

May 24, 1927.

J. H. SCHLAFLY

1,629,641

LOCK

Filed Aug. 13, 1924

3 Sheets-Sheet 1

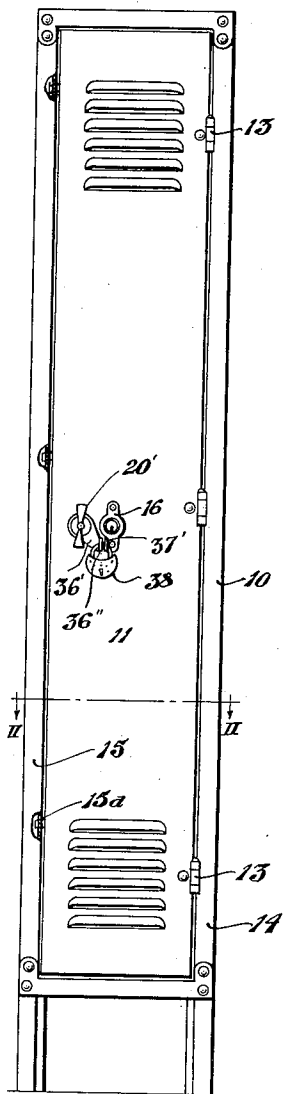


Fig. 1.

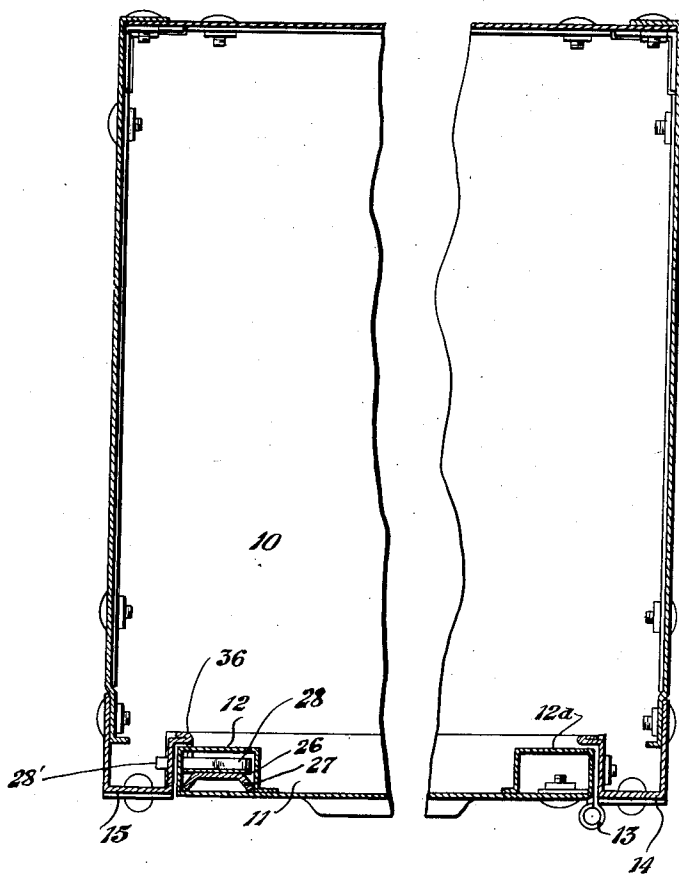


Fig. 2.

