

(No Model.)

2 Sheets—Sheet 1.

H. BURT.

BOILER FOR HEATING PURPOSES.

No. 309,436.

Patented Dec. 16, 1884.

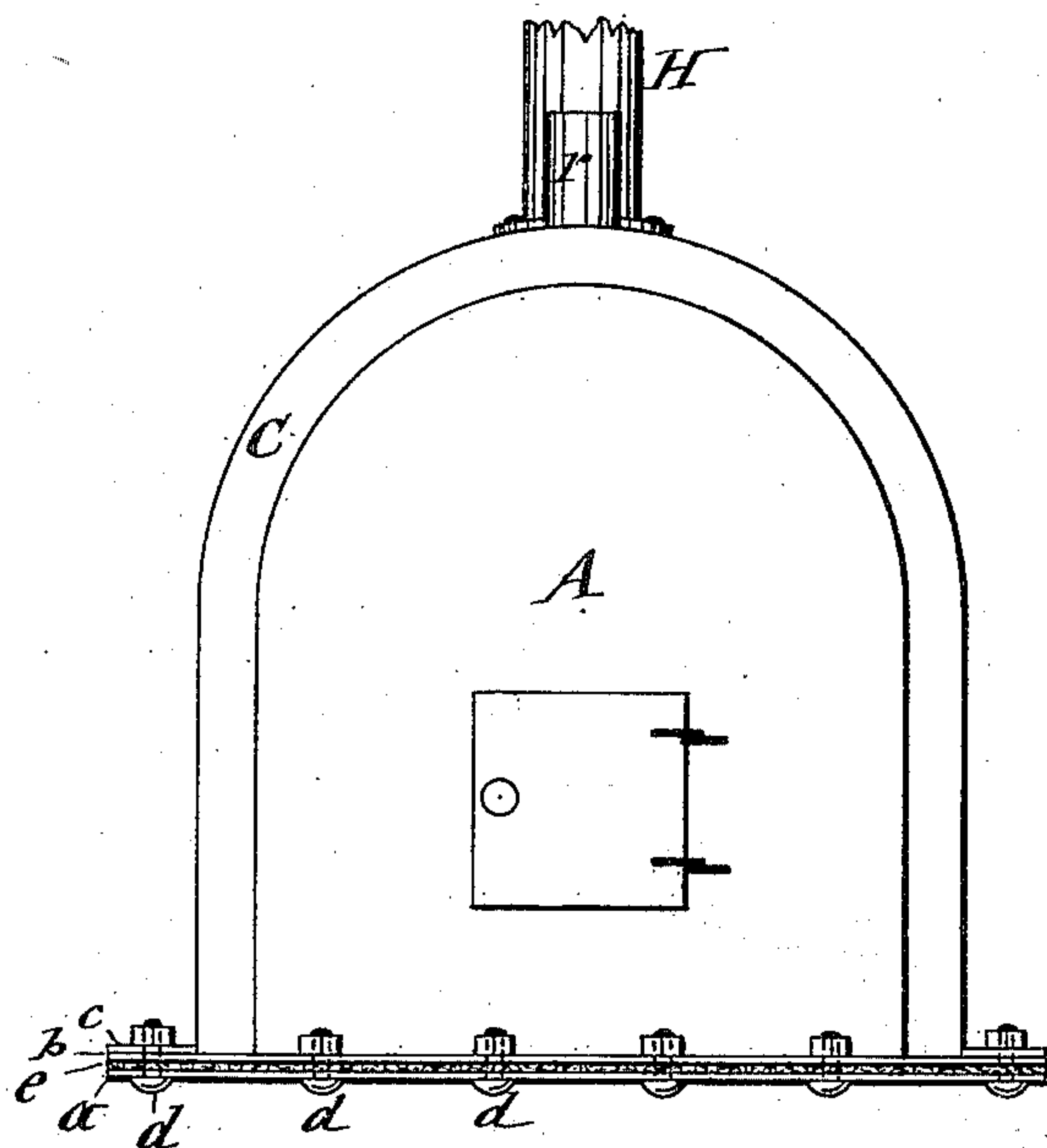


