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Aug. 25, 1925. 1,550,813

A. J. JOHNSON

VENTILATING SHUTTER

Filed May 28, 1921 2 Sheets-Sheet 1

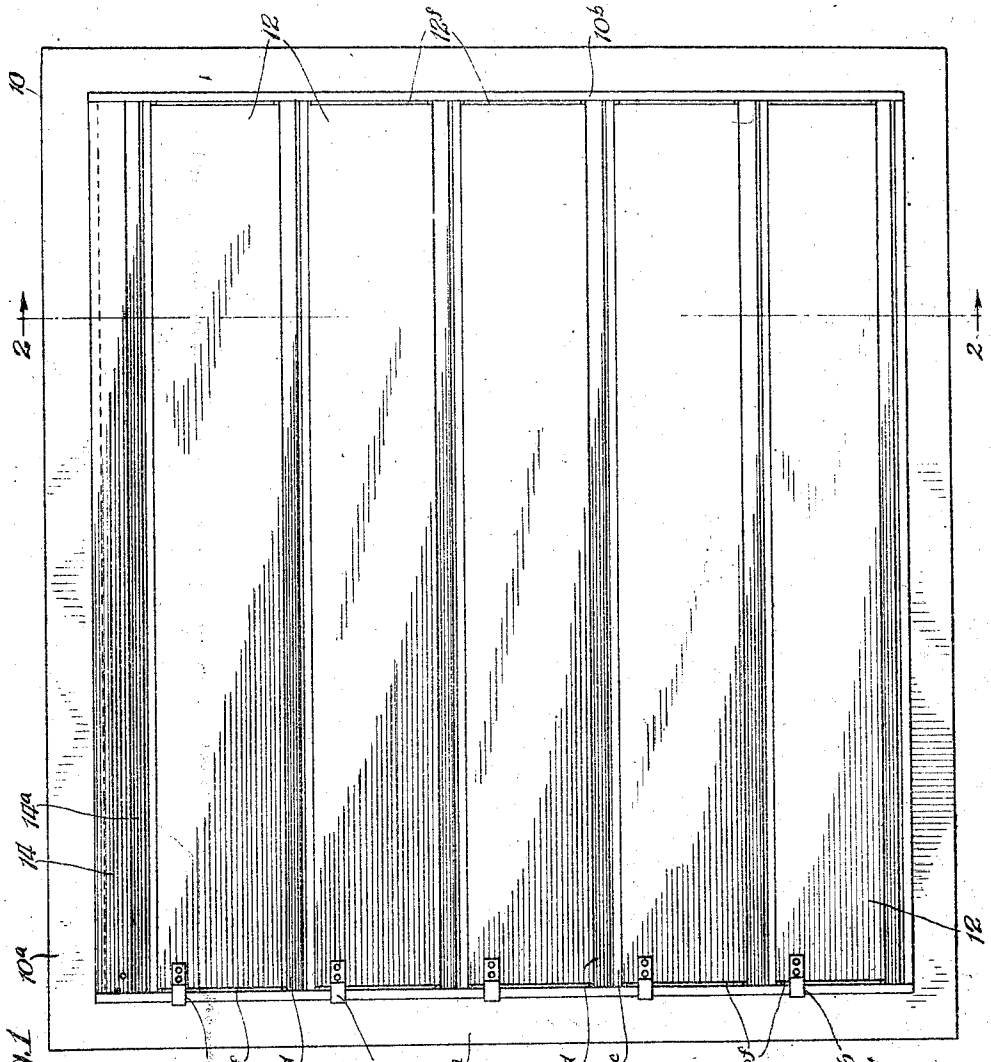


FIG. 1

