Sept. 16, 1969 D. C. MUESSEL 3,466,805

BREAKAWAY FOR A SLIDING CLOSURE

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FIG. 1

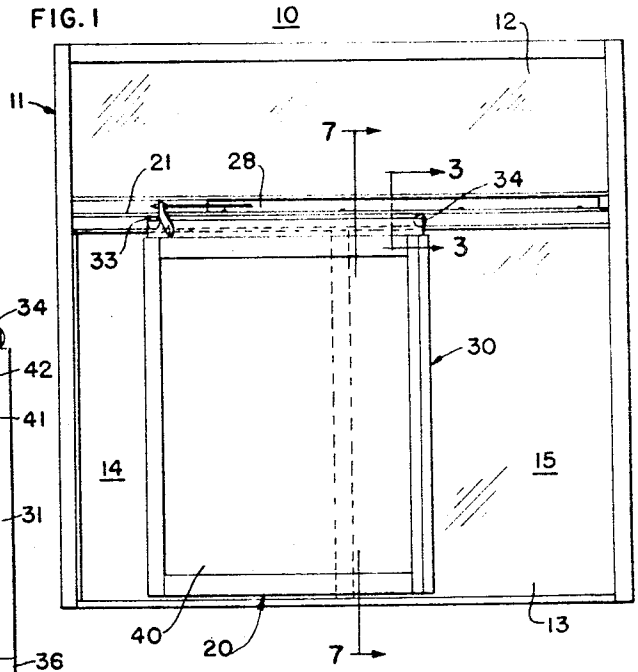


FIG. 2

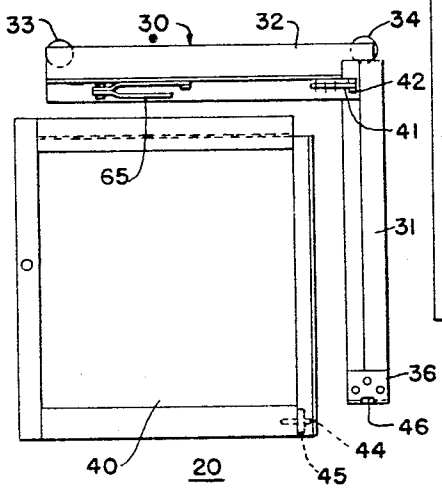


FIG. 3

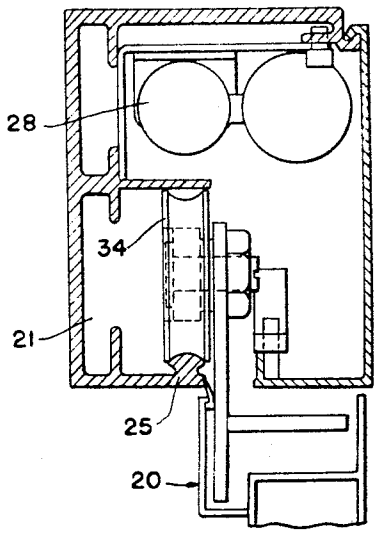
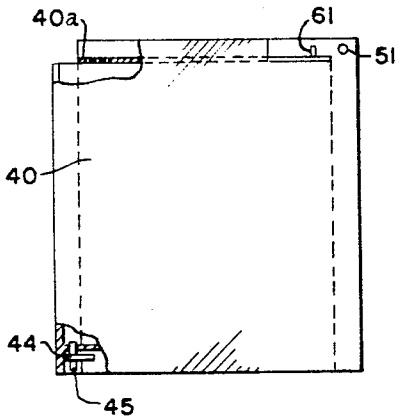


