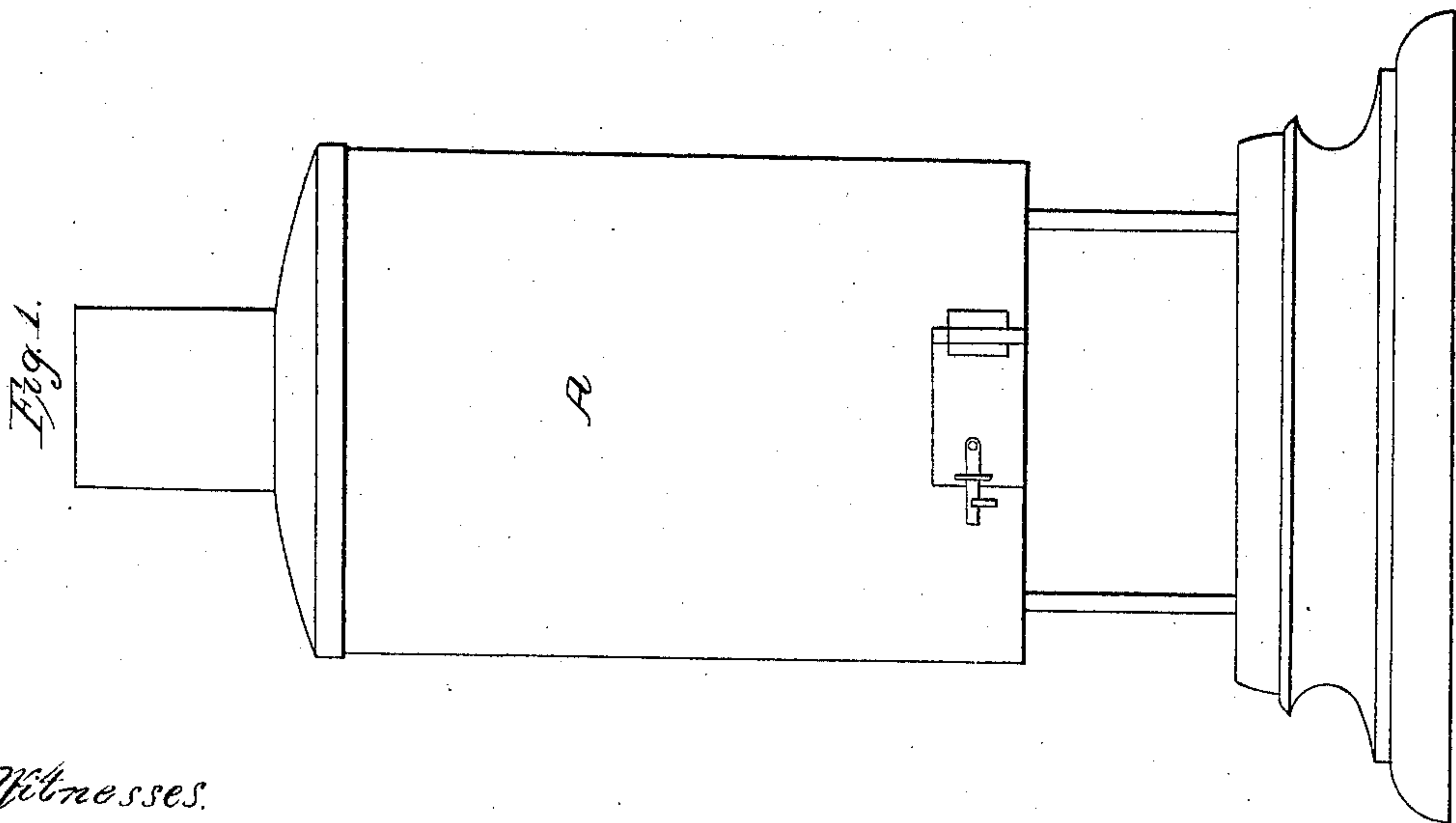
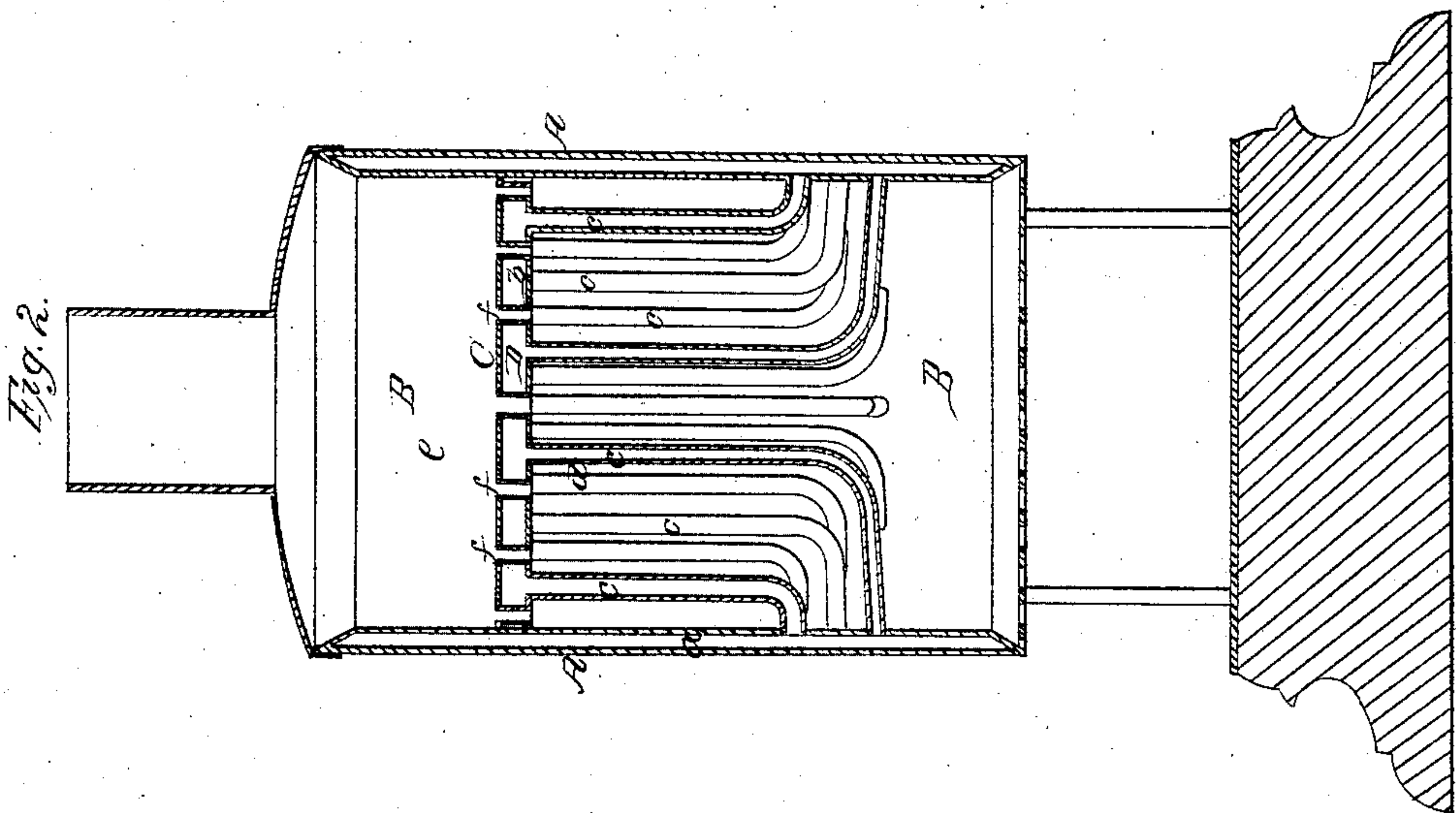