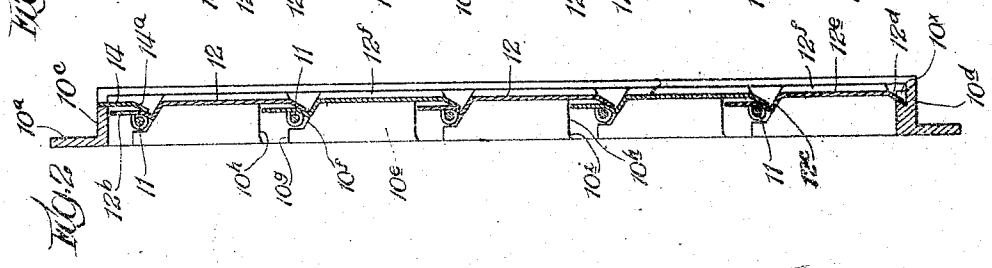


FIG. 2

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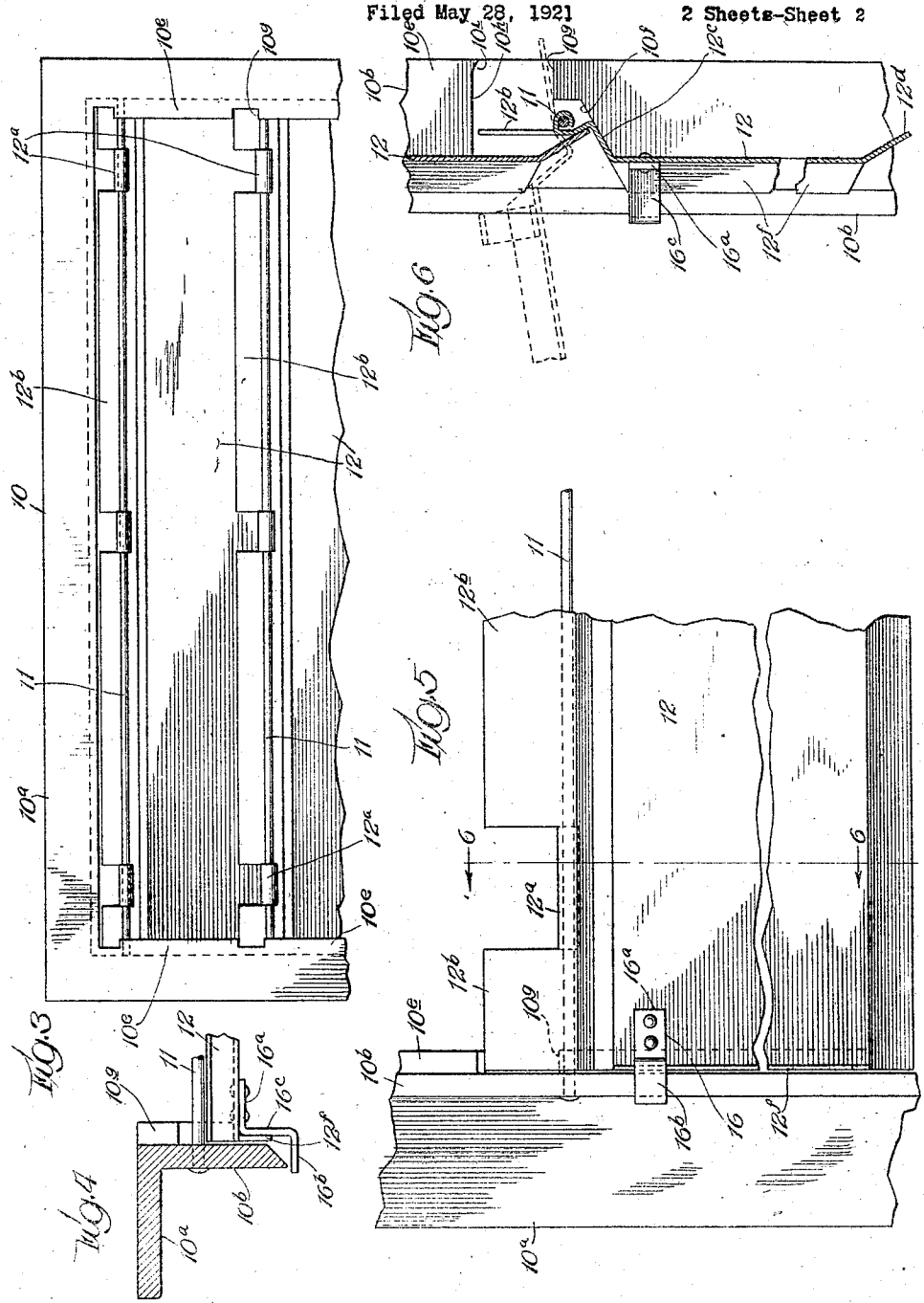
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VENTILATING SHUTTER

