

S. RIGLER,  
Automatic Register.

No. 72,084.

Patented Dec. 10, 1867.

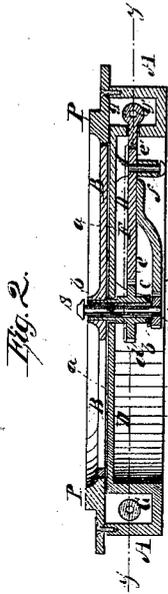


Fig. 2.

Fig. 3.

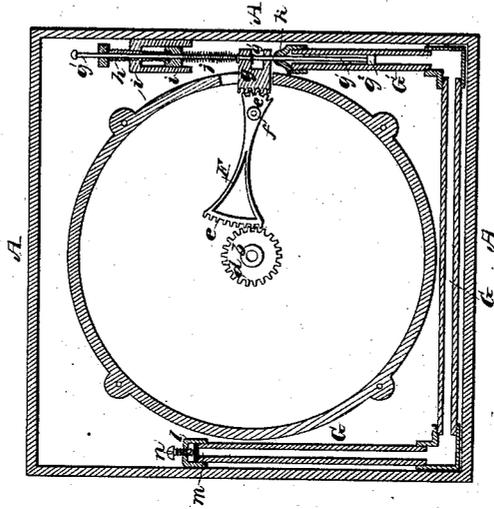
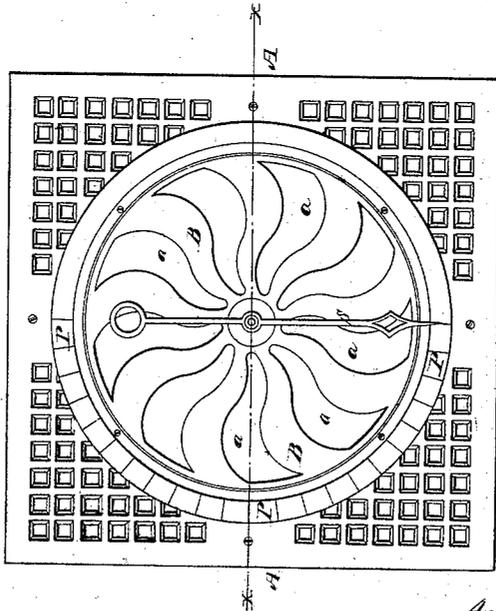


Fig. 1.



Witnesses:  
R. S. Campbell  
Edw. Schaper

Administralor  
Joc. L. Buckley  
by  
Mason Hewitt & Co.

# United States Patent Office.

JOEL T. BUCKLEY, OF OTTAWA, ILLINOIS, ADMINISTRATOR OF THE ESTATE  
OF STEPHEN RIGLER, DECEASED.

Letters Patent No. 72,084, dated December 10, 1867.

## IMPROVEMENT IN AUTOMATIC REGISTERS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that STEPHEN RIGLER, deceased, late of Ottawa, in the county of La Salle, and State of Illinois, did invent in his lifetime an Improved Automatic Register; and whereas JOEL T. BUCKLEY, of said county and State, has been duly appointed administrator of the estate of the said STEPHEN RIGLER, now, therefore, I, JOEL T. BUCKLEY, do hereby declare that the following is a full, clear, and exact description of said invention, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an outside or front view of the register.

Figure 2 is a vertical central section through the register, indicated by red line  $xx$  in fig. 1.

Figure 3 is a section taken in the plane indicated by red line  $yy$  in fig. 2.

Similar letters of reference indicate corresponding parts in the three figures.

This invention relates to a novel improvement on registers, which are employed in furnace-shafts or flues, and other places, for regulating the passage of heated air into apartments; and also for ventilating apartments.

The nature of this invention consists in automatically regulating the movements of register-slides so as to increase or diminish the size of the register-openings, through which air circulates, by means of the expansion and contraction of mercury enclosed within a tube, as will be hereinafter described. Also, in the employment of an index-hand, in conjunction with a register-slide, which is automatically opened and closed by the expansion and contraction of mercury, in such manner that said hand will, at all times, indicate the degree of temperature upon the face of the register, as will be hereinafter described.

