

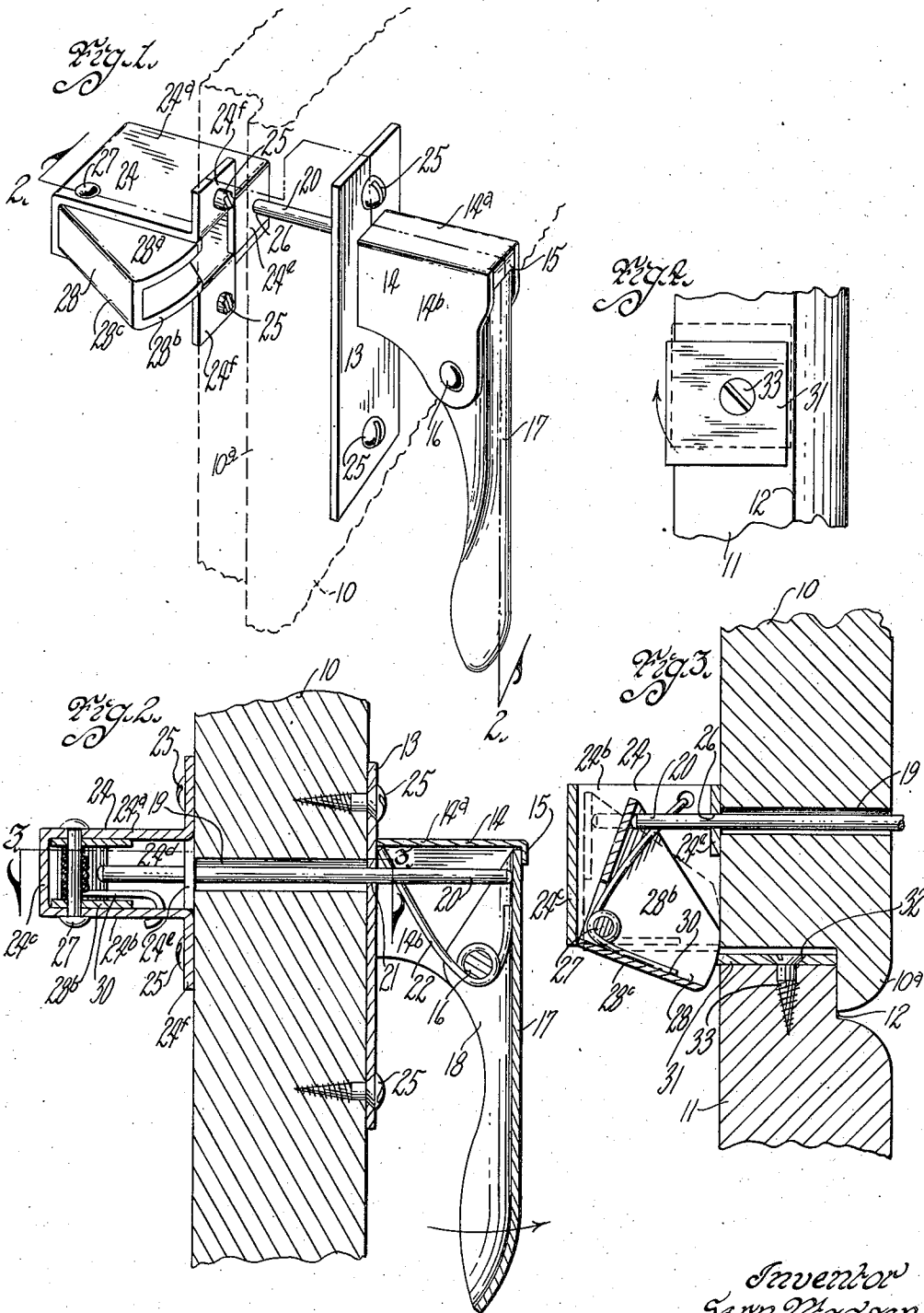
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S. MADSEN

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DOOR LATCH

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Witness
Edw. Seely

Inventor
Sven Madsen
by Bair, Freeman & Sinclair
Attorneys

UNITED STATES PATENT OFFICE

SERN MADSEN, OF CLINTON, IOWA, ASSIGNOR TO CURTIS COMPANIES, INCORPORATED,
OF CLINTON, IOWA, A CORPORATION OF IOWA

DOOR LATCH

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My invention relates to a latch intended primarily for use with cupboards, cabinets, refrigerators and the like, where a rigid tight lock is desired, and where there are varied and numerous conditions of installation.

There are so many kinds of doors and different types of installation that different kinds of latches are required for the different types of doors and installations.