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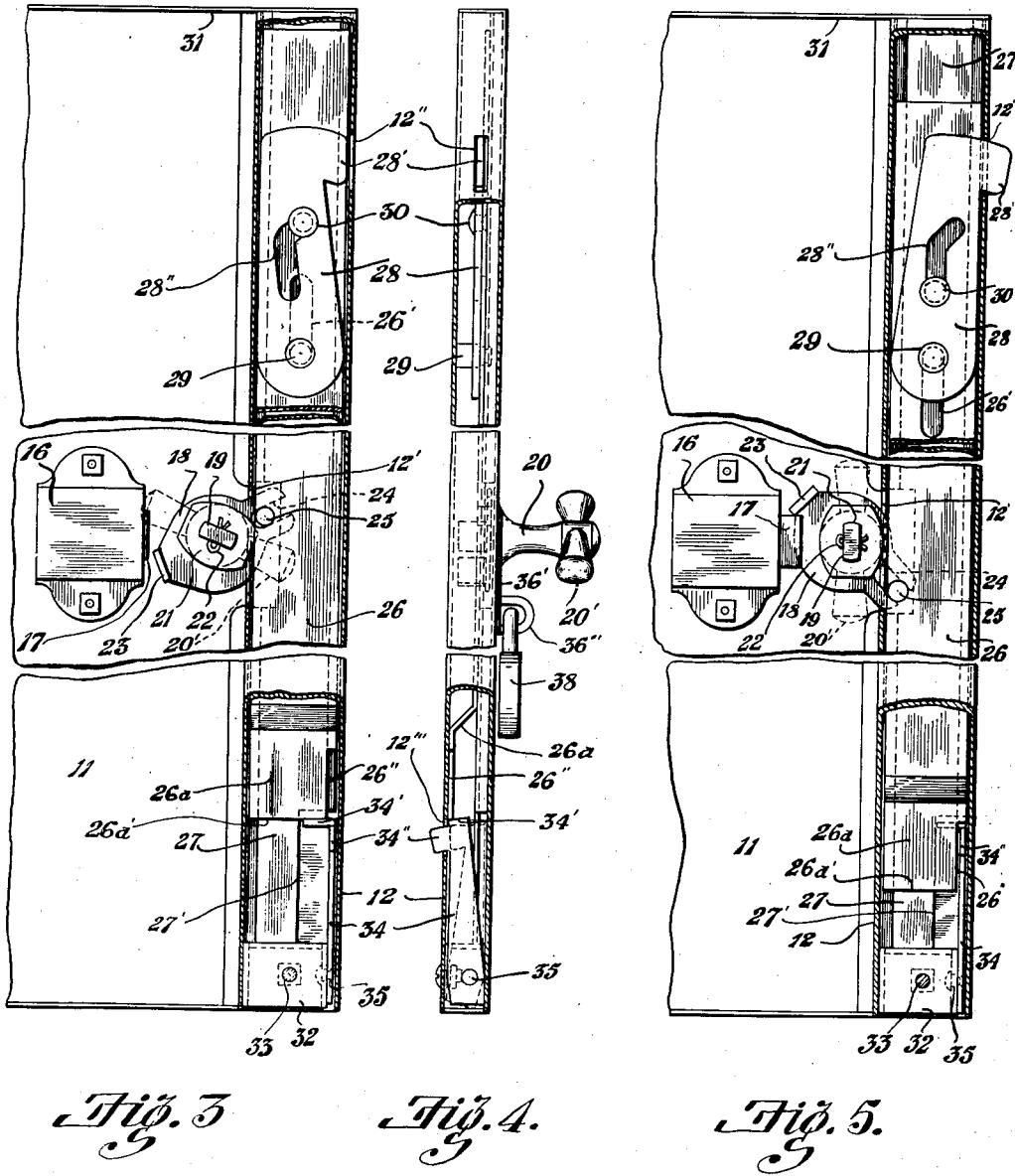
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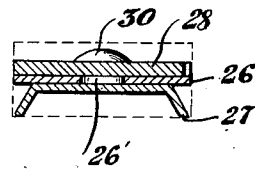
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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE.

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LOCK.

Application filed August 13, 1924. Serial No. 731,760.

The invention relates to locks for sheet metal cabinet doors, and particularly to that class of locks in which a plurality of locking bolts after being retracted by a turning of the door handle are held in retracted position by an automatically actuated trip while the door is open, and are automatically thrown into locking position upon a release of the trip actuated by a closing of the door, independent of any manual operation of the handle.

The object of the invention is to provide a unitary lock of the above description which shall be certain and positive of action, which shall be compactly made of comparatively few parts and assemblies for easy attachment to the door, and in which the majority of operating parts are encased in a box flange on the edge of the door, which box flange not only acts as a case for the lock but is also an integral structural element of the door.

The invention is illustrated in the accompanying drawings forming part hereof, in which—

Figure 1 is a front elevation of a sheet metal cabinet;

Fig. 2, an enlarged horizontal cross-section on line II—II, Fig. 1, showing the box flanges of the door and the bolt assembly in one box flange;

Fig. 3, a fragmentary elevation of the back side of the door with part of the box flange broken away to show the multiple bolt assembly and one lever bolt in retracted position;

Fig. 4, a fragmentary end elevation of the door with part of the box flange broken away to show the gravity trip in position for holding the lever bolts in retracted position;

Fig. 5, a fragmentary back side elevation of the door as in Fig. 3, showing one lever bolt in locking position;

Fig. 6, an isometric perspective view of the multiple bolt assembly and supporting bracket;

Fig. 7, a longitudinal cross section of the same, on line VII—VII, Fig. 6;

Fig. 8, a cross section of the same on line VIII—VIII, Fig. 6;

Fig. 9, a cross section of the same on line IX—IX, Fig. 6.

