

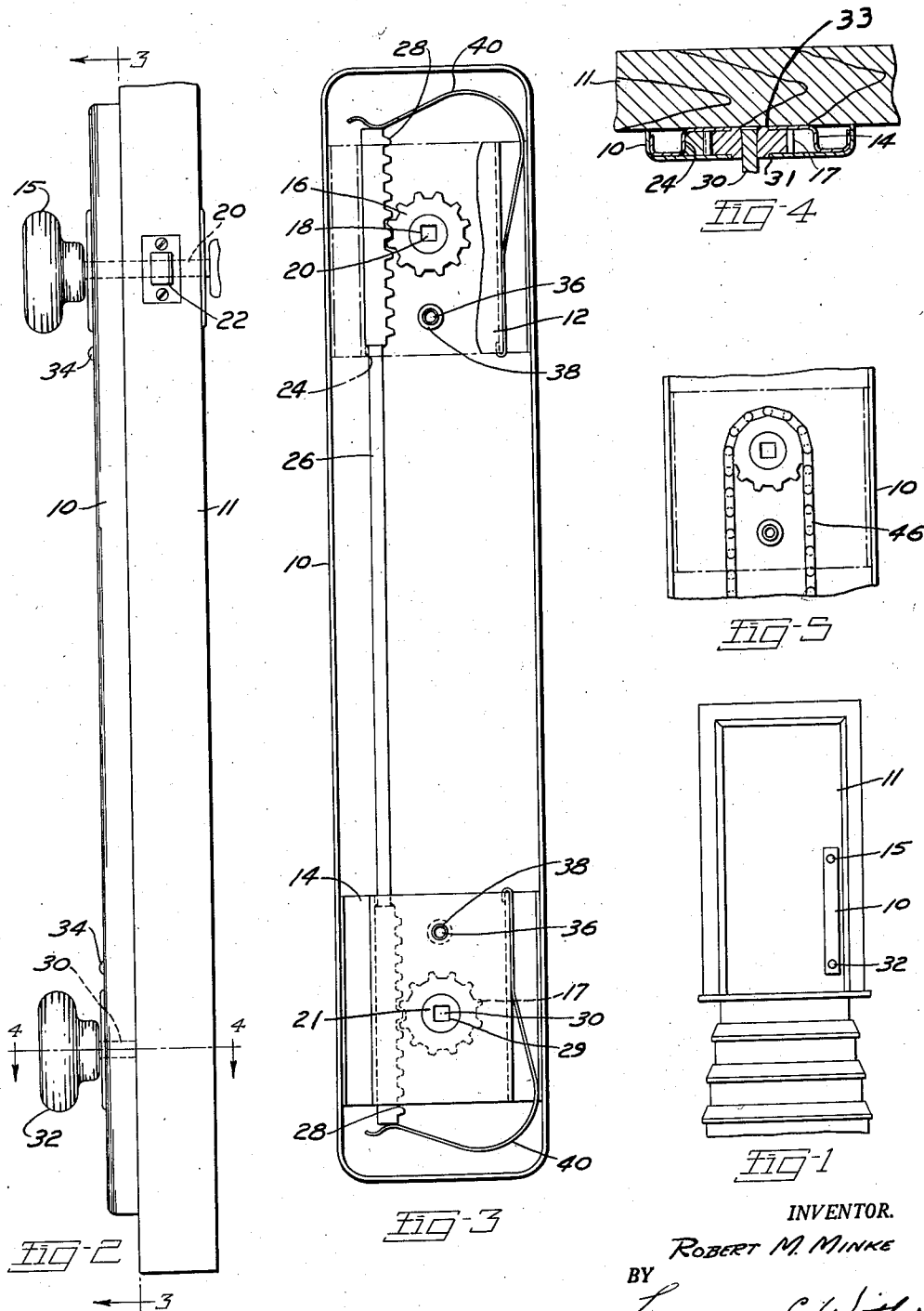
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DOOR LATCH OPERATING MECHANISM

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DOOR LATCH OPERATING MECHANISM

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2 Claims. (Cl. 292—172)

This invention relates to door latch operating means and is particularly directed to hand operated means remotely positioned with respect to the conventional door latch operating means to unlatch and open a swinging door.

The primary object of the invention is to provide a door with auxiliary latch operating means conveniently located adjacent the bottom of the door so that the door can be opened by a child, the arrangement having particular utility when used on doors at the top of stairways, for example.

