

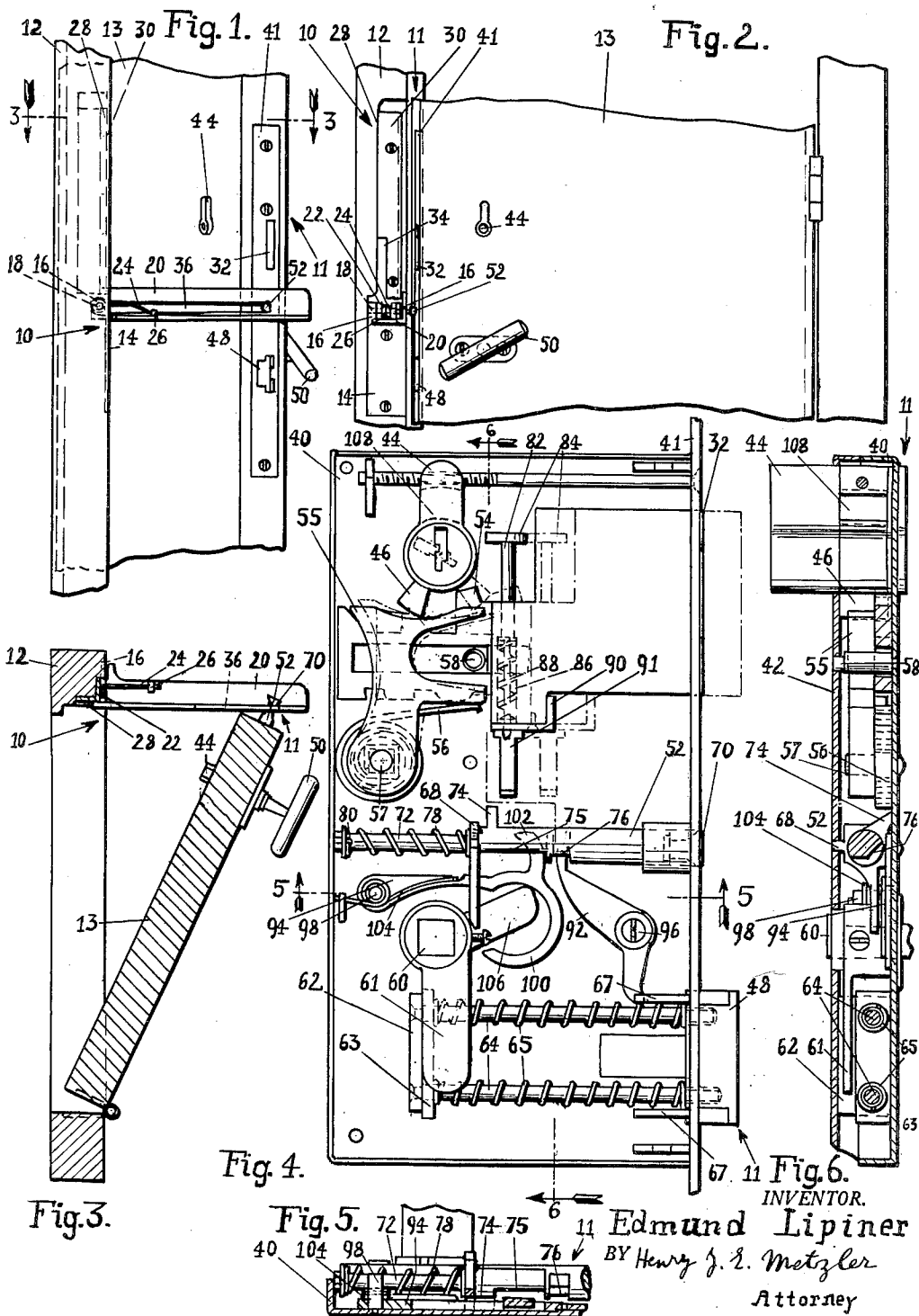
Dec. 23, 1952

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SAFETY DOOR LOCK

2,622,429

Filed March 21, 1950

2 SHEETS—SHEET 1



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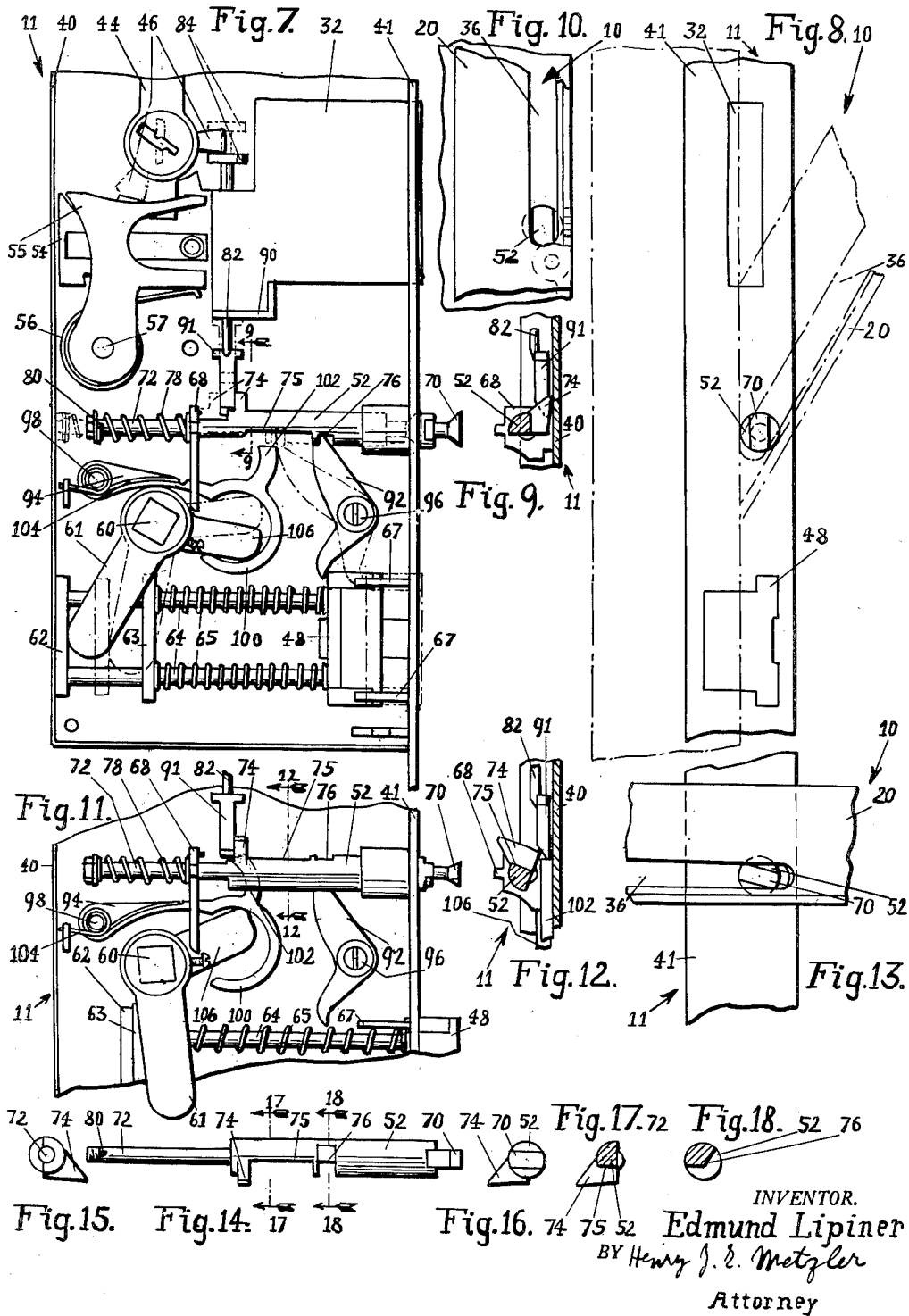
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2 SHEETS—SHEET 2



UNITED STATES PATENT OFFICE

2,622,429

SAFETY DOOR LOCK

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1 Claim. (Cl. 70—93)

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The present invention relates to improvements in door locks and, more specifically to an improvement over my safety lock construction described in my Patent No. 2,174,890, dated October 3, 1939.

