Oct. 13, 1953 T. L. D. LYNXWILER 2,655,027

DOOR LATCH

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Fig. 1.

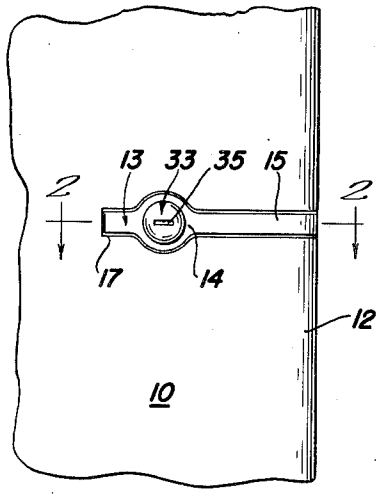


Fig. 3.

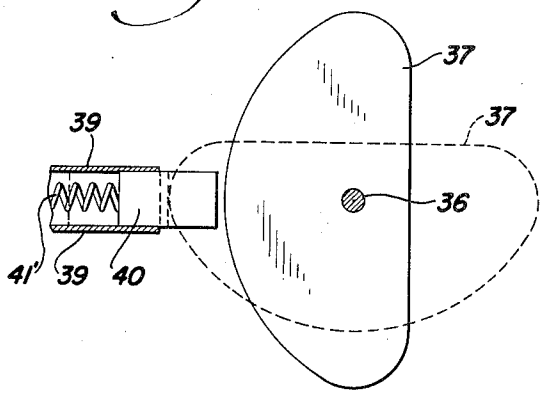
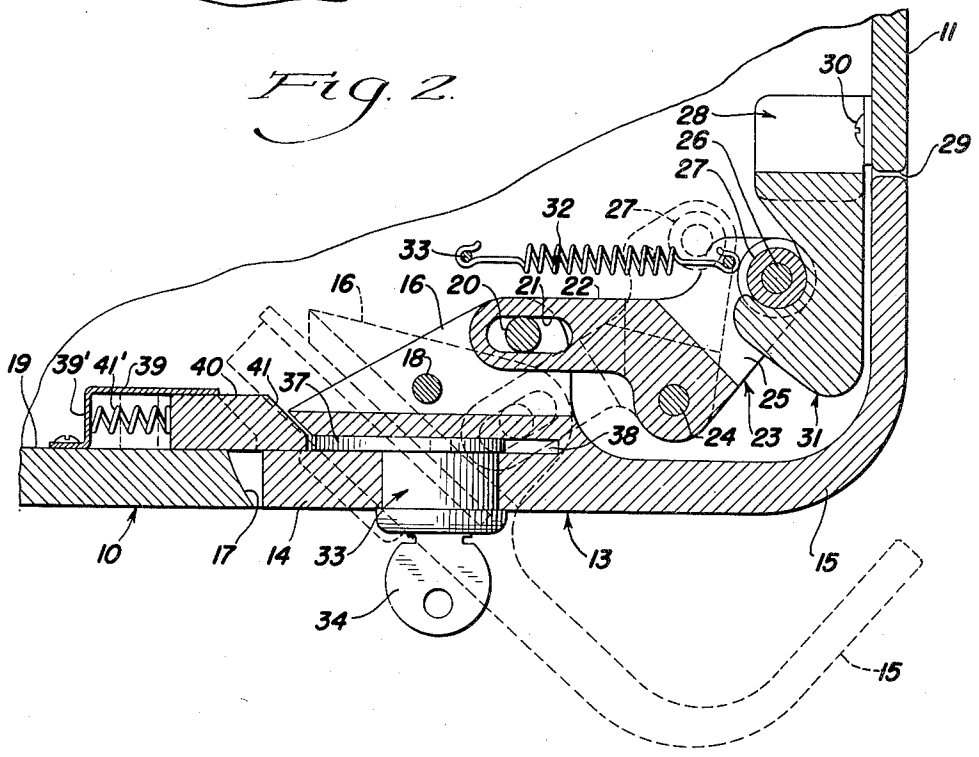


Fig. 2.



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DOOR LATCH

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8 Claims. (Cl. 70—208)

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This invention relates to devices for securing doors in closed position and more particularly to a door latch of a type suitable for use, for example, on the door of a refrigerated cabinet or the like.

