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(54) Title: RODENT BLOCKING MEMBER AND OVERHEAD DOOR SYSTEM COMPRISING A RODENT BLOCKING MEMBER

(57) Abstract: A rodent blocking member (100) for an overhead door arrangement (10), the overhead door arrangement (10) comprising a door leaf (11) adapted to be arranged at an opening in a wall (W), the door leaf (11) comprising one or more door panel section (17a-f) being movable between a vertical closed position and a horizontal, opened or overhead position within a side frame (16), the overhead door arrangement (10) comprising a side seal (56) arranged to extend along a vertical side of the opening when the door leaf (11) is in the vertical closed position to seal between the door leaf (11) and said vertical side of the opening, wherein the rodent blocking member (100) is adapted to be arranged at a bottom corner (C) at a floor (F) of the opening at least when the door leaf (11) is in the vertical closed position.

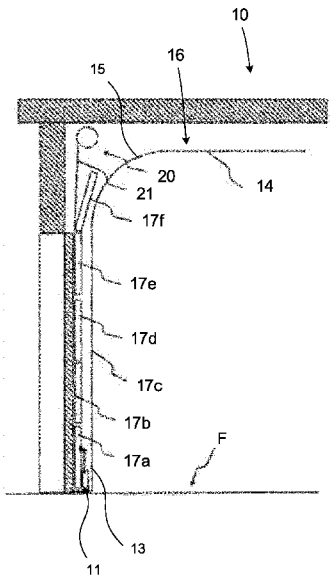


Fig 1

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RODENT BLOCKING MEMBER AND OVERHEAD DOOR SYSTEM COMPRISING A RODENT BLOCKING MEMBER

Technical field

The present invention relates to the technical field of overhead doors. More specifically, the present invention relates to a rodent blocking member for an overhead door arrangement and an overhead door system comprising such a rodent blocking member and an overhead door arrangement.

Background

Overhead doors are commonly installed to control access into different types of industrial buildings. In order to not let in moisture or cooling air from the outside, overhead doors are typically provided with rubber seals.

It has been shown that rodents are able to eat through such rubber seals and get into the building. This issue is particularly serious in buildings used for food production or food logistics since a clean environment in such buildings is of the uttermost importance.

In the past, the seals of the overhead doors has been “rodent-proofed” by placing of steel wool inside the seals. This however requires cumbersome work after the door has been installed. In addition, poison has also been used. However, due to legislation moving towards forbidding the use of poison this option will become less and less viable.

The present inventors have realized that the weak point of the overhead doors in terms of rodents gaining access through the overhead door is the bottom corners of the overhead door and in particular the small opening between the side seal and the bottom corner of the door. The small opening may be enough to allow the rodents to chew through.

Thus, there exists a need for an improved manner of keeping the rodents from eating through an overhead door.

Summary

According to an aspect, a rodent blocking member for an overhead door arrangement is provided. The overhead door arrangement is arranged in an opening in a wall. The overhead door arrangement comprises a door leaf adapted to be arranged at an opening in a wall. The door leaf comprises one or more door panel sections being movable between a vertical closed position and a horizontal, opened, or overhead position within a side frame. The overhead door arrangement comprises a side seal arranged to extend along a vertical side of the opening when the door leaf is in the vertical closed position to seal between the door leaf and said vertical side of the opening.

The rodent blocking member is adapted to be arranged at a bottom corner at a floor of the opening at least when the door leaf is in the vertical closed position. The rodent blocking member comprises a vertically extending member. The vertically extending member is adapted to extend along and adjacent to a bottom portion of the side seal at least when the door leaf is in the vertical closed position.

According to an aspect, an overhead door system is provided. The overhead door arrangement comprises a door leaf adapted to be arranged at an opening in a wall. The door leaf comprises one or more door panel sections being movable between a vertical closed position and a horizontal, opened or overhead position within a side frame. The overhead door arrangement comprises a side seal arranged to extend along a vertical side of the opening at least when the door leaf is in vertical closed position to seal between the door leaf and said vertical side of the opening. The overhead door system further comprises a rodent blocking member.

Embodiments of the invention are defined by the appended dependent claims and are further explained in the detailed description section as well as in the drawings.

It should be emphasized that the term “comprises/comprising” when used in this specification is taken to specify the presence of stated features, integers, steps, or components, but does not preclude the presence or addition of one or more other features, integers, steps, components, or groups thereof. All terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device,

component, means, step, etc.]" are to be interpreted openly as referring to at least one instance of the element, device, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated.

Brief description of drawings

Embodiments of the invention will be described in the following; reference being made appended drawings which illustrate non-limiting examples of how the inventive concept can be reduced into practice.

Figure 1 depicts a schematic side view of an overhead door arrangement according to one embodiment.

Figure 2 depicts a perspective view of an overhead door arrangement according to one embodiment.

Figure 3a depicts a perspective view of an overhead door arrangement according to one embodiment.

Figure 3b depicts a detailed view of a bottom corner area of an overhead door arrangement and a rodent blocking member according to one embodiment.

Figure 4a depicts a schematic top view of an overhead door arrangement and a rodent blocking member according to one embodiment.

Figure 4b depicts a detailed schematic top view of an overhead door arrangement and a rodent blocking member according to one embodiment.

Figure 5a depicts a perspective view of a rodent blocking member according to one embodiment.

Figure 5b depicts a side view of a rodent blocking member according to one embodiment.

Figure 5c depicts another side view of a rodent blocking member according to one embodiment.

Figure 5d depicts a front view of a rodent blocking member according to one embodiment.

Detailed description

Embodiments of the invention will now be described with reference to the accompanying drawings. The invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. The terminology used in the detailed description of the particular embodiments illustrated in the accompanying drawings is not intended to be limiting of the invention. In the drawings, like numbers refer to like elements.

The present invention relates to a rodent blocking member for an overhead door arrangement and an overhead door system comprising one or more of such a rodent blocking member and an overhead door arrangement.

The rodent blocking member may be implemented together with any type of conventional overhead door arrangement such as the ones depicted in Figure 1 and 2.

Figure 1 shows a side view of an illustrative embodiment of an overhead door arrangement according to one embodiment. The overhead door arrangement 10 has a door leaf 11 for covering a door opening in a wall, running in a side frame 16. The door leaf 11 may be arranged at an opening in a wall.

In one embodiment, the door leaf 11 covers a door opening surrounded double-sided by the side frame 16, the wall and by a ceiling above. The side frame has double-sided a vertical track 13, provided as a guiding element on the left and on the right side of the door leaf 11, respectively. Further, the side frame 16 has double-sided a horizontal track 14. The horizontal track 14 runs transversely, in this execution example perpendicular to the vertical track 13, extending rearward to the door leaf 11. A connecting portion 15 with a curved shape connects the vertical track 16 and the horizontal track 14, providing a guideway. The horizontal tracks 14 of the side frame 16 are fixed at a rear side under the ceiling. At a front side the horizontal tracks 14 are fixed at the vertical tracks 13 of the side frame 16, respectively. Accordingly, the overhead door arrangement comprises a pair of vertical tracks 13 and a pair of horizontal tracks 14 connected by a pair of connecting track portions 15. Guiding arrangements may be attached to the door leaf 11 for interfacing with the tracks.

The door leaf 11 is movable between a vertical closed position and a horizontal, opened or overhead position within the side frame. Hence, the door leaf 11 may be movable between a vertical closed position and a horizontal position and/or between a vertical closed position and an opened position and/or between a vertical closed position and an overhead position.

An overhead position herein refers to a position where the door leaf 11 is lifted up from the floor. In the overhead position, the door leaf 11 may for example be vertically arranged or inclined.

The door leaf 11 may comprise one or more door panel sections 17a-f. In the depicted embodiment, the door leaf 11 comprises a plurality of door panel sections 17a-f. The door panel sections 17a-f are arranged to be moved a distance in an upward or downward direction with respect to the floor F. The door panel sections 17a-f are preferably connected to each other by hinges.

In an alternative embodiment, the door leaf 11 may be formed with a single panel. Such a door leaf 11 may be considered to comprise one door panel section 17 or a single door panel section 17.

Figure 1 illustrates an embodiment where five door panels in total 17a-f have been arranged to the side frame 16, however, as understood by a person skilled in the art the number of door panel sections may vary.

The door panel sections 17a-f are preferably consisting of a rigid material. The height of the door panel sections 17a-f may be between 150 and 1000 millimeters. The height of the door panel section may for example vary from 400 millimeters from 675 millimeters, making it possible to suit the door's style to that of the building. As the skilled person recognizes, the door panel sections may be of any size and material suitable for the application of the overhead door arrangement.

The door panel sections 17a-f may be operated by an operating system 20. The overhead door arrangement 10 may comprise the operating system 20. It may however be envisioned that the door leaf 11 is manually operated, whereby no drive unit or motor is required in order to move the door leaf 11.

Referencing Figure 2, an overhead door arrangement 10 according to one embodiment is depicted in further detail.

