July 21, 1936. D. M. ROBINSON 2,048,377

OVERHEAD DOOR LOCK

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Fig. 1

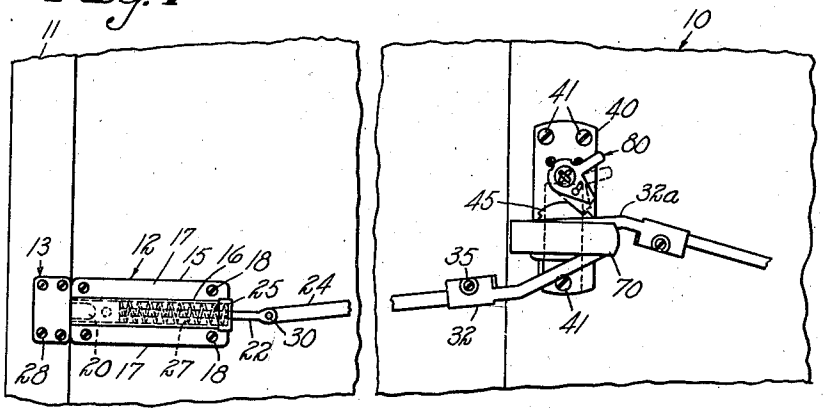


Fig. 2

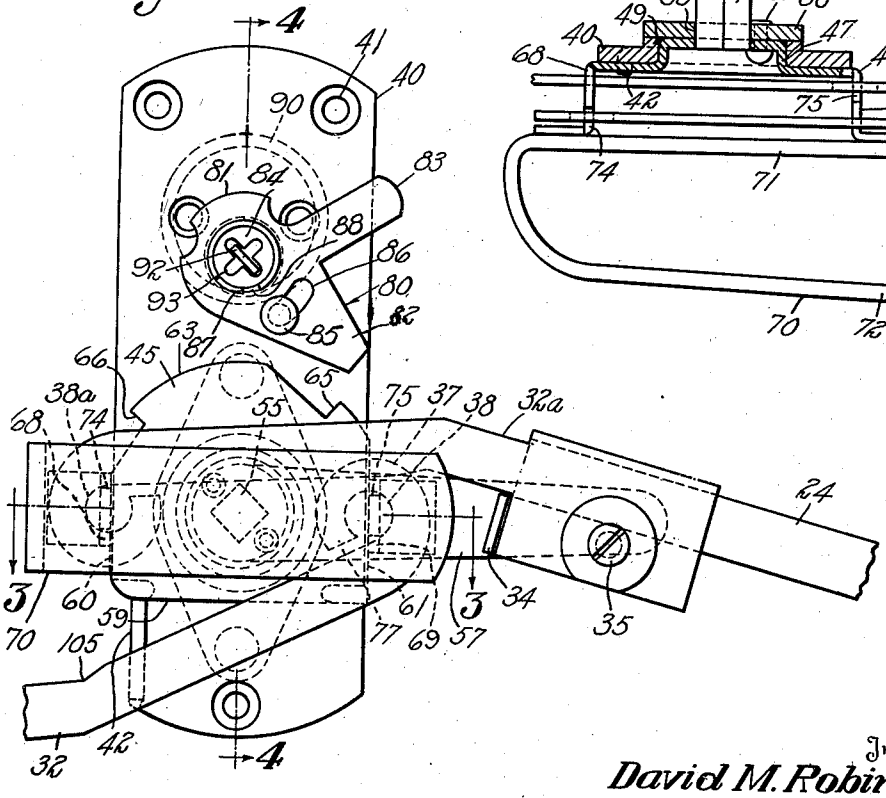


Fig. 3

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Fig. 4

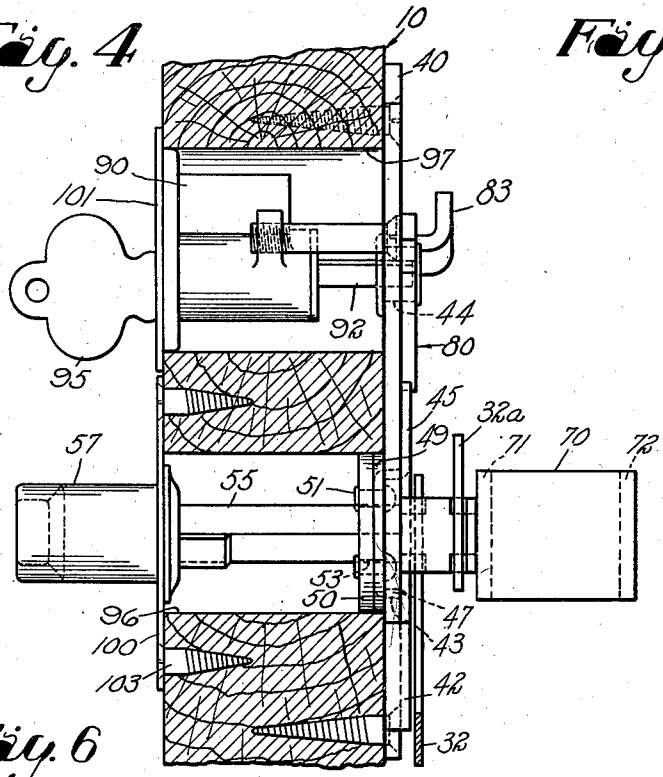


Fig. 5

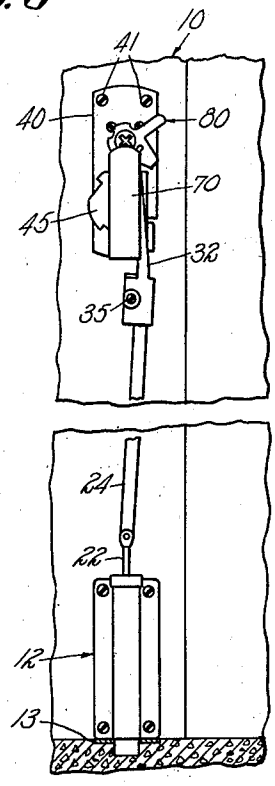
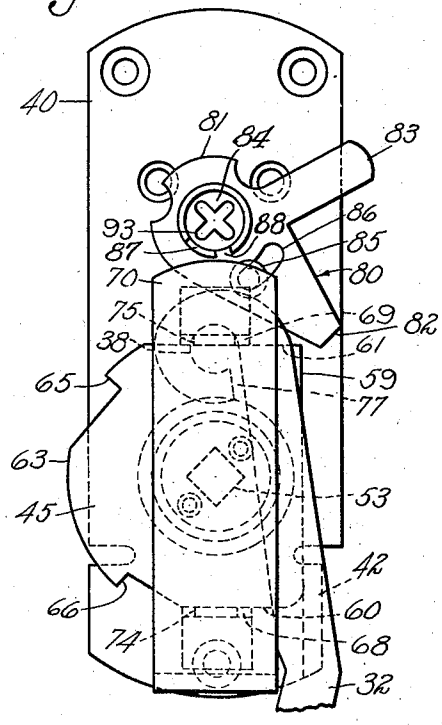


Fig. 6



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UNITED STATES PATENT OFFICE

2,048,377

OVERHEAD DOOR LOCK

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Application February 1, 1934, Serial No. 709,247

2 Claims. (Cl. 70—29)

This invention relates to improvements in door locks, and particularly to improvements in locks for securing vertically movable doors, such as overhead doors, and has for its principal object the provision of manually operable means for controlling remotely located latch mechanisms and for releasably locking said latch mechanisms in position to secure the door against opening.

Another object lies in the provision of a device of the character described which is simple and economical to manufacture and install and one which will not readily get out of order in use.

A further object lies in the provision of a device of the character described which is easy to operate and is quick and positive in operation.

Other objects and advantages will appear as the description proceeds.

In the accompanying drawings, I have shown a preferred form of the device of the invention and a somewhat modified form thereof. The drawings, however, are for the purpose of illustration only and are not to be taken as limiting the invention the scope of which is to be measured entirely by the scope of the appended claims.

In the drawings:

Fig.1 is an elevational view of a fragmentary portion of the inner surface of a door such as a garage door showing a locking mechanism constructed according tc the idea of this invention applied thereto;

