J. M. BRADY.

HAND RAIL.

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1,268,209.

Patented June 4, 1918.

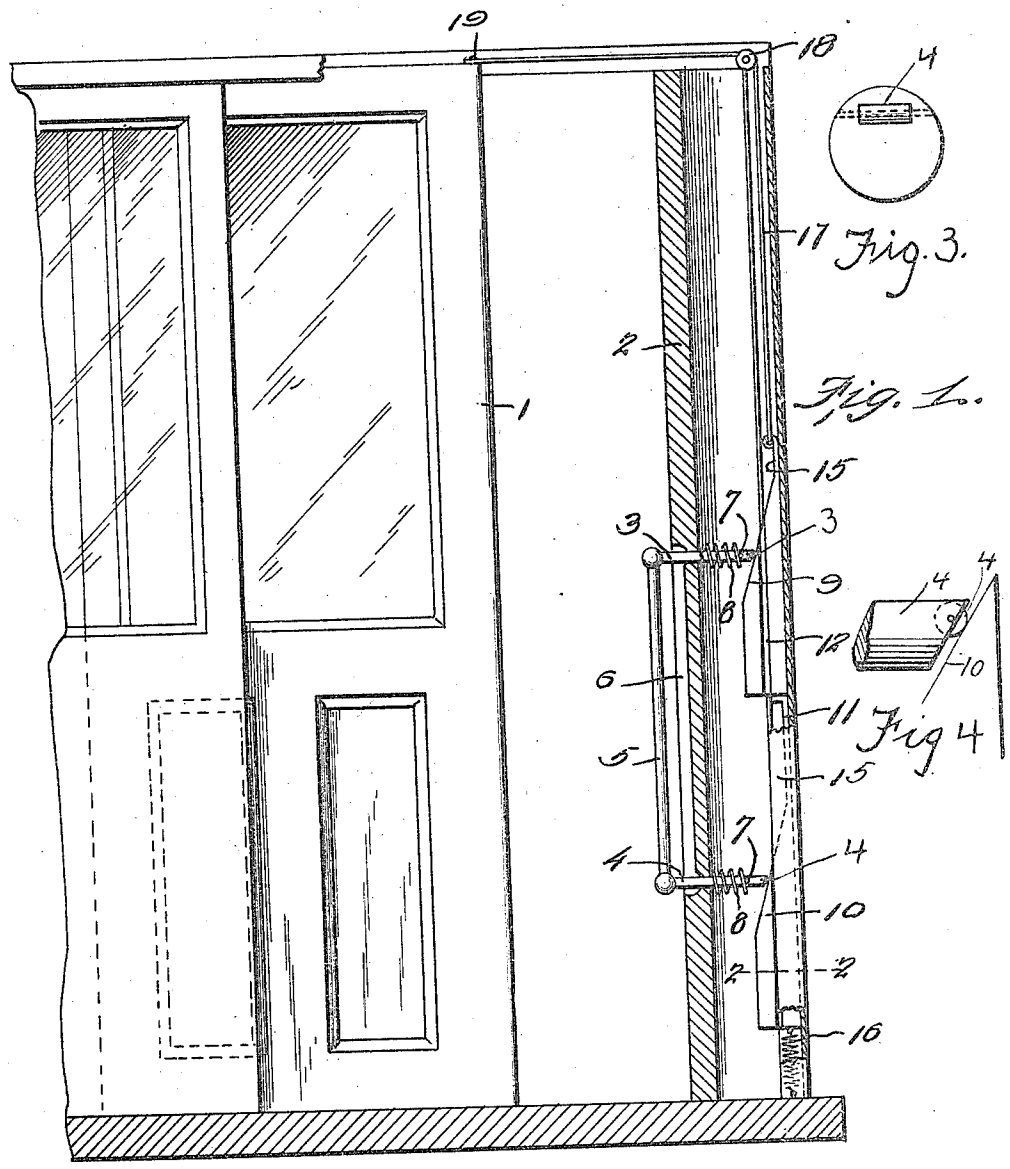

Fig. 1.

