handle. The door handle is linked with a latch tab. Depending on an embodiment the upper mechanism may be a standard mechanism of the door handle controlling the latch tab on the vertical edge of the door leaf to latch inside the door frame, or a second (blind) door leaf. Alternatively, the upper mechanism may be in a form of a mechanism added to said door handle standard mechanism. As used herein, the upper mechanism refers also to a small lever and gears of the mechanism for arresting of the second (blind) door leaf. In this case, the latch tab may be located both in the upper and lower horizontal edge of the door leaf.

[0014] The door handle is mechanical, movable (rotary, compressible, etc.). The door handle has a closed position where the door is not opened by the user. It means that no force is acting on the door handle towards pressing of the door handle and releasing of the latch tab, and the door handle is in rest (usually upper) position. Additionally, the door handle has an open position that occurs after the user presses the door handle. The latch tab is released in the open position. The mechanical door handles have a travel between closed and open position during which the latch tab moves (releases). Thereby, the latch tab is no longer located in the rest closed position which it has in case of the door handle closed position. At the same time, no such change to its position still occurs so that it is released and the door leaf could open. The extent of protection is not limited to the present representative listing of possible embodiments of the upper mechanism, door handle, and latch tab.

[0015] The technical means for lifting the movable sealing strip up from the lower position before opening of the door leaf includes a lifting element linking the upper mechanism and/or door handle with the bottom mechanism to transfer an impulse from the door handle to the movable sealing strip. In particular, the impulse of the mechanical movable (rotary, compressible, etc.) door handle is a move.

[0016] The assembly is made so that the upper mechanism includes a pulley controllable (rotary) by the door handle move. At least on a part of its perimeter, the pulley is provided with a groove. At least first cord is temporarily placed inside the groove. It is not essential whether the cord upper end is attached to the pulley. It is only essential that the cord is wound or unwound when the pulley rotates. The first cord bottom end is attached to the movable sealing strip so that it forms a lifting element. Thereby, slight rotation of the pulley winds the cord and the movable sealing strip lifts up, and vice versa.

[0017] The first cord may be attached to the first half of the movable sealing strip length to adjust height of the movable sealing strip ends. The second cord is then attached to the other half of the movable sealing strip length. At least temporarily, the second cord is placed inside the pulley groove. Or, the second cord may be attached to the first cord above the movable sealing strip. The second cord and the first cord form the lifting element together. This permits independent adjustment of the movable sealing strip ends height with change to cable lengths, e.g., when there is an uneven floor in the door area.

[0018] Further, the assembly includes a technical means for arresting of the movable sealing strip in the upper position. The means for arresting of the movable

sealing strip in the upper position permits a repeated movement of the door leaf without said movement being hindered by rubbing of the movable sealing strip against the floor. The means for arresting of the movable sealing strip includes a convex structure with a spring. The pulley is provided with a concave structure on its surface. The convex structure is arranged for spontaneous fitting in the concave structure of the pulley being just slightly rotated by the door handle. Further, the assembly includes a releasing element linked to the technical means for arresting of the movable sealing strip. The releasing element serves to releasing of the technical means for arresting of the movable sealing strip and hence, to spontaneous lowering of the movable sealing strip from the upper position to the lower position. The door leaf is arrested thereby in a specified open position. Similarly, the releasing element is used for closing of the door leaf when the movable sealing strip is lowered to the lower position, and thereby the gap under the closed door leaf is sealed. Preferably, the releasing element may be located in the same edge of the door leaf as the latch tab is. The releasing element may be an integrated component of the technical means for arresting of the movable sealing strip.

[0019] The releasing element may comprise or may be controlled by the door handle, and it may be a part of the upper mechanism. Said solution applies e.g., in a structure where the concave structure of the pulley is a pit, and the convex structure of the technical means for arresting of the movable sealing strip is a ball. The ball is arranged for spontaneous fitting into the pit of the pulley just slightly rotated by the door handle. A spring may push the ball to outer periphery of the pulley that may rotate despite pressure generated by the ball in correspondence to the door handle motion. Shifting of the door handle to open position and lifting the movable sealing strip up results in positioning of the pulley pit against the ball. Owing to force generated by the spring, the ball fits in the pit and prevents from slight rotation of the pulley back and dropping of the movable sealing strip to default lower position. When the user desires to lower the movable sealing strip to the lower position, the reverse door handle move from open to closed position rotates reversely the pulley and shifts the pit outside the ball. The force applied by the user when moving the door handle from open to closed position suffices for pulling of the ball against the spring force, and thereby releasing of the technical means for arresting of the movable sealing strip.

[0020] In another embodiment, the concave structure of the pulley may be a notch. Preferably, the notch may be perpendicular to the groove on the outer periphery of the pulley. In this case, the convex structure of the technical means for arresting of the movable sealing strip is a latch. The latch is arranged for spontaneous fitting into the notch of the pulley just slightly rotated by the door handle. In particular, the latch may be arranged tangentially towards the pulley. A spring may push the latch to outer periphery of the pulley that may rotate despite pressure generated by the latch in correspondence to the door handle motion. Shifting of the door handle to open position and lifting the movable sealing strip up results in positioning of the pulley notch against the latch. Owing to force generated by the spring, the latch fits in the notch and prevents from slight rotation of the pulley back and dropping of the movable sealing strip to default lower position.

[0021] The assembly further includes a technical means for mechanical illustration of the door handle position in the area between the latch tab release position and the retention position of the technical means for arresting of the movable sealing strip. It is essential that the door handle position between said positions is illustrated, but the positions are not included. As used herein, the mechanical illustration refers to signalling to the user being haptic for the user. Therefore, it may be at least temporary change to resistance of the door handle being open, vibration, non-smooth operation of the door handle, and more. Not essentially, said mechanical illustration may be also audible to the user. Said technical means signals a moment (door handle position) to the user while opening the door handle occurring after releasing of the latch tab and lifting the movable sealing strip to the upper position (the door leaf may be open) but before retention of the technical means for arresting of the movable sealing strip. Said signalling informs the user that the latch tab has already been released and the movable sealing strip is lifted up, but the technical means for arresting of the movable sealing strip has not been put under retention yet. If the user puts the door handle to a position being open more, the technical means for arresting of the movable sealing strip is put under retention. If the user fails to overcome the displayed position of the door handle, the movable sealing strip spontaneously lowers down after releasing of the door handle to the lower position and movement of the door leaf is arrested in open position.

