

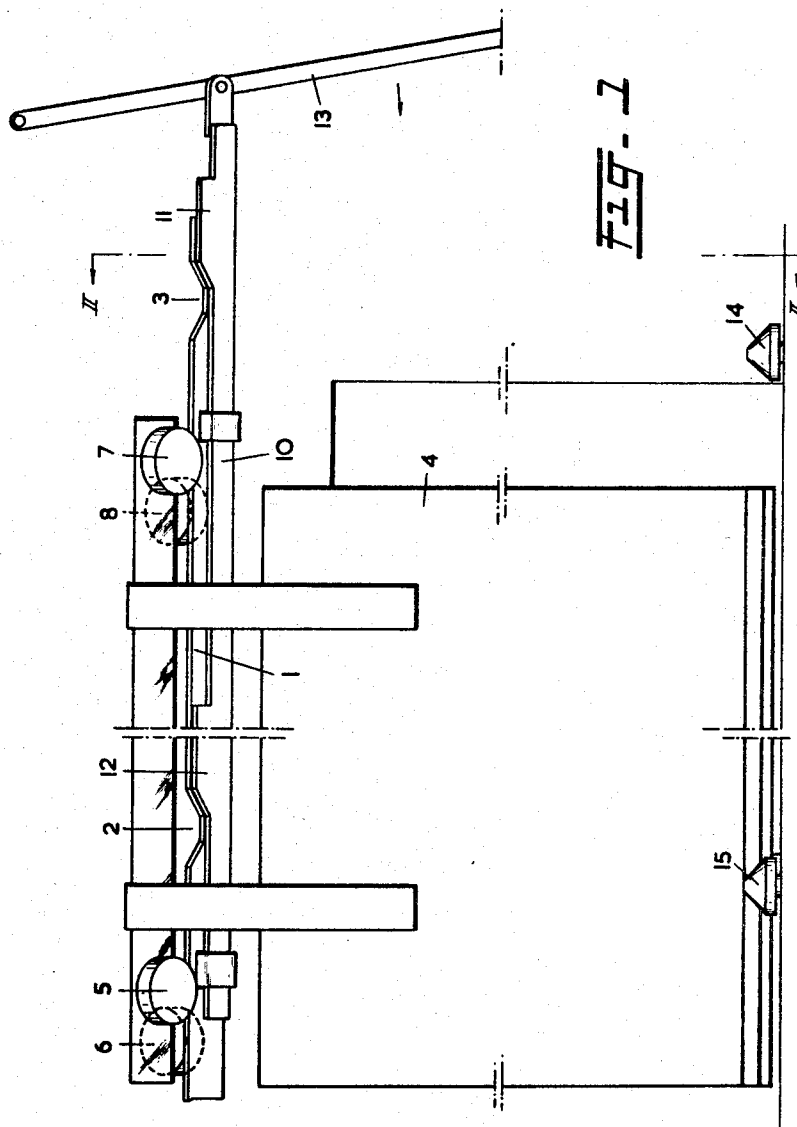
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J. J. G. MARKUS
SLIDING DOOR ASSEMBLY

3,276,166

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2 Sheets-Sheet 1



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FIG. 2

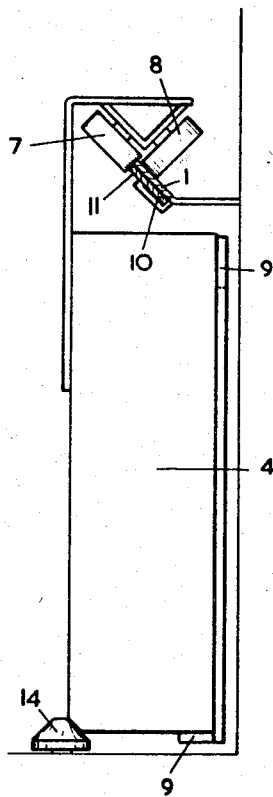
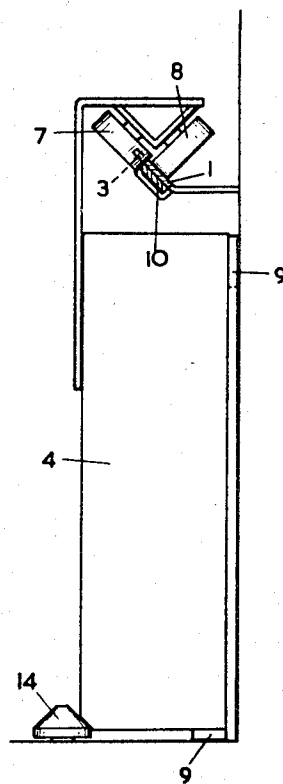


FIG. 3



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SLIDING DOOR ASSEMBLY

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2 Claims. (Cl. 49-410)

This invention relates to a sliding door for closing an opening in a wall, which comprises rollers movable along at least one supporting rail and means for moving the door towards the wall as it reaches its closed position, so that the door is in contact with the wall along its periphery.

In order to prevent undesirable thermal losses, any refrigerating space should be provided with one or more properly sealing doors. These doors may be constructed as hinged doors or as sliding doors. Sliding doors have the advantage that they take up little space in their open position, but present the difficulty that they should be movable to and fro free of the wall to be closed, but have to be moved towards the wall in the closed position so as to be peripherally in contact with the frame of the opening in the wall.