FIG. 4



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FIG. 5

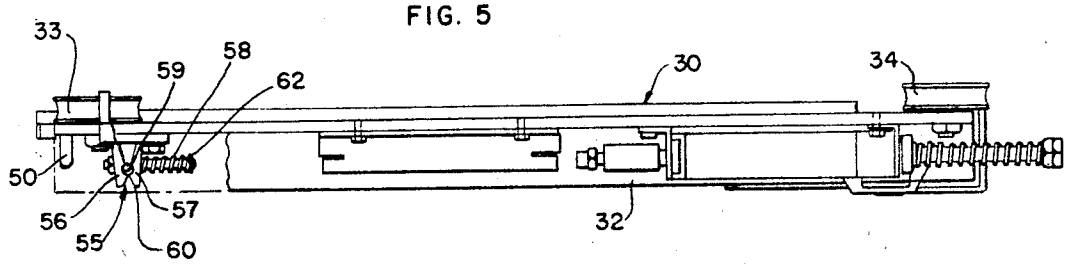


FIG. 6

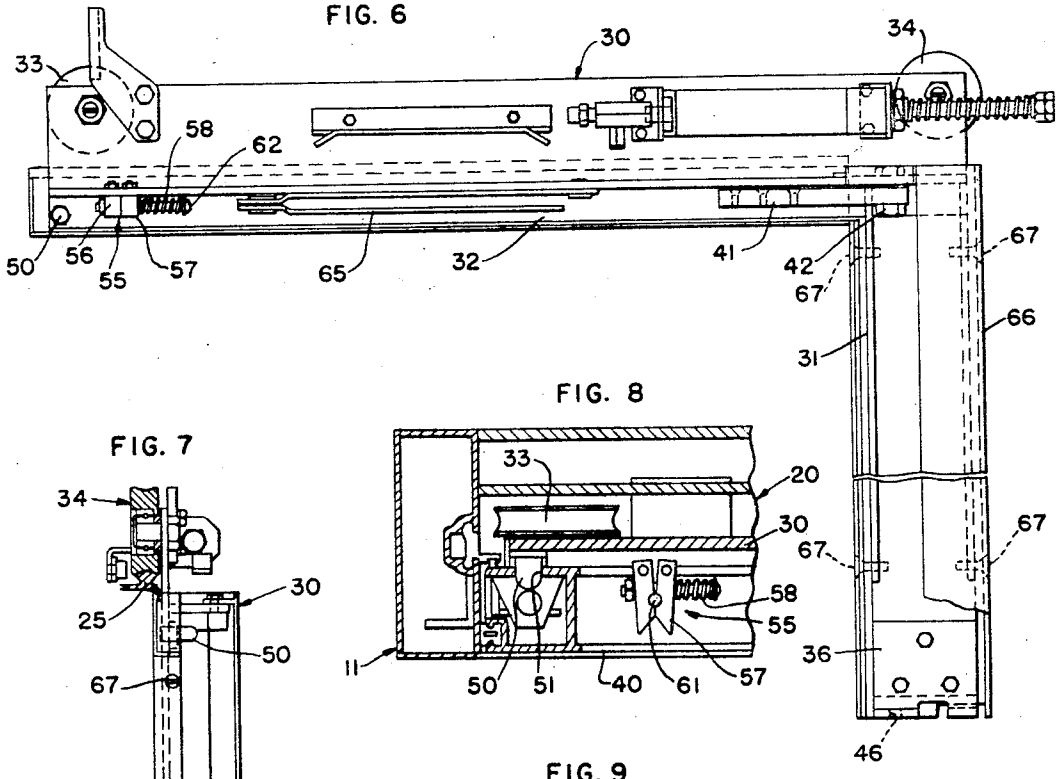


FIG. 7

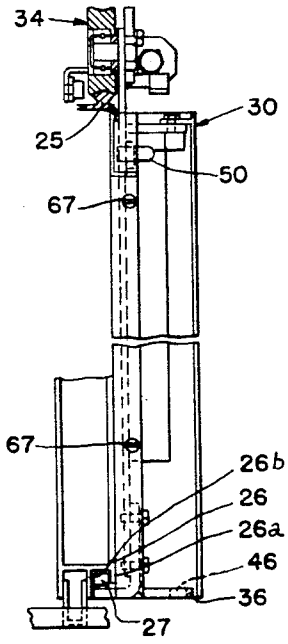
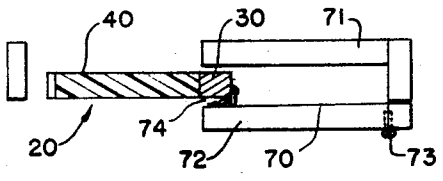


