

April 5, 1932.

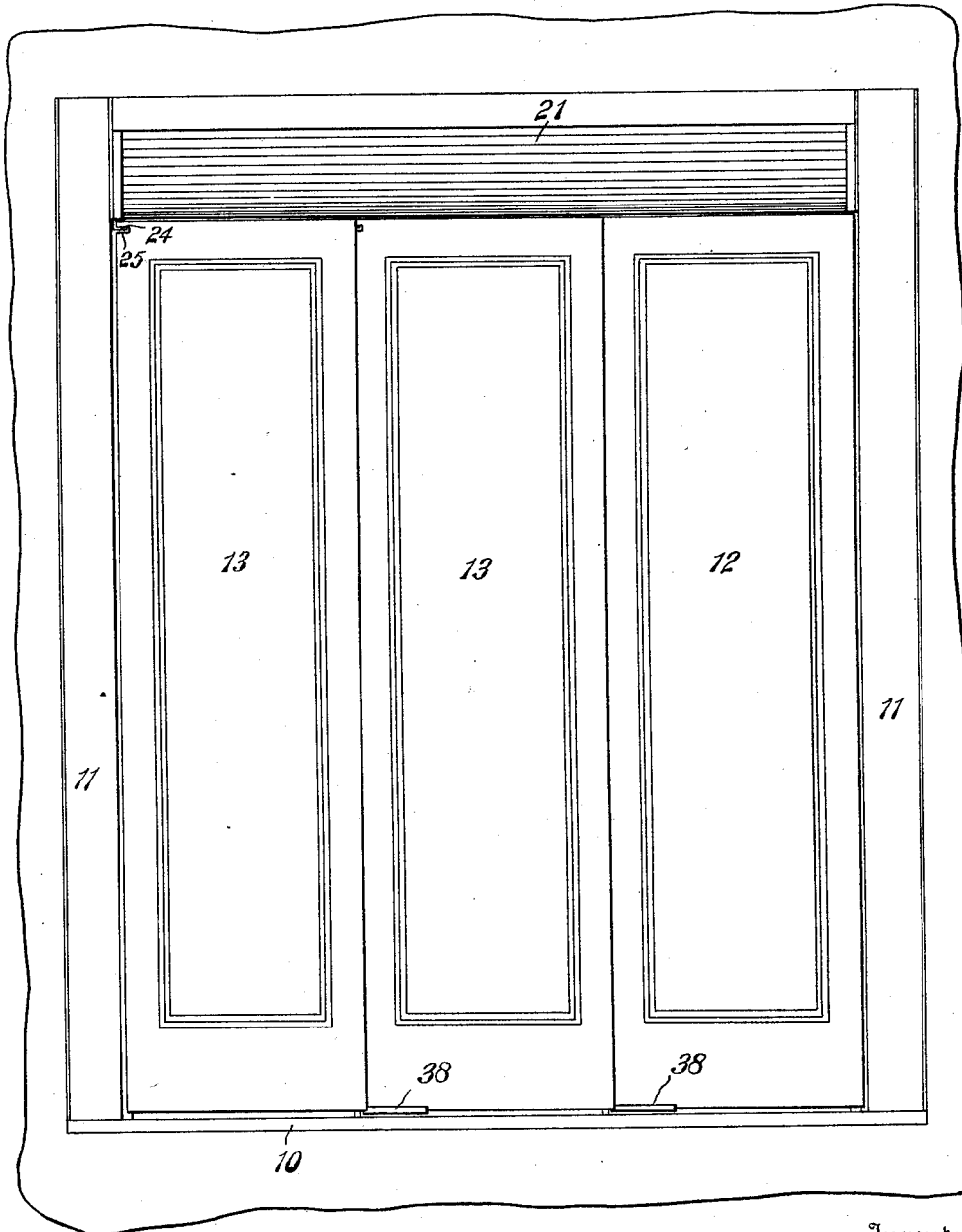
H. R. GRABLE

1,852,608

SLIDING AND SWINGING DOOR

Filed Jan. 24, 1930

3 Sheets-Sheet 1



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Fig. 1.

