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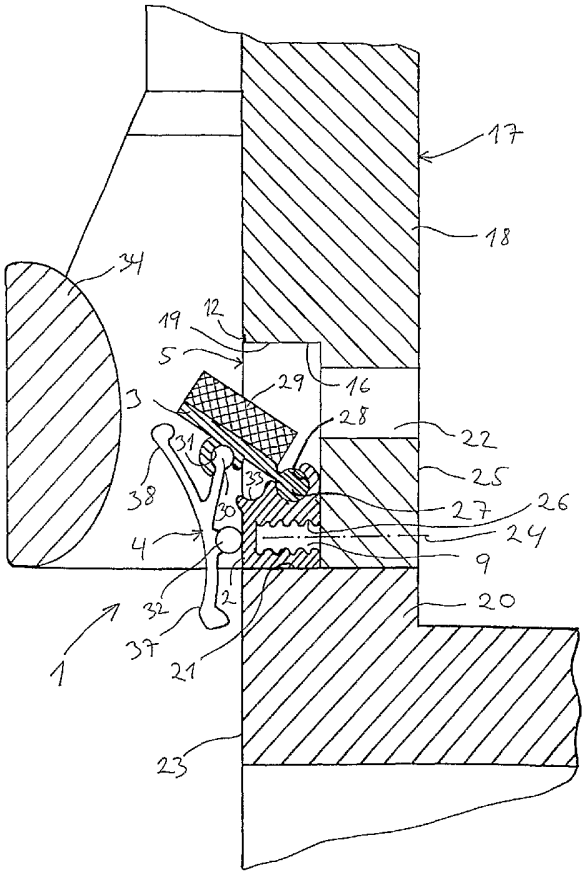
(54) Title: VENTILATING VALVE



(57) Abstract: A ventilating valve (1) which is adapted to be mounted on a building structure with a ventilating opening (22) comprises a stationary valve part (2) adapted to be fixed on the building structure and an elongated valve element (3) which is connected with the stationary valve part so that the valve element is pivotal between a closed position in which it covers the ventilating opening and an open position in which the ventilating opening is uncovered. The valve comprises an operating handle (4) having an at least partially rounded circumference (36) and a concave outer surface (35) which has separately marked finger-touch areas (37, 38) for operation of the handle to open and close the valve. Said finger-touch areas are positioned opposite each other and along the circumference of the handle.

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Ventilating valve

The present invention relates to a ventilating valve adapted to be mounted on a building structure, such as a window sash or the like, the building structure having a ventilating opening, the valve comprising a stationary valve part adapted to be fixed on the building structure and an elongated valve element which is connected with the stationary valve part so that the valve element in the mounted position of the valve on the building structure is pivotal about an axis extending in a longitudinal direction of the valve element between a closed position in which it covers the ventilating opening in the building structure and an open position in which the ventilating opening is uncovered, and the valve comprising an operating handle.

NO 179985 discloses a ventilating valve having a valve element in the form of a tubular moulding which in its closed position abuts the internal surface of a window sash around a ventilating opening in said sash. Each end of the valve element is guided in a stationary valve part in the form of an end block mounted on the internal surface of the window sash. The valve element may be locked in its closed position by means of locking bars provided at each end of the valve element, respectively, each locking bar being pivotal to a position in which it engages a notch in its corresponding end block. However, this valve is difficult to operate because both locking bars must be manipulated simultaneously. Furthermore, the valve is bulky.

The object of the present invention is to provide a ventilating valve which is simpler to operate than the known valves.

In view of this, the ventilating valve according to the invention is characterized in that the operating handle has an at least partially rounded cir-

cumference and a concave outer surface which is curved about an axis extending in the longitudinal direction of the valve element, in that the concave outer surface has separately marked finger-touch areas for operation of the handle to open and close the valve, and in that said finger-touch areas are positioned opposite each other and along the circumference of the handle.

In this way, the valve element may easily be opened and closed by manipulating the operating handle with one finger, which may abut either of the finger-touch areas. It is a further advantage that the operating handle takes up very little space so that the valve may even be positioned under a hand grip of the window.

Advantageously, the finger-touch areas of the operating handle may be recessed in the concave outer surface. Thereby the finger-touch areas may be sensed and easily found by a fingertip.