FIG-1-

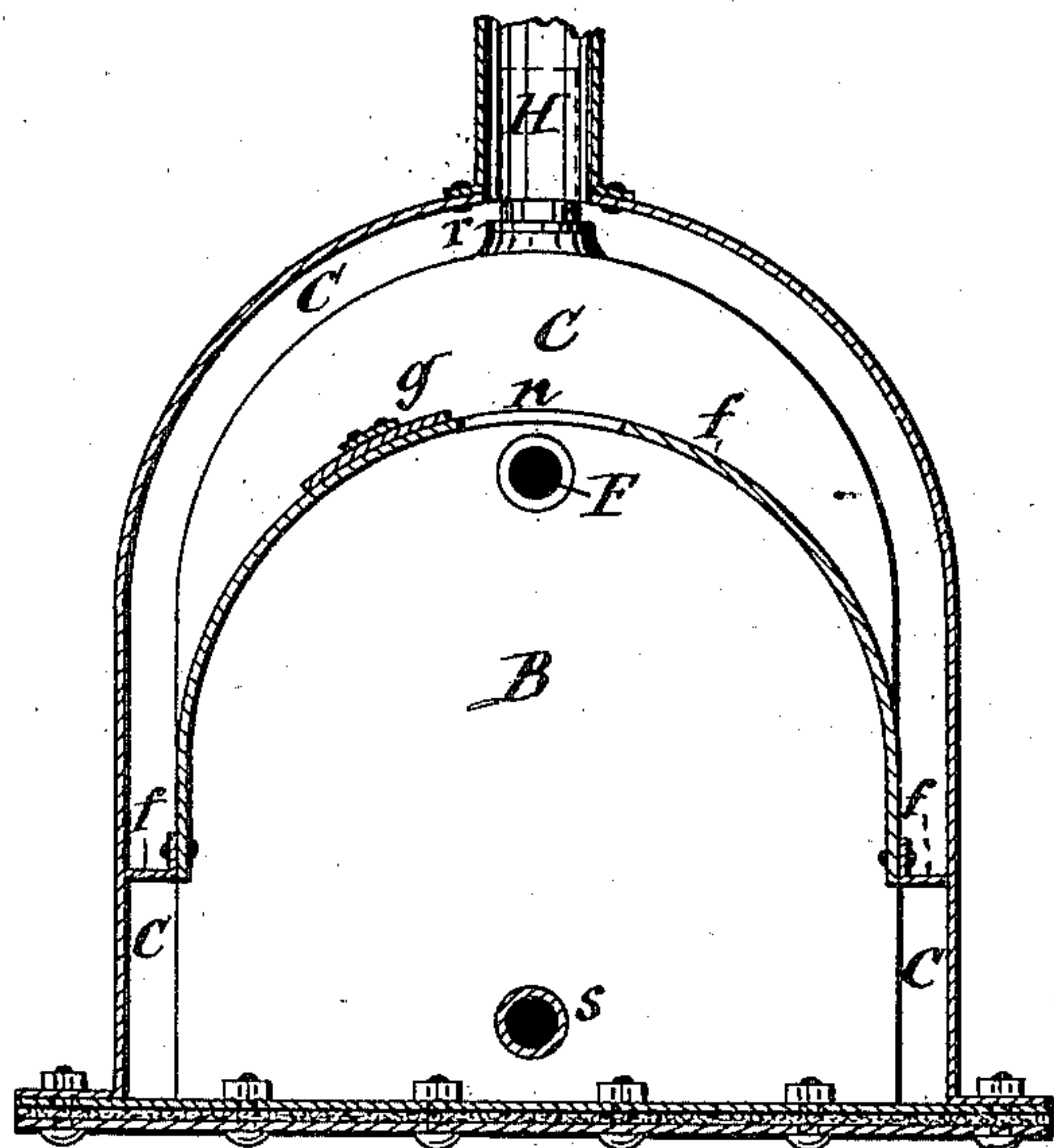


FIG-2-

ATTEST—

*Wm. E. Raymond*  
*J. H. Gibbs*

INVENTOR—

*Harry Burt*  
