March 7, 1939. S. S. ROBY 2,149,870

PANIC DOOR RELEASE MECHANISM

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Fig. 1

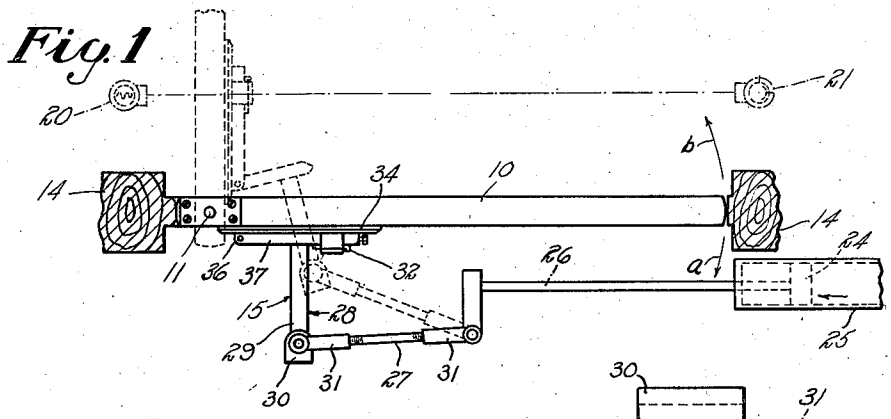


Fig. 2

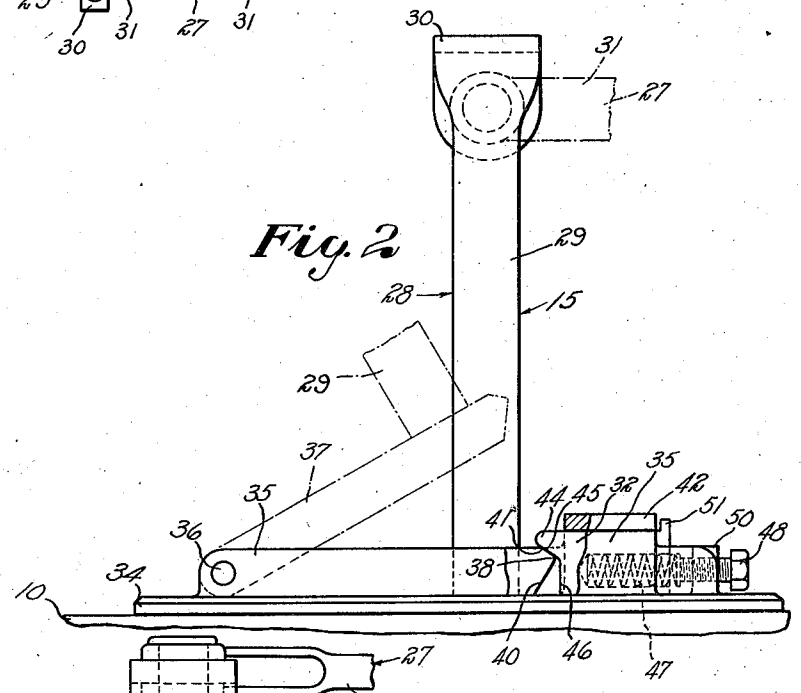
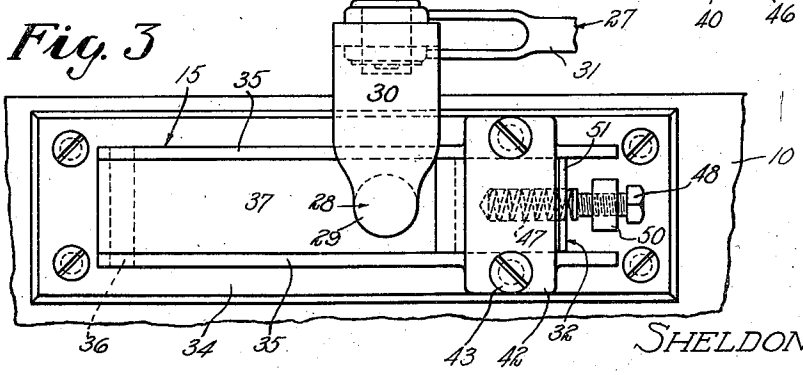


Fig. 3



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PANIC DOOR RELEASE MECHANISM

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10 Claims. (Cl. 268—66)

This invention relates to power operated doors and, more particularly, to a panic release mechanism adapted to be employed in connection with a power operated door opening and closing mechanism.

