

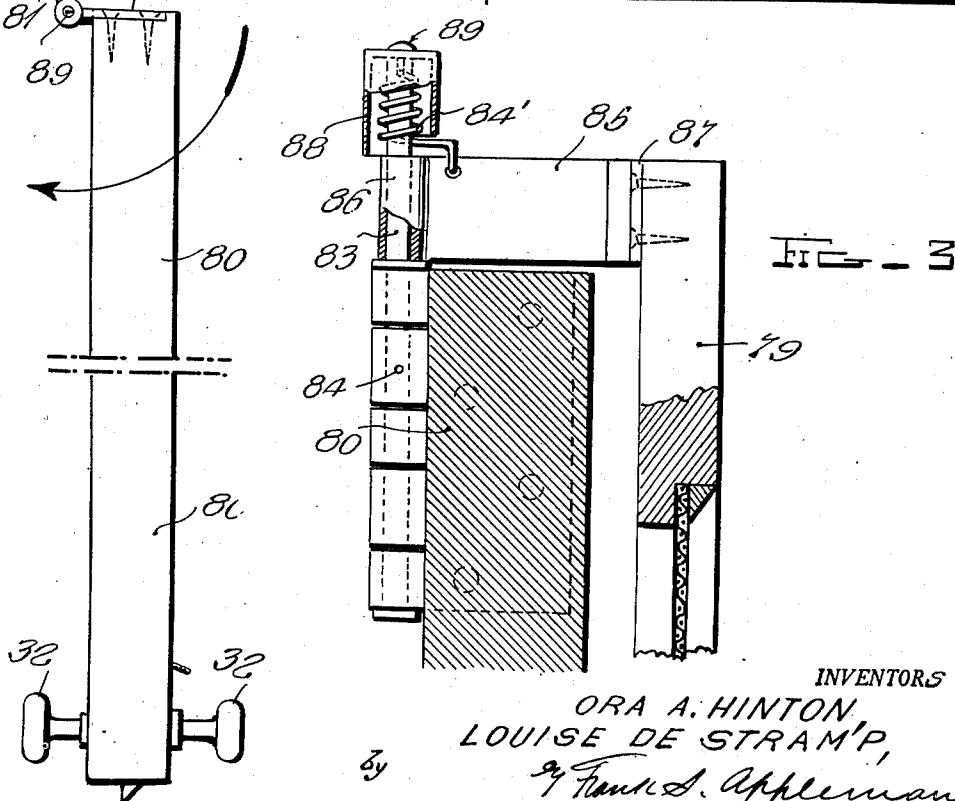
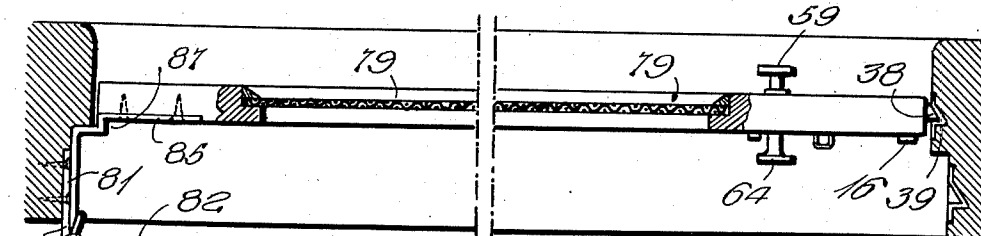
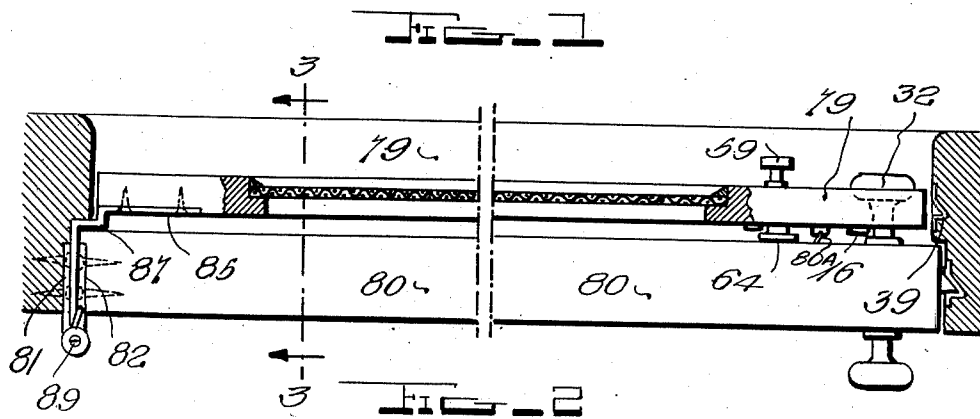
Jan. 9, 1951