*per Paul Looset Key*  
*his Atty*

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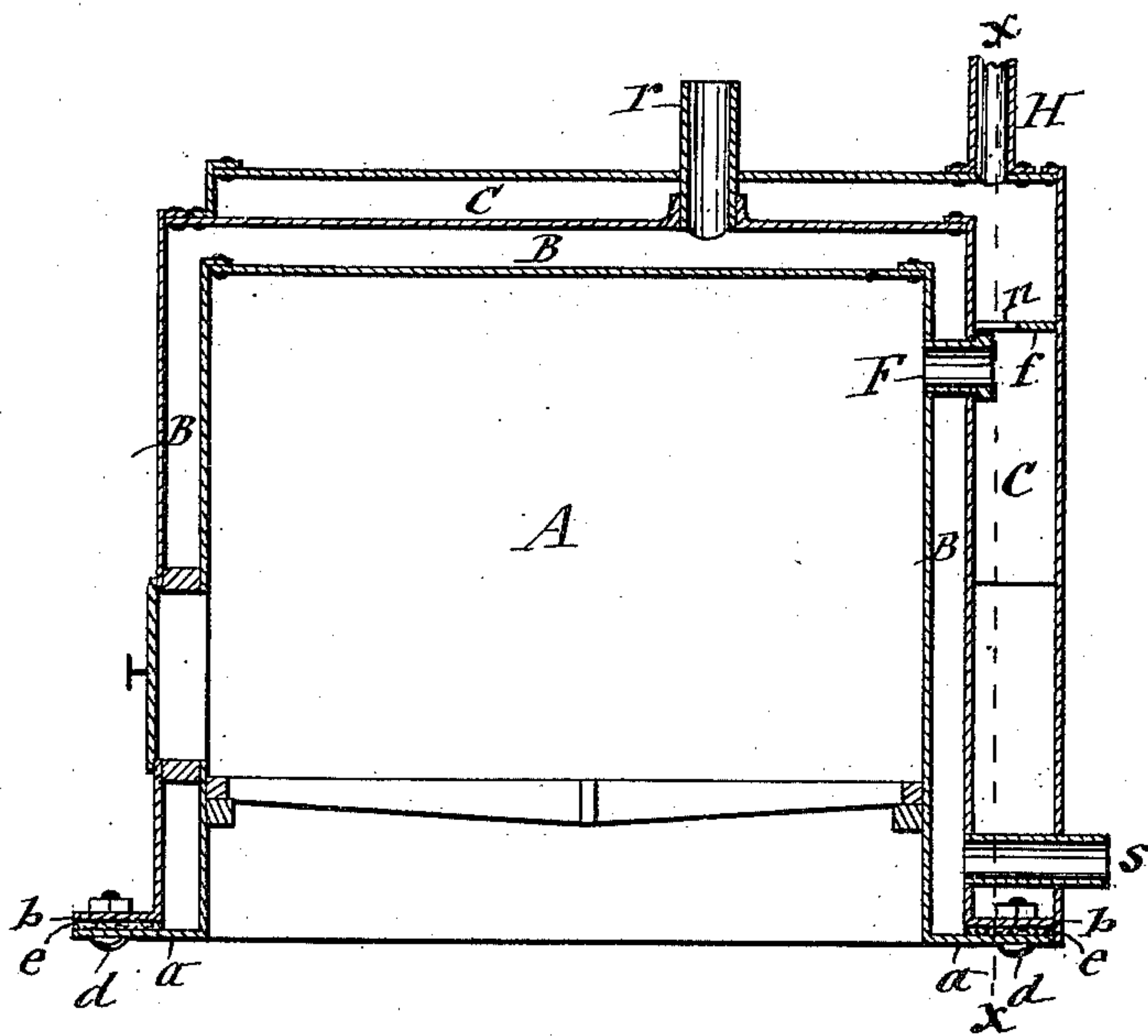


