

(No Model.)

J. BUCHANAN.
STEAM BOILER.

No. 515,729.

Patented Feb. 27, 1894.

Fig. 2.

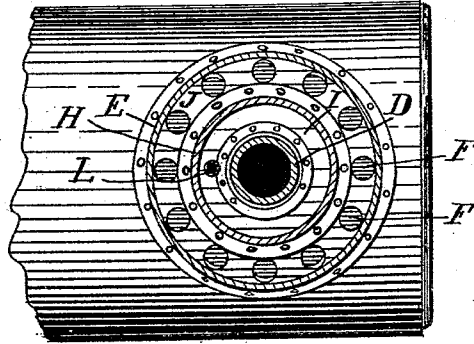
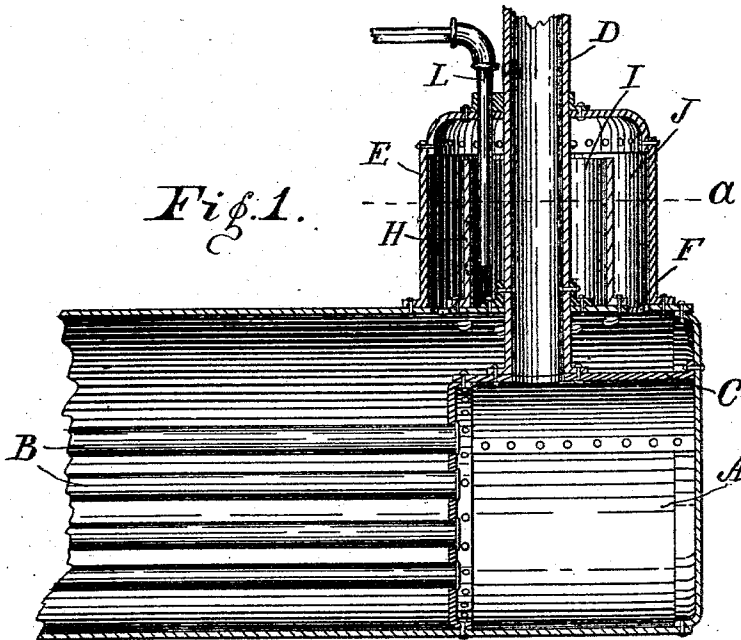


Fig. 1.



WITNESSES:

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JAMES BUCHANAN, OF INDIANAPOLIS, INDIANA; WILLIAM W. BUCHANAN
ADMINISTRATOR OF SAID JAMES BUCHANAN, DECEASED.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 515,729, dated February 27, 1894.

Application filed March 18, 1893. Serial No. 466,606. (No model.)

To all whom it may concern:

Be it known that I, JAMES BUCHANAN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Steam-Boilers, of which the following is a specification.

My invention relates to an improvement in steam-boilers.

10 The object of my improvement is, to provide means for utilizing the waste products of combustion for drying and super-heating the steam; and to provide means to prevent the water, in case of "foaming" in the boiler, from entering the steam discharge pipe.

15 The accompanying drawings illustrate my invention.

20 Figure 1 represents a longitudinal section of a tubular steam-boiler, having my improvement. Fig. 2 is a plan of the same at —a— Fig. 1.

25 In the drawings, A, indicates the smoke-chamber into which the smoke-tubes, B, discharge. Said smoke-chamber instead of occupying the entire diameter of the forward end of the boiler, as is usual in this class of boilers, is separated from the upper part of the boiler by an arched horizontal partition, C, so that the steam-space of the boiler extends 30 over the smoke-chamber to the forward end of the boiler. The smoke-stack, D, extends from the smoke-chamber through the steam-space above partition C, through the shell of the boiler, and upward. The steam-dome, E, is 35 mounted upon the boiler concentric with the smoke-stack and communicates with the steam-space of the boiler through a series of openings, F, F, in the shell of the boiler. Mounted upon the boiler and surrounding the 40 smoke-stack, within the steam-dome, is a circular partition, H, which extends nearly to the top of the steam-dome and forms an an-

nular space, I, immediately surrounding the smoke-stack, and having no communication with the steam space of the boiler except 45 through the annular space, J, formed between the outside of partition H, and the inside of the steam-dome. The steam discharge pipe, L, extends nearly to the bottom of the annular space, I.

50 In operation, the steam, passing from the upper part of the boiler through the openings F, enters the annular space J, and passes from thence over the top of partition H, into the annular space I, and is discharged therefrom 55 through the steam pipe L. The steam is thus compelled to pass, before its discharge, into close contact with the smoke-stack through which the products of combustion pass, and is thereby heated to the required degree of 60 dryness. The arrangement of the partition H and the steam discharge pipe, renders it practically impossible for water from the boiler to enter the steam-pipe.

I claim as my invention—

65 In a steam-boiler, the combination of the smoke-stack, the circular partition surrounding said smoke-stack and forming an annular chamber therewith, said chamber being open at the top and closed at the bottom, the steam- 70 pipe leading from said annular chamber, and the steam-dome surrounding said circular partition and forming therewith and with the smoke-stack a closed annular space communicating at the bottom with the steam space 75 of the boiler, all arranged to co-operate in the manner set forth, whereby the steam before entering the steam pipe is brought into close contact with the smoke-stack, substantially as and for the purpose set forth.

JAMES BUCHANAN.

Witnesses:

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