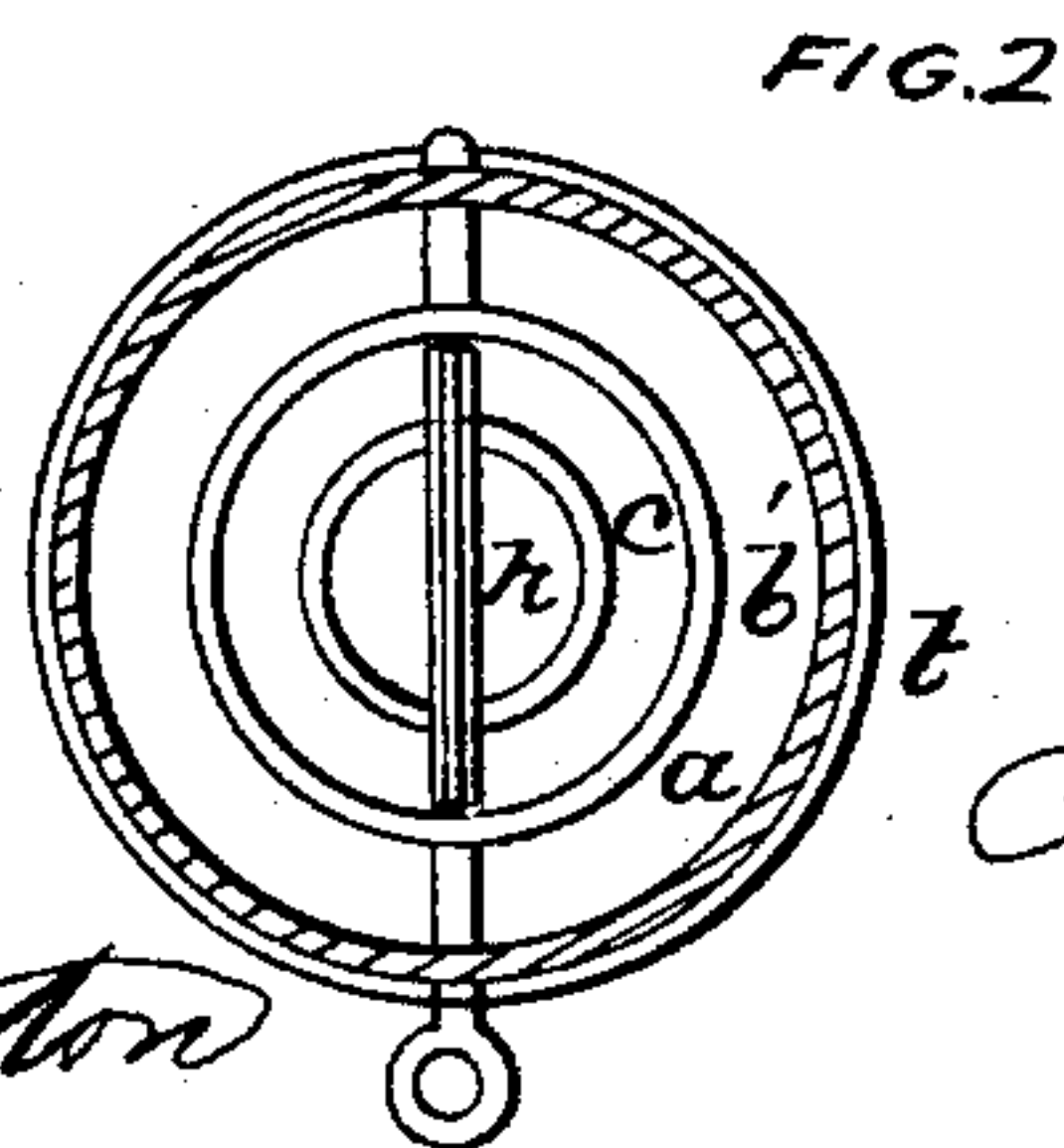
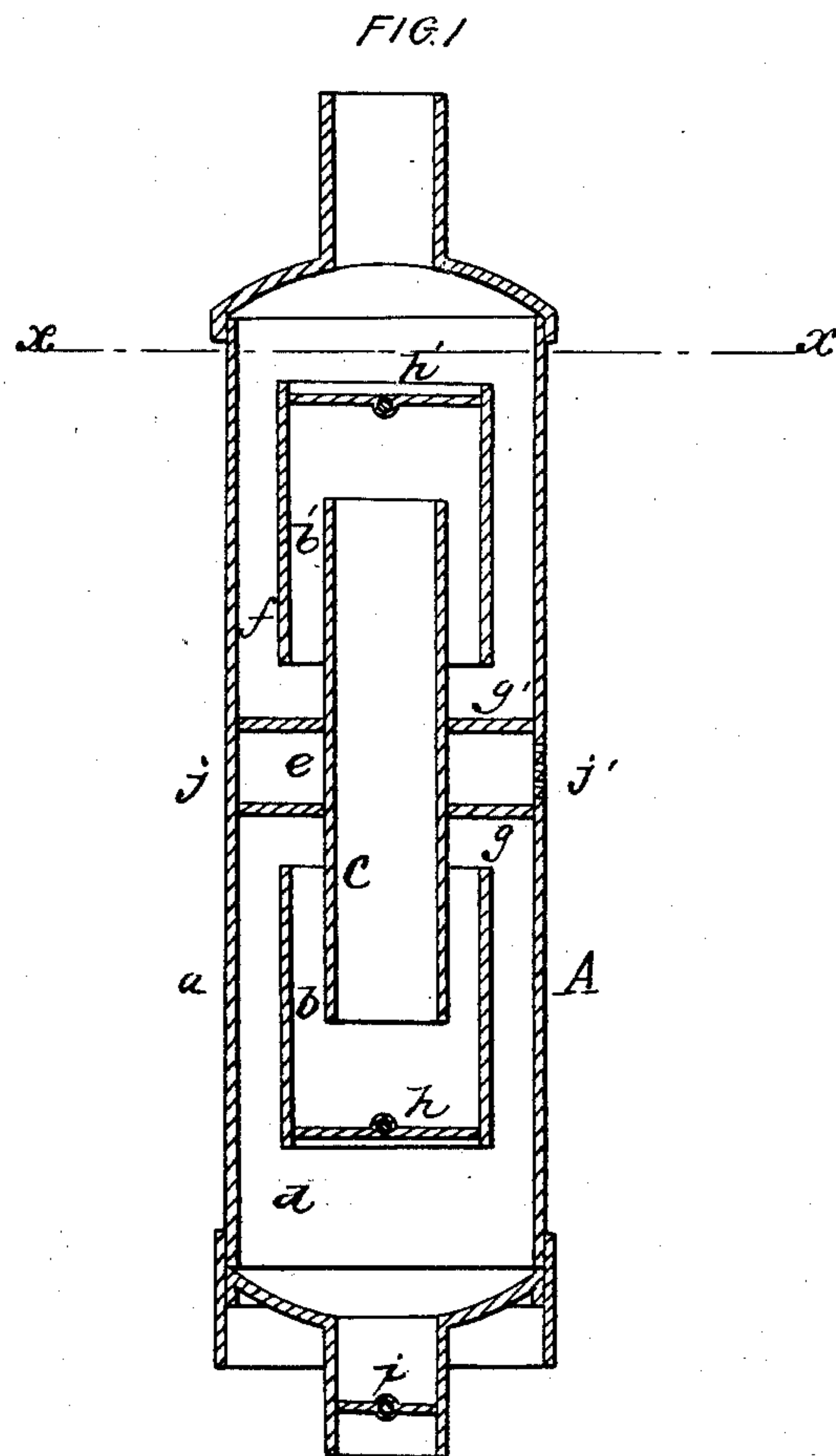