E. W. Tarbell,

Steam-Boiler Water-Tube.

N^o 27,954.

Patented Apr. 17, 1860.



Witnesses.
R. H.ddy
E. P. H.ddy

Inventor.
E. W. Tarbell

UNITED STATES PATENT OFFICE.

E. W. TARBELL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND EDWIN A. SIMONDS, OF SAME PLACE.

STEAM-BOILER.

Specification of Letters Patent No. 27,954, dated April 17, 1860.

To all whom it may concern:

Be it known that I, EDMUND W. TARBELL, of South Boston, in the county of Suffolk and State of Massachusetts, have invented
5 an Improved Upright Steam Boiler or Generator; and I do hereby declare the same to be fully described and represented in the following specification and the accompanying drawings, of which—

10 Figure 1 is an external elevation, and Fig. 2, a vertical section of it.

In such drawings, A exhibits the outer case of the boiler, which may be cylindrical in form within and concentric with such
15 case is another, viz., B, the two being connected at their ends so as to form between them a space or chamber *a*.

Two plates C, D, extend across the inner case B, and at a short distance apart, so as to
20 form a water space *b*, and to divide the interior of the case B, into two compartments *d*, *e*, the lower of which may serve as a furnace or chamber of combustion and be fitted with a grate and ash pit and a fuel
25 supplying throat. The superior chamber *e*, is a smoke and heat space and may be connected with a chimney by a pipe or flue. The two chambers *d*, *e*, are also connected
30 by one or more short pipes *f*, *f*, *f*, extending through the water space *b*. Furthermore,

a series of bent pipes *c*, *c*, *c*, *c*, project from the water space *b*, downward within the furnace *d*, and bend toward the casing B, and open into the water space *a*, as shown
in Fig. 2, the same serving to form a com- 35 munication between the two spaces *a*, and *b*.

When a fire is made in the chamber of combustion *d*, the external surfaces of the pipes *c*, *c*, will be exposed to the flame and heat, and such flame and heat will also cir- 40 culate through the pipes *f*, and pass into the chamber *e*. It will also act on the upper and lower plates of the water chamber *b*, and on the inner surface of the casing B. When the boiler is supplied with water to a 45 level above the space *b*, a very large amount of heating surface will be exposed to the action of the flame.

I claim—

The combination and arrangement of the 50 water and steam space *a*, the transverse water space *b*, and the series of bent connection tubes *c*, *c*, the furnace *d*, the smoke or heat chamber *e*, and the connection tube or tubes *f*, the whole forming an upright 55 boiler or steam generator.

E. W. TARBELL.

Witnesses:

R. H. EDDY,
F. R. HALE, Jr.