Oct. 17, 1933 G. H. LELAND 1,930,760

COMBINED CLOSURE OPERATOR AND LATCH

Filed Dec. 19, 1929 2 Sheets-Sheet 1

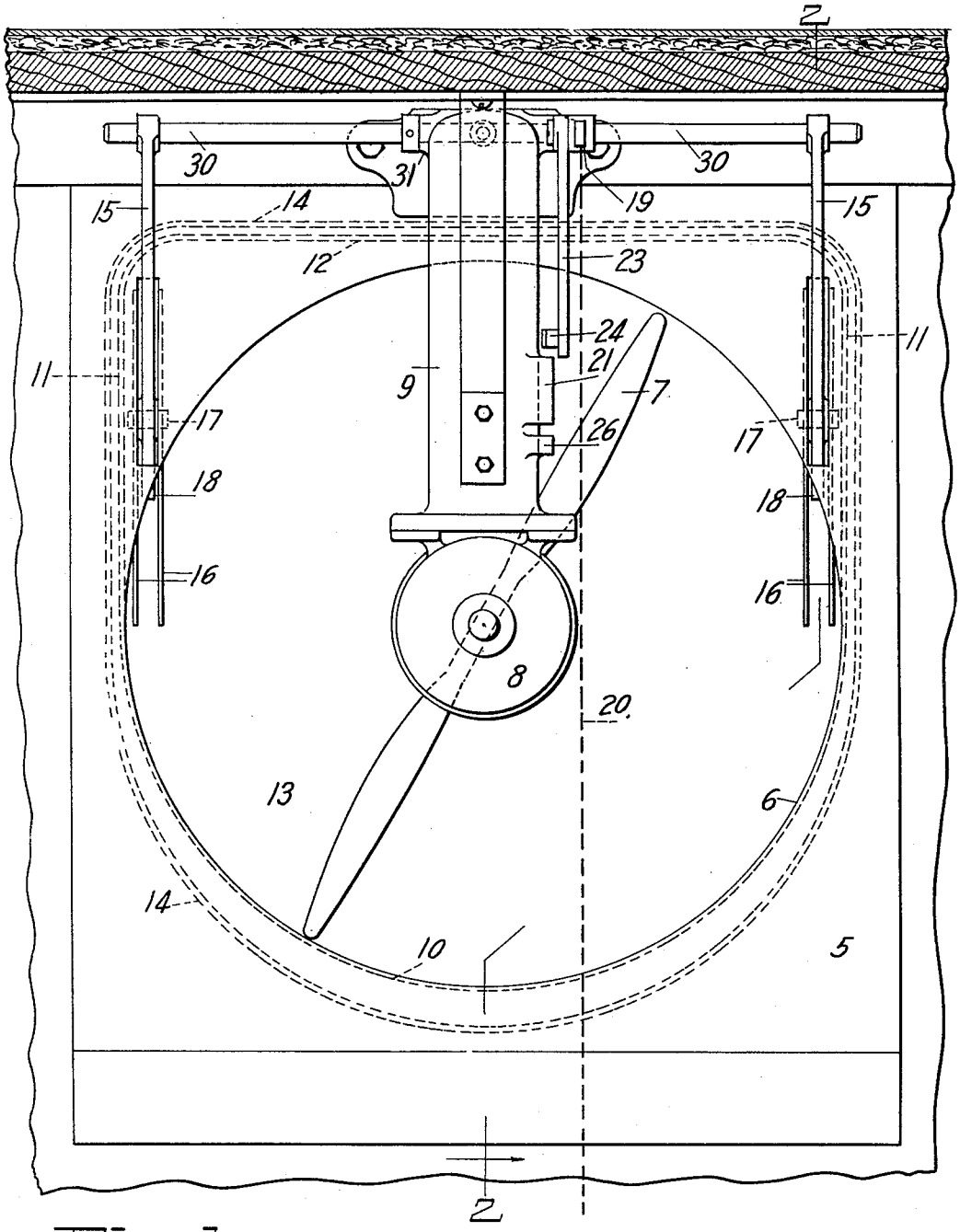


Fig. 1

INVENTOR.
GEORGE H. LELAND.
By
ATTORNEY.

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Fig. 2.