[0022] Said technical means for illustration of the door handle position may include at least one auxiliary flexible element to generate the auxiliary vertical pressing force acting on the movable sealing strip in the position between the upper position and lower position of the movable sealing strip. When the movable sealing strip is lifted up to a certain extent, it comes into contact with the auxiliary flexible element before the technical means for arresting of the movable sealing strip in the upper position is arrested. When the door handle moves from closed position to open position, the resistance of the door handle towards the user increases. Thereby, the door handle position is mechanically illustrated between the latch tab release position and the retention position of the technical means for arresting of the movable sealing strip.

[0023] In another embodiment, the mechanical means for illustration of the door handle position may include said pulley being characterized in non-round shape and/or eccentric axis of rotation. Put it in other words, the

pulley forms a cam. The task of the cam is to make the distance of the pulley axis variable from the point where the pulley contacts the cord. It results in a change to lever length and a variable resistance in pushing the door handle, which mechanically illustrates the door handle position in the area between the latch tab release and the position of the technical means for arresting of the movable sealing strip retention.

[0024] When the technical means for arresting of the movable sealing strip is under retention, the door handle remains in open position, and the user is thus informed that the movable sealing strip is arrested in the upper position and the door leaf may be moved freely. In some cases, the door handle may look unaesthetically when in open position. Therefore, the door handle may be provided in a variant embodiment with a spring to return the door handle back to the closed position after retention of the technical means for arresting of the movable sealing strip. In this case, a freewheel connects the door handle to the upper mechanism. The freewheel (so-called one-way bearing) transfers movement of the door handle being open to the upper mechanism. The freewheel and said spring operate together also for spontaneous return of the door handle to the closed position while the technical means for arresting of the movable sealing strip is being under retention after releasing of the door handle by the user.

[0025] Depending on a specific embodiment, the lower mechanism may be provided with at least one basic flexible element to apply the basic vertical pressing force on the movable sealing strip. For example, the basic flexible element may be at least one spring, preferably a coil spring, or a rubber member, and more. The basic flexible element may be found in particular in structures where the movable sealing strip is too light to sit reliably onto the floor. The basic flexible element applies a pressing force on the movable sealing strip downwards and pushes it onto the floor.

[0026] In a preferable embodiment, the bottom mechanism may include a means for arresting of the bottom mechanism for arresting of the movable sealing strip in a lifted-up position. It may be operated for manual arresting of the movable sealing strip in the lifted-up position in case of a service intervention or failure of the lifting element, which connects the upper mechanism or the door handle with the bottom mechanism, etc. The lifted-up position may be identical to the upper position.

[0027] A related invention is a door leaf, in particular for building structures, that includes the assembly described above. The bottom mechanism may be arranged in a separate housing attached on the outside of the door leaf or in a cavity inside the bottom portion of the door leaf. The upper mechanism may be arranged in a separate housing attached to the outside of the door leaf (in particular where the door handle is placed) or in a cavity inside the door leaf (in particular where the door handle is placed).

[0028] The proposed invention provides a barrier-free sealing of the space under the door where it effectively provides insulation against noise, dust, liquids, and gases. Also, the assembly operates as a fireproof door retention when appropriate materials are used. As the door sill is eliminated, a flat floor may be achieved at the crossing between rooms, and no floor rubbing occurs when the door leaf moves. Preferably, the assembly may also be used for arresting of the door leaf open (including a blind door leaf) in any position.

Description of drawings

[0029] The exemplary embodiment of the proposed technique is described with reference to the drawings, in which

Fig. 1 - is a side view of a partial cross-section of the upper mechanism with the door handle in closed position;

Fig. 2 - is a side view of a partial cross-section of the upper mechanism with the door handle in open position with the means for arresting of movable sealing strip under retention;

Fig. 3 - is a side view of a partial cross-section through the bottom mechanism, with the sealing strip in lower position on the left and with the sealing strip in upper position on the right;

Fig. 4 - is an axonometric view of the door leaf with the movable sealing strip assembly.

Exemplary embodiment of the invention

[0030] An assembly of a movable sealing strip 41 of a door leaf 5 includes a bottom mechanism 40. The bottom mechanism 40 includes a movable sealing strip 41 being movable between an upper position and a lower position, and two basic flexible elements 43 for generating of basic vertical pressing force applied on the movable sealing strip 41. The movable sealing strip 41 is provided with a rubber seal in the bottom portion.

[0031] Further, the bottom mechanism 40 includes a guiding element 42 for vertical movement guiding of the movable sealing strip 41. Further, the assembly includes an upper mechanism 20 being controllable by a door handle 2. The door handle 2 is linked with a latch tab 27 that fits in a counterpart in a door frame 6 when the door leaf 5 is closed.

[0032] Further, the assembly includes a technical means for temporary lifting up the movable sealing strip 41 from the lower position before opening of the door leaf 5. Said technical means includes a lifting element 1. The lifting element 1 connects the upper mechanism 20 with the bottom mechanism 40 for impulse (movement) transfer from the mechanical door handle 2 to the movable sealing strip 41.

[0033] The upper mechanism 20 includes a pulley 21 being controllable by movement of the door handle 2. A groove 22 is provided on the periphery of the pulley 21.

A first cord 4 is located in the groove 22. Bottom end of the first cord 4 is attached to a first half of the movable sealing strip 41 length. Then, a second cord 4' is attached to the other half of the movable sealing strip 41 length. The second cord 4' is attached to the first cord 4 above the movable sealing strip 41. The first cord 4 and the second cord 4' form together the lifting element 1. Further, the assembly includes a technical means 3 for arresting of the movable sealing strip 41 in the upper position. A releasing element 26 is connected to the technical means 3 for arresting. The releasing element 26 serves to releasing of the technical means 3 for arresting and hence, to spontaneous lowering of the movable sealing strip 41 from the upper position.

