Oct. 14, 1958 D. D. TOFANELLI 2,855,637

ELEVATOR ENTRANCE SILLS

Filed Feb. 29, 1956

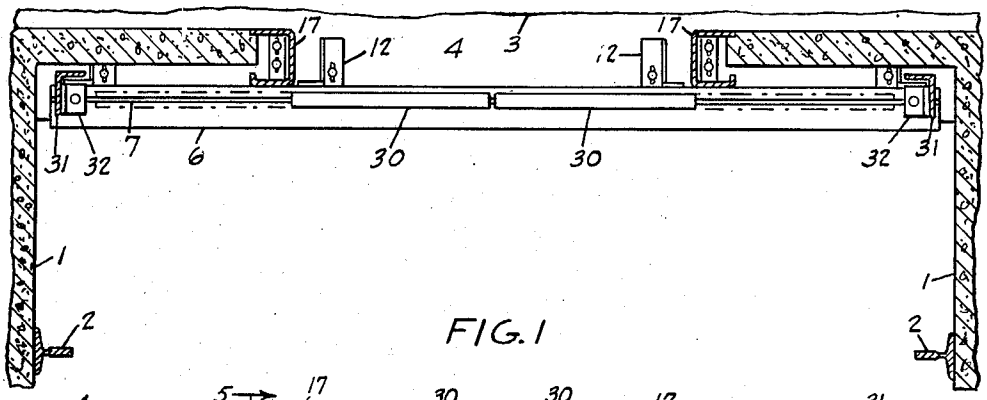


FIG. 1

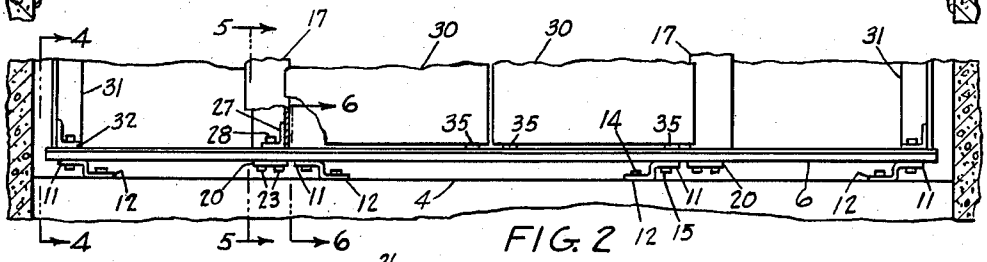


FIG. 2

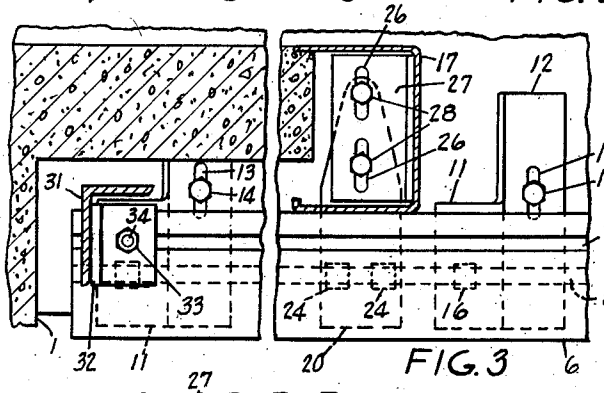


FIG. 3

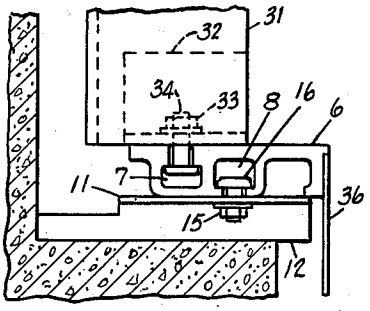


FIG. 4

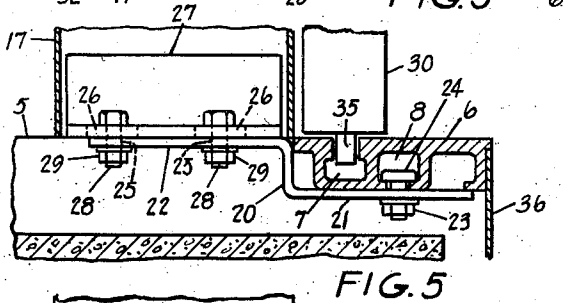


FIG. 5

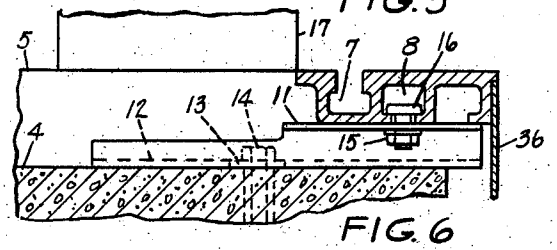


FIG. 6

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United States Patent Office 2,855,637 Patented Oct. 14, 1958

2,855,637

ELEVATOR ENTRANCE SILLS

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Application February 29, 1956, Serial No. 568,546

7 Claims. (Cl. 20—19)

This invention relates to an adjustably mounted door sill which adjustably supports a door frame and hanger framework and has special application in elevator hoistway entrances utilizing horizontally sliding doors.