O. A. HINTON ET AL
HARDWARE UNIT FOR VENTILATING DOORS

2,537,896

Filed May 29, 1946

5 Sheets-Sheet 1



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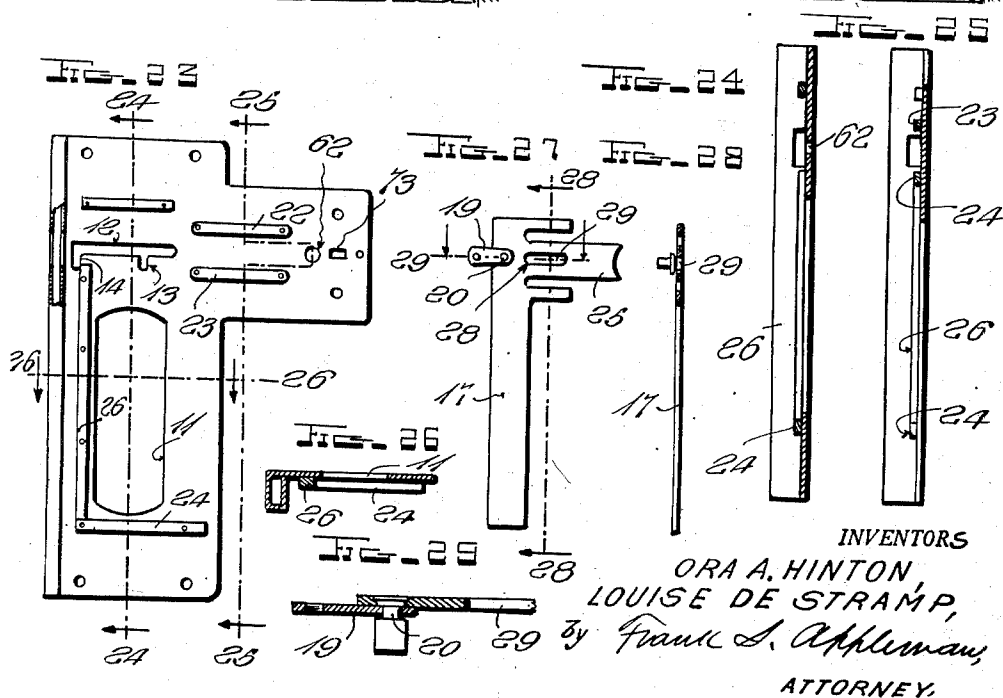
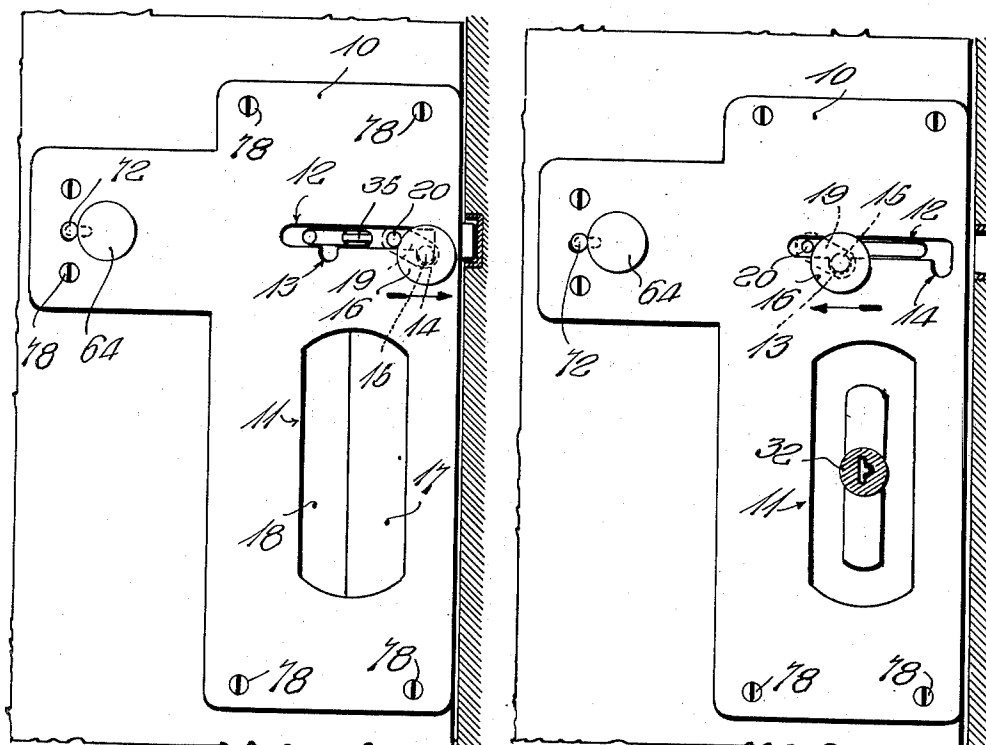
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FIG. 4

