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(54) **FIRE DOOR**

FEUERSCHUTZTÜR

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EP 3 241 973 B1

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Description

[0001] The present invention refers to a fire door according to the precharacterizing part of the main claim.

[0002] More specifically, the invention refers to a fire door of the sliding type that is preferably operated automatically whenever a fire breaks out.

[0003] It is known that during a fire, most victims are not caused by the flames themselves, but rather by the smoke that creates, which is often toxic. Fire doors are presently known of the above-mentioned type which comprise smoke seal systems.

[0004] For instance, patent EP 1 749 961, which is owned by the applicant, discloses a sliding fire door equipped with a smoke seal device comprising a first metal profile bar connected, either directly or indirectly, to a wall, and a second metal profile bar fixed to the upper edge of the door itself. The first and second metal profile bars are suitable for mutually interfering during a fire and are provided with thermo-expanding gaskets which expand whenever they are exposed to heat, in this case to the heat of fire, or to the hot smokes emanating therefrom.

[0005] Document CH 708369 A2 discloses a sliding fire door according to the preamble of claim 1, equipped with a smoke seal device comprising a metal profile bar fixed to an upper portion of the door and suitable for interacting with the sliding guide to block smokes. The smoke seal device also comprises a smoke block element, which includes a thermo-expanding gasket, suitable for co-operating with the above-mentioned metal profile bar. The smoke block element is fixed onto the sliding guide.

[0006] Even though the metal profile bars as mentioned here above comprise such cross sections as to create an obstructed path to prevent or limit the passage of smokes, it has been ascertained that they are not effective in blocking cold smokes. Such cold smokes pass through the metal profile bars without causing the thermo-expanding gaskets to expand, and pass beyond the door, often through the gaps between the tie-rods which connect the doors to their respective sliding means, for instance wheels.

[0007] As a matter of fact, the zone above the known doors (where the tie-rods used for wheel connection are arranged) is open and inefficient in blocking smokes in the case that the smoke seal device is not operating.

[0008] Utility model DE 3019727 discloses a fire door provided with a smoke seal device comprising a metal profile bar which covers both the upper part of the door and its respective sliding part. The smoke seal device also comprises a smoke block element, which, however, is fixed to the sliding guide. Also, this smoke block element is arranged on the other side of the door with respect to the metal profile bar.

[0009] Utility model DE 3212640 discloses a fire door provided with a smoke seal device comprising a metal profile bar which covers the sliding part of the door, and a second metal profile bar fixed to an upper portion of the door, below the sliding part. This block element interacts with a further metal profile bar fixed to a wall.

[0010] In the known fire doors, the smoke seal devices do not include both a metal profile bar that covers the sliding part of the door, and a smoke block element suitable for efficiently interacting with the sliding guide in order to block smokes.

[0011] An object of the present invention is therefore to provide a fire door that is equipped with a smoke seal device capable of blocking cold smokes.

[0012] Another object of the present invention is to provide a fire door that is also capable of blocking hot smokes.

[0013] These objects and others are achieved by implementing a fire door according to the technical teachings of the attached claims.

[0014] Further characteristics and advantages of the invention will be apparent from the description of a preferred but not exclusive embodiment of the fire door, here illustrated, for explanatory hence non-limitative purposes, in the attached drawings, wherein:

figure 1 is a cross sectional view of an upper zone of a first embodiment of the fire door according to the invention;
figures 2 and 3 are a cross sectional view and a perspective view respectively of an upper zone of a second embodiment of the fire door;
figures 4, 5, 6A, and 7 are cross sectional views of an upper zone of a third, fourth, fifth, and sixth embodiments of the subject door respectively; and
figure 6B is an enlarged view of a detail of figure 6A.

[0015] With reference to the mentioned figures, figure 1 shows a first embodiment of the fire door 1 according to the present invention.

[0016] The fire door 1, which is to be installed in a building, comprises at least one panel 2 equipped with a slide part 3 above. Such slide part 3 comprises in turn slide means 30, suitable for allowing the door 1 to slide, as well as at least one connection member 31 to connect the slide means 30 to the panel 2.

[0017] In the example illustrated in figure 1, the slide means 30 comprise a plurality of wheels and the door 1 comprises a plurality of connection members 31, in this case a plurality of tie-rods spaced apart from each other, which the wheels 30 are rotatably fixed to.

[0018] The door 1 also comprises a slide guide 4 on which the slide means 30 are suitable to. The slide guide 4 is usually fixed, either directly or indirectly, to a wall of the building where the fire door 1 is installed, and comprises a shaped profile bar 40 preferably having a hook-shaped cross section. Such shaped profile bar 40 is preferably made from a structured composite material, which allows for an optimum sliding of the door 1.

[0019] More specifically, the shaped profile bar 40 of the slide guide 4 includes a first portion 41 which is fixed, either directly or indirectly, to a wall P of the building, and

a lower portion 42 which extends transversally, preferably perpendicularly, from the first portion 41. At the free end of the second portion 42 there is provided a hook-shaped portion 43, featuring an inverted-"U"-shaped cross section, so as to present a portion 43A rounded upwards.

[0020] As shown in the figures, such rounded portion 43A operates as a guide for the wheels 30, which just rest on this rounded portion 43A. Conveniently are such wheels 30 provided with a circumferential race 30A.

[0021] The fire door 1 also comprises a smoke seal device 5. Such smoke seal device 5 comprises at least one metal profile bar 50 fixed to said slide part 3 and has such length L1 as to cover the slide part 3 all along the length L of the door 1 (see figure 3), and such height H1 as to cover at least the area between the upper edge of the panel 2 and the slide means 30. Such metal profile bar 50 allows to close all apertures between the tie-rods 31, which otherwise would let smoke pass through.

[0022] The smoke seal device 5 also comprises at least one smoke block element 51 suitable for co-operating with the slide guide 4 in blocking cold smokes. The block element 51 has a length preferably substantially equal to the length L1 of the metal profile bar 50, and, in any case, greater than or equal to the length L of the door 1, so as to be operational all along the length L of the door 1. In this way, cold smokes cannot pass either through the slide guide 4, between two successive wheels 30 of the door 1.

[0023] By length L of the door 1 we mean the dimension of the panel 2 of the door 1 taken in the horizontal direction and parallel to the wall P of the building.

[0024] According to the invention, the smoke seal device 5 is fixed to the slide part 3 of the panel 2 of the door 1.

[0025] This allows to achieve a smoke blocking that is more efficient as compared to the devices of the known art and also performs a two-fold function, in that it allows to block both hot smokes and cold smokes.

[0026] Actually, both the metal profile bar 50 and the smoke block element 51 are fixed to the slide part 3 of the panel 2. In this way, the interaction of the block element 51 with the slide guide 4 is improved as compared to the solutions of the known art. Furthermore, this arrangement makes it possible to have a smoke seal device 5 structurally simpler and less cumbersome.

[0027] The block element 51 extends transversally from the door 1 and comprises at least a portion 51A flush with at least one portion 42 of the slide guide 4. In the example depicted in figure 1, the portion 51A of the block element 51 is flush with the lower portion 42 of the metal profile bar 40 of the slide guide 4. Note that the example illustrates a block portion 51A flush with all the lower portion 42 of the slide guide 4, but it might be flush with a part only of such lower portion 42.

[0028] By flush with we mean a longitudinal or slide movement, in this case a horizontal one, wherein the profile bars reciprocally brush. The addition of slide elements, for instance self-compensating brushing gaskets, might be provided.

[0029] The example of figure 1 shows that the block element 51 is comprised in a block metal profile bar 52 featuring a "L"-shaped cross section and fixed to the metal profile bar 50 fixed to the slide part 3 of the door 1 (on the side facing the wall P), but this does not exclude the possibility for the block element 51 of being one piece with the same metal profile bar 50 fixed to the slide part 3 or being welded thereto.

[0030] It is particularly preferred that the block element 51 be provided with a thermo-expanding gasket 6, arranged on the upper surface of the block element 51, i. e. the surface facing the lower portion 42 of the slide guide 4.

