

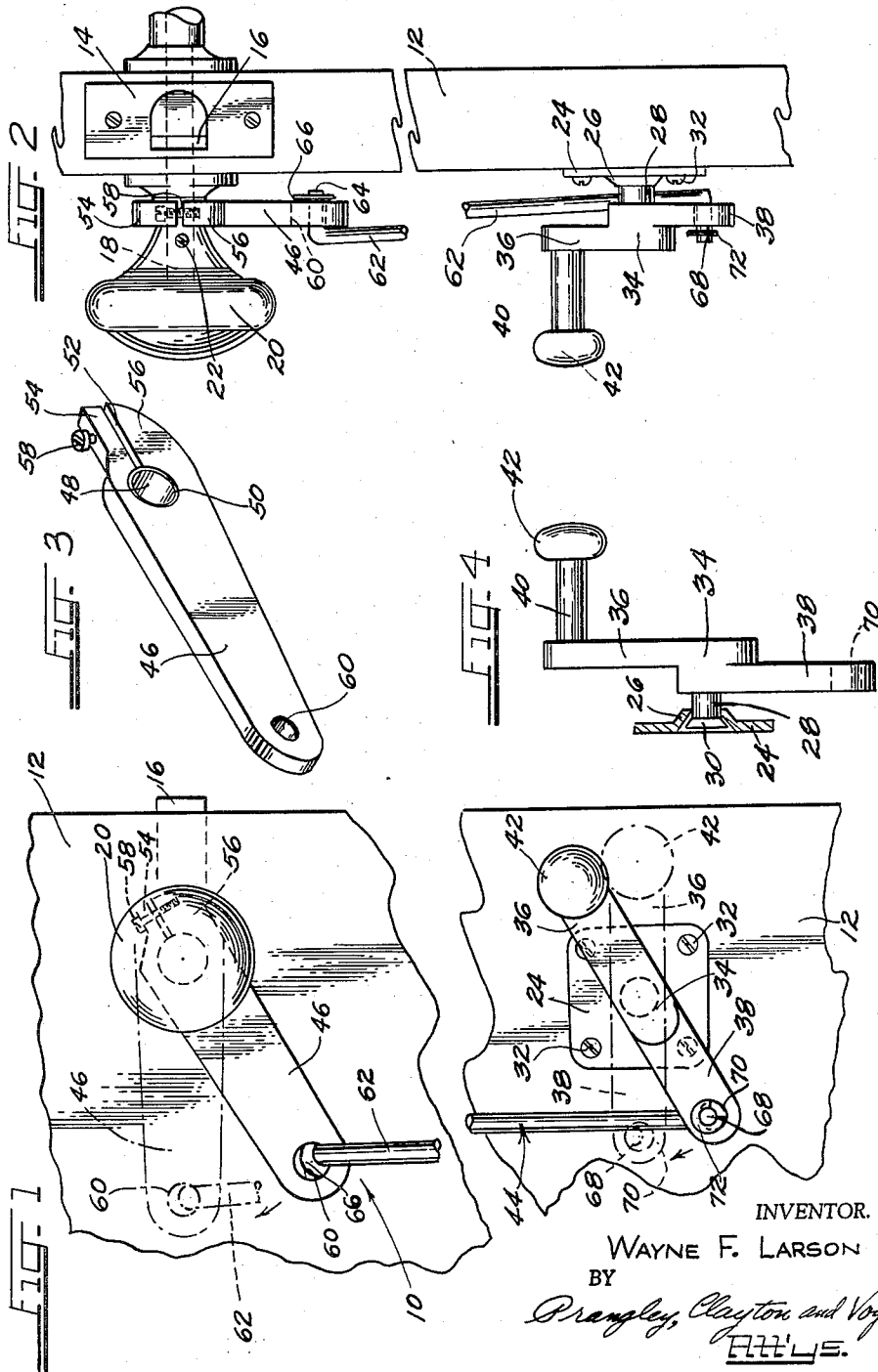
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2,928,690

DOOR OPENER

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2,928,690

DOOR OPENER

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1 Claim. (Cl. 292—336.3)

This invention relates to door operating mechanisms and particularly to attachments mountable upon ordinary doors and connectable with the latch operating mechanism thereof whereby to permit small children to operate the latch mechanism.