Heretofore, various power operated devices have been utilized to open and close doors, but the operating mechanisms have not been so arranged that the doors could be quickly and manually operated irrespective of the power mechanisms in the event of an emergency such as a panic.

It has also been contemplated to provide a power operated door opening and closing mechanism so devised that a door will automatically open as a person approaches it and remain in its open position until after the person has passed through the doorway, after which the door is closed. Door operating mechanisms of this general type are usually controlled by a beam of light which is interrupted by a person passing between a light source and a photo-electric cell. One convenient door controlling apparatus of this type is disclosed in the United States Patent No. 1,978,093 issued to me and Horace H. Raymond on October 23, 1934. In some instances, the door controlling devices may be so constructed as to admit traffic through the doorway only from one side thereof. In constructions of this sort, should an emergency arise, the power operated door could not be quickly opened in a reverse direction to its normal operating movement to avert the dangers of a panic and admit traffic through the doorway from the other side of the door, with the probable result that many persons would become trapped behind a closed door.

It is, therefore, the principal aim of the present invention to provide a release mechanism for a power operated door so that the door may be quickly and manually opened at any time irrespective of the power operated mechanism.

It is a further object of this invention to provide a power operated door opening and closing mechanism embodying a releasable link which becomes easily disengaged under manual operation of the door so that the door may be manually operated at any time.

Other objects will be in part obvious and in part pointed out more in detail in the ensuing specification.

My invention accordingly resides in the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawing illustrating one embodiment of my invention and wherein like parts are indicated by like numerals:

Figure 1 is a plan view of my invention illustrating its operative features when employed in conjunction with a power operated door opening mechanism;

Fig. 2 is an enlarged plan view of my panic release mechanism showing the operation of the releasable link connection; and

Fig. 3 is a side elevation of my panic release mechanism mounted at the top of the swinging door.

In accordance with my invention, a door 10 mounted on pivots, one of which is indicated at 11, is arranged for swinging movement in both directions within a suitable casing 14. A panic release mechanism 15 is carried by the door and provides a releasable connection between an operating mechanism and the door. The power actuated door operating mechanism may be of any suitable form and, in the present instance, is shown more or less diagrammatically since it does not comprise a part of my invention.

By way of example, I have illustrated a power operated mechanism of the general type disclosed in the aforementioned patent to Roby and Raymond and herein comprising a light source 20 and photo-electric cell 21 located relative to the door in such manner that a person approaching the door will intercept a beam of light therebetween to affect the current flow through the photo-electric cell which in turn controls the slidable movement of a fluid pressure operated piston 24 within a cylinder 25. The piston movement is transmitted through a piston rod 26 and a pivotally mounted connector 27 to a release link 28. The release link has a laterally projecting arm 29 terminating in a substantially U-shaped projection 30 pivotally secured to one end of connector 27.

To facilitate adjustment, one or both ends of connector 27 may be provided with clevices 31 threaded thereon and respectively pivoted to the piston rod and the release link as shown in Fig. 1.

Release link 28 is normally secured through a latch 32 to the door so that piston movement in the direction of the arrow will normally swing the door open in the direction indicated by arrow *a* whenever a light beam entering the photo-electric cell is intercepted. After a person has passed through the doorway and the light beam again reaches the photo-electric cell, a reverse movement of piston 24 serves to swing the door to a closed position.

