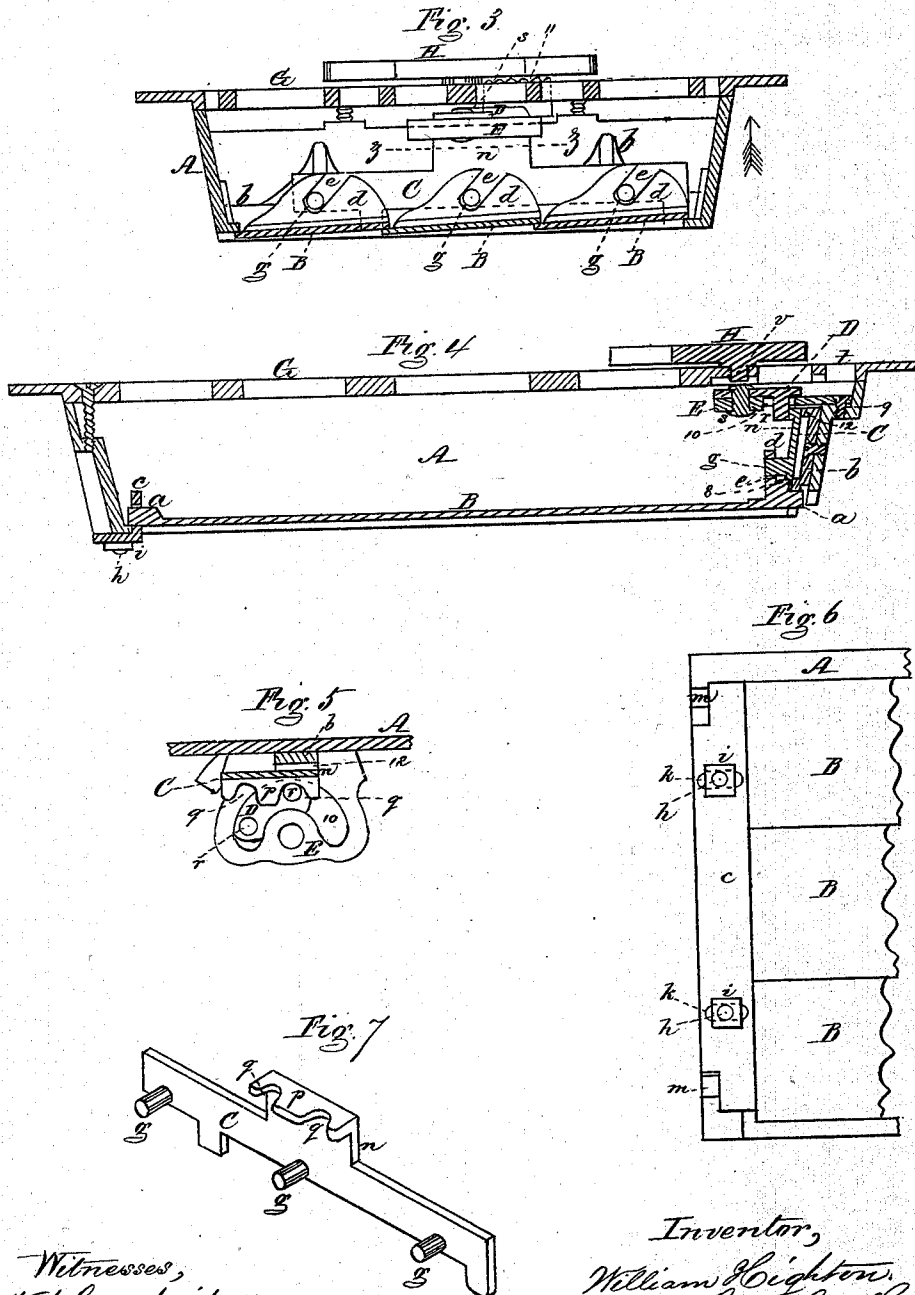


Inventor,
William & Wight
for Steamships & Steams
Bills

W. HIGHTON.
Hot-Air Registers.

No. 144,616.

Patented Nov. 18, 1873.



Witnesses,
H. J. Cambridge
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Inventor,
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per *Robert L. Highton*
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM HIGHTON, OF MALDEN, MASSACHUSETTS.

IMPROVEMENT IN HOT-AIR REGISTERS.

Specification forming part of Letters Patent No. 144,616, dated November 18, 1873; application filed October 21, 1873.