One object of the present invention is the provision of a safety door lock composed of two units, one of which is adapted to be attached to a door and the other of which is adapted to be attached to a door jamb or frame, the construction being such that the units cooperate to provide a new so-called barring device as a part of the lock to enable the door to be partially opened without fully unlocking the door.

Another object of the invention resides in a door lock so constructed that a door can be fully locked, partially released and fully released, and which is provided with means for preventing either a partial or a full release of the lock, such means being rendered operative or inoperative at will from the room side of the door.

Still another object of the present invention is the provision of a device of the character described which—when installed—normally has the appearance of an ordinary door lock, the barring device being hidden unless it is in use.

A further object of the present invention is the provision of a device of the character described which is simple in construction, so that it can be manufactured and sold at a relatively low price, but which is also sturdy, durable, and well adapted to withstand the rough usage to which devices of this type frequently are subjected.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing a preferred form of the invention has been shown.

In said drawing:

Figure 1 is a fractional elevation of a preferred embodiment of my invention as it appears with the door partially opened and the barring device in operation;

Figure 2 is a fractional plan view of the partially opened door of Figure 1;

Figure 3 is a sectional view on the line 3—3 of Figure 1;

Figure 4 is an enlarged plan view of the lock

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without cover as the lock appears when the barring mechanism is not in operation;

Figure 5 is a fractional sectional view on the line 5—5 of Figure 4;

Figure 6 is a sectional view on the line 6—6 of Figure 4;

Figure 7 is a fractional plan view of the lock as Figure 4, but with the barring mechanism in operation.

Figure 8 is a front edge view of the lock of Figure 7;

Figure 9 is a fractional sectional view on the line 9—9 of Figure 7;

Figure 10 is a fractional front edge view of the device as it appears before the barring mechanism is operated;

Figure 11 is a fractional plan view of the lower portion of the lock showing the position of the parts of the barring mechanism when the same is about to be released;

Figure 12 is a sectional view on the line 12—12 of Figure 11;

Figure 13 is a fractional front edge view of the lock as per Figure 11;

Figure 14 is a detailed side view of the bearing bolt;

Figure 15 is a rear end view of the barring bolt;

Figure 16 is a front end view of the barring bolt;

Figure 17 is a sectional view on the line 17—17 of Figure 14; and,

Figure 18 is a sectional view on the line 18—18 of Figure 14.

Similar reference characters refer to similar parts throughout the several views.

The door lock comprising my present invention is made up of two units, 10 and 11, one of which (10) is adapted to be attached to a door jamb 12 and the other of which (11) is adapted to be attached to a door 13. Referring to the former first, the unit 10 has a member 14 which is provided with suitable holes whereby the same may be attached to a corner of the door jamb indicated at 12. The member 14 is provided at one end with spaced lug portions 16 through which is extended a pin 18, and a bar 20 which preferably is an angle bar as shown has at one end a lug portion 22 through which the pin 18 is likewise extended, so as to hinge the bar 20 to the member 14. Thus the bar 20 can be moved on the door jamb 12 from an upright to a horizontal position, and a spring 24 having a coiled portion which is attached to the jamb 12 and an extended portion whose outer end is attached to the bar 20 at 26 has a tendency to force the bar 20 into an up-

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right position. In this position the bar 20 rests in a recess 28 (Figures 1 to 3) in the jamb 12, so that it will not protrude beyond the jamb 12 as long as it is in an upright position. At the bottom of the recess 28 there is an ordinary angle plate 30 (Figures 1 and 2) which is provided with an opening (not shown) for receiving the latch 32 of the door lock portion of the unit 11. The plate 30 also is provided with a recess 34 adapted for receiving a portion of the spring 24 when the bar 20 is in an upright position. The bar 20 is provided with a slot 36, a portion of which registers with the latch 32 when the door 13 is closed, so that the latch 32 can be extended through the slot 36 into said opening in the plate 30 when the door 13 is locked.

