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STAIRWAY GUARD

Filed Jan. 24, 1930

2 Sheets-Sheet 1

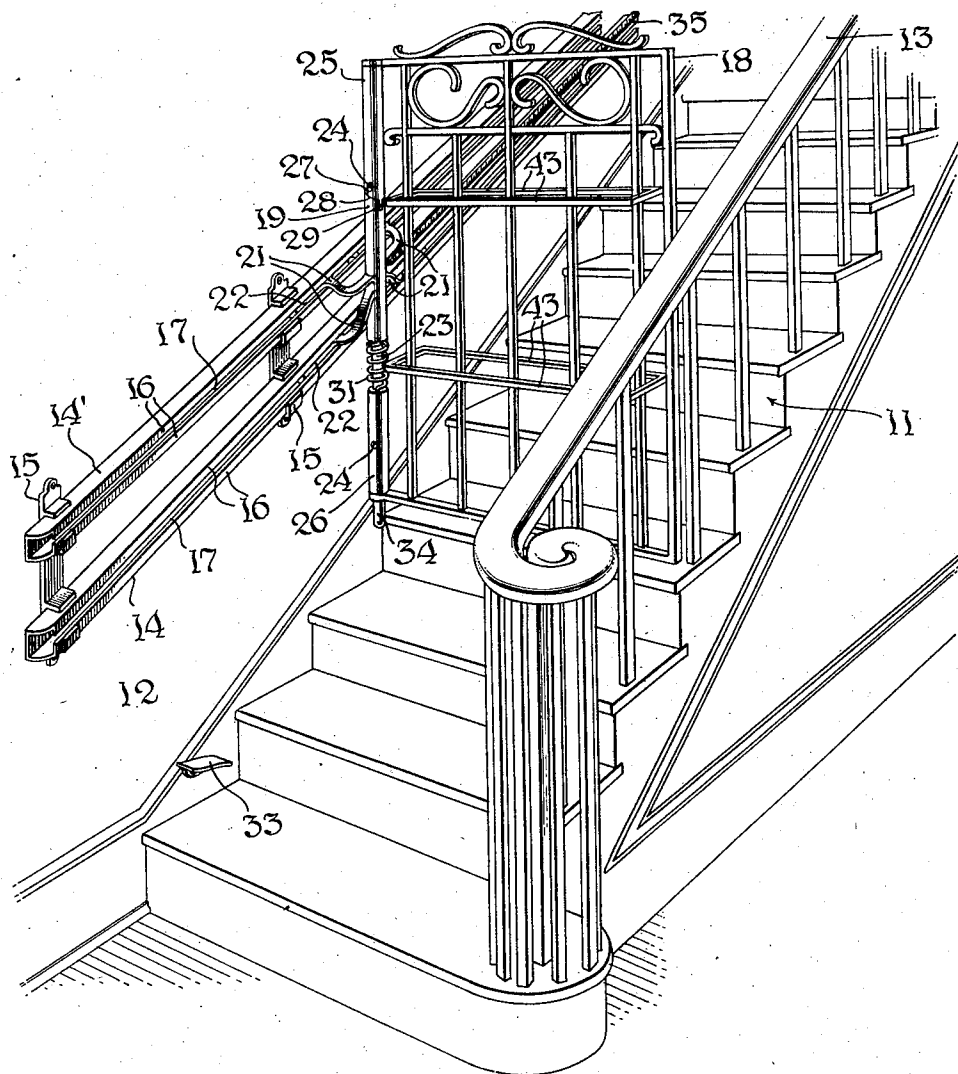


Fig. 1

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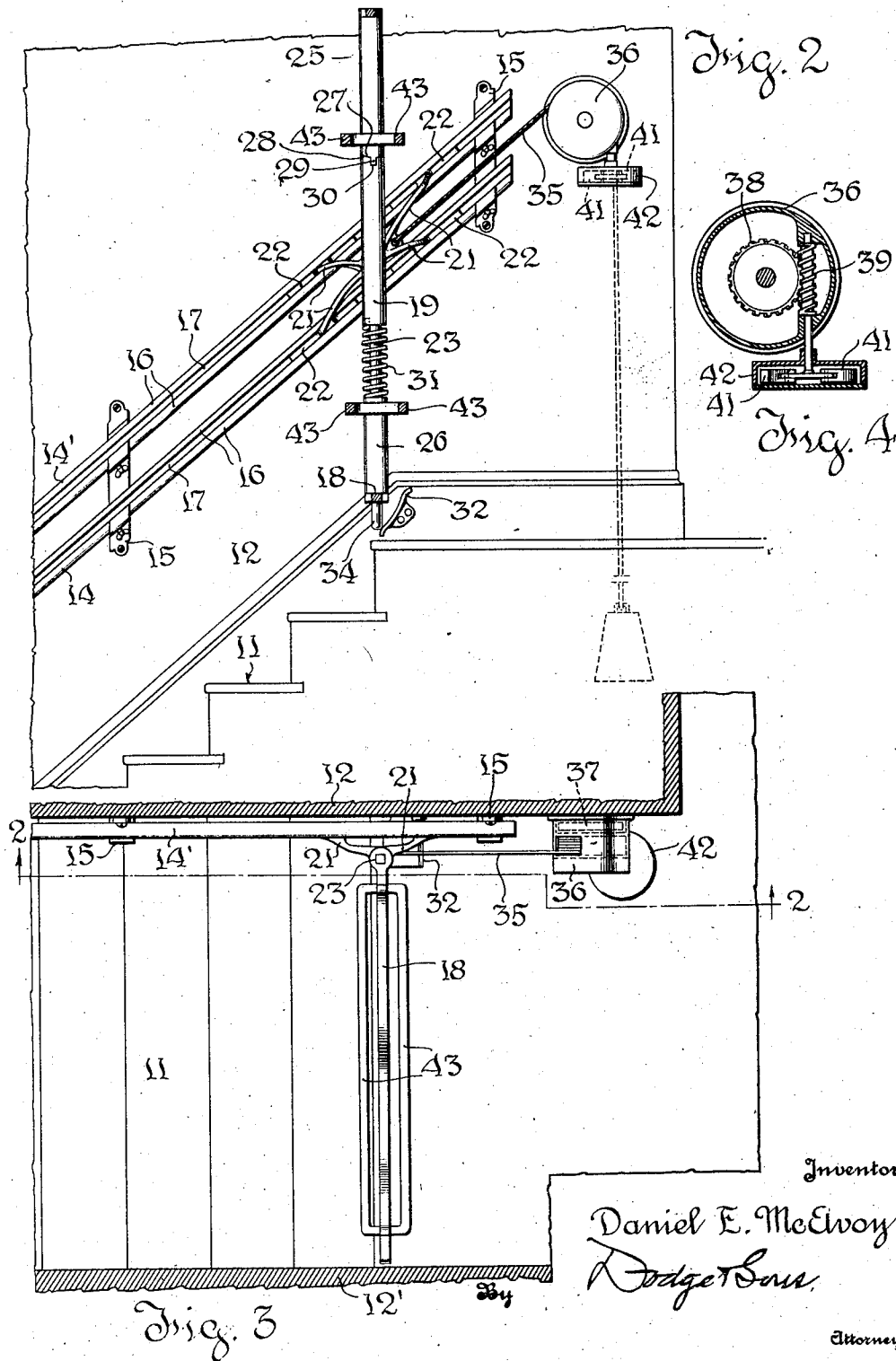
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UNITED STATES PATENT OFFICE

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STAIRWAY GUARD

Application filed January 24, 1930. Serial No. 423,144.

This invention relates to a guard for stairways, and more particularly to a gate designed to prevent persons from falling down stairways. In some types of residences and apartment houses, landings are provided at the top of the stairway, and it frequently happens that persons walking on the landing, due to darkness, defective eyesight, or feebleness, are unaware of or misjudge the top step of the stairs. Serious injury often results from falls caused in this manner.

