Aug. 14, 1923. 1,464,764

N. C. JENSEN

WIND REGULATED SHUTTER FOR WINDOWS

Filed May 8, 1922

Fig. 1

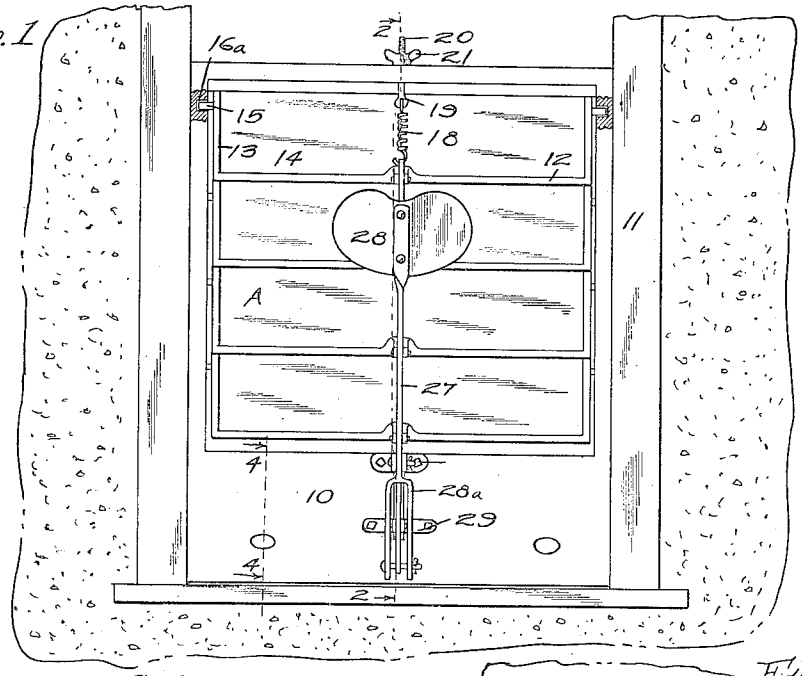


Fig. 2

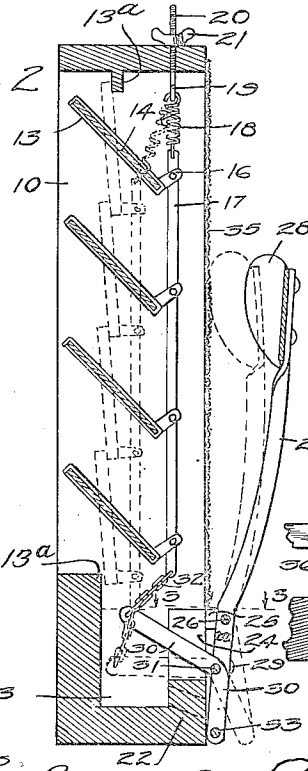


Fig. 3

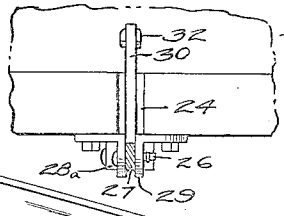
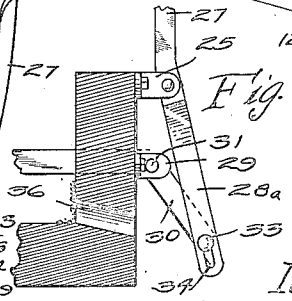


Fig. 5

Fig. 4



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UNITED STATES PATENT OFFICE.

NIELS C. JENSEN, OF FORT DODGE, IOWA.

WIND-REGULATED SHUTTER FOR WINDOWS.

Application filed May 8, 1922. Serial No. 559,360.

To all whom it may concern:

Be it known that I, NIELS C. JENSEN, a citizen of the United States, and a resident of Fort Dodge, in the county of Webster and State of Iowa, have invented a certain new and useful Wind-Regulated Shutter for Windows, of which the following is a specification.

An object of my invention is to provide a shutter for windows which will be automatically opened and closed by the action of the wind.

A further object is to provide such a shutter wherein an increase in the wind pressure will move the shutters toward closed position, in order that a window which is covered by the shutter may be left open and yet protected against excessive breezes.

A still further object is to provide such a device wherein the shutters will be automatically reopened when the wind pressure decreases.

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

Figure 1 is an exterior view of a portion of a window casing with my improved shutter installed therein.

Figure 2 is a sectional view through the shutter, taken on the line 2—2 of Figure 1.

Figure 3 is a view, partly in section, of a part of the device, taken on the line 3—3 of Figure 2.

Figure 4 is a sectional view of a portion of the device, taken on the line 4—4 of Figure 1; and

Figure 5 is a perspective view of one of the shutter sections.

My improved shutter is mounted in a casing 10, which may be made in different sizes to fit various sizes of windows. The casing 10 is designed to fit inside the ordinary window casing 11, on the outside of the window.

Mounted on the sides of the casing 10 are the shutter sections A. The sections A are composed, as shown in Figure 5, of the channel shaped frame members 12 which have the end members 13. Received in the frame members 12 are the flat blades 14. On the members 13 are the pins 15, which are received in the holes 16^a in the sides of the casing 12, thus pivotally mounting the sections A.

