C. A. BLOMEEN.

DEVICE FOR OPENING AND CLOSING VENTILATORS.

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1,114,675.

Patented Oct. 20, 1914.

FIG. 1.

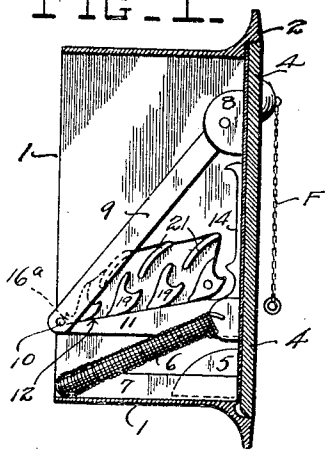


FIG. 2.

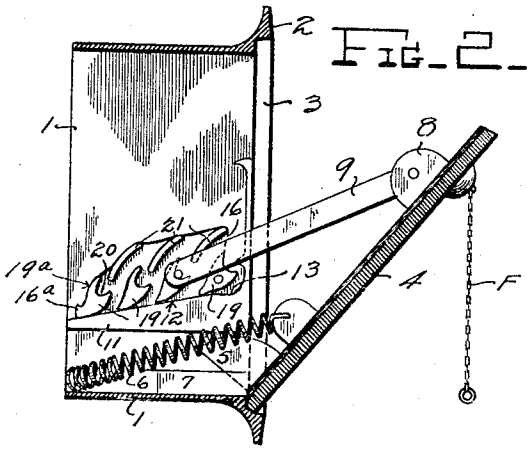


FIG. 3.

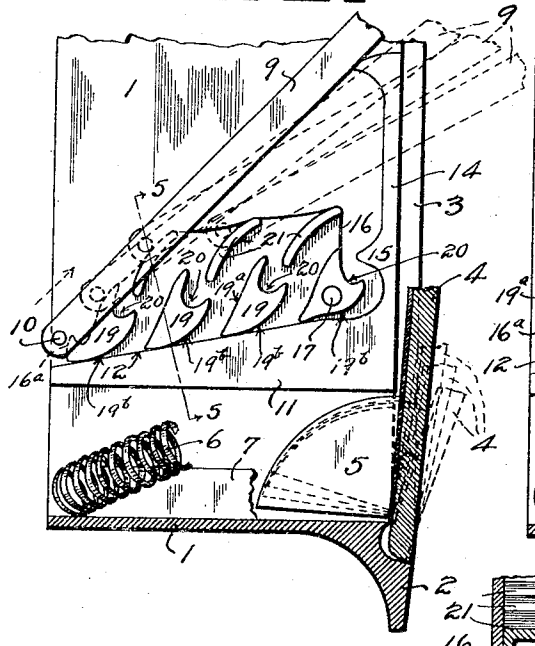


FIG. 4.

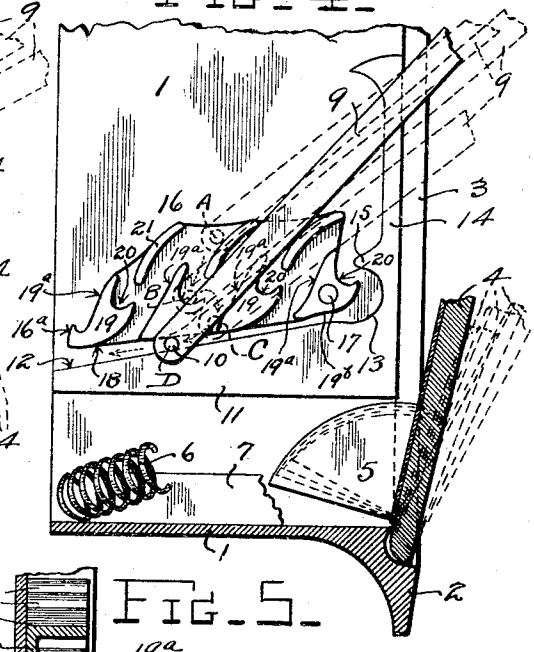
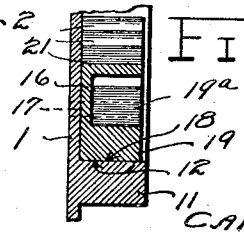


FIG. 5.



Witnesses

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DEVICE FOR OPENING AND CLOSING VENTILATORS.

1,114,675. Specification of Letters Patent. Patented Oct. 20, 1914.

Application filed August 26, 1913. Serial No. 786,739.

To all whom it may concern:

Be it known that I, CARL A. BLOMEEN, a subject of King Gustave V of Sweden, residing at Seattle, in the county of King and State of Washington, United States of America, have invented certain new and useful Improvements in Devices for Opening and Closing Ventilators, of which the following is a specification.

