

C. F. HITCHINGS.

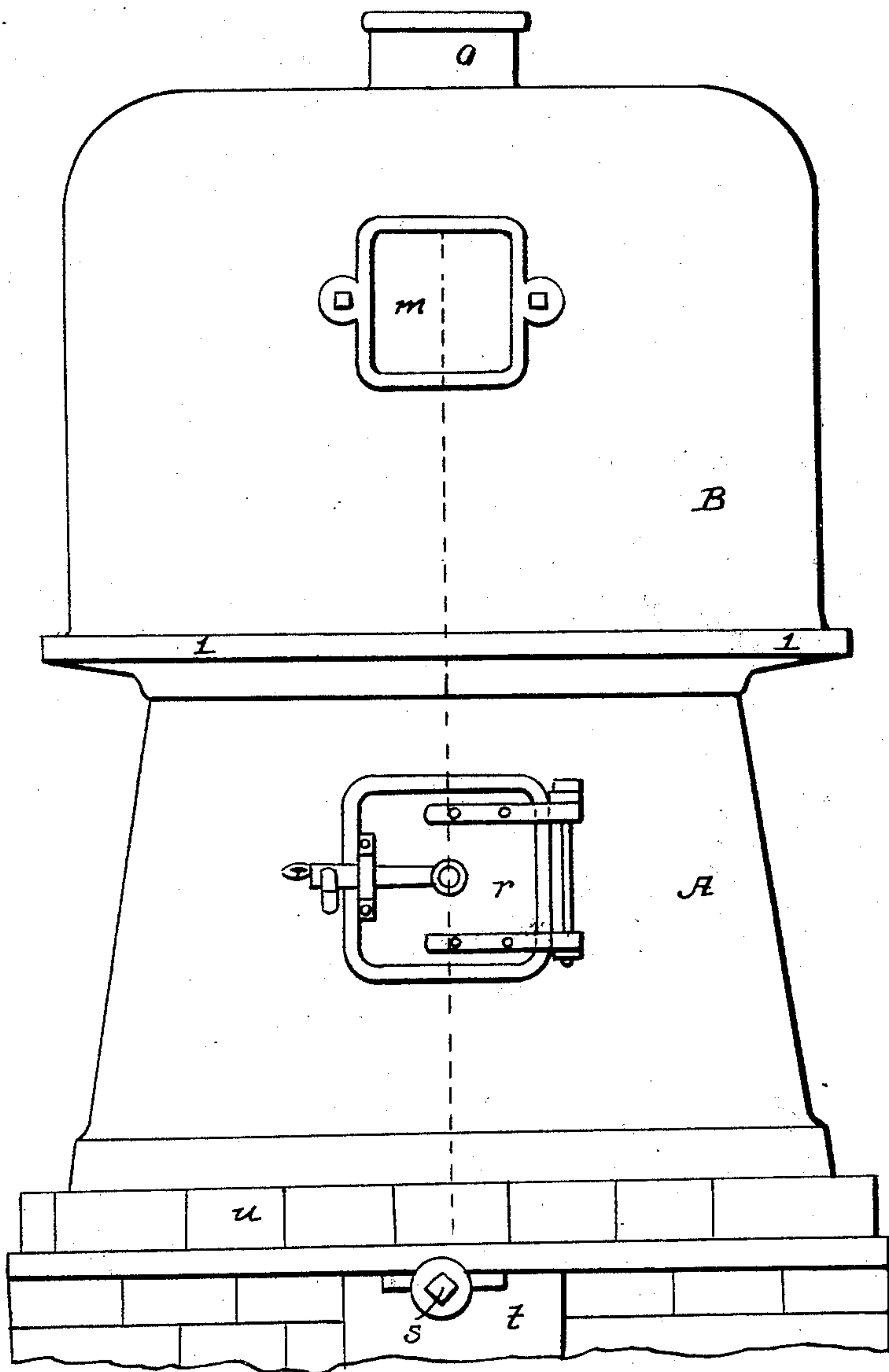
Steam Heater.