The unit (11) which is adapted to be attached to a door 13 is provided with a housing 40 which is box-like in nature except that it has one open side, to which is secured a longitudinal upright bar 41 that rests in a recess of the door 13. The housing 40, which has a cover 42 (Figure 6), contains a locking device which comprises a lock 44 for controlling the locking latch 32 by means of a rotatable tongue member 46, as well as an ordinary door spring latch 48 which is operated by means of a handle 50 or a knob or the like, and a barring bolt 52. The parts 54 to 58 inclusive are ordinary, well-known parts for operating the locking latch 32, and the parts 60 to 67 inclusive are ordinary, well-known parts for operating the spring latch 48.

The barring bolt 52 is axially movable and is also rotatable in a bearing 68 that is secured to the bottom of the housing 40 and can be extended through an opening in the bar 41. It has a flattened end portion 70 whose outer extremity is dovetail-shaped, and a reduced portion 72 which extends through the bearing 68. The bolt 52 is provided with a radially extending tongue portion 74 and with recesses 75 and 76. A coiled spring 78 through which extends the portion 72 of the bolt 52 has one of its ends extended into a bore 80 in the bolt 52 while its other end is secured to the bearing 68. The spring 78 has a tendency to withdraw the bolt 52 into the housing 40 and to force it in the position shown in Figures 4, 5 and 6.

A shaft 82, which has a head 84, is axially slidably extended through a vertical bore 86 (Figure 4) in the latch 32. The lower portion of the shaft 82 is reduced, and a spring 88 (Figure 4), which is interposed between the upper portion of the shaft 82 and an angular member 90 that is secured to the latch 32, forces the shaft 82 upwardly into the position shown in Figure 4. A latch member 91 is secured to the lower end of the shaft 82. Levers 92 and 94 are tiltably secured to the bottom of the housing 40 at 96 and 98 respectively, and the lever 94 has a ring-shaped portion 100 and a tongue portion 102, and is forced by a spring 104 against an arm portion 106 of the lever 61.

The functioning of my new and improved safety lock is as follows:

The door 13, if it is closed, can be locked by moving the latch 32, by means of operating the lock 44, from the position shown in full lines in Figure 4 to the position shown in dash-and-dotted lines in Figure 4. This can be done without moving the barring bolt 52 and the latch 48. Assuming the door 13 closed and unlocked, a small clockwise movement of the handle 50 will move the parts 48, 61, 62 and 106 into a position as is indicated in dash-and-dotted lines in Figure 7, so

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that the latch 48 is withdrawn sufficiently for opening the door 13 without forcing the bolt 52 out of the housing 40. Thus for simply opening the door 13 the bolt 52 and the lever 92 are left in the positions shown in Figure 4. In order to operate my new and improved barring device, the handle 50 is moved further in a clockwise direction, so that the parts 48, 60, 61, 62, 94 and 106 are in the positions shown in full lines in Figure 7. Thereby the tongue portion 102 is moved out of the recess 75 of the bolt 52, and the latter is moved by the lever 92 into the position shown in full lines in Figure 7, so that the front portion 70 passes through the slot 36 of the bar 20 (Figures 7 and 10). The lock 44 is provided with a perforation 108 (Figures 4 and 6), so that the tongue member 46 can be moved three hundred and sixty degrees in either direction. In order to prevent an unwanted snapping back of the bolt 52 from its position shown in full lines in Figure 7, the key (not shown) in the lock 44 is turned in a clockwise direction, so that the tongue member 46 is in the position shown in full lines in Figure 7 and depresses the shaft 82. With the shaft 82 and its head 84 in the position shown in full lines in Figure 7, the latch member 91 is adjacent the tongue portion 74 of the bolt 52 (Figures 7 and 9), so that after a release of the handle 50, the spring 78 can press the tongue portion 74 of the bolt 52 against the member 91 only, but cannot withdraw the bolt 52 into the housing 40. Thereafter, while the door 13 is being opened, the bolt 52 causes an angular movement of the bar 20 around the pin 18, so that the bar 20 is in a position as is indicated by dash-and-dotted lines in Figure 8, relative to the parts 41 and 52. When the door 13 is open so far as the bar 20 permits, the latter has turned about ninety degrees around the pin 18, and the bolt 52 cannot be disengaged from the bar 20 as long as it remains in the position shown in Figures 7, 8 and 9, because the end portion 70 is higher than the slot 36 is wide.