[0031] According to another preferred aspect of the invention, the smoke seal device 5 comprises a second metal profile bar 53 having such length as to cover the slide part 3 all along the length L of the door 1, the first and second metal profile bars 50, 53 being arranged each on a respective side of the slide part 3.

[0032] It is also possible for the first metal profile bar 50, the second metal profile bar 53, and the block element 51 to constitute one piece.

[0033] In order to further improve smoke blocking, in the preferred embodiment of the invention the slide guide 4 comprises an upper portion 44 arranged above the slide part 3, preferably substantially parallel to the lower portion 42, and even more preferably substantially horizontal. Besides performing an anti-derailment function and providing a further obstacle to a possible passage of smokes, this upper portion 44 can operate as a rest member for tools bound to the door, such as a rack, shock-absorbers, or door stroke regulators.

[0034] Preferably the upper portion 44 of the slide guide 4 comprises an end portion 45 located on the other side of said slide part 3 with respect to the rest of the slide guide 4, the end portion 45 of the upper portion 44, of the slide guide 4 extending downwards, so as to further block the passage of smoke. In practice, the slide guide 4, and in particular its first portion 41, its lower portion 42, and its hook-shaped portion 43, is arranged between the slide part 3 of the door 1 and the wall P. Conversely, the end portion 45 of the upper portion 44 is located on the side of the slide part 3 oriented towards the room to be isolated, not between the wall P and the slide part 3. In order to achieve this result, the width W1 of the portion 44 must be greater than the distance W2 between the wall P and the surface of the slide part 3 which faces the room to be isolated (figure 1).

[0035] Note that, in the example of figure 1, the upper portion 44 is one piece with the first portion 41, but the upper portion 44 might also constitute an element separate from the shaped profile bar 40 and be fixed thereto, as it will be detailed below.

[0036] The principle of operation of the invention is the following.

[0037] Upon installing the door 1, first of all the first portion 41 of the slide guide 4 is fixed, either directly or

indirectly, to the building, then the wheels 30 of the door 1 itself are inserted thereinto.

[0038] Having installed the door 1, it might possibly be used as a normal door, i.e. to close an aperture between two adjacent rooms.

[0039] In the moment when a fire breaks out and cold smokes are emitted, the door 1 is automatically closed by an appropriate monitoring system which it is connected to, and which is not part of the present invention.

[0040] Upon reaching the door, the cold smokes are blocked by the metal profile bar 50 fixed to the slide part 3 of the door, as well as by the block element 51 which is flush with the lower portion 42 of the shaped profile bar 40 of the slide guide 4.

[0041] Should a quantity of cold smoke pass anyway to inside the slide guide 4, such quantity would be very small, and then it would be blocked by the upper portion 44 of the slide guide 4.

[0042] Figures 2 and 3 illustrate a second embodiment of the door according to the invention. For the sake of simplicity, the elements common to the first embodiment will not be described again, and they will be identified by the same reference numerals, but increased by 200.

[0043] In this second embodiment, the smoke seal device 205 comprises an upper block element 254 which extends transversally with respect to the slide part 203 of the door 201, and is located above the slide means 230.

[0044] Such upper block element 254 is arranged above the wheels 230 but below the upper portion 244 of the shaped profile bar 240 of the slide guide 204, and it is also flush with said upper portion 244 of the slide guide 204, so as to improve the blocking of any cold smokes having reached the inside of the slide guide 204.

[0045] Preferably is the upper block element 254 also provided with a thermo-expanding gasket 206 arranged flush with the lower surface of the upper portion 244 of the slide guide 204.

[0046] Particularly advantageous is the fact that the smoke seal device 205 comprises a metal profile bar 252 having a "C"-shaped cross section, wherein the lower portion of the metal profile bar 252 is the block element 251 and the upper portion of the profile bar 252 is the upper block element 254, the metal profile bar 252 being connected to the slide part 203 of the door 201 in such a way as to incorporate the slide means 230.

[0047] More specifically, the "C"-shaped metal profile bar 252 has a vertical portion 255 fixed to the first metal profile bar 250, in turn fixed to that side of the slide part 203 which faces the wall P, the lower portion and the upper portion of the "C"-shaped metal profile bar 252 facing the same wall P.

[0048] Figure 4 illustrates a third embodiment of the door according to the invention. For the sake of simplicity, the elements common to the first embodiment will not be described again and will be identified by the same reference numerals, increased by 300.

[0049] The third embodiment only differs from the second embodiment in that the upper portion 344 of the slide guide 304 is a piece separate from the shaped profile bar 340, and is connected thereto.

[0050] The first portion 341 of the shaped profile bar 340 includes an upper connection section 341A spaced apart from the wall P of the building so as to allow the insertion, and fixing, of a coupling section 344A of the upper portion 344.

[0051] Figure 5 illustrates a fourth embodiment of the door according to the invention. For the sake of simplicity, the elements common to the first embodiment will not be described again and will be identified by the same reference numerals, increased by 400.

[0052] In this fourth embodiment, the upper block element 454 is arranged above the upper portion 444 of the shaped profile bar 440 of the slide guide 404. The figure shows that the lower surface of the upper block element 454 is flush with the upper surface of the upper portion 444 of the slide guide 404.

[0053] In particular, the figure highlights the presence of a "C"-shaped metal profile bar 452, wherein the lower portion constitutes the block element 451 and the upper portion constitutes the upper block element 454.

[0054] Obviously, in this case the upper portion 444 of the slide guide 404 has a width W1 shorter than the distance W2 between the wall P and the slide portion 403 of the door 401, and more specifically shorter than the distance between the wall P and the vertical portion of the "C"-shaped metal profile bar 452. Furthermore, the upper portion 444 of the slide guide 404 does not include any end portion extending downwards.

[0055] Figures 6A and 6B illustrate a fifth embodiment of the door according to the invention. For the sake of simplicity, the elements common to the first embodiment will not be described again and will be identified by the same reference numerals, increased by 500.

[0056] This embodiment includes the elements of the first embodiment (figure 1), to which a hot smoke seal device 507 is added below the cold smoke seal device 505.

[0057] The hot smoke seal device 507 is similar to that disclosed in the previously mentioned patent application EP 1 749 961, and comprises a first element 570 fixed to the wall P, and a second element 571 arranged in such a way as to create an obstructed path with the first element 570. Such elements 570, 571 have a length substantially equal to the length of the door 501.

[0058] The first element 570 includes a substantially vertical section 570A extending upwards at a distance W3 from the wall P, whereas the second element 571 includes a substantially vertical section 571A extending downwards at a distance W4, shorter than W3, at such height that the majority of the vertical section 571A of the second element 571 faces the majority of the vertical section 570A of the first element 570, so as to create an obstructed path (figure 6B).

[0059] It is worth noting that, in the example of figure 6, the second element 571 of the hot smoke seal device 507 is one piece with the cold smoke block element 551

and extends from the free end thereof.

[0060] It is also worth noting that the first element 570 and the second element 571 are provided each with at least one thermo-expanding gasket 508 along said obstructed path, i.e. on the surface opposing the other element. The second element 571 might even comprises two thermo-expanding gaskets, one on each of its surfaces.

[0061] Figure 7 illustrates a sixth embodiment of the door according to the invention. For the sake of simplicity, the elements common to the first embodiment will not be described again and will be identified by the same reference numerals, increased by 600.

[0062] This embodiment is identical to the fifth embodiment (figure 6), the only difference being in that the first element 670 of the cold smoke seal device 607 is fixed to the slide guide 604, instead of to the wall P.

[0063] Such first element 670 comprises a shaped profile bar 672 having a "G"-shaped cross section, having a substantially horizontal upper section 673, which is fixed to the lower surface of the lower portion 642 of the shaped profile bar 640 of the slide guide 604 in a way similar to that described in patent application EP 1 749 961.

