A. F. WINTERS AND B. R. CRAMPTON.

LATCH.

APPLICATION FILED DEC. 7, 1920.

1,385,102. Patented July 19, 1921.

2 SHEETS—SHEET 1.

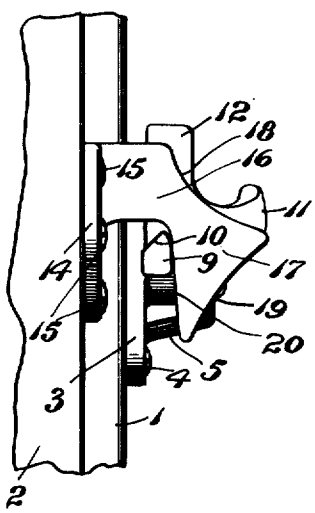


Fig. 2.

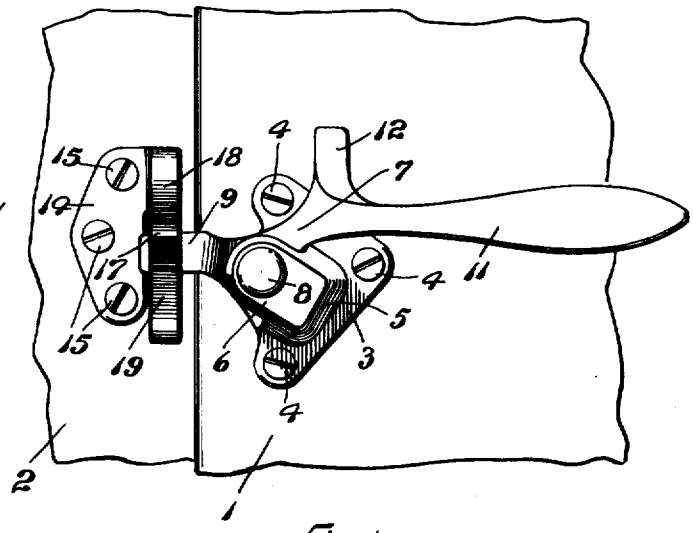


Fig. 1.

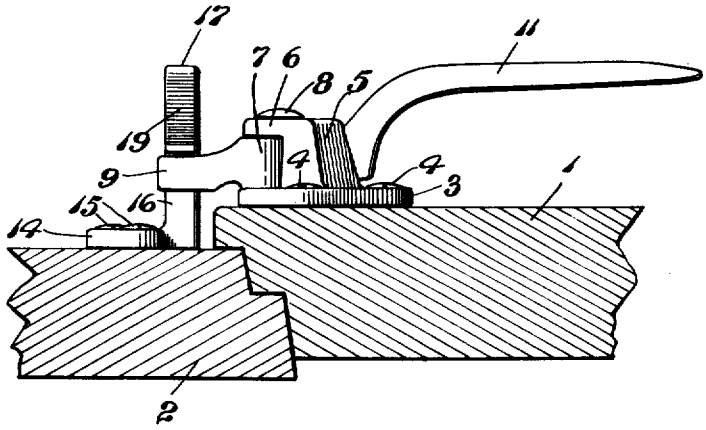


Fig. 3.

Inventors

Alexander F. Winters

Basil R. Crampton

By Frank E. Liverance, Jr.

Attorney

A. F. WINTERS AND B. R. CRAMPTON.

LATCH.

APPLICATION FILED DEC. 7, 1920.

1,385,102.

Patented July 19, 1921.

2 SHEETS—SHEET 2.

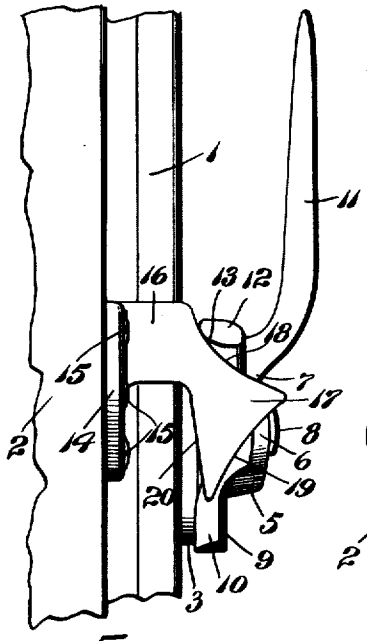


Fig. 5.