FIG. 8

FIG. 9



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BREAKAWAY FOR A SLIDING CLOSURE

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U.S. Cl. 49—141 4 Claims

ABSTRACT OF THE DISCLOSURE

There is provided a panic breakaway for a sliding door, such as would be used for an automatic entranceway. The panic breakaway is defined by a door panel pivoted on a door carriage so as to swing outwardly with respect thereof. The door carriage in turn is provided with suitable rollers slideable along the tracks to provide for the sliding movement of the closure. Thus the door panel may be pivoted outward, such as would result during a panic situation, throughout the sliding travel of the door assembly.

This invention relates to a sliding door enclosure, and more particularly to a panic breakaway for a sliding door of the type which would be used in automatically opening doors and entrances.

During recent years there has been increasing commercial interest for automatic entrances of the type having a sliding door for closing the entrance opening. Safety requirements necessitate such swinging doors when used as entrances to public buildings be capable of being swung outwardly from a closed position to an open position in the event that an operator responsible for actuating the door movement should become inactive or in the event that a panic occurs within the building such as could result during a fire or other catastrophe. Because such conditions may come about and the entranceway may be rushed from within while the sliding door assembly is in any position of its travel, it is necessary that the door panel be capable of being panic opened throughout the stroke of its sliding travel.

Moreover, it may be required by local ordinances that the sliding door travel into a completely closed pocket. Under such conditions it is necessary that the door be capable of being panic opened throughout the stroke of its travel into the pocket. Heretofore difficulties have been experienced with an arrangement satisfactory for the panic breakaway of such sliding doors.

Accordingly it is an object of the present invention to provide a new and improved sliding door.

It is a further object of the present invention to provide a new and improved panic breakaway for a sliding door.

In a further object of the present invention is the provision of a sliding door capable of panic breakaway throughout the length of the sliding travel.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In accordance with these and other objects there is provided an improved entranceway of the type having a sliding door movable between a door opening and a storage space located to one side of the door opening. The entranceway includes a door frame assembly defining the door opening and the door storage space and including tracks for slideably mounting the door assembly. The door assembly is mounted for sliding movement on

the tracks of the door frame and includes a door carriage defining a carriage frame open at the side remote from the storage area and a door panel mounted to the carriage for pivotal movement relative therewith. Thus the door panel may be pivotally opened throughout the sliding travel of the door carriage.

In accordance with another feature of the present invention, the storage area may be a completely enclosed pocket with an outer wall pivotally mounted about an outer edge. In this manner outward swinging movement of the door panel will break loose the outer wall for swinging movement with the door panel thus permitting the panic outward opening of the door panel throughout the travel of the door carriage.

For a better understanding of the present invention, reference may be had to the accompanying drawings wherein:

FIG. 1 is an elevational view of an entranceway according to the present invention;

FIG. 2 is a partial exploded view of the door assembly of the entranceway of FIG. 1;

FIG. 3 is a detail view illustrating an upper track and roller and taken on line 3—3 of FIG. 1;

FIG. 4 is a broken away view of the door panel of FIGS. 1 and 2, illustrated from the inside looking out;

FIG. 5 is a plan view of the door carriage of the entranceway of FIG. 1;

FIG. 6 is an elevational view of the door carriage of the door assembly of FIG. 1;

FIG. 7 is a cross sectional view of the entranceway of FIG. 1, taken along line 7—7 of FIG. 1, illustrated with the door panel removed;

FIG. 8 is a detail view of the door assembly of FIG. 1, illustrating the support connection and door held closed; and

FIG. 9 illustrates an embodiment of the invention wherein the sliding door assembly is movable into a closed pocket in the storage area.

