

PATENT SPECIFICATION

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- (21) Application No. 32435/77 (22) Filed 2 Aug. 1977
 (61) Patent of Addition to No. 1446738 dated 15 Nov. 1973
 (31) Convention Application No. 7624558 (32) Filed 11 Aug. 1976 in
 (33) France (FR)
 (44) Complete Specification Published 14 Jan. 1981
 (51) INT. CL.³ E05D 15/42
 (52) Index at Acceptance
 E1J EA



(54) IMPROVEMENTS IN OR RELATING TO A DEVICE FOR SUSPENDING A SLIDING SEALING DOOR

(71) We, FERMOD, a French Body Corporate of 75, Rue de Richelieu, 75002 Paris, France, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:-

The present invention relates to improvements in a device for suspending a sliding sealing door described in the main British patent No. 1446738.

The main patent relates to a device for suspending a sliding sealing door for closing tightly an opening in a wall, comprising at least one guide rail which is, in use, fixed alongside the wall, the guide rail having a guide surface which defines at least one ramp or recess, means for supporting the door carrying at least one element movable along the guide rail, a guide member which, in use, is fixed alongside the wall, and at least one arm having a first end portion which is movable on and along a guide surface of said guide member and having an opposite second end portion which is pivoted to said support means, said arm transmitting the weight of the door from the support means to the guide member during sliding movement of the door and being movable with respect to the guide member in a plane transverse to the length of the guide surface of the guide member to permit the door to move towards the wall when the at least one element descends down said ramp or into said recess, at, in use, a closed position of the door, the arm or arms being inclined to the horizontal at an angle of less than 45° when in use the door is in its closed position.

The object of the present invention is to provide improvements in the aforementioned device so as to simplify manufacture and reduce the price and improve the outside appearance.

According to the invention, there is provided a device for suspending a sliding seal-

ing door of the main patent and comprising a section member having the general shape of a C and fixed against the wall, the edge of the lower flange of the C forming the guide surface of said guide rail and the upper portion of the C defining a rolling surface which faces inwardly of the section member and constitutes the guide surface of the guide member.

According to a feature of the invention, the section member has a planar web portion by which it is secured against the wall, the upper portion of the C comprising two flanges at right angles to each other, one of which is parallel to the web portion and has at the free end thereof a ledge extending inwardly of the section member, said ledge defining said rolling surface in the corner formed internally with the adjacent flange.

According to another feature of the invention, said means for supporting the door may be a section element substantially in the shape of a V having one flange roughly horizontal for connection to the door and the other flange supporting the or each said element movable along said guide rail and terminating at the end thereof in a cylindrical rail on which the or each said arm is pivotally mounted.

One embodiment of the invention given solely by way of example will now be described with reference to the accompanying drawings, in which:-

Fig. 1 is a sectional view of the suspension device, the door being in the open position thereof, and

Fig. 2 is a view similar to Fig. 1 of the device when the door is in the closing position.

With reference to the drawings, there is shown a device similar to that of Figs. 2 and 3 of the main patent and adapted to guide a door P carrying sealing beadings B and movable with respect to a wall M. This device comprises a section member 1 having the general shape of a C length equal to twice the

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width of the door and including a planar web portion 2 whereby it is secured against the wall M. The free end 3, forming a guide rail, of the lower flange of the C extends obliquely upwardly and has an edge 5 which constitutes a guide surface and in which there are formed, in predetermined places, recesses 6 which can be seen in Fig. 2. The upper portion of the C includes two flanges 7, 8 at right angles to each other, the flange 8 extending in a direction parallel to the web portion 2 and terminating at the free end thereof in a ledge 9 which extends inwardly of the section member, this ledge 9 defining, in the corner formed internally with the adjacent flange 8, a rolling surface 10 which faces inwardly of the section member 1 and constitutes a second guide means.

It will be observed that, as in the main patent, the defined guide surface 5 and rolling surface 10 are roughly perpendicular to each other.