[0034] The releasing element 26 is located on the same edge of the door leaf 5 as the latch tab 27 and has a form of a tab having its side edge bevelled (i.e., a shape identical to the standard latch tab 27).

[0035] The pulley 21 is provided with a notch 25. The technical means 3 for arresting of the movable sealing strip 41 comprises a latch 23 and a spring 24. The latch 23 is arranged for spontaneous fitting into the notch 25 of the pulley 21 just slightly rotated by the door handle 2. The door handle 2 is attached to the upper mechanism 20 via a freewheel for transmission of the door handle 2 being opened to the upper mechanism 20. The door handle 2 is provided with a spring 28 for spontaneous return of the door handle 2 to the closed position with the technical means 3 for arresting of the movable sealing strip 41 retained (and thus with the pulley 21 being arrested).

[0036] The assembly includes a technical means for mechanical illustration of the door handle 2 position in the area between the latch tab 27 release position and the retention position of the technical means 3 for arresting of the movable sealing strip 41. A technical means for mechanical illustration of the door handle 2 position is in this case located in the bottom mechanism 40. The technical means includes two auxiliary flexible elements 44 to create an auxiliary vertical pressing force acting on the movable sealing strip 41 in the position between the upper position and lower position of the movable sealing strip 41.

[0037] The bottom mechanism 40 includes a bottom mechanism 40 arresting element 45 for arresting of the lifted-up movable sealing strip 41 above the lower position, in this case in the upper position. The arresting element 45 is in a form of holes in the movable sealing strip 41 and the fixed (stationary) portion of the bottom mechanism 40 and the door leaf 5, respectively. The holes are coaxial when the movable sealing strip 41 is lifted up above the lower position. A rod element may be inserted to the coaxial holes from the outside and thereby fix the relative position of the lifted movable sealing strip 41 and of the fixed (stationary) portion of the bottom mechanism 40 and the door leaf 5, respectively.

[0038] The assembly described above is contained inside the door leaf 5 for building structures such as houses. The bottom mechanism 40 is arranged in a cavity inside of the bottom portion of the door leaf 5. The upper mechanism 20 is arranged in a cavity inside of the door leaf 5 in place of the door handle.

[0039] When the user presses the door handle 2, the latch tab 27, which keeps the door leaf 5 in the closed position in the door frame 6, moves. As the door handle 2 axis is rotated, also the pulley 21 rotates and winds the first cord 4 and the second cord 4' onto the pulley 21. The movable sealing strip 41 is lifted up from the lower position thereby. When pressing of the door handle 2 continues, the latch tab 27 retracts outside of the door frame 6 into the door leaf 5. Hence, the door leaf 5 may open after the movable sealing strip 41 lifts up from the lower position.

[0040] When pressing of the door handle 2 continues further, the two auxiliary flexible elements 44, which operate as the technical means for mechanical illustration of the door handle 2 position, are pressed. The auxiliary flexible elements 44 have a form of coil springs arranged above the movable sealing strip 41. When pressing of the door handle 2 continues further, the pulley 21 notch 25 positions against the latch 23 of the technical means 3 for arresting of the movable sealing strip 41 in the upper position. Through the force generated by the spring 24, the latch 23 is pushed into the pulley 21 notch 25. The pulley 21 is hereby retained against rotating back, prevents loosening of the first and second cord 4, 4', and lowering of the movable sealing strip 41 from the upper position. In the view of the fact that the door handle 2 is provided with the freewheel, the door handle 2 returns to the closed position as soon as the user releases the door handle 2.

[0041] The user may in any open position of the door leaf 5 press the releasing element 26 and the latch 23 is taken out against the force of the spring 24. The return movement of the pulley 21, unwinding of the first and second cord 4, 4', and spontaneous lowering of the movable sealing strip 41 from the upper position to the lower position, and sticking onto the floor is allowed thereby due to the force generated by the basic flexible elements 43. The door leaf 5 is arrested against movement thereby. To re-release the door leaf 5, the user presses the door handle 2, thereby the movable sealing strip 41 is lifted up from the lower position, and its optional arresting in the upper position as described above. When the door leaf 5 with the technical means 3 for arresting of the movable sealing strip 41 under retention is retained in the door frame 6, the releasing element 26 is automatically pressed by the door frame 6 and spontaneous lowering of the movable sealing strip 41 to the lower position occurs after the door leaf 5 closes.

[0042] The exemplary embodiment is shown in Fig. 1 to Fig. 4.

List of reference numerals

[0043]

1 - lifting element

2 - door handle

3 - technical means for arresting of the movable sealing strip in the upper position

4 - first cord

4' - second cord

5 - door leaf

6 - door frame

20 - upper mechanism

21 - pulley

22 - pulley groove

23 - latch

24 - spring of the technical means for arresting of the movable sealing strip in the upper position

25 - notch

26 - releasing element

27 - latch tab

28 - door handle spring

40 - bottom mechanism

41 - movable sealing strip

42 - guiding element

43 - basic flexible element

44 - auxiliary flexible element

45 - arresting element

Claims

1. A movable door leaf (5) sealing strip assembly including bottom mechanism (40) for attachment to bottom portion of the door leaf (5), wherein the bottom mechanism (40) comprises at least a movable sealing strip (41) being movable between an upper position and a lower position,

and at least one guiding element (42) for vertical guiding of the movable sealing strip (41) movement, wherein the assembly further includes technical means for temporary lifting of the movable sealing strip (41) up from the lower position prior to opening of the door leaf (5),

the assembly further including upper mechanism (20) controllable by a door handle (2), said door handle (2) is linked with a latch tab (27),

wherein the technical means for lifting the movable sealing strip (41) up from the lower position before opening of the door leaf (5) include a lifting element (1) linking the upper mechanism (20) and/or the door handle (2) with the bottom mechanism (40) to transfer an impulse from the door handle (2) to the movable sealing strip (41),

wherein the upper mechanism (20) includes pulley (21) controllable by the door handle (2) movement, said pulley (21) is provided with groove (22) on at least a portion of its periphery, in which at least first cord (4) is located at least temporary, wherein bottom end of a first cord (4) is attached to the movable sealing strip (41) so it forms the lifting element (1),