Further objects and advantages will become apparent from a study of the following description when taken in connection with the accompanying drawings, in which:

Figure 1 is front elevation of a door located at the top of a stairway which incorporates a form of the present invention:

Figure 2 is a side elevation of the door latch operating device shown in Figure 1 as applied to the door in place of the usual latch operating means:

Figure 3 is a view taken in the direction of the arrows 3—3 of Figure 2 illustrating details of the motion transmitting mechanism for operating the door latch:

Figure 4 is a sectional detail view taken substantially on a line 4—4 of Figure 2; and

Figure 5 is a fragmentary elevational view of another form of motion transmitting means of the present invention.

As particularly shown in Figure 1, the door latch operating mechanism of the present invention has particular utility when used on doors at the top of stairways, and in like situations. Frequently in such places the door is hinged to swing outwardly over the stairs and when children attempt to open the door by reaching for the knob in its usual location, they fall or can be knocked down by the swinging of the door. The danger thus prevalent in such cases is avoided by providing the door latch operating extension illustrated which includes a secondary door knob preferably located adjacent the bottom of the door within easy reach of very small children. This additional or remotely located door knob is operatively connected to the standard or conventional door knob in such a manner as to impart the usual rotary movement thereto. This is accomplished by providing the usual door knob spindle with gear means actuated by a toothed rack which is motivated by the secondary knob and to which is attached a similar gear means in mesh with the other end of the toothed rack.

As shown in Figures 2 and 3, the device consists primarily of an elongated casing 10 adapted to replace the usual escutcheon plate adjacent the knob 15 on one side of the door 11. The case 10 may be of sheet metal, plastic, or other suitable material and serves to enclose and separate a pair of spaced bracket members 12 and 14 located respectively adjacent the opposite ends of the casing. The brackets 12 and 14 are so formed so as to provide pockets for the reception of gears 16 and 17

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respectively. The upper gear 16 is provided with a square central aperture 18 for the reception of the usual knob supporting shaft or spindle 20, which also serves to actuate the latch bolt 22 to withdraw the same from its keeper plate in the usual manner. Brackets 12 and 14 are also formed with rack guide portions within the gear pockets to provide a backing or bearing surface 24 for the toothed rack 26 adapted to be reciprocated upon rotation of gears 16 and 17. The rack 26 may have teeth 28 in one edge thereof throughout its length or may be provided with teeth adjacent its end portions only, as illustrated. The gear 17 is likewise provided with a square central aperture 29 within which is more or less permanently attached one end of knob supporting shaft 30 on the other end of which knob 32 is suitably secured. The casing 10 and bracket 14 are provided with aligned openings 31 and 33 to receive the hubs 21 of gear 17. The walls of these openings provide bearings for the gear 17, and additionally permit the shaft 30 to be projected therethrough. Gear 16 is similarly mounted in casing 10 and bracket 12. The unit may be secured to the face of the door in the desired position by means of screws 34 in apertures 36 provided in spacers 38 arranged adjacent the gears 16 and 17 in the brackets 12 and 14.

While the spring provided to normally project the latch bolt 22 into its keeper is ordinarily sufficient to operate the latch in latching direction, additional spring means may be provided in the form of strip springs 40 secured to assist in projecting the latch bolt outwardly irrespective of what direction the knobs are turned, as they tend to bias the rack 26 toward its intermediate position. Thus by means of the present invention means are provided by which the usual door knob can be operated by means remotely located from the ordinary latch operating means. While the mechanism illustrated can be completely enclosed by the casing 10 it will be understood that for purpose of economy, two separate casings could as well be provided to actuate gear as the intermediate portion of the toothed rack need not necessarily be enclosed.

Referring to Figure 5, it is to be further understood that the toothed rack could be replaced by an endless link chain such as illustrated at 46 for imparting motion in either direction to knob 32 to operate the knob 15 and thus withdraw latch 22.

What is claimed is:

1. An auxiliary door latch operating unit adapted to be installed on one face of a door having a latching bolt and an operating shaft adapted to retract the latching bolt, said unit comprising an elongated casing, an aperture in said casing, a centrally apertured gear in said casing for receiving said operating shaft for rotation therewith, means for mounting said gear in said casing with the aperture therein opposite the aperture in said casing, a hand operated auxiliary knob projecting from said casing and remotely located with respect to said shaft, a second gear in said casing connected to said auxiliary knob for rotation therewith, mounting bracket means carried by said casing for said second gear, motion transmitting means interconnecting said gears for rotating said shaft from said auxiliary knob to move the latching bolt from latching position, and means associated with said motion transmitting means for biasing said motion transmitting means toward an intermediate portion to return the latching bolt to latching position.

2. A device according to claim 1 in which the motion transmitting means is a gear rack having spaced sets of teeth in engagement with the gears, and the biasing means includes a pair of spaced springs in engagement with the opposite ends of the gear rack.

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