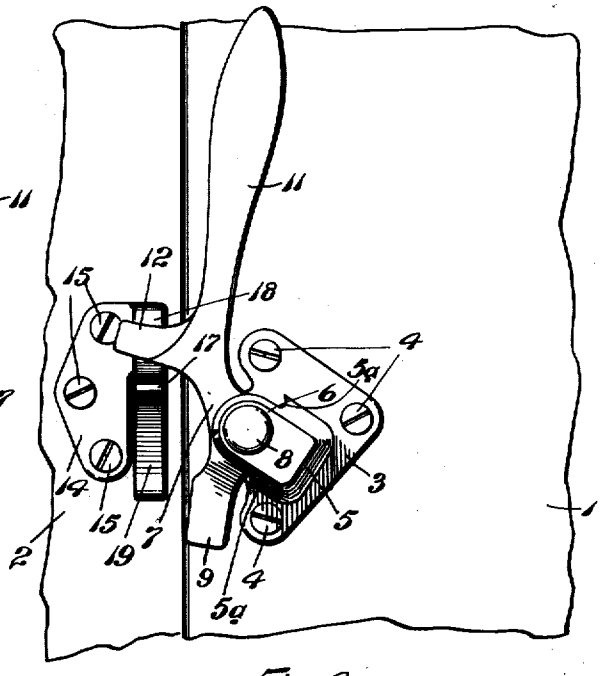


Fig. 4.

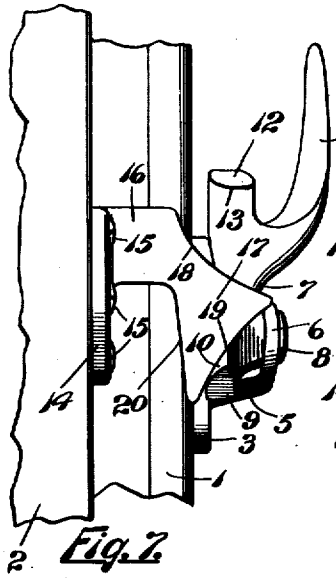


Fig. 7.

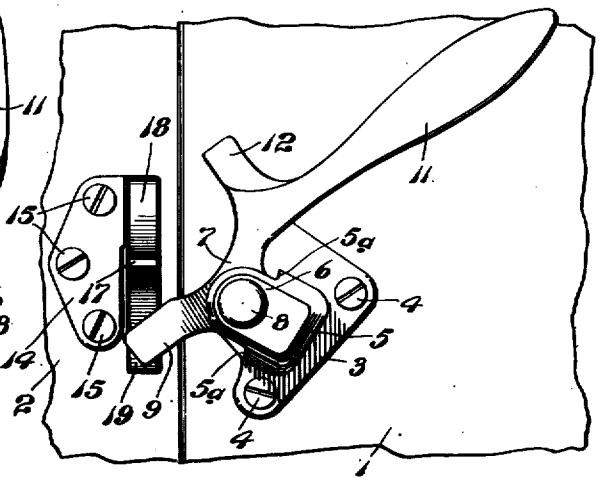


Fig. 6.

Inventors

Alexander F. Winters

Basil R. Crampton

By Frank E. Liverance, Jr.

Attorney

UNITED STATES PATENT OFFICE.

ALEXANDER F. WINTERS AND BASIL R. CRAMPTON, OF GRAND RAPIDS, MICHIGAN.

LATCH.

1,385,102. Specification of Letters Patent. Patented July 19, 1921.

Application filed December 7, 1920. Serial No. 428,891.

To all whom it may concern:

Be it known that we, ALEXANDER F. WINTERS and BASIL R. CRAMPTON, citizens of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Latches; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a latch of the swinging lever type, particularly adapted for use on refrigerators though applicable in many other relations where a door is to be closed and held in closed position. The swinging lever latch, or as it is better known, the Condit latch, is pivotally connected at one end to the door jamb or casing, allowing the door to be opened when the latch is thrown to an upper vertical position, and coming down across the meeting edges of the casing and door when swung to horizontal position, engaging with a cam member on the door to wedge the door tightly shut. This latch is a very serviceable latch but is relatively hard to operate due to its attachment to the casing instead of the door, and the same is liable to drop to horizontal position in which case the door cannot be closed without first raising the lever to upper vertical position while, many times, the door is inadvertently swung toward closed position and against the lever in its horizontal position with injury either to the lever or door or both. In the present invention, it is a primary object and purpose to provide a latch which may be pivotally connected to the door and which is automatically operated to engage with a retaining member or keeper fixed on the door casing when the door is closed irrespective of the vertical or horizontal position of the latch lever, working as well in the one case as the other. A further object of the invention is to construct a latch of few parts, whereby it may be economically made and which will be durable and efficient in service. Other objects and purposes will appear as understanding of the invention is had from the following description, taken in connection with the accompanying drawings, in which,

Figure 1 is a front elevation showing the latch in closed position and holding a door closed.