An elongated plate 34 is rigidly secured by screws or other suitable means to the upper portion of the door somewhat forwardly of axial supporting pins 11. Plate 34 has two spaced longitudinally extending, laterally projecting flanges 35 supporting a pin 36 upon which is journalled the rearward end of an arm 37 of the release link 15. Arm 29 is rigidly secured to arm 37 intermediate of its ends and substantially rectangularly thereto. The forward end of arm 37 terminates in a nose portion 38 having respective angularly disposed inner and outer faces 40 and 41. Nose 38 is adapted to removably engage beneath a spring pressed latch member 32 which is slidably mounted between flanges 35 forwardly of the nose and beneath a cap plate 42 secured by screws 43 to the flanges. The end of latch 32 adjacent to nose 38 has a rounded lip 44 provided with a cam face 45 therebeneath which terminates in an end face 46. A coiled spring 47 received within a bore in latch 32 projects therefrom and compressively engages against the end of an adjustment screw 48 threadably received within a lug 50 projecting from plate 34.

An outwardly projecting lug 51 on the outer end of latch member 32 is arranged to engage cap plate 42 and limit the extent of spring pressed movement of the latch when nose 38 is disengaged therefrom. It will thus be appreciated that whenever a force is exerted against the door tending to swing it in the direction indicated by arrow *b*, the engaging surfaces 41 and 45 co-act with each other to cam the latch 32 out of operative position, and a slight push on the door will cause release link 28 to move to an inoperative position as shown in dotted lines in Figs. 1 and 2 so that the door may be easily swung to full open position without affecting the power operating mechanism. The extent of push necessary to disengage latch 32 may be easily adjusted by means of screw 48. If desired, a suitable latch member in the general form of a push bar or other member may be pivotally secured across the inside face of the door and connected to the latch by a flexible cable so that a person approaching the door can move the bar and retract the latch 32 from operative engagement with release link 15. However, this additional feature is not deemed essential to the present invention since a push against the door itself will serve to release the latch from operative position. When the door is again closed, surface 40 will enter into camming engagement with lip 44 so that the latch 32 will compress spring 47 and permit the nose 38 to slidably lock in latching engagement. End face 46 is preferably spaced from nose 38 so that the mating faces 41 and 45 will cooperate to rigidly secure arm 37 in abutting engagement with the face of door plate 34 to normally prevent lost motion between the release link and door.

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

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. In combination with a power actuated door operating mechanism for causing the opening movement of a swinging door in one direction, a panic release apparatus including a release link and permitting the door to be manually opened in an opposite direction, means pivotally securing one end of the link to the door adjacent its pivotal support, means connecting the link to the power operating mechanism, a releasable latch movably mounted on the door and normally securing the link in operative door engagement to open and close the door under power, and means associated with the latch permitting said latch to be moved out of link engagement in response to a push exerted against the door in a direction opposite to that of its power actuated opening movement so that the door may be manually operated independently of the power mechanism whenever desired and the release link may serve as a lost motion connection between the power operating mechanism and door.

2. In combination with a power actuated door operating mechanism arranged to open and close a pivotally supported door to one side of a doorway, a panic release connection including a release link pivotally secured at one end to the door adjacent its pivotal support and permitting manual operation of the door to the other side of the doorway and independently of the power actuated mechanism, means connecting the link to the operating mechanism, a latch engaging a portion of said link and normally securing the link in operative engagement with the door to open and close the door under influence of the power actuated operating mechanism, said latch being arranged to disengage whenever a push is exerted against the door tending to open it in a direction opposite to the power operated door opening movement, whereby the release link will serve as a lost motion connection between the operating mechanism and door and the door may be manually opened at any time irrespective of the power operating mechanism.

3. In combination, a door mounted for swinging movement in opposite directions, power means for swinging said door in one direction, a panic release apparatus connecting said door to the power mechanism and comprising a plate secured to the door, a member pivotally secured at one end to said plate and having opposed cam surfaces at its other end, a latch detachably securing the other end of said member to the plate, means connecting said member intermediate of its ends to the door operating mechanism, said latch normally cooperating with the pivotal connection and securing said member to the plate so that movement imparted to the member by the operating mechanism normally serves to control the opening and closing of the door in one direction, the latch being arranged to disengage from the member whenever a push is exerted against the door tending to open it in the opposite direction, and to re-engage the member when the door is closed, thereby permitting the door to be manually opened at any time irrespective of the power operated mechanism.