The finger-touch areas of the operating handle may be provided with a material which has a surface texture different from, e.g. is softer than the material of the remaining part of the operating handle. This will ensure a comfortable grip when handling the valve and also enable the user to feel with the fingertip where to press on the handle.

In an embodiment, the operating handle is pivotally connected to the valve element about an axis extending in the longitudinal direction of the valve element, and the operating handle is provided with a locking device in the form of a cylinder extending in the longitudinal direction of the valve element, said cylinder being adapted to engage with a corresponding recess in the stationary valve part in order to lock the valve element in its closed position. By pressing corresponding finger-touch areas on the operating handle, the valve element may be closed and the cylinder brought into locking engagement with the re-

cess, and vice versa.

In an advantageous embodiment, the stationary valve part is constituted by an extruded moulding, the moulding has a longitudinal slot with opposite walls, and each of said walls has a plurality of adjacent grooves extending in the longitudinal direction of the slot, whereby the grooves of one of the walls are staggered in relation to the grooves of the other wall. This provides for an easy installation of the ventilating valve, whereby the stationary valve part may be fixed to the building structure by means of screws inserted into the slot and screwed into engagement with the grooves of the slot walls. The screws may be placed at any position along the slot so that precise positioning in the direction of the slot is not necessary. The slot may be positioned pointing away from the visible operation side of the ventilating valve, thereby providing for a concealed mounting of the valve.

In a further embodiment, the stationary valve part has two ends, each of which is provided with an end member, and each end member has a thin cover plate adapted to contact a surface of the building structure and an underlying part adapted to engage a recess in said surface of the building structure. In this way, the ventilating valve may by embedded in the building structure in a elongated recess in the latter, whereby the cover plate may conceal the termination of the recess and thereby provide a more esthetic appearance of the installed valve. The part of the end member underlying the cover plate may ensure good positioning of the valve in the recess.

In an advantageous embodiment, the valve element is provided with an elastic sealing strip adapted to contact the building structure around the ventilating opening in said structure. Apart from sealing the valve element against the building structure in the closed position of the valve element, the

elasticity of the sealing strip provides for a closing force keeping the locking element in engagement with its corresponding recess in the closed position of the valve element.

The present invention further relates to a window assembly comprising a ventilating valve as described above. The window assembly is characterized in that it comprises a window sash which is mounted pivotally in a window frame, in that substantially the entire ventilating valve is situated in a recess in a top member of the window sash, and in that a hand grip for the opening of the window has the form of a moulding extending along the ventilating valve outside said recess in the window sash. By positioning the ventilating valve behind the hand grip of the window, the valve may be hidden and thereby the overall esthetic appearance of the window assembly may be improved. Especially the compact design of the operating handle of the ventilating valve makes it possible to place the valve behind a hand grip of a window, and at the same time providing for easy operation of the ventilating valve.

In an advantageous embodiment in terms of manufacture, the top member of the window sash is composed of at least two mouldings, a first one of which delimits a first side wall and two rounded end walls of said recess, and a second one of which delimits a second side wall of said recess. As a result, the recess may be machined very easily in a milling machine by cutting out material from the first moulding, entering the material from that side of the recess to be machined that will be delimited by the second moulding. The rounded end walls will result automatically from the rotating milling tool.

The invention will be described in more detail below by means of examples of embodiments with reference to the schematic drawing, in which

Fig. 1 is a perspective view of the face of a

ventilating valve according to the invention,

Fig. 2 is a perspective view of the rear of the ventilating valve in Fig. 1,

Figs. 3 is an enlarged view of a segment of Fig. 1,

Fig. 4 is a side view of the ventilating valve, seen from its right side in Fig. 1,

Fig. 5 is another side view of the ventilating valve, seen from its left side in Fig. 1, and

Fig. 6 and Fig. 7 are sectional views of the ventilating valve in Fig. 1 installed in a window sash, in the closed and the open position of the valve, respectively.

Fig. 1 shows a ventilating valve 1 according to the invention, seen from its face side. The valve 1 comprises a stationary elongate valve element 2 formed from an extruded aluminium moulding, a valve element 3 also formed from an extruded aluminium moulding, an operating handle 4 formed from injection-moulded plastic, and two end members 5, 6 also formed from injection-moulded plastic.