The door leaf 11 is arranged at an opening in the wall W. The overhead door arrangement 10 comprises a side seal 56. The side seal 56 is arranged to extend along a vertical side of the opening when the door leaf 11 is in the vertical closed position to seal between the door leaf 11 and the vertical side of the opening. The vertical side of the opening may be considered a vertical edge of the opening. Along may herein refer to the side seal 56 extending parallel with the vertical side of the opening. The side seal 56 may thus extend in a vertical direction.

The side seal 56 may be in a flexible material such as rubber or a polymeric material such as polyamide. As will be described with reference to Figure 3-4, the side seal 56 may come in various shapes and designs. For example, the side seal 56 may be formed as a profile or a flap depending on the application and requirements of the overhead door arrangement.

In one embodiment, the side seal 56 may comprise a main profile in a rigid material such as PVC. The main profile may be considered a main side seal profile. The side seal 56 may further comprise a flap extending along the main profile. The flap may be attached to the main profile. The flap may be in a flexible material. In one embodiment, the flap and the main profile may be co-extruded.

As the skilled person is aware, the side seal 56 may be arranged in various ways as long as it provides the desired sealing between the door leaf 11 and the vertical side of the opening when the door leaf 11 is in the vertical closed position.

In one example, the side seal 56 may be mounted to the door leaf 11. Hence, the side seal 56 may only extend along the vertical side of the opening when the door leaf 11 is in the vertical closed position. When the door leaf 11 is in the vertical closed position, the side seal 56 may engage the wall W and/or the side frame 16 thereby sealing between the wall W and the door leaf 11.

In one example, the side seal 56 may be mounted along the vertical side of the opening. For example, the side seal 56 may be mounted to the side frame 16 and/or the wall W. Thus, when the door leaf 11 is in the vertical closed position, the door leaf 11 may engage the side seal 56 thereby sealing between the wall W and the door leaf 11.

As depicted, each vertical side of the opening may be sealed by means of a side seal. Accordingly, the overhead door arrangement 10 may comprise a first side seal 56 and a second side seal 57.

The first side seal 56 may be arranged to extend along a first vertical side of the opening when the door leaf 11 is in the vertical closed position to seal between the door leaf 11 and the first vertical side of the opening.

The second side seal 57 may be arranged to extend along a second vertical side of the opening when the door leaf 11 is in the vertical closed position to seal between the door leaf 11 and the second vertical side of the opening.

The first and second vertical side of the opening may be opposite vertical sides of the opening.

To further enable sealing of the opening, the door leaf 11 may comprise a bottom seal 90. The bottom seal 90 may be adapted to seal against the floor F when the door leaf 11 is in the vertical closed position. The bottom seal 90 may be adapted to seal between the floor F and the door leaf 11 when the door leaf 11 is in the vertical closed position. In one embodiment, the bottom seal 90 may be adapted to come into contact with the floor F when the door leaf 11 is in the vertical closed position.

The bottom seal 90 may be mounted to the bottommost door panel section 17f. If the door leaf 11 comprises a single door panel section, the bottom seal 90 may be mounted to the single door panel section.

The bottom seal 90 may be in a flexible material such as rubber or a polymeric material such as polyamide. The bottom seal 90 may come in various shapes and designs. For example, the bottom seal 90 may be formed as a profile or a flap depending on the application and requirements of the overhead door arrangement.

In one embodiment, the bottom seal 90 may comprise a main profile in a rigid material such as PVC. The main profile may be considered a bottom seal main profile. The bottom seal 90 may further comprise a flap extending along the main profile. The flap may be attached to the main profile. The flap may be in a flexible material. In one embodiment, the flap and the main profile may be co-extruded.

Further referencing, the operating system 20 may comprise at least one motor 28. The operating system 20 may further comprise a drive arrangement 25. The drive

arrangement 25 may be connected to the motor 28. The drive arrangement 25 may further be connected to at least one of the door panel sections 17a-f.

In the depicted example, the drive arrangement 25 comprises one or more cable drums 26 driven by means of the at least one motor 28. The drive arrangement 25 further comprises one or more cable 21. The one or more cable 21 is connected to the door leaf, e.g. at one of the door panel sections 17a-f. The one or more cable 21 is preferably made in steel. Thus each cable drum 26 is connected to a cable 21 for winding and unwind the cable 21 to cause movement of the door leaf 11.

The operating system 20 may comprise a D-hoist, T-hoist or U-hoist system. The operating system 20 is preferably arranged on the top or the end of the side frame 16.

It may also be envisioned that the drive arrangement 25 comprises a movable arm connected to the door leaf 11, i.e. at least one of the door panel sections 17a-f. The movable arm may further be connected to the motor 28 for moving the movable arm and thereby cause movement of the door leaf 11.

In the depicted embodiment, a shaft connected to the motor 28 has a cable drum on each end from which cables 21 run to the bottom corners of the door leaf 17a. When the shaft is turned, the door moves up or down.

The one or more cable 21 may connect to at least one of the door panel sections 17. Thereby the cable works as a lifting device. Further, one cable may connect end pieces of the door panel sections 17 on both sides of the door panel sections 17, respectively. The cable may run in vertical direction in a slot on both sides of the vertical track 16 of the side frame, respectively.

In one embodiment, the motor 28 may be connected to a gear box 31 for transferring torque from the motor 28 to the drive arrangement 25. Hence, the motor 28 may be connected to the gear box 31 for transferring torque from the motor 28 to the cable drum(s).

In one embodiment the cable is only connected to the bottommost door panel section 17a of the door leaf 11. Hence the door leaf is lifted by means of the cable working as a lifting device for lifting the bottommost door panel section of the door leaf 11 and consequently lifting the entire door leaf by means of the lifting force applied to said bottommost door panel section.

Further referencing Figure 2, the door leaf 11 may be balanced by means of a counter balancing mechanism 70. The counter balancing mechanism may be connected to the door leaf 11. The counterbalancing mechanism may comprise a balancing shaft 73 and one or more balancing springs 71, 72.

As will be described with reference to Figure 3-5, a rodent blocking member according to the present invention may be utilized to prevent rodents from eating through the side seal and passing through.

Referencing Figure 3a-b, an overhead door system 10 and a rodent blocking member 100 according to one embodiment. Rodent may herein refer to gnawing animals and in particular mice and rats.

The rodent locking member 100 may be intended for an overhead door arrangement 10. The rodent blocking member 100 may be adapted to be arranged at a bottom corner C at the floor F of the opening at least when the door leaf 11 is in the vertical closed position.

The rodent blocking member 100 may comprise a vertically extending member 140. The vertically extending member 140 may be adapted to extend along and adjacent to a bottom portion of the side seal 56 at least when the door leaf 11 is in the vertical closed position.

Thereby, the rodent blocking member 100 may be arranged such that it can prevent a rodent chewing through the side seal 56 at the bottom corner passing through the opening. This due to the rodent blocking member 100 forming a barrier at the bottom corner of the opening which cannot be chewed through or climbed over or around by a rodent. The main reason for rodents passing through even through the door leaf is in a vertical closed position is that a small gap is formed at the bottom corner of the opening. The small gap forms a space for the rodents to eat through the side seal, thereby making it possible for the rodents to enter even though the door leaf is in the vertical closed position. The rodent blocking member seals of such a gap, thereby mitigating the risk for rodents entering through the opening when the door leaf is in the vertical closed position.

The vertically extending member 140 may be adapted to extend between the wall W and the door leaf 11. The vertically extending member 140 may be adapted to extend

between the wall W and the door leaf 11 at the bottom corner at least when the door leaf 11 is in the vertical closed position.

The vertically extending member 140 may be arranged behind the side seal 56 such that a rodent chewing through the side seal 56 from one side of the side seal 56 will be stopped by the vertically extending member 140.

Accordingly, the vertically extending member 140 is adapted to be arranged such that the bottom portion of side seal 56 is arranged between the door leaf 11 and the vertically extending member 140 at the bottom corner at least when the door leaf 11 is in the vertical closed position.

In one embodiment, a section of the bottom portion of the bottom portion of the side seal 56 may be sandwiched between the vertically extending member 140 and the door leaf 11 when the door leaf 11 is in the vertical closed position.

Preferably, the rodent blocking member 100 may be arranged such that any part of the side seal 56 protruding outward from the door leaf 11 at the bottom corner is covered by the rodent blocking member 100 on one side.

In the depicted embodiment, the rodent blocking member 100 is fixedly arranged at the bottom corner of the opening. Accordingly, the rodent blocking member 100 may be adapted to be mounted at the bottom corner C of the opening. Hence, the rodent blocking member 100 may be adapted to be stationary mounted at the bottom corner C of the opening.

The rodent blocking member 100 may comprise a horizontally extending portion 110. The horizontally extending portion 110 may be adapted to extend along the floor F. The horizontally extending portion 110 may provide additional stability to the rodent blocking member 100.

