

Sept. 8, 1942.

R. J. SEATOR

2,295,239

EXHAUST FAN DAMPER OPERATING AUXILIARY

Filed Jan. 20, 1942

2 Sheets-Sheet 1

Fig. 1.

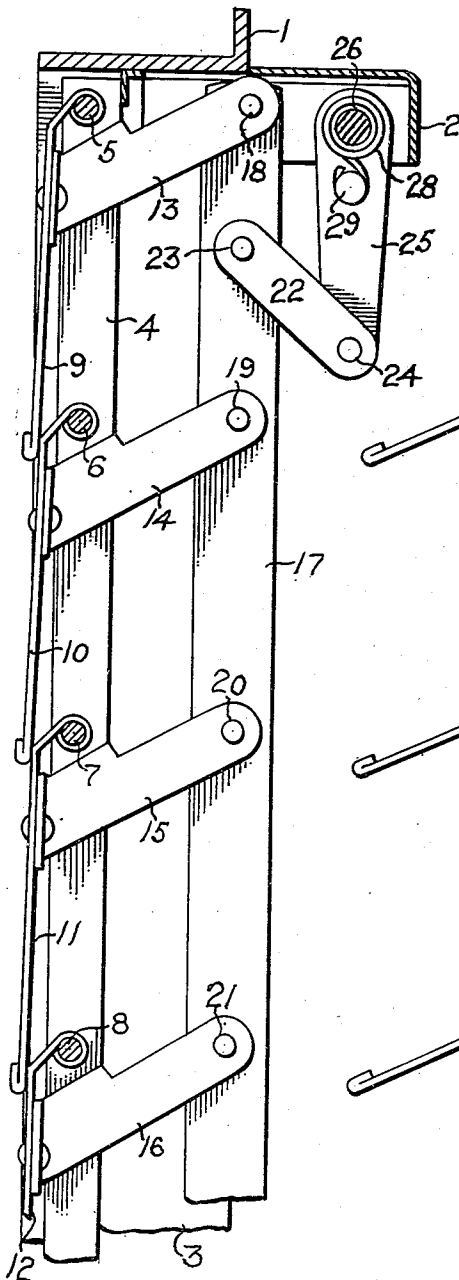
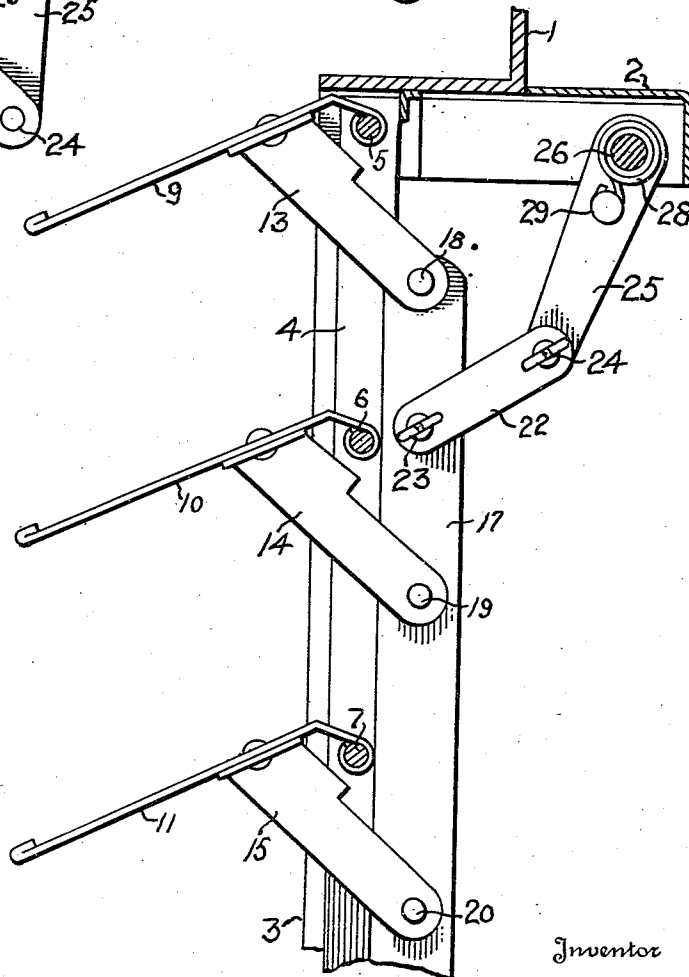