Claims

1. A fire door to be installed in a building, and comprising:

at least one panel (2, 202, 302, 402, 502, 602) equipped with a slide part (3, 203, 303, 403, 503, 603) above, comprising slide means (30, 230, 330, 430, 530, 630) and at least one connection member (31, 231, 331, 431, 531, 631) to connect said slide means (30, 230, 330, 430, 530, 630) to said panel (2, 202, 302, 402, 502, 602);
a slide guide (4, 204, 304, 404, 504, 604) on which said slide means (30, 230, 330, 430, 530, 630) can slide; and
a smoke seal device (5, 205, 305, 405, 505, 605) fixed to said slide part (3, 203, 303, 403, 503, 603) of said panel (2, 202, 302, 402, 502, 602) and comprising:

at least one metal profile bar (50, 250, 350, 450, 550, 650) fixed to said slide part (3, 203, 303, 403, 503, 603) and having such length (L1) as to cover said slide part (3, 203, 303, 403, 503, 603) all along the length (L) of said door (1, 201, 301, 401, 501, 601), and such height as to cover at least the area between the upper edge of said panel (2, 202, 302, 402, 502, 602) and said slide means (30, 230, 330, 430, 530, 630); and
at least one smoke block element (51, 251, 351, 451, 551, 651) having a length (L2) greater than or equal to the length (L) of said door (1, 201, 301, 401, 501, 601) and extending transversally from said door (1, 201, 301, 401, 501, 601),

said door (1,201,301,401,501,601) being **characterized in that** said smoke block element (51,251,351,451,551,651) comprises at least one portion (51A, 251A, 351A, 451A, 551A, 651A) flush with at least a portion (42, 242, 342, 442, 542, 642) of said slide guide (4, 204, 304, 404, 504, 604), and **in that** said smoke block element (5, 251, 351, 451, 551, 651) is suitable for co-operating with said slide guide (4, 204, 304, 404,504, 604) to block cold smokes.

2. A door according to the previous claim, **characterized in that** said slide guide (4, 204, 304, 404, 504, 604) comprises a shaped profile bar (40, 240, 340, 440, 540, 640) having a hook-shaped cross section, said shaped profile bar (40, 240, 340, 440, 540, 640) having a lower portion (42, 242, 342, 442, 542, 642) with which the portion (51A, 251A, 351A, 451A, 551, 651A) of the block element (51, 251, 351, 451, 551, 651) is flush.

3. A door according to any of the previous claims, **characterized in that** the block element (51, 251, 351, 451, 551, 651) comprises a thermo-expanding gasket (6, 206, 306, 406, 506, 606).

4. A door according to any of the previous claims, **characterized in that** the smoke seal device (5, 205, 305, 405, 505, 605) comprises a second metal profile bar (53, 253, 353, 453, 553, 653) having such length as to cover the slide part (3, 203, 303, 403, 503, 603) all along the length (L) of the door (1, 201, 301, 401, 501, 601), the first metal profile bar (50, 250, 350, 450, 550, 650) and the second metal profile bar (53, 253, 353, 453, 553, 653) being arranged each on a respective side of said slide part (3, 203, 303, 403, 503, 603).

5. A door according to the previous claim, **characterized in that** the slide guide (4, 204, 304, 404, 504, 604) comprises an upper portion (44, 244, 344, 444, 544, 644) arranged above the slide part (3, 203, 303, 403, 503, 603).

6. A door according to the previous claim, **characterized in that** the upper portion (44, 244, 344, 444, 544, 644) of the slide guide (4, 204, 304, 404, 504, 604) comprises an end portion (45, 245, 345, 545, 645) located on the other side of said slide part (3, 203, 303, 403, 503, 603) with respect to the rest of said slide guide (4, 204, 304, 404, 504, 604), the end portion (45, 245, 345, 545, 645) of the upper portion (44, 244, 344, 444, 544, 644) of the slide guide (4, 204, 304, 404, 504, 604) extending downwards.

7. A door according to any of the previous claims, **characterized in that** the smoke seal device (205, 305, 405, 505, 605) comprises an upper block element (254, 354, 454, 554, 654) which extends transversally with respect to the slide part (203, 303, 403, 503, 603) of the door (201, 301, 401, 501, 601) and is located above said slide means (230, 330, 430, 530, 630).

8. A door according to claim 7, **characterized in that** the smoke seal device (205, 305, 405, 505, 605) comprises a metal profile bar (252, 352, 452, 552, 652) having a "C"-shaped cross section, wherein the lower portion of said metal profile bar (252, 352, 452, 552, 652) is the block element (251, 351, 451, 551, 651) and the upper portion of said profile bar (252, 352, 452, 552, 652) is the upper block element (254, 354, 454, 554, 654), said metal profile bar (252, 352, 452, 552, 652) being connected to the slide part (203, 303, 403, 503, 603) of the door (201, 301, 401, 501, 601) so as to incorporate the slide means (230, 330, 430, 530, 630).

Patentansprüche

1. Feuerschutztür zur Installation in einem Gebäude, umfassend:

   mindestens ein Paneel (2, 202, 302, 402, 502, 602), das oben mit einem Schieberteil (3, 203, 303, 403, 503, 603) ausgestattet ist, der Schiebemittel (30, 230, 330, 430, 530, 630) und mindestens ein Verbindungsmittel (31, 231, 331, 431, 531, 631) zur Verbindung der genannten Schiebemittel (30, 230, 330, 430, 530, 630) mit dem genannten Paneel (2, 202, 302, 402, 502, 602) umfasst;
   eine Schiebeführung (4, 204, 304, 404, 504, 604) worauf die genannten Schiebemittel (30, 230, 330, 430, 530, 630) gleiten können; und
   eine an dem genannten Schieberteil (3, 203, 303, 403, 503, 603) des genannten Paneels (2, 202, 302, 402, 502, 602) befestigte Rauchdichtungsvorrichtung (5, 205, 305, 405, 505, 605), umfassend:

      mindestens einen Profilstab aus Metall (50, 250, 350, 450, 550, 650), der an dem genannten Schieberteil (3, 203, 303, 403, 503, 603) befestigt ist und der eine derartige Länge (L1) hat, dass er den genannten Schieberteil (3, 203, 303, 403, 503, 603) über die gesamte Länge (L) der genannten Tür (1, 201, 301, 401, 501, 601) bedeckt, und der eine derartige Höhe hat, dass er mindestens den Bereich zwischen dem oberen Rand des genannten Paneels (2, 202, 302, 402, 502, 602) und den genannten Schiebemitteln (30, 230, 330, 430, 530, 630) bedeckt; und
      mindestens ein Rauchsperrelement (51, 251, 351, 451, 551, 651) mit einer Länge (L2), die größer als oder gleich der Länge (L) der genannten Tür (1, 201, 301, 401, 501, 601) ist, wobei es aus der genannten Tür (1, 201, 301, 401, 501, 601) quer verläuft, wobei die genannte Tür (1, 201, 301, 401, 501, 601) **dadurch gekennzeichnet ist, dass** das genannte Rauchsperrelement (51, 251, 351, 451, 551, 651) mindestens einen Abschnitt (51A, 251A, 351A, 451A, 551A, 651A) umfasst, die bündig mit mindestens einem Abschnitt (42, 242, 342, 442, 542, 642) der genannten Schiebeführung (4, 204, 304, 404, 504, 604) steht, und dass das genannte Rauchsperrelement (51, 251, 351, 451, 551, 651) sich zum Zusammenarbeiten mit der genannten Schiebeführung (4, 204, 304, 404, 504, 604) zur Sperrung von Kaltrauch eignet.

2. Tür nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die genannte Schiebeführung (4, 204, 304, 404, 504, 604) einen geformten Profilstab (40, 240, 340, 440, 540, 640) mit einem hakenförmigen Querschnitt umfasst, wobei der genannte Profilstab (40, 240, 340, 440, 540, 640) einen unteren Abschnitt (42, 242, 342, 442, 542, 642) hat, der mit dem Abschnitt (51A, 251A, 351A, 451A, 551A, 651A) des Sperrelements (51, 251, 351, 451, 551, 651) bündig ist.