and the assembly further includes a technical means (3) for arresting of the movable sealing strip (41) in the upper position and a releasing element (26) linked with said technical means (3) for arresting of the movable sealing strip (41) for releasing of the technical means (3) for arresting of the movable sealing strip (41) and for spontaneous lowering of the movable sealing strip (41) from the upper position,

characterized in that

the pulley (21) is provided with a concave structure and the technical means (3) for arresting of the movable sealing strip (41) includes a convex structure with a spring (24) arranged for spontaneous falling to the pulley (21) concave structure just rotated by the door handle (2), wherein the assembly further includes technical means for mechanical illustration of the door handle (2) position in the area between, but not including, the latch tab (27) release position and the retention

position of the technical means (3) for arresting of the movable sealing strip (41), the mechanical illustration referring to signalling to the user being haptic for the user.

2. The assembly according to claim 1 **characterized in that** the pulley (21) concave structure is a notch (25) and the technical means (3) for arresting of the movable sealing strip (41) convex structure is a latch (23).

3. The assembly according to claim 1 **characterized in that** the pulley (21) concave structure is a pit and the technical means (3) for arresting of the movable sealing strip (41) convex structure is a ball.

4. The assembly according to any one of claims 1 to 3 **characterized in that** the first cord (4) is attached to the first half of the movable sealing strip (41) length,
the second cord (4') is attached to the second half of the movable sealing strip (41) length, wherein the second cord (4') is at least partially placed in the pulley (21) groove (22) and/or attached to the first cord (4) above the movable sealing strip (41) so that it forms the lifting element (1) together with the first cord (4).

5. The assembly according to any one of claims 1 to 4 **characterized in that** the door handle (2) is attached to the upper mechanism (20) via a freewheel for transfer of movement of the door handle (2) being open to the upper mechanism (20), and provided with a spring (28) for spontaneous return of the door handle (2) to the closed position when the technical means (3) for arresting of the movable sealing strip (41) is retained.

6. The assembly according to any one of claims 1 to 5 **characterized in that** the bottom mechanism (40) comprises at least one basic flexible element (43) for creating of basic vertical pressing force acting on the movable sealing strip (41).

7. The assembly according to any one of claims 1 to 6 **characterized in that** the technical means for illustration of the door handle (2) position comprises at least one auxiliary flexible element (44) for creating auxiliary vertical pressing force acting on the movable sealing strip (41) in the position between the upper position and lower position of the movable sealing strip (41).

8. The assembly according to any one of claims 1 to 6 **characterized in that** the technical means for mechanical illustration of the door handle (2) position includes the pulley (21) of non-circular shape and/or with eccentric axis of rotation.

9. The assembly according to any one of claims 1 to 8 **characterized in that** the bottom mechanism (40) comprises an arresting element (45) of the bottom mechanism (40) for arresting of the lifted movable sealing strip (41) above the lower position.

10. A door leaf, in particular for building structures, **characterized in that** it includes the assembly according to any one of preceding claims 1 to 9.

11. The door leaf according to claim 10 **characterized in that** the bottom mechanism (40) is arranged in a separate housing attached to the outside to the door leaf (5).

12. The door leaf according to claim 10 **characterized in that** the bottom mechanism (40) is arranged in a cavity inside of the bottom portion of the door leaf (5).

Patentansprüche

1. Baugruppe einer beweglichen Dichtungsleiste eines Türblatts (5) umfassend einen unteren Mechanismus (40) zur Befestigung am unteren Teil eines Türflügels (5), wobei das untere Mechanismus (40) mindestens eine bewegliche Dichtungsleiste umfasst (41), das zwischen einer oberen Position und einer unteren Position bewegbar ist,

und mindestens ein Führungselement (42) zum vertikalen Führen der Bewegung der beweglichen Dichtungsleiste (41), wobei die Baugruppe außerdem technisches Mittel zum vorübergehenden Anheben der beweglichen Dichtungsleiste (41) aus der unteren Position vor dem Öffnen des Türflügels (5) umfasst,
wobei die Baugruppe außerdem einen oberen Mechanismus (20) umfasst, der durch eine Türklinke (2) steuerbar ist, wobei die Türklinke (2) mit einer Riegelzunge (27) verbunden ist, wobei das technische Mittel zum Anheben der beweglichen Dichtungsleiste (41) aus der unteren Position vor dem Öffnen des Türflügels (5) ein Hebeelement (1) umfasst, das den oberen Mechanismus (20) und/oder der Türklinke (2) mit dem unterer Mechanismus (40) zur Übertragung des Impulses vom Türgriff (2) auf die bewegliche Dichtungsleiste (41) verbindet, wobei der obere Mechanismus (20) eine durch die Bewegung der Türklinke (2) steuerbare Rolle (21) enthält, wobei die Rolle (21) auf mindestens einem Teil ihres Umfangs mit einer Nut (22) versehen ist, in der mindestens das erste Seil (4) wird zumindest vorübergehend gelagert, wobei das untere Ende des ersten Seils (4) an der beweglichen Dichtungsleiste (41) befestigt ist, um so ein Hubelement (1) zu bilden,
und die Baugruppe umfasst weiterhin ein technisches Mittel (3) zum Verriegeln der bewegliche Dichtungsleiste (41) in der oberen Position und ein mit dem technischen Mittel (3) verbunden Entriegelungselement (26) der Arretation der bewegliche Dichtungsleiste (41) zum Entriegeln des technischen Mittels (3) der Arretation der beweglichen Dichtleiste (41) und zum automatischen Absenken der beweglichen Dichtungsleiste (41) aus der oberen Position, **dadurch gekennzeichnet, dass**
die Rolle (21) eine konkave Form aufweist und das technische Mittel (3) zum Arretieren der beweglichen Dichtungsleiste (41) eine konvexe Form mit einer Feder (24) aufweist, die so an-

geordnet ist, dass sie in die konkave Form der Rolle (21) dank gerade der Türklinke (2) gedreht, passt,
wobei die Baugruppe weiterhin ein technisches Mittel zur mechanischen Darstellung der Position der Türklinke (2) im Bereich zwischen, aber nicht einschließlich, der Position des Entriegelns der Riegelzunge (27) und der Position des Sicherstellens des technischen Mittels (3) des Arretierens der beweglichen Dichtungsleiste (41) enthält, wobei unter der mechanischen Darstellung eine durch die Berührung des Benutzers erfassbare Signalisierung für den Benutzer zu erkennbar ist.

