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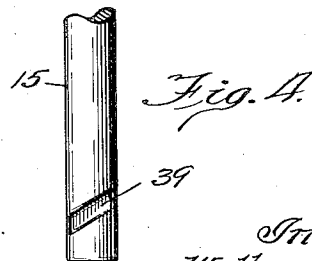
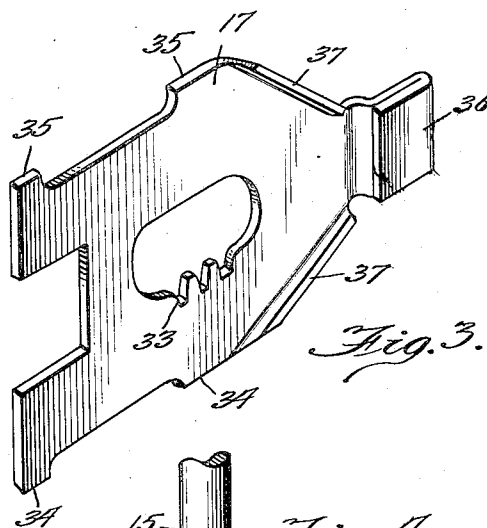
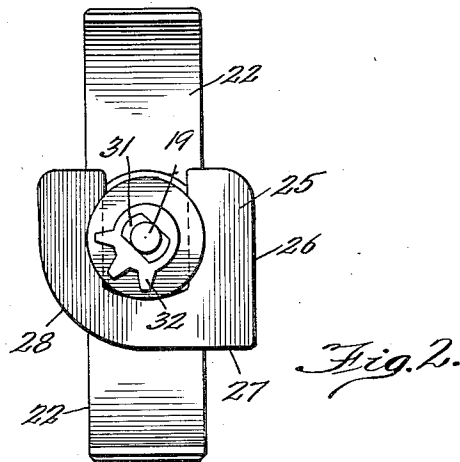
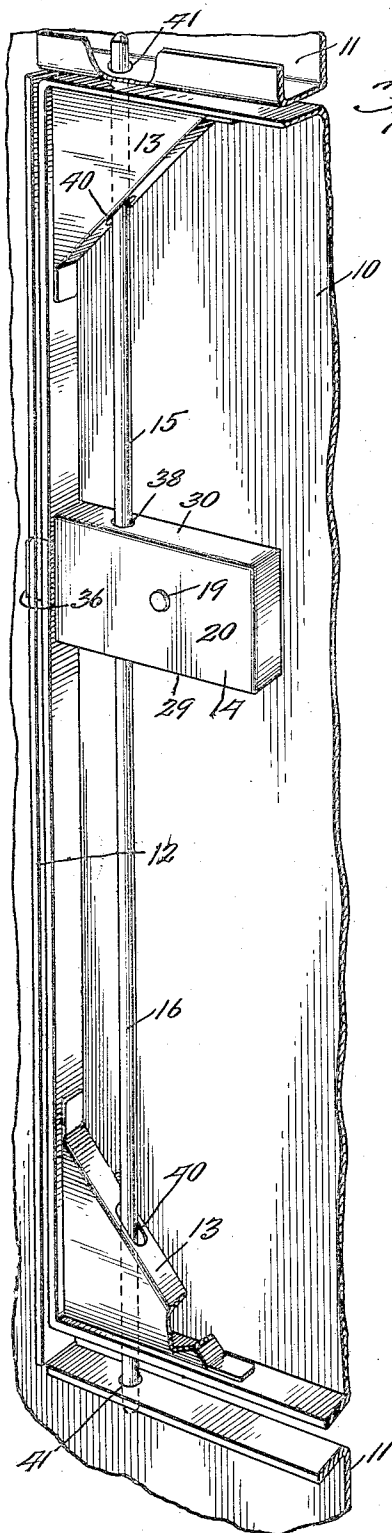
W. N. VANCE ET AL