An object of the invention is to provide a door latch which, when moved to latching position, will produce a strong clamping action drawing the door into tightly closed position.

Another object of the invention is to provide in a door latch of the above character, a simple and reliable means for locking the same in latched position.

A further object of the invention is to provide a door latch of the aforesaid kind having, as an integral part thereof, a member which may be disposed in a position flush with the exterior surface of the door when the latch is in latching position, and which will be automatically exposed to serve as a door handle upon the unlocking of said latch.

Other objects and advantages of the invention will be apparent from the following description of a preferred embodiment thereof, taken in connection with the accompanying drawing, in which:

Fig. 1 is a fragmentary elevational view of the front of a refrigerated cabinet or the like showing a door latch of my invention mounted in a door on the cabinet, said latch being shown in its latching or closed position;

Fig. 2 is an enlarged sectional view, taken substantially on the line 2—2 in Fig. 1, showing in solid lines the position of the parts of the latch when the latter is locked to hold the door closed, and showing in broken lines the position of the parts when said latch is unlocked; and

Fig. 3 is a detailed elevational view showing the shape of a rotatable cam which serves to move a spring-loaded bolt to releasing position to unlock the latch.

In the drawing the numeral 10 indicates a door which is mounted, as by hinges (not shown), upon the front of a cabinet or the like having a side 11. Said door may be of the type commonly used on refrigerators and refrigerated cabinets, for example, and may have rounded side edges 12 which add to the appearance of the cabinet when the door is closed.

Flush with the external surface of the door 10 is a handle member, shown generally at 13, which comprises a body portion 14, from one side of which extends a handle 15 which may be of a shape conforming to the rounded edge 12 of the door. A flange 16 is formed on the inner side of the body portion 14 and extends horizontally inwardly therefrom. The handle member is disposed within a slot 17 provided therefor in the door and is pivotally mounted therein by means of a pivot post 18 which is fixed in a vertical position, in any suitable manner, to an inner surface 19 of said door and extends upwardly through a central portion of the flange 16.

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A pivot pin 20 is fixed on the upper surface of the flange 16 and is adapted to ride in a slot 21 in a leg 22 of a catch member shown generally at 23. Said catch member is pivotally mounted upon a pivot post 24 which is fixed firmly, in any desired manner, upon the inner surface 19 of the door. A leg 25 on the catch member 23 has a pin 26 fixed thereon adjacent an extremity thereof and a roller 27 is mounted on the pin.

A strike member 28 is mounted upon the inner surface of the side 11 adjacent a front edge 29 thereof, as by a plurality of bolts 30 threaded into said side. A hook portion 31 is formed on the forward side of said strike and extends forward to a position opposite that of the catch member 23 when the door 10 is in the closed position shown in the drawing. As will be seen in Fig. 2, the hook portion 31 is adapted to be engaged by the roller 27 on the leg 25 of the catch member 23. A tension spring 32 is attached at one of its ends to the leg 25 on the catch member 23 adjacent the roller 27 and is fastened at its other end to a pin 33 which is fixed in any suitable manner to the door 10. The spring 32 tends to rotate the catch member 23 in a counter-clockwise direction about the pivot post 24, as seen in Fig. 2.

A cylinder-type lock of a well-known construction, shown generally at 33, is mounted in the body portion 14 of the handle member 13 and is rotatable as by a key 34 which may be inserted into a keyhole 35 in said lock. Fixed upon the inner end of a rotatable portion 36 (Fig. 3) of said cylinder lock is a cam 37 which is disposed within a slot 38 provided therefor in the body portion 14 of the actuating member 13.

To the left of the body portion 14 of the handle member 13, as seen in Fig. 2, a guide frame 39 is fixed horizontally on the inner surface 19 of the door on a level with said body portion. A bolt 40 having a beveled outer edge 41 is supported by the guide frame and is arranged to be moved therein in reciprocating motion. A compression spring 41' is disposed in the guide frame between an inner end 39' thereof and the inner end of the bolt 40, thus tending to move the bolt to the right, as seen in Fig. 2, to cause said bolt to protrude from the guide frame and occupy a position immediately behind the body portion 14 of the handle member 13 and opposite the cam 37.