The device further comprises a V-section member 11 whose length is equal to the width of the door and which has a flange 12 arranged roughly horizontally and to which there is secured the upper edge of the door P and a flange 13 which terminates at the end thereof in a cylindrical rail 14 on which there are pivotally mounted traction arms 15 which are preferably two in number, namely an arm at each end of the door P. The arms 15 are cranked in such manner as to be capable of extending through the space defined between the ledge 9 and the free end 3 of the flange 4 and projecting inside the recess defined between the web portion 2 and the flanges 7, 8. Preferably, a ring 16 of a material having a low coefficient of friction, for example of "RILSAN" (trademark), is interposed between each traction arm 15 and the rail 14 and a washer or other abutment member 17 is secured to the rail 14 by a pin or the like at each side of the traction arm 15 to prevent the latter from moving longitudinally along the rail. The arms 15 carry at their opposite ends guide rollers 18 which are mounted for example on ball bearings and move along the rolling surface 10. The rollers 18 are mounted above the arms 15 so that, bearing in mind the cranked shape of the latter, they are located fully inside the section member and are not visible from the exterior. As in the main patent, the shape of the rollers 18 and the rolling surface 10 is adapted to permit an angular displacement between these two members. Moreover, the inclined flange 13 of the V carries rollers 19, for example two rollers, which move along the guide rail 3.

There may be provided a cladding constituted by an L-section member 20 secured by hooks 21 to the flange 8 in order to hide the major part of the device.

The operation of the device described

hereinbefore is identical to that described in the main patent. In the position of translation, that is to say in the position of partial or full opening of the door P, the device has the configuration shown in Fig. 1. When the door is moved in translation, the rollers 18, 19 move respectively along their guideway 5, 10. When the door P reaches the vicinity of, or is in the closing position, the rollers 19 drop into the recesses 6, which cause a displacement of the door toward the ground and toward the wall. In the course of this displacement, the traction arms 15 pivot through an angle β of about 15° so as to take up the position shown in Fig. 2 in which it can be seen that the rollers 18 have pivoted around their bearing point on the rolling surface 10.

The extreme simplicity of the device described hereinbefore is quite clear. Indeed, the rail, the section member and the parts connecting them together and to the wall of the main patent are here replaced by a single C-section member which may be, for example, of light alloy and manufactured by extrusion, as may also be the V-section member. Consequently, there is a marked ease of manufacture, since the different parts mentioned hereinbefore do not have to be assembled with each other. The manhours and the amount of material employed are therefore reduced and this results in a reduced price of the assembly. Note also the improvement in the outside appearance, owing to the fact that the rollers 18 are fully disposed inside the section member 1 which renders the presence of the cladding 20 less essential.

WHAT WE CLAIM IS:-

1. A device for suspending a sliding sealing door according to any one of the claims 1 and 2 of the main patent, comprising a section member having the general shape of a C secured against the wall, the edge of the lower flange of the C forming the guide surface of said guide rail and the upper portion of the C defining a rolling surface which faces inwardly of the section member and constitutes the guide surface of said guide member.

2. A device as claimed in claim 1 of the addition, wherein the section member has a planar web portion by which it is secured against the wall, the upper portion of the C comprising two flanges at right angles to each other, one of the flanges being parallel to the web portion and having at the free end thereof a ledge which extends inwardly of the section member, said ledge defining said rolling surface in the corner formed internally with the adjacent flange.

3. A device as claimed in claim 1 or 2 of the addition or of the main patent, wherein said means for supporting the door is a section element substantially in the shape of a V having one flange roughly horizontal for

connection to the door and the other flange supporting the or each said element movable along said guide rail and terminating at the end thereof in a cylindrical rail on which the or each said arm is pivotally mounted.

4. A device as claimed in claim 3 of the addition, wherein a ring of a material having a low coefficient of friction is interposed between the or each said arm and the cylindrical rail.

5. A device as claimed in claim 3 or 4 of the addition, comprising an abutment means at each side of the or each said arm to prevent it or them from any movement along the cylindrical rail.

6. A device for suspending a sliding sealing door, substantially as hereinbefore described with reference to and as shown in the accompanying drawing.

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