FIG. 5



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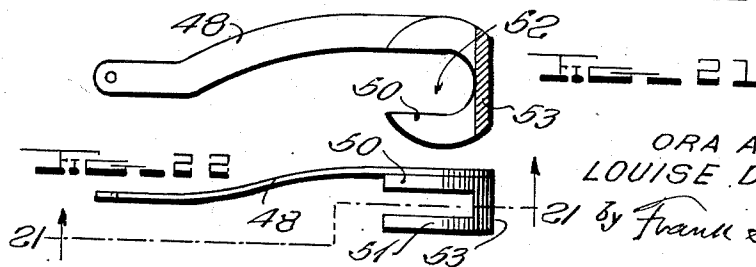
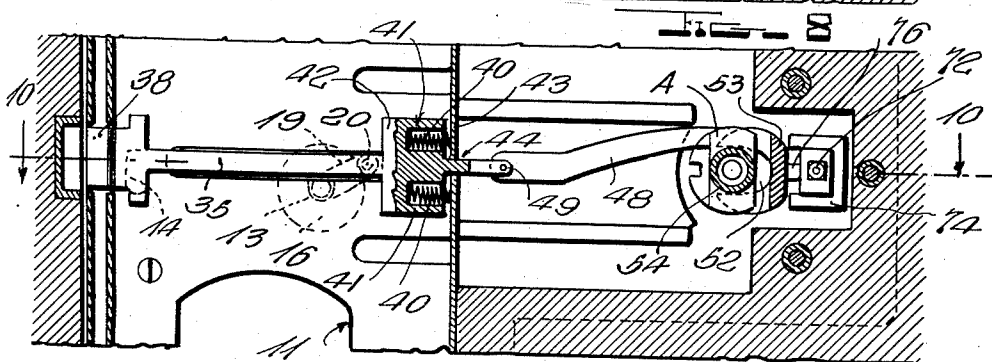
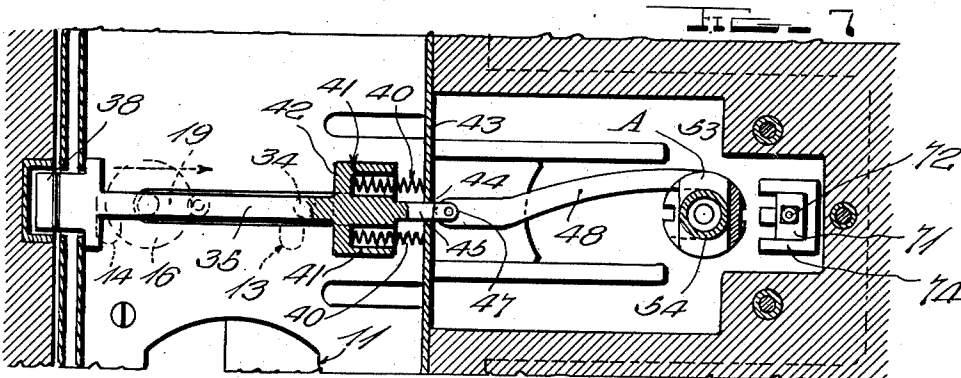
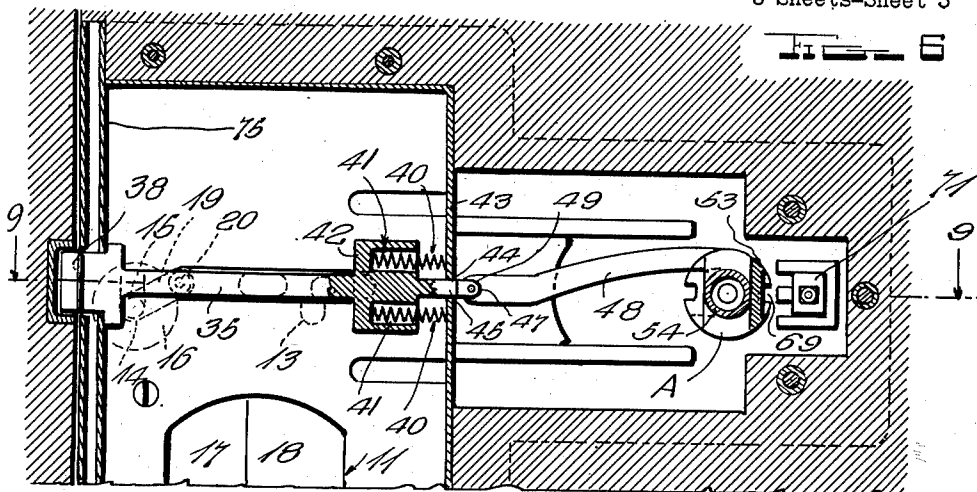
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HARDWARE UNIT FOR VENTILATING DOORS