Fig. 2 is an elevational view of an enlarged scale similar to Fig. 1 showing the control portion of my improved locking mechanism;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view on the line 4—4 of Fig. 2 looking in the direction of the arrows;

Fig. 5 is an elevational view of a fragmentary portion of a garage door similar to Fig. 1 showing a somewhat modified form of the device of the invention; and

Fig. 6 is a view similar to Fig. 2 showing the modified form of the invention.

Referring to the drawings in detail, the numeral 10 generally indicates a door, such as an overhead garage door, and the numeral 11 indicates one of the door jambs, it being understood that a suitable jamb is provided at each side of the door. The door is adapted to be locked in closed position by means of latch mechanisms generally indicated at 12 and cooperating latch keepers as indicated at 13. The latch mechanism 12 is secured to the door adjacent to one edge thereof and comprises a casing 15 provided with a central cylindrical portion 16 upon each side of which there is a flange portion 17. The flange portions are provided with suitable apertures through which screws 18 extend to secure the casing 15 to the inner surface of the door 10. Within the cylindrical portion 16, there is a latch bolt 20 having an extension 22 which extends through the cylindrical portion 16 and is connected at the end opposite the latch bolt 20 to a link 24. The rear end of the cylindrical member 16 is provided with an abutment 25, and between this abutment and the latch bolt 20 there is a coiled compression spring 27 adapted to urge the latch bolt outwardly of the casing 12 to engage the latch keeper 13 which comprises a plate provided with suitable apertures through which screws 28 extend to secure the plate to the inner surface of the door jamb 11. The link 24 is pivotally connected to the extension 22 by means of cooperating apertured lugs through which extends a transverse pin 30.