1,966,272

LOCK

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2 Sheets-Sheet 1



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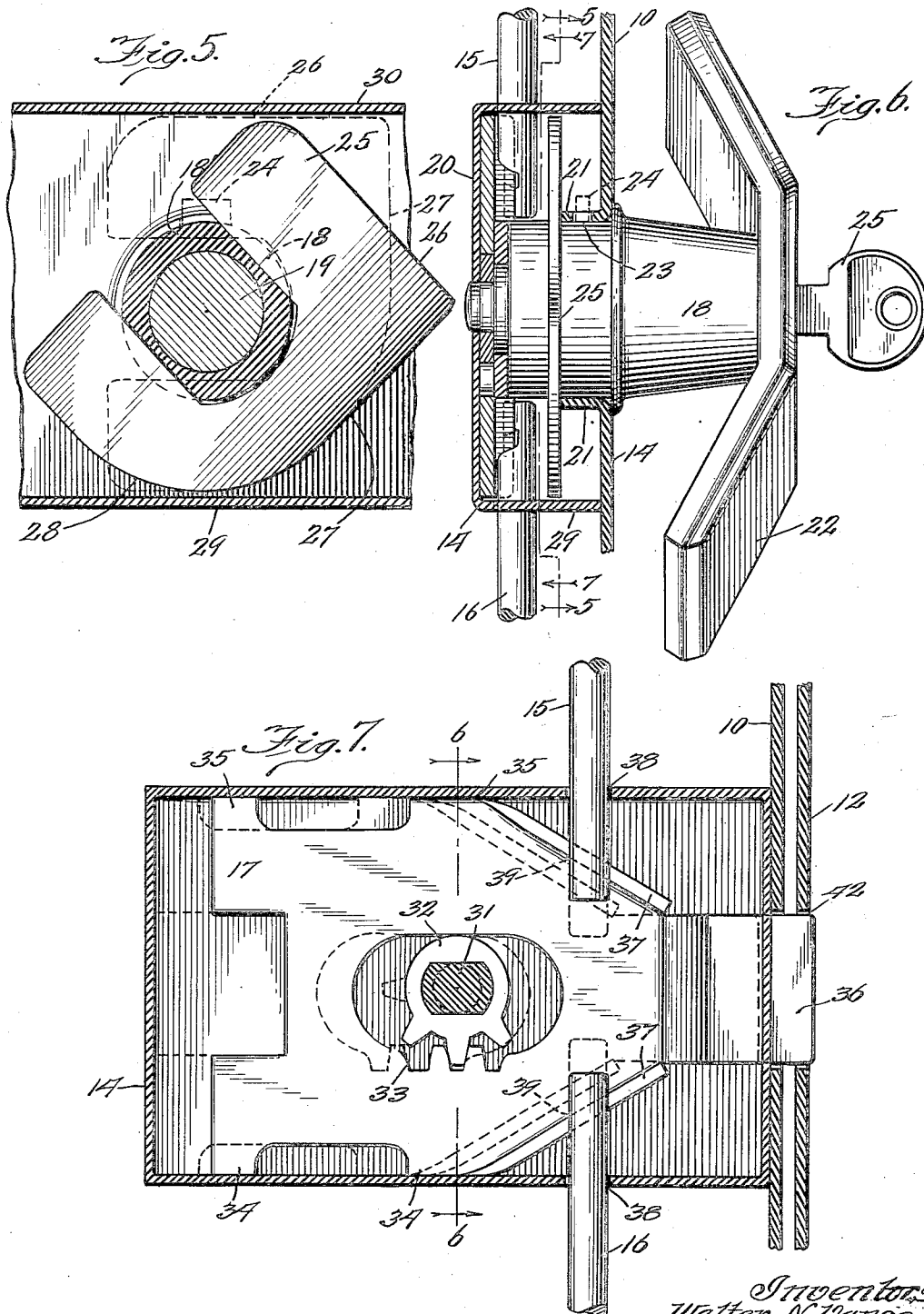
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UNITED STATES PATENT OFFICE

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LOCK

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Application May 10, 1929, Serial No. 362,077

8 Claims. (Cl. 70—91)

This invention relates to locks and particularly to locks for safes, lockers, wardrobes, and similar articles where a three-point locking device is desired.

5 The object of the invention is to provide a lock of new and novel construction which will simultaneously operate a horizontal bolt and a pair of vertical bolts.

10 Another object is to provide a lock of simple and improved construction which is operated by means of a single handle or control.

15 Another object is to provide a handle controlled lock which is provided with beveled or cam surfaces which operate vertical locking members in addition to the horizontal bolt.