In the depicted embodiment, the rodent blocking member 100 is adapted to be mounted to the floor F. The horizontally extending portion 110 may comprise a floor mounting interface 115. The floor mounting interface 115 may be adapted to be mounted to the floor F. The floor mounting interface 115 may be adapted to be mounted to the floor by means of one or more fastening elements.

It may however be envisioned that the rodent blocking member 100 may be mounted to the door leaf 11 instead. In such an embodiment, the rodent blocking

member 100 may move together with the door leaf 11 and when the door leaf 11 reaches the vertical closed position, be positioned along the side seal 56 at the bottom corner C of the opening.

Further referencing Figure 3a-b, the vertically extending member 140 may comprise a part 120 adapted to extend at least partially parallel with the door leaf 11 at least when the door leaf is in the vertical closed position. The part 120 may be considered a first part 120 of the vertically extending member 140. In the depicted embodiment, the rodent blocking member 100 is fixedly mounted at the bottom corner C of the opening, whereby the part 120 is adapted to extend at least partially parallel with the door leaf 11 when the door leaf 11 is in the vertical closed position.

Advantageously, the part 120 may be adapted to extend at an angle relative the door leaf 11 when the door leaf 11 is in the vertical closed position. The inclined outer surface of the part 120 allows for the part 120 to engage the side 56 in a tighter manner, thereby ensuring proper sealing and mitigates the risk for forming of gaps for rodents to access. The part 120 may be adapted to extend diagonally towards the door leaf 11 when the door leaf 11 is in the vertical closed position.

The part 120 may be adapted to extend along the bottom portion of the side seal 56 at least when the door leaf 11 is in the vertical closed position. The part 120 may be adapted to extend adjacent to a bottom portion of the side seal 56 at least when the door leaf 11 is in the vertical closed position.

In the depicted embodiment, the side seal 56 is mounted to the side frame of the overhead door arrangement. The side seal 56 is arranged to extend at least partially parallel with the door leaf 11 when the door leaf 11 is in the vertical closed position. The part 120 may thus be arranged adjacent to and parallel with the bottom portion of the side seal 56. Thus, the bottom part 120 may be arranged behind the bottom portion of the side seal 56 relative to the door leaf 11. When the door leaf 11 is in the vertical closed position, the door leaf 11 will be arranged in front of the side seal 56 and the rodent blocking member.

In one embodiment, the part 120 may comprise an upper section 127. The upper section 127 may form an inclined upper surface of the rodent blocking member 100. The inclined upper surface may be arranged to extend upwards and diagonally away

from the door leaf 11 when the door leaf 11 is in the vertical closed position. The upper section 127 mitigates the risk for pinching injuries since the inclined surface will cause an object to slide away when the door leaf 11 approaches towards the vertical closed position. The upper section 127 may be provided in the form of a flange with a V-shaped portion forming the inclined upper surface.

To ensure that the bottom corner of the opening is tightly sealed and the risk for rodents eating through a gap at the bottom corner is mitigated, a magnetic arrangement may be utilized. Thus, the door operator system may comprise a magnetic arrangement configured to cause the door leaf 11 to clamp against the rodent blocking member 100 when the door leaf 11 is in the vertical closed position. Worded differently, the magnetic arrangement may cause a magnetic force to attract the door leaf 11 and the rodent blocking member 100 against each other when the door leaf 11 is in the vertical closed position.

In one embodiment, at least a portion of the rodent blocking member 100 may be magnetic to attract a corresponding magnet of the door leaf 11 when the door leaf 11 is in the vertical closed position to clamp the door leaf 11 against the rodent blocking member 100 when the door leaf 11 is in the vertical closed position.

In one embodiment, the rodent blocking member 100 may comprise a magnet to attract a corresponding magnetic portion of the door leaf 11 when the door leaf 11 is in the vertical closed position to clamp the door leaf 11 against the rodent blocking member 100 when the door leaf 11 is in the vertical closed position.

Preferably, the magnet or magnetic portion may be arranged in the bottom seal 90 of the door leaf 11. The magnetic or magnetic portion may be arranged inside the bottom seal 90.

Advantageously, the rodent blocking member 100 may be in a magnetic material such as a magnetic metal. Advantageously, the door leaf 11 may comprise the magnet. Preferably, a magnet may be provided inside the bottom seal 90.

In one embodiment, the door leaf 11 may comprise a bottom seal rodent blocker 91. The bottom seal rodent blocker 91 may at least partially cover the bottom seal 90. Hence, the bottom seal rodent blocker 91 may be arranged to at least partially cover the

bottom seal 90. In one embodiment, the bottom seal rodent blocker 91 may wrap around the bottom seal 91.

The bottom seal rodent blocker 91 may be adapted to prevent rodents from eating through the bottom seal 90 and in particular the parts of the bottom seal 90 being in a flexible material. In one embodiment, the bottom seal rodent blocker 91 may wrap around the bottom portion of the bottom seal 90.

The bottom seal 90 may have a first surface forming a portion of a first outer surface of the door leaf 11 and a second surface forming a portion a second outer surface of the door leaf 11. The first and second outer surfaces may be opposite to each other. The first and second outer surfaces may extend vertically when the door leaf 11 is in the vertical closed position.

The bottom seal rodent blocker 91 may be adapted to at least partially and preferably fully cover the first surface and second surface of the bottom seal 90. The bottom seal rodent blocker 91 may be adapted to at least partially cover and preferably fully cover the bottom portion of the bottom seal 90. The bottom seal rodent blocker 91 may be formed in one piece or by a plurality of elements.

In one embodiment, the bottom seal rodent blocker 91 may wrap around the bottom seal 90 such that it covers the first and second surface of the bottom seal 90. An upper portion of the bottom seal 90 may be left uncovered by the bottom seal rodent blocker 91 to enable mounting of said upper portion to the bottommost door panel section.

Bottom seal rodent blockers are known in the arts and will therefore not be explained in detail. Generally such bottom seal rodent blockers are adapted to cover the entire extension of the bottom seal 90. Hence, the bottom seal rodent blocker 91 may extend along the entire bottom seal 90. The bottom seal rodent blocker 91 may be in a durable material not possible for the rodents to chew through such as a mesh in Kevlar or stainless steel.

The bottom seal rodent blocker 91 may be magnetic or comprise a magnet for attracting the rodent blocking member 100 when the door leaf 11 is in the vertical closed position. Thereby, the risk for a rodent eating through any of the seals is significantly reduced.

Hence, at least a portion of the bottom seal rodent blocker 91 may be magnetic to attract a magnet of the rodent blocking member 100 and when the door leaf 11 is in the vertical closed position, clamp the bottom seal rodent blocker 91 against the rodent blocking member 100. Alternatively, the bottom seal rodent blocker 91 may comprise one or more magnets to attract at least a magnetic portion of the rodent blocking member 100 and when the door leaf 11 is in the vertical closed position, clamp the bottom seal rodent blocking member 91 against the rodent blocking member 100.

The bottom seal rodent blocker 91 may be mounted to one or more of the one or more door panel sections 17a-f of the door leaf 11. Preferably, the bottom seal rodent blocker 91 may be mounted to the bottommost door panel section of the one or more door panel sections 17a-f.

Preferably, the bottom seal rodent blocker 91 may be magnetically mounted to the one or more of the one or more door panel sections 17a-f. Hence, the bottom seal rodent blocker 91 may comprise one or more magnets adapted to be magnetically attached to the one or more door panel sections 17a-f. The one or more magnets may further be utilized for clamping the bottom seal rodent blocker 91 against the rodent blocking member 100.

It is noted that the bottom seal rodent blocker 91 may comprise one or more magnets by means of being magnetized and/or comprising magnetic members attached to a main member of the bottom seal rodent blocker 91.

In one embodiment, the bottom seal rodent blocker 91 may comprise a magnet strip. The magnet strip may be adapted to magnetically attach to the one or more door panel sections and/or cause the bottom seal rodent seal blocker 91 to clamp against the rodent blocking member 100 when the door leaf 11 is in the vertical closed position.

Further referencing Figure 3a-b, the door leaf 11 and preferably the bottom seal rodent blocker 91 of the door leaf 11 will, when the door leaf 11 is in the vertical closed position, be magnetically attracted towards the rodent blocking member 100 and in particular the part 120 of the rodent blocking member 100. This causes the bottom seal 90 to flex towards the rodent blocking member 100 and in particular the part 120 of the rodent blocking member 100. This in turn clamps the bottom portion of the side seal 56 and the bottom seal rodent blocker 91 between the bottom seal 90 and the part 120.

Thereby, the risk for a potential gap allowing rodents to eat through the side seal 56 at the bottom corner occurring is mitigated.

Figure 4a-b depicts an overhead door arrangement 10 according to another embodiment. The rodent blocking member 100 may be adapted to be used together with the overhead door arrangement 10.

As depicted in Figure 4a-b, the vertically extending member 140 may comprise a section 130. The section 130 may be adapted to extend at least partially orthogonally to the door leaf 11 at least when the door leaf 11 when the door leaf 11 is in the vertical closed position. The section 130 may be considered a second part of the vertically extending member 140.