The position of the parts of the above-described device, when the door is closed and latched, is shown by the solid lines in Fig. 2. In this position the bolt 40 protrudes from the guide frame 39 to the above-described position immediately behind the body portion 14 of the handle member 13 and prevents the latter from being pivoted about the pivot post 18. The handle member is thus retained in its locked position in which the handle 15 of said member is disposed in the slot 17 in the door in a position flush with the external surface of the door, and the catch member 23 is held with the roller 27 in engagement with the hook portion 31 of the strike 28 to hold the door in closed position.

To open the door 10, the key 34 is inserted into the keyhole 35 and the cylinder lock 33 is turned. Turning of the lock rotates the cam 37 to the position shown by the broken lines in Fig. 3 wherein said cam engages the outermost end of the bolt 40, and depresses the same into the frame 39 against the compression spring 41'. When the cam 37 has moved the bolt 40 to a position clear of the adjacent end of the body portion 14 of the handle member 13, the latter is free to pivot, whereupon the force of the tension spring 32 will pivot the catch member 23, in a counter-clockwise direction, to the position shown by the broken lines in Fig. 2, to disengage the roller 27 from the hook portion 31 of the strike 28 and release the door. Pivotation of the catch member 23 about the pivot post 24 will pivot the handle member 13 in a clockwise direction (as seen in Fig. 2) about the pivot post 18 to the position shown by the broken lines, wherein the handle 15 will be exposed and may serve in the normal capacity of a handle for the manipulation of the door. As soon as the handle 15 has been exposed as aforesaid, the key 34 may be further turned in the lock 33 to return the cam 37 to its normal position, shown by the solid outline thereof in Fig. 3, whereupon said key may be removed from the lock, if desired.

To close and lock the door said door is first moved to closed position and the handle 15 is then pressed inwardly toward the door to pivot the handle member 13 about the pivot post 18 in a counter-clockwise direction. The edge of the body portion 14 engages the beveled surface 41 of the bolt 40 to depress the latter to allow the returning movement of the handle member. Through the articulation of the catch member 23 with the handle member 13, the returning movement of the latter pivots the catch member in a clockwise direction to re-engage the roller 27 with the hook portion 31 of the strike 28. As said roller engages said hook portion 31, it will be seen that by reason of the pin-and-slot connection between the members 16 and 22 and the leverage resulting from the distance between the pivot points 18 and 24 thereof continued movement of the handle 15 toward its normal locked position flush with the surface of the door will exert a strong clamping action between the parts of the device and the hook portion 31 of the strike, thereby drawing the door into a tightly closed position. This feature of my device is one of the objects of the invention and its advantage, when employed on the door of a refrigerator or the like, for example, will be evident to those acquainted with the art.

When the handle 15 has been returned to its position flush with the surface of the door 10, the end of the body portion 14 of the handle member 13 will have cleared the bolt 40 and the latter,

due to the force of the compression spring 41', will snap outwardly to its locking position behind the said body position, whereupon all of the parts will have been returned to their normal locking positions and the door 10 will be held tightly closed.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, for it will be apparent that various changes may be made in the form and construction of the device of my invention without departing from the spirit and scope of the invention.

I claim:

1. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door; a catch member articulately connected to said handle member and pivotally mounted on said door, said catch member being moved into clamping engagement with a strike on the cabinet in the pivotation of said handle member to locking position, thereby holding said door in tightly closed position, a bolt movably mounted on said door and engageable with said handle member to retain the latter in said locking position; a rotatable cam on said handle member engageable with said bolt for disengaging the latter from said handle member; and biasing means operable to pivot said handle member from said locking position upon disengagement of said bolt therefrom to thereupon disengage said catch member from said strike and thereby unlatch said door.

2. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door; a catch member articulately connected to said handle member and pivotally mounted on said door, said catch member being moved into clamping engagement with a strike on the cabinet in the pivotation of said handle member to locking position, thereby holding said door in tightly closed position; a bolt movably mounted on said door and engageable with said handle member to retain the latter in said locking position; a rotatable lock in said handle member; a cam operated by said lock and engageable with said bolt for disengaging the latter from said handle member; and biasing means operable to pivot said handle member from said locking position upon disengagement of said bolt therefrom to thereupon disengage said catch member from said strike and thereby unlatch said door.

3. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door; a catch member articulately connected to said handle member and pivotally mounted on said door, said catch member being moved into clamping engagement with a strike on the cabinet in the pivotation of said handle member to locking position, thereby holding said door in tightly closed position; a bolt movably mounted on said door and engageable with said handle member to retain the latter in said locking position; a rotatable cam on said handle member engageable with said bolt for disengaging the latter from said handle member; and spring means operatable to pivot said handle member from said locking position upon disengagement of said bolt therefrom, thereby disengaging said catch member from said strike and unlatching said door.

4. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door and having an inwardly extending flange thereon; a catch member pivotally mounted at another point on the door and having a leg portion articulately connected to said flange by a

pin-and-slot connection, said catch member being movable into engagement with a strike on the cabinet by pivotal movement of the handle member, the pivot points of said handle member and said catch and the connection between said handle flange and said leg portion of the catch being so related that said handle member has a further motion after engagement of the catch with the strike to thereby firmly clamp the catch into the strike and hold the door in tightly closed position; a lock for holding said catch and handle members in locked position, said lock including a slidable bolt; a cam operable by the lock to cause movement of said bolt to unlocking position when the lock is unlocked, said handle being then movable to unlocked position and said bolt being movable back to locking position if said cam has been returned to the position occupied by it when the lock is locked; and means independent of said cam and operable by the handle upon movement thereof to locked position for temporarily moving said bolt to its unlocking position to provide clearance for the handle member in its movement to said locked position, the bolt being thereafter again movable to its locking position.

5. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door and having an inwardly extending flange thereon; a catch member pivotally mounted at another point on the door and having a leg portion articulately connected to said flange by a pin-and-slot connection, said catch member being movable in one direction into engagement with a strike on the cabinet by pivotal movement of the handle member in the opposite direction, the pivot points of said handle member and said catch and the connection between said handle flange and said leg portion of the catch being so related that said handle member has a further motion after engagement of the catch with the strike to thereby firmly clamp the catch into the strike and hold the door in tightly closed position; a lock for holding said catch and handle members locked in closed position; and means normally tending to move said members to unlocked position whereby they are moved to such position upon unlocking of said lock, the handle in the latter position being projected from the door whereby it may be grasped for opening the door.

6. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door and having an inwardly extending flange thereon, said handle member when in closed position being flush with the external surface of the door; a catch member pivotally mounted at another point on the door and having a leg portion articulately connected to said flange by a pin-and-slot connection, said catch member being movable into engagement with a strike on the cabinet by pivotal movement of the handle member, the pivot points of said handle member and said catch and the connection between said handle flange and said leg portion of the catch being so related that said handle member has a further motion after engagement of the catch with the strike to thereby firmly clamp the catch into the strike and hold the door in tightly closed

position; a lock for holding said catch and handle members locked in closed position; and means normally tending to move said members to unlocked position whereby they are moved to such position upon unlocking of the lock.

7. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door and having an inwardly extending flange thereon; a catch member pivotally mounted at another point on the door and having a leg portion articulately connected to said flange by a pin-and-slot connection, said catch member being movable into engagement with a strike on the cabinet by pivotal movement of the handle member, the pivot points of said handle member and said catch and the connection between said handle flange and said leg portion of the catch being so related that said handle member has a further motion after engagement of the catch with the strike to thereby firmly clamp the catch into the strike and hold the door in tightly closed position; a bolt movably mounted on said door and engageable with said handle member to retain it and said catch member locked in said closed position; means for moving said bolt to unlocking position; and means normally tending to move said members to unlocked position whereby they are moved to such position upon such movement of said bolt.

8. A door latch for a cabinet, comprising: a handle member pivotally mounted on said door and having an inwardly extending flange thereon; a catch member pivotally mounted at another point on the door and having a leg portion articulately connected to said flange by a pin-and-slot connection, said catch member being movable into engagement with a strike on the cabinet by pivotal movement of the handle member, the pivot points of said handle member and said catch and the connection between said handle flange and said leg portion of the catch being so related that said handle member has a further motion after engagement of the catch with the strike to thereby firmly clamp the catch into the strike and hold the door in tightly closed position; a bolt movably mounted on said door and engageable with said handle member to retain it and said catch member locked in said closed position; a spring normally urging said bolt to handle-engaging position; and means normally tending to move said handle and catch members to unlocked position upon unlocking movement of said bolt.

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