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5 Sheets-Sheet 3



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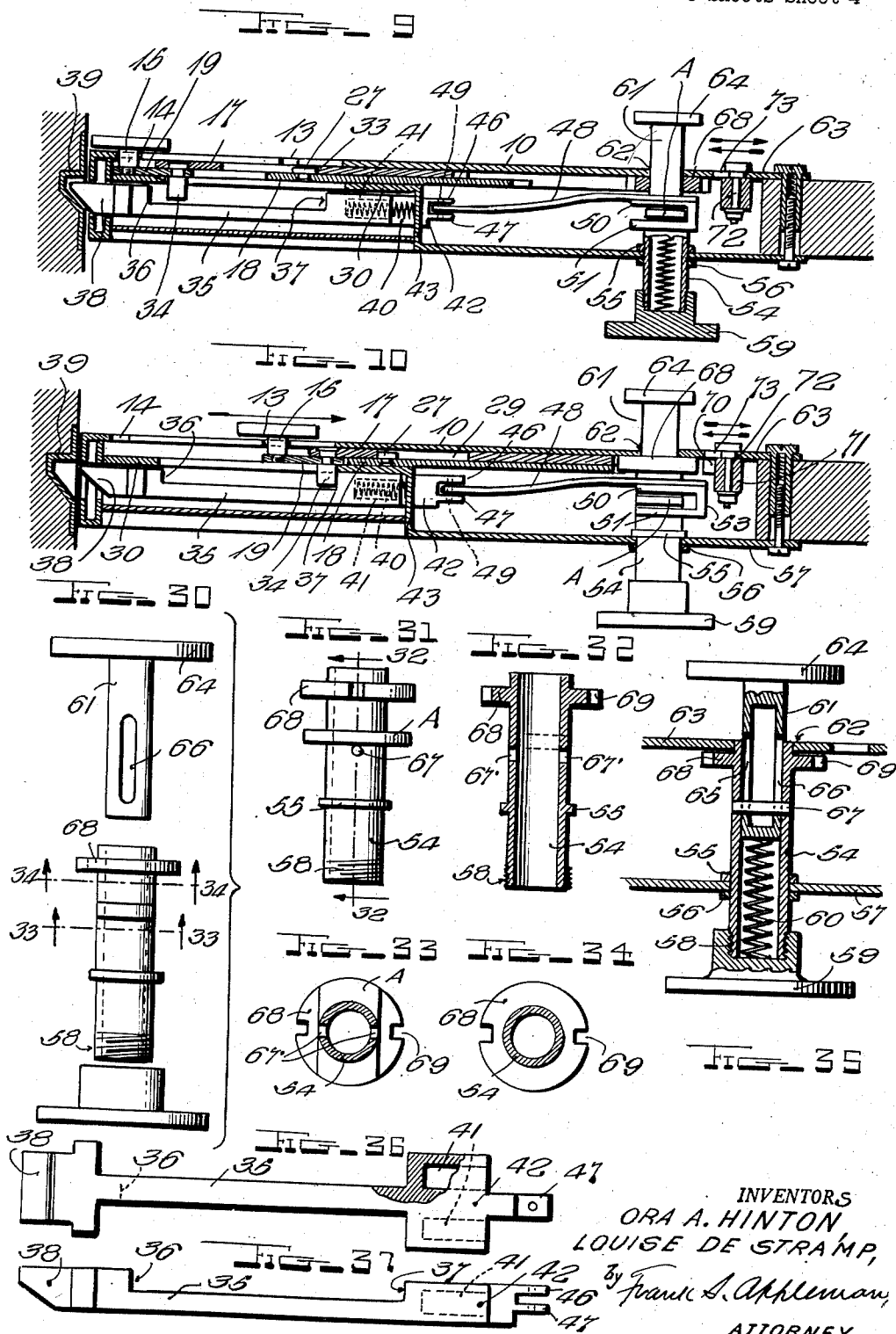
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HARDWARE UNIT FOR VENTILATING DOORS