In the form of the invention illustrated in Figs. 1 and 2, there is preferably a latch mechanism at each side of the door. However, as these latch mechanisms are similar in construction, it is believed that an illustration and description of one of them is sufficient for the purpose of this disclosure. The link 24 is connected at the end opposite the latch mechanism 12 to an arm 32 by suitable means such as a clamp plate 34 illustrated in Fig. 2 and a screw 35 extending through the arm and the clamp plate to frictionally engage the end of the link 24 between the arm 32 and the clamp plate 34. The end of the arm 32 opposite the link 24 is formed with a loop 37 within which there is an aperture 38 for a purpose to be presently described. A face plate 40 is secured upon the inner surface of the door by suitable means such as the screws 41 extending through apertures in the face plate into the door, preferably along the vertical center of the door and at a height above the bottom of the door convenient to manual operation of the lock. 42 indicates an abutment formed by turning up one edge of the face plate 40 at the lower end thereof to limit the rotation of the control plate 45 from one to the other of its two operative positions. This face plate 40 is provided with two apertures 43 and 44 particularly illustrated in Fig. 4 located one above the other along the vertical center of the face plate. Within the lower aperture 43, there is mounted for rotation relative to the plate 40 a latch operator 45 which comprises a flat plate having a centrally located cylindrical offset portion 47 which fits into the aperture 43 and provides a bearing for the ro-

tation of the operator 45 relative to the plate 40. The plate 40 is provided with an annular flange or shoulder 49 surrounding the aperture 43, and an abutment member 50 in the form of a circular disc is secured to the offset cylindrical portion 47 by suitable means, such as the rivets 51, in such a manner that its circumferential portion bears upon the surface of the flange 49 on the side of the plate 40 opposite the operator 45 to restrain the operating member 45 against removal from the plate 40. The abutment 50 and offset cylindrical portion 47 are each provided coaxially thereof with a square aperture indicated at 53 in Fig. 6 for the reception therein of one end of a square stem 55 which extends through the door and carries upon its end outside of the door an exterior lock handle 57.

Referring now to Figs. 2 and 6, it will be observed that the latch operator 45 is provided with a straight edge 59 and straight edges 60 and 61 at each end of the edge 59 and with an edge 63 in the form of an arc of a circle having its center at the axis of the aperture 53 connecting the edges 60 and 61 opposite the edge 59. This edge 63 is provided with a pair of radial notches 65 and 66 for a purpose to be presently described. Along the edges 60 and 61, the latch operator 45 is provided with upstanding ears or lugs 68 and 69 respectively extending in a direction opposite to the cylindrical depression 47. At their extremities, the ears 68 and 69 are bent outwardly to lie in the plane parallel to that of the plate 45, and a side handle 70 is suitably secured to these extremities by suitable means, such as riveting or spot welding.

Referring particularly to Fig. 3, it will be observed that the handle 70 is in the form of a U-shaped member having one leg 71 secured to the ears 68 and 69 and the other leg 72 overlying the leg 71 and spaced therefrom a sufficient distance to provide a convenient handle for manually rotating the plate 45. The ears 68 and 69 have reduced portions 74 and 75 respectively in the upstanding portions thereof adjacent to the bent over extremities, and these reduced portions are adapted to be received in the apertures 38 in the ends of the arms 32, as particularly illustrated in Fig. 2, the loops 37 being provided with slots 77 through which the reduced portion of the respective ear may be passed into the aperture. It will now be observed that as the ears 68 and 69 are positioned on diametrically opposite sides of the cylindrical or bearing portion 47 of the plate 45, a rotation of the plate 45 will move the arms 32 and links 24 in opposite directions, rotation of the handle 70 in one direction, withdrawing the latch bolts 20 from the keepers 13, and rotation thereof in the opposite direction, permitting the springs 27 to force the latch bolts out into engagement with the abutment plate 13. As the outside handle 57 is also connected to the plate 45, it will be observed that I have provided means by which the door may be manually latched and unlatched from either side of the door by manual rotation of the handle 57 or handle 70.