Stop members 13^a are designed to engage the lower edge of the bottom section and the upper edge of the top section, for limiting the movement of the sections toward closed position. The frame of each section is provided with stops 15^a, as shown in Figure 5, for engaging the lower edge of the adjacent section.

At the center of each frame member 12 is a yoke 16. A rod 17 is received between the sides of each yoke and is pivotally connected thereto. To the upper end of the rod 17 is attached a spring 18, which is held at its other end by a hook 19 having a threaded shank 20 which extends through an opening in the top of the casing 10 and is held in place by a thumb nut 21 threaded onto the shank 20.

It may be mentioned in this connection that the spring 18 serves to open the shutter sections A against the action of the closing mechanism, or wind actuated mechanism, which I will now describe.

The lower portion of the casing 10 is substantially channel shaped, as shown in Figure 2, and has the outer flange 22 and the space 23 forming the interior of the channel. At the center of the member 22 is a vertical slot 24.

On the exterior of the member 22, straddling the slot 24, is a yoke member 25. The yoke 25 serves to pivot, at 26, a vertical arm 27. The upper portion of the arm 27 is curved outwardly, as shown in Figure 2, and has at its end a vane 28.

The lower end of the arm 27 has the bifurcated portion 28^a. Below the yoke 25 is a similar yoke 29. A bell crank lever 30 is pivoted at its center, in the yoke 29, by a bolt 31. One arm of the lever 30 extends downwardly on the exterior of the casing 10, and the other arm extends inwardly through the slot 24 and upwardly at an angle as shown. This end of the lever is connected with the lower end of the rod 17 by a link 32.

The downwardly extending arm of the lever 30 is slidably and pivotally mounted in the end of the fork 28^a by means of a pin 33 which is received in notches 34 in the fork 28^a.

I will now describe the operation of the device herein illustrated. As the pressure of the wind against the vane 28 is increased, the arm 27 is forced inwardly and the bi-

furcated portion 28a moves outwardly. The bell crank lever 30 is swung on its pivot, and pulls the rod 17 downwardly, thus moving the sections A toward closed position against the action of the spring 18.

When the wind pressure decreases, the spring 18 will return the sections A toward their open position, forcing the arm 27 outwardly. Thus it will be seen that the positions assumed by the shutter are variable, according to the wind pressure. The stronger the wind, the farther closed will the shutter become.

A screen 35 may be placed on the outer edge of the casing 10, as shown in Figure 2. An opening 36 is provided in the member 22 for draining moisture which may collect in the interior 23 of the bottom of the casing 10.

Some changes may be made in the construction and arrangement of the various parts of my invention, without departing from the real spirit and purpose of my invention and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. A wind regulated shutter comprising a casing, shutter sections therein pivotally mounted near their ends, a shutter arm hingedly mounted on the exterior of the casing, said element comprising an arm pivoted near its lower end and a vane on its other end, a shutter rod connecting the sections, means for connecting the lower end of said arm with the shutter rod, said means comprising a bell crank lever mounted in the lower portion of the casing, one end of the bell crank lever being operatively connected with the lower end of the shutter arm and the other end of the bell crank lever being attached by means of a conecting link to the lower end of the shutter rod, a tension spring connecting the upper end of the shutter rod with the casing, and means for varying the tension on the spring, the parts being so arranged that the spring tends to move the shutter sections to open position and the wind actuated shutter arm tends to move the sections to closed position against the action of the spring.

2. A wind regulated shutter comprising a casing, shutter sections therein pivotally mounted near their ends, a shutter rod connecting the sections, a wind actuated element mounted on the exterior of the casing, said element comprising an arm mounted on a pivot, a vane on one end, means for operatively connecting the other end to the lower end of the shutter rod, the parts being so arranged that the action of the wind will move the arm and transmit motion through the connecting means to the shutter rod for moving the shutter sections to closed position, and a spring connecting the upper end of the shutter rod to the casing for tending to move the shutter sections to open position against the action of the wind actuated element.

3. A wind regulated shutter comprising a casing, shutter sections therein pivotally mounted near their ends, a shutter rod connecting the sections, a wind actuated element mounted on the exterior of the casing, said element comprising an arm mounted on a pivot, a vane on one end, means for operatively connecting the other end to the lower end of the shutter rod, the parts being so arranged that the action of the wind will move the arm and transmit motion through the connecting means to the shutter rod for moving the shutter sections to closed position, and resilient means tending to move the shutter sections to open position, whereby the action of the wind actuated element will be counteracted when the pressure against said element is decreased.

4. A wind regulated shutter comprising a casing, shutter sections therein pivotally mounted near their ends, a shutter rod connecting the sections, a wind actuated element mounted on the exterior of the casing, said element comprising an arm mounted on a pivot, a vane, one on end, means for operatively connecting the other end to the lower end of the shutter rod, and resilient means tending to move the shutter sections to open position, the parts being so arranged that the pressure of the wind will move the vane arm and transmit motion through the connecting means to the shutter rod for closing the shutter sections against the action of the resilient means, and the resilient means will automatically move the wind actuated element back against the pressure of the wind, when such is decreased.

Des Moines, Iowa, April 18, 1922.

NIELS C. JENSEN.