In order to release the bolt 52 from the bar 20, the handle 50 is moved in a counter-clockwise direction, so that the parts 60, 61, 62, 94, 100, 102, 104 and 106 are in the positions shown in Figures 11 and 12. Thereby the tongue portion 102 presses from beneath against the tongue portion 74 of the bolt 52 and turns the latter about ninety degrees, so that the tongue portion 74 of the bolt 52 no longer engages the member 91 (Figures 11, 12, 13). When the front portion 70 of the bolt 52 is in the position shown in Figure 13, it can pass through the slot 36, so that the spring 78 will withdraw the bolt 52. The spring 78 has one of its ends inserted into the bore 80 of the bolt 52 and its other end anchored at the bearing 68, and has a tendency to turn the bolt 52 around its longitudinal axis, so that the tongue portion 74 rests against the bottom of the housing 40. Thus the spring 78 — once the tongue portion 74 has passed the member 91 — will return the bolt 52 to its position shown in Figures 4 and 6. As soon as the bolt 52 has left the slot 36, the spring 24 will move the bar 20 back to an upright position and into the recess 28 (Figures 1 to 3). When the door 13 is closed, it can be locked by turning the key (not shown) in the lock 44 in a counterclockwise direction, thereby releasing the shaft head 84 from the tongue member 46, so that the spring 88 (Figure 4) will force the parts 82 and 91 upwardly to their original positions as shown in full lines in Figure 4. Since certain changes may be made in the

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above article and different embodiments of the 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 following claims are 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.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent in the United States is:

A door lock comprising a unit adapted to be attached to a door jamb, a unit adapted to be attached to a door, a normally upright bar having a horizontal slot and being secured to the first unit by means of a spring hinge joint adapted for forcing the bar into an upright position, the second unit comprising a housing, a locking element assembly disposed in said housing and having a locking latch as well as a rotatable tongue member adapted for moving said locking latch in horizontal direction, a shaft being vertically movable on said locking latch within said housing, resilient means interposed between said locking latch and said shaft being adapted for forcing said shaft upwardly towards said rotatable tongue member, a vertical finger member being secured to the lower end of said shaft, a horizontal barring bolt having a flattened dove-tail shaped extremity which is flush with the outer side of said housing as long as said bolt is withdrawn thereinto, said bolt being rotatably and axially movable in said housing and having a longitudinal notch and a short notch intermediate its ends as well as a tongue portion extending radially towards said vertical finger member which rests against said finger member when said shaft is depressed by the rotatable tongue member of said locking element assembly to dog said barring bolt when in projected position, a door handle shaft being rotatable in said housing, an arm being radially secured to said

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door handle shaft, a lever adapted to be tilted by said arm having a protruding finger portion which engages the longitudinal notch in said barring bolt and being in engagement with the tongue portion of said barring bolt and adapted for rotating the barring bolt so that its tongue portion is released from said vertical finger member, a spring biased latch being horizontally movable in said housing, a double lever tiltably secured to the interior of said housing engaging with one of its ends the short notch in said barring bolt while its other end is adapted for engaging said spring biased latch when the latter is withdrawn into said housing and for forcing the barring bolt partially out of said housing, and a coiled spring having one of its ends secured to said barring bolt while its other end is secured to said housing and being adapted for withdrawing said barring bolt into said housing after said spring biased latch is released from said double lever and for turning the barring bolt around its longitudinal axis until the tongue portion of the barring bolt rests against the housing, and said flattened end portion of the barring bolt being thinner than the slot in said bar is wide, but the extremity of its dove-tail section being wider than said slot.

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