Fig. 2 shows the ventilating valve 1 from the rear side, which will be hidden in the installed position of the valve. Each end member 5, 6 is connected to a respective end of the stationary valve member 2 by means of a tab 7, 8 which is formed integrally with the end member and pressed into engagement with a slot 9 formed longitudinally in the rear side of the stationary valve member 2. After insertion of the tab 7, 9 in the slot 9, a part 10, 11 of the aluminium material of the stationary valve member 2 next to the tab is depressed slightly into the plastic material of the tab 7, 8 in order to secure the tab in the slot 9. Each end member 5, 6 has a thin cover plate 12 of rectangular shape extending substantially in the plane of the face side 13 of the stationary valve member 2 and over the entire width of the valve 1, seen from its face side. Under the

cover plate 12 and visible from the rear side of the valve 1 each end member has a hollow underlying part 14 of rectangular shape, except for one rounded corner 15. The rounded corners 15 are provided in order for the valve 1 to fit into a recess 16 having rounded corners at its ends.

Fig. 6 shows the ventilating valve 1 installed in a top member 17 of a window sash. The top member 17 is composed of a first moulding 18 delimiting an upper wall 19 and the rounded end walls of the recess 16 and a second moulding 20 delimiting the lower wall 21 of the recess 16. The first moulding 18 surrounds an elongate ventilating opening 22 which opens to the exterior side of the window. The recess 16 is machined in the first moulding 18 by means of a milling machine before assembly of the sash 17. The milling tool is entered into the recess 16 from its lower side where a wall 21 closes the recess in the assembled condition of the window sash 17, shown in Fig. 6. Thereby the ends of the recess 16 are rounded next to the upper wall 19 of the latter. The rounded corners 15 of the end members 5, 6 of the valve 1 fits into said rounded corners (not shown) of the recess 16.

The stationary valve member 2 is installed next to the lower wall 21 of the recess 16 and is substantially flush with the inner surface 23 of the top member 17 of the window sash. The stationary valve member 2 is secured to the top member 17 by means of screws indicated by the dash-dot line 24 and inserted through an exterior surface 25 of the top member 17 into the slot 9 in the stationary valve member 2. The not shown screws engage with adjacent grooves 26 provided in either side wall of the slot 9. The grooves 26 in one side wall of the slot 9 is displaced slightly in relation to the grooves 26 of the other side wall in order for the screw threads to fit the grooves on either side of the slot. The valve element

3 is connected pivotally with the stationary valve member 2 by means of a cylindrical part 27 formed integrally with the valve element 3, extending in the longitudinal direction of the valve member 3, and fitted in a corresponding semi-cylindrical recess 28 formed in the stationary valve member 2. The valve element 3 is provided with an elastic sealing strip 29 which in the closed position of the valve shown in Fig. 6 abuts the edges of the ventilating opening 22 provided in the top member 17 of the window sash.

The operating handle 4 of the ventilating valve 1 is pivotally connected with the valve member 3 about an axis extending in the longitudinal direction of the valve element 3 by means of a cylindrical part 30 formed integrally with the handle 4 on its rear side and being embedded in a corresponding cylindrical recess 31 formed in the valve element 3. Furthermore, at a distance from the cylindrical part 30, the handle 4 is provided with a cylinder 32 also formed integrally with the handle on its rear side. The cylinder 32 forms a locking device which in the closed position of the valve 1 engages a corresponding semicircular recess 33 in the stationary valve part 2. In this position, the sealing strip 29 is compressed slightly at its edges, whereby a locking force is provided which keeps the cylinder 32 in locking engagement with the recess 33.

The top member 17 of the window sash is provided with a hand grip 34 extending along the ventilating valve 1 at a distance from the operating handle 4, whereby the valve 1 is hidden when seen from the interior of the window. Nevertheless, the operating handle 4 may easily be manipulated by a fingertip, as will be explained in the following.

Fig. 3 shows an enlarged perspective view of the operating handle 4, which has a concave outer surface 35 and a rounded circumference 36. On either side of the concave outer surface 35 in relation to

the longitudinal axis of the valve 1, the handle 4 is provided with an opposed first and second finger-touch areas 37, 38. The finger-touch areas 37, 38 are separately marked by being recessed in the outer surface 35 of the handle. Alternatively, the finger-touch areas 37, 38 may be separately marked by means of colours.