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5 Sheets-Sheet 4



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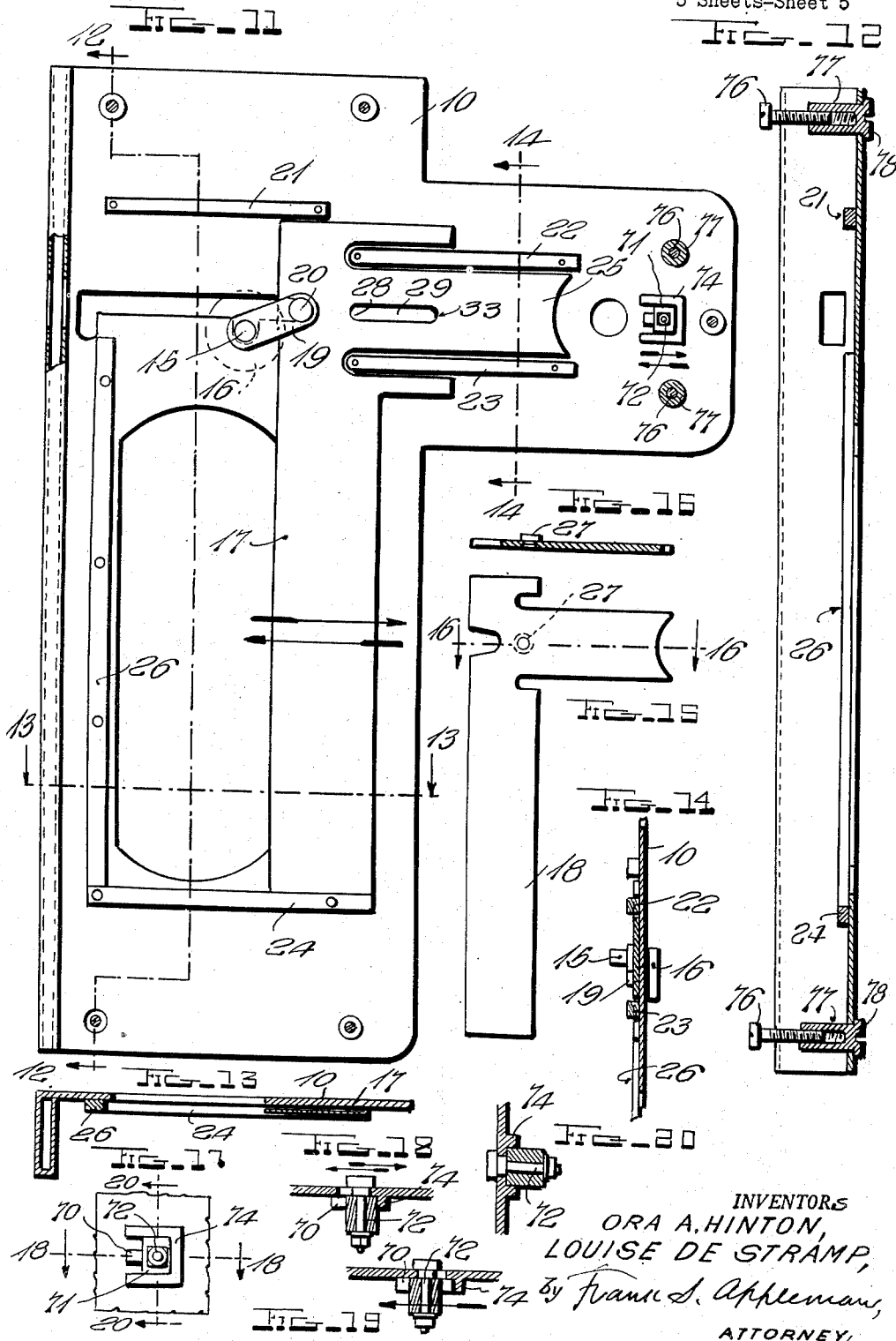
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HARDWARE UNIT FOR VENTILATING DOORS

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UNITED STATES PATENT OFFICE

2,537,896

HARDWARE UNIT FOR VENTILATING DOORS

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Application May 29, 1946, Serial No. 673,117

3 Claims. (Cl. 292—1)

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This invention relates generally to builders' hardware, and particularly to a unitary construction which can be attached to ventilating doors, such as screen doors, or those of the louvre type, and in the further description, the door will be referred to as a "ventilating door," regardless of its construction, the same to be associated with the usual threshold doors of houses or apartments, and an object of the invention is to produce a latch for the ventilating door and to guard an opening in the installation, which opening is intended for the reception of the latch-operating handle of the threshold door; the said device also having an opening through which the usual keyhole of a lock of such door is accessible, the said device having novel means for closing or guarding these openings when the ventilating door is closed and latched.

A further object of the invention is to provide sliding guards which close the aforesaid openings, the said sliding guards being telescopically arranged, one with relation to the other, so that when they are moved to unguard the openings, one slides upon the other for a limited distance, and thereafter, both are moved in unison, the means for accomplishing this result being provided with means by which movement cannot be imparted to the telescopic members until the manually operated means is moved from a seat which it occupies for holding the manually operated means against accidental movement.

A still further object of the invention is to provide a latch bar held normally projected into operative position by resilient instrumentalities at the inner end of the latch bar, the said latch bar being provided with a shoulder engaged by an actuating instrumentality moved as the telescopic members reach their open positions, at which limit of movement the manually operated means is again seated and held against movement until lifted from a retaining means forming a part of the casing of the installation.

A further object of the invention is to provide a manually operated spindle which may be manipulated from the inside or outside of the door, the said spindle operating a link connected to the inner end of the latch bar, which link is retracted and projected under the influence of the rotary movement of the spindle; and furthermore, means are provided for preventing rotation of the spindle, said means being in the nature of a latch which locks the spindle against rotation, the said latch being on the inside of the ventilating door and making it impossible for the spindle to be rotated from without, except by the release of the latch.

A still further object of the invention is to provide means on which the foregoing instrumentalities are assembled and mounted, which means is bodily installable in the frame of a ventilating

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door, so that as a unit the locking mechanism and guards for the openings heretofore mentioned, may comprise an article of manufacture, ready for installation by the removal of so much of a ventilating door frame as will accommodate the unit, there being novel means for fastening it on the ventilating door in operative relation to a threshold door.

A further object of this invention is to provide means for causing the threshold door and the ventilating door to swing in unison by the employment of hinges of novel construction, each of said hinges having a pintle to which one of the leaves of a hinge is secured, whereas the other leaf is hinged on the pintle, the said pintle also having a bracket oscillatable thereon and a spring engaging the bracket for exerting force to swing the bracket on the pintle, it being the purpose of the inventor that brackets of this character shall be attached to the ventilating door so that the said door can be swung into and moved in parallelism with the threshold door, or the ventilating door may be swung independently of the threshold door into an open or closed position.

