

F. J. CROUCH.
Automatic-Ventilator.

No. 216,313.

Patented June 10, 1879.

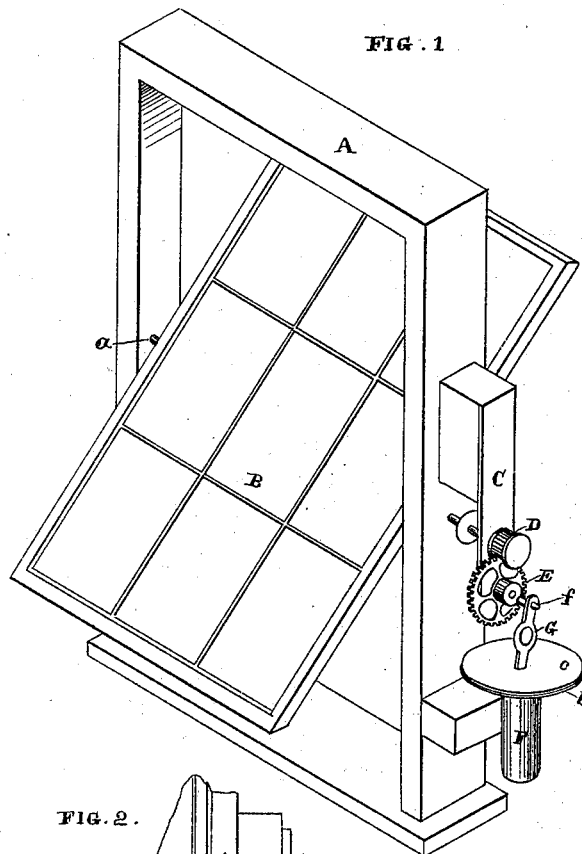
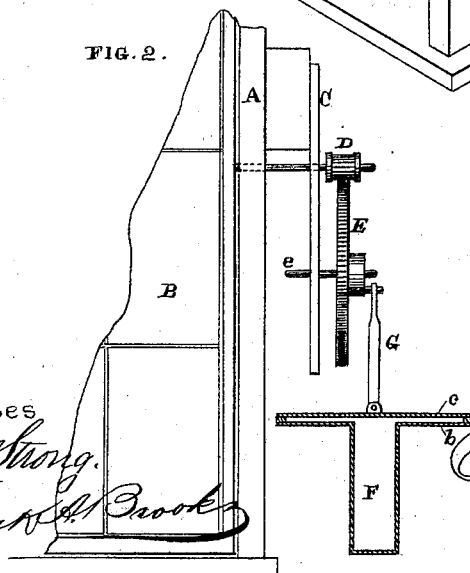


FIG. 2.



Witnesses

Geo. H. Strong.

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UNITED STATES PATENT OFFICE.

FRANK J. CROUCH, OF EUGENE CITY, OREGON.

IMPROVEMENT IN AUTOMATIC VENTILATORS.

Specification forming part of Letters Patent No. **216,313**, dated June 10, 1879; application filed April 2, 1879.

To all whom it may concern:

Be it known that I, FRANK J. CROUCH, of Eugene City, county of Lane, and State of Oregon, have invented an Automatic Ventilator; and I hereby declare the following to be a full, clear, and exact description thereof, reference being made to the accompanying drawings.

My invention relates to an improved appliance for attachment to windows, transoms, &c., by means of which the opening or closing of the transom or window is automatically accomplished in accordance with the temperature of the room.

It consists in the use of a cylinder containing any sensitive liquid, on the end of which are two metallic plates or disks, one of which has an arm connected with suitable gearing for operating the transom or sash on its axle. As the sensitive liquid expands the plates are sprung apart and the transom opened. As the liquid is cooled and the plates come together the transom is again closed.

In this way the transom is automatically opened or closed in accordance with the temperature of the room, as is more fully described in the accompanying drawings, in which—

Figure 1 is a perspective view of my device. Fig. 2 is a section.

Let A represent a window-frame, and B a sash or transom, which is hinged, as shown at *a*, so as to swing in a circle on this central axis, and thus be opened and closed.

This shaft or trunnion *a* is continued through the window-frame on one side, and passes through a frame, C. On the outer side of the frame C a pinion, D, is secured on said shaft, said pinion meshing with the spur-wheel E on a shaft, *e*, as shown, for the purpose hereinafter described.

On the lower part of the frame C is secured a pipe cylinder or chamber, F, on top of which is a thin metallic plate or disk, *b*, soldered or otherwise secured to the top of said pipe or cylinder. On top of this plate is another plate, *c*, of the same size and shape, the two plates being secured together at their edges, and the space between them being filled with

sulphuric ether, petroleum, turpentine, alcohol, or similar sensitive substance.

The tube or cylinder F opens into the chamber formed by these two plates through the lower plate, and also contains the ether, petroleum, turpentine, or other substance.

To the top plate of the disk is secured an arm, G, the upper end of which is fastened to a crank, *f*, on the spur-wheel E.

Now, when the liquid in the cylinder and between the plates or disks expands, the plates are expanded, as they admit of a sensible spring apart at the centers. As they are expanded or forced apart by the expanding substance the arm attached to the upper plate operates the crank and gear wheel, thus rotating the pinion on the shaft or trunnion carrying the sash or transom, and said sash or transom is swung open. As the liquid cools the reverse is the case, and the sash is closed.

The plates are placed very closely together, so as to give as much spring as possible when the heating and cooling action takes place.

I make my cylinder and plates preferably of brass, as it absorbs heat readily, and neither of the chemicals mentioned will corrode it. No dangerous effects are produced should leakage occur.

I thus provide a durable and self-acting machine adapted to hotels, theaters, halls, and private dwellings, where good ventilation is desirable.

The plate and cylinder are placed inside the room, so as to be affected only by the temperature inside. When the room is heated the resultant expansion of the plates acting on the gearing will open the transom, and as they are cooled the transom will again close, thus regulating the size of the opening through the transom or window in proportion to the temperature of the air.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The metallic plates *b c* and cylinder F, filled with a sensitive liquid, said plates being connected by an arm with gearing for operating the shaft *a*, on which is mounted

the transom or sash B, whereby the said transom or sash is automatically opened or closed in accordance with the temperature of the room, substantially as herein described.

2. An automatically-operating device placed inside a room, consisting of the plates *b c* and cylinder F, filled with a sensitive liquid, by means of which suitable gearing is caused to operate a sash or transom for the purposes of

ventilation, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand.

FRANK J. CROUCH.

Witnesses:

J. M. THOMPSON,

LEWIS MCFARLAND.