Filed May 28, 1921 2 Sheets-Sheet 2



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Patented Aug. 25, 1925. 1,550,813

UNITED STATES PATENT OFFICE.

ARTHUR J. JOHNSON, OF CHICAGO, ILLINOIS.

VENTILATING SHUTTER.

Application filed May 28, 1921. Serial No. 473,491.

To all whom it may concern:

Be it known that I, ARTHUR J. JOHNSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ventilating Shutters, of which the following is a specification.

This invention relates to improvements in ventilating shutters, and has for its object to provide a new and improved shutter especially adapted for use with a ventilating blower or exhaust fan, to permit egress of the air while preventing entrance of back currents from the outside.

Hitherto it has been found that in the use of an exhaust fan for ventilating or other purposes a counter current of air blowing against the exhaust current or across it affects the operation of the ventilating motor and is detrimental to the general ventilation effect.

The principal object of my invention is to prevent the entrance of such currents either beneath or at the ends of the swinging louvers.

Another object consists in the provision of new and improved means in such a shutter to limit the opening movement of the louvers.

These and other objects will be more fully set forth and described in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a front elevation of an embodiment of my shutter;

Fig. 2 is a vertical section, taken on the line 2—2 of Fig. 1;

Fig. 3 is a front elevation of a portion of the frame and shutter as viewed from the rear;

Fig. 4 is a horizontal section of a detail showing a louver stop;

Fig. 5 is a front elevation of a detail of a portion of the shutter, drawn to an enlarged scale and showing a portion of a single louver; and

Fig. 6 is a section on the line 6—6 of Fig. 5.

Like numerals refer to like elements throughout the drawings, in which—

10 designates generally the rectangular frame, cast preferably in a single piece. The frame is provided with a base flange 10^a, outwardly projecting side flanges 10^b, and similar top and bottom flanges 10^c and 10^d, respectively. At the inner face of each of the side flanges is provided a plurality of bosses 10^e, as shown in Fig. 2, for example. Each of these bosses is provided with an inclined seat 10^f having an offset rearwardly extending top 10^g. At the bottom, each of the bosses is formed with a substantially plane surface 10^h and a slightly curved rear surface 10^i—see Fig. 2. Extending across between the sides of the frame and the bosses are pintle rods 11.

A plurality of swinging louvers 12 are provided, each having knuckle portions partially cut away and bent around the pintle rods 11, the knuckle portions being indicated by numeral 12^a. The louvers are provided with vertical upstanding portions 12^b, between which knuckles 12^a extend, and below which the louvers are provided with a grooved or ribbed portion 12^c extending below and across the pintle rods. These ribs or grooves are so constructed as to seat upon the seats 10^f of the bosses when in closing position—see Fig. 2. Below the ribs the louvers are provided with portions 12^e which terminate in inwardly bent lower edges 12^d. At the sides of the portions 12^e the louvers are bent outwardly, as indicated by numeral 12^f. When in closing position the body portions 12^e of the louvers lie within the flanges 10^b of the frame 10, the lower edge of each of the shutters above the lowermost resting in the ribbed or grooved portion 12^c of the louver next below, thereby providing a considerable overlap, as illustrated in Fig. 2. The bottom flange 10^d of the frame is recessed across its front, as indicated by numeral 10^x, (see Fig. 2) to provide a seat for the lower edge of the lowermost louver. The outwardly turned side edges 12^f also lie within the side flanges 10^b when in closing position, for a purpose to be hereinafter described.

