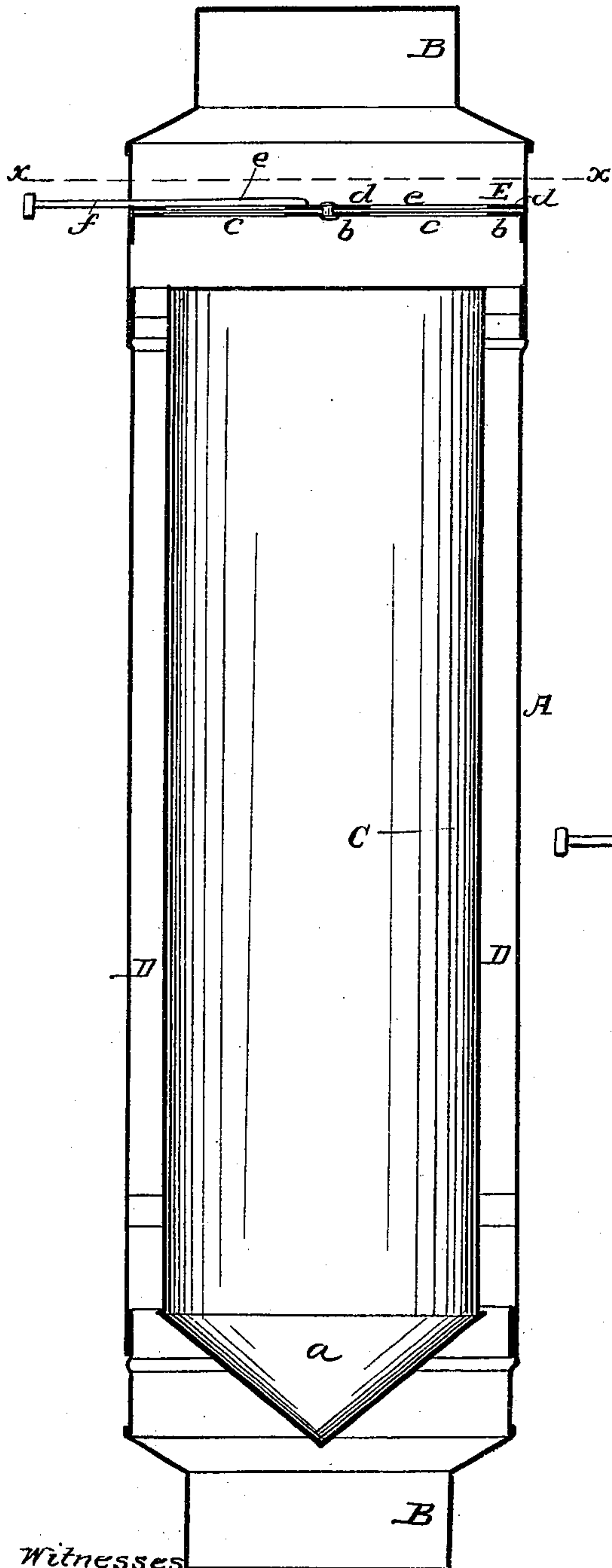


L. BURNELL  
Radiator.

No. 38,809.

Patented June 9, 1863.

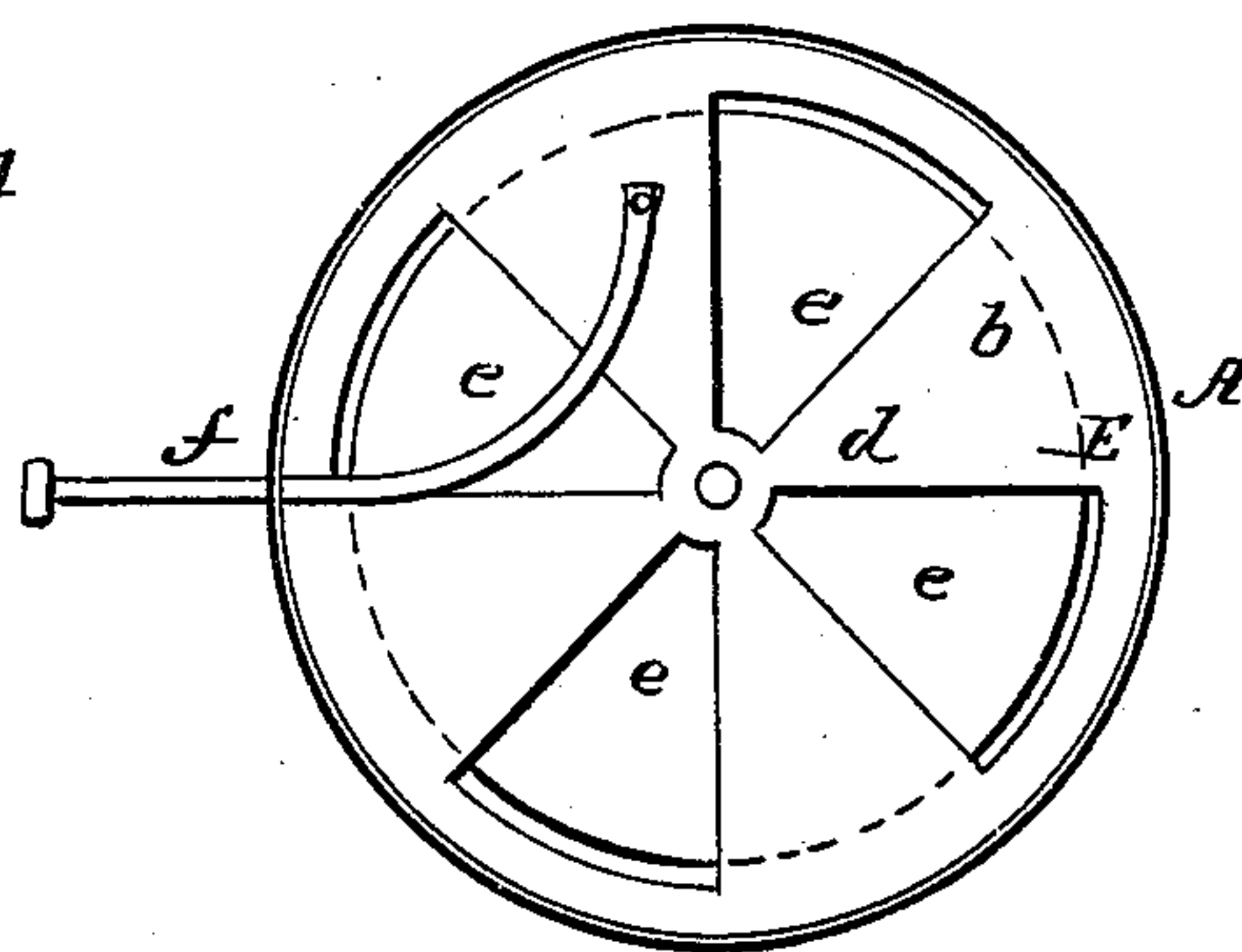
Fig. 1.