It is my purpose to provide a latch of very simple and inexpensive and yet effective construction, which can be installed on numerous different kinds of doors and under a great variety of conditions. For example, I can install my latch on both flush and lip-type doors. It may be installed on the right or left-hand door at the top, bottom or side edge with equal convenience, ease and effectiveness.

Another purpose is to provide such a latch which will operate very easily and under all conditions. A pull on the handle first releases the latch and then serves to open the door. The latch automatically engages when the door is closed.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my door latch, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of a portion of a cabinet door equipped with a latch embodying my invention.

Figure 2 is a vertical, detail, sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a horizontal, detail, sectional view taken on the line 3—3 of Figure 2; and

Figure 4 is a face view of a strike plate.

In the accompanying drawing, I have used the reference numeral 10 to indicate the door and the numeral 11 to indicate the jamb. The door is of the lip type having the lip 10a, and the jamb has the rabbet 12 to receive the lip.

My improved latch consists generally of the following parts—an outer housing and handle, an inner housing and swinging bolt, a plunger pin, and a strike plate.

The outer housing includes a base plate 13 adapted to be mounted on the outer face of the door 10 as shown in Figure 1, and a projecting housing 14, closed at its top 14a and sides 14b and open at its bottom and at its end farthest from the door, as shown in Figure 1.

The outer end of the top 14a is down-turned as at 15 to form a stop for the handle.

A pintle 16 is mounted in the lower outer parts of the sides 14b.

A handle 17 has the spaced side walls 18 pivoted on the pintle 16. The swinging movement of the handle 17 is limited in one direction by the down-turned portion 15.

In installing the latch on a door, a hole 19 is made through the door for the plunger pin 20. The base plate 13 has a hole 21 for the plunger pin.

A spring 22 is preferably used for normally holding the handle 17 in its straight down-hanging position. The spring is wound on the pintle 16 and has one end bearing against the plate 13 and the other end bearing against the handle 17 between the pintle 16 and the stop 15.

The inner housing and latch plate will now be referred to.

The housings are described in their positions as shown in the drawing, but it is obvious that they can be rotated to different positions where that seems desirable.

The inner housing indicated at 24 has the top and bottom members 24a and 24b, the end wall 24c farthest from the door, and the side wall 24d at one side, the other side being open as shown.

The end opposite the end 24c has a portion inturned between the walls 24a and 24b to form a base plate 24e, and has the up-turned and down-turned engaging flanges 24f for fastening to the inside of the door by screws 25 or the like.

The base plate portion 24e has a hole 26 for the plunger pin 20.

The pintle pin 27 is mounted in the walls 24a and 24b at the corner of the inner or latch housing 24 near the end 24c and the open side of the housing.

The swinging bolt 28 is substantially V-

shaped or angular in outline and has upper and lower walls 28a and 28b and a connecting wall 28c extending from its apex, as shown for instance in Figures 1 and 3, and a shorter connecting wall 28d connecting its walls 28a and 28b and terminating short of the apex.

The parts are installed so that the plunger pin 20 bears against the wall 28d.

10 A spring 30 has a short coil wound on the pintle 27 and has one end in engagement with the wall 28c and the other end connected with the wall 24b, for instance as illustrated in Figure 3. This spring thus serves to hold the swinging bolt 28 in what might be called its open position.

The engaging edge of the swinging bolt is curved nearly on the arcing of a circle with its center at the center of the pintle 27. 20 There is a slight flattening of this curve about where the bolt ordinarily engages the strike plate when the door is closed.

The strike plate is indicated at 31 and is polygonal in outline and has a hole 32 (Figure 3) arranged at different distances from its edges to receive the screw 33, which arrangement will be hereafter referred to.

In installation, the hole 19 is preferably first drilled or bored in the door 10. Then the outer housing is installed in proper position. Then the inner housing is properly installed and fastened in place by means of screws 25 similar to those already referred to. Finally the strike plate is installed in place.

If there is a need for varying the position of the striking edge of the strike plate, either at the time of original installation or later as the parts may possibly shrink or expand a little, the strike plate can be readily adjusted by loosening the screw 33 and turning the strike plate for presenting another edge to the latch bolt.

It will be seen that a latch of this kind 45 meets the problems mentioned in my statement of my objects and has a number of important advantages.

The plunger pin 20 may be made of maximum length and may then be cut to proper length for thinner doors so that the same latch part may be used for doors of various thicknesses.

The inner housing 24 may be placed as shown in Figure 1 in what might be called 55 a horizontal position or if the latch is installed at the top or bottom of a door may be given a quarter turn and on account of the arrangement of the plunger pin 20, this can be readily done without interfering with the operation or efficiency of the latch.