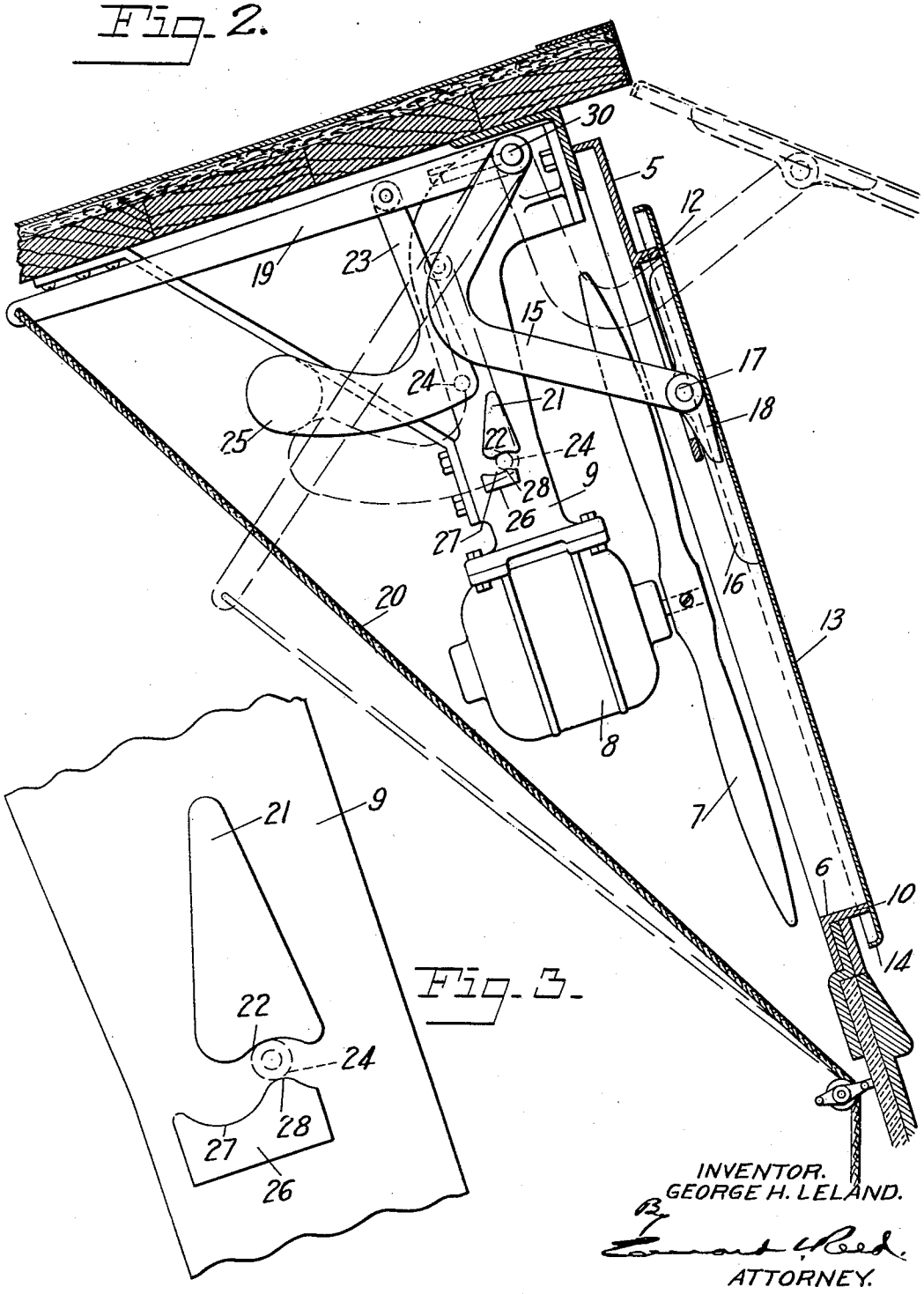


Fig. 3.

INVENTOR.
GEORGE H. LELAND.
By Edmund C. Reed.
ATTORNEY.