Witnesses

*W. B. Coombs*  
*G. W. Reed*

Fig. 2.



Inventor:  
*Levi Burnell*  
per *Wm. H. Co*  
Attorney.

# UNITED STATES PATENT OFFICE.

LEVI BURNELL, OF MILWAUKEE, WISCONSIN.

## IMPROVEMENT IN RADIATORS.

Specification forming part of Letters Patent No. 38,809, dated June 9, 1863.

*To all whom it may concern:*

Be it known that I, LEVI BURNELL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and Improved Heat-Radiating Apparatus or Device to be Applied to the Smoke-Pipes of Stoves, Ranges, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a longitudinal section of a stove-pipe with my invention applied to it; Fig. 2, a transverse section of the same, taken in the line *x x*, Fig. 1.

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

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents an enlarged section or joint of a stove-pipe; and B B represent the ends of the joints of the stove-pipe, to which the enlarged section A is attached. Within this enlarged section A there is secured a cylinder, C, sufficiently less in diameter than A to admit of an annular space, D, of proper capacity between A and C for the products of combustion to pass through. (See Fig. 1.) The cylinder C may be hollow and constructed of sheet metal closed at both ends, and the lower end, *a*, may be of conical form. The upper end may be either flat or of conical form, as desired. The cylinder may be also solid if desired, and constructed of any proper non-combustible material.

In the upper part of A there is placed a disk register or damper, E, constructed of a plate, *b*, which is permanently secured in A at right angles to the sides thereof, said plates having a number of radial slots, *c*, made in it at equal distances apart and of equal area. On this plate *b* there is pivoted centrally a circular disk, *d*, the diameter of which is nearly equal to *b*. This disk *d* has also radial slots *e* made in it corresponding to the slots *c* in *b*, and to the disk *d* there is attached a rod, *f*, which extends through the side of A and serves as a handle for turning

or adjusting *d*. (See Fig. 2.) This disk register or damper is a short distance above the cylinder C, as shown in Fig. 1.

From the above description it will be seen that the products of combustion, in passing through the annular passage or space D, will all be brought in contact with the side of A, and this will greatly favor the radiation of heat from A, as the products of combustion will, by means of the cylinder C, be spread over a comparatively large area, whereas, without said cylinder, considerable heat would pass up centrally through A and escape radiation into the room or apartment. The cylinder C, while thus serving to divert the products of combustion in A and bring them in contact with the inner side thereof, also serves to absorb a certain degree of heat and retain the same so long as the temperature of the products of combustion in the passage or space D remains equal to the temperature of C; but when the temperature of the products of combustion in D becomes lower than the temperature of C, owing to the reduction of the fire in the heater, or from other causes, the cylinder C will give out or radiate its heat in space D, and said heat will be again radiated from A. Thus the radiation of heat from A will be rendered comparatively uniform, as all fluctuations in the intensity of the fire is compensated for.

By means of the disk register or damper E the passage of the products of combustion through the space D may be regulated as desired.

It is designed to have the combined areas of the slots *c c* in the plate *b*, and also of the disk *d*, equal to, or at least as great as, the area of the space D, and hence, when the register or damper is fully opened, an unobstructed passage is allowed the products of combustion through A, and by adjusting the disk *d* the draft may be checked as desired.

I would remark that the cylinder C, if made hollow, may be used as a hot-water tank or reservoir, and supplied with a cock or faucet at its lower end, and with a funnel or induction-pipe at its upper end. The cylinder, therefore, would be made to perform a double

function and answer a good purpose in either capacity—equally so as if designed separately for each.

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

The arrangement of the deflector C and

register E with each other, and with the pipe A and space D, in the manner herein shown and described.

LEVI BURNELL.

Witnesses:

SAML. L. BURNELL,

E. L. JONES.