The operation of the latch is very simple. Assuming that the door is open, it may be pushed toward closed position, whereupon the swinging bolt 28 will engage the strike 65 plate and be pressed into the casing 24

against the tension of the spring 30 until the edge of the bolt clears the edge of the strike plate, whereupon the bolt will swing to the position shown in Figure 3. After that any force directed outwardly on the door will only tend to lock the latch more securely. When, however, it is desired to open the door, all that is necessary is to grasp the handle, swing it on its pivot until the locking bolt is released, and then continue the pull for opening the door.

It will be seen that a latch made as herein described can be used on many different door structures and in various types of installations and that only a simple adjustment is necessary to adapt the latch for the various conditions under which it is to be used.

It is contemplated that the latch may be made of various materials and that some changes might readily be adopted in its construction and arrangement of parts, and it is, of course, my purpose to cover by the claims of the patent to be issued upon this application any variations in structure or arrangement or employment of mechanical equivalents which may be within their scope and within the scope of the advance in the art made by my invention.

I claim as my invention:

1. The combination of a door and a jamb 95 with inside and outside members, and a connecting operating pin, the inside member having a swinging retractable bolt for engaging a strike plate on the door jamb, and said bolt hinged inwardly from the inside face of the door, having a portion which engages the strike plate substantially in the plane of the inside face of the door and an operating portion extending normally parallel to the plane of the door and engaging the inner end of the operating pin, a spring arranged to normally extend the bolt to locking position with relation to the strike plate, the outside member having a spring, a stop and a fulcrumed handle spaced outwardly from the face of the door and normally held in a plane parallel to the door by the spring and stop, and provided with a finger which moves toward the door when the handle is pulled outwardly from the door, whereby inward motion is transmitted through the operating pin to the swinging bolt in the inside member.

2. The combination of a door, a jamb with inside and outside members, and a connecting operating pin, the inside member having a swinging retractable bolt hinged inwardly from the inside face of the door and having a portion which engages the jamb and an operating portion engaging the inner end of the operating pin, a spring arranged to normally extend the bolt to locking position with relation to the jamb, the outside member having a stop and a fulcrumed handle spaced outwardly from the face of the door and nor- 130

5 mally held in a plane parallel to the door by the spring and stop, and provided with a finger which moves toward the door when the handle is pulled away from the door, whereby inward motion is transmitted through the operating pin to the swinging bolt in the inside member.

10 3. In a latch structure for a door, an outer member, a handle pivoted thereto, an inner member, a bolt pivoted thereto and spring urged toward latched position, said members being mounted on opposite faces of said door and a thrust pin interposed between said handle and said bolt and serving as an operative connection between them, said thrust pin extending at substantially right angles to the faces of said door whereby to operate regardless of the radial direction of extension of the bolt from said thrust pin.

20 4. In a door latch construction, a plunger pin adapted to extend through a door at right angles to the faces thereof, inner and outer members adapted to be applied to said faces, a handle fulcrumed on the outer member, one end of which engages the pin member passing through the door to impart endwise motion thereto, a swinging latch bolt pivoted on the inner member having a door jamb edge engaging portion and an operating extension arranged to be in contact with the pin through the door, portions of both the inner and outer members serving as supports and guides for sliding of the pin relative to the members and for rotation of the members relative to the pin when installing the door latch construction on the door.

35 5. In a latch structure, an outer member, a handle fulcrumed thereto, an inner member, a bolt pivoted thereto, said outer and inner members being mounted on a door or the like and a member interposed between the handle and the bolt and extending at substantially right angles relative to the faces of the door, said handle and bolt being rotatable relative to said last mentioned member whereby the handle may be used to actuate the bolt when the inner member is mounted to project its bolt in any one of a variety of directions and the outer member is mounted to project its handle in any one of a variety of directions.

50 6. The combination of a door, a jamb, inside and outside members and a connecting operating pin, the inside member having a swinging retractible bolt which has a portion which engages said jamb and an operating portion engaging the inner end of said operating pin, a spring arranged to normally extend said bolt to locking position with relation to said jamb, said outside member having a stop and a fulcrumed handle normally held against said stop by said spring and provided with a finger which moves toward the door when the handle is pulled away from the door, whereby inward motion is transmitted through the operating pin to the swinging bolt of the inside member.

7. The combination of a jamb and a door with inside and outside members and a connecting operating pin, said inside member having a swinging retractible bolt which has a portion which engages said jamb and an operating portion engaging the inner end of said operating pin, a spring arranged to normally extend said bolt to locking position with relation to said jamb and to thereby extend said pin outwardly whereby when the operating pin is pushed inwardly the swinging bolt is retracted.

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