Fig. 3.

Fig 4

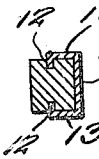

Fig. 2

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HAND-RAIL.

1,268,209. Specification of Letters Patent. Patented June 4, 1918.

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To all whom it may concern:

Be it known that I, JAMES M. BRADY, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Hand-Rails, of which the following is a specification.

This invention relates to hand rails, and more particularly to those used in connection with exit doors of cars.

The main object of the invention is to so construct a hand rail for use by passengers in leaving cars that it will be in housed position out of sight when the door in connection with which it is used is closed and will automatically move outward into position for use on the opening of the door.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 represents a side elevation partly in section of a compartment having a sliding door equipped with this invention, parts being broken out.

Fig. 2 is a detail transverse section taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged end elevation of an arm of the hand rail, and

Fig. 4 is a detail fragmentary elevation showing the hand rail shifting means.

In the embodiment illustrated a sliding door 1 is shown such as is used in pay-as-you-enter cars, although obviously it may be used in connection with any other door opening. This door is adapted to slide back in guides in the usual manner when open and when closed abuts the jamb 2, the door as shown in Fig. 1 being partially open. The jamb 2 is shown made hollow and mounted to slide transversely therein are two arms 3 and 4 which project laterally from a hand rail 5 positioned outside the jamb 2 and which is designed to lie within the groove 6 when the rail is in retracted position. These arms 3 and 4 are provided adjacent their free ends with laterally projecting pins or studs 7 between which and the inner face of the door jamb are positioned coiled springs as 8 which are in the form of expansion springs and exert their tension to normally force the arms 3 and 4 inward thereby carrying the rail 5 with them and causing it to lie in the groove 6 where it is completely housed and out of sight.

Mounted to move in the path of the spring pressed arms 3 and 4 of the rail 5 are a pair of cams 9 and 10 carried by a slide 11. This slide 11 is in the form of a block and has oppositely disposed grooves 12 in its sides which are designed to receive the inturned flanges 13 of a guideway 14 in which said slide is mounted, (see Fig. 2). The cam faces 9 and 10 incline inwardly and upwardly as is shown clearly in Fig. 1 and at their upper ends are provided with recesses 15 which are designed to receive anti-friction rollers 3′ and 4′ on the ends of the arms 3 and 4 when said slide is in its extreme lowered position thereby permitting said arms to move into the hollow jamb 3 a sufficient distance to completely house the rail 5 by which they are carried in the groove 6 so that the door 1 may be closed without interference.

A coiled pull spring 16 is connected at one end with the bottom of the car and at its other end with the lower end of slide 11 and exerts its tension to normally hold said slide in lowered retracted position so that the recesses 15 are normally disposed opposite the arms 3 and 4 of the railing 5 and when said slide is moved upwardly the cam faces 9 and 10 thereof engage the rollers on the free ends of the arms 3 and 4 and force said arms outwardly against the tension of their springs 8 thereby causing the rail 5 to move automatically into position ready for use as is shown clearly in Fig. 1, this view showing the rail in partly projected position only as will be obvious.

A cable 17 is connected at one end with the upper end of the slide 11 and passes over a pulley 18 mounted in the upper end of the door jamb 2 and then extends horizontally and is connected with the upper right hand corner of the door 1 as shown at 19. From this construction it will be seen that when the door 1 is opened it will exert a pull on the cable 17 and thereby elevate the slide 11 against the tension of its spring

16, bringing the cam faces 9 and 10 of said slide into engagement with the free ends of the spring pressed arms 3 and 4 of the railing thereby forcing said railing outwardly into position for use by the passengers leaving the car. When the door is closed a pull exerted by spring 16 will operate the lower slide 11 and thereby position the recesses 15 therein opposite the arms 3 and 4 of the rail and permit said rail to move inwardly to its extreme retracted position under the action of the springs 8.