3. Tür nach nach irgendeinem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** das Sperrelement (51, 251, 351, 451, 551, 651) eine thermoexpandierende Dichtung (6, 206, 306, 406, 506, 606) umfasst.

4. Tür nach nach irgendeinem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die Rauchdichtungsvorrichtung (5, 205, 305, 405, 505, 605) einen zweiten Profilstab aus Metall (53, 253, 353, 453, 553, 653) umfasst, der eine derartige Länge hat, dass er den Schieberteil (3, 203, 303, 403, 503, 603) über die gesamte Länge (L) der genannten Tür (1, 201, 301, 401, 501, 601) bedeckt, wobei der erste Profilstab aus Metall (50, 250, 350, 450, 550, 650) und der zweite Profilstab aus Metall (53, 253, 353, 453, 553, 653) auf jeweils einer Seite des genannten Schieberteils (3, 203, 303, 403, 503, 603) angeordnet sind.

5. Tür nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die Schiebeführung (4, 204, 304, 404, 504, 604) einen oberen Abschnitt (44, 244,

344, 444, 544, 644) umfasst, der oberhalb des Schieberteils (3, 203, 303, 403, 503, 603) angeordnet ist.

6. Tür nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** der obere Abschnitt (44, 244, 344, 444, 544, 644) der Schiebeführung (4, 204, 304, 404, 504, 604) einen Endabschnitt (45, 245, 345, 545, 645) umfasst, der auf der anderen Seite (3, 203, 303, 403, 503, 603) relativ zu dem Rest der genannten Schiebeführung (4, 204, 304, 404, 504, 604) angeordnet ist, wobei der Endabschnitt (45, 245, 345, 545, 645) des oberen Abschnitts (44, 244, 344, 444, 544, 644) der Schiebeführung (4, 204, 304, 404, 504, 604) nach unten verläuft.

7. Tür nach nach irgendeinem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die Rauchdichtungsvorrichtung (205, 305, 405, 505, 605) ein oberes Sperrelement (254, 354, 454, 554, 654) umfasst, das quer zum Schieberteil (203, 303, 403, 503, 603) der Tür (201, 301, 401, 501, 601) verläuft und oberhalb der genannten Schiebemittel (230, 330, 430, 530, 630) angeordnet ist.

8. Tür nach Anspruch 7, **dadurch gekennzeichnet, dass** die Rauchdichtungsvorrichtung (205, 305, 405, 505, 605) einen Profilstab aus Metall (252, 352, 452, 552, 652) mit einem "C"-förmigen Querschnitt umfasst, worin der untere Abschnitt des genannten Profilstabs aus Metall (252, 352, 452, 552, 652) das Sperrelement (251, 351, 451, 551, 651) ist und der obere Abschnitt des genannten Profilstabs (252, 352, 452, 552, 652) das obere Sperrelement (254, 354, 454, 554, 654) ist, wobei der genannte Profilstab aus Metall (252, 352, 452, 552, 652) mit dem Schiebeteil (203, 303, 403, 503, 603) der Tür (201, 301, 401, 501, 601) verbunden ist, um die Schiebemittel (230, 330, 430, 530, 630) zu integrieren.

Revendications

1. Porte coupe-feu pour l'installation dans un édifice comprenant :

au moins un panneau (2, 202, 302, 402, 502, 602) équipé d'une partie coulissante (3, 203, 303, 403, 503, 603) supérieure, comprenant des moyens de coulissement (30, 230, 330, 430, 530, 630) et au moins un élément de connexion (31, 231, 331, 431, 531, 631) pour relier lesdits moyens de coulissement (30, 230, 330, 430, 530, 630) audit panneau (2, 202, 302, 402, 502, 602) ;

un guide de coulissement (4, 204, 304, 404, 504, 604) sur lequel lesdits moyens de coulissement (30, 230, 330, 430, 530, 630) peuvent glisser ; et

un dispositif d'étanchéité à la fumée (5, 205, 305, 405, 505, 605) fixé à ladite partie coulissante (3, 203, 303, 403, 503, 603) dudit panneau (2, 202, 302, 402, 502, 602) et comprenant :

au moins une barre profilée de métal (50, 250, 350, 450, 550, 650) fixée à ladite partie coulissante (3, 203, 303, 403, 503, 603) et ayant une longueur (L1) telle qu'elle couvre ladite partie coulissante (3, 203, 303, 403, 503, 603) sur toute la longueur (L) de ladite porte (1, 201, 301, 401, 501, 601) et une hauteur telle qu'elle couvre au moins la région entre le bord supérieur dudit panneau (2, 202, 302, 402, 502, 602) et lesdits moyens de coulissement (30, 230, 330, 430, 530, 630) ; et

au moins un élément de blocage de la fumée (51, 251, 351, 451, 551, 651) ayant une longueur (L2) supérieure ou égale à la longueur (L) de ladite porte (1, 201, 301, 401, 501, 601) et s'étendant transversalement à partir de ladite porte (1, 201, 301, 401, 501, 601), ladite porte (1, 201, 301, 401, 501, 601) étant **caractérisée en ce que** ledit élément de blocage de la fumée (51, 251, 351, 451, 551, 651) comprend au moins une portion (51A, 251A, 351A, 451A, 551A, 651A) alignée avec au moins une portion (42, 242, 342, 442, 542, 642) dudit guide de coulissement (4, 204, 304, 404, 504, 604) et **en ce que** ledit élément de blocage de la fumée (51, 251, 351, 451, 551, 651) est conçu pour coopérer avec ledit guide de coulissement (4, 204, 304, 404, 504, 604) pour bloquer les fumées froides.

2. Porte selon la revendication précédente, **caractérisée en ce que** ledit guide de coulissement (4, 204, 304, 404, 504, 604) comprend une barre profilée formée (40, 240, 340, 440, 540, 640) ayant une section transversale en forme de crochet, ladite barre profilée formée (40, 240, 340, 440, 540, 640) ayant une portion inférieure (42, 242, 342, 442, 542, 642) alignée avec la portion (51A, 251A, 351A, 451A, 551A, 651A) de l'élément de blocage (51, 251, 351, 451, 551, 651).

3. Porte selon l'une quelconque des revendications précédentes, **caractérisée en ce que** l'élément de blocage (51, 251, 351, 451, 551, 651) comprend une garniture à expansion thermique (6, 206, 306, 406, 506, 606).

4. Porte selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le dispositif d'étanchéité à la fumée (5, 205, 305, 405, 505, 605) comprend une seconde barre profilée de métal (53, 253, 353, 453, 553, 653) ayant une longueur telle

qu'elle couvre la partie coulissante (3, 203, 303, 403, 503, 603) sur toute la longueur (L) de la porte (1, 201, 301, 401, 501, 601), la première barre profilée de métal (50, 250, 350, 450, 550, 650) et la seconde barre profilée de métal (53, 253, 353, 453, 553, 653) étant agencées chacune sur un côté respectif de ladite partie coulissante (3, 203, 303, 403, 503, 603).

5. Porte selon la revendication précédente, **caractérisée en ce que** le guide de coulissement (4, 204, 304, 404, 504, 604) comprend une portion supérieure (44, 244, 344, 444, 544, 644) agencée au-dessus de la partie coulissante (3, 203, 303, 403, 503, 603).

6. Porte selon la revendication précédente, **caractérisée en ce que** la portion supérieure (44, 244, 344, 444, 544, 644) du guide de coulissement (4, 204, 304, 404, 504, 604) comprend une portion terminale (45, 245, 345, 545, 645) située sur l'autre côté de ladite partie coulissante (3, 203, 303, 403, 503, 603) par rapport au reste dudit guide de coulissement (4, 204, 304, 404, 504, 604), la portion terminale (45, 245, 345, 545, 645) de la portion supérieure (44, 244, 344, 444, 544, 644) du guide de coulissement (4, 204, 304, 404, 504, 604) s'étendant vers le bas.