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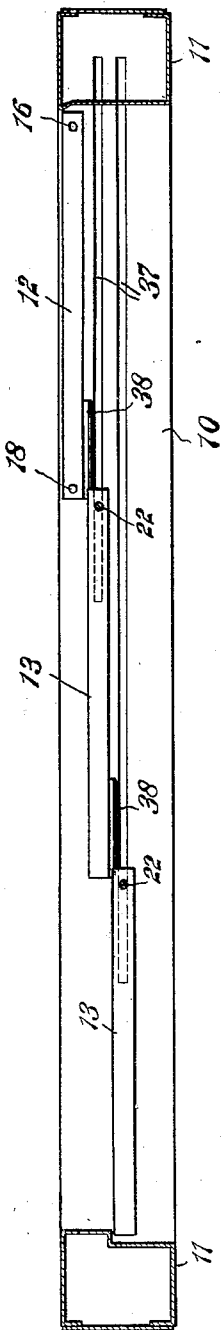


Fig. 2.

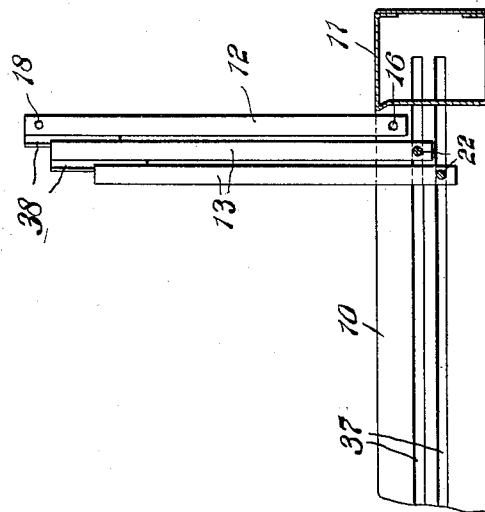


Fig. 4.

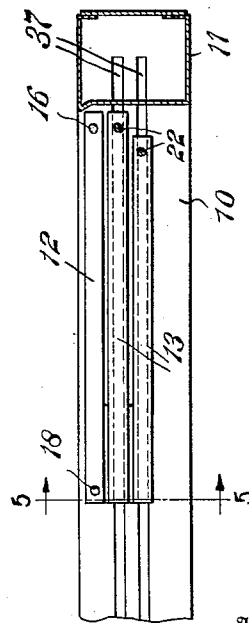


Fig. 3.

