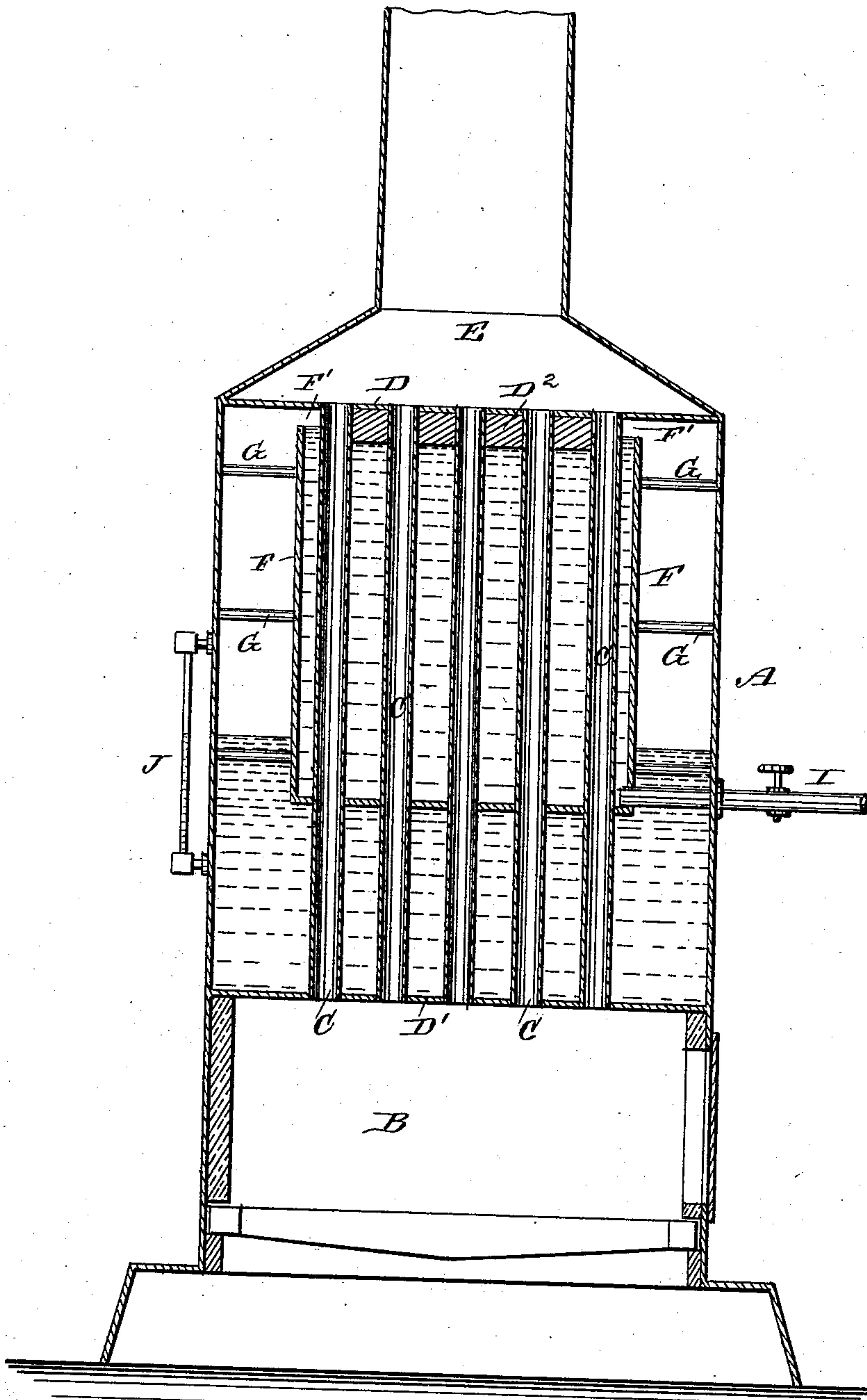


(No Model.)

G. A. THODE.
UPRIGHT STEAM BOILER.

No. 324,188.

Patented Aug. 11, 1885.



WITNESSES:

Geo. G. Foster
C. Sedgwick

INVENTOR:

G. A. Thode

BY *Munn & Co*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GUSTAV A. THODE, OF HOLSTEIN, IOWA.

UPRIGHT STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 324,188, dated August 11, 1885.

Application filed April 23, 1885. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV A. THODE, of Holstein, in the county of Ida and State of Iowa, have invented a new and Improved Upright Steam-Boiler, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved upright steam-boiler, in which the heating-surface is increased, and in which the boiler-flues are surrounded by water to prevent the overheating of the same.

The invention consists of an upright steam-boiler provided with a suspended reservoir within the boiler, and which reservoir is kept constantly filled with water by an injector.

The invention also consists of various parts and details, hereinafter more fully set forth and described.

Reference is to be had to the accompanying drawing, forming part of this specification, in which the figure represents a vertical section of an upright steam-boiler provided with my improvements.

The steam-boiler A is provided with the usual fire-place, B, and the flues C between the top and bottom plates, D and D', connecting the fire-place B with the dome E of the boiler. Within the boiler A, and between the top and bottom plates, D and D', is held suspended the reservoir F by means of the stays G, riveted or otherwise fastened to the shell or the top plate, D, of the boiler A. The reservoir F is open at the top, which reaches near to the top plate, D, and the bottom of the reservoir is immersed in the water a little below the level of the water-line, and through which bottom all the boiler-flues C pass. The top plate, D, has its middle part around the flues C a little lower than the outer part, or is provided with an additional plate, D², attached to the under side of the plate D, as shown in the drawing, so that the inner flues and part of the outer flues, C, are surrounded on their upper end by the said depression of the plate D or the extra plate D², leaving a small space, F', between the upper plate, D, and the reservoir F. An injector, I, passes through the shell of the boiler A and opens into the res-

ervoir F near its bottom, and serves to supply the reservoir F and the boiler A with water.

The operation is as follows: The injector I fills the reservoir F, and the latter being open at the top allows the water to overflow and fill the boiler A to the water-level, which is indicated by the water-gage J. It will be seen that the lower parts of the flues C are surrounded by water in the boiler A, between the bottom plate, D', and the bottom of the reservoir F, and the remaining upper parts of the flues C are surrounded by the water in the reservoir F up to the top plate, D. The water in the boiler A is heated and converted into steam, in the usual way, from the fire-place B by means of the bottom plate, D', and the lower parts of the flues C, and the water in the reservoir F is heated and converted into steam by the upper part of the flues C, this being the additional heating-surface gained by my improvement. The quantity of water which is converted into steam is equalized by the injector I.

The reservoir F can be cleaned by removing the injector I.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A steam-boiler containing a reservoir inclosing the upper parts of the boiler-flues, substantially as herein shown and described.

2. A steam-boiler containing a reservoir suspended between the top and bottom plates of the boiler, and inclosing the upper parts of the boiler-flues, substantially as shown and described.

3. A steam-boiler containing a reservoir suspended between the bottom and top plates of the boiler, and inclosing the upper parts of the boiler-flues, the open top of the reservoir reaching within a short distance of the top plate of the boiler, substantially as shown and described.

GUSTAV A. THODE.

Witnesses:

GEORGE W. COOLIDGE,
J. W. REED.