It is furthermore an object of the invention to provide means by which the threshold door and ventilating door are coupled together when they are parallel and caused to move together by reason of the construction of the hinges of the two doors.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which:

Figure 1 illustrates a transverse, horizontal sectional view through a set of door jambs showing the threshold door and the ventilating door appropriately mounted thereon;

Figure 2 illustrates a similar view to Fig. 1, but showing the threshold door swung inwardly and the ventilating door in position to be acted upon;

Figure 3 illustrates a transverse, vertical section taken on line 3—3 of Fig. 1;

Figures 4 and 5 are face views of the ventilating door hardware showing the two vital positions assumed by the sliding closure plates;

Figures 6, 7 and 8 illustrate sectional views, showing more particularly the action of the spring-pressed latch and associated parts;

Figure 9 illustrates a horizontal section taken substantially on line 9—9 of Fig. 6 the detent guide being omitted;

Figure 10 illustrates a horizontal, sectional view taken on line 10—10 of Fig. 8 the detent

guide being omitted and showing more specifically the latch bolt withdrawn from its keeper and the operating button moved to the right in the direction of the arrow indicated in Fig. 10 the web not being shown in engagement with the detent;

Figure 11 illustrates an elevational view of a portion of the hardware with parts broken away and in section;

Figure 12 illustrates a vertical, sectional view taken on line 12—12 of Fig. 11;

Figure 13 illustrates a horizontal section taken on line 13—13 of Fig. 11;

Figure 14 illustrates a vertical, sectional view taken on line 14—14 of Fig. 11;

Figure 15 illustrates a face view of one of the closure plates of the hardware;

Figure 16 illustrates a horizontal, sectional view taken on line 16—16 of Fig. 15;

Figure 17 illustrates a face view of the adjustable button of the ventilating door hardware;

Figure 18 illustrates a horizontal sectional view taken on line 18—18 of Fig. 17;

Figure 19 illustrates a similar view to Fig. 18 but showing the adjustable button moved to the left in the direction of the arrow;

Figure 20 illustrates a transverse, vertical section taken on line 20—20 of Fig. 17 and shows more particularly how the adjustable button is confined on the side plate;

Figure 21 illustrates a sectional view taken on line 21—21 of Fig. 22;

Figure 22 illustrates a plan view of Fig. 21;

Figure 23 illustrates a face view of one of the main plates of the ventilating door hardware;

Figure 24 illustrates a transverse, vertical section taken on line 24—24 of Fig. 23;

Figure 25 illustrates a vertical, transverse section taken on line 25—25 of Fig. 23;

Figure 26 illustrates a horizontal, sectional view taken on line 26—26 of Fig. 23;

Fig. 27 illustrates a face view of one of the coating slide plates forming a part of the ventilating door hardware;

Figure 28 illustrates a vertical transverse section taken on line 28—28 of Fig. 27;

Figure 29 illustrates a sectional view taken on line 29—29 of Fig. 27;

Figure 30 illustrates a plan view of a portion of the locking means for the ventilating door hardware, the parts being shown separated and in juxtaposition;

Figure 31 illustrates a face view of the inner sleeve;

Figure 32 illustrates a transverse, vertical sectional view taken on line 32—32 of Fig. 31;

Figure 33 illustrates a detail transverse, sectional view taken on line 33—33 of Fig. 30;

Figure 34 illustrates a transverse, vertical section taken on line 34—34 of Fig. 30;

Figure 35 illustrates a horizontal section showing more specifically the coaction of the various elements just described in Figs. 30, 31, 32, 33 and 34;

Figure 36 illustrates a plan view with parts broken away, showing more particularly one of the latch bolts employed in connection with the hardware; and

Figure 37 illustrates an edge view thereof.

The installation heretofore described comprises a face plate 10 having an elongated opening, as at 11, forming a clearance for the usual knob or lock handle of a threshold door. The face plate has a transversely disposed slot 12, the lower edge of which is provided with notches or seats