This device is constructed to overcome the disadvantages of the present front exit doors of cars which have handles on the inside and which are frequently grasped by passengers in leaving the car to assist them in their descent which oftentimes results in breaking or straining of the passengers wrists. Moreover, these inside handles are objectionable in that they catch in buttons or other parts of the clothing of the passengers and result disastrously. On the other hand, with the cars which have permanent handles outside and steps permanently lowered there is a tendency of passengers to jump on the car and when finding the door fastened, accidents result.

This device which greatly assists passengers in making their exit from a car can only be used when the car door is open as obviously from the above description it will be housed within the groove 6 and out of sight when the door is closed.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains and while I have described the principle of operation of the invention together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made as are within the scope of the claimed invention.

I claim:—

1. The combination with a door frame; of a projectable member normally housed therein, a door, and means operable on the opening of the door to project said member.

2. The combination with a door frame; of a projectable member normally housed therein, a door, means whereby said member is held in retracted housed position while the door is closed, and means controlled by the opening of the door to project said member.

3. The combination with a door jamb; of a rail having an arm movable laterally into and out of said jamb, means for normally holding said arm within the jamb whereby the rail is retracted, a cam positioned in the path of said arm, and a connection between said cam and said door whereby on the opening of the door the cam is moved into engagement with said arm for forcing said rail outward.

4. The combination with a door jamb, a hand rail having a laterally extending arm movable into and out of said jamb, a coiled spring mounted on said arm for normally holding it in retracted position, a cam movable in the path of said arm, a spring normally holding said cam out of engagement with said arm, a door, and a connection between said door and cam whereby the opening of the door causes said cam to move into engagement with said arm for projecting said rail.

5. The combination with a door frame having a hollow jamb, a door movable toward and away from said jamb, a hand rail disposed outside said jamb and having an arm extending transversely thereinto, a slide mounted to move in said jamb, guides in said jamb with which said slide is engaged, yieldable means normally holding said slide in retracted position, out of engagement with said arm, and a flexible element connecting said slide and said door whereby on the opening of the door the cam is moved into engagement with the arm and said rail projected.

6. The combination with a door frame having a hollow jamb provided on its inner face with a longitudinally extending groove, the inner wall of said groove having longitudinally spaced apertures therein communicating with the interior of the jamb, a hand rail adapted to lie in said groove when in inoperative position and provided with laterally extending arms slidably mounted in said apertures, springs connected with said arms for normally forcing the rail inward, a slide mounted to move longitudinally in said jamb and having longitudinally spaced cams positioned for engagement with the arms of said rail when in one position, recesses at the ends of said cams to receive said arms when the slide is in another position, a door, and a connection between said door and slide whereby the cams are moved into contact with said arms on the opening of the door thereby forcing the rail into projected operative position.

7. The combination with a hollow door jamb, a door, a guide in said jamb having laterally spaced inturned flanges, a slide having grooves for engagement with said flanges, cams carried by said slide in recesses at their upper ends, a coiled spring connecting said slide with the fixed support and exerting its tension to hold it normally in retracted position, a hand rail located outside said jamb and having laterally extending arms slidably mounted transversely in the jamb and positioned in the path of said cams, means for normally holding said rail in retracted position, and a connection be-

tween said slide and door whereby the cams of the slide are brought into engagement with said arms on the opening of the door for projecting the rail.

8. The combination with a door frame having a hollow jamb provided on its inner face with a longitudinally extending groove, the inner wall of said groove having longitudinally spaced apertures therein communicating with the interior of the jamb, a hand rail adapted to lie in said groove when in inoperative position and provided with laterally extending arms slidably mounted in said apertures, springs connected with said arms for normally forcing the rail inward, a slide mounted to move longitudinally in said jamb and having longitudinally spaced cams positioned for engagement with the arms of said rail when in one position, rollers on the ends of said arms bearing on said cams, recesses at the ends of said cams to receive said arms when the slide is in another position, a door, and a connection between said door and slide whereby the cams are moved into contact with said arms on the opening of the door thereby forcing the rail into projected operative position.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES M. BRADY.

Witnesses:
THOMAS MULHERN,
AGNES KENNY.