3 Sheets—Sheet 1.

No. 28,272.

Patented May 15, 1860.

Fig. 1.

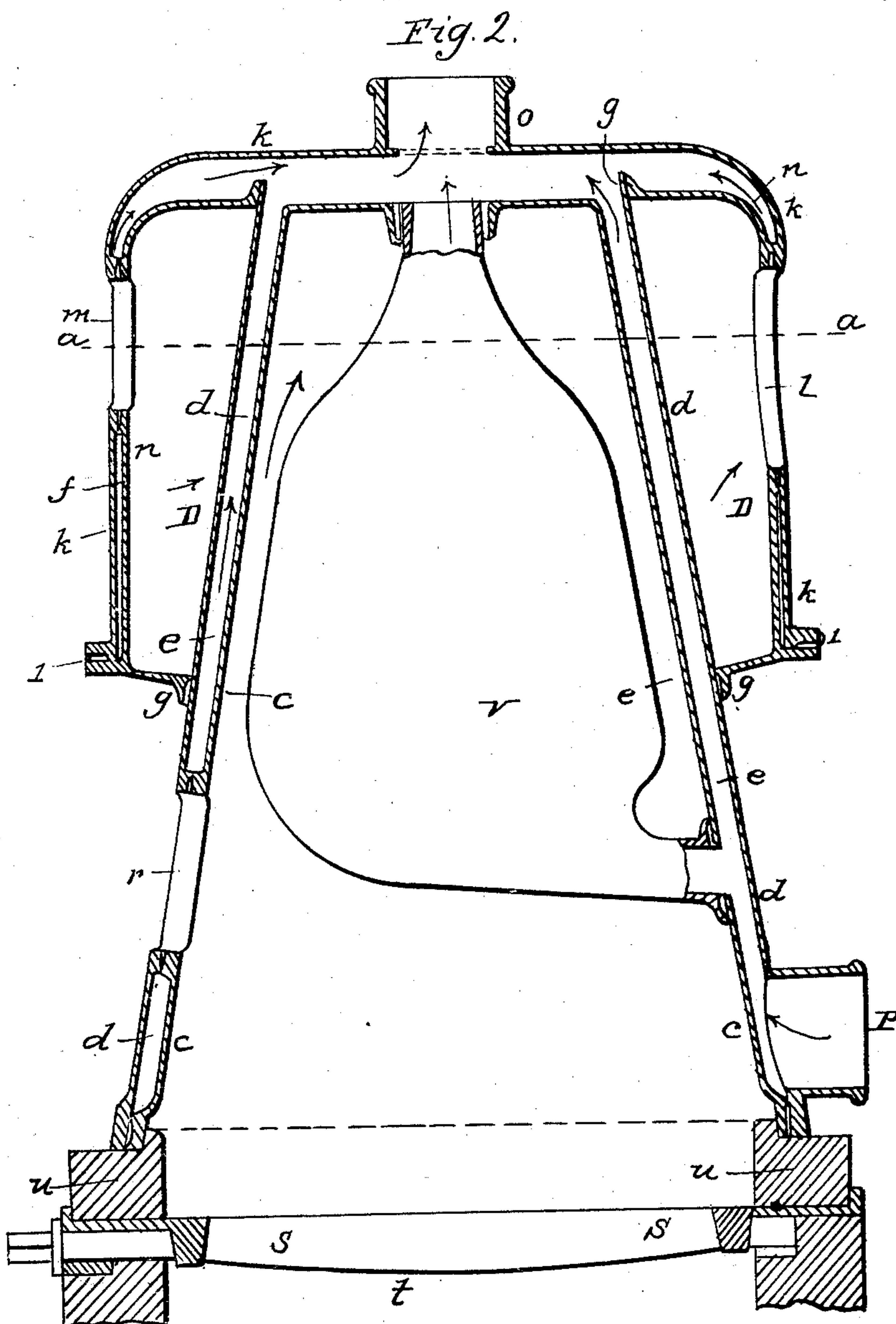