This invention relates to the subject of ventilators, and more particularly to a ventilator shutter that can be automatically locked in a selected open position and closed by successive pulls in the same direction.

The invention is applicable to ventilators for various purposes, but is of especial utility in connection with ventilators that are out of ordinary reach, because the same may be operated by a chain connection depending therefrom, and easily opened to the desired degree and be automatically retained in the open position.

The object of the invention is to provide a simple, durable and thoroughly practical device for accomplishing the result above referred to, possessing many features and advantages that will be more readily apparent as the nature of the invention is better understood.

With the above and other objects in view which will be more readily apparent as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings in which—

Figure 1 is a sectional view of the ventilator with the shutter closed, showing the application of the invention. Fig. 2 is a sectional view similar to Fig. 1 showing the shutter latched in an open position. Fig. 3 is an enlarged detail sectional view showing successive positions of the holding arm passing over the latch member. Fig. 4 is a view similar to Fig. 3 showing the holding arm released from the latch member and returning to normal position. Fig. 5 is a detail cross sectional view taken on the line 5—5 of the latch member, as shown in Fig. 3.

The embodiment of the invention disclosed by the accompanying drawing comprises a main ventilator casing 1 which is adapted to be in communication with any preferred type of ventilator flue, and having a face portion 2 provided with the door or opening 3. The said opening 3 is closed by the shutter 4 which is pivoted in the lower part of the face 2 of the casing, and carries on its lower portion the stop member 5. In order to hold the shutter 4 in and draw it to a closed position, the same is connected to the bottom wall of the frame 1 by a coil spring 6 which is engaged by an upstanding rib 7 integral with the lower wall of the casing. At one side and near the top of the shutter 4 the latter is provided with an integral projecting ear 8 to which is loosely pivoted a holding arm 9 having at its lowermost end a laterally projecting locking lug 10.

When the casing 1 is cast there is formed on one side wall thereof an inwardly projecting shoulder 11 whose upper face 12 is rearwardly inclined as clearly shown in the drawings. The forward part of said shoulder is curved as at 13, and has a vertically disposed portion 14 provided with a deflecting shoulder 15. A latch member designated in its entirety by the numeral 16 is pivoted as at 17 to the side wall of the frame 1 so that the bottom edge 18 thereof normally registers with the inclined surface 12 of the projecting shoulder 11. The said latch member 16 is formed with a plurality of tortuous channels which are formed by a series of spaced locking projections 19 having their upper portions provided with keeper notches 20. Above the projections 19 the latch member has a series of forwardly inclined concavo-convex guide flanges 21, the convex upper surface of each of which flanges directs the locking element riding thereon into the keeper notches 20 immediately below said flange. It will also be noted in connection with the guide flanges 21 and the locking projections 19 that the former are so arranged that their lower ends project below the uppermost edges of the locking projections. This arrangement causes the pin 10 when sliding down the convex back of the flange 21 upon the release of the pull on the shutter to be directed into one of the keeper notches 20, instead of passing on through the channel to the back 19^a of the next adjacent locking projection 19, in which latter case the pin would have no locking effect.

In view of the foregoing description of the several parts of the invention, it will be ob-

served in connection with Fig. 1 that when the shutter 4 is closed, the holding arm 9 having the laterally projecting locking stud 10 is resting at the lowermost end of the inclined surface 12 of the shoulder 11, and adjacent the first one of the keeper notches 20. Upon pulling the shutter 4 forward, the holding arm 9 is drawn forward also, and its locking lug 10 rides and rises upon the convexed end 16^a of the latch member. Upon clearing the top of this end, the lug 10 strikes against the rear surface 19^a of the first locking projection 19, and if the pull is relieved when the said lug 10 is in this position, the same will fall into the initial or first one of the keeper notches 20. However, upon a further pull the arm 9 will be drawn forward and the locking lug 10 will ride over the tops of the convex guide flanges 21 in succession as shown in Fig. 3 of the drawings. The instant the forward pull is relieved the lug 10 starts to slide down the convex surface of the particular guide flange 21 upon which it was resting at the time the pulling force ceased.

Referring to Fig. 4, and assuming that the lug 10 is resting upon the second forwardly inclined guide flange 21, as shown at A, the instant the pulling force is released as above referred to, the lug 10 will slide down the convex surface of the flange 21 and be guided into the particular keeper notch 20 which is directly under the said second guide flange 21. Thus, the shutter 4 is retained in an open position and the locking lug 10 is held in the notch 20 as shown at B.