2. Baugruppe nach Anspruch 1, **dadurch gekennzeichnet, dass** die konkave Form der Rolle (21) eine Kerbe (25) und die konvexe Form des technischen Mittels (3) zur Arretierung der beweglichen Dichtungsleiste (41) eine Ratsche (23) ist.

3. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** die konkave Form der Rolle (21) eine Vertiefung und die konvexe Form des technischen Mittels (3) zur Arretierung der beweglichen Dichtungsleiste (41) eine Kugel ist.

4. Anordnung nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** das erste Seil (4) an der ersten Hälfte der Länge der beweglichen Dichtungsleiste (41) befestigt ist,
ein zweites Seil (4') ist an der zweiten Hälfte der Länge der beweglichen Dichtungsleiste (41) befestigt, wobei das zweite Seil (4') zumindest vorübergehend in der Nut (22) der Rolle (21) gelagert ist und/oder über die bewegliche Dichtungsleiste (41) oben am ersten Seil (4) befestigt, so dass es zusammen mit dem ersten Seil (4) ein Hubelement (1) bilden.

5. Baugruppe nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Türklinke (2) mit der oberen Mechanik (20) über einen Freilauf zur Übertragung der Bewegung der geöffneten Türklinke (2) auf die obere Mechanik (20) verbunden ist und ist mit einer Feder (28) zur automatischen Rückkehr der Türklinke (2) in die Schließstellung ausgestattet, wenn das technische Mittel (3) zur Arretierung der beweglichen Dichtungsleiste (41) gesichert ist.

6. Baugruppe nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** der untere Mechanismus (40) mindestens ein elastisches Grundelement (43) zum Erzeugen einer vertikalen Grunddruckkraft auf die bewegliche Dichtungsleiste (41) enthält.

7. Baugruppe nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** das technische Mittel zur mechanischen Darstellung der Position der Türklinke (2) mindestens ein zusätzliches elastisches Element (44) zur Erzeugung einer zusätzlichen vertikalen Druckkraft auf die bewegliche Dichtungsleiste (41) in der Position zwischen der oberen Position und der unteren Position der beweglichen Dichtungsleiste (41) enthält.

8. Anordnung nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** das technische Mittel zur mechanischen Darstellung der Position der Türklinke (2) eine Rolle (21) mit unrunder Form und/oder mit exzentrischer Drehachse enthält.

9. Baugruppe nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** der untere Mechanismus (40) ein Verriegelungselement (45) des unteren Mechanismus (40) zum Verriegeln der angehobenen beweglichen Dichtungsleiste (41) über der unteren Position umfasst.

10. Türflügel, insbesondere für Bauobjekte, **dadurch gekennzeichnet, dass** es eine Baugruppe nach einem der vorhergehenden Ansprüche 1 bis 9 enthält.

11. Türflügel nach Anspruch 10, **dadurch gekennzeichnet, dass** die untere Mechanik (40) in einem separaten, von außen am Türflügel (5) befestigten Gehäuse angeordnet ist.

12. Türflügel nach Anspruch 10, **dadurch gekennzeichnet, dass** der untere Mechanismus (40) in einem Hohlraum im Inneren des unteren Teils des Türflügels (5) angeordnet ist.

Revendications

1. Assemblage de joint de battant de porte mobile (5) comprenant un mécanisme inférieur (40) destiné à être fixé à la partie inférieure du battant de porte (5), dans lequel le mécanisme inférieur (40) comprend au moins un joint de battant de porte mobile (41) qui peut être déplacé entre une position supérieure et une position inférieure,

et au moins un élément de guidage (42) pour guider verticalement le mouvement du joint mobile (41), l'ensemble comprenant en outre un moyen technique pour soulever temporairement le joint mobile (41) de sa position inférieure avant d'ouvrir le battant de porte (5),
l'ensemble comprenant en outre un mécanisme supérieur (20) pouvant être actionné par la poignée de porte (2), la poignée de porte (2) étant reliée à une languette de verrouillage (27), dans lequel le moyen technique permettant de soulever le joint mobile (41) de sa position inférieure avant l'ouverture du battant de porte (5) com-

prend un élément de levage (1) reliant le mécanisme supérieur (20) et/ou la poignée de porte (2) au mécanisme inférieur (40) afin de transmettre l'impulsion de la poignée de porte (2) sur le joint mobile (41),
le mécanisme supérieur (20) comprenant une poulie (21) actionnable par le mouvement de la poignée de porte (2), la poulie (21) ayant au moins sur une partie de sa circonférence une rainure (22) dans laquelle est logée au moins temporairement un premier câble (4), l'extrémité inférieure du premier câble (4) étant fixée au joint mobile (41) de manière à former l'élément de levage (1),
et l'ensemble comprenant en outre un moyen technique (3) de blocage du joint mobile (41) en position supérieure et un élément de déblocage (26) relié au moyen technique (3) de blocage du joint mobile (41) pour débloquer le moyen technique (3) de blocage du j oint mobile (41) et pour libérer spontanément le joint mobile (41) de la position supérieure, **se caractérisant par le fait que**
la poulie (21) est pourvue d'une formation concave et le moyen technique (3) de blocage du joint mobile (41) comprend une formation convexe avec un ressort (24) conçu pour s'engager spontanément dans la formation concave de la poulie (21) venant d'être tournée par la poignée de la porte (2),
l'ensemble comprenant en outre un moyen technique permettant d'indiquer mécaniquement la position de la poignée de porte (2) dans une zone située entre, mais sans inclure, la position de déblocage de la languette de verrouillage (27) et la position de blocage du moyen technique (3) de blocage du joint mobile (41), l'indication mécanique étant un signal à l'utilisateur, détectable au toucher par l'utilisateur.