To all whom it may concern:

Be it known that I, WILLIAM HIGHTON, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Hot-Air or Ventilator Registers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of a hot-air register constructed in accordance with my invention. Fig. 2 is a plan of the same with the top or grate removed. Fig. 3 is a transverse vertical section on the line *xx* of Fig. 1. Fig. 4 is a longitudinal vertical section on the line *yy* of Fig. 1. Fig. 5 is a section on the line *zz* of Fig. 3, looking in the direction of the arrow. Fig. 6 is a plan of one end of the under side of the register; Fig. 7, detail.

My invention consists in a lever which is pivoted to a plate secured to the register-frame, and is provided with one or more pins or projections, fitting into one or more notches in a lug or projection on the slide-bar which actuates the shutters, which construction affords a convenient and reliable means of operating the shutters with the foot.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the frame of the register, and B the slats or shutters, the pivots or gudgeons *a* of which are supported in bearings in the end pieces *b c*. At one end of each shutter B is a lug or projection, *d*, which extends up at right angles to its surface, and in each of these lugs is formed an open slot, *e*, which is inclined at an angle of forty-five degrees. C is a slide or bar, which is provided with pins or projections *g*, which fit into the slots *e* of the shutters, and thus, as the slide is moved, the pins bear against the inclined sides of the slots and partially rotate the shutters on their pivots to open or close the register. The inclination of the slots *e* and the position of the pins *g* with respect to the pivots of the shutters cause the leverage to be equalized, so that no additional force is required at the commencement of the opening or closing of the register, which is

not the case with the ordinary arrangement of pins and slots in common use, and the mechanism is thus caused to operate with great ease and very little friction, the bottom of the bar C rolling over rounded projections *8* on the shutters adjacent to the pivots, instead of sliding thereon. The end piece *c* is secured to the frame A, and held in place by screws *h* and nuts *i*, the screws passing through slots *k*, and by this means the end piece can be adjusted so as to bring it up close to the ends of the shutters, and thus prevent them from moving laterally between their bearings and rattling, as heretofore. In fitting the piece *c* its ends should be filed away so as to allow it to fit snugly up against the projections *m* on the bottom of the frame, as seen in Fig. 6. At the center of the slide C is a projection, *n*, at the top of which, and extending out at right angles thereto, is a lip, *p*, in which are formed two rounded notches, *q*, into which fit two pins, *r*, on the under side of a lever, D, which is pivoted at *s* to a plate, E, secured by a screw, *q*, to the frame A, the pins *r* projecting through a curved slot, *10*, in the plate. At the outer end of the lever D is a serrated enlargement, *11*, which projects up through a curved slot, *t*, in the grate or top G of the register, so that it can be operated by the foot, and thus, as this lever D is vibrated, the pins *r* strike against the sides of the notches *q* and move the slide C, which operates the shutters, the slide being moved part way by one of the pins *r*, and the balance of its movement being effected by the other pin *r*, as the first pin is moved out of its notch, *q*. (See Fig. 5.) The slide C is steadied and held in position by the pins *r* on one side and a projection, *12*, against which it rests, on the other side.

It will be seen that the operating mechanism is entirely disconnected from the top or grate G, which can consequently be removed without disturbing it, or without any liability of any of the parts dropping out, as is liable to occur with registers as now constructed.

I will now describe the device by which the lever D is operated when the register is set in a wall at the mouth of a ventilator: H is a wheel, which is provided on its under side with a center-pin or pivot, *v*, which fits into a

hole in the grate G, and at the outer end of each of the arms *w* of this wheel is an aperture, 13, for the reception of a cord which is intended to extend down into an accessible position, two cords being employed, attached to arms diametrically opposite each other, so that the wheel can be partially revolved in either direction. One of the arms *w* is firmly secured by means of a screw, 14, to the enlargement 11 at the end of the lever D, and thus, as the wheel is rotated by the cords, the lever is moved to operate the shutters as desired, the lever D being pivoted at a point directly beneath the center-pin of the wheel H, so that both can move together, the slot *t* being curved to correspond to this movement.

I claim—

1. The lever D, pivoted to the plate E, and

provided on its under side with one or more projections, *r*, in combination with the slide C, having one or more notches, *q*, operating substantially as described, and for the purpose set forth.

2. The wheel H, pivoted to the grate G and attached to the lever D, which actuates the shutters, the end of said lever moving in the arc of a circle having its center at the point where the wheel is pivoted, substantially as and for the purpose described.

Witness my hand this 11th day of October,
A. D. 1873.

WM. HIGHTON.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.