7. Porte selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le dispositif d'étanchéité à la fumée (205, 305, 405, 505, 605) comprend un élément de blocage supérieur (254, 354, 454, 554, 654) qui s'étend transversalement par rapport à la partie coulissante (203, 303, 403, 503, 603) de la porte (201, 301, 401, 501, 601) et est situé au-dessus desdits moyens de coulissement (230, 330, 430, 530, 630).

8. Porte selon la revendication 7, **caractérisée en ce que** le dispositif d'étanchéité à la fumée (205, 305, 405, 505, 605) comprend une barre profilée de métal (252, 352, 452, 552, 652) ayant une section transversale en forme de "C", où la portion inférieure de ladite barre profilée de métal (252, 352, 452, 552, 652) est l'élément de blocage (251, 351, 451, 551, 651) et la portion supérieure de ladite barre profilée (252, 352, 452, 552, 652) est l'élément de blocage supérieur (254, 354, 454, 554, 654), ladite barre profilée de métal (252, 352, 452, 552, 652) étant reliée à la partie coulissante (203, 303, 403, 503, 603) de la porte (201, 301, 401, 501, 601) de sorte à incorporer les moyens de coulissement (230, 330, 430, 530, 630).

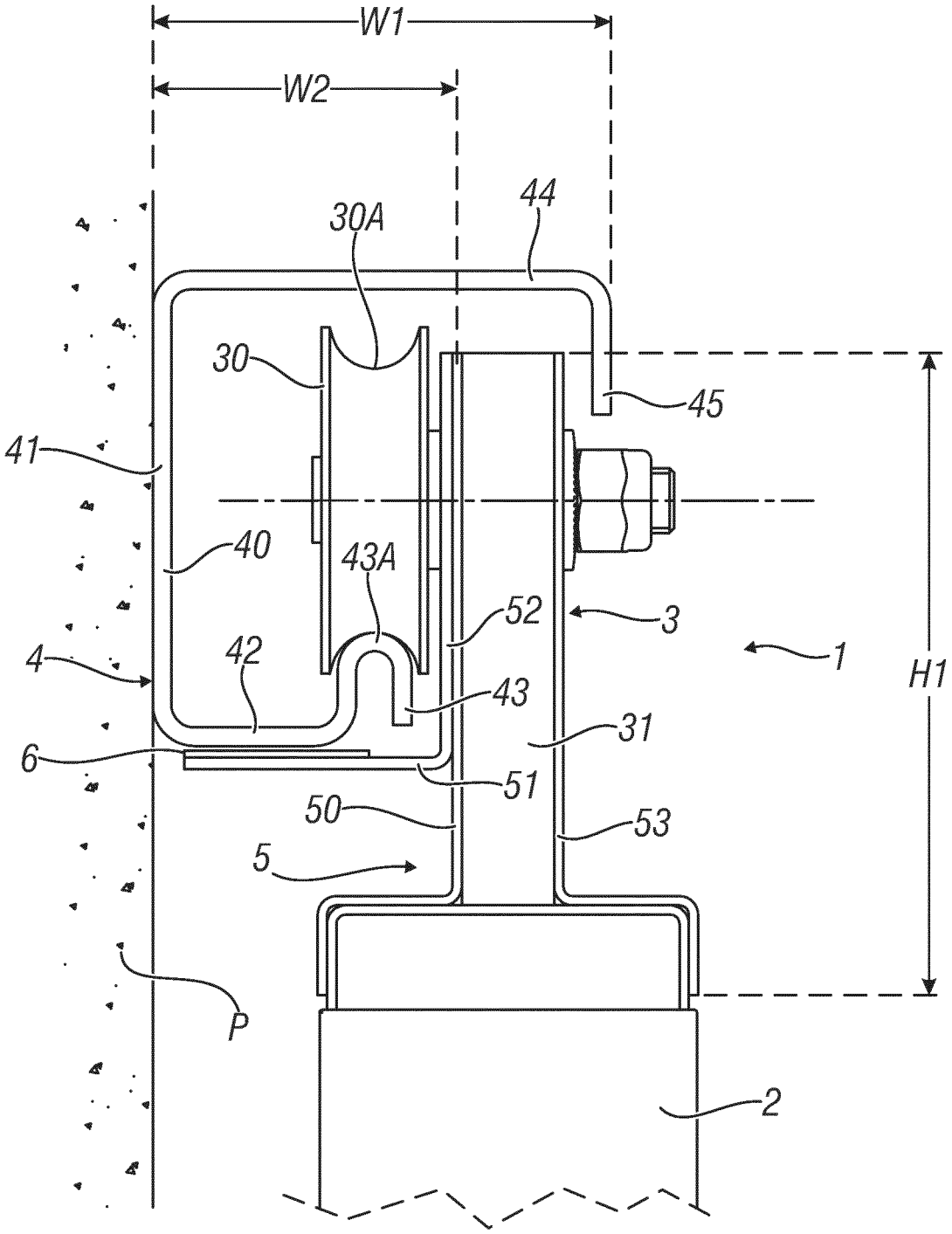


Fig. 1

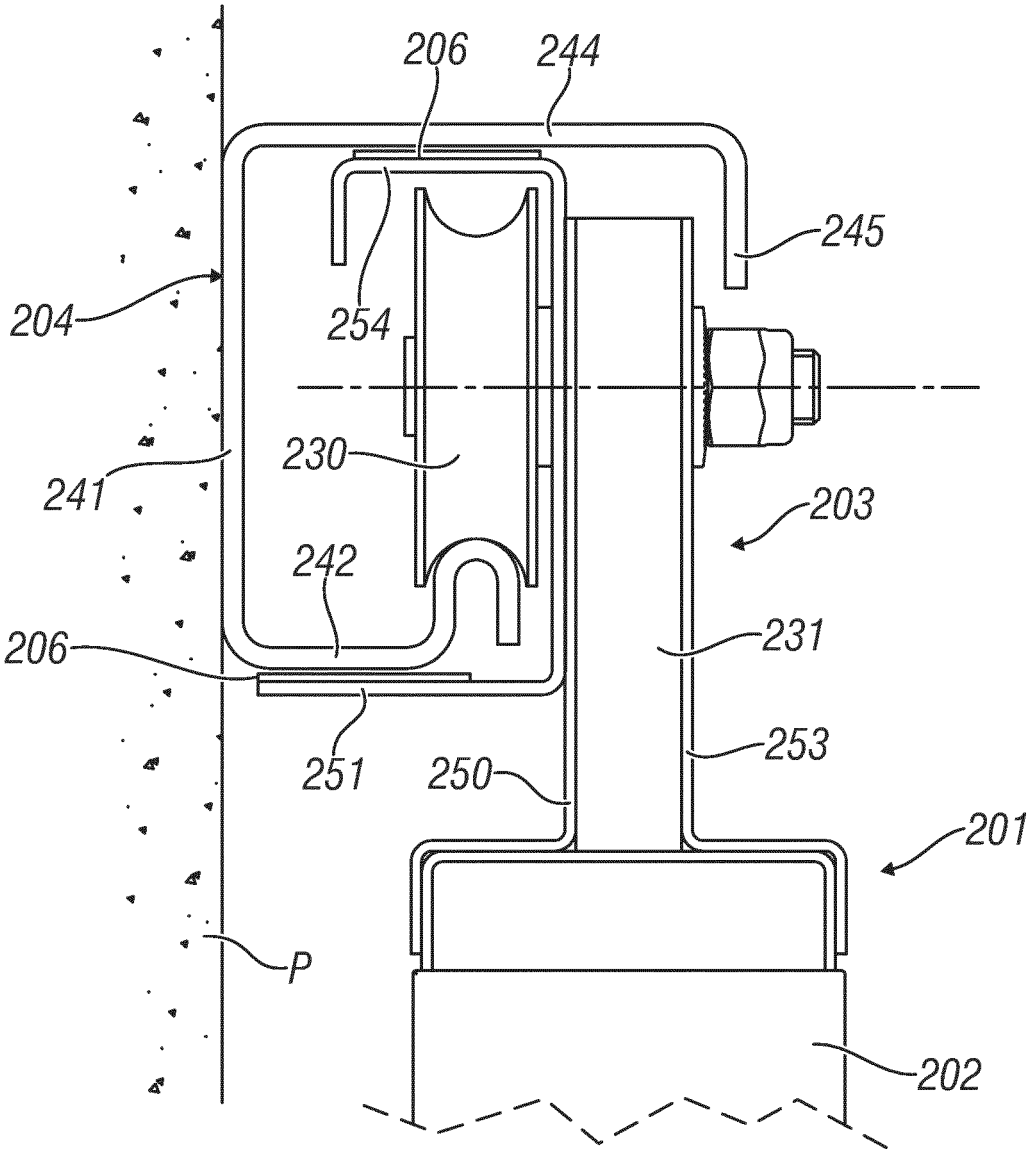


Fig. 2

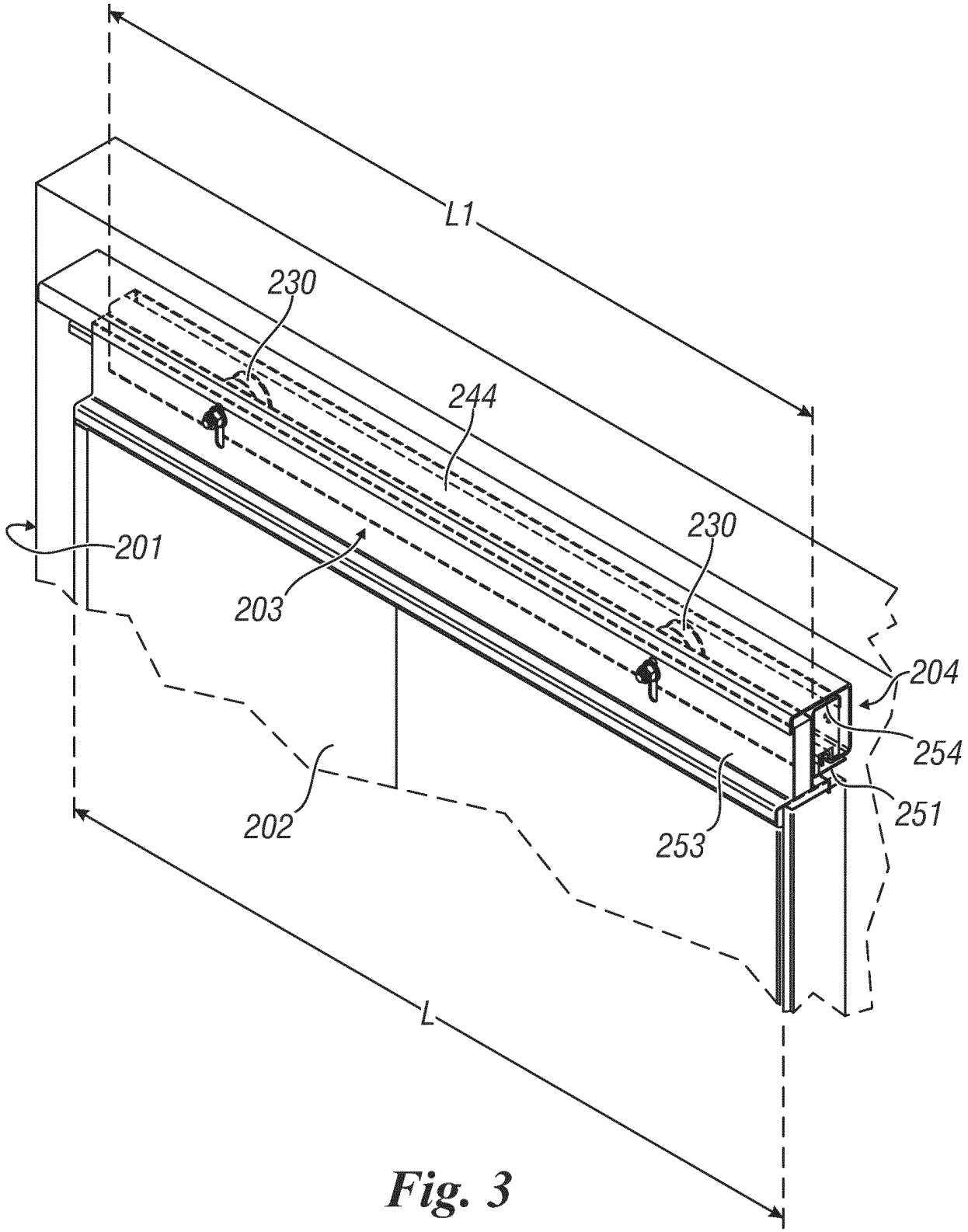