2. Assemblage selon la revendication 1, **se caractérisant par le fait que** la formation concave de la poulie (21) est une encoche (25) et la formation convexe du moyen technique (3) pour le blocage du joint mobile (41) est un loquet (23).

3. Assemblage selon la revendication 1, **se caractérisant par le fait que** la formation concave de la poulie (21) est un petit creux et la formation convexe du moyen technique (3) de blocage du joint mobile (41) est une bille.

4. Assemblage selon l'une des revendications 1 à 3, **se caractérisant par le fait que** le premier câble (4) est fixé à la première moitié de la longueur du joint mobile (41),
un second câble (4') étant fixé à la seconde moitié de la longueur du joint (41), le second câble (4') étant au moins temporairement logé dans la rainure (22) de la poulie (21) et/ou fixé au premier câble (4) au-dessus du joint mobile (41), de sorte qu'il forme avec le premier câble (4) l'élément de levage (1).

5. Assemblage selon l'une des revendications 1 à 4, **se caractérisant par le fait que** la poignée de porte (2) est reliée au mécanisme supérieur (20) par une roue libre pour transmettre le mouvement de la poignée de porte ouverte (2) au mécanisme supérieur (20) et est pourvue d'un ressort (28) pour ramener spontanément la poignée de porte (2) en position fermée lorsque le moyen technique (3) de blocage du joint mobile (41) est bloqué.

6. Assemblage selon l'une des revendications 1 à 5, **se caractérisant par le fait que** le mécanisme inférieur (40) comprend au moins un élément élastique de base (43) pour générer une force de pression verticale élémentaire sur le joint mobile (41).

7. Assemblage selon l'une des revendications 1 à 6, **se caractérisant par le fait que** le moyen technique pour la représentation mécanique de la position de la poignée de porte (2) comprend au moins un élément élastique supplémentaire (44) pour générer une force de pression verticale additionnelle sur le joint mobile (41) dans une position entre la position supérieure et la position inférieure du joint mobile (41).

8. Assemblage selon l'une des revendications 1 à 6, **se caractérisant par le fait que** le moyen technique pour la représentation mécanique de la position de la poignée de porte (2) comprend une poulie (21) de forme non circulaire et/ou avec un axe de rotation excentrique.

9. Assemblage selon l'une des revendications 1 à 8, **se caractérisant par le fait que** le mécanisme inférieur (40) comprend un élément de blocage (45) du mécanisme inférieur (40) pour le blocage du joint mobile relevé (41) au-dessus de la position inférieure.

10. Battant de porte, notamment pour les bâtiments, **se caractérisant par le fait qu'**il comporte un assemblage selon l'une des revendications précédentes 1 à 9.

11. Battant de porte selon la revendication 10, **se caractérisant par le fait que** le mécanisme inférieur (40) est disposé dans une enveloppe indépendante fixée de l'extérieur au battant de porte (5).

12. Battant de porte selon la revendication 10, **se caractérisant par le fait que** le mécanisme inférieur (40) est disposé dans une cavité à l'intérieur de la

partie inférieure du battant de porte (5).