In a prior sliding door construction, the suspension mechanism is, for this purpose, provided with means by which the door is moved towards the wall after it has reached its closed position. In the case of a heavy sliding door for a large refrigerating hold, which may weigh as much as 400 kg., the closure mechanism becomes rather intricate and then represents a considerable weight and cost item.

It is an object of the present invention to provide a simple solution for the problem.

To this effect, according to the invention a supporting rail is provided with a locally recessed carrying surface and with a guide surface inclined upwardly away from the wall, and the door is provided with rollers cooperating with said carrying surface and said guide surface.

In addition, according to the invention, the carrying surface and the guide surface may be substantially at right angles to each other, and the axes of the rollers cooperating with the respective surfaces may be located in two planes which are substantially perpendicular to each other.

By virtue of this construction, when the sliding door has come in front of the opening the carrying rollers sink into the recessed sections of the carrying surface, but as a result of the inclined position of the guide surface, the sliding door is at the same time moved towards the wall. Such an arrangement is particularly suitable for closing a passage-way to a refrigerating space, since the door must be free of the floor as it is moved along the rails, but comes to bear on the floor when the passage is closed, so that it also seals at the bottom side.

For opening the sliding door, according to the invention, there may be provided an auxiliary rail mounted for movement along the said carrying rail, and having cams at or adjacent the locally recessed section, such cams extending up to the carrying surface of said carrying rail.

In illustration of the invention, one embodiment of the arrangement will be described, by way of example, with reference to the accompanying drawings, in which

FIG. 1 shows a front elevation of a wall provided with a carrying rail;

FIG. 2 is a lateral view on the line II-II in FIG. 1, showing the door in the open position;

FIG. 3 is a lateral view, showing the door in the closed position.

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Referring to the drawings, the carrying rail 1 has two recessed sections 2 and 3 on both sides of the opening in the wall to be closed. Suspended from the carrying rail 1 is a door 4. The door is at the top provided with sets of rollers, consisting of two rollers (5, 6 and 7, 8, respectively), the axes of which are located in two planes which make an angle of substantially 90° with each other. Of each pair of rollers, one travels along the carrying surface of the rail and the other is supported on the guide surface.

Along the inner edge and the lower edge of the door, packing 9 is provided. When the door is open, this packing is spaced a short distance from the wall of the refrigerating space, and the lower edge of the door is slightly raised from the floor. As soon as the door arrives in its closed position, the carrying rollers sink into the recessed sections 2, 3 of the carrying rail. By the guide rollers 6, 8, which also move diagonally downwardly, the door is now moved towards the wall, as a result of which the packing edge is in contact with the door frame, the lower edge of the door bears on the bottom, and the refrigerating space is hermetically sealed. In order to ensure that the door is also in proper contact with the frame at the bottom side at all times, and is not forced off the frame by any pressure in the refrigerating space, two rotatable frusto-conical closure cams 14 and 15, the inclination of which is equal to that of the guide surface of the carrying rail, are provided on the bottom on both sides of the entrance to the refrigerating space.

For opening the door a narrow auxiliary rail 10 is mounted for movement along the carrying rail. The auxiliary rail is provided with two cams 11, 12, which are beveled on one side and have the same height as the carrying rail 1.

The auxiliary rail is movable along the carrying rail by means of a lever 13 or other power transmission device, and that in such a manner that the cams 11, 12 for lifting the door from its closed position, are brought under the carrying rollers 5 and 7, respectively, and thus lift the door with the rollers upwardly and at the same time away from the wall.

In this manner the frictional resistance of the packing on the wall is removed before the door is moved along the carrying rail.

Furthermore a thrust cam may be mounted on the carrying rail, which, after the carrying rollers have been lifted out of the recessed sections of the carrying rail by the beveled cams, runs against the door, whereby the latter is moved away.

Although this sliding door construction is particularly intended for sealing a refrigerating space, it need not be limited to that use. For example, such a sliding door construction may be used for fireproof doors or for gas-tight or water-tight doors.

I claim:

1. A sliding door assembly for closing an opening in a wall, comprising a supporting track having right angularly disposed faces, said supporting track being mounted on the wall in a tilted position above the door opening and being provided with spaced recesses in one face adjacent the door opening, a door suspended from said track by suspension means mounted on the door, said suspension means comprising spaced sets of rollers, each set comprising right angularly disposed rollers simultaneously engaging said right angularly disposed faces of said supporting track, whereby the door will gravitate downwardly and inwardly against the wall when in a closed position, and cam means fixed adjacent the opening and engaging the bottom margin of the door to urge the bottom margin inwardly against the wall when in the closed position.

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2. A sliding door assembly for closing an opening in a wall, comprising a supporting track having right angularly disposed faces, a door suspended from said track by suspension means mounted on the door, said suspension means comprising spaced sets of rollers, each set comprising right angularly disposed rollers simultaneously engaging said right angularly disposed faces of said supporting track, said supporting track being mounted in a tilted position above the door opening and being provided with spaced recesses in one face adjacent the door opening whereby the door will gravitate downwardly and inwardly against the wall when in a closed position, cam means fixed adjacent to the bottom margin of the door and engaging said bottom margin of the door to urge the bottom margin inwardly against the wall when in the closed position, an auxiliary rail mounted adjacent and essentially parallel to said carrying track for longitudinal

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displacement relative to said carrying track, said auxiliary rail being provided with cam means to engage said sets of rollers upon longitudinal displacement of said auxiliary rail thereby to lift said sets of rollers from said spaced recesses so that the door may readily be moved from the closed position to an open position.

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