Referring now to the drawings, and particularly to the embodiment of FIGS. 1 through 8, there is illustrated an entranceway, generally illustrated at **10** in FIG. 1 and shown from the outside of the building looking in. The entranceway **10** includes a door frame assembly **11** mounting a transom member **12** and a fixed door panel **13** so as to define a door opening **14** and a door storage area **15**. The door opening **14** is normally closed by a sliding door assembly **20** supported by a track **21** forming a part of the door frame assembly. The sliding door assembly **20** is movable from the normally closed position closing the door opening **14** to an open position overlying the fixed panel **13** in the storage area **15**.

As best illustrated in FIGS. 3 and 7, the door assembly **20** is adapted to slide on a rail **25** defined in the upper track **21** so as to support the vertical weight of the door assembly **20**. In addition, there is provided a lower track guide **26** having spaced vertical sides **26***a*, **26***b*, to define a guideway. The lower end of the door assembly is provided with a guide projection, here shown as a guide roller **27**, spaced within the guideway **26** between the side walls **26***a* and **26***b* thereof so as to guide the lower edge of the door assembly **20** without carrying any vertical load.

For opening the sliding door assembly **20**, there may be provided an automatic door opener **28**, FIG. 1, of known design controlled by a door mat or other suitable device (not shown) but actuated by one approaching the door.

To provide for the swinging or panic breakaway of the door, the door assembly includes a door carriage **30**, best illustrated in FIGS. 2, 5 and 6, open at its side remote from the storage area **15** and defined by a side member

31 and a top member 32. The door carriage 30 carries a pair of spaced rollers 33, 34 riding on the track 25 to provide for the vertical support of the door assembly 30. Moreover, the lower edge of the vertical member is guided by the roller 27 carried on one end of a bottom hinge and guide bracket 36. To provide for the outward opening of the door, the door assembly is also provided with a door panel 40, FIGS. 1, 2 and 4, hinged to the sliding door carriage 30 adjacent the vertical member 31. For this purpose there is provided a top hinge leaf 41 pivotally connected to the sliding door carriage by a pivot bolt 42 and adapted to be fastened with screws or other fasteners threaded into a top member 40*a*, FIG. 4, of the door panel 40. Additionally, there is provided a lower hinge member 44 secured to a lower portion of the door panel 40 and including a hinge pin 45 cooperable with the bottom hinge bracket 36 so as to set in a hinge pin opening 46. Thus the door panel 40 is pivotally mounted by the upper hinge leaf 41 pivotably secured by the pin 42, and additionally by the lower hinge pin 45 seated within the opening 46 on the bottom hinge and guide bracket. The door panel 40 is adapted to swing outwardly about these hinge points when pressure is applied to the inside throughout the sliding travel of the door assembly 20.

To carry the weight of the door panel 40 relative to the door carriage 30 when the door assembly 30 is in an operative sliding condition, there is provided a support pin 50, best shown in FIGS. 5, 6 and 8. The support pin 50 engages within a support aperture 51, FIGS. 4 and 8, in the upper corner of the door panel 40 thereby carrying the forward vertical weight of the door panel 40 and relieving any bending load on the hinge members 41 and 36.

To provide a catch or "hold closed" for the door panel 40 at such time as it is not being outwardly opened, there is provided the hold closed structure 55, best illustrated in FIGS. 5, 6 and 8, including a pair of spring biased jaws 56, 57, biased together by a compression spring 58. The jaws contain a pair of generally semicircular aligned vertical grooves 59, FIG. 5, that are chamfered at their confronting vertical edges as at 60, FIG. 5, so that a pin 61 on the door panel 40 may enter between the chamfered portions 60, spreading the jaws 56 and 57 and locking within the grooves 59. In this manner the door panel 40 is held against accidental or unintentional opening due to the wind or minor pressures thereon. The force necessary to open the door is readily adjustable through tightening the tension of the hold closed spring 58 by tightening a spring bolt 62.

A door limit arm 65, FIG. 2, controls the maximum opening of the door panel 40.