The present invention contemplates a gate or guard which, while adapted to be swung about a vertical axis, in the usual manner, is mounted to move on a guideway paralleling the angle of the stairway, and is normally locked to prevent swinging thereof, so long as a downwardly directed force is exerted on the gate. It is further intended to provide means for regulating the rate of descent of the gate, so that it forms a support for the person holding thereto.

The invention will be more fully understood from a description of one form thereof taken in connection with the appended drawings, in which,—

Fig. 1 is a perspective view of the guard showing the supporting rail and its relation to the stairway.

Fig. 2 is a side sectional view of the guard in its normal position, that is, at the top of the stairs, taken on line 2—2 of Fig. 3.

Fig. 3 is a top view of the guard.

Fig. 4 is a sectional view of a brake mechanism for regulating the rate of descent of the guard.

Referring to the drawings, the stairs 11 may be of the type abutting one wall 12 and having a banister rail 13, or may extend transversely of a well to abut two walls 12, 12', as shown in Fig. 3. In either case there is fastened to the wall 12 a pair of rails 14, 14', by means of supporting brackets 15, the latter being firmly secured to the wall. The supporting rails are so mounted that they are parallel to the angle of the stairs with respect to the horizontal. Each of the rails is substantially channel-shaped in cross section and provided with inwardly turned flanges 16 to provide a longitudinal slot 17.

The gate or guard 18 is mounted to slide in the rails, the gate being supported in a tubular casting or bracket 19 having arms 21, preferably made integral therewith, on the ends of which are shoes 22 adapted to fit within the channel of the rails. If desired anti-friction bearings may be interposed between the shoes and rails to permit the shoes to ride more readily on the rails. It is to be noted that the arms 21 are disposed at an angle to the tubular member 19 so that when the shoes are in sliding engagement with the rails the member 19 will be in a substantially vertical position.

Slidably mounted on the tubular member 19 is a post or standard 23 to which are secured, by means of pins or keys 24, other tubular members 25, 26, one secured to the upper end of the gate and the other to the lower end. The upper member 25 is beveled at its lower end, as at 27, to coact with a similarly beveled end 28 of the member 19, so that the weight of the gate normally tends to turn the gate to a position wherein it bridges the stair passage. The ends 27, 28, are further provided with a key 29 and slot 30, respectively, to lock the gate in bridging or obstructing position. As a further means for swinging the gate to obstructing position, a combined torsion and compression spring 31 surrounding the post 23, is interposed between and fastened to the members 19 and 26, respectively. This spring tends to swing the gate with respect to its support, holding the gate in its locked, or obstructing position. Adjacent the top and bottom steps of the stairway, cam plates 32, 33, are fastened to wall 12 and are so positioned that they engage the projecting end 34 of the post 23, when the gate passes the top and bottom steps, to lift the post sufficiently to permit the gate to be swung open.

Attached to the supporting bracket 19 is a cable 35 which is wound around a drum within a casing 36 attached to the wall 12 at the upper landing of the stairs. A spring 37 is attached to the drum shaft and casing so that as the cable is unwound the spring is wound. The spring, therefore tends to return the gate to a position adjacent the up-

per landing at all times. Suitable tension or resistance means are associated with the drum to prevent too rapid winding or unwinding of the cable so that the gate will ascend or descend at a relatively slow and steady speed.

One form of speed regulating means is shown in Fig. 5 in which there is provided on the drum shaft a gear 38 meshing with a worm 39. The worm shaft carries a pair of brake shoes 41 adapted to be thrown by centrifugal force into engagement with a brake drum 42 secured to the casing 41 or to the wall 12. It is apparent that if the cable is wound or unwound too rapidly the shoes will be thrown out into braking position, and arrest the ascent or descent of the gate.

As an aid to those desiring to use the gate as a support while descending the stairs, that is, children or feeble persons, the gate is provided with transverse bars 43, arranged at appropriate heights on the gate. These may be grasped by the user who will be supported thereby.