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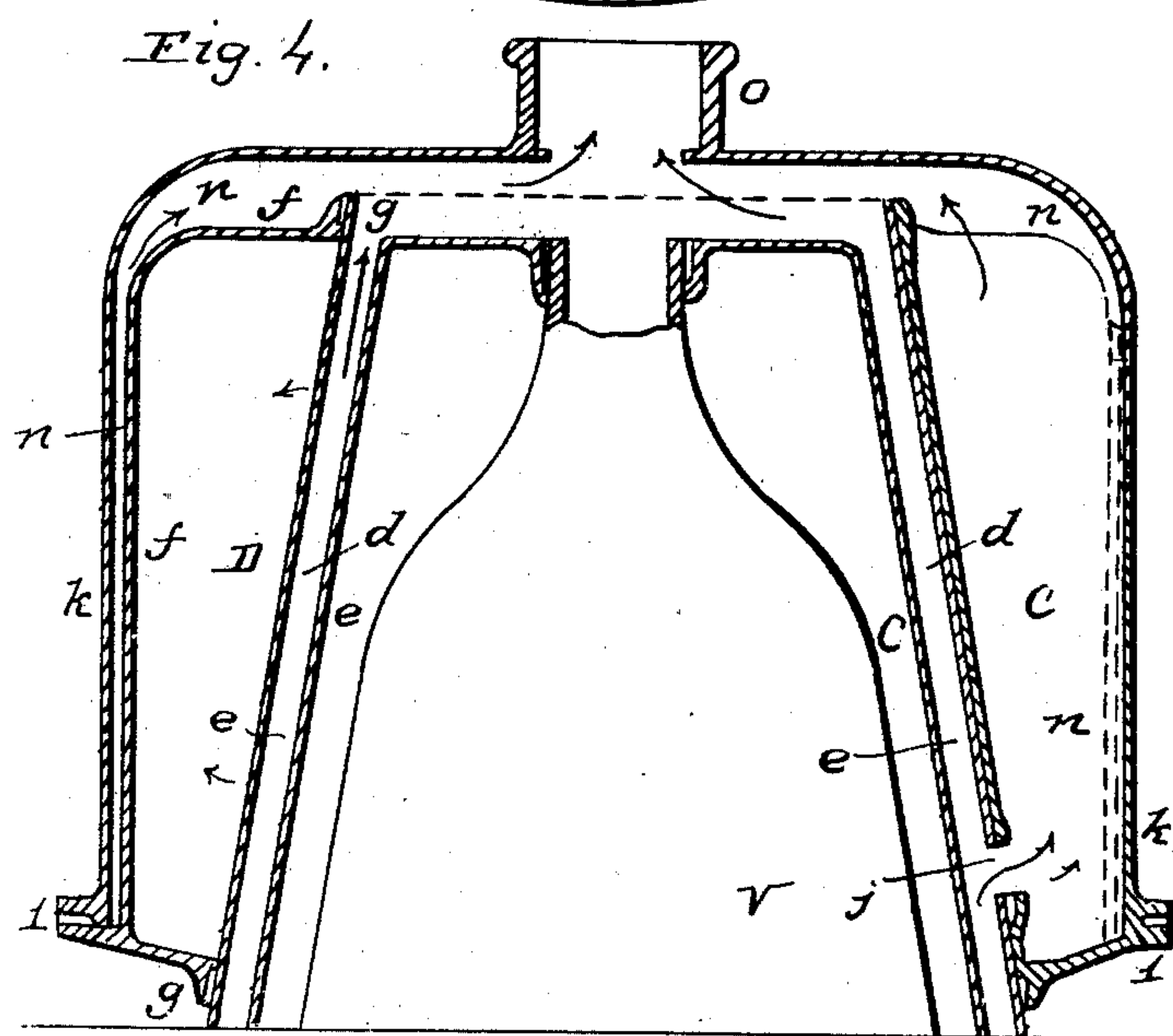