The door knobs for operating the latch mechanisms on standard doors are ordinarily positioned approximately three feet or higher above the floor. Handles in this position cannot be easily reached by small children. Accordingly, the children have difficulty in operating the door. This results in a necessity either for the door to be left open which may be undesirable or necessitates an older person opening the door for the child.

Accordingly, it is an important object of the present invention to provide an auxiliary door latch operating mechanism whereby to permit small children to operate the latch mechanism.

Another object of the invention is to provide operating linkage mountable on a standard door and connectable to the latch operating mechanism thereof whereby to provide for opening of the door utilizing a relatively small force.

In connection with the foregoing object it is another object of the invention to provide an auxiliary door opening mechanism which can be operated by a simple downward movement thereof whereby to require little coordination to operate the mechanism to open a door.

Another object of the invention is to provide an auxiliary latch actuating mechanism of the type set forth which is relatively inexpensive and can be readily mounted in operative position by the use of simple tools such as a screw driver.

These and other objects and advantages of the invention will be better understood from the following description when taken in conjunction with the accompanying drawing. In the drawing wherein like reference numerals have been utilized to designate like parts throughout:

Figure 1 is a side elevational view with certain parts broken away illustrating an auxiliary latch operating mechanism made in accordance with and embodying the principles of the present invention mounted upon a door, the latching position being shown by solid lines and the unlatching position being shown by dashed lines;

Figure 2 is an end view of the mechanism of Figure 1;

Figure 3 is a perspective view of the lever connectable to the latch operating shaft of the door; and

Figure 4 is a side elevational view with certain parts broken away of the auxiliary handle forming a part of the present invention.

Referring to Figures 1 and 2 of the drawing there is shown an auxiliary handle and latch operating mechanism generally designated by the numeral 10 made in accordance with and embodying the principles of the present invention. The auxiliary handle 10 has been shown mounted upon a wooden door 12 having a latch mechanism 14 including a latch 16. Disposed perpendicular to the face of door 12 is a shaft 18 operatively connected to the latch 16 and operable when rotated to retract latch 16 whereby to permit door 12 to be opened. There

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is provided on one end of shaft 18 the usual door knob 20 held on shaft 18 by a set screw 22. Turning of knob 20 is effective to turn shaft 18 and thus withdraw latch 16 from the engaging or latching position.

The auxiliary handle device 10 includes a mounting plate 24 which has been illustrated as being substantially square in shape with rounded corners. However, it is to be understood that other shapes of plates can readily be used. Plate 24 has a substantially frusto-conical embossment 26 formed therein which is apertured to receive therethrough a stub shaft 28. The end of stub shaft 28 disposed through embossment 26 is peened over or enlarged as at 30 whereby to interconnect shaft 28 and plate 24. Four screws 32 have been illustrated mounting plate 24 upon door 12. Attached to shaft 28 and preferably formed integral therewith is a lever 34 having a pair of oppositely extending offset arms 36 and 38. As may be best seen in Figure 4 of the drawing, arm 38 is disposed toward shaft 28 and arm 36 is offset outwardly therefrom. Formed integral with the outer end of arm 36 and disposed perpendicular thereto is a handle 40 including a knob 42 of a size adapted to be grasped by the hand of a small child.

Interconnection is made between lever arm 38 and the latch operating shaft 18 through a connecting rod 44 and a lever 46. Lever 46 is provided adjacent one end thereof with an aperture 48 having a gripping ring 50 therein. Extending outwardly from aperture 48 toward the adjacent end of lever 46 is a slot 52 providing a pair of resilient lever sections 54 and 56. Aligned threaded apertures are provided in sections 54—56 and receive therein a screw 58. Screw 58 when tightened serves to move sections 54 and 56 toward each other whereby to tighten lever 46 about anything disposed within aperture 48. As may be best seen in Figure 2 of the drawing preferably a portion of door knob 20 is inserted through aperture 48 whereby lever 46 can be fixedly attached thereto in any desired adjusted position.

