W. R. MICHENER.

PORTABLE STEAM BOILERS.

No. 193,378. Patented July 24, 1877.

Fig. 1

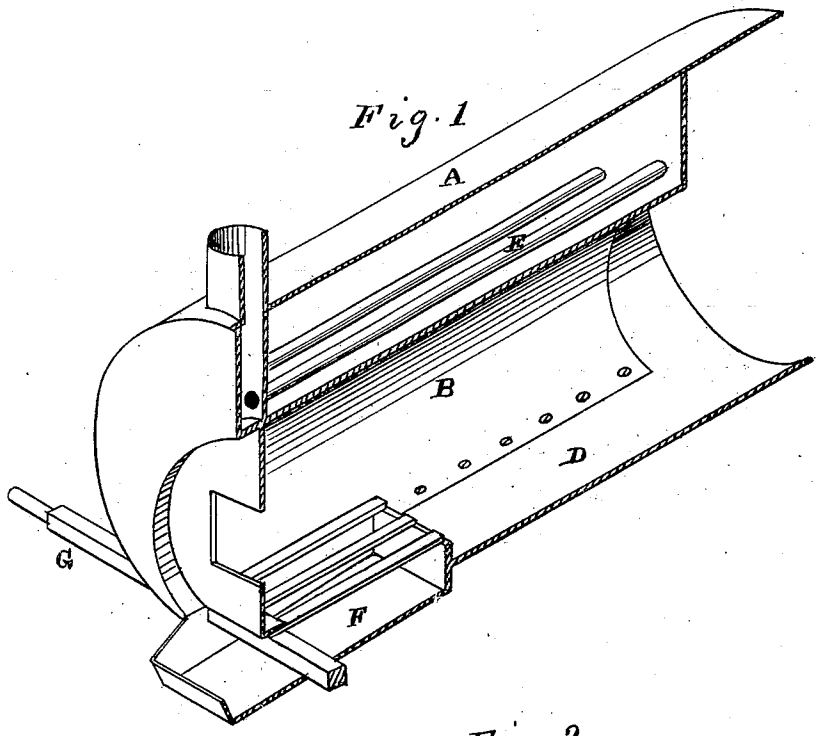
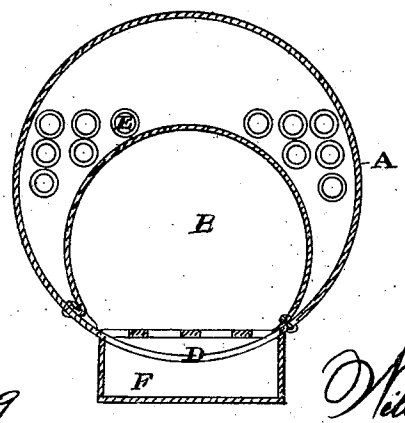


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM R. MICHENER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN PORTABLE STEAM-BOILERS.

Specification forming part of Letters Patent No. **193,378**, dated July 24, 1877; application filed June 8, 1877.

To all whom it may concern:

Be it known that I, WILLIAM R. MICHENER, of the city and county of San Francisco, and State of California, have invented a Portable Boiler; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to certain improvements in the construction or boilers, and more especially that class of boilers which are known as portable or field boilers, and which are constructed with a single large flue, serving as a fire-place, and extending through the length of the boiler, while small return-tubes upon each side carry the products of combustion to the chimney.

My invention consists in making the large flue a segment of a circle, and riveting its edges to the lower part of the cylindrical main shell of the boiler, so that at the bottom this main shell serves as a bottom both to the boiler and to the tube. A portion of the main shell is cut away where the fire-grates are placed, so as to allow an ash-pan to be set beneath the grates, and this ash-pan may be surrounded by a water-chamber, which connects with the water space in the boiler. A shaft or axle is firmly secured across the end, which is cut away to receive the grates, so as to serve as a stay and counteract any weakening arising from said cutting away.

In the drawings, Figure 1 is a longitudinal section of the boiler. Fig. 2 is a transverse section.

A is the shell of my boiler, which is made cylindrical. The main flue B, which serves also as a fire-place, I make in form of a segment of a circle—that is, with the lower edges separated, and these lower edges are riveted to the main shell at C throughout the entire length. This leaves the portion D of the main shell between the riveted edges of the flue to serve as a bottom for the flue. My object in thus constructing the boiler is to set the flue as low as possible, so that the return-tubes E may be made more numerous, and extend, if desired, over the main flue. I have discovered that when the flue B is set above the main shell, as in the ordinary construction of these boilers, so that water can circulate all around it, there is no advantage gained by this circulation, because very little heat passes into the water below the tube, and when the portion D of the main shell is employed to form the bottom of the tube, the heat will not be great enough to affect the iron, partly because it is at the bottom and partly because it is protected by ashes or cinders. The gain, however, is great by increasing the number of return-tubes, and extending them above the main flue, which can be done in my construction without encroaching upon the steam-space any more than is done with a less number of tubes in the old form. This construction is also economical, because of the saving of iron where the part D serves as a bottom to both boiler and flue.

At the front of my boiler furnace or tube B, I cut away a portion of the shell D, so as to leave a space for an ash-pan, F, which stands below the level of the bottom of the flue. The sides of this pan may be made double, if desired, and serve as a water-chamber connecting with the boiler. A shaft, axle, or stay, G, is secured across this open space, so as to counteract the weakening caused by cutting away the shell.

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

1. A portable boiler having the flue B made in the form of a segment of a circle, the edges of said segment being riveted to the lower part of the main circular shell A at C, so that the segment D of the shell shall extend around and serve as a stay and bottom for both tube and boiler, substantially as herein described.

2. In combination with the segmental tube B, riveted to the shell A, as shown, and having the part D cut away to receive the ash-pan F, the shaft or axle G, secured across this open space and serving as a stay, substantially as herein described.

In witness whereof I have hereunto set my hand and seal.

WILLIAM R. MICHENER. [L. S.]

Witnesses:

GEO. H. STRONG,

FRANK A. BROOKS.