13 and 14, into which a lug 15 on a manually operated knob 16 is alternately lodged so that the said knob cannot be moved until the lug thereof is lifted from the seat or notch 13 or 14. Guard plates 17 and 18 are slidably arranged back of the face plate, and the manually operated knob 16 is connected to the plate 17 by a link 19 which is oscillatable on a pivot 20. The inner surface of the face plate is provided with a plurality of guides 21, 22, 23, 24. The ends of the guard plates travel between guides 21 and 24, and an extension or tongue 25 of the guard plates travels between the guides 22 and 23, so that by these means the guard plates may reciprocate or move with relation to the rear surface of the face plate. The rail 26 which is arranged at right angles to the guide 24 forms an abutment for the edge of the guard plate 17 when it is moved to a position for closing the opening 11 in the face plate. The guard plate 17 telescopes the guard plate 18 and passes in front of it during the initial movement, and the guard plate 18 has a pin or stud 27 which is encountered by the plate 17 at the end 28 of a slot 29 formed in the plate 17, and when the end 28 of the slot engages the pin or stud 27, further movement of the plate 17 communicates motion to the plate 18 and both plates are therefore carried to unguard the opening 11 in the face plate, and it is understood that the rear plate 30 of the housing has an opening (not shown) coinciding with the opening 11 in order that the handle or knob 32 of the threshold door lock may project there-through. When the guards are to be moved to guard the opening 11, the operating knob 16 is released from the notch 13 and the guard 17 is moved across the opening 11, and when the rear end 33 of the slot 29 encounters the pin or stud 27, motion is communicated to the guard plate 18 and both plates are moved to closed positions.

The pivot 20 is carried by the plate 17, and the link 19 oscillates on it, and the said pivot is enlarged at its inner end, as shown at 34, and travels in a channel of the latch 35, the said channel having shoulders 36 and 37 at its ends which are abutted alternately by the end 34 of the pivot. The latch bolt 35 has a beveled end 38 which extends through a slot in a flange 75 formed on plate 10 and engages in a seat 39 located in the door frame so that the latch holds the ventilating door closed and in locked position through means, to be presently explained, but when the plate 17 is moved to its wholly open position, the enlarged portion 34 of the pivot abuts the shoulder 37 of the latch bolt and upon further movement forces the latch to open position against the action of springs 40 which have their ends seated in sockets or recesses 41 formed in an enlarged portion 42 of the latch bolt. The ends of the springs bear against the side 43 of the housing of the hardware. An aperture 44 in the said side forms a clearance for an extension 45 of the latch bolt, and said extension reciprocates in the aperture as the latch bolt operates. The extension 45 has spaced ears 46 and 47, between which one end of a link 48 is pivoted on a pin 49. The end of the link remote from the pivot is connected to a member comprising two spaced plates 50 and 51, each having a slot, such as 52, which receives a part of the spindle, and the said member is slidable transversely of the spindle during the rotation of the spindle. The two plates are connected by a web 53. A cross arm A is carried by the spindle and is adapted to be located between the

plates 50 and 51. The cross arm is substantially rectangular in outline and each short side is arcuate so that as the spindle is rotated, the short side of the cross arm engages the web and moves the link longitudinally and this action occurs regardless of the direction of rotation of the spindle, since the cross arm engages the web above or below the spindle according to the direction of rotation. The spindle is sectional in character and it comprises a tubular body portion 54 having an annular rib 55, and the said body portion extends through an aperture of a flange 57 that is integral with the side of the housing, and the body is held in place by a retaining ring 56 engaging the outer side of the said flange.

The body portion of the spindle is externally threaded, as at 58, and a knob 59 is threaded thereon, and the said knob serves to retain a spring 60 in the body and tensions the said spring against a telescopic tubular section 61 forming a part of the spindle. The end of the body remote from the knob 59 is lodged in an aperture 62 of a flange or extension 63 integral with the face plate of the hardware. The tubular section 61 slides in the body and the spring 60 holds it normally projected outwardly. The tubular section 61 has a knob 64 by which the spindle is turned. The tubular section 61 furthermore has slots 65 and 66, through which a pin 67 extends, the said pin having its ends located in apertures 67' in the body so that by the assembly illustrated and described, the tubular member may yield or slide inwardly in order that when the ventilating door and the threshold door are parallel and in position to be moved together, the knob 64 will bear against the threshold door and the space between the two doors will be minimized, and the two doors may be latched together in appropriate way so that they swing in unison. The body is furthermore provided with an integral projection 68 having a notch or seat 69 for receiving a lug 70 of a detent 71 comprising a body carried by a bolt or the like 72, which bolt is slidable in a slot 73 formed in the flange. When the latch bolt has been manipulated to a closed position as it is illustrated in Fig. 9, the detent is moved so that the lug 70 thereof enters the notch 69 and the latch bolt cannot be released until the detent is moved to withdraw the lug from the notch 69, after which the spindle may be turned. The web 53 has a plane or squared outer surface which engages the detent when the latch bolt has been fully withdrawn, and it is shown that the detent 71 slides in a U-shaped guide 74 stationed on the inner surface of the flange 63 as shown in Figures 17 to 20, inclusive.

The front plate and the back plate are attached together at several points, and the back plate is dished and these plates have integral flanges 63 and 57 at one end, and these flanges are spaced to form a clearance, between which the frame of the ventilating door is lodged and to which it is secured. The flanges 63 and 57 also embrace the frame of the ventilating door at the edge of a cutaway portion, which cutaway portion provides a clearance for the spindle and the operating parts heretofore described, it being understood that the front plate and the flanges engage opposite surfaces of the ventilating door and are anchored thereto by fastenings, such as screws 76, threaded in tubular members 77 extending through the front plate, and the tubular members are provided with slotted heads 78 to be en-

gaged by a screw driver for holding them while the screw is being applied in fastening the parts together (Figures 9 to 12, inclusive).