W. KROEGER.  
Stovepipe Drum.

No. 55,419.

Patented June 5, 1866.



WITNESSES  
J. W. B. Covington  
Gas. & Service

INVENTOR  
W. Kroeger  
Per Munn & Co  
Attys

# UNITED STATES PATENT OFFICE.

WERNER KROEGER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO HIMSELF  
AND CONSTANTINE RIES, OF THE SAME PLACE.

## STOVE-PIPE DRUM.

Specification forming part of Letters Patent No. 55,419, dated June 5, 1866.

*To all whom it may concern:*

Be it known that I, WERNER KROEGER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and Improved Heat-Radiator; 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 represents a vertical central section of this invention. Fig. 2 is a horizontal section of the same, taken in the plane indicated by the line *x x*, Fig. 1.

Similar letters of reference indicate like parts.

This invention consists in a heat-radiator composed of three concentric cylinders and three dampers, the second or middle cylinder being separated in two parts by two horizontal partitions in such a manner that the draft can be made to pass through the central pipe in a direct course, or that the heated gas can be compelled to pass up and down in a zigzag course, whereby the smoke is consumed and a large amount of heat radiated; and, furthermore, the chamber inclosed by the two horizontal partitions forms an air-heater, which materially assists in raising the temperature of the room without requiring an additional quantity of fuel.

A represents a heat-radiator constructed according to this invention. It is composed of three concentric cylinders, *a*, *b b'*, and *c*. The outer cylinder or drum, *a*, is made in one piece throughout, and it is contracted at both ends to correspond to the size of the inner cylinder, *c*, or nearly so, and also to conform to the ordinary size stove-pipes. Said drum is divided in three compartments, *d e f*, by two horizontal partitions, *g g'*, which form the support of the inner cylinder, *c*, and which separate the second or middle cylinder in two parts, *b b'*, as clearly shown in Fig. 1 of the drawings. These two parts are held in position by suitable braces, and they are provided

with dampers *h h'*, one of which is situated on the bottom part of the cylinder *b* and the other in the top part of the cylinder *b'*. An additional damper, *i*, is situated in the bottom end of the drum *a*. Suitable air-holes *j j'* on diametrically opposite sides of the middle compartment allow the external air to circulate in said compartment and to form an air-heater.

If all the dampers are opened, the heated gases or the draft pass through the drum and the inner pipes as through an ordinary stove-pipe; but if the damper *h* is shut the heated gases pass up between the drum and the cylinder *b* until they strike the partition *g*; then they descend through the cylinder *b* until they strike the damper *h*, and then they ascend through the inner cylinder, *c*. If the damper *h'* is also closed, the gases on coming in contact therewith are again compelled to descend, and caused to pass out at the bottom end of the cylinder *b'* and out through the top of the drum *a*. While the heated gases pass down through the cylinder *b*, after they have come in contact with the lower partition, *g'*, much smoke is consumed as it comes in contact with the highly-heated surfaces, and by checking the draft again by the damper *h'* all the heat is made available.

By this arrangement a heat-radiator is obtained which insures a capital draft and obviates all smoking, the smoke being consumed to a remarkable degree. It also forms an air-heater of good effect, and it works with great economy of fuel.

What I claim, and desire to secure by Letters Patent, is—

A heat-radiator composed of three concentric cylinders, *a*, *b b'*, *c*, in combination with two horizontal partitions, *g g'*, and dampers *h h' i*, all constructed and operating substantially in the manner and for the purpose herein set forth.

W. KROEGER.

Witnesses:

JOSEPH BISCHOFF,  
JOHN S. TAMBLE.