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UNITED STATES PATENT OFFICE

1,930,760

COMBINED CLOSURE OPERATOR AND LATCH

George H. Leland, Dayton, Ohio, assignor of one-half to The Leland Electric Company, a corporation of Ohio

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Serial No. 415,210

11 Claims. (Cl. 268—99)

This invention relates to a ventilator for buildings or the like and more particularly to a device for retaining a closure in its open position with relation to the ventilating opening and for releasing said closure to permit the same to return to its closed position.

One object of the invention is to provide a simple efficient and easily operated device for controlling the position of the closure.

A further object of the invention is to provide a retaining device which will automatically lock the closure in its open position when the actuating device is moved in one direction and will be released by a further movement of the actuating device in the same direction to permit the closure to move to its closed position.

Other objects of the invention will appear as the device is described in detail.

In the accompanying drawings Fig. 1 is a rear elevation of a ventilator embodying my invention showing the same installed in a building; Fig. 2 is a side elevation of such a ventilator, partly in section; and Fig. 3 is a detail view of the keeper and guide.

In these drawings I have illustrated one embodiment of the invention but it will be understood that this particular embodiment has been chosen for the purpose of illustration only and that the device may take various forms without departing from the spirit of the invention.

In that embodiment here illustrated I have shown the ventilator as installed in a building of the saw-tooth type. Mounted in the upright wall of this building is a frame or plate 5 having therein a ventilating opening 6. This opening is preferably circular in shape to accommodate it to an exhaust fan 7 which, as here shown, is mounted on the shaft of a motor 8 which is carried by a bracket 9 rigidly secured to the building above the opening and extending downwardly to a point in line with the opening. The frame 5 has an outwardly extending flange 10 the lower portion of which conforms to the shape of the adjacent portion of the opening 6 and the side portions of which extend upwardly from the respective sides of the opening in parallel relation and are connected at their upper ends by a transverse portion 12 which is spaced a short distance above the opening. The opening is provided with a closure 13 which corresponds in shape to the flange 6, 11 and 12, but is slightly larger than that flange and has about its edge an inwardly extending flange 14, which overlaps the flange surrounding the opening but is spaced therefrom. This closure is carried by L-shaped arms 15, pivotally mounted above the opening and so arranged that their movement about their common axis will move the closure outwardly and upwardly, to the position shown in dotted lines in Fig. 2. When, as in the present instance, the closure is formed of sheet metal I prefer to provide it with reinforcing ribs 16, there being in the present instance a pair of such ribs adjacent to each side of the closure. The ends of the supporting arms 15 extend between the ribs of the respective pairs and are secured thereto by pins 17. Each arm has a toe 18 to engage the closure and limit the relative pivotal movement of the arms and the closure. A suitable actuating lever 19 is connected with the arms 15 to actuate the same and move the closure to its open position. Obviously when the actuating lever is released the weight of the closure will return it to its closed position. In the present instance, the actuating lever 19 and the arms 15 are rigidly secured to a shaft 30 mounted in a bearing 31 carried by the bracket 9. The actuating lever may be provided with any suitable means for operating the same, such as as a pull cord 20 which extends to a point where it may be easily grasped and operated.

Mounted in a fixed position below the actuating lever 19 is a keeper 21 which is here shown as having upwardly converging edges and as having a recess 22 in the lower edge thereof. This keeper may be mounted on any suitable support but I have here shown it as carried by and formed integral with the motor supporting bracket 9. Pivotally mounted on the actuating lever 19 is a locking member 23 which is shown in the form of a freely swinging arm having near its lower end a laterally extending stud or pin 24 to engage the keeper. The locking member 23 is provided with means for imparting transverse movement thereto with relation to the keeper. In the present construction, it has at its lower end a weighted arm 25 which extends in a direction away from the keeper 21. The locking member is so arranged so that when the actuating lever is moved downwardly to open the closure the stud 24 will engage the adjacent side of the keeper 21 and will be slightly deflected from its normal position and when the stud passes the lower edge of the keeper the locking member will be moved transversely to the keeper, by the weighted arm 25, to position the stud beneath the keeper. Arranged below and spaced from the lower edge of the keeper is a device for guiding the stud 24 into the recess 22. This device in the present instance consists of a lug 26, also formed integral with the