The other end of lever 46 is provided with an aperture 60. Aperture 60 is adapted to receive a portion of connecting rod 44. More specifically, connecting rod 44 includes a substantially straight connecting portion 62 having a first end 64 bent at an acute angle slightly less than 90° with respect to the axis of connecting portion 62. End 64 is adapted to be inserted through aperture 60. Preferably a neck is formed in end 64 to receive a snap ring 66 which serves to hold connecting rod 44 in connected relationship with lever 46.

The other end of connecting rod 44 is provided with an end 68 also disposed at an acute angle slightly less than 90° with the longitudinal axis of connecting portion 62 and disposed in a direction opposite to that of end 64. End 68 is adapted to be inserted through an aperture 70 in lever arm 38 and is held in position therein by a snap ring 72. In a preferred arrangement the end 64 extends toward the door through aperture 60 and end 68 extends outwardly away from the door through aperture 70.

In order to operate the auxiliary door opener, the operator who usually will be a small child will grasp the knob 42. The parts as shown in solid lines in Figure 1 indicate the latching position of the various parts. The child then pulls downwardly upon knob 42 until the knob 42 reaches the position indicated in dashed lines in Figure 1. The small size of knob 42 makes it easy for the child to grasp and move the auxiliary handle.

Downward movement of knob 42 serves to raise the outer end of lever arm 38 and thereby raise connecting rod 44. This serves to move lever 46 upwardly to the position illustrated in dashed lines of Figure 1. Such movement of lever 46 is effective to retract latch 16 whereby to permit opening of door 12. The child then opens door 12 by simply pulling outwardly on knob 12.

It will be seen that the mechanical advantage in retracting latch 12 by utilizing the auxiliary handle 40 is substantially greater than that available when the ordinary door knob 20 is utilized to operate the latch mechanism. The mechanical advantage in fact is several times and may be as many as four or five times that available using door knob 20. Furthermore, the auxiliary knob 42 is more easily handled by a small child than the relatively large usual door knob 20.

The auxiliary door opener can be readily applied using simple tools. For example a screw driver is effective to mount the various operating parts upon door 12. In addition only four screws 42 are required to mount plate 24 in position and the tightening of a single screw 58 will serve to clamp lever 46 upon knob 20. It will be noted that it will also be necessary to remove knob 20 by unscrewing the set screw 22 before inserting the smaller portion of knob 20 through aperture 48.

It will be seen that there has been provided an auxiliary door opener which fulfills all of the objects and advantages set forth above. Although one preferred form of the invention has been shown for purposes of illustration, it is to be understood that various changes and modifications can be made therein without departing from the spirit and scope of the invention. Accordingly, the invention is to be limited only as set forth in the following claim.

I claim:

An auxiliary door opener comprising a door, a latch mechanism mounted on the door, said latch mechanism including a latch movable between latching and unlatching positions, a door knob rotatably mounted on said door and connected to said latch mechanism to move said latch between latching and unlatching positions, a mounting plate mounted on said door below said door knob and at

a height readily to be reached by a small child, a first lever pivotally mounted on said mounting plate and having two lever arms extending outwardly from the pivot point in opposite directions and in alignment, one of said lever arms being offset outwardly away from said door, a handle formed on the end of said one of said lever arms and extending outwardly therefrom, a knob formed on the outer end of said handle, said knob having a diameter substantially smaller than said door knob and being of a size readily to be grasped by a small child, a second lever adjustably mounted on said door knob, and having one end extending a substantial distance radially outwardly therefrom, and a connecting rod interconnecting the other end of the other of said lever arms and said one end of said second lever, the distance between the axis of rotation of said door knob and the connection with said connecting rod being several times the radius of said door knob, the length of said lever arms being substantially equal whereby to provide in cooperation with said second lever a mechanical advantage for said handle substantially greater than that afforded by said door knob in operating said latch mechanism.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,928,690

March 15, 1960

Wayne F. Larson

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 72, for the numeral "12", second occurrence, read -- 42 --; column 4, line 13, for "other" read -- outer --.

Signed and sealed this 16th day of August 1960.

(SEAL)

Attest:

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