Depending from the top flange 10^c is the fixed plate 14 having its lower edge 14^a inwardly bent, as shown in Fig. 2, to overlap and coact with the uppermost louver.

The louvers are so mounted and the portions 12^b so constructed with respect to the tops 10^g of the bosses that at substantially horizontal or full open position the portions 12^b will contact with the tops, thereby serving to limit the opening movement of the louvers. Since these louvers are preferably constructed of light metal, such as aluminum, I find it desirable sometimes to pro-

vide additional movement-limiting means, and for this purpose I provide stop members 16, which are substantially Z-shaped, having offset parallel flanges 16^a and 16^b attached by the web 16^c. The flange 16^a is riveted or otherwise securely attached to the body of the louver 12, the flange 16^b then overlying the outwardly bent portion 12^f. When the louvers swing outwardly to maximum open position the flanges 16^b will strike the outer edge of the side flange 10^b of the frame 10, as illustrated in dotted lines in Fig. 6.

In the use of my improved shutter, it will be apparent that when an exhaust fan or the like is in actuation the exhaust air will move the shutters to open position about the pintle rods, permitting egress of the exhaust air. When a counter current of air, such as a gust of wind or the like, strikes the louvers, they will be permitted to move toward closing position, preventing the ingress of such counter current with its detrimental effect upon the operating motor. It will be apparent that as the shutters approach closed position the overlap will prevent the entrance of such currents from the outside, while permitting a substantial outflow of exhaust air. Should the louvers be in substantially closed position it will be practically impossible for cross currents of air to find their way beneath the shutters, as the overlapping construction prevents direct entrance of such air. At the sides of the louvers, as they are suspended, the outwardly bent portions 12^f will serve to deflect away from the frame currents which might otherwise find their way beneath the sides of the shutters. This prevents the entrance of dust, dirt, or objectionable air currents while the motor is at rest. The plate 14 at the top permits the necessary pivotal movement of the uppermost louver while coacting with it to prevent entrance of undesirable air currents. Similarly, the groove 10^x at the bottom permits seating of the lowermost louver to accomplish a like result.

The stops 16 function to prevent the imposition of an undue strain or shock upon the portions 12^b of the shutter, and thereby prevent their bending or distortion, thus permitting the use of a light metal for the shutters, which is desirable as affording less resistance to the out-flowing air.

It will be obvious that my invention is susceptible of modification, and I do not wish to be restricted to the form shown and described herein, except as defined in the appended claims.

I claim:—

1. A device of the class described comprising a frame, louvers pivotally mounted between the sides of said frame, the latter being provided with bosses at the rear of said louvers, said louvers lying against said bosses when in closing position, said louvers being each provided with a rib extending between the sides thereof, said bosses being recessed to accommodate said rib when said louvers are in closing position.

2. In a device of the class described, comprising a frame, louvers pivotally mounted between the sides of said frame, the latter being provided with spaced bosses located at the rear of said louvers, said louvers being provided with portions extending upwardly from their pivotal axes, said portions being movable between said bosses and contactable therewith in full open position.

3. A device of the class described comprising an enclosing frame with spaced sides, pivoted louvers extending between such sides and mounted for pivotal movement about a transverse axis, each of said louvers being provided with a transverse groove on its upper face beneath the axis of pivotal movement, and with an inwardly turned lower edge, such louvers being mounted to freely swing to and from closing position and further being mounted in such wise that the lower edge of each shutter will lie in the transverse groove of the next shutter below when in closing position, whereby pressure from outside upon one shutter will be transmitted to the next lower shutter below the axis of pivotal movement to increase the closing force acting thereon.

In testimony whereof, I have subscribed my name.

ARTHUR J. JOHNSON.