In the depicted embodiment, the rodent blocking member 100 is fixedly mounted at the bottom corner of the opening. Thus, the section 130 may be adapted to extend at least partially orthogonally to the door leaf 11 when the door leaf 11 is in the vertical closed position.

Preferably, the section 130 may be adapted to extend along a bottom portion of the side seal 56 at least when the door leaf 11 is in the vertical closed position. The section 130 may be adapted to extend adjacent to a bottom portion of the side seal 56 at least when the door leaf 11 is in the vertical closed position.

Further referencing Figure 4a-b, the rodent blocking member 100 may be adapted to be mounted to a vertical surface of the overhead door arrangement 10 such as the door frame 16 and/or the wall.

Accordingly, the section 130 may comprise a side mounting interface 135. The side mounting interface 135 may be adapted to be mounted to a vertical surface of the overhead door arrangement 10 and/or the wall. The side mounting interface 135 may be mounted to said vertical surface by means of one or more fastening elements.

As shown in Figure 4a-b, the side seal 56 may comprise a vertically extending surface 563 extending along the side seal 56 and facing the opening. The vertically extending surface may in a horizontal direction extend orthogonally to the horizontal extension of the door leaf 11. Worded differently, the side seal 56 may face the opening.

In one embodiment, the vertically extending surface may be formed by a main profile member 561 of the side seal 56. In the depicted embodiment, the main profile

member 561 is in the form of a hollow profile member. The main profile member 561 may extend along the entire length of the side seal 56.

The section 130 may extend parallel to and adjacent to the vertically extending surface 563 of the side seal 56. Hence, the rodent blocking member 100 may be arranged behind the side seal 56 relative a horizontal direction extending along the door leaf 11 towards the opening.

In one embodiment, the side seal 56 may comprise a door engaging portion 565. When the door leaf 11 is in the vertical closed position, the door leaf 11 is arranged to engage the door engaging portion 565 to seal along the vertical side of the opening. The door engaging portion 565 may extend at least partially parallel with the door leaf 11 when the door leaf 11 is in the vertical closed position. In the depicted example, the door engaging portion 565 is in the form of a flap extending from the main profile member 561.

In the depicted embodiment, the side seal 56 is mounted to the wall. The side seal 56 may comprise a mounting portion 562 extending along the side seal 56. The mounting portion 562 is adapted to be mounted to the side frame and/or wall. In the depicted embodiment, the mounting portion 562 is adapted to be mounted to the wall.

Again referencing Figure 4a-b, the part 120 may be arranged to extend parallel to and adjacent to the door engaging portion 565. The door engaging portion 565 may be arranged to extend at least partially parallel with the door leaf 11 when the door leaf 11 is in the vertical closed position. The part 120 may thus be arranged adjacent to and parallel with the door engaging portion 565. Thus, the bottom part 120 may be arranged behind the door engaging portion 565 relative to the door leaf 11. When the door leaf 11 is in the vertical closed position, the door leaf 11 will be arranged in front of the door engaging portion 565 and the rodent blocking member 100.

Hence, when the door leaf 11 is in the vertical closed position, the door engaging portion 565 will be pressed against the part 120, thereby sandwiching the door engaging portion 565 between the door leaf 11 and the part 120.

As described with reference to Figure 3a-b, a magnetic arrangement may be utilized. Further referencing Figure 4a-b, the door leaf 11 and preferably the bottom seal rodent blocker 91 of the door leaf 11 will when the door leaf 11 is in the vertical closed

position be magnetically attracted towards the rodent blocking member 100 and in particular the part 120 of the rodent blocking member 100. This causes the bottom seal 90 to flex towards the rodent blocking member 100 and in particular the part 120 of the rodent blocking member 100. This in turn clamps the door engaging portion 565 between the bottom seal 90 together with the bottom seal rodent blocker 91 and the part 120. Thereby, the risk for a potential gap allowing rodents to eat through the side seal 56 at the bottom corner occurring is mitigated.

A rodent blocking member according to an embodiment is depicted in further detail in Figures 5a-d.

The rodent blocking member 100 may be made of a metallic material such as steel or aluminum. This ensures that rodents are not able to chew through the rodent blocking member 100. The rodent blocking member 100 may be made of sheet metal. The shape of the rodent blocking member 100 may be formed by bending of the sheet metal. Hence, the rodent blocking member 100 may be formed in one piece. It may however be envisioned that the rodent blocking member 100 comprises multiple interconnected parts.

In order to enable use of the rodent blocking member 100 for different types of overhead door arrangements 10 including different types of side seals 56, the vertically extending member 140 may comprise both the part 120 and the section 130.

The vertically extending member 140 may comprise the first part 120 adapted to extend at least partially with a door leaf 11 at least when the door leaf 11 is in the vertical closed position. The vertically extending member 140 may comprise the section 130 adapted to extend at least partially orthogonally to a door leaf 11 at least when the door leaf 11 is in the vertical closed position.

Referencing Figures 5a-d, the floor mounting interface 115 may comprise one or more elongated recesses 116 for receiving a fastening member for mounting to the floor. The one or more elongated recesses 116 may be formed in the horizontally extending portion 110. The one or more elongated recess 116 allows for the rodent blocking member 100 to be mounted in a plurality of positions, thereby enabling use of the rodent blocking member 100 in combination with different types of overhead door arrangements.

In the depicted example, two elongated recesses 116 are formed along a centerline of the horizontally extending portion 110. As shown in Figure 3b, a single longer elongated recess 116 may be implemented instead.

Again referencing Figures 5a-d, the side mounting interface 135 may comprise one or more elongated recess 136. The one or more elongated recess may be intended to receive a fastening member for mounting to the vertical surface of the overhead door arrangement 10 and/or the wall.

The one or more elongated recesses 136 may be formed in the horizontally extending portion 110. The one or more elongated recess 136 allows for the rodent blocking member 100 to be mounted in a plurality of positions, thereby enabling use of the rodent blocking member 100 in combination with different types of overhead door arrangements.

As most clearly depicted in Figure 5a and 5d, the one or more elongated recess 136 may comprise one or more arc-shaped recess. The one or more arc-shaped recess allows for mounting of the rodent blocking member 100 in further additional positions. In the depicted embodiment, a plurality of arc shaped recesses are arranged in a circular formation. In the depicted embodiment, an elongated central recess is formed inside the circular formation of the plurality of arc-shaped recesses.

According to an aspect, an overhead door system is provided. The overhead door system comprises the door leaf 11 adapted to be arranged at the opening in the wall W. The door leaf 11 comprises one or more door panel section 17a-f. The one or more door panel section may be movable between a vertical closed position and a horizontal, opened or overhead position within the side frame 16. The overhead door arrangement comprises the side seal 56 arranged to extend along the vertical side of the opening at least when the door leaf 11 is in the vertical closed position to seal between the door leaf 11 and said vertical side of the opening. The overhead door system further comprises a rodent blocking member 100 according to any of the embodiments described herein.

The overhead door arrangement may comprise the first side seal 56 arranged to extend along the first vertical side of the opening at least when the door leaf is in the

vertical closed position to seal between the door leaf 11 and the first vertical side of the opening.

The overhead door arrangement may comprise the second side seal 57 arranged to extend along the second vertical side of the opening at least when the door leaf 11 is in the vertical closed position to seal between the door leaf 11 and the second vertical side of the opening.

The overhead door system may comprise a first and second rodent blocking member 100.

The first rodent blocking member 100 may be adapted to be arranged at the first bottom corner of the opening. The first rodent blocking member 100 may comprise the vertically extending member 140. The vertically extending member may be arranged to extend along and adjacent to a bottom portion of the first side seal 56 at least when the door leaf 11 is in the vertical closed position.

The second rodent blocking member 100 may be adapted to be arranged at the second bottom corner of the opening. The second rodent blocking member 100 may comprise the vertically extending member 140. The vertically extending member may be arranged to extend along and adjacent to a bottom portion of the second side seal 57 at least when the door leaf 11 is in the vertical closed position.

In one embodiment, the first and second rodent blocking member 100 may be a rodent blocking member according to any of the embodiments described herein.

In one embodiment, the door leaf 11 may comprise the bottom seal 90. The bottom seal 90 may be adapted to seal between the door leaf 11 and the floor F when the door leaf 11 is in the vertical closed position.

In one embodiment, the rodent blocking member 100 may be mounted at the bottom corner of the opening.

In one embodiment, at least a portion of one of the door leaf and the rodent blocking member 100 may be magnetic. The other of the door leaf 11 and the rodent blocking member 100 may comprise a magnet to attract the corresponding magnetic portion when the door leaf 11 is in the vertical closed position to clamp the door leaf 11 against the rodent blocking member 100.