20 A further object is to provide a new arrangement of parts for supporting and holding the lock and for controlling the operation of the horizontal and vertical bolts.

25 Another object is to provide a lock which is efficient in operation, which may be easily and quickly assembled, and which may be readily and economically manufactured.

Other objects and advantages will hereinafter appear.

30 The lock comprises in general a case having a horizontal member arranged therein which is controlled by means of a handle mounted on the outside of the door. This member is provided with a pair of beveled flanges which engage slots in the vertical bolts so that during horizontal movement of the main draw bolt, the vertical bolts will be forced to move in and out. This member is also provided with a rack which meshes with a pinion operated by the lock handle. A flange on the door supports the lock cylinder, and a cam-shaped supporting washer engages the lock cylinder and rotates within the lock casing to limit the movement of the bolts and maintain them in either locked or open position, as desired. A plunger or pin, which is operated by means of a key, engages a slot in the intumed flange on the door to lock the door, if desired.

40 The accompanying drawings illustrate a selected embodiment of the invention and the views therein are as follows:

50 Fig. 1 is a detail perspective view of a safe or locker door having the improved operating mechanism applied thereon.

Fig. 2 is a detail view of the handle and a part of the locking mechanism showing them in open or unlocked position.

55 Fig. 3 is a perspective view showing horizontal operating member and draw bolt,

Fig. 4 is a detail view showing the inner end of the vertical bolts.

Fig. 5 is a detail view on the line 5—5 of Fig. 6 showing some of the mechanism in intermediate position.

Fig. 6 is a detail sectional view on the line 6—6 of Fig. 7 showing the locking mechanism in intermediate position.

Fig. 7 is a sectional plan view on the line 7—7 of Fig. 6 and shows the horizontal member in intermediate position.

Referring to the drawings, 10 designates a safe or similar door which is mounted in upper and lower jambs 11 and side jambs 12. Struts or braces 13 are arranged in the corners of the door, as shown, to add strength and rigidity thereto.

A lock casing 14 is mounted on the inside of the door 10 and contains the mechanism for operating the upper and lower vertical bolts 15 and 16 respectively and the horizontal member 17.

A cylinder 18 arranged in the door has a stud 19, Fig. 6, which is peened on the back 20 of the casing 14. The door 10 is cut out to receive the cylinder 18 and it has portions thereof bent over to provide flanges 21 to support the cylinder. A handle 22 is rigidly connected to the cylinder 18 to operate the vertical bolts 15 and 16 and the horizontal member 17. One of the flanges 21 is provided with an aperture 23 for the reception of a pin 24, which is operated by the usual cylinder lock mechanism (not shown). A key 25 operates the cylinder lock mechanism in the usual manner for maintaining the operating parts in either open or locked position.

A cam shaped member 25 having straight portions 26 and 27 and a substantially circular portion 28 is arranged in the casing 14 and engages the outside of the cylinder 18, as clearly shown in Fig. 5. This member has engagement with the cylinder and rotates therewith during the operation of the handle 22. When the handle is in horizontal or locked position, the circular portion 28 on the member 25 will bear against the bottom 29 of the lock casing 14, and the straight portion 26 will be parallel with the top 30 of the casing. When the handle is in vertical or unlocked position, Fig. 2, the member 25 will be moved to the position shown in dotted lines in Fig. 5 with the straight portion 27 parallel with the bottom 29 of the casing. The member 25 not only supports the cylinder in the casing 14 but it also limits the rotation of the handle 22.

A bar or operating member 31 is operatively connected to handle 22 and has a pinion 32

mounted thereon which operates in the rack 33 formed in the horizontal member 17. This latter member is provided with upstanding lugs 34 and 35 which are guided by the bottom 29 and top 30 respectively of the casing 14.

A horizontal draw bolt 36 which is turned over upon itself to strengthen it, Fig. 3, is preferably made integral with the member 17 which is stamped from a single piece of sheet metal. The member 17 has its forward edges beveled and turned over to provide the inclined flanges 37 for operating the vertical bars 15 and 16. These bars have their inner ends projecting through holes 38 in the bottom 29 and top 30 of the casing. Each of these vertical bars is provided with an inclined notch or groove 39 which engages one of the flanges 37, Fig. 7.