Similar numerals refer to similar parts throughout the drawings.

A sheet metal cabinet 10 may include a door 11 having longitudinal box flanges 12 and 12^a, on each side edge, and joined by hinges 13 to one side channel 14 of the door frame; the other side channel 15 being provided with bolt receiving apertures 15^a.

The improved lock is adapted to be applied to and carried by such a door, and may include a key operated lock 16 having slide bolt 17 which may cooperate with an actuating disk 18 to prevent a retraction of the lever bolts. The actuating disk 18 may be fitted on the flattened inner end 19 of the spindle 20 of a door handle 20' and fastened thereon by means of washer 21 and cotter-pin 22; the spindle of the door handle having a journal bearing in the door.

The actuating disk 18 is provided with a stop 23 for cooperation with the slide bolt 17, and with a slot 24 operating on a pin 25 on the operating bar 26 of the multiple bolt assembly A, which may be encased in the box flange 12, there being provided in said flange a suitable aperture 12' for receiving the actuating disk.

The multiple bolt assembly A preferably includes the operating bar 26 which may be a flat strip, mounted for sliding endwise on a base plate 27, which may be the face of the web of a channel bar, and one or more lever bolts 28 pivoted on the base bar and controlled by the endwise movements of the operating bar.

Each lever bolt 28 has an L-head 28' on its free end for operating in and through an aperture 12'' in the edge wall of the door, and is mounted at the other end on a pivot post 29 secured to the base bar 27 and extending through elongated slot 26' in the operating bar; so that the pivots 29 serve as slide guides for the endwise movements of the operating bar 26.

Each lever bolt 28 is also provided with a cam slot 28'', in which operates a cam pin 30 secured to the operating bar; the upper portion of the slot being inclined so as to swing the L-head of the lever bolt inward and retract it within the edge of the door when the operating bar is moved upward, as shown in Fig. 3, and to swing it outward beyond the edge of the door when the operating bar is moved or drops by gravity downward, as shown in Fig. 5.

The multiple bolt assembly A is secured

together as a unitary structure so that it may be inserted upward into the cavity of the box flange 12 on the door through the lower open end thereof, until the upper end of the base bar is stopped by a flange 31 on the top of the door which overlaps and closes the open end of the box flange cavity.

A supporting bracket 32 is then inserted and secured as by a bolt 33, in the lower open end of the box flange for closing the same and supporting and securing the base bar in fixed position therein; upon which bracket is fulcrumed the lower end of a trip lever 34, as by a pivot 35, on the upper end of which lever is provided a trip foot 34' and an actuating tongue 34'' for operating in and through an aperture 12''' in the back wall of the box flange at or near the edge of the door.

The trip lever 34 is so shaped and proportioned with reference to its pivot support 35, that it will swing by gravity backward when it is not restrained and protrude its actuating tongue 34'' through the aperture 12''' in the back wall of the box flange. The operating bar 26 is provided with a notch 26'', and the base bar 27 is provided with a notch 27' for accommodating the movements of the trip lever.

The lower end portion 26^a of the operating bar is offset rearward so as to slide along the back wall of the box flange, and when the trip lever is swung forward as by pushing its actuating tongue into the cavity of the box flange when the door is closed against the rabbeted wall 36 of the door frame, the stop foot is carried forward free from the offset lower end of 26^a of the operating bar, and the same is free to drop downward by gravity, so as to swing the lever bolts 28 outward into locking position, as shown in Fig. 3.

When, however, the operating bar is moved upward, as by turning the handle of the door far enough to retract the lever bolts and unlock the door, and the door is then opened, the trip lever falls backward by gravity and carries its trip foot 34' under the lower end 26^a of the operating bar, and thereby holds the bar upward and maintains the lever bolts 28 in unlocked position until the trip lever is swung by pressure on its actuating tongue as by the closing of the door, to disengage the foot from under the operating bar.

Upon closing the door by slamming or otherwise, the actuating tongue 34'' of the trip lever 34 strikes against the door frame thereby swinging the trip lever on its pivot 35, and removing the trip foot 34' from beneath end 26^a of operating bar 26. The operating bar then immediately drops by gravity the distance permitted by the lengths of slots 28'', while the cam pins 30 sliding downward in the cam slots swing the

lever bolts 28 into locking position, as shown in Fig. 5; and the door handle 20 is simultaneously turned, by reason of the pin and slot connection with the bar, to the position shown in dotted lines in Fig. 5, whence it may be rotated for raising the operating bar to retract the lever lock.