In order to open the valve 1 from the closed position shown in Fig. 6, the second finger-touch area 38 is depressed with the finger tip, whereby the sealing strip 29 is compressed slightly more and the cylinder 32 springs out of engagement with the recess 33 in the stationary valve part 2 and the valve opens to the position shown in Fig. 7. Subsequently, the valve 1 may be closed again by positioning the finger tip on the second finger tip area 38 and touching simultaneously the first finger-touch area 37 with a finger, whereby the valve element 3 may be pivoted to its closed position.

PATENT CLAIMS

1. A ventilating valve (1) adapted to be mounted on a building structure, such as a window sash or the like, the building structure having a ventilating opening (22), the valve comprising a stationary valve part (2) adapted to be fixed on the building structure and an elongated valve element (3) which is connected with the stationary valve part so that the valve element in the mounted position of the valve on the building structure is pivotal about an axis extending in a longitudinal direction of the valve element between a closed position in which it covers the ventilating opening in the building structure and an open position in which the ventilating opening is uncovered, and the valve comprising an operating handle (4), characterized in that the operating handle (4) has an at least partially rounded circumference (36) and a concave outer (35) surface which is curved about an axis extending in the longitudinal direction of the valve element, in that the concave outer surface has separately marked finger-touch areas (37, 38) for operation of the handle to open and close the valve, and in that said finger-touch areas are positioned opposite each other and along the circumference of the handle.

2. A ventilating valve according to claim 1, characterized in that the finger-touch areas (37, 38) of the operating handle are recessed in the concave outer surface (35).

3. A ventilating valve according to claim 1 or 2, characterized in that the finger-touch (37, 38) areas of the operating handle are provided with a material which has a surface texture different from, e.g. is softer than the material of the remaining part of the operating handle.

4. A ventilating valve according to any one of the preceding claims, characterized in that the operating handle (4) is pivotally connected

to the valve element (3) about an axis extending in the longitudinal direction of the valve element, and in that the operating handle is provided with a locking device in the form of a cylinder (32) extending in the longitudinal direction of the valve element, said cylinder being adapted to engage with a corresponding recess (33) in the stationary valve part in order to lock the valve element in its closed position.

5. A ventilating valve according to any one of the preceding claims, characterized in that the stationary valve part (2) is constituted by an extruded moulding, in that the moulding has a longitudinal slot (9) with opposite walls, and in that each of said walls has a plurality of adjacent grooves (26) extending in the longitudinal direction of the slot, whereby the grooves of one of the walls are staggered in relation to the grooves of the other wall.

6. A ventilating valve according to any one of the preceding claims, characterized in that the stationary valve part (2) has two ends, each of which is provided with an end member (5, 6), and in that each end member has a thin cover plate (12) adapted to contact a surface of the building structure and an underlying part (14) adapted to engage a recess (16) in said surface of the building structure.

7. A ventilating valve according to any one of the preceding claims, characterized in that the valve element (3) is provided with an elastic sealing strip (29) adapted to contact the building structure around the ventilating opening (22) in said structure.

8. A window assembly comprising a ventilating valve according to any one of the preceding claims, characterized in that the window assembly comprises a window sash which is mounted pivo-

tally in a window frame, in that substantially the entire ventilating valve (1) is situated in a recess (16) in a top member (17) of the window sash, and in that a hand grip (34) for the opening of the window has the form of a moulding extending along the ventilating valve outside said recess in the window sash.

9. A window assembly according to claim 8, characterized in that the top member (17) of the window sash is composed of at least two mouldings (18, 20), one of which delimits a first side wall (19) and two rounded end walls of said recess, and another one of which delimits a second side wall (21) of said recess.