The door carriage may be provided with suitable trim to blend in with the door panel. To this end, there is provided a trim or molding 66, FIGS. 6 and 7, on the vertical member 31 of the door carriage 30 which may be adjusted relative to the door panel by opposed screws 67 extending through opposite side edges thereof. Thus the trim 66 may readily be adjusted to accommodate variations in the door alignment.

From the above description the operation of the panic breakaway for the entrance door is believed clear. However, briefly, it will be understood that the door assembly 20 will slide along the tracks 21 and 26 between a closed position, wherein it closes the door opening 14 to an open position wherein it overlies the fixed panel 15. The opening of the door assembly 20 is in response to a signal that may be activated by the breaking of a light beam that controls a photocell or by stepping on a mat which controls the automatic door opener 28. However, in the event that a door assembly is pushed outwardly, such as during panic conditions as may occur in a fire or catastrophe, it is necessary that the door 20 may be opened regardless of its position. Thus, pressure on the inside of the door 20 outwardly will unlatch the hold closed pin 61 of the door panel 40 from the hold closed latch jaws 56, 57 and permit the door panel 14 to swing outwardly about

its pivots 42 and 45 throughout the sliding travel of the door carriage. The limit arm 65 will prevent overtravel of the outwardly swinging door. Moreover, when the door panel 40 is restored to its closed position, the vertical load at the forward or free edge of the door panel will be carried by the interlocking of the support pin 50 within the support aperture 51 of the door panel 40.

FIG. 9 schematically illustrates in plan view the arrangement of an entranceway according to the present invention wherein the door assembly must open into a pocketed storage area. Thus there is provided, as illustrated in FIG. 9, a storage area 70 for the door assembly 20 identical with that heretofore described. The storage assembly, however, defines a closed pocket formed by an inner fixed panel 71 and an outer hinged panel 72. The outer hinged panel 72 will swing outwardly about suitable hinge members 73. Thus, if the door panel 20 is panicked open when the door assembly 20 is partially within the pocket 70, the outer panel 72 will break loose and pivot outwardly with the door panel 20 about its hinge members 73. An interlock 74 secures the panel 72 in locked position when the door assembly 20 is closed.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. An entranceway of the type having a sliding door movable between a door opening and a storage space located to one side of the door opening, said entranceway comprising:

a door frame assembly defining a door opening and a door storage space defined by a fixed door panel to one side of said door opening;

track means extending across said door opening and along the outer side of said fixed door panel associated with said frame assembly and including an upper rail for carrying the vertical load of said door assembly and a lower guide track for guiding said door assembly and having spaced side members; and

a door assembly mounted for sliding movement on said track means, said door assembly including:

a door carriage defining a carriage frame open at the side remote from said storage area and having roller means riding on said rail and guide means slideable between said spaced side members of said lower guide track, and

a door panel pivotally mounted to said carriage for pivotal movement relative therewith providing said door panel to pivotably open outwardly throughout the sliding travel of said door carriage.

2. An entranceway as set forth in claim 1 wherein said door carriage and door panel are provided with mating support projections and support projection receiving means adjacent the edge of said door panel remote from its pivotable mounting to carry vertical load of said door panel relative to said door carriage when said door panel is closed in said door carriage.

3. An entranceway as set forth in claim 2 wherein door carriage and door panel are provided with readily releasable door latch members cooperable to hold the door panel in the closed position and readily releasable upon mere outward pressure on said door.

4. An entranceway of the type having a sliding door movable between a door opening and a storage space located to one side of the door opening, said entranceway comprising:

a door frame assembly defining a door opening;

a door storage space defined by a pocket to one side of said door opening;

the outer wall of said pocket being vertically hinged so that the panic opening of said door panel results in the outward opening of said outer wall to provide outward opening of said door panel throughout the sliding travel of said door carriage into said pocket;

track means associated with frame assembly; and

a door assembly mounted for sliding movement on said track means, said door assembly including:

a door carriage defining a carriage frame open at the side remote from said storage area, and

a door panel mounted to said carriage for pivotal movement relative therewith so that said door panel may be pivotably opened throughout the sliding travel of said door carriage.

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