It is common practice in modern elevator installations to utilize hoistway entrances for slide type doors consisting of metal sills on which are mounted the door frame and the hanger framework which supports the hanger rails. Inasmuch as the smooth operation of the doors is a function of their position in respect to the elevator car itself and since the door frame and hanger framework must be properly positioned in respect to the elevator car, it is desirable that the location of the door sill be accurately fixed in relation to the main guide rails for the elevator car. On some power actuated doors the movement of the hoistway door is accomplished by the temporary coupling of a vertical vane mounted on the outside of the elevator car door to a mechanism on the hoistway door. If this vertical vane is misaligned due to off center assembly of the elevator car doors or if the hoistway doors are being guided on a misaligned sill, the free sliding travel of the doors will be impeded.

The prior practice of installing a door sill required the use of a template for providing that both ends of the sill were a predetermined distance from the main guide rails and that the sill was properly positioned with respect to the mid-point between opposing guide rails. Making a template on the job site cannot be performed with the exactness of a factory machine and minor inaccuracies in the template have resulted in misalignment of the door sill and in improper installation of the door hanger rails.

It is, therefore, an object of this invention to provide an elevator hoistway entrance with a door sill which may be more readily mounted on a supporting structure in true alignment with respect to the elevator car guide rails.

Another object of this invention resides in an elevator hoistway door sill which is adjustably mounted on a supporting structure and on which ancillary entrance equipment may be adjustably supported in proper alignment relative to the elevator car guide rails.

Another object of this invention is to provide an improved door sill that eliminates the necessity of drilled holes and consequently facilitates the manufacture and installation of the sill.

A further object of this invention is to provide a door sill with a grooved slot along its undersurface for slidably receiving the heads of fasteners and a grooved slot along its upper surface for slidably receiving the heads of additional fasteners and to serve as a track for slide type doors.

It is a further object of this invention to provide an elevator hoistway door sill with adjustable mounting means to assure that the sill may be properly located sidewise and have the correct spacing from the front edge of the elevator car platform.

Additional features and advantages of this invention will be apparent from the following description and appended claims.

In the drawings:

Figure 1 is a partial plan view of an elevator hoistway entrance showing a pair of center opening doors accurately mounted therein by means of an adjustable door sill;

Figure 2 is a partial view in elevation showing the installation of an adjustable door sill;

Figure 3 is an enlarged partial plan view of one end of Figure 1 showing mounting and supporting brackets adjustably attached to the door sill;

Figure 4 is an enlarged end view taken on line 4—4 of Figure 2;

Figure 5 is an enlarged sectional view taken on line 5—5 of Figure 2; and,

Figure 6 is an enlarged sectional view taken on line 6—6 of Figure 2.

The elevator hoistway may be constructed in any suitable manner, as by concrete **1**, to which is attached oppositely disposed elevator guide rails **2** for guiding the elevator car during its vertical path of travel. An entrance connects the elevator hoistway to a floor landing **3** which is constructed of a rough flooring **4** and a finished flooring **5** in a conventional manner as illustrated in Figure 6.

The adjustable door sill **6** may be manufactured from any type of material and by any well-known method, but an extrusion of a non-ferrous alloy is preferred. Throughout the length of the sill **6** there is an inverted T-slot **7** (Fig. 4) along its top surface and a T-slot **8** along its bottom surface; the purpose of such lots will be set forth hereinafter.

The door sill (Fig. 2) is supported by and is attached to the rough floor **4** by means of a plurality of spaced mounting brackets, each of which has a sill supporting portion **11** offset from an attaching portion **12**. As is shown in Figure 6, the reason for offsetting the sill supporting portion **11** is to allow the upper surface of the sill **6** to be mounted in flush relation with the finished flooring **5**. A slot **13** (Fig. 3) in the attaching portion **12** receives a headed bolt **14** which attaches the mounting bracket to the rough flooring **4**. The threaded shank of the bolt **14** may be imbedded in the rough floor by any suitable means, such as an expansion shield. The sill **6** is mounted on the sill supporting portion **11** of the mounting bracket by means of a nut **15** and bolt **16**, the head of which is confined within the T-slot **8** in the bottom surface of the sill. The number and spacing arrangement of the mounting brackets are determined by the weight of the entranceway structure to be supported thereon.

