G. H. POND.

Sectional Steam-Boiler.

No. 223,451. Patented Jan. 13, 1880.

FIG. 1.