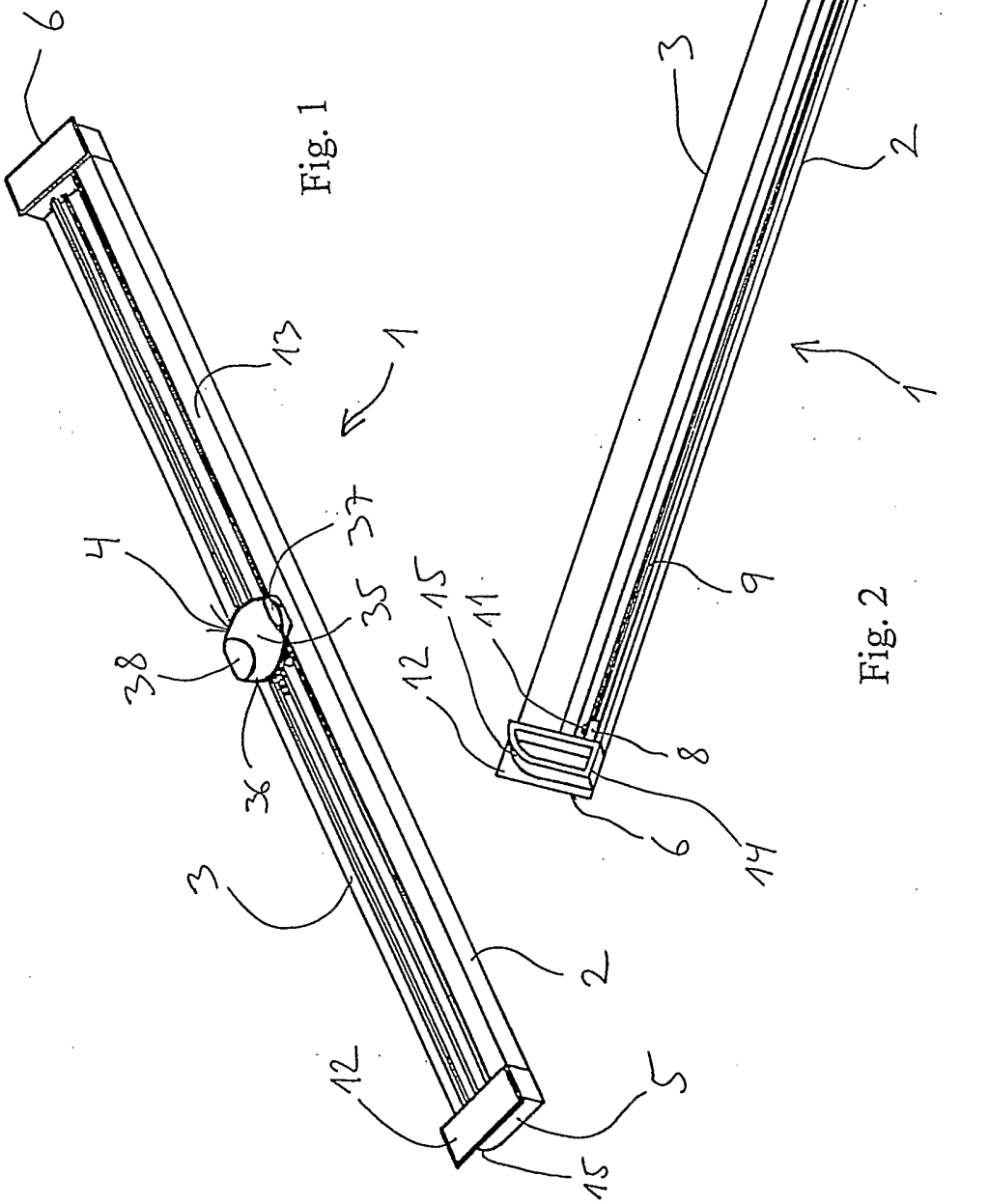

Fig. 1

Fig. 2

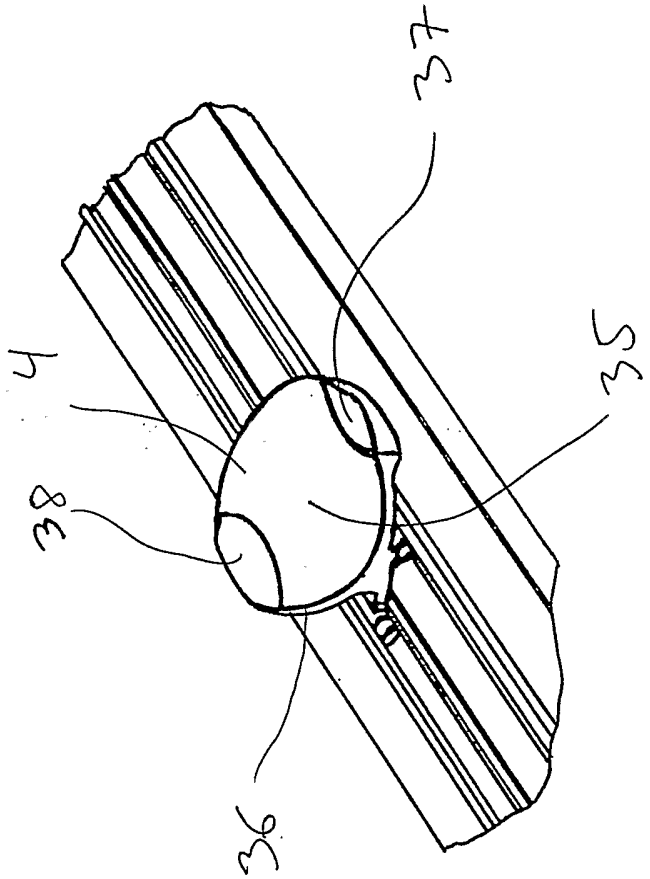