As is shown in Figure 3, the sill is adjustable along its longitudinal axis by means of bolt **16** sliding in slot **8** and is adjustable along its transverse axis by means of bolt **14** sliding in slot **13**. These adjustments in two different horizontal directions make possible the proper positioning of the center line of sill **6** with respect to the center line between the guide rails **2**, and also permit of correct spacing between the front edge of the elevator car platform and the edge of the sill **6**.

The door jambs **17** (Figures 3 and 4) are supported on the sill **6** by means of supporting brackets **20**, each of which has a sill attaching portion **21** offset from a jamb supporting portion **22**. As is shown in Figure 5, the reason for offsetting the sill attaching portion **21** is to permit it to be attached to the bottom surface of the sill **6** by means of a pair of nuts **23** and a pair of bolts **24**, the heads of which are confined within the same T-slot **8** as is the head of bolt **16**. A pair of apertures **25** in the sup-

porting portion **22** are aligned with a pair of slots **26** in an angle bracket **27** that is secured to the door jamb **17**. Each aligned aperture **25** and slot **26** receive a bolt **28**, and a pair of nuts **29**, one for each bolt **28**, retain the angle bracket **27** on the supporting portion **22** to support the door jamb **17** thereon.

In order to prevent any interference between the movement of sliding doors and the door jambs and to insure a symmetrical appearance to the entrance installation, it is necessary that the door jambs be accurately positioned in relation to other entrance equipment. To locate the door jamb **17** with respect to the center line of the sill **6**, the supporting bracket **20** is adjustable along the longitudinal axis of sill **6** by sliding the heads of bolts **24** in the T-slot **8**. To abut the rear face of the door jamb **17** against the edge of the sill **6**, the angle bracket **27** is adjustable along the transverse axis of sill **6** by sliding the heads of bolts **28** in the slots **26**. Thus each door jamb is separately adjustable, or if the two door jambs are integrally united with a top header bar (not shown) the integral door frame is adjustable as a single unit.

It is to be understood that this invention is adaptable to any conventional type of sliding door but is applied here to a pair of center opening doors **30**, as shown in Figures 1 and 2. The doors **30** are suspended from an overhead hanger track, not shown, in the conventional manner and the track is supported by a hanger framework which is represented on the drawing as a pair of vertical angle beams **31**. These are supported on the sill **6** by angle brackets **32**, with one beam adjacent each end of the sill.

One leg of the angle bracket (Fig. 4) is integrally connected to the beam **31** as by welding and the other leg is attached to the sill **6** by means of a nut **33** and a bolt **34**, the head of which is confined within the inverted T-slot **7** along the top surface of the sill **6**. Thus each beam **31** is separately adjustable along the longitudinal axis of sill **6** or in the event the two beams **31** are integral parts of the hanger framework, the framework is adjusted as a single unit. This supporting arrangement for the beams **31** permits an adjustment for the door tracks, and hence the doors **30**, which is independent of the adjustments for the door jambs **17** and the sill **6**.

A pair of guides **35** (Fig. 5) are spaced along the bottom of each door **30** and are medially located between the front and back panels of the door. Inasmuch as the T-slot **7** (Fig. 3) along the top surface of the sill **6** is only utilized at its extremities by the fastening for framework supporting brackets **32**, the remainder of the T-slot is utilized as a guiding track for the door guides **35**. This is apparent from Figure 1 wherein the doors **30** in moving to their fully opened position, as indicated by the dot-dash lines, do not travel as far as the framework supporting brackets **32**.

The various adjustments referred to above may be made singularly, plurally or conjunctively in any combination deemed desirable to perfect the installation of the hoistway entrance. Furthermore, the construction is so arranged that access to certain of the components may be obtained even after installation when readjustment may be needed. For instance, nuts **29** are accessible behind the door jambs **17** which are substantially U-shaped; nuts **15** are accessible by removal of kick plate **36**; and, nuts **33** are accessible from the hoistway.

Although this adjustable sill has been described as applied to a hoistway, it is to be understood that it is also applicable to the elevator car.

As many changes could be utilized in the above construction and many widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all the matter contained in the above description or shown on the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In combination, a door sill for an elevator entrance, said sill being in the form of an elongated rectangular strip having a first grooved slot along its lower surface and a second grooved slot along its upper surface in spaced parallel relation to said first grooved slot, mounting means for said sill, means slidably disposed along said first grooved slot to adjustably attach said sill to said mounting means, door track supporting means, and means slidably disposed along said second grooved slot to adjustably attach said track supporting means to said sill.

