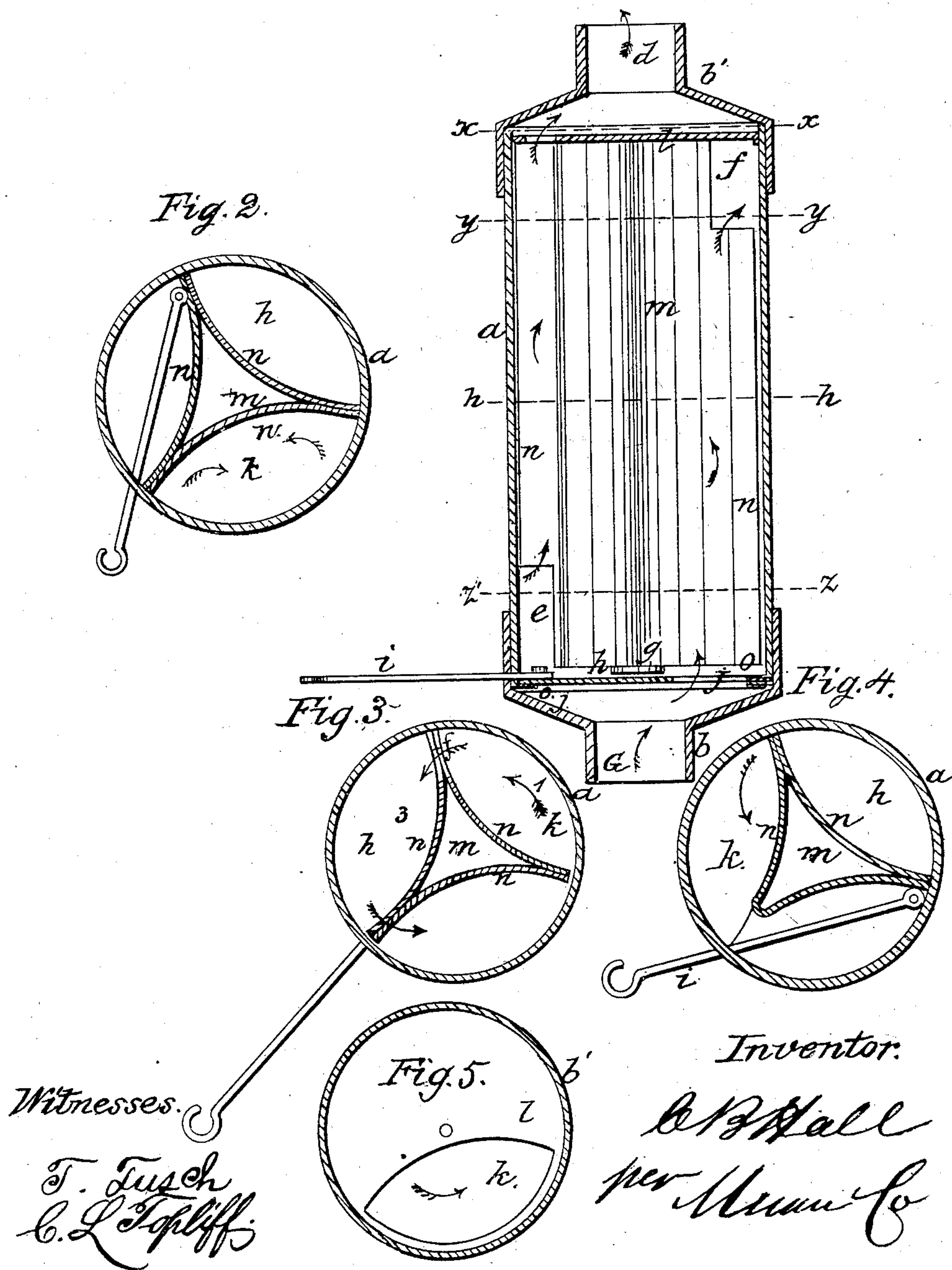


C. B. HALL.  
Heat Radiator.

No. 45,404.

Patented Dec. 13, 1864.