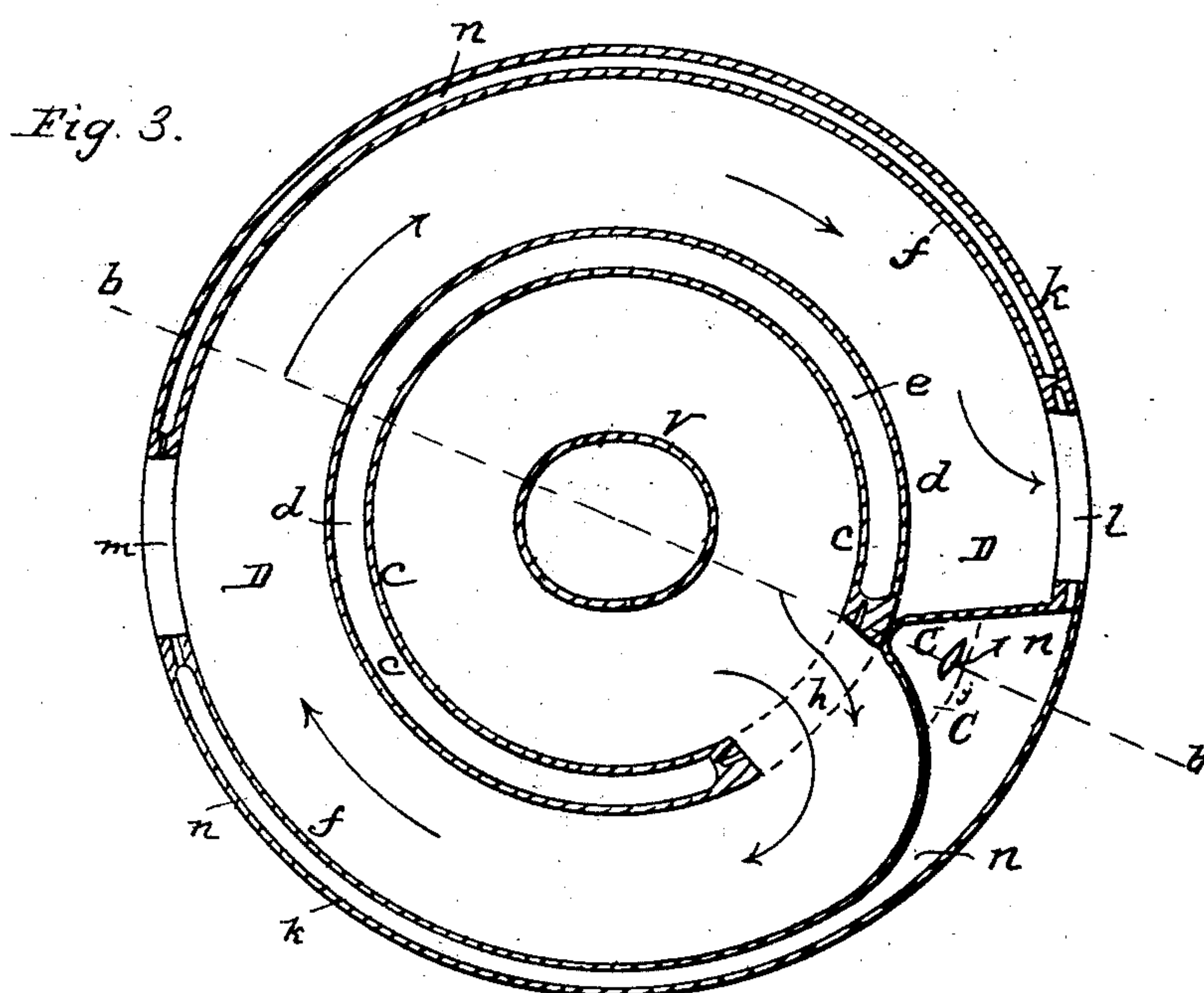
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3 Sheets—Sheet 3.