Fig. 3

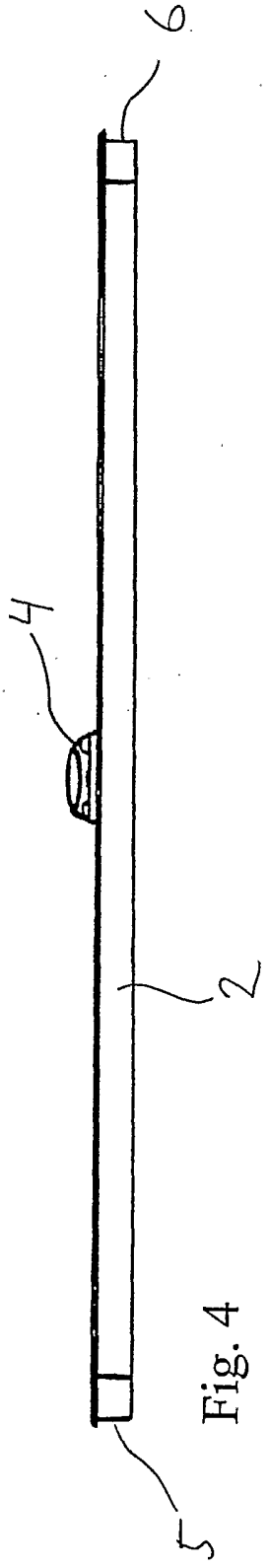

Fig. 4

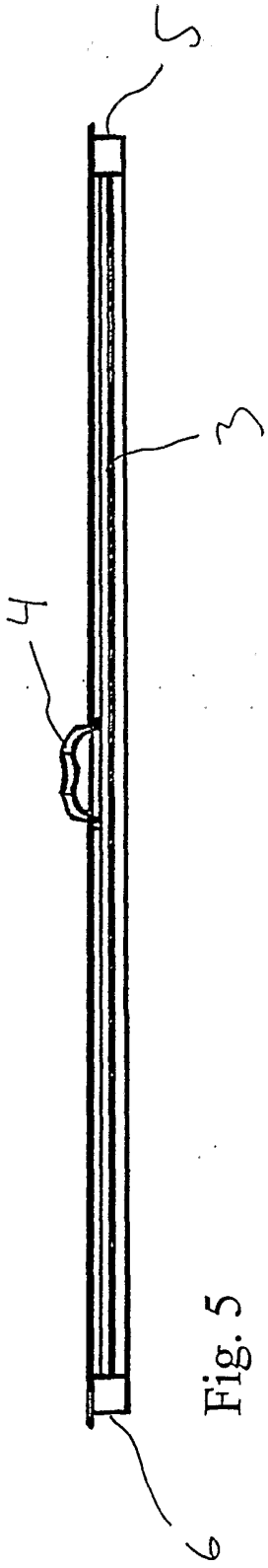

Fig. 5