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3 Sheets-Sheet 3

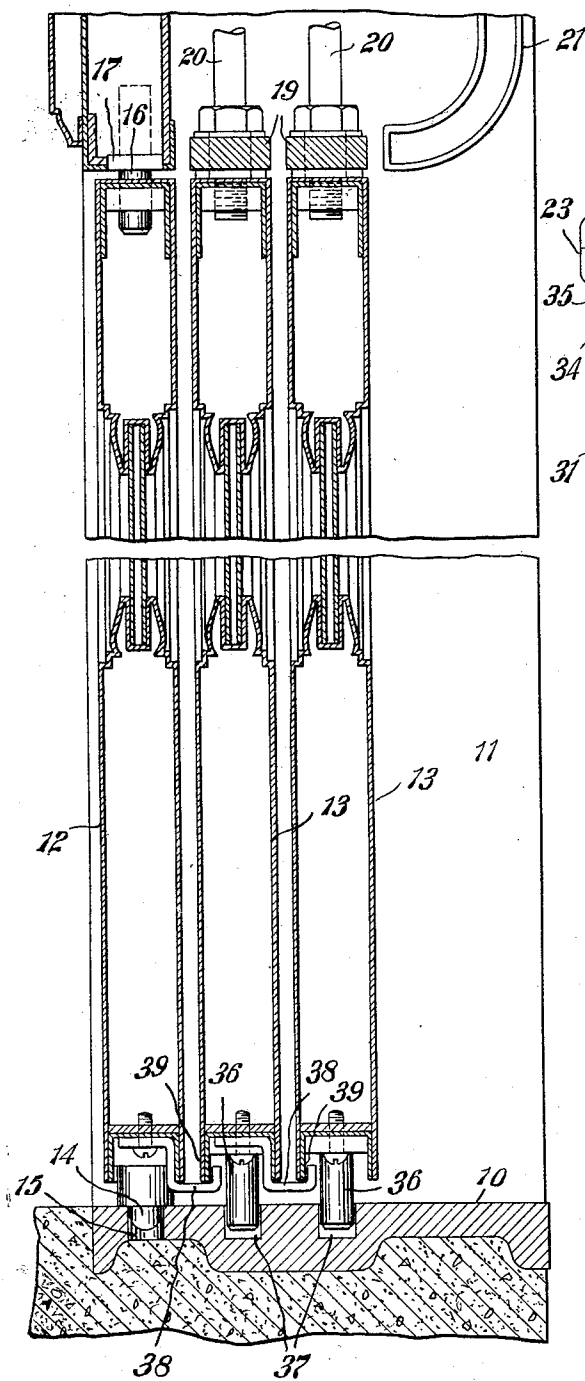


Fig. 5.

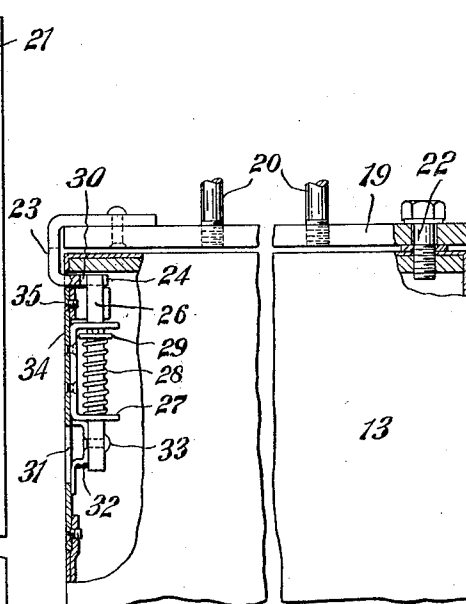


Fig. 6.

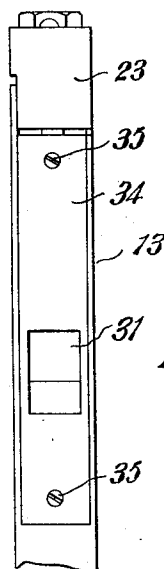


Fig. 7.

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UNITED STATES PATENT OFFICE

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SLIDING AND SWINGING DOOR

Application filed January 24, 1930. Serial No. 423,152.

The invention relates to elevator doors and more particularly to doors having a combined sliding and swinging movement.

Elevator doors, such as are used in apartments and similar places, ordinarily comprise one or more slidable sections and one stationary section behind which the slidable sections are adapted to move in order to give access to the elevator car. The width of opening thus obtained is less than the width of the elevator car owing to the stationary door section which covers a portion of the car.

It is frequently desirable to have a door opening substantially equal to the width of the elevator car in order to carry furniture or other freight in the car, and the object of the present improvement is to provide a door composed of combined sliding and swinging sections so arranged that the front of the sliding door sections will hang on heavy iron clips or brackets, indicated at 23 on the drawings, which are secured to the sliding bars 19, and engaged by the locking members 34 carried in the front edges of the sliding door sections and adapted to be released to permit the sliding door sections to swing outward to a right angle position.

Other objects of the improvement are to provide means for supporting the door sections against sagging when swung into the fully opened position; and to generally improve and simplify structures of this nature.

An embodiment of the invention is illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of a combined sliding and swinging door taken from the inside of the elevator car;

Fig. 2, a plan view of the improved door showing the sections in closed position, parts being broken in section for the purpose of illustration;

Fig. 3, a similar view with the door sections in the open sliding position;

Fig. 4, a similar view with the door sec-

tions swung into the fully opened position;

Fig. 5, an enlarged vertical section on the line 5-5, Fig. 3;

Fig. 6, a fragmentary detail elevation partly in section of the upper portion of one of the door sections, showing the means for detachably connecting the door section to the sliding bar which carries the same; and

Fig. 7, an edge elevation of the upper portion of one of the door sections.

