

(No Model.)

H. WOJAN.
BOILER.

No. 367,488.

Patented Aug. 2, 1887.

FIG. 2.

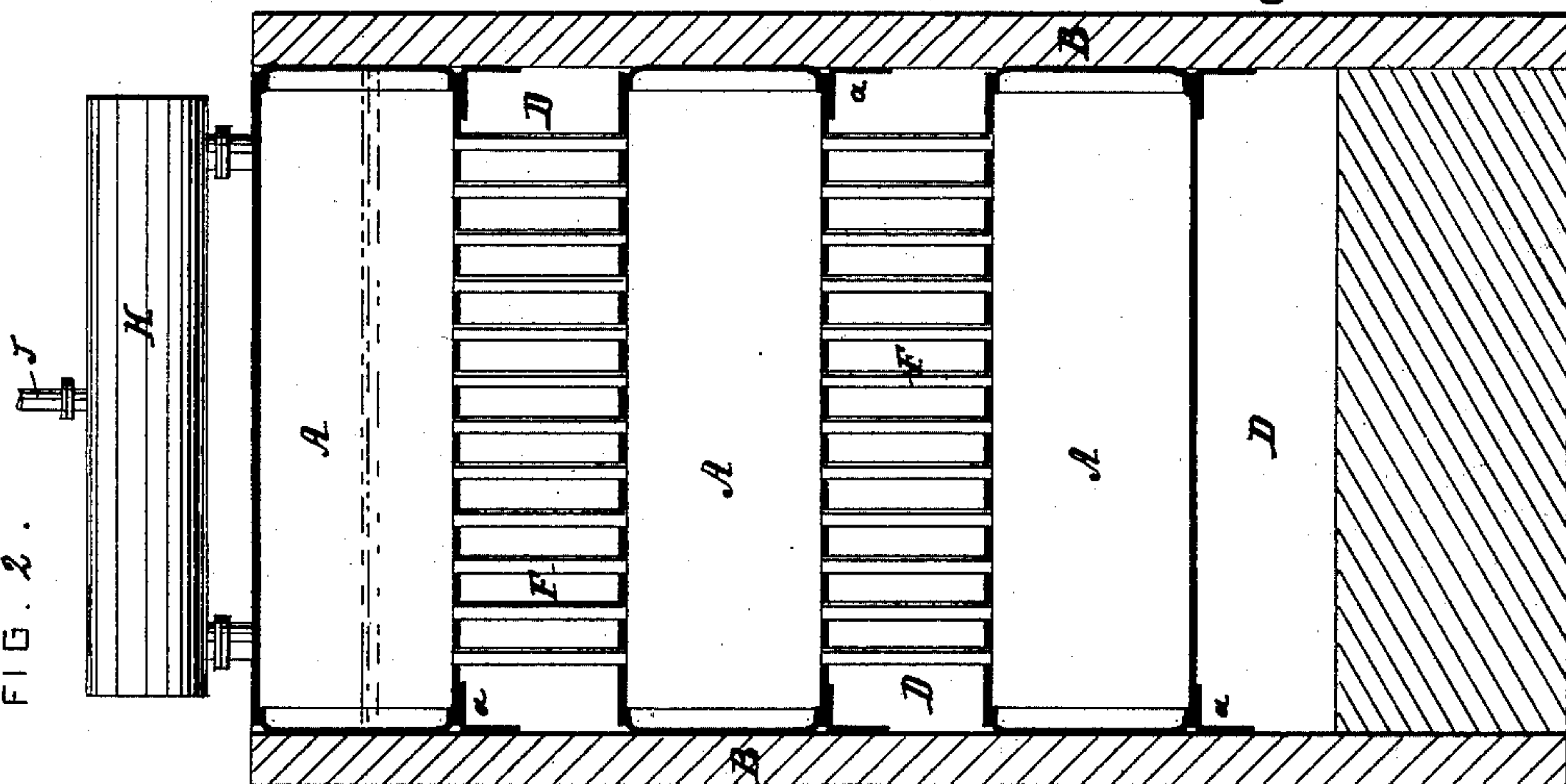
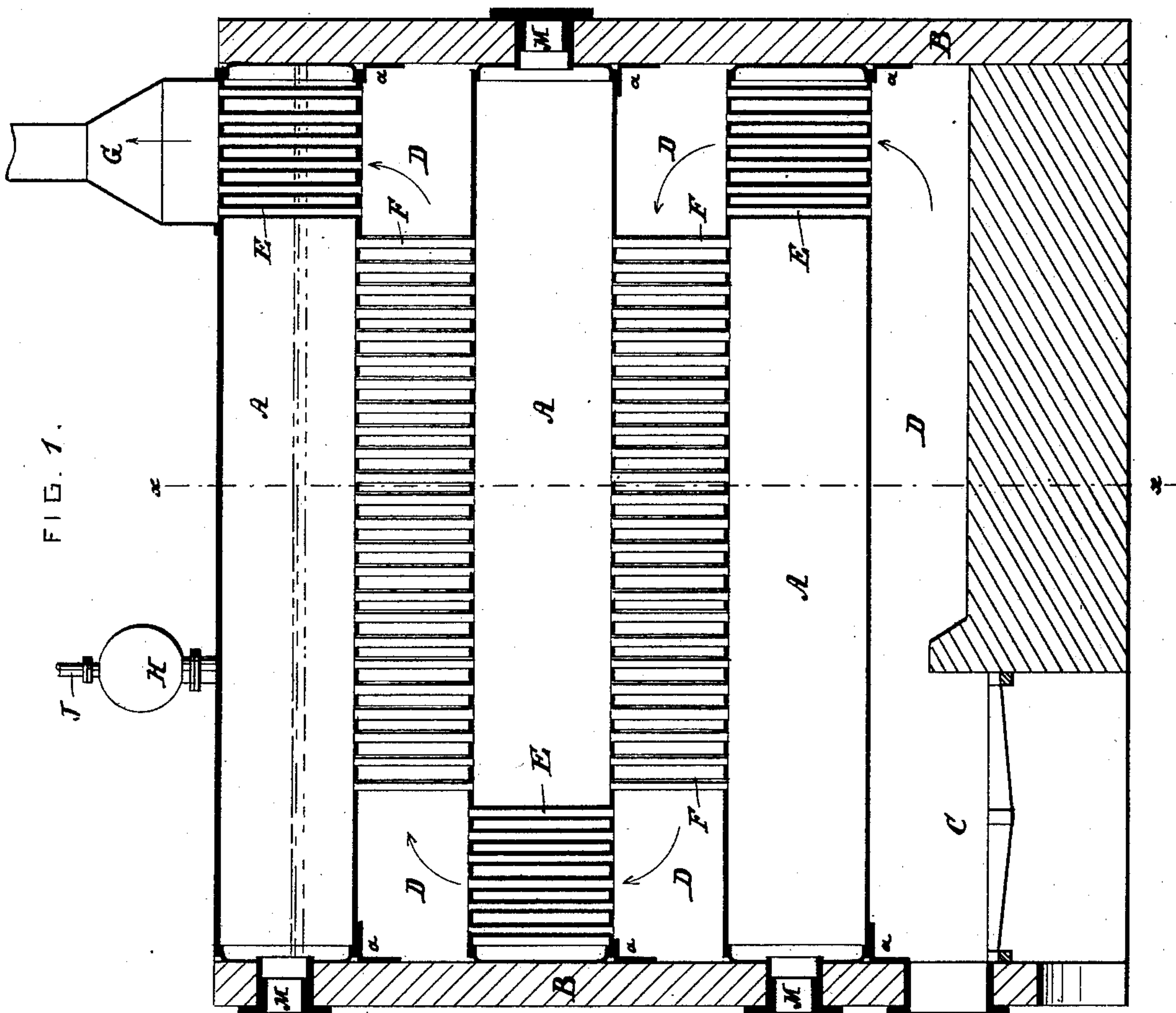