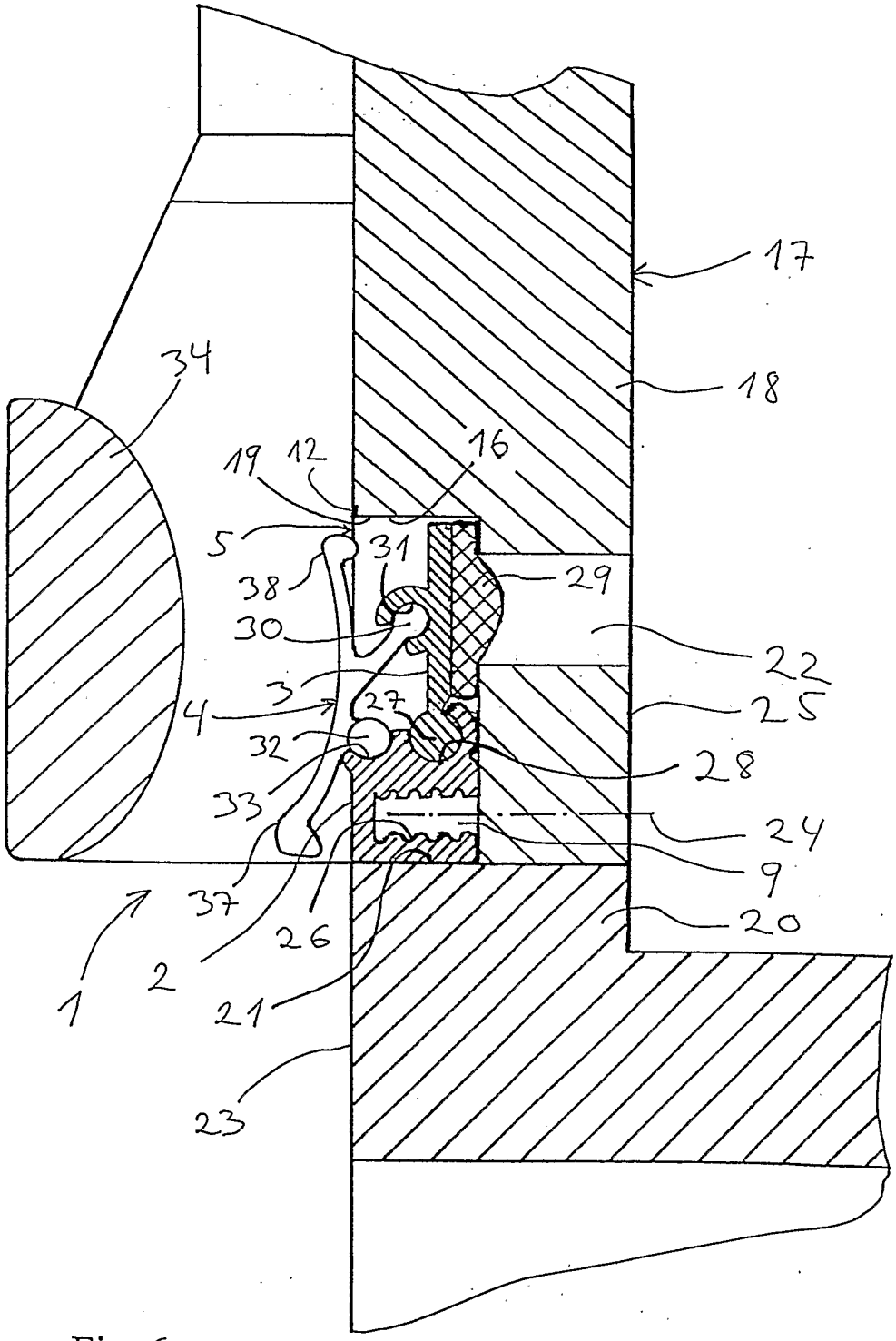
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Fig. 6