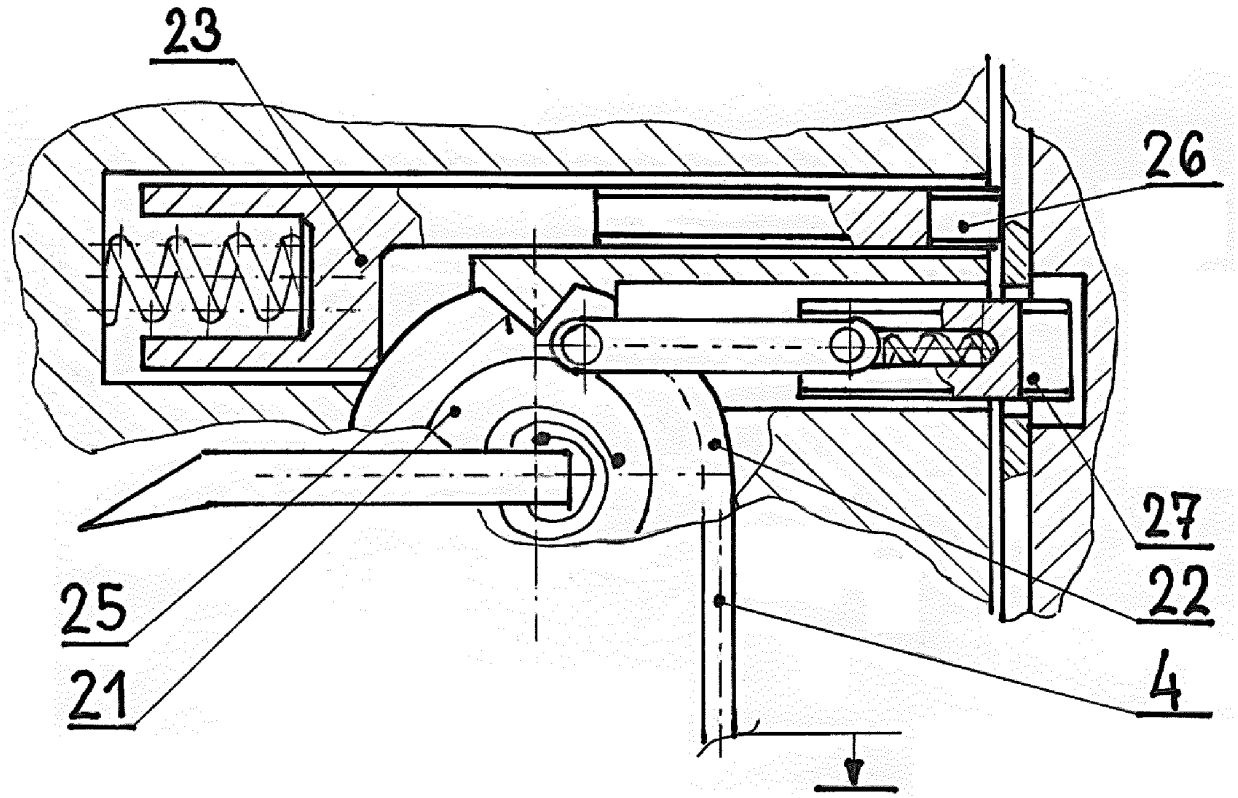

Fig. 1

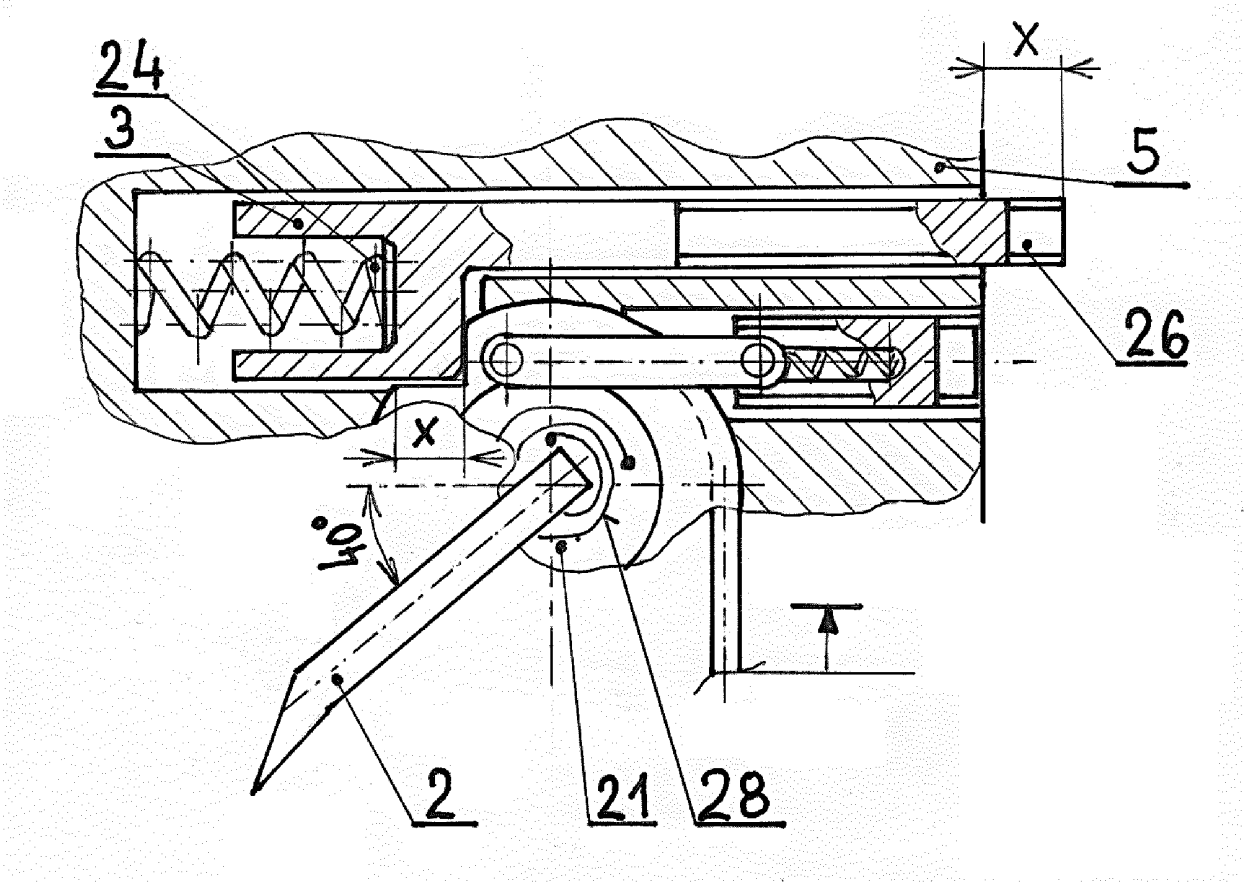

Fig. 2

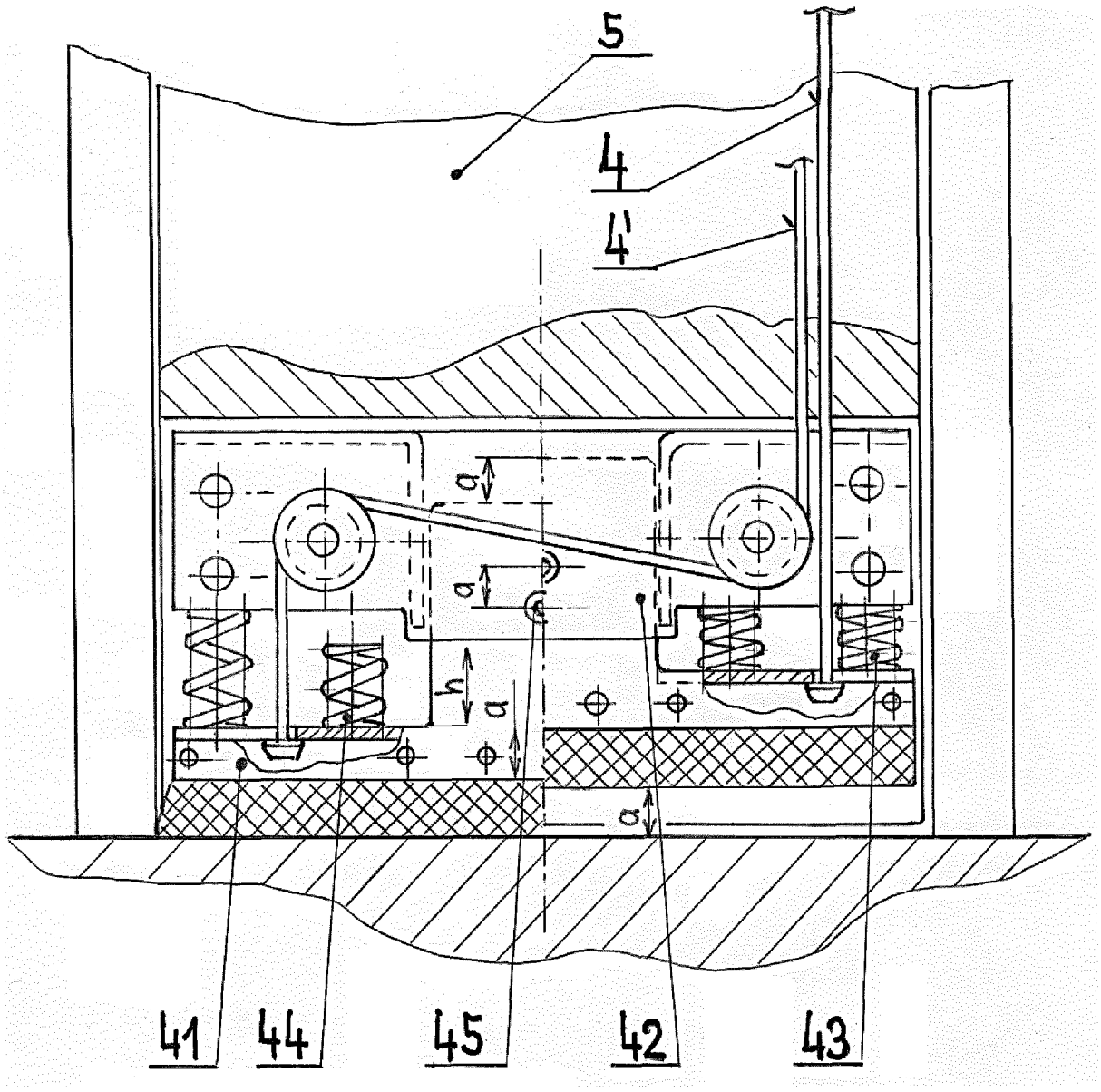

Fig. 3

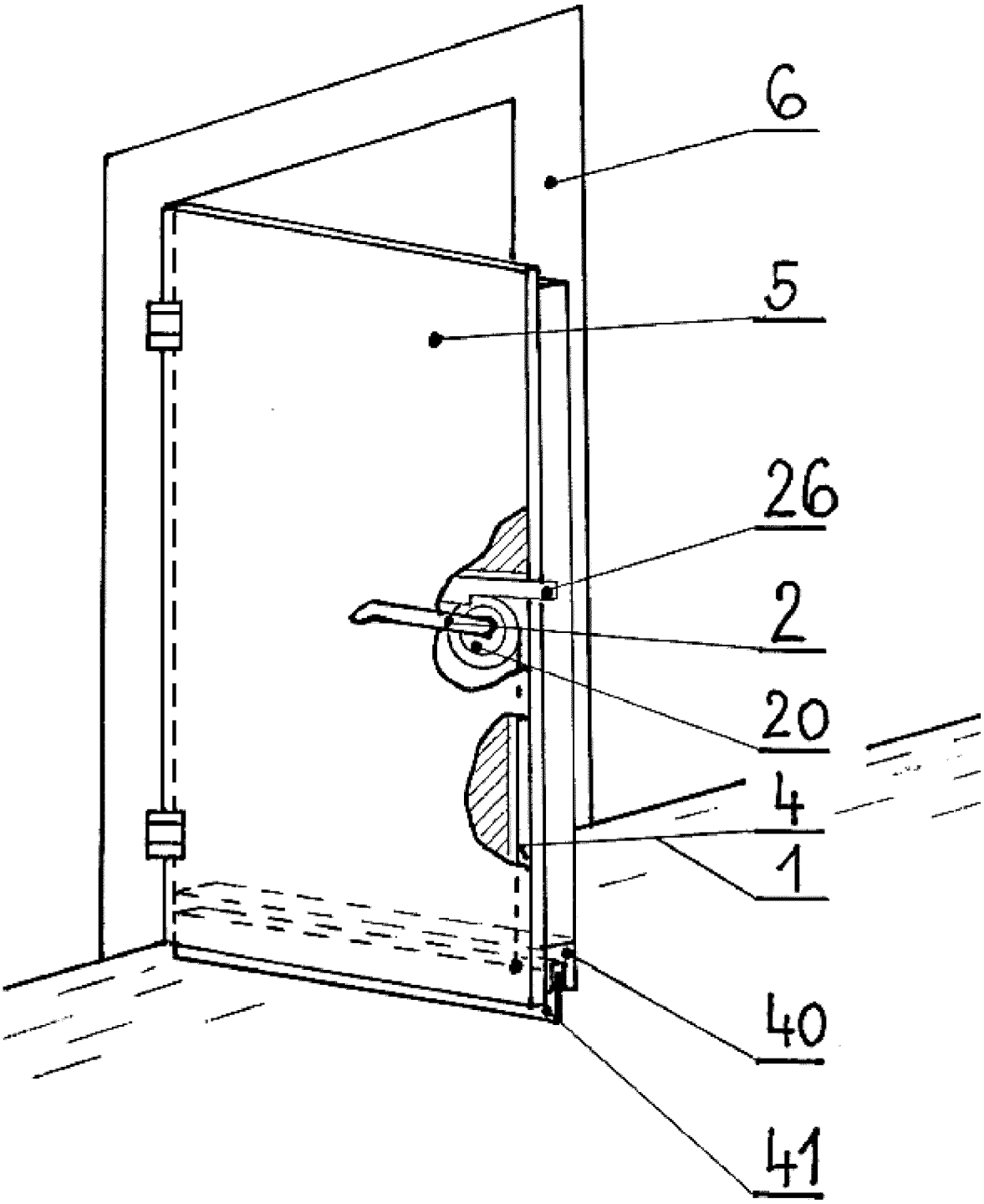

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 102017101559 A1 **[0005]**
- DE 102017101553 A1 **[0005]**
- EP 3699386 A **[0005]**
- CN 211573297 U **[0006]**
- DE 3037805 A1 **[0007]**
- DE 592020 C **[0008]**
- DE 2657279 A1 **[0009]**
- DE 29720978 U1 **[0010]**
- JP H1096380 A **[0010]**
- CN 110397387 A **[0010]**