4. In combination with a swinging door, power operated mechanism for opening and closing said door in one direction, a panic release apparatus connecting said door and power mechanism and comprising a plate fastened to the door, a release link pivotally secured at one end to the plate and having opposed cam surfaces at its other end, an arm projecting laterally from said link intermediate of its ends and connected to

the operating mechanism, a latch supported for slidable movement on said plate and arranged to detachably engage the cammed end of the released link, said latch normally securing the link in rigid relation to the plate, and resilient means tending to maintain the latch in engagement with the link and to permit re-engagement of the latch and link after same has been detached.

5. In combination with a pivotally supported swinging door, power operated mechanism adapted to open and close said door in one direction and controlled by the interruption of a light beam, a panic release connecting said door to said power mechanism and comprising a release link, one end of said link having opposed cams a pin pivotally securing one end of the link to the door independently of the pivotal door support, a laterally projecting operating arm on the link, a spring pressed latch removably engageable with the cammed end of the link and normally tending to rigidly secure it in operative relation to the door, and adjustable means engageable with said latch whereby a predetermined pressure against said door tending to open it will serve to disengage said latch and swing the door to an open position irrespective of the operating mechanism and permit automatic re-engagement of the link upon closing the door.

6. In combination with a power actuated door operating mechanism controlled by the interruption of a light beam and arranged to automatically open a swinging door in one direction and close it in an opposite direction, a panic release apparatus including a release link, a pivotal connection between one end of the link and the door, said link having an operating arm projecting laterally therefrom and intermediate of its ends, a nose on the other end of the link, a spring pressed latch resiliently and removably engageable with said nose and tending to normally secure the link in rigid relation to the door, said latch being arranged to disengage whenever a manual push is exerted against the door and permitting an opening movement of the door independently of the power mechanism and in a direction opposite to the power actuated door opening movement.

7. In combination with a power actuated door operating mechanism arranged to open a door in one direction, a panic release device including a release link permitting the door to be manually opened in an opposite direction, means pivotally securing the link to the door independently of the door support, and a latch detachably interconnecting the door and link and normally cooperating with the pivotal means to rigidly secure the link to the door and transmit power operation thereto, said latch being arranged to disengage from the link in response to a push exerted against the door and permitting an opening movement of the door independently of the power mechanism.

8. In combination with a power actuated door controlling mechanism arranged to move the door in one direction to open it, a manually responsive panic release apparatus including a release link, a pivotal connection securing the link to a door independently of the door support, and a latch cooperating with said connection to normally secure the link rigidly to the door for transmitting a power actuated door opening and closing movement, and means associated with said latch causing it to automatically disengage whenever a manual force is imparted against the door to open it in a direction opposite to its power operated opening movement.

9. In combination with a power operated door controlling mechanism arranged to open the door in one direction and close it in an opposite direction, a pivotal support for the door permitting it to swing from a closed to an open position in either direction, a panic release apparatus including a release link pivotally secured at one end to the door and independently of the door support, and a latch releasably securing the other end of the link in rigid relation to the door to transmit a power actuated opening and closing movement thereto, means connecting the release link to the power operated door mechanism, and means on the link and latch arranged to disengage said link and latch whenever a manual force is exerted against the door tending to open the door in the direction of its normal power operated closing movement.

10. In combination with a power actuated door operating mechanism arranged to open a door in one direction, a panic release device including a release link permitting the door to be manually opened in an opposite direction, means pivotally securing the link to the door independently of the door support, and a latch detachably interconnecting the door and the link and normally cooperating with the pivotal means to rigidly secure the link to the door and transmit power operation thereto, said latch being arranged to automatically disengage from the link in response to a push exerted against the door and permit an opening thereof independently of the power operating mechanism and to automatically re-engage the link when the door is returned to closed position.

SHELDON S. ROBY.