To enable others skilled in the art to understand the invention, I will describe its construction and operation.

In the accompanying drawings, A represents the frame or box of the register, which is suitably adapted for receiving in its face an open-work circular slide, B, which is designed to receive a slight motion about its axis, for regulating the size of the openings  $aa$ , through a plate, D, through which air is allowed to escape. This circular slide, B, is made fast to one end of a hollow shaft,  $b$ , which has its bearings in plate D, and also in a stirrup,  $c$ , which is secured to the back of this plate, as shown in fig. 2. Between the stirrup  $c$  and perforated plate D, a spur-wheel,  $d$ , is keyed upon said hollow shaft  $b$ , which engages with the teeth of a segment-rack,  $e$ , on the inner end of a vibrating lever, F, shown in figs. 2 and 3. The lever F is pivoted to a stud,  $f$ , projecting from the plate D, and upon the shortest arm of this lever a segment-rack,  $e'$ , is formed, the teeth of which engage with a rack which is formed on a cross-head,  $g$ , shown in figs. 2 and 3. The cross-head  $g$  is secured fast to a piston-rod,  $g^1$ , having a piston-head,  $g^2$ , on one end, which works within the end of a pipe, G, and is acted upon by the expansion and contraction of mercury, which is confined within this pipe. The piston-rod  $g^1$  passes through the axis of a hollow adjusting-screw,  $h$ , which is tapped through bearings upon the back plate of frame A, as shown at  $i$ , fig. 3. Between the end of screw  $h$  and the cross-head  $g$ , a spring,  $j$ , is applied, which will force the cross-head up against the cap  $k$  on pipe G, and hold it there with a given pressure, which is regulated by means of the screw  $h$ . The mercury-pipe G is carried around the frame A, within this frame, and terminated at a point which is opposite the cross-head  $g$ . This end of the pipe G is closed and hermetically sealed by means of a cap,  $l$ , packing,  $m$ , and packing-screw,  $n$ , or by any other suitable means, which will prevent the escape of mercury from the pipe at this point. When pipe G is filled with mercury, and the piston  $g^2$  adjusted up tightly against it, at a temperate heat, the register is ready for use. As the heat expands the mercury in pipe G, the piston-rod will be forced outward, which will act, through the medium of cross-head  $g$  and segment-lever F, upon the hollow shaft  $b$ , and thus move the circular slide B so as to allow of a greater or less escape of air through the register into the room. As the temperature of the room diminishes, the expansion of mercury will also diminish, so as to open the slide B and allow more heat in the apartment. In this way, and by these means, the opening and closing of the circular slide will be automatic, and regulated by the temperature of the apartment in which the register is applied. Through the centre of the hollow shaft  $b$  a shaft,  $p$ , passes, carrying on one end an index-hand, S, which points at a marginal index upon a circular elevation, P, on the face of the register, and on the other end a pinion-wheel, P<sup>1</sup>, which engages with the teeth of a segment-rack on the lever F, as shown in fig. 2. The expansion and contraction of mercury in pipe G, operating upon the lever F, will also operate the index-hand, and thereby register the degree of heat upon the face of the register-plate.

Having described the invention of STEPHEN RIGLER, what I claim as new, and desire to secure by Letters Patent, is—

1. Operating a register-slide so as to regulate the temperature of apartments, by means of a column of mercury within a tube, which is arranged within the register itself, and acts upon said slide through the means substantially as described.

2. The combination of an index-hand, S, with a register, arranged and operated by a column of mercury within a tube, which is arranged within the register itself, substantially as described.

3. The combination with a circular-turning register-slide, B, of mercury-pipe G, piston-rod  $g^1$ , cross-head  $g$ , toothed lever F, spur-wheel  $d$ , and shaft  $b$ , arranged, constructed, and operating substantially as described.

JOEL T. BUCKLEY,

*Administrator of Stephen Rigler, deceased.*

Witnesses:

LIFEL H. POWERS,  
H. L. MEAD.