As shown in Figures 1, 2 and 3, the ventilating door 79 and the threshold door 80 are hinged so that they may swing independently, or they may be moved to parallel positions and swung as a unit, in which latter position they are connected to move in unison and this may be accomplished by any suitable fastenings between them. Such fastenings may be in the nature of a hook and eye 83A in its simplest form, as shown in Figure 1. The hinge for the threshold door comprises two leaves 81 and 82 secured to the door jamb and threshold door, respectively, and preferably, the pintle 83 is secured to one of the leaves by a fastening 84 so (Figure 3) that it turns when the door is swung. It is the purpose of the inventors to have the hinge of the ventilating door swingly mounted on an extension of the pintle of the threshold door and, to that end, a bracket-like leaf 85 has a loop or eye 86 in its end which swings on the pintle, and the said bracket has an angularly disposed portion 87 which forms a clearance for a corner of a door jamb or frame, and the said outer end of the bracket is attached to the ventilating door in known manner. In order to assemble the hinges in operative relation to one another, the stationary leaf of the threshold door is sunk somewhat, as compared with the usual installation, and the hinge for the ventilating door has the angularly disposed portion 87 so that it fits in the recessed portion and conforms to the general contour of the surfaces of the door frame or jamb.

It is to be understood that any number of hinges may be provided to suit particular requirements, the weights of the doors and other considerations; and furthermore, the ventilating door has a spring 84' connected to it, which spring is wound around the extension of the pintle and torsionally operates to impart motion to the ventilating door in one direction. The spring is enclosed by a cap 88 secured to the pintle by a fastening 89, such as a screw or the like.

We claim:

1. A hardware unit for ventilating doors comprising juxtaposed encasing plates having edge flanges for embracing a frame of a door having means whereby the flanges are attached to the door, the said encasing plates having coinciding apertures forming clearances for the reception of operating parts of a threshold door lock, slidable telescopically arranged shutters adapted to guard and unguard the said apertures, one of said shutters having an elongated slot therein, guiding members between the encasing plates on which the said shutters are supported, the outer encasing plate having a transversely disposed slot with notches in the lower edge of the slot, a knob having a stud slidable in the slot, a link oscillatable on a stud carried by one of the shutters, a stud on the other shutter with relation to which the first mentioned shutter slides, the said last mentioned stud being in the path of travel of the end of the slot in said shutter and adapted to be engaged by the end of the slot when the first mentioned shutter has traveled a predetermined distance, whereupon further movement of the first mentioned shutter communicates motion to the second mentioned shutter and the two shutters are moved in unison to unguard the aperture, and a latch bolt hav-

ing a channel therein in which the stud on said first mentioned shutter travels, the said channel terminating in a shoulder engaged by the said stud for retracting the latch.

2. A hardware unit for ventilating doors comprising juxtaposed encasing plates having edge flanges for embracing a portion of a frame of a door, the said encasing plates having coinciding apertures forming clearances for the reception of operating parts of a threshold door lock, slidable telescopically arranged shutters adapted to guard and unguard the said apertures, one of said shutters having an elongated slot therein, guiding members between the encasing plates on which said shutters are supported, the outer encasing plate having a transversely disposed slot, a knob having a stud slidable in the slot, means for holding the stud at different positions of adjustment, a link on which the stud is mounted, a stud on one of the shutters on which the link is pivoted, the said last named stud extending inwardly, a latch bolt having a channel in which the inwardly disposed portion of the stud moves, the said channel terminating in a shoulder engageable by the inwardly disposed portion of the stud for communicating motion of the stud to the latch bolt, and coacting shutter having a stud engageable by the ends of the elongated slot whereby motion of one of the shutters in either direction communicates motion to the other shutter during a portion of its travel so that the shutters are moved to open and closed positions with relation to the apertures in the encasing plates.

3. A hardware unit for ventilating doors comprising juxtaposed encasing plates having edge flanges for embracing a portion of a frame of a door, the said encasing plates having coinciding apertures forming clearances for the reception of operating parts of a threshold door lock, slidable telescopically arranged shutters adapted to

guard and unguard the said apertures, one of said shutters having an elongated slot therein, guiding members between the encasing plates on which said shutters are supported, the outer encasing plate having a transversely disposed slot, a knob having a stud slidable in the slot, means for holding the stud at different positions of adjustment, a link on which the stud is mounted, a stud on one of the shutters on which the link is pivoted, the said last named stud extending inwardly, a latch bolt having a channel in which the inwardly disposed portion of the stud moves, the said channel terminating in a shoulder engageable by the inwardly disposed portion of the stud for communicating motion of the stud to the latch bolt, the coacting shutter having a stud engageable by the elongated ends of the slot whereby motion of one of the shutters in either direction communicates motion to the other shutter during a portion of its travel so that the shutters are moved to open and closed positions with relation to the apertures in the encasing plates, and springs for movably holding the latch bolt in locked position.

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