FIG-3-

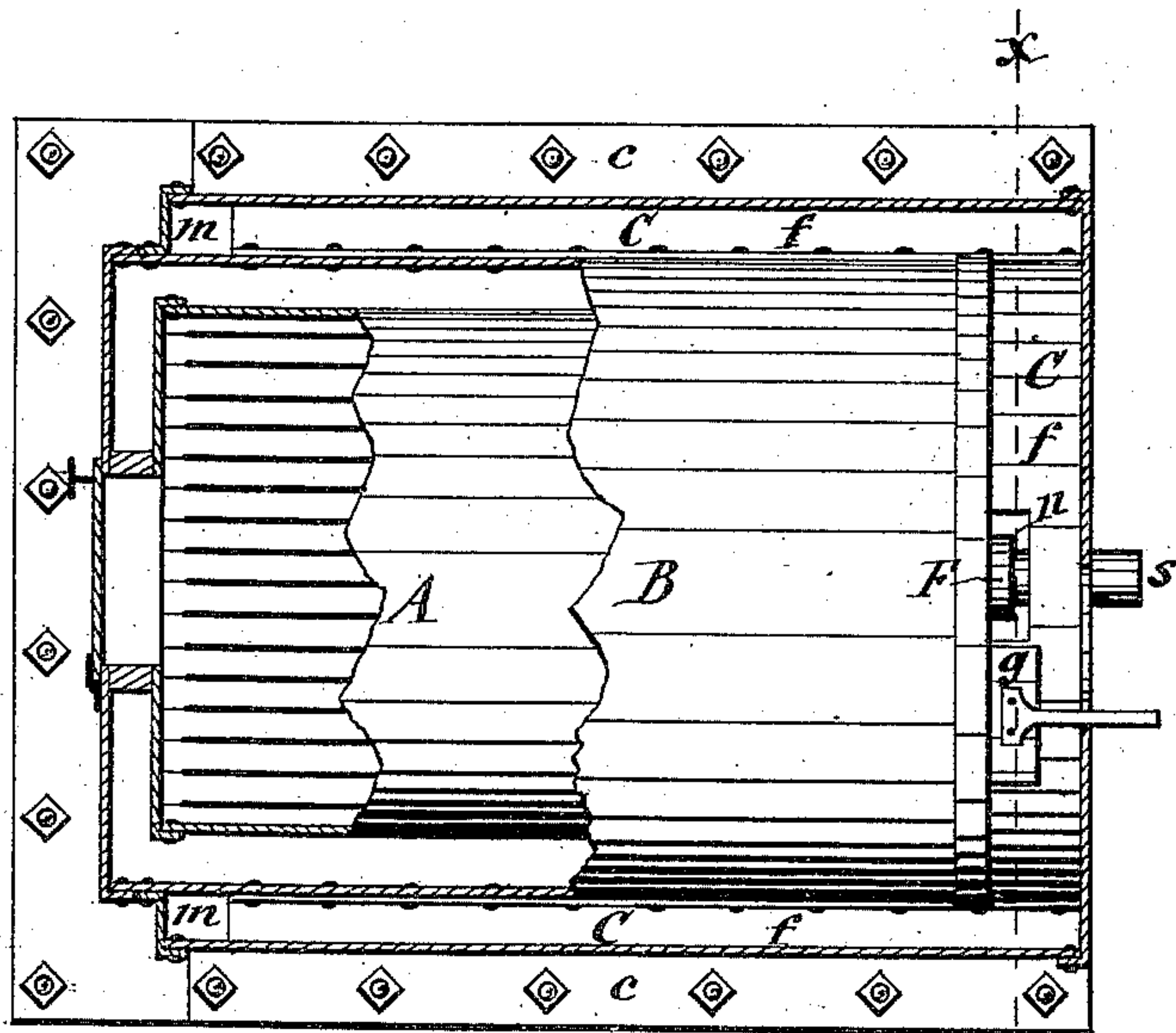


FIG-4-

ATTEST—

*C. E. Raymond*  
*F. H. Gibbs*

INVENTOR—

*Harry Burt*  
*per H. L. Lassar*  
*Attorney*



# UNITED STATES PATENT OFFICE.

HENRY BURT, OF DANFORTH, NEW YORK.