In one embodiment, the door leaf 11 comprises the bottom seal rodent blocker 91. The bottom seal rodent blocker 91 may at least partially cover the bottom seal 90. At least a portion of one of the bottom seal rodent blocker 91 and the rodent blocking member 100 may be magnetic. The other of the bottom seal rodent blocker 91 and the rodent blocking member 100 may comprise a magnet to attract the corresponding magnetic portion when the door leaf 11 is in the vertical closed position to clamp the bottom seal rodent blocker 91 against the rodent blocking member 100.

In one embodiment, the overhead door arrangement 10 may be arranged between a first space and a second space separated by the wall W to control access between the first and second space.

The first space may be an exterior space and the second space may be an interior space.

The vertically extending member 140 of the rodent blocking member 100 may be adapted to extend vertically in the first space, e.g. on a side of the wall W facing the door leaf 11.

In one embodiment, the vertically extending member 140 of the rodent blocking member 100 is at least partially arranged in the first space. This ensures that the rodents are kept on one side of the wall W.

Worded differently, the rodent blocking member 100 may be arranged such that the vertically extending member 140 extends vertically in the first space, e.g. on the side of the wall W facing the door leaf 11 when the door leaf 11 is in the vertical closed position.

The one or more outer vertically extending surfaces of the rodent blocking member 100 may be adapted to extend along and adjacent to a bottom portion of the side seal 56 may be arranged in the first space. Hence, the part 120 and/or the section 130 of the rodent blocking member 100 may at least partially be arranged in the first space.

Preferably, the vertically extending member 149 may be arranged in the first space. Advantageously, the entire vertically extending member 140 may be arranged in the first space.

In one embodiment, the side frame 16 may be arranged in the second space. The side frame 16 may thus be arranged on the opposite side of the wall W relative the rodent blocking member 100 or at least the portion of the rodent blocking member 100 being arranged to extend adjacent to and along the bottom portion of the side seal 56. The side frame 16 may thus be arranged on the side of the wall W facing away from the door leaf 11 when the door leaf 11 is in the vertical closed position.

The invention has been described above in detail with reference to embodiments thereof. However, as is readily understood by those skilled in the art, other embodiments are equally possible within the scope of the present invention, as defined by the appended claims.

CLAIMS

1. A rodent blocking member (100) for an overhead door arrangement (10), the overhead door arrangement (10) comprising a door leaf (11) adapted to be arranged at an opening in a wall (W), the door leaf (11) comprising one or more door panel section (17a-f) being movable between a vertical closed position and a horizontal, opened or overhead position within a side frame (16), the overhead door arrangement (10) comprising a side seal (56) arranged to extend along a vertical side of the opening when the door leaf (11) is in the vertical closed position to seal between the door leaf (11) and said vertical side of the opening, wherein:

the rodent blocking member (100) is adapted to be arranged at a bottom corner (C) at a floor (F) of the opening at least when the door leaf (11) is in the vertical closed position, and

the rodent blocking member (100) comprises a vertically extending member (140), the vertically extending member (140) being adapted to be extend along and adjacent to a bottom portion of the side seal (56) at least when the door leaf (11) is in the vertical closed position.

2. The rodent blocking member (100) according to claim 1, wherein the vertically extending member (140) is adapted to be arranged such that the bottom portion of the side seal (56) is arranged between the door leaf (11) and said vertically extending member (140) at the bottom corner when the door leaf (11) is in the vertical closed position.

3. The rodent blocking member (100) according to claim 1 or 2, the rodent blocking member (100) being adapted to be mounted at the bottom corner (C) of the opening.

4. The rodent blocking member (100) according to any one of the preceding claims, further comprising a horizontally extending portion (110), the horizontally

extending portion (110) comprising a floor mounting interface (115) adapted to be mounted to the floor (F).

5. The rodent blocking member (100) according to claim 4, wherein the floor mounting interface (115) comprises one or more elongated recesses (116) for receiving a fastening member for mounting to the floor (F).

6. The rodent blocking member (100) according to any one of the preceding claims, wherein the vertically extending member (140) comprises a part (120) adapted to extend at least partially parallel with the door leaf (11) at least when the door leaf (11) is in the vertical closed position.

7. The rodent blocking member (100) according to claim 6, wherein the part (120) is adapted to extend at an angle relative the door leaf (11) when the door leaf (11) is in the vertical closed position.

8. The rodent blocking member (100) according to claim 6 or 7, wherein the part (120) is adapted to extend along and adjacent to a bottom portion of the side seal (56) at least when the door leaf (11) is in the vertical closed position.

9. The rodent blocking member (100) according to any one of claim 6 to 8, wherein the part (120) comprises an upper section (127), the upper section (127) forming an inclined upper surface of the rodent blocking member (100) arranged to extend upwards and diagonally away from the door leaf (11) when the door leaf (11) is in the vertical closed position.

10. The rodent blocking member (100) according to any one of the preceding claims, wherein the vertically extending member (140) comprises a section (130) adapted to extend at least partially orthogonally to the door leaf (11) at least when the door leaf (11) is in the vertical closed position.

11. The rodent blocking member (100) according to claim 10, wherein the section (130) is adapted to extend along and adjacent to a bottom portion of the side seal (56) at least when the door leaf (11) is in the vertical closed position.

12. The rodent blocking member (100) according to claim 10 or 11, wherein the section (130) comprises a side mounting interface (135) adapted to be mounted to a vertical surface of the overhead door arrangement (10) and/or the wall (W).

13. The rodent blocking member (100) according to claim 12, wherein the side mounting interface (135) comprises one or more elongated recesses (136) for receiving a fastening member for mounting to the vertical surface of the overhead door arrangement (10) and/or the wall (W).

14. The rodent blocking member (100) according to any one of claim 6 to 13, wherein the vertically extending member (140) comprises a part (120) adapted to extend at least partially parallel with a door leaf (11) at least when the door leaf (11) is in the vertical closed position and a section (130) adapted to extend at least partially orthogonally to a door leaf (11) at least when the door leaf (11) is in the vertical closed position.

15. The rodent blocking member (100) according to any one of claim 3 to 14, wherein at least a portion of the rodent blocking member (100) is magnetic or comprises a magnet to attract a corresponding magnet or magnetic portion of the door leaf (11) when the door leaf (11) is in the vertical closed position to clamp the door leaf (11) against the rodent blocking member (100).

16. The rodent blocking member (100) according to any one of the preceding claims, wherein the rodent blocking member (100) is made of sheet metal, wherein the shape of the rodent blocking member (100) is formed by bending of the sheet metal.

17. An overhead door system comprising an overhead door arrangement (10), the overhead door arrangement (10) comprising a door leaf (11) adapted to be arranged at an opening in a wall (W), the door leaf (11) comprising one or more door panel section (17a-f) being movable between a vertical closed position and a horizontal, opened or overhead position within a side frame (16), the overhead door arrangement (10) comprising a side seal (56) arranged to extend along a vertical side of the opening at least when the door leaf (11) is in the vertical closed position to seal between the door leaf (11) and said vertical side of the opening,

the overhead door system further comprises a rodent blocking member (100) according to any one of claim 1 to 16.

18. The overhead door system according to claim 17, wherein the overhead door arrangement (10) comprises:

a first side seal (56) arranged to extend along a first vertical side of the opening at least when the door leaf (11) is in the vertical closed position to seal between the door leaf (11) and said first vertical side of the opening, and

a second side seal (57) arranged to extend along a second vertical side of the opening at least when the door leaf (11) is in the vertical closed position to seal between the door leaf (11) and said second vertical side of the opening,

whereby the overhead door system comprises a first and second rodent blocking member (100) adapted to be arranged at a first and second bottom corner of the opening, respectively, the first and second rodent blocking member (100) comprising a vertically extending member (140) arranged to extend along and adjacent to a bottom portion of the first side seal (56) and second side seal (57), respectively at least when the door leaf (11) is in the vertical closed position.

19. The overhead door system according to claim 17 or 18, wherein the door leaf (11) comprises a bottom seal (90) adapted to seal againstthe floor (F) when the door leaf (11) is in the vertical closed position.

20. The overhead door system according to any one of claim 17 to 19, wherein the rodent blocking member (100) is mounted at the bottom corner of the opening.

21. The overhead door system according to claim 20, wherein at least a portion of one of the door leaf (11) and the rodent blocking member (100) is magnetic and the other of the door leaf (11) and the rodent blocking member (100) comprises a magnet to attract the corresponding magnetic portion when the door leaf (11) is in the vertical closed position to clamp the door leaf (11) against the rodent blocking member (100).

22. The rodent blocking member (100) according to claim 21, wherein the door leaf (11) comprises a bottom seal rodent blocker (91) at least partially covering the bottom seal (90), and wherein at least a portion of one of the bottom seal rodent blocker (91) and the rodent blocking member (100) is magnetic and the other of the bottom seal rodent blocker (91) and the rodent blocking member (100) comprises a magnet to attract the corresponding magnetic portion when the door leaf (11) is in the vertical closed position to clamp the bottom seal rodent blocker (91) against the rodent blocking member (100)

23. The overhead door system according to any one of claim 17 to 22, wherein the overhead door arrangement (10) is arranged between a first space and second space separated by the wall (W) to control access between said first and second space.

