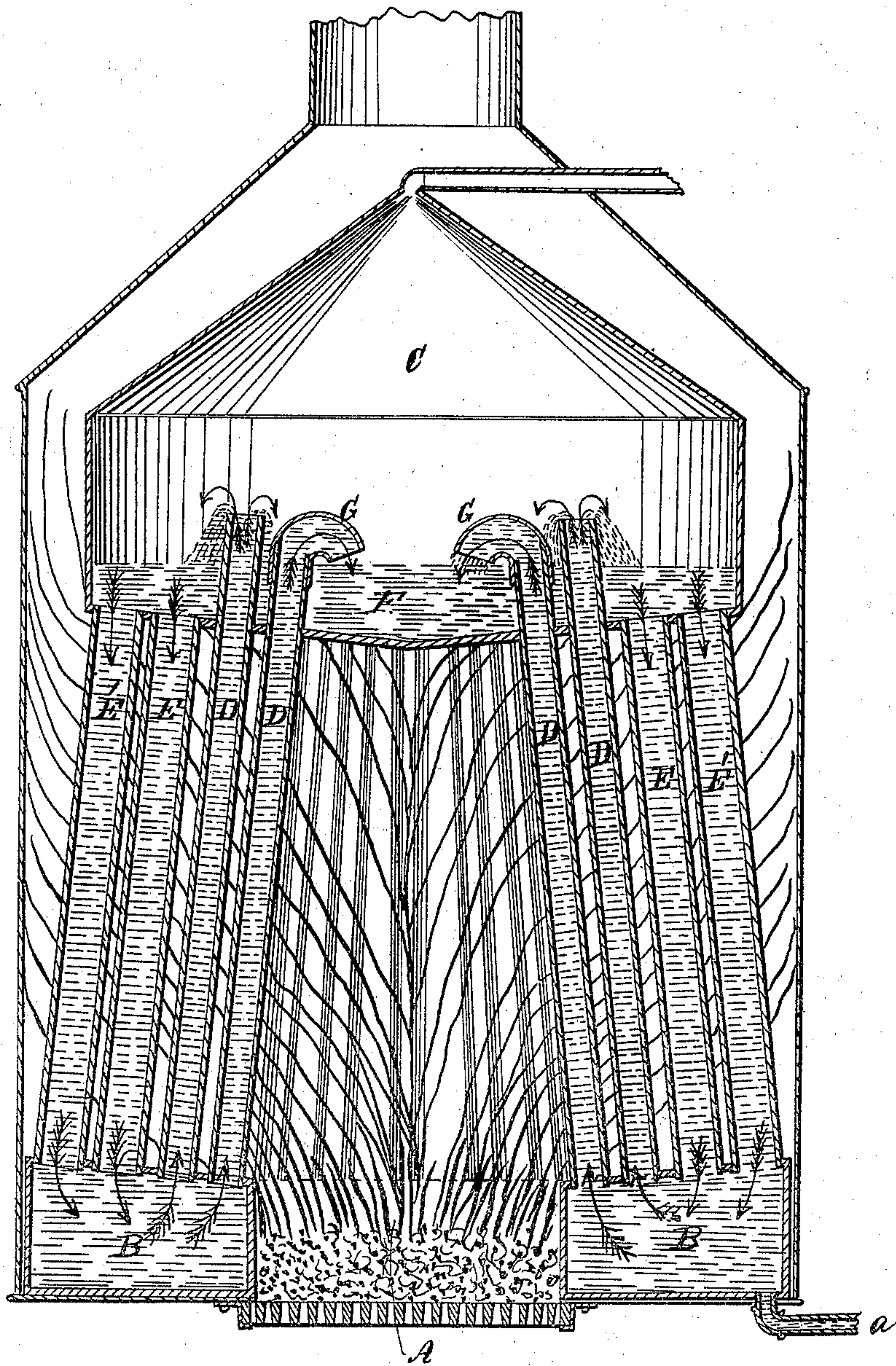


H. Bevis,
Steam-Boiler Water-Tube.
N^o 66,670. Patented July 16, 1867.



Witnesses.
J. Millward
Jas. H. Layman

Inventor.
Henry Bevis
By Knight Bros
Attys

United States Patent Office.

HENRY BEVIS, OF CINCINNATI, OHIO, ASSIGNOR TO HIMSELF, THOMAS H. FOULDS, AND W. D. DALTON, OF THE SAME PLACE.

Letters Patent No. 66,670, dated July 16, 1867.

IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that I, HENRY BEVIS, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Steam-Generators; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification.

My invention relates to that class of steam-generators having an automatic circulation, and consists in constructing the circulating tubes of different lengths and different diameters, the tubes for the supply or downward current being short, large in diameter, and furthest from the fire; the tubes for the upward current small, nearest to the fire, and carried upward, so as to discharge their contents above the water line; and the whole collection of tubes connected at the bottom to an annular or other suitably-shaped water-chamber. My invention further consists in providing a sufficient number of the fire-tubes for the upward current, with elbows or return-bends at the top to deflect the current and assist the circulation.

The accompanying drawing is an axial section of a boiler embodying my invention.

A is the fire-box, surrounded by an annular water-chamber, B, which receives the entire water supply for the boiler at *a*. C is the steam-chamber, connected to the water-chamber B by the annular rows of circulating tubes D D', E E'; tubes D D' being carried above the water line, and tubes E E' ending level with the crown-sheet F.

In the operation of the boiler, the tubes D D', being of smaller diameter and more exposed to the fire than the tubes E E', a rapid automatic and uninterrupted circulation will take place, upward through tubes D D' and downward through tubes E E'. To prevent a conflict of currents and for the purpose of effecting a quick generation of steam on first lighting up the fire, I carry the tubes D D' to a point above the water line. By this device the currents are separated completely, and the steam, as fast as formed, will issue directly into the steam-chamber, without having to pass through the body of the water on the crown-sheet F. To assist in circulation, when found necessary, I surmount some or all of the inner series of tubes D D' with downwardly-directed elbows or terminations G, to deflect the upward currents into the downward direction, and toward the outer and descending series of tubes.

I claim herein as new and of my invention—

The steam-chamber C and water-chamber B, connected by one or more annular series of ascending-tubes or ducts D immediately surrounding the fire, and having downwardly-discharging terminations G above the crown-sheet, and by one or more outer annular series of descending ducts E, having their inlets flush with the top of the crown-sheet, for the purpose set forth.

In testimony of which invention I hereunto set my hand.

HENRY BEVIS.

Witnesses:

SAMUEL KNIGHT,
JAMES H. LAYMAN.