Similar numerals refer to similar parts throughout the drawings.

The sill 10 may be mounted in the floor at each door opening of the elevator shaft and is preferably in the form of a heavy casting as illustrated; and the upright frame members 11 preferably of sheet metal, and of any usual and well known construction, are mounted at opposite sides of the door opening.

The door may be made up of any desired number of sections and for the purpose of illustration is shown as comprising the normally stationary section 12, adapted for swinging movement only, and the normally slidable sections 13 adapted for both sliding and swinging movement, as will be hereinafter described.

The normally stationary door section 12 is pivoted near its outermost edge by means of the lower stud 14 journaled in an aperture 15 in the sill and the upper stud 16 journaled in a fixed support 17. A bolt 18 at the inner upper corner portion of said door section is adapted to normally engage the upper fixed support 17, or other stationary member for normally holding the door section 12 against movement.

The slidable door sections 13 are supported from the sliding bars 19 suspended as by the bolts 20 from the usual sliding door hangers (not shown) which may be of any usual and well known construction and which may be normally covered by a hanger cover 21 of any desired form.

Each of the door sections 13 is pivoted near its outermost edge to the corresponding bar 19 as by a stud or screw 22 and is normally held against movement with reference to the bar 19 by means of mechanism engaging its opposite edge portion, as best shown in Fig. 6.

For this purpose a U-shape or channel bracket 23 may be carried by the adjacent end portion of the bar 19, the lower inturned leg 24 thereof being adapted to be received in a groove 25 formed through the inner side of the door section.

A latching bolt 26 is slidably carried in a bracket 27 fixed upon the interior of the door section and a coil spring 28 is located around the bolt and interposed between the lower arm of the bracket and the collar 29 upon the bolt, tending to normally urge the bolt upward and into the aperture 30 in the arm 24 of the bracket 23, in the position shown in Fig. 6, latching the door section against movement relative to the corresponding bar 19 which supports the same.

For the purpose of manually operating the bolt 26 to withdraw the same from engagement with the bracket 23, when it is desired to swing the door section outward, an opening 31 is formed in the edge wall of the door section to permit the finger to be inserted therethrough to engage the pull handle 32 fixed upon the lower end of the bolt as by the rivet 33 or the like.

As best shown in Figs. 6 and 7, the bracket 27, carrying the latching bolt, may be fixed upon a separate plate 34, in which the finger aperture 31 is formed, this plate being connected to the edge portion of the door section as by screws 35 or the like.

At the bottom of each of the sliding door sections 13, and in alinement with the upper pivot stud 22, is located a depending pivot pin 36 arranged to slide in the longitudinal parallel grooves 37 formed in the sill.

A channel supporting and guiding bracket 38 is connected to the bottom edge of the door section 12 and a similar bracket is connected to the bottom of the central door section 13, these channels slidably receiving the depending flanges 39 upon the corresponding door sections 13 and being adapted to guide and support the several door sections in the sliding and swinging movement thereof.

As shown in Figs. 1 and 2, when the door is closed, the door section 12 remains in the normal position and the sections 13 are moved into position to close the normal door opening, slightly overlapping each other and the section 12 in the customary manner.

The doors are slidably opened by any usual and well known mechanism, such as is at present in common use, the sections 13 being slidably moved one behind the other and both

behind the section 12, as shown in Figs. 3 and 5.

When it is desired to swing the door sections into fully opened position, the bolt 18 upon the door section 12 and the bolts 26 upon the door sections 13 are all released, permitting the section 12 to swing outward upon its pivots 14 and 16 and the sections 13 to swing upon their pivots 22 and 36 into the position shown in Fig. 4, the guide and support brackets 38 properly guiding the door sections as they swing to this position and permitting the lower pivots 36 of the sections 13 to assume the proper positions in the grooves 37 of the sill.