24. The overhead door system according to claim 23, wherein the first space being an exterior space and the second space being an interior space.

25. The overhead door system according to claim 23 or 24, wherein the vertically extending member (140) of the rodent blocking member (100) is at least partly arranged in the first space.

26. The overhead door system according to any one of claim 23 to 25, wherein the side frame (16) is arranged in the second space.

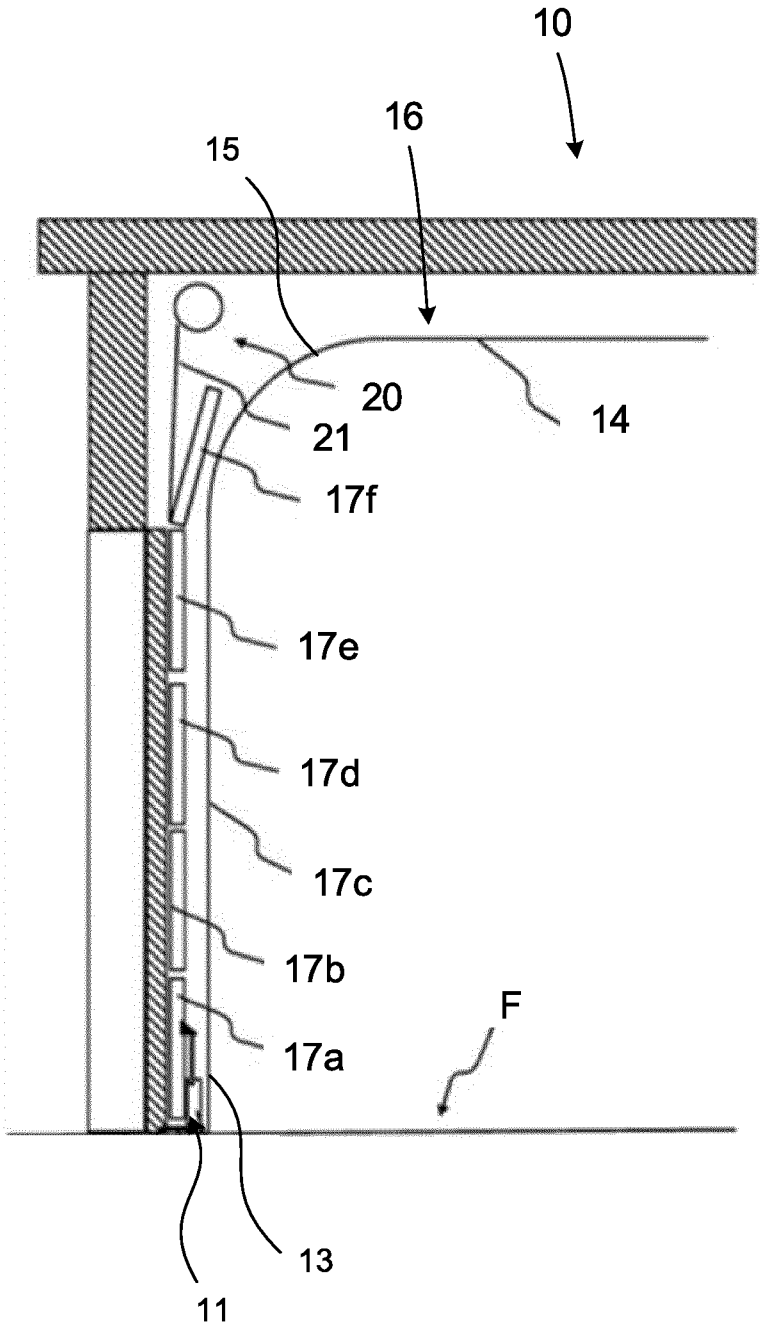


Fig 1

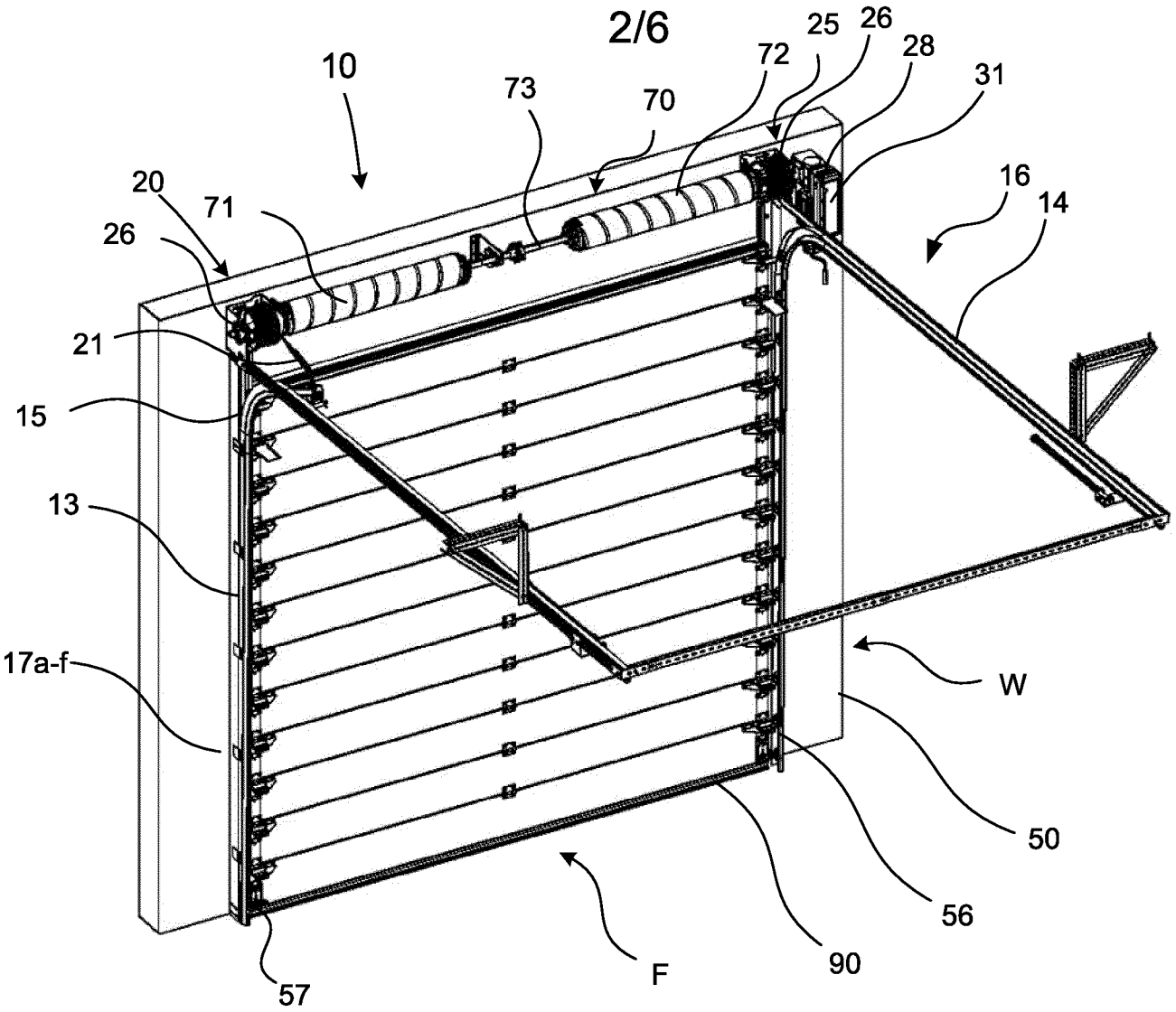


Fig 2

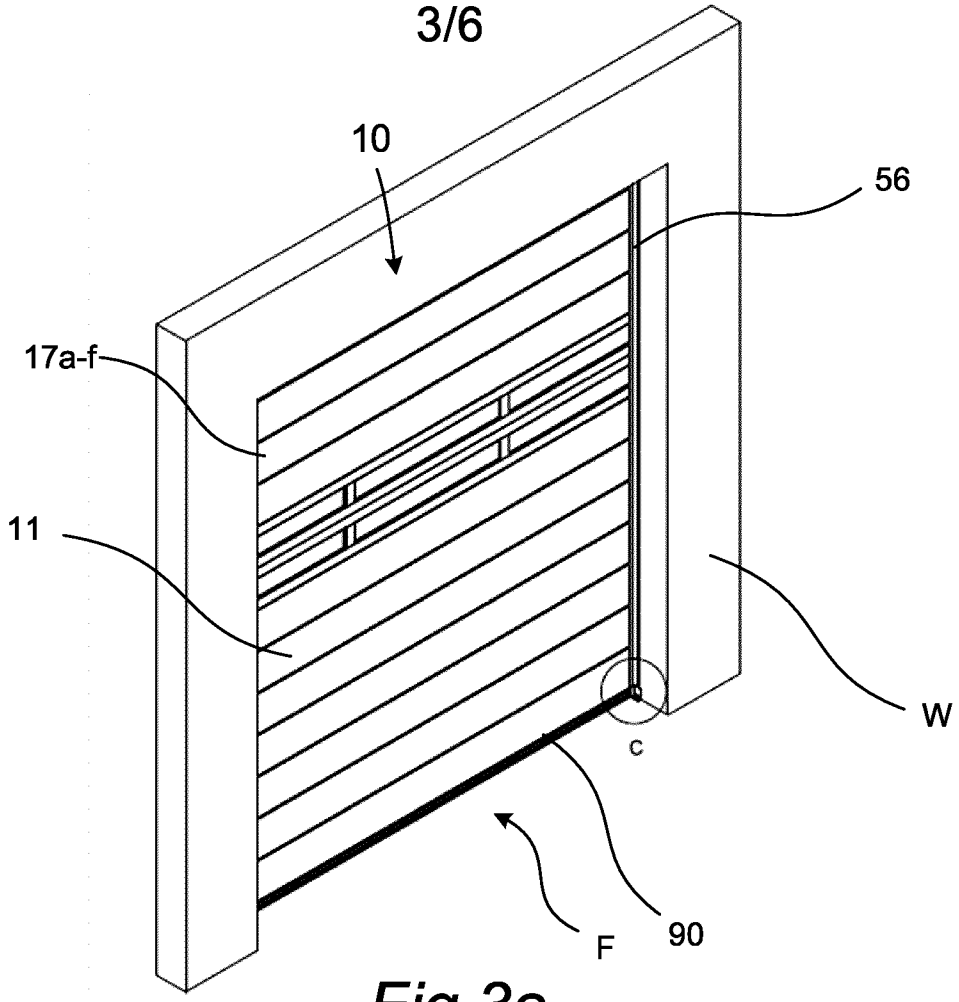

10
56
17a-f
11
W
C
F
90

Fig 3a

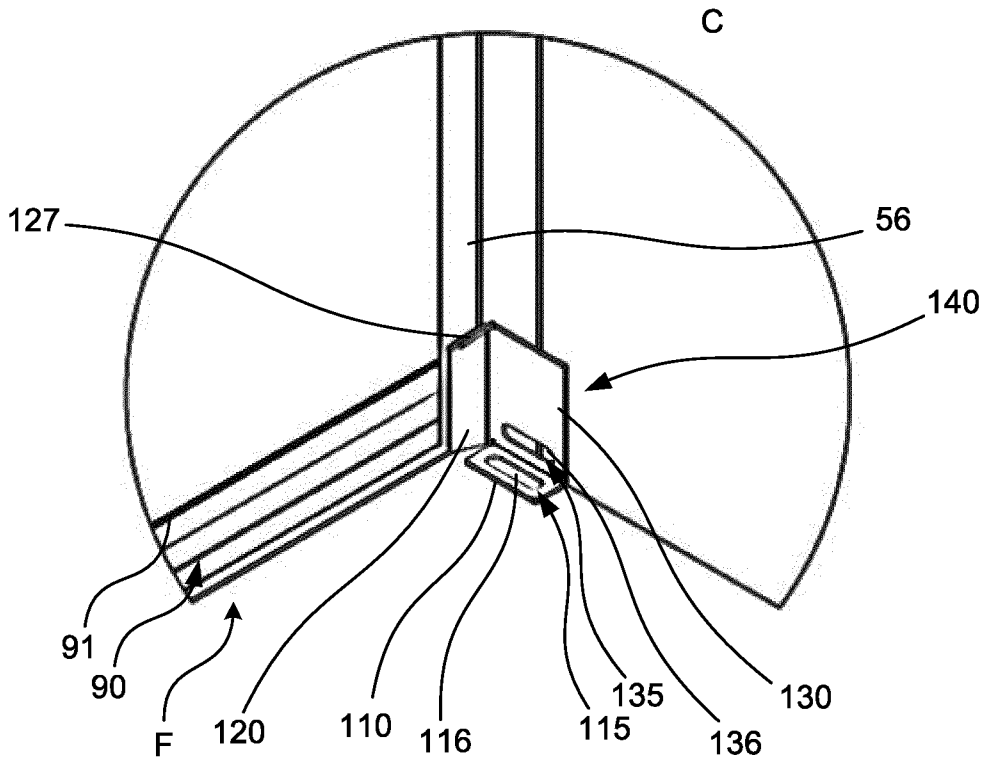

C
127
56
140
91
90
F
120
110
116
115
135
136
130

Fig 3b

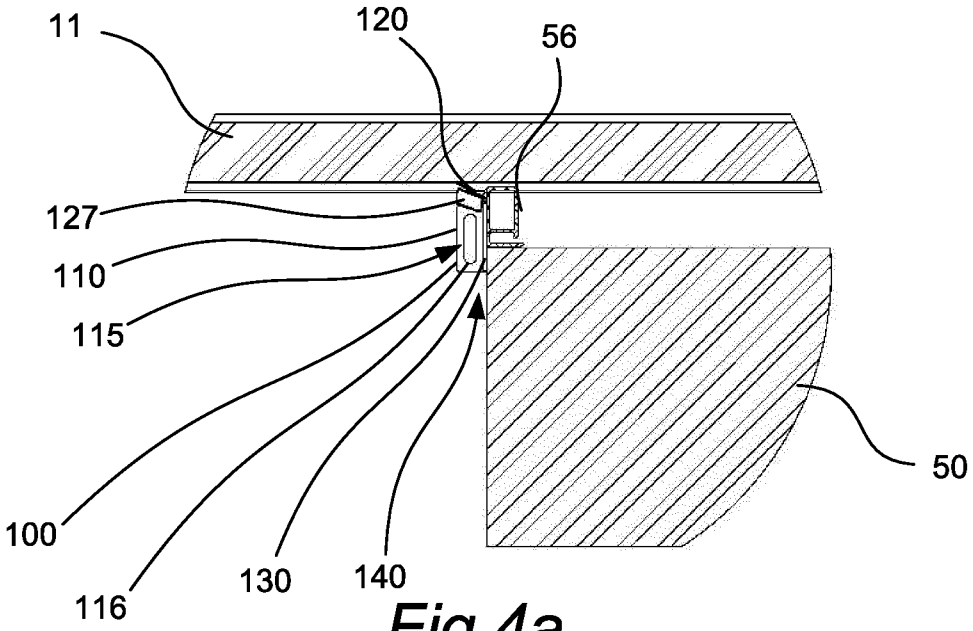

11
120
56
127
110
115
100
116
130
140
50

Fig 4a

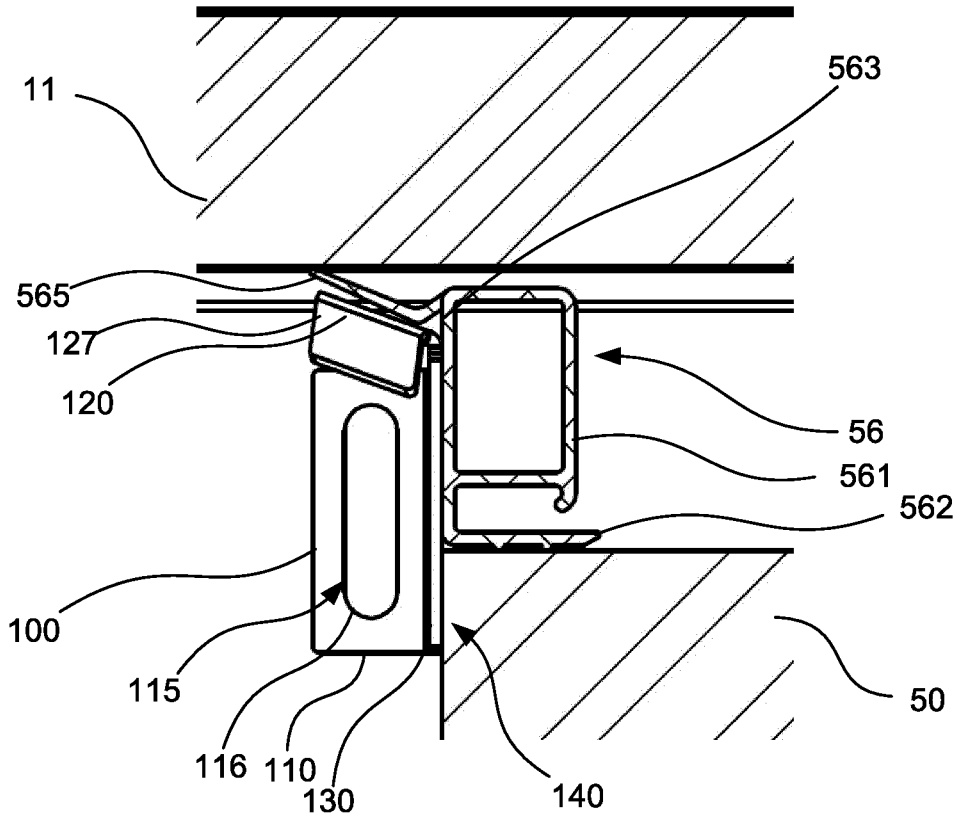

11
563
565
127
120
56
561
562
100
115
116
110