Fig. 2 is a side elevation thereof.

Fig. 3 is an under plan view of the latch, the door and adjacent portion of the casing therefor being in section.

Fig. 4 is a view similar to Fig. 1 showing the door approaching closed position with the swinging lever in vertical relation to the door.

Fig. 5 is a side elevation thereof.

Fig. 6 is a front elevation showing the action on the swinging lever as the door approaches closed position after said lever has been in horizontal position, and

Fig. 7 is a side view thereof.

Like reference characters refer to like parts in the different figures of the drawings.

The door 1 and the adjacent portion of the casing 2 against which the free vertical edge of the door comes in closing are shown fragmentarily, only enough being shown to disclose the attachment of the lever and keeper thereto. The lever is carried by the door. A base 3, attached to the door by screws 4 or equivalent connecting means has an integral outstanding post 5 from which, at the outer end an arm 6 extends over and paralleling the base. The lever 7 is placed between said arm and the base and a pivot pin 8 passed through the same, pivotally mounting the lever at a point between its ends. An arm 9 forming a part of the lever extends from the pivot and is adapted to cross the meeting edges of the door and casing when the door is closed and the lever in horizontal position, this arm passing under the keeper attached to the door casing. The under side of the arm 9 is formed at an angle as indicated at 10 the purpose of which will later appear.

In the opposite direction the lever extends from the pivot and is formed into a handle 11 set out a distance from the door to allow the passage of the fingers of the operator between it and the door. A short distance from the pivot an arm 12 is formed integral with the lever, being located substantially at right angles to the arm 9. The under side of arm 12 when the lever is vertically positioned is formed with a rounded cam surface 13, as shown, the purpose of which will also appear later.

The keeper comprises a base 14 attached to the casing 2 by screws 15 or like fastening means from which a post 16 extends outwardly for a short distance terminating in a

head 17 which is extended downwardly for a distance below the lower edge of the post. The head on its outer sides is formed with two curved surfaces 18 and 19 which come to a point substantially at the front and between the upper and lower ends of said head, while on its inner side it is cut upwardly and inwardly at a slight angle to the vertical, forming a wedging cam 20, as shown.

The latch lever may be thrown to upper position, as shown in Fig. 4, being stopped from going beyond such position by engagement of the arm 9 with the lower shoulder 5^a made by post 5. It may also be carried to a horizontal position, being likewise stopped when it reaches such position by the upper shoulder 5^a. When the door is moved toward closing position with the lever vertically located, the cam side 13 of arm 12 strikes against the curved upper side 18 of head 17, causing the lever to be automatically swung toward the horizontal, and bringing the arm 9 into place so as to pass under the lower point of the keeper head so that it may engage at its outer side against the wedging cam side 20 of the head. It is apparent that by giving the end of handle 11 a downward movement, the door will be wedged tightly shut as the arm 9 moves upwardly and against the incline 20. To open the door it is merely necessary to grasp handle 11 and turn it to upper position, thus releasing the door, and the door may be opened at the same time by pulling outwardly on the handle after arm 9 has disconnected from the keeper.

If the lever has dropped to horizontal position while the door is open, the closure of the door and engagement of the lever with the keeper is accomplished by merely swinging the door shut, in which case, as shown in Figs. 6 and 7, the arm 9 strikes with its inclined cam side 10 against the lower curved side 19 of the head 17 of the keeper, causing the handle to be automatically turned toward vertical position. This movement continues until the arm 9 passes by the lower point of the keeper head 17 or, as usually occurs, the arm 12 comes into contact with the head at the upper side 18, whereupon the lever is actuated so as to bring the arm 9 under the depending portion of the keeper, the same as before described when closing the door with the lever in vertical position. In any case, the latch lever engages with the latch keeper when the door is closed irrespective of the position of the lever. This is a feature of merit in the invention and one of particular value from a practical standpoint when the latch is used on refrigerators.

This latch construction is very simple, consisting of but three parts and a pivot pin, all of which may be readily cast from metal or formed with proper dies from sheet metal. The mounting of the lever on the door is of value as use of one hand only is necessary for unlatching and drawing the door open. The ability to close the door and latch it automatically, irrespective of the position of the latch lever insures against injury to the latch or door and also insures that the door will be latched when it is swung shut. All of these features combined in the latch structure make it one of exceptional merit.