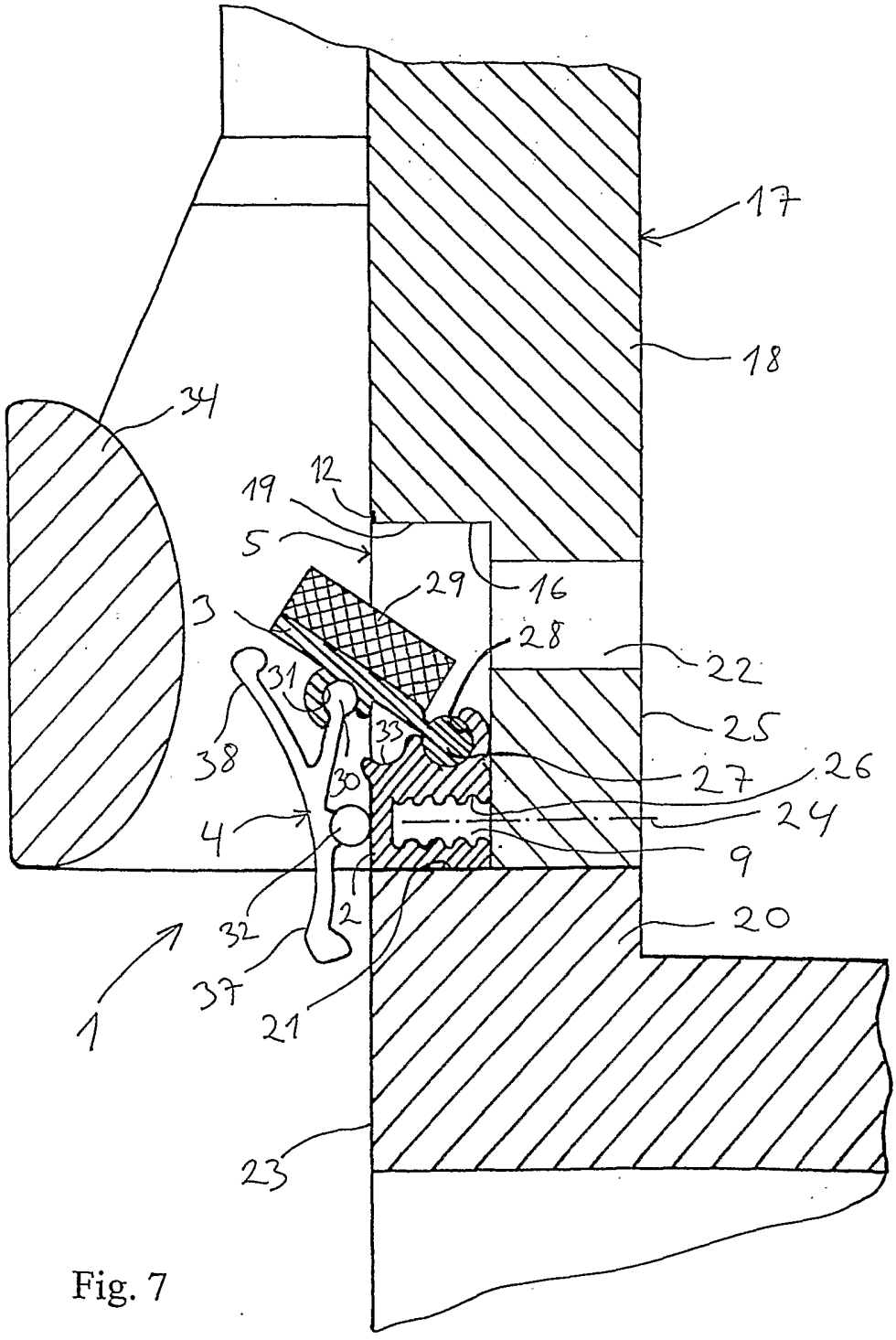
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Fig. 7

INTERNATIONAL SEARCH REPORT

Inte ional Application No
PCT/DK2004/000022

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E06B7/06 F24F13/18

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)
IPC 7 E06B F24F H01H

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 practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 714 897 A (BENJAMIN DONALD HUGHES; GREENWOOD S AND AIRVAC VENTILA) 1 September 1954 (1954-09-01) page 1, line 69 - line 96 figure 1	1-3
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A	US 4 475 324 A (FLAKK EGIL) 9 October 1984 (1984-10-09) column 4, line 21 - line 65 figure 1	1,4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
17 May 2004	25/05/2004

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INTERNATIONAL SEARCH REPORT

nformation on patent family members

Int onal Application No
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