Fig. 3

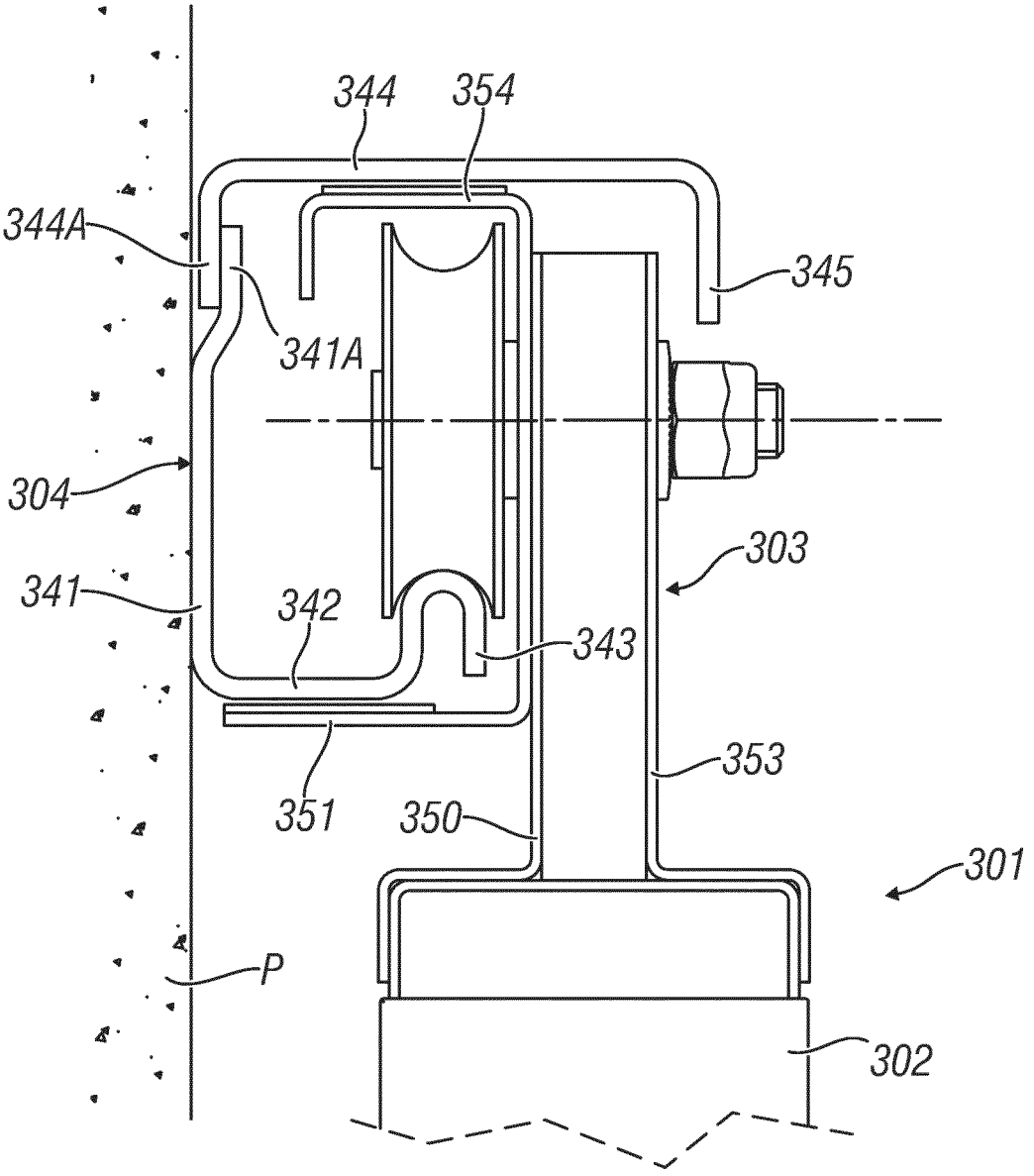


Fig. 4

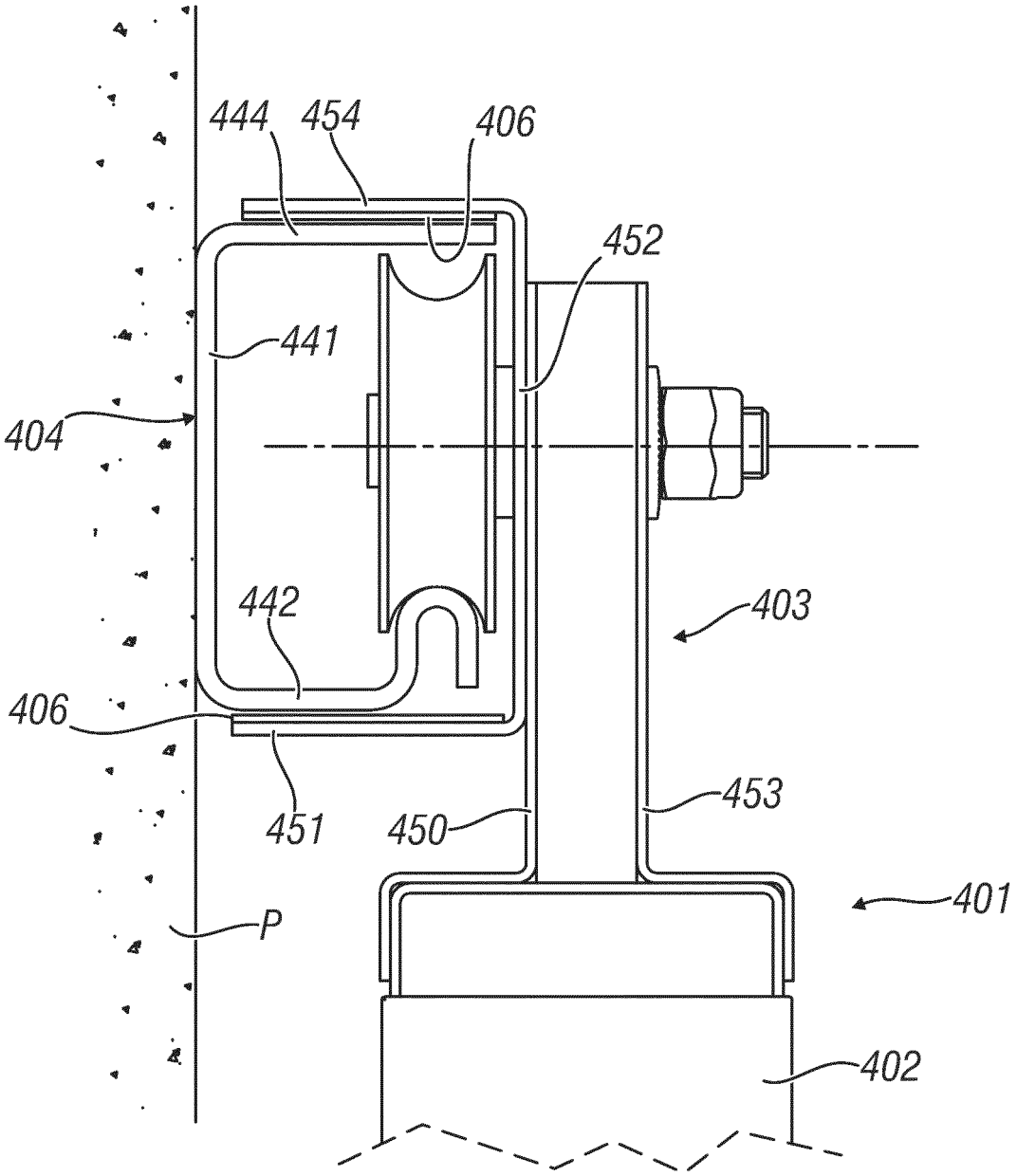


Fig. 5

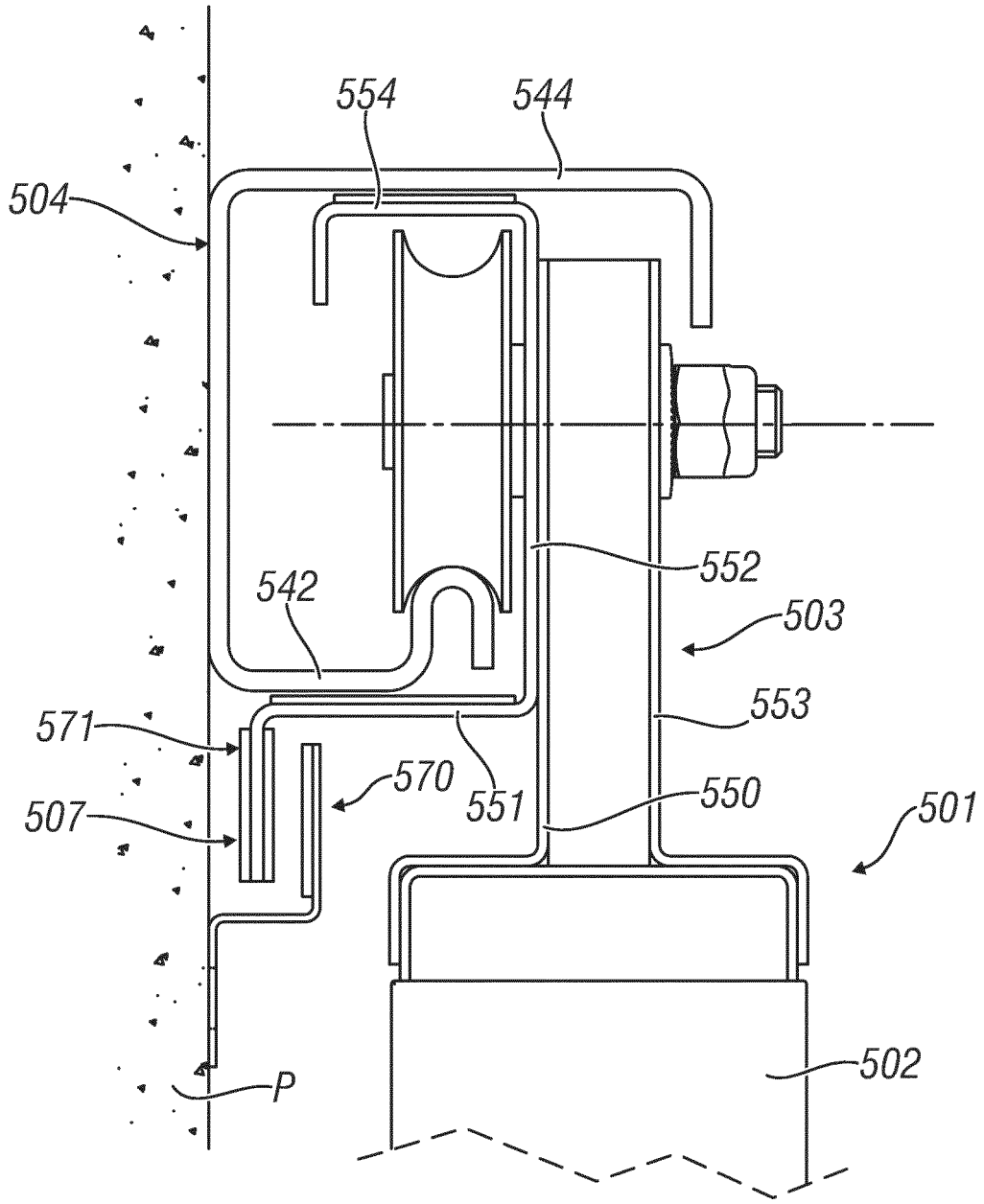


Fig. 6A

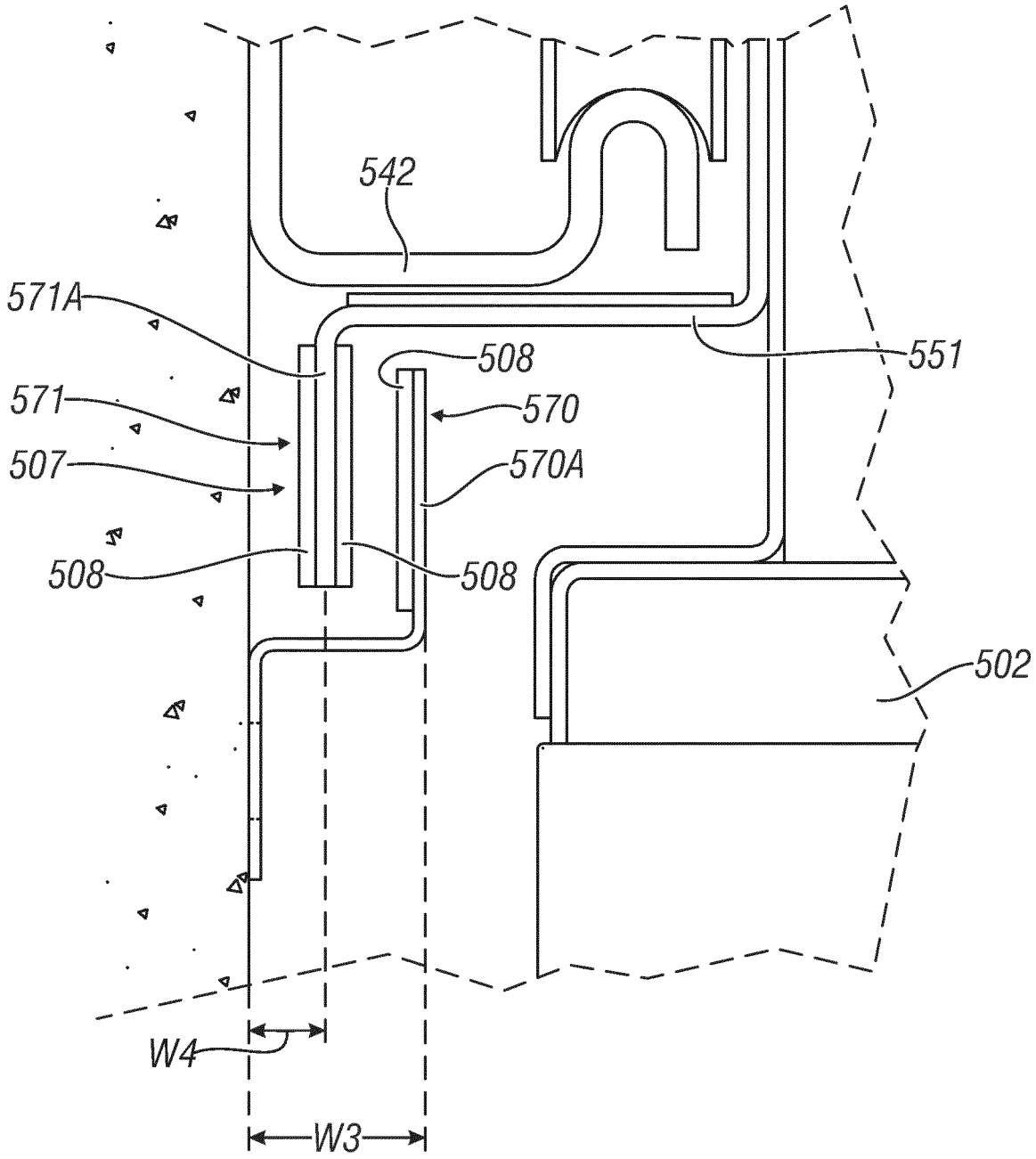
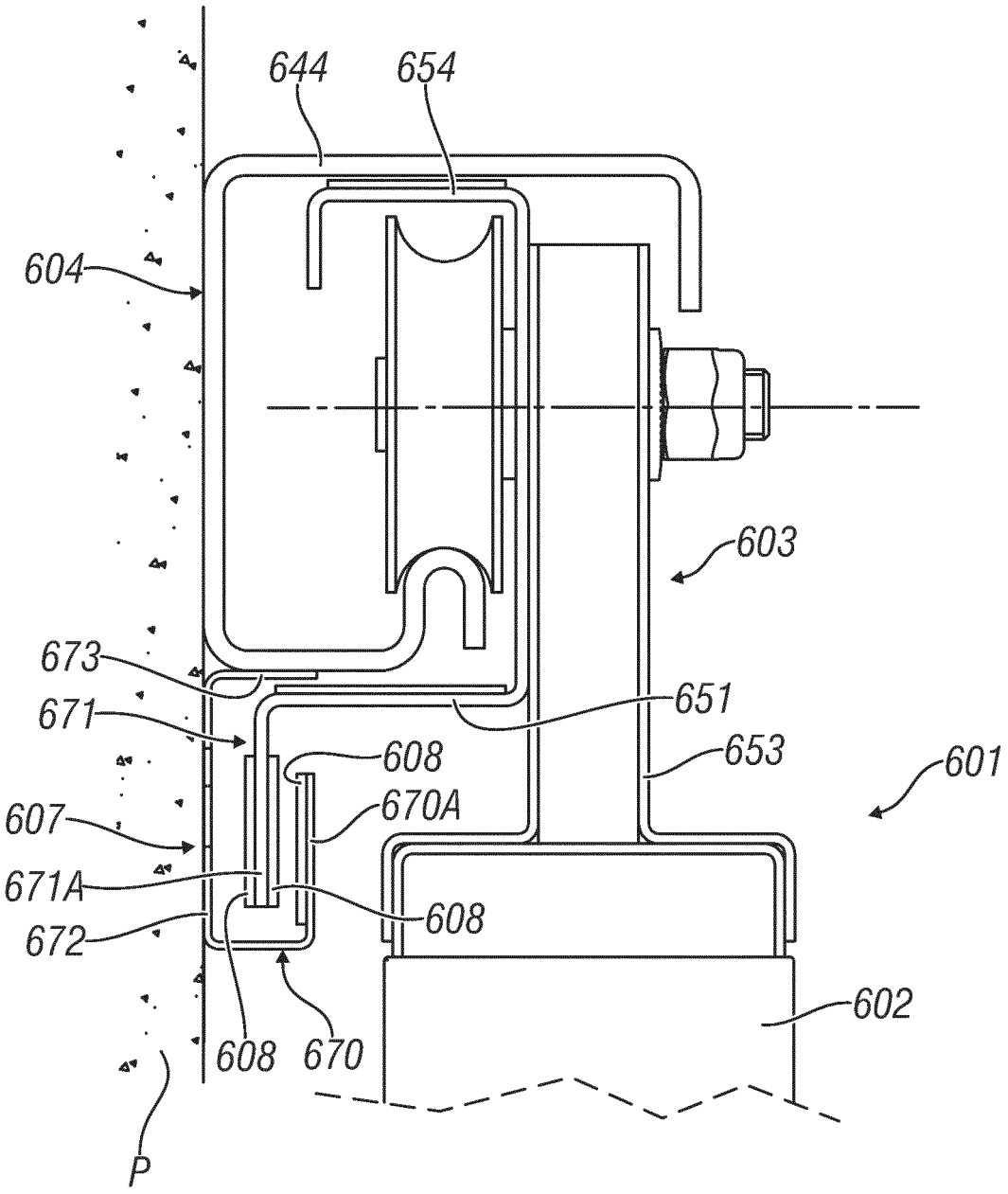


Fig. 6B


644
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P

Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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