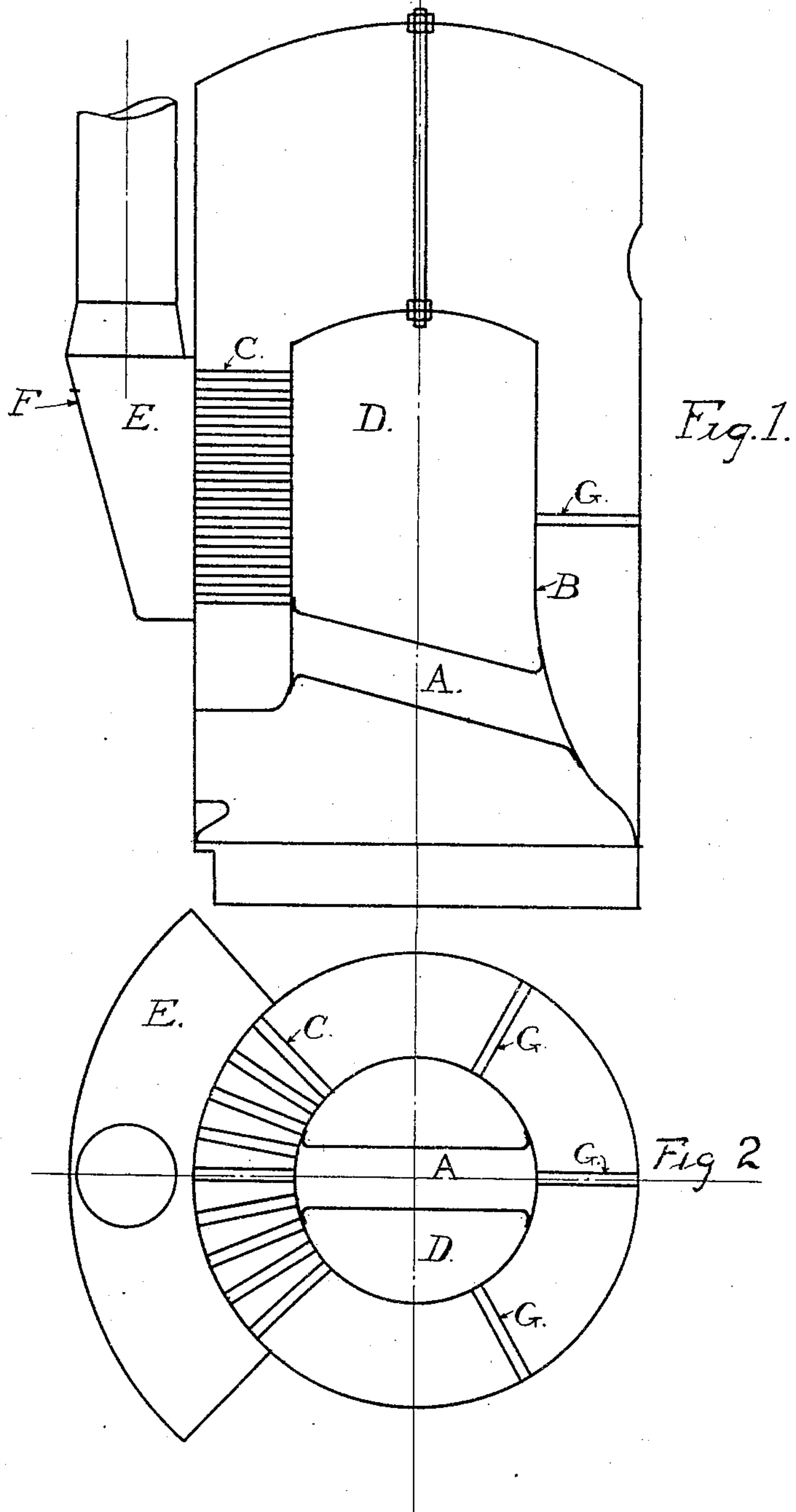


No. 782,844.

PATENTED FEB. 21, 1905.

J. GEMMELL.  
STEAM BOILER.

APPLICATION FILED MAY 10, 1904.



WITNESSES:

*E. A. Arnold*  
*Horace Cooper*

INVENTOR.

*James Gemmell*

# UNITED STATES PATENT OFFICE.

JAMES GEMMELL, OF PHILADELPHIA, PENNSYLVANIA.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 782,844, dated February 21, 1905.

Application filed May 10, 1904. Serial No. 207,344.

*To all whom it may concern:*

Be it known that I, JAMES GEMMELL, a citizen of the United States, residing at 764 South Swanson street, Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Upright Steam-Boiler, of which the following is a specification.

My invention relates to improvements to increase the efficiency of upright steam-boilers by the rapid circulation and evaporation of water by means of a circulating-tube in the fire-box above the grate-bars and by carrying off the gases to a lateral smoke-box on the front of the boiler by means of horizontal flues in place of the old method of carrying off gases through upright flues which extend from the crown-sheet to the upper head of upright steam-boilers. In my invention the flames and gases are in direct contact with an unobstructed dished crown-sheet and are deflected by the same to the horizontal flues through which they travel to the smoke-box above indicated. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the steam-boiler. Fig. 2 is a plan of the steam-boiler.

Similar letters refer to similar parts throughout both views.

The circulating-tube A is an ordinary water-tube, which passes over the fire-box in an inclined direction and is flanged and fastened to the fire-box iron B by rivets in

accordance with boiler-shop practice. The horizontal tubes C extend from the combustion-chamber D to smoke-box E in the manner shown in Fig. 2. The tubes are expanded and beaded into the outer shell and fire-box iron B and are to carry off the gases and smoke from combustion-chamber and to increase the heating-surface.

E is a smoke-box and a smoke-stack attached to front of the boiler and fastened to shell of the boiler by angle-iron and provided with cleaning-doors.

F represents the cleaning-doors attached to E.

G represents the hollow stay-bolts for admission of air to facilitate draft and combustion.

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

A combination of a water-tube above the fire-box in an upright combined water-tubular and flue boiler, with horizontal flues passing direct from the combustion-chamber to a smoke-box placed upon the front side of the boiler with an unobstructed dished crown-sheet to deflect the heat and flames toward the horizontal flues specified, all as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES GEMMELL.

Witnesses:

E. F. RILEY,  
E. G. ARNOT.