With the door sections in the positions shown in Fig. 4, it will be seen that substantially the entire door opening is available for passing furniture or other large objects through the same.

When it is desired to again move the door sections into position for sliding movement, it is only necessary to swing the sections upon their pivots back to the position shown in Figs. 3 and 5 and again lock them by means of the bolts 18 and 26 so that the section 12 will be held against movement and the sections 13 will slidably move relative to each other and the section 12 as in ordinary practice.

From the above it will be obvious that the door sections may be easily and readily swung into the fully opened position and again moved back into the normal position with a minimum of time and effort, it being only necessary to operate the bolts 18 and 26 in order that the door sections may be released or locked.

I claim:

1. A swinging and sliding door including a normally stationary door section arranged to be swung outward upon one edge portion, a sliding bar, a normally slidable door section pivotally suspended at one edge portion upon the sliding bar, a U-shaped fixed bracket upon the sliding bar adapted to slidably engage and support the opposite edge portion of the normally slidable door section, and releasable latching means for normally connecting the normally slidable door section to said bracket to prevent swinging of the normally sliding door section relative to the sliding bar.

2. A swinging and sliding door including a normally stationary door section arranged to be swung outward upon one edge portion, a sliding bar, a normally slidable door section pivotally suspended at one edge portion upon the sliding bar, a U-shaped fixed bracket upon the sliding bar adapted to slidably engage and support the opposite edge portion of the normally slidable door section, and releasable latching means upon the normally slidable door section for normally connecting the normally slidable door section to said bracket to

prevent swinging of the normally sliding door section relative to the sliding bar.

3. A swinging and sliding door including a normally stationary door section arranged to be swung outward upon one edge portion, a sliding bar, a normally slidable door section pivotally suspended at one edge portion upon said bar and having a slot in its opposite edge portion, a fixed bracket upon the sliding bar adapted to slidably engage said slot to support the opposite edge portion of the slidable door section, and releasable means for normally connecting the slidable door section to said bracket to prevent swinging of the normally sliding door section relative to the sliding bar.

4. A swinging and sliding door including a normally stationary door section arranged to be swung outward upon one edge portion, a sliding bar, a normally slidable door section pivotally suspended at one edge portion upon said bar and having a slot in its opposite edge portion, a U-shaped fixed bracket upon the sliding bar adapted to slidably engage said slot to support the opposite edge portion of the slidable door section, and releasable means for normally connecting the slidable door section to said bracket to prevent swinging of the normally sliding door section relative to the sliding bar.

5. A swinging and sliding door including a normally stationary door section arranged to be swung outward upon one edge portion, a sliding bar, a normally slidable door section pivotally suspended at one edge portion upon said bar and having a slot in its opposite edge portion, a fixed bracket upon the sliding bar adapted to slidably engage said slot to support the opposite edge portion of the slidable door section, and releasable spring pressed bolt means for normally connecting the slidable door section to said bracket to prevent swinging of the normally sliding door section relative to the sliding bar.

6. A swinging and sliding door comprising a normally stationary door section, a normally slidable door section, the normally stationary section being pivoted near one vertical edge, releasable means for normally engaging the opposite vertical edge of the normally stationary section, a slidable bar above the slidable section, said slidable section being pivoted near one edge to said bar, releasable means for normally connecting the opposite edge portion of the slidable section to said bar, and a guide bracket carried at the inner portion of the normally stationary section and engaging the under edge of the slidable section.

7. A swinging and sliding door comprising a normally stationary door section, a normally slidable door section, the normally stationary section being pivoted near one vertical edge, releasable means for normally engaging the opposite vertical edge of the nor-

mally stationary section, a slidable bar above the slidable section, said slidable section being pivoted near one edge to said bar, releasable means for supporting the opposite edge portion of the slidable section upon said slidable bar, and a guide bracket carried at the inner portion of the normally stationary section and engaging the under edge of the slidable section.

In testimony that I claim the above, I have hereunto subscribed my name.

HUGH R. GRABLE.

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