bracket 9, and having one end extending beyond the side of the keeper into the path of the stud 24 as the locking member moves downwardly with the actuating lever. This outwardly extending portion of the lug has its upper edge recessed or curved, as shown at 27, and has near its other end an upwardly extending projection 28 arranged below the recess 22 in the keeper, the upper surface of the projection being rounded. When the actuating lever is moved downwardly the locking member 23 will be moved laterally toward the keeper due to the arc through which it moves and the stud 24 will engage the adjacent side of the keeper and will be slightly deflected against the action of the weighted arm 25. As the stud passes the lower edge of the keeper it will engage the lug 26 which will check its downward movement. The lug is spaced from the keeper a distance sufficient to permit the passage of the stud and the action of the weighted arm will move the stud into a position beneath the keeper and when the actuating lever is released the stud will ride up over the adjacent edge of the projection 28 into the recess 22 in the keeper, where it will be firmly seated and retained due to the pressure exerted on the actuating lever by the weight of the closure. It will be noted that when the stud 24 is seated in the recess in the keeper the locking member is held against further movement by the weighted arm 25 and is positioned at one side of its center of gravity. When the stud is in this position a further downward movement of the actuating lever will tend to move the stud out of the recess and the action of the weighted arm 25 will move the stud laterally beyond that side of the keeper opposite the side from which it entered the recess. The center of gravity of the locking member is such that when the stud is thus freed from the keeper it will move upward alongside of the keeper when the lever is released, thus permitting the closure to move to its closed position and restore the several parts to their initial positions.

While I have shown and described one embodiment of my invention I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, and an actuating lever connected with said closure, a keeper mounted below said lever and having a recess in the lower edge thereof, a locking member pivotally supported on said lever and having a part to engage said keeper, means acting on said locking member to move said part thereof laterally with relation to said keeper, and a device arranged below said keeper to guide said part of said locking member from one side of said keeper into said recess upon one operation of said actuating lever and to cause the said part to move from said recess to the other side of said keeper upon a succeeding operation of said lever.

2. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall and an actuating lever connected with said closure, a keeper mounted below said lever, a locking member pivotally mounted on said lever and having a part to engage said keeper, means acting on said locking member to move the same laterally with relation to said keeper, and a device arranged below said keeper, spaced therefrom and having a part extending beyond one side of said keeper into the path of said locking member when the latter moves downwardly with said lever, said device being shaped to guide said part into locking engagement with said keeper when said lever is released and to cause said part to move to the other side of said keeper upon the succeeding downward movement of said lever.

3. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, and an actuating lever connected with said closure, a keeper mounted below said lever and having a recess in the lower edge thereof, a locking member pivotally supported on said lever and having a stud to engage said keeper and move said locking member about its axis as said lever moves downwardly, means acting on said locking member to resist said movement and to restore said locking member to its normal position when said stud passes beyond said keeper, a device arranged below said keeper to engage said stud as it moves past said keeper, and guide the same into said recess when the pressure on said lever is relieved, said device being so arranged with relation to said keeper that a further downward pressure on said lever will cause said stud to move from said recess to that side of said keeper opposite the side from which it entered said recess.

4. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, and an actuating lever connected with said closure, a keeper mounted below said lever, a locking member pivotally mounted on said lever, a weighted arm carried by said member and extending in a direction away from said keeper, a stud carried by said locking member to engage said keeper, and a lug arranged below said keeper in the path of said stud to check the downward movement of said locking member and cause said stud to be moved into locking engagement with said keeper, said lug being so shaped that a further downward movement of said lever will cause said stud to move out of engagement with said keeper and beyond that side thereof opposite the side from which it moved into engagement with said keeper.

5. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, and an actuating lever connected with said closure, a keeper mounted below said lever, having its lateral edges converging upwardly and having a recess in the lower edge thereof, a lug arranged below and spaced from said keeper, extending beyond one side thereof and having a projection arranged in line with the recess in said keeper, a locking member pivotally mounted on said actuating lever, a weighted arm extending from said locking member in a direction away from said keeper, and a stud carried by said locking member and arranged to engage one side of said keeper as said actuating lever is moved downwardly and move said locking member against the action of said weighted arm and to engage said lug after it has cleared the lower end of said keeper, the projection on said lug being so arranged that when said lever is released said stud will be guided into the recess in said keeper and when further downward movement is imparted to said lever said stud will be moved out of said recess beyond that side of said keeper opposite the side from which it entered the recess.