Holes or slots 40 are provided in the members 13, Fig. 1, through which the vertical bolts 15 and 16 extend and engage holes 41 in the top and bottom jambs 11, for maintaining the door in locked position.

When the handle 22 is operated the pinion 32, which engages the rack 33, will move the member 17 horizontally and the bars 15 and 16 vertically.

In practice the key 25 operates the mechanism (not shown) to move the pin 24 out of the slot 23 and permits operation of the handle 22. As the handle 22 is turned, the pinion 32, which engages the rack 33 in the member 17, will cause the member 17 to slide to the left, Fig. 7, and disengage the horizontal draw bolt 36 from its keeper 42. The handle 22 may be rotated until the member 25 attains the position shown in Fig. 2 and in dotted lines in Fig. 5. The vertical bolts 15 and 16 and the draw bolt 36 will then be withdrawn from their keepers 41 and 42 respectively. As the member 17 is moving to the left, Fig. 7, the flanges 37, which engage the notches 39, will cause the vertical members 15 and 16 to move inwardly and be disengaged from their keepers 41. During this movement the draw bolt 36 will pull out of the keeper 42 and the door may be then opened. To again lock the door the handle 22 is rotated until it returns to horizontal or initial locked position, when the horizontal member 17 will be moved to the right, Fig. 7. This movement of the handle causes the flanges 37 to force the bars 15 and 16 outwardly, and the draw bolt 36 horizontally, until each of the bolts engages its respective keeper. In locked position the member 25 will be in the position shown in dotted lines in Fig. 5. When the key 25 is operated the lug or pin 24 will be forced outwardly to engage the recess 23 in the flange 21. The key may then be removed and the door is rigidly locked in place.

The invention provides a lock of simple and improved construction which will support the door in three different places by the simple means of giving the handle a part turn. Most of the parts may be stamped from sheet metal so that the lock can be readily and economically manufactured.

Changes may be made in the form, construction, and arrangement of the parts without departing from the spirit of the invention, or sacrificing any of the advantages thereof, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. A lock comprising a casing, a member in

said casing, a rack on said member, a pinion engaging said rack, a handle outside of said casing for operating said pinion, a draw bolt rigid with said member, a pair of vertical bolts operated by said member during horizontal movement thereof, and means arranged in said casing for restricting the movement of said handle.

2. A lock comprising a casing, a member in said casing, a rack on said member, a pinion engaging said rack, a handle outside of said casing for operating said pinion, a draw bolt rigid with said member, a pair of vertical bolts operated by said member during horizontal movement thereof, means arranged in said casing for restricting the movement of said handle, and locking means for preventing operation of said handle.

3. A lock comprising a casing, a member in said casing, a rack on said member, a pinion engaging said rack, a handle outside of said casing for operating said pinion, a draw bolt rigid with said member, inclined flanges on said member, vertical bolts engaging said flanges and having vertical movement during horizontal movement of said member, means arranged in said casing for limiting the movement of said handle, and means for selectively preventing or permitting operation of said handle.

4. A lock for doors comprising a casing, intumed flanges on said door for supporting said lock, and means arranged within said casing and engageable with said lock for supporting the same and limiting the movement thereof.

5. In combination, a door, a casing fixed to said door, operating mechanism arranged in said casing, locking means arranged outside of said door and extending into said casing for controlling the operation of the operating mechanism, and intumed integral flanges on said door and supporting both said locking means and the operating mechanism.

6. In combination, a door, a casing fixed to said door, operating mechanism arranged in said casing, locking means arranged outside of said door and extending into said casing for controlling the operating mechanism, intumed integral flanges on said door and supporting said operating mechanism and locking means, and means cooperating with said operating mechanism for limiting the movement thereof.

7. In combination, a door, a casing fixed to said door, operating mechanism arranged in said casing, locking means arranged outside of said door and extending into said casing for controlling the operating mechanism, intumed integral flanges on said door and supporting said operating mechanism, and a member having angular and rounded surfaces cooperating with said operating mechanism and engageable with the top and bottom of said casing for limiting the movement of said operating mechanism.

8. A lock comprising a casing, a one-piece horizontal slidable member arranged in said casing, a fastening bolt integral with said member and having an intumed portion folded back upon itself for strengthening the same, inclined flanges on said member and integral therewith, and vertically movable bolts engageable with said flanges and operated vertically during horizontal movement of said member.

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