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

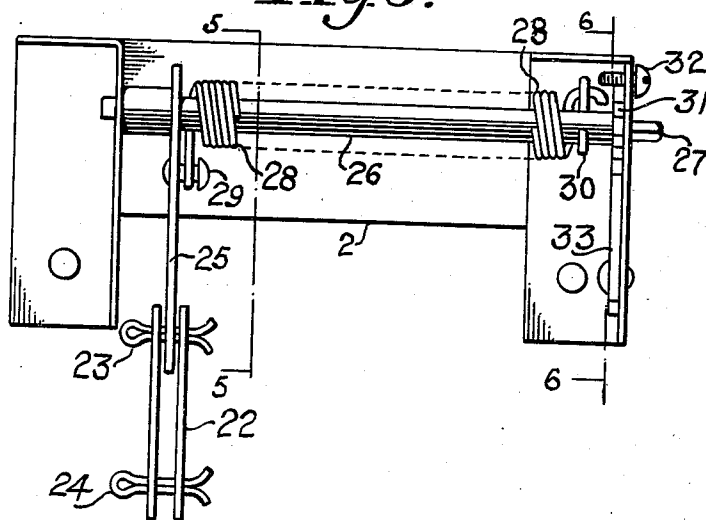


Fig. 4.

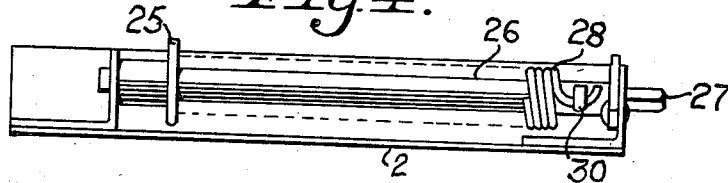


Fig. 5.

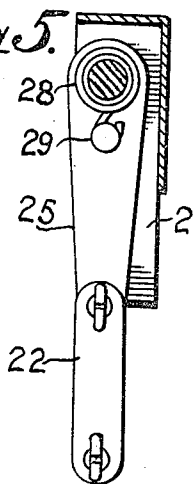
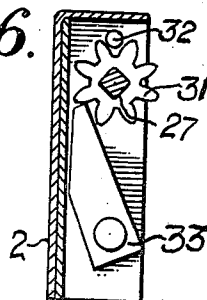


Fig. 6.



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EXHAUST FAN DAMPER OPERATING
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Application January 20, 1942, Serial No. 427,515

4 Claims. (Cl. 98—116)

This invention relates to mechanism which may be termed for purposes of explanation and description an exhaust fan damper operating auxiliary.

The object of the invention is to produce an improved special construction for back draft dampers or for register louvers using galvanized iron instead of aluminum of which those elements are usually made and to render the heavier louvers or vanes more efficiently operable than is customarily the result in present constructions of like character with which this applicant is acquainted. As may be stated, the primary object of this invention is to overcome the added weight of the iron louvers over aluminum in such a way that the flow of air will cause the louvers to open wide, also when the air is shut off a reverse action takes place causing the louvers or vanes to close tightly and to remain in that position until the fan is again started. The fan and operating devices used in connection with this invention form no feature of novelty or part of the invention and are not shown in the drawings of this application. Heretofore, the dampers employed for like purposes have been made of aluminum for the reason of lightness so that the air flow could readily actuate them. In substituting galvanized iron for aluminum some other force has to be added to assist the air in opening the louvers, and that is the result this invention attains.

Of the accompanying drawings

Fig. 1 represents a vertical sectional view of the upper portion of a register frame showing the construction of the operating devices and the louvers or vanes in their closed positions.

Fig. 2 is a partly sectional view similar to Fig. 1 showing the vanes in their raised positions.

Fig. 3 is a front view of the spring shaft support removed, showing the spring upon the shaft, the connections of the spring with the shaft and crank arm, and the locking screw.

Fig. 4 is a view from below of the parts shown in Fig. 3 showing the shaft partly turned and the connection of the spring therewith.

Fig. 5 is a vertical sectional view of the parts illustrated in Fig. 3 showing the crank arm and spring connection therewith, and the pivotal link on the crank arm. The section is taken on the line 5—5 of Fig. 3.

Fig. 6 represents a vertical section on the line 6—6 of Fig. 3 and shows the ratchet wheel engaged with the locking screw and pawl.

Throughout the drawings and description the same number is used to refer to the same part.