We claim:

1. In combination, a door and a casing therefor, a keeper attached to the casing comprising a base, an outstanding post and a head at the outer portion of the post, said head depending below the post and formed with upper and lower curved outer sides coming substantially to a point and with an inner upwardly and inwardly inclined side, a member attached to the door comprising a base, an integral outstanding post projecting from the base and a laterally extending arm at the upper end of the post paralleling the base, and a latch lever pivotally mounted between its ends between the said arm and base of said member, said lever having one arm formed with an under cam side extending from the pivot and adapted to be engaged under the depending portion of the keeper, a handle portion extending in the opposite direction from the pivot and another arm projecting from the handle portion a distance from the pivot and lying substantially at right angles to the first arm of the lever and likewise being formed with an inner cam side, substantially as and for the purposes described.

2. In combination, a door and a casing therefor, a keeper attached to the casing including an outer head spaced from the casing and formed with upper and lower curved outer sides coming substantially to a point and with an inner upwardly and inwardly inclined side, a member secured to the door, and a latch lever pivotally mounted between its ends on said member, said lever having one arm extended from the pivot adapted to ride against the lower outer side of the keeper head when the door is closed with the lever in horizontal position to automatically turn the lever to bring said arm back of the head, a handle portion extending in the opposite direction from said pivot and a second arm projecting from the handle portion at an angle to the first arm and adapted to ride against the upper outer side of the keeper when the door is closed with the lever positioned vertically to throw the lever to horizontal position and automatically engage the first arm with the keeper back of said head, substantially as described.

3. In combination with a door and casing therefor, of a keeper attached to the casing and a latch lever pivotally connected to the

door and engageable with the keeper to hold the door in closed position, of means on the keeper and means on the latch lever to engage with the keeper on the outer sides thereof to swing the lever into engagement with the keeper at the inner side thereof when the door is closed with the lever occupying either a vertical or a horizontal position, substantially as described.

4. In combination with a door and casing therefor, of a keeper attached to the casing and a latch lever pivotally connected to the door and engageable with the keeper to hold the door in closed position, of two arms on the latch lever one of which is engaged with an outer portion of the keeper when the door is moved to closing position to swing the lever from a vertical position to a horizontal position and engage the other arm under the keeper, and the other of which is engaged with a different outer portion of the keeper when the door is moved to closing position and the lever is horizontal to turn the lever upwardly toward vertical position or until said other arm passes under and engages with the keeper to hold the door closed, substantially as described.

5. In a latch of the character described, a supporting member adapted to be attached to a door, and a latch lever pivotally mounted between its ends thereon, said lever including one arm extending from the pivot, a handle portion extending in the opposite direction from the pivot, and a second arm extending from the handle portion adjacent the pivot and in a direction substantially at right angles to the first arm, substantially as described.

6. A latch containing the elements in combination defined in claim 5, said arms on their inner sides being formed with cam surfaces, substantially as described.

7. In combination, a door and a casing therefor, a keeper attached to the casing, a latch lever pivotally mounted on the door between its ends, one end of the lever being formed into an operating handle and the other into a keeper engaging arm, a second arm projecting from the handle portion of the lever a short distance from its pivot and at an angle to the first arm, said keeper being formed at its outer sides for engagement with the respective arms when the lever is in horizontal and vertical positions, respectively, as the door is closed, to automatically operate the lever so that it will engage under the keeper when the door is entirely closed, substantially as described.

In testimony whereof we affix our signatures.

ALEXANDER F. WINTERS.
BASIL R. CRAMPTON.

DISCLAIMER

1,385,102.—*Alexander F. Winters* and *Basil R. Crampton*, Grand Rapids, Mich. LATCH. Patent dated July 19, 1921. Disclaimer filed October 24, 1929, by the patentees.

Hereby enter this disclaimer to that part of the claims in said specification which are in the following words, to wit:

"5. In a latch of the character described, a supporting member adapted to be attached to a door, and a latch lever pivotally mounted between its ends thereon, said lever including one arm extending from the pivot, a handle portion extending in the opposite direction from the pivot, and a second arm extending from the handle portion adjacent right angles to the first arm, substantially as described.

"6. A latch containing the elements in combination defined in claim 5, said arms on their inner sides being formed with cam surfaces, substantially as described."

[*Official Gazette November 12, 1929.*]