# UNITED STATES PATENT OFFICE.

CLAUDIUS B. HALL, OF RACINE, WISCONSIN.

## IMPROVED HEAT-RADIATOR.

Specification forming part of Letters Patent No. 45,404, dated December 13, 1864.

*To all whom it may concern:*

Be it known that I, CLAUDIUS B. HALL, of Racine, in the county of Racine and State of Wisconsin, have invented a new and useful Improvement in Heat Radiators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view of a radiator made after my invention. Fig. 2 is a cross-section on the line  $z'$  of Fig. 1. Fig. 3 is a cross-section on the line  $y$  of Fig. 1. Fig. 4 is a cross-section on the line  $z$  of Fig. 1. Fig. 5 is a cross-section on the line  $x$  of Fig. 1.

Similar letters of reference indicate like parts.

This invention consists in dividing the interior of a heat-radiator into segmental divisions communicating with each other, and combining therewith a horizontal damper which rotates so as to uncover different divisions at pleasure.

The shell of the radiator is designated by the letter  $a$ . It is hollow cylinder with open ends, which have covers  $b$   $b'$  fitted upon them. The cover  $b$  has a collar,  $c$ , upon it to receive a stove-pipe, and the cover  $b'$  has a like collar,  $d$ , to form a joint with a stove-pipe. The side of the collar  $b$  is perforated to receive a damper-rod,  $i$ , attached to a damper,  $h$ , by which the latter is made to rotate about its center of motion. This damper is a circular plate, out of which a segment has been cut answering to the segment  $K$ . An interior flange or ring,  $O$ , is secured within the collar  $b$ , near the perforation made for the rod  $i$ , which sustains the edge of the damper. A frame,  $j$ , with three radial arms, is fixed within the collar adjacent to the ring  $O$ , and it is so placed that its radial arms coincide with the sides  $n$  of the divisions  $K$ .

$m$  is a triangular frame or body of equal length with the shell  $a$ , within which it is fitted. Its adjacent sides  $n$  join each other near their ends, and from the point of their junction they extend in radial lines until they meet the interior circumference of the cylinder  $a$ . When the body  $m$  is in place within the cylinder, its sides  $n$  form segmental divisions  $k$  with the opposite sides of the cyl-

inder. The upper end of the body  $m$  has a circular plate,  $l$ , soldered to it, the plate being cut away to form a segmental opening which coincides with one of the divisions,  $K$ , so as to provide a flue connecting with the flue through the collar  $d$ . The lower end of the frame has a central plate,  $g$ , which covers the central part thereof, and furnishes means for supporting the axis of the damper  $h$ , which is secured at either end in the plate  $g$  and the center of the frame  $j$ . One of the sides or partitions  $n$  is cut away at bottom, as shown at  $e$ , and another at top, as shown at  $f$ .

The operation of this device when properly adjusted and connected with the pipes of a stove is as follows: The products of combustion pass in through the collar  $c$ , and, if the damper is in the position shown in Fig. 3 they ascend the division  $K$ , shown in that figure, to the opening  $f$ , where they are turned, by means of the top plate,  $l$ , into the adjacent left-hand division  $K$ . When they arrive at the bottom of that division, they are turned, upward, by the damper,  $h$ , through the opening  $e$ , into the next division, the arrows in which are colored blue. If, however, the damper is in the position shown in Fig. 2, the products of combustion enter the division designated by blue arrows, directly from the collar  $c$  and pass thence directly into the collar  $d$ . It follows from this construction that the division designated by the figure 2, is always covered by the damper, while those designated 1 and 3 are opened and closed by the damper according to the position it is made to take. It follows also that when the direct draft is closed the heated smoke and gases pass through the whole length of the radiator three times, thereby imparting much warmth to the air of the apartment in which it is placed.

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

The radiator consisting of its shell  $a$ , its frame  $m$ , its damper  $h$ , and its collars  $b$  and  $d$ , constructed and operating substantially as above described.

CLAUDIUS B. HALL.

Witnesses:

CHARLES E. WRIGHT,  
GEO. H. BROWN.