Considering Figs. 1 and 2 of the drawings, the register frame 1 has an inner upper addition 2 and side walls 3. In the frame is located a vertical bar or strip 4 forming bearings for carrying the rods 5, 6, 7, and 8, with which are attached the vanes 9, 10, 11 and 12 in Fig. 1. It will be noted that the vanes have branch pieces 13, 14, 15 and 16 secured thereto and extending at an angle with the vanes into the interior of the frame. A vertical operating bar 17 has suitable pivotal connections 18, 19, 20 and 21 with the branch pieces of the vanes. The operating bar 17 moves up and down and its movement is imparted by the connecting link 22 provided with a pivotal attachment 23 to the bar and a like connection 24 to the crank arm 25. The crank arm is loosely carried by the spring shaft 26, and it will be noted in Fig. 3 that the end of the spring shaft projects beyond the side of the inner upper addition 2, which is the bearing support for the spring shaft 26. The projecting end 27 of the shaft 26 is squared for the engagement with a key.

In Fig. 3 it will be observed that the spring 28 has one end connected with the pin 29 on the crank arm 25, and that the spring encircles the shaft and has its other end connected with a pin 30 which passes through the shaft.

As best shown in Fig. 6 the squared end 27 of the shaft carries on the inside of upper addition 2 a toothed wheel 31, and the wheel may be locked in position by the removable screw 32 and by the pawl 33. Any suitable ratchet devices may be employed in place of the lock screw and pawl.

In the operation, the intention is to accurately balance the weights of the vanes by means of the adjusted tension of the spring, so that the vanes will close fully as shown in Fig. 1, and open as shown in Fig. 2 as far as desired in view of the predetermined force of the air current passing through. When the adjustment is made for any particular condition the tension of the spring is controlled accordingly by taking out the lock screw and raising the pawl, which may be a spring piece of substantially the shape shown, and by means of a key turning the spring shaft. When the adjustment is reached the pawl is snapped into place and the screw turned in. The wheel is then locked against unauthorized displacement. The invention is not limited to the exact size or form of any element, and the mechanism as a whole is believed to be as simple and as adequate for the purposes intended as can be devised.

Having now described the invention, I claim:

1. In damper and vane operating mechanism, a frame, a vane pivotally supported by the frame, the vane having attached thereto an arm extending into the frame, the end of said arm in the frame having pivotally connected therewith a reciprocating operating bar, a crank arm in the frame having one end movably and pivotally connected with said operating bar, a spring shaft rotatively carried by the frame, said crank arm being loosely borne by the said shaft, a spring encircling the shaft and having one end connected with the shaft and one end connected with said crank arm, and means for adjustably securing the shaft in rotated positions whereby the tension of the spring applied to the shaft and crank arm may be controlled.

2. In damper and vane operating mechanism, a frame, a vane pivotally supported by the frame, the vane having attached thereto an arm extending into the frame, the end of said arm in the frame having pivotally connected therewith a reciprocating operating bar, a crank arm in the frame having one end movably and pivotally connected with said operating bar, a spring shaft rotatively carried by the frame, said crank arm being loosely borne by the said shaft, a spring encircling the shaft and having one end connected with the shaft and one end connected with said crank arm, a wheel with radiating teeth secured on the shaft, and a removable locking screw in the frame and arranged to engage the teeth of said wheel whereby the said shaft may be secured

in rotated positions and the tension of said spring applied to the shaft and crank arm controlled.

3. In combination, a pivoted vane, a crank arm provided with a connection with the vane whereby the movement of the end of the crank arm actuates the vane, a suitably supported revoluble spring shaft, said crank arm being loosely carried by the shaft, a coil spring on the shaft, said spring having one end connected with the shaft and one end connected with said crank arm, a member secured upon and rotating with the shaft, and a locking screw carried by the said shaft support and arranged to bear upon the said member and hold the shaft in rotated positions whereby the tension of the spring applied to said shaft and crank arm is controlled.

4. In combination, a pivoted vane, a crank arm provided with a connection with the vane whereby the movement of the end of the crank arm actuates the vane, a suitably supported revoluble spring shaft, said crank arm being loosely carried by the shaft, a coil spring on the shaft, said spring having one end connected with the shaft and one end connected with said crank arm, a member secured upon and rotating with the shaft and having radiating projections, and a locking screw and pawl carried by the shaft support and arranged to engage the projections of said member and hold the shaft in rotated positions whereby the tension of the spring applied to said shaft and crank arm is controlled.

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