The cam slot 28'' is preferably extended longitudinally downward in its lower portion so that when the operating bar is dropped downward for swinging the lever bolts into locked position, the cam pin 30 will move downward in the longitudinal portion of the cam slot, and positioned to stop the levers in locking position, as shown in Fig. 5.

Thus a simple and certain gravity actuated locking means is provided, which positively places the bolts in locking position upon the closing of the door without the necessity of turning the door handle for that purpose. In the locked position the stop flange 23 of the disk 18 is in the position shown in Fig. 5, so that the slide bolt 17 of the key operated lock 16 may be moved into locking position under the flange 23, thus preventing a turning of the door handle to unlock the door.

Under ordinary conditions gravity is the actuating means relied upon to operate the bar 28 and the trip 34, but in certain cases, as on board a ship, the gravity actuating means may be supplemented or if need be supplanted by springs for the desired automatic operation of the bar and trip, without departing from the spirit of the invention.

In addition to or in place of a key operated sliding bolt lock for stopping the door handle from turning to unlock the door, it is sometimes preferred to form on or secure to the spindle of the handle a depending arm 36'' with an apertured flange 36'' on its end; and to secure another apertured flange 37' to the door as on the escutcheon of the key lock so arranged that the apertured flanges will abut where the handle is turned upon a locking of the door, whereupon the flanges can be secured together by an ordinary pad lock 38, as shown in Fig. 1, thereby preventing a turning of the handle to unlock the door.

I claim:

1. A unitary lock assembly including a base bar, an operating bar movable endwise only on the base bar, a lever bolt pivoted on the base bar, and cam means between the operating bar and the lever bolt for swinging the lever bolt to and fro by alternate endwise movements of the operating bar.

2. A unitary lock assembly including a bar, an operating bar movable endwise only on the base bar and provided with a cam pin, and a lever bolt pivoted on the base bar and having a cam slot engaging the cam pin for

swinging the lever bolt to and fro by alternate endwise movements of the operating bar.

3. A unitary lock assembly including a base bar having a pivot post thereon, an operating bar movable endwise only on the base bar having a longitudinal slot in guiding engagement with the pivot post and provided with a cam pin, and a lever bolt fulcrumed on the pivot post and having a cam slot engaging the cam pin for swinging the lever bolt to and fro by alternate endwise movements of the operating bar.

4. A unitary lock assembly including a base bar, an operating bar movable endwise only on the base bar and provided with a cam pin, and a lever bolt pivoted on the base bar and having a cam slot engaging the cam pin, the slot being laterally inclined in its upper portion for swinging the bolt to and fro by alternate endwise movements of the operating bar, and being extended longitudinally in its lower portion for stopping the lever bolt when it is swung fully one way.

5. A unitary lock assembly including a base bar, an operating bar movable endwise only on the base bar and provided with a cam pin, a lever bolt pivoted on the base bar and having a cam slot engaging the cam pin for swinging the lever bolt to and fro by alternate endwise movements of the operating bar, and means for moving the operating bar endwise.

6. A unitary lock assembly including a base bar, an operating bar movable endwise only on the base bar and provided with a cam pin, a lever bolt pivoted on the base bar and having a cam slot engaging the cam pin

for swinging the lever bolt to and fro by alternate endwise movement of the operating bar, means for moving the operating bar endwise, and means for locking the moving means.

7. A unitary lock assembly including a base bar, an operating bar movable endwise only on the base bar and provided with a cam pin, a lever bolt pivoted on the face bar and having a cam slot engaging the cam pin for swinging the lever bolt to and fro by alternate endwise movements of the operating bar, and trip means for maintaining the operating bar when moved fully one way.

8. A unitary lock assembly including a base bar, an operating bar movable endwise only on the base bar and provided with a cam pin, a lever bolt pivoted on the base bar and having a cam slot engaging the cam pin for swinging the lever bolt to and fro by alternate endwise movements of the operating bar, trip means for maintaining the operating bar when moved fully one way, and an actuating tongue on the trip means.

9. A door with a unitary locking assembly thereon including an endwise movable operating bar, a handle spindle on the door operatively engaged with the bar, an arm secured to the spindle having an apertured flange thereon, and an apertured flange secured to the door for abutment with the apertured flange on the spindle arm when the door is locked, and means as a padlock for securing the flanges together.

In testimony that I claim the above, I have hereunto subscribed my name.

JULIUS H. SCHLAFLY.