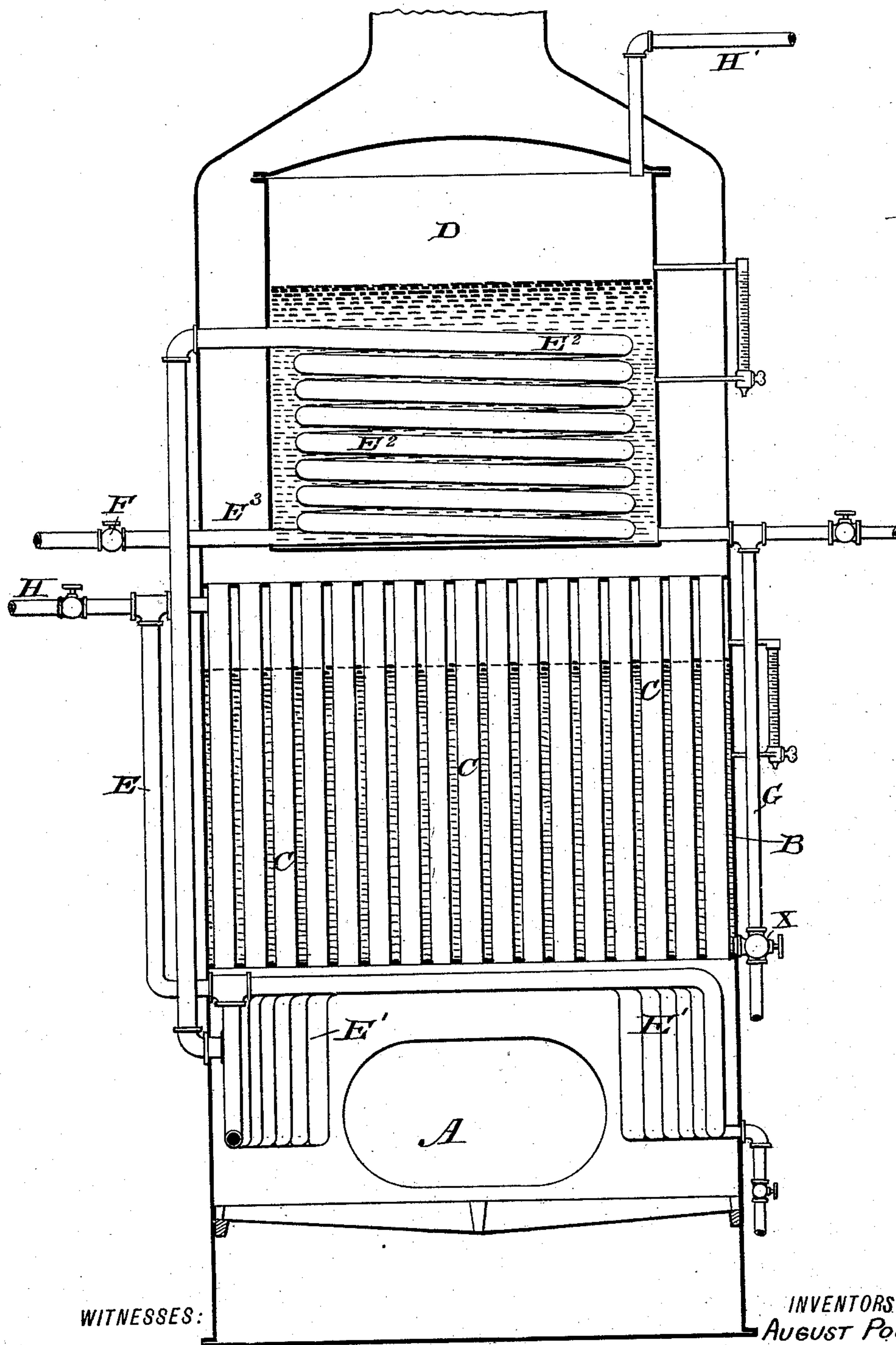


(No Model.)

A. POGGENDORFF & C. & F. BREDE.
METHOD OF GENERATING STEAM.

No. 406,467.

Patented July 9, 1889.



WITNESSES:

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UNITED STATES PATENT OFFICE.

AUGUST POGGENDORFF, CARL BREDE, AND FRITZ BREDE, OF ROCHESTER,
NEW YORK.

METHOD OF GENERATING STEAM.

SPECIFICATION forming part of Letters Patent No. 406,467, dated July 9, 1889.

Application filed January 16, 1889. Serial No. 296,568. (No model.)

To all whom it may concern:

Be it known that we, AUGUST POGGENDORFF, CARL BREDE, and FRITZ BREDE, all of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Method of Steam-Generation, of which the following is a specification, reference being had to the accompanying drawing.

The object of our invention is to generate steam economically by fire and with superheated steam, substantially as hereinafter described.

The accompanying drawing shows a central vertical section of an apparatus suitable for carrying out our invention, consisting of a furnace, two boilers, and suitable connecting-pipes.

The drawing only represents in mere outline certain forms of furnace and boiler apparatus; but any other forms may be used, since our invention does not depend upon any particular form of apparatus to be employed.

It consists in employing any suitable furnace and steam-boiler apparatus, and connections by which steam may be primarily generated by a fire and then conveyed through superheating apparatus, which may be located in the primary heating-furnace or elsewhere, and thence to submerged pipes within a water-boiler or steam-generator.

In the drawing, A indicates a furnace; B, a steam-boiler, provided with flues C; D, another boiler, and E a steam-pipe leading from the first boiler above the water-line through a superheating nest of pipes E' within the furnace to the coil E² in the boiler D, thence out whenever desired through the pipe E³.

F is a regulating-cock in the pipe E³.

G indicates a pipe connecting the two boilers, provided with a cock X for drawing off their contents.

This process of course might be carried out by using a series of more than two boilers. More than one superheater might also be

used; but these additions of mechanism would not be a departure from the substance of our process of steam-generation, which is thoroughly exemplified in the use of a single superheater and a series of only two boilers, as illustrated in the drawing.

In practice a long extent of pipes is generally preferable for the superheating structure, and also for containing the superheated steam to be submerged and used for generating steam in the second or other boiler. Steam for use in driving an engine, or for any other purpose, may be taken directly from the first boiler and also directly from the second boiler by pipes H H' in the ordinary way.

We have found in practice that by the method above described the use of part of the steam generated in the first boiler, by being conserved and superheated and distributed in coils within another boiler or boilers, enables us to generate much more steam than can be generated in a single boiler heated by fire.

What we claim to be new is—

The method of generating steam herein described, which consists in first generating it in a water-receptacle heated by fire, conveying it thence to a superheater and superheating it, and conveying it thence into submerged pipes within another water-receptacle to generate steam there, the superheated steam being kept separate from the water in the second water-receptacle, substantially as set forth.

In testimony of all which we have hereunto subscribed our names.

AUGUST POGGENDORFF.
CARL BREDE.
FRITZ BREDE.

Witnesses:

R. F. OSGOOD,
H. C. THIRM.