In operation, the guard normally obstructs the stairway, but is capable of riding down the rails at a relatively slow rate of speed. Thus, a person having walked or fallen accidentally over the top step, will grasp the guard, and since the weight of the person exerts a downward pressure on the gate, it will remain in its locked or obstructing position but will move along the rails slowly enough to enable the person to regain his or her balance. It is also apparent that the guard will be useful to those desiring a support while descending the stairs, and, under some circumstances, may be utilized as a fire escape. When it is desired to swing the gate in either direction, it is necessary to elevate it against the pressure of spring 31, which may be done by lifting the gate by hand, or by moving the end of the post against the cam plates 32 or 33. The gate may be swung in either direction so that it opens at the top landing as well as at the bottom step of the stairs. When the gate is swung open the spring 31, being fastened to the gate as well as to the supporting bracket, is subjected to a torsional stress and tends to return the gate to its bridging or locked position.

Although a spring controlled drum has been employed in the form of the invention illustrated, it is obvious that equivalent means, such as a weight, may be utilized for the purpose of returning the gate to the upper landing of the stairs after the gate has been lowered. Other details of the invention may also be modified without affecting the operation of the apparatus.

What is claimed is:—

1. A guard for stairs, comprising a gate, guide means disposed in parallel relation to said stairs, and means engaging said guide means for supporting said gate, said support-

ing means being slidable longitudinally of the stairs along the guide means.

2. A guard for stairs, comprising a gate, guide means disposed in parallel relation to said stairs, means engaging said guide means for supporting said gate, said supporting means being slidable longitudinally of the stairs along the guide means, and a hinged connection between said supporting means and said gate.

3. A guard for stairs, comprising a gate, guide means disposed in parallel relation to said stairs, means engaging said guide means for supporting said gate, said supporting means being slidable along the guide means, and means normally tending to move said supporting means to the uppermost portion of said stairs.

4. A guard for stairs, comprising a gate, a rail disposed in parallel relation to said stairs, means engaging said rail for supporting said gate, said means being slidable along the rail, a hinged connection between said supporting means and said gate, and locking means normally holding said gate in obstructing position transversely of the stairs.

5. A guard for stairs, comprising a gate, a rail disposed in parallel relation to said stairs, means engaging said rail for supporting said gate, said means being slidable along the rail, a hinged connection between said supporting means and said gate, means normally locking said gate transversely of said stairs, and means adjacent the top and bottom of said stairs for automatically releasing said locking means during slidable movement of the support to permit swinging movement of the gate.

6. A guard for stairs, comprising a gate, means for slidably mounting said gate to permit the gate to be moved parallel to and longitudinally of the stairs, a hinged connection between said means and said gate, means for locking the gate to bridge said stairs, and means at each end of the stairs for releasing said locking means to permit swinging movement of said gate in either direction.

7. A guard for stairs, comprising a gate, a rail disposed in parallel relation to said stairs, a bracket slidably mounted for movement along said rail, a vertical tubular member on said bracket, said gate being hingedly and slidably mounted in said member, means on said gate and member for holding said gate in bridging position with respect to said stairs, and means at each end of the stairs for releasing said holding means to permit swinging movement of said gate.

8. A guard for stairs, comprising a gate, means for slidably mounting said gate to permit the gate to be moved parallel to and longitudinally of the stairs, and means for automatically regulating the speed at which

the gate slides downwardly with respect to said stairs.

9. A guard for stairs, comprising a gate, means for slidably mounting said gate to permit the gate to be moved parallel to and longitudinally of the stairs, means normally acting on said gate to move the gate to the uppermost position of the stairs, and means for automatically regulating the speed at which the gate may be moved downwardly with respect to said stairs.

10. A guard for stairs, comprising a gate, means for slidably mounting said gate to permit the gate to be moved parallel to and longitudinally of the stairs, and a plurality of transverse supporting bars on said gate.

In testimony whereof I have signed my name to this specification.

DANIEL EDWARD McAVOY.