If it is desired to release the shutter 4 so that the same may be closed, a slight pull is exerted thereupon by means of a chain or other pull element F. The arm 9 moving forward with the shutter 4 pulls the locking lug 10 out of the keeper notches 20 in which it has been resting so that it strikes against the rear surface 19^a of the next forward locking projection 19, as shown at C, and then by arresting the pull and permitting the spring 6 to exert its force, the lug 10 is guided by the surface 19^a to the inclined surface 12 of the shoulder 11. The lug is thus brought against the under surface 19^b of a locking projection and thus lifts the entire latch member 16 upon its pivot 17 so that the lug has a free passage to the ends of the latch member along the inclined surface 12, thus permitting the shutter 4 to be seated in the frame because of the contraction of the spring 6.

If the locking lug 10 of the holding arm 9 is in the position shown at B and the ventilator shutter 4 is open only part way, and it is desired to open it farther, the same may be accomplished by exerting a greater pull upon the shutter 4 than was previously exerted to send it back to its initial position. In this case the lug 10 rides over the rear surface 19^a of the next forward locking projection 19 and upon reaching the top thereof jumps across the channel and strikes against the next forwardly inclined convex guide flange 21 where it may be permitted to slide down into the next forward keeper notch 20 by releasing the pull on the shutter and thereby hold the said shutter 4 open wider than it was before. This same action is repeated for each one of the keeper notches 20, except for the final or greatest distance the shutter 4 may be opened where the shoulder 15 takes the place of a guide flange 21. Whether the lug 10 has ridden over the tops of all of the inclined guide flanges 21, or over the inclined rear surface 19^a of the last locking projection 19, it comes in contact with a tapered deflecting shoulder 15 which guides it into the last one of the series of keeper notches 20 thereby holding the shutter 4 extended to its farthest position. When the lug 10 is pulled out of the last one of the said keeper notches 20, it falls down into the curved position 13 of the shoulder 11 which directs it up against the surface 19^b of the last locking projection 19 which tilts the latch member 16 upon its pivot 17 as previously described and permits the lug 10 to slide along the inclined surface 12 back to its normal position.

From the foregoing description it is thought that the operation of the invention will be entirely clear.

I claim:

1. In a ventilator, the combination of a casing, a spring retracted shutter mounted therein, and a latching device including a latch member, and a holding member operated by the shutter, said holding member having a plurality of locking positions on the latch member and releasable from any one thereof by forward movement of the shutter for direct return to starting position without traversing or entering any of the other locking positions.

2. A latching device for ventilators comprising a spring retracted movable object having a single pull connection therewith, a latch member pivotally supported and provided with a succession of keeper elements and guideways leading to and from said keeper elements, a holding element connected with said movable object and carrying a locking lug adapted to be guided into any one of the keeper notches, by the movement of the shutter, and by other movement of the shutter adapted to be guided into another notch or returned to starting position.

3. In a ventilator, the combination of a casing, a spring retracted shutter pivotally mounted therein, an arm carrying a locking lug loosely pivoted to said shutter, and a latching device having a plurality of locking notches and guideways leading to and other guideways leading from said notches, the

said arm carrying the locking lug adapted to be directed into any of said notches and released therefrom for returning to starting position, or for engagement with other notches by the movement of the shutter.

4. In a ventilator, the combination of a casing, a spring retracted movable element mounted therein, and a latch member pivotally supported by said casing and provided with a series of independent spaced apart locking projections having keeper notches, a series of spaced apart guiding elements arranged above said locking projections and terminating short of said keeper sockets, and a holding element connected with said spring retracted movable element and carrying a locking lug adapted in one movement to ride successively from one guiding element to the other and to be guided downward by the latter into a keeper notch, and in its other movement adapted to be disengaged from said keeper notch and guided beneath said guide element for engagement with other keeper notches or to a position beneath and clear of the latch member.

5. In a ventilator, the combination of a ventilator casing, a spring retracted shutter pivotally mounted therein, a shoulder formed integral with one wall of the said ventilator casing, a latch member pivoted to said frame and normally resting upon said shoulder, said latch member having a series of keeper notches and a separate series of forwardly inclined convex guide flanges arranged above and terminating short of said retaining sockets, and a holding arm pivotally connected to the said ventilator shutter and movable therewith carrying a laterally projecting locking lug adapted to be guided into said receiving sockets by the said inclined guide flanges.

6. A latching device for ventilators and the like, comprising a spring retracted movable object having a single pull connection therewith, a latch member pivotally supported and provided with a succession of keeper elements and a succession of separate guiding elements arranged above and in alternating relation with said keeper elements, and a holding element connected with said movable object and carrying a locking lug adapted in one movement to ride successively from one guiding element to the other and to be guided downward by the latter into the respective keeper elements, and in its other movement adapted to be disengaged from said keeper notches and guided beneath said guide elements for engagement with other keeper notches or to a position beneath and clear of the latch member.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CARL A. BLOMEEN.

Witnesses:
THOS. A. HARRISON,
OLOF BERGSTROM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."