In the form of the invention illustrated in Fig. 5, the operation is exactly the same as that described above except that in this modified form I have provided only one latch mechanism 12 located at the bottom of the door immediately below the lock mechanism and, therefore, this modified form of the invention utilizes only one link 24 and arm 32, the construction and operation being in all other respects the same except that the handle 70 and the plate 45 are positioned at right angles to the position utilized for the preferred form of the invention, as illustrated in Fig. 1.

In order to releasably lock the latch mechanisms in position to hold the door closed, I have provided a locking dog generally indicated at 80 comprising a plate having a circular portion 81, a tapered portion 82, and a handle portion 83. The plate 80 is rotatably mounted in the upper aperture 44 of the face plate 40 by means of a hollow rivet 84, and is proportioned so that the extremity of the tapered portion 82 thereof is adapted to engage with one of the radial notches 65 or 66 or to be released therefrom upon a slight angular rotation of the dog, as particularly illustrated in Fig. 1. The rotational movement of this locking dog 80 is limited by means of a rivet 85 which extends through a radial slot 86 in the dog and is secured in the face plate 40. The inner end of the hollow rivet 84 is provided with a circumferential slot 87, and the locking dog 80 is provided with a tongue 88 having a width less than the length of the slot to provide an operative lost motion connection between the hollow rivet and the locking dog. The handle portion 83 is offset from the remainder of the plate to provide a convenient means for manually moving the dog from the inside of the door. A lock mechanism, generally indicated at 90, is mounted in the door opposite the aperture 44, and has an operating member 92 extending into an X-shaped aperture 93 provided in the head of the hollow rivet 84 concentric with the circular portion 81 thereof. A key 95 may be fed into the lock mechanism 90 from the outside of the door to operate the lock mechanism and operating member 92 to move the locking dog 80 into or out of operative engagement with the respective notch 65 or 66 on the plate 45. If the door is locked and it is desired to open the same, the locking dog 82 may be moved out of engagement with the notch 65 or 66 with which it is engaged either by the handle 83 on the inside of the door by reason of the lost motion connection between the locking dog and the hollow rivet 84, if the operator happens to be within the enclosure or by means of the key 95 if the operator happens to be outside of the enclosure. The latch mechanisms 12 may then be released by manually rotating the inside handle 70 of the outside handle 57, and the door may then be opened. The door is provided with two apertures 96 and 97 therethrough corresponding with the apertures 43 and 44 in the face plate 40 and the other ends of these apertures 96 and 97 are covered by escutcheon plates 100 and 101, the escutcheon plate 101 having an aperture therein for the accommodation of the interior handle 57 and the escutcheon plate 101 having an aperture for the accommodation of the lock mechanism 90. These escutcheon plates may be secured to the door by suitable means, such as screws 103, extending through suitable apertures through the escutcheon plates and into the door.

From an inspection of Fig. 3, it will be observed that the reduced portions 74 and 75 of the ears 68 and 69 are positioned at opposite ends of the upstanding portions of these ears so that when two arms 32 and 32*a* are utilized, as in the preferred form of the invention illustrated in Figs. 1, 2, and 3, these arms may overlap each other in different vertical planes. It will also be observed that the arms 32 and 32*a* are bent, as indicated at 105, so that the apertures 38 and 38*a* may lie in the same

line and the arms will at the same time accommodate the ears 68 and 69 therebetween.

While I have illustrated and described a particular mechanical embodiment of the idea of my invention, it is to be understood that the invention is not limited thereto and that such changes in the size, shape, and arrangement of parts may be resorted to as come within the scope of the appended claims.

Having now described my invention so that others skilled in the art may clearly understand the same, what I desire to secure by Letters Patent is as follows:

1. A latch operating mechanism comprising, a face plate, a control plate rotatably mounted on said face plate, an abutment on said face plate for limiting the rotation of said control plate from one to the other of two operative positions, a radial notch in one edge of said control plate, and a locking dog pivoted on said face plate having two operative positions in one of which it engages said notch to restrain said control plate against movement from one of its operative positions and in the other of which it clears said notch to release said control plate for rotation, a pin and slot for limiting the movement of said locking dog from one to the other of its two operative positions, and means for operatively connecting said control plate with a latch bolt whereby rotation of said control plate will retract or project the latch bolt.

2. A latch operating mechanism comprising a face plate having a flanged aperture therein, a control plate having a circular indentation rotatably received in said aperture and a pair of upstanding diametrically opposed ears, an abutment member secured to said indented portion of said control plate and bearing against the flange on said face plate to maintain said control plate and said face plate in associated relation, an outside handle having an operative connection with said abutment member, an inside handle permanently secured to said ears, means associated with said ears to operate a latch bolt upon rotation of said control plate, and means for locking said control plate against rotation.

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