FIG. 1.



WITNESSES

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UNITED STATES PATENT OFFICE.

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BOILER.

SPECIFICATION forming part of Letters Patent No. 367,488, dated August 2, 1887.

Application filed June 7, 1887. Serial No. 247,517. (No model.)

To all whom it may concern:

Be it known that I, HERRMANN WOJAN, of Brooklyn, county of Kings, State of New York, have invented a new and useful Improvement in Boilers, of which the following is a specification.

This invention relates to boilers consisting of a series of water-chambers provided with tubes through which the fire and gases pass, and connected together by tubes through which the water passes from one chamber into the other, and around which latter the fire and gases pass.

The invention consists of the improvements hereinafter described and claimed.

Figure 1 is a longitudinal section of my improved steam-boiler; Fig. 2, a cross-section at line *x x*, Fig. 1.

A A represent a number of water-chambers supported on brackets *a*, attached to the walls B, inclosing the boiler.

C is the fire grate, and D D are flues for the fire and gases, above and below the chambers A.

E are tubes passing through the chambers A, placed at alternate ends of the same, and through which the fire and gases pass from one flue into another, and F are tubes connecting the upper and lower chambers, placed between the tubes E in one end of one of the chambers and the tubes E in the other end of

the adjoining chamber, through which tubes F the water can pass from one chamber to the other adjoining chamber.

G is the smoke-pipe, into which the tubes E of the upper chamber A terminate.

H is a steam-drum, and J the steam pipe, arranged in the usual manner.

M are man-holes placed in the ends of the chambers A opposite the end through which the tubes E pass.

The fire and gases pass from the lower flue D through the tubes E in the chamber A into the upper flue D, then around the tubes F, connecting the chambers A together, until at last they arrive at last series of tubes E in the upper chamber A and escape then into the chimney G, as indicated by the arrows.

What I claim as my invention is—

In combination with a number of water-chambers, A, placed above each other, and intermediate flues, D, the vertical tubes E, passing through the water-chambers A alternately at the back and front end, and the tubes F, passing through the flues D between the tubes E, and connecting the water-chambers A, as and for the purpose described.

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Witnesses:

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