2. A door sill for an elevator entrance having a horizontally sliding door comprising, an elongated rectangular strip, a first T-slot in the bottom surface of said strip, a second T-slot in the top surface of said strip, a plurality of mounting brackets spaced along said first slot and a headed bolt for each mounting bracket slidably disposed in said first T-slot to mount adjustably said sill on a supporting structure, a plurality of supporting brackets spaced from said mounting brackets along said first T-slot and a headed bolt for each supporting bracket slidably disposed in said first T-slot to support adjustably a supported structure on said strip, and an angle bracket at each end of said strip and a headed bolt for each angle bracket slidably disposed in said second T-slot to support adjustably an additional supported structure on said strip, said second T-slot being adapted to guide the horizontally sliding door.

3. In combination with a door sill for an elevator entrance, a plurality of mounting brackets and a headed bolt for each mounting bracket, a plurality of supporting brackets and a headed bolt for each supporting bracket, and a plurality of angle brackets and a headed bolt for each angle bracket, a first T-slot in the lower surface of said sill and a second T-slot in the upper surface of said sill oppositely disposed to and spaced in parallel relation from said first T-slot, the headed bolts of said mounting brackets being slidably disposed in said first T-slot to mount adjustably said sill on a supporting structure, the headed bolts of said supporting brackets being also slidably disposed in said first T-slot to attach adjustably a supported structure to said sill, and the headed bolts of said angle brackets being slidably disposed in said second T-slot to attach adjustably an additional supported structure to said sill.

4. In combination with structure forming an elevator entranceway, a door sill adapted to be mounted adjustably on a supporting structure and to support adjustably said entranceway structure, said sill having an upper grooved slot along its top surface and a lower grooved slot along its bottom surface, means slidably disposed in said upper grooved slot to support adjustably said entranceway structure and means slidably disposed in said lower grooved slot for adjustably mounting said sill on a supporting structure.

5. In combination with an elevator hoistway entrance having sliding type doors, a door sill for supporting said entrance in relative alignment to an elevator hoistway, said entrance comprising a door hanger framework and a door frame, said sill having an upper T-slot along its top surface to serve as a track for said doors and a lower T-slot along its bottom surface, a plurality of spaced mounting brackets, a headed bolt for each bracket slidably disposed in said lower T-slot whereby said sill may be adjustably mounted on said supporting structure, a plurality of spaced offset supporting brackets, said door frame rigidly attached to said supporting brackets, a headed bolt for each supporting bracket slidably disposed in said lower T-slot whereby said door frame may be adjustably supported on said sill, a plurality of spaced angle brackets, said door hanger framework rigidly attached to said angle brackets, a headed bolt for each angle bracket slidably disposed in said upper T-slot whereby said door hanger framework may be adjustably supported on said sill.

6. An elevator hoistway entrance having in combination, slide type doors, a door hanger framework, a door frame and a door sill, an upper T-slot in the top surface of said sill, a lower T-slot in the bottom surface of said sill, said lower T-slot having first means to mount said sill on a supporting structure in alignment with an elevator hoistway and second means to support said door frame in alignment with the elevator hoistway, said first means including a plurality of mounting brackets adapted to be secured to said supporting structure and a headed bolt for each bracket slidably disposed in said lower T-slot to secure adjustably said sill to said mounting brackets, said second means including a plurality of offet supporting brackets attached to said door frame and a headed bolt for each supporting bracket slidably disposed in said lower T-slot to secure adjustably said supporting brackets to said sill, said upper T-slot being a track to guide the sliding movement of said doors and having means to support said door hanger framework in alignment with the elevator hoistway, said last mentioned means including a plurality of angle brackets secured to said door hanger frame work and a headed bolt for each angle bracket slidably disposed in said upper T-slot to secure adjustably said channel brackets to said sill.

7. In an elevator entranceway at the floor of a building and leading to an elevator hoistway, said floor being formed by building structure, said entranceway having a pair of door jambs, one on each side of said entranceway, and being provided with a sliding door having an overhead track, and in which a pair of supporting uprights is provided, one for each side of said entranceway, for supporting the overhead track for said door, in combination, an elongated rectangular strip, serving as a sill for

said door, said strip having a first T-slot extending longitudinally of the strip in the lower surface thereof and a second T-slot extending longitudinally of the strip in the upper surface thereof in spaced parallel relation to said first T-slot, said second T-slot being inverted with respect to said first T-slot and serving as a guide for said door, sill mounting brackets adjustably secured to said building structure, a plurality of bolts, one for each mounting bracket, for securing said sill to said brackets, the heads of said bolts slidably extending into said first T-slot to facilitate sidewise adjustment of said sill, a jamb supporting bracket for each of said door jambs adjustably secured thereto, a pair of bolts for each of said supporting brackets for adjustably securing said supporting brackets to said sill, the heads of said supporting bracket securing bolts also slidably extending to said first T-slot to facilitate sidewise adjustment of said door jambs, and a pair of bolts, one for each of said supporting uprights, for securing said uprights to said sill, the heads of said last named bolts slidably extending into said second T-slot, one at each end of said sill, for facilitating sidewise adjustment of said uprights.

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