## BOILER FOR HEATING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 309,436, dated December 16, 1884.

Application filed August 18, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY BURT, of Danforth, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Boilers for Heating Purposes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in a novel construction and combination of a fire-box, a water-jacket surrounding the fire-box, and a smoke-jacket surrounding the water-jacket and communicating with the fire-box, the whole forming a simple and efficient apparatus for heating, in a most economical manner, water to be conducted through green-houses or other buildings to be heated, and also presenting great external heat-radiating surfaces, all as hereinafter more fully described, and specifically set forth in the claim.

The invention is fully illustrated in the annexed drawings, wherein Figure 1 is a front end view of the heating apparatus. Fig. 2 is a vertical transverse section on line *x x* in Figs. 3 and 4. Fig. 3 is a vertical longitudinal section, and Fig. 4 is a top plan view, with the successive shells of the apparatus partly broken away to better illustrate the construction and relation of the same.

Similar letters of reference indicate corresponding parts.

A represents the fire-box, of any suitable shape, formed of metal, and with a wide outward-projecting flange, *a*, around its base.

B denotes a water-jacket placed over the fire-box, so as to surround the same on all sides and top with a water-space between them, said water-jacket being provided at its base with an outward flange, *b*, by which it is supported on the flange *a* of the fire-box.

C is a smoke-jacket placed over the water-jacket, and surrounding the same at its sides, rear, and top, and having at its base an outward flange, *c*, extended along the two sides thereof, by which flange it rests on the flange *b* of the water-jacket. A suitable packing, *e*, is interposed between the flanges *a* and *b* of the fire-box and water-jacket, to render the joint water-tight, the three shells A,

B, and C being tied together by means of bolts *d d*, passing through the flanges, the bolts being provided with nuts, to admit of tightening the joint and of taking the apparatus apart when required for repairs or for cleaning the interior of the water-jacket and smoke-jacket.

*r* and *s* represent, respectively, the water-induction and water-education pipes of the water-jacket.

F is a flue extended from the rear end of the fire-box to the smoke-jacket, and *f* is a partition in the smoke-jacket above the flue F, said partition being extended toward the opposite or front end of the smoke-jacket, and terminating thereat with openings *m m*. The products of combustion are thus compelled to pass from the flue F along the lower portion of the smoke-jacket to the front end thereof, and thence up through the openings *m m*, and back through the upper portion of the smoke-jacket to the exit-flue H, which is at the same end of the smoke-jacket which is tapped by the flue F.

It will be observed that by the described arrangement of parts the water-jacket is impinged by the products of combustion on all of its inner walls, and on the greater portion of its outer walls, and on both sides of its top portion, and therefore the water in the jacket B is heated in a most effective and economical manner.

In the partition *f*, directly over the flue F, is a port, *n*, provided with a damper, *g*. By opening the latter a direct passage for the products of combustion is formed from the flue F to the exit H, said passage being required when first starting the fire in the fire-box A.

Having described my invention, what I claim as new is—

The combination, with the fire-box A, of the water-jacket B, surrounding the fire-box, the smoke-jacket C, surrounding the water-jacket, the flue F, extended from the end of the fire-box into the smoke-jacket, the partition *f*, arranged in the smoke-jacket, above the flue F, and extended toward the opposite end of said jacket and terminating thereat

with the opening *m*, the direct exit-port *n*,  
over the flue *F*, provided with the damper *g*,  
and the exit-flue *F*, over the port *n*, all con-  
5 scribed and shown.  
In testimony whereof I have hereunto signed  
my name and affixed my seal, in the presence

of two attesting witnesses, at Syracuse, in the  
county of Onondaga, in the State of New York,  
this 6th day of August, 1884.

HENRY BURT. [L. S.]

Witnesses:

FREDERICK H. GIBBS,  
ALBERT BURT.