Steam Heater.

No. 28,272.

Patented May 15, 1860.



UNITED STATES PATENT OFFICE.

CHARLES F. HITCHINGS, OF NEW YORK, N. Y.

BOILER FOR HEATING BUILDINGS.

Specification of Letters Patent No. 28,272, dated May 15, 1860.

To all whom it may concern:

Be it known that I, CHAS. F. HITCHINGS, of the city, county, and State of New York, have invented a new and useful Improvement on Vertical Conical or Cylindrical Boilers for Warming Buildings with Hot Water; and I do declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in providing an annular water jacketed chamber, of any suitable metal, connected with water passages to and inclosing the upper part of boiler, forming an annular flue or passage between the outer shell of the boiler and the inner shell of the chamber, through which the flame and heated gases are forced to pass in their escape from the fire chamber to the chimney by which means, without altering the size or shape of the fire chamber I expose nearly double the amount of heating surface which absorbs the heat that would otherwise pass up the chimney rendering the boiler more effective and economizing fuel.

The form selected to illustrate my improvement is that of A. E. Hitchings' conical boiler, but the same may be applied to a vertical cylindrical boiler under similar conditions.

Figure 1, is a front elevation; Fig. 2, a vertical section at right angles to Fig. 1; Fig. 3, a sectional plan at *a, a*, Fig. 2; Fig. 4, a vertical section of the upper part through *b, b*, Fig. 3.

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

A is the boiler, *e, e*, being the inside shell or fire chamber, *d, d* the outside shell of the boiler made without a top, *e, e* the water space between the inner and outer shells.

B is the water jacketed chamber, which may be of any required height and of such diameter as to leave the passage or flue D between it and the outer shell *d, d* of the boiler, *f, f* the inner shell of the chamber. The upper and lower ends of this shell are contracted to suit the diameter of the outer shell of the boiler to which it is jointed at *g, g*, the upper joint being water tight.

C, C is the diaphragm formed by an indentation in one side of the inner shell *f, f* of the chamber, of such depth and shape as to

touch the outer shell of the boiler throughout the whole height of the inner shell *f, f* for the purpose of closing the flue at that point and forcing the flame and heated gases emitted from the fire chamber at the opening *h*, to pass around and play on the surfaces of the outer shell of the boiler and on the inner shell of the chamber and pass out through the opening *i* in the chamber to the chimney. The width of the diaphragm in contact with the outer shell of the boiler is increased at the lower part, and the water passage *j* made through it and the outer shell *d, d* of the boiler at that point for the passage of water to supply the circulation through the water spaces of the chamber B.

k, k is the outer shell of chamber B which is bolted and jointed to the inner shell *f, f* at the flange *l, l*, at the smoke outlet *i* and at the arm hole *m, n*, *n* the water spaces between the inner and outer shells of the chamber B, *i* the outlet for smoke, to be provided with a suitable connection to the chimney, *m* the arm hole for the convenience of cleaning the flue D, *o* the socket to receive the flow pipe, *p* the socket to receive the return pipe, *r* the fire door, *s* the fire grate, *t* ash pit, *u u* fire brick, *v* the flat sided water chamber.

The water in circulation enters at a low temperature at the pipe *p* is distributed through the water spaces *e, e*, of the boiler and by the passage *j* through the water spaces *n, n* of the chamber and as it becomes heated rises by reason of its lightness and passes out at the pipe *o*.

I do not claim a cylindrical or conical boiler, nor any system of flues or water passages within such boiler.

What I do claim as my invention and desire to secure by Letters Patent is—

1. The water jacketed chamber B in combination with a vertical cylindrical or conical boiler, inclosing the flue D between the inner shell *f, f* of the chamber B, and the outer shell *d, d* of the boiler A, for the purpose and in the manner substantially as set forth.

2. The diaphragm C, C formed by an indentation in the inner shell *f, f* of the chamber B or its equivalent for the purpose set forth.

CHAS. F. HITCHINGS.

Witnesses:

THOMAS H. KING,
A. E. HITCHINGS.