6. In a ventilator comprising a closure movable

into and out of a position to close an opening in a wall, a bracket mounted on said wall on the inner side of said opening, a shaft journaled in said bracket above said opening, arms rigidly secured to said shaft, extending through said opening and connected with said closure, an actuating lever rigidly secured to said shaft, a locking member pivotally mounted on said actuating lever, a weighted arm connected with said locking member, a stud carried by said locking member, a keeper mounted on said bracket, having its lateral edges converging upwardly and so arranged that one edge thereof will be engaged by said stud when said actuating lever is moved downwardly, and a lug arranged beneath said keeper in the path of said stud to check the downward movement of said locking member and to guide said stud into a position beneath said keeper when said actuating lever is released, and so arranged with relation to said keeper that a further downward movement of said actuating lever will cause said stud to be moved beyond that side of said keeper opposite the side from which it moved beneath the same.

7. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, an actuating member connected with said closure, a keeper, a locking device connected with said actuating member for up and down movement thereby, supported normally above said keeper and mounted for swinging movement into and out of locking engagement with the lower edge of said keeper when said locking device has been moved downwardly, and means acting on said locking device to cause the same to swing from one side of said keeper into locking engagement with the lower edge thereof upon the initial operation of said actuating device and to swing out of locking engagement with said keeper to the other side thereof upon a subsequent operation of said actuating member.

8. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, an actuating member connected with said closure, a keeper mounted below said actuating member, a locking device connected with said actuating member for up and down movement thereby and for lateral movement with relation thereto, said locking device having a part movable into and out of locking engagement with the lower edge of said keeper by the lateral movement of said locking device, means acting on said locking device to cause said part to move into locking engagement with said lower edge of said keeper when said locking device is moved downwardly past said keeper on one side thereof, and a device arranged below said keeper to interrupt the downward movement of said locking device and to cause said part of said locking device to move out of engagement with said keeper toward the other side thereof when said locking device is again moved downwardly.

9. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, an actuating member connected with said closure, a keeper mounted below said actuating member, a locking device connected with said actuating member for downward movement thereby, said locking device having a part movable into and out of locking engagement with the lower edge of said keeper, means acting on said locking device to move the same laterally when said part thereof has been moved below said keeper, and a device arranged below said keeper in the path of said part of said locking device to guide the same from one side of said keeper into locking engagement with the lower edge thereof upon one movement of said actuating member and to guide said part of said locking device out of engagement with said keeper and beyond the other side of said keeper upon a subsequent operation of said actuating device.

10. In a ventilator comprising a closure movable into and out of a position to close an opening in a wall, and an actuating lever connected wtih said closure, a keeper mounted in a fixed position below said lever, a locking member pivotally suspended from said lever for swinging movement transversely to said keeper, said locking member having a part arranged to engage one side of said keeper when said lever is moved downwardly and cause the lower end of said locking member to lag behind the center of gravity of said locking member until said part has passed the lower edge of said keeper when said part will be moved by gravity beneath said keeper into a position in which it will engage said keeper and prevent the upward movement of said locking member, and a device cooperating with said keeper to guide said part of said locking member to the other side of said keeper when said lever is again moved downwardly.

11. In a ventilator comprising a closure movable into and out of a position to close an opening in said wall, and an actuating lever connected with said closure, a keeper mounted in a fixed position below said lever and having a recess in the lower edge thereof, a locking member pivotally suspended from said lever for swinging movement transversely to said keeper, said locking member having a part arranged to engage one side of said keeper when said locking member is moved downwardly and to cause the lower end of said locking member to lag behind the center of gravity of said locking member until said part has passed the lower edge of said keeper when said part will be moved by gravity beneath said keeper, means cooperating with said keeper to check the lateral movement of said part beneath said keeper, and cause said part to enter the recess in said keeper when said locking member is released for upward movement, said means being so arranged that a subsequent downward movement of said locking member will cause said part thereof to move out of said recess and beyond that side of said keeper opposite the side first engaged by said part.

GEORGE H. LELAND.