130
140
50

Fig 4b

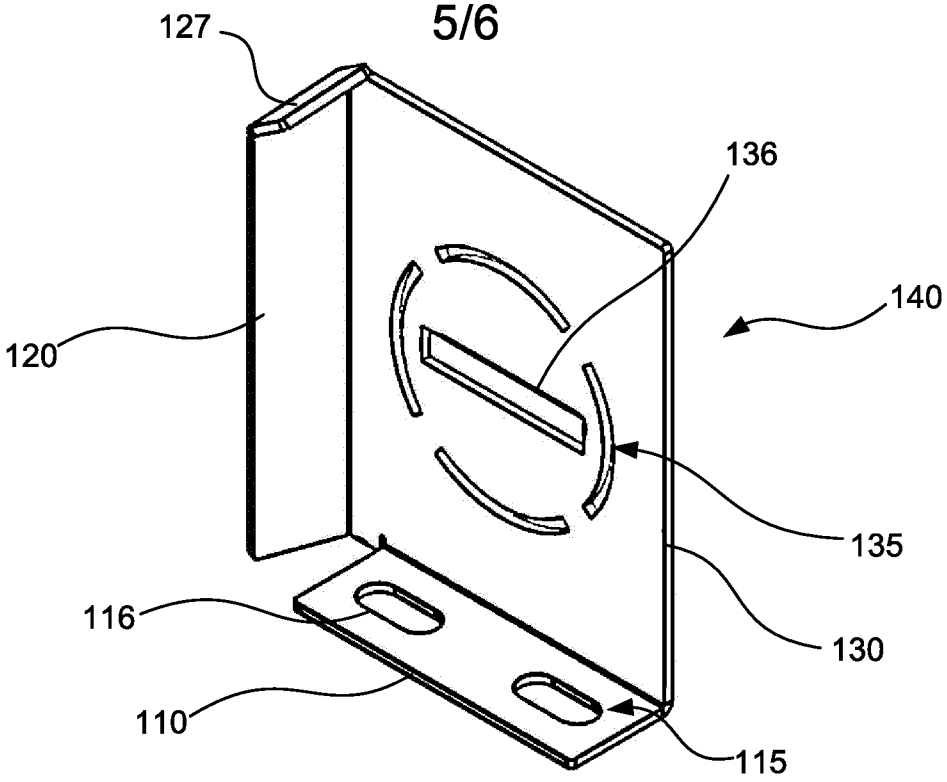


Fig 5a

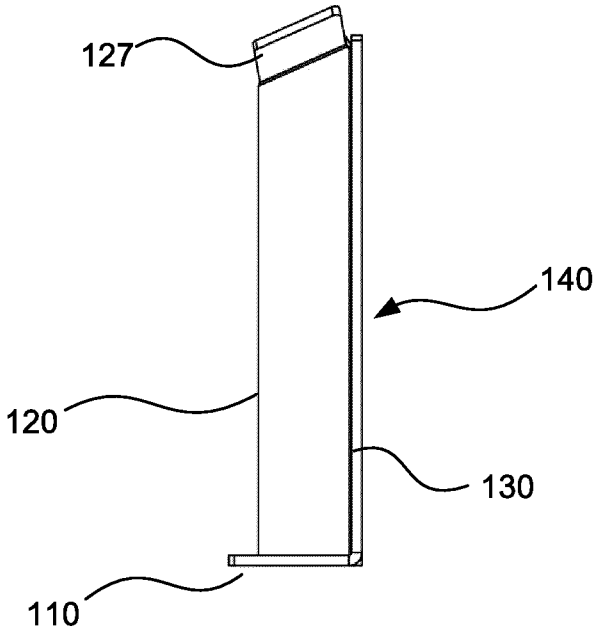


Fig 5b

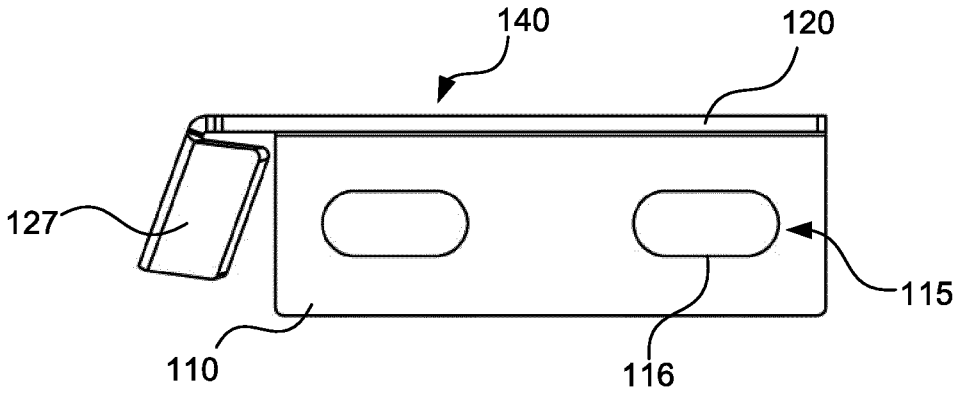


Fig 5c

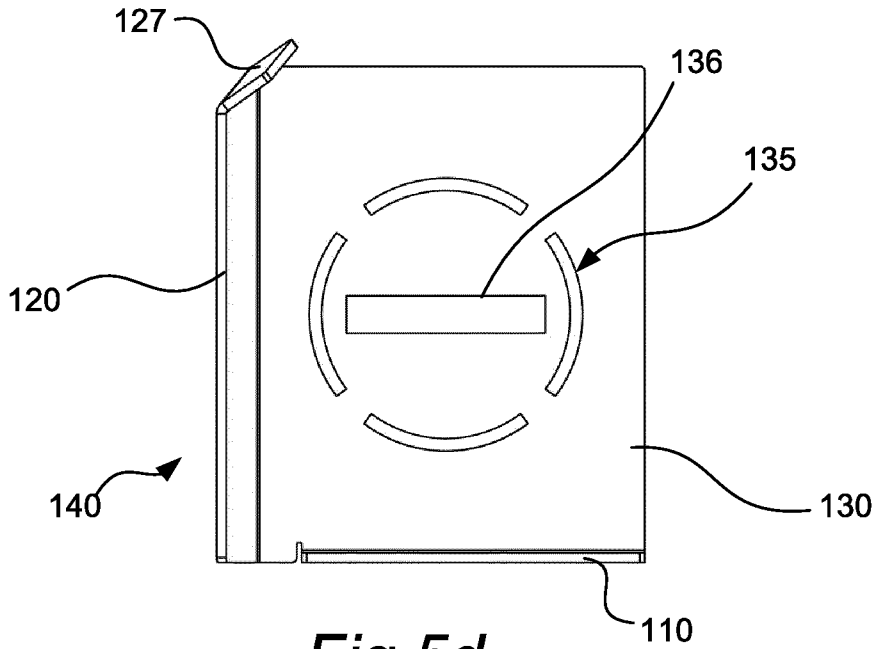


Fig 5d

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2024/068585

A. CLASSIFICATION OF SUBJECT MATTER

INV. E06B7/16 E06B3/48 E06B9/17 A01M29/30 E06B7/28
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E06B A01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2016/376829 A1 (DAVIS DAVID P [US]) 29 December 2016 (2016-12-29) figures 2A,2B,3A-C,4-6 paragraphs [0002], [0003], [0004], [0018], [0019], [0022], [0023], [0032], [0036], [0041], [0042], [0044], [0046] -----	1-3,6-26
X	US 2022/125035 A1 (MICHELL ROBERT F [US]) 28 April 2022 (2022-04-28)	1-16
A	figures 1,3,14 paragraphs [0002], [0003], [0037] - [0039], [0041], [0057] -----	17-26
	-/--	

[x] Further documents are listed in the continuation of Box C.

[x] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 September 2024	14/10/2024

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Tänzler, Ansgar

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2024/068585

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2020/104344 A1 (ASSA ABLOY ENTRANCE SYSTEMS AB [SE]) 28 May 2020 (2020-05-28) figures 1,2 page 1, line 4 - line 5 page 3, line 30 - page 4, line 16 page 5, line 15 - line 22	17-26
A	DE 203 19 110 U1 (WEIDNER RUDOLF [DE]) 26 February 2004 (2004-02-26) figures 1,2 paragraphs [0001], [0003] - [0005], [0012], [0013]	19,22

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2024/068585

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2016376829 A1	29-12-2016	US 2015176326 A1	25-06-2015
		US 2016376829 A1	29-12-2016
US 2022125035 A1	28-04-2022	NONE	
WO 2020104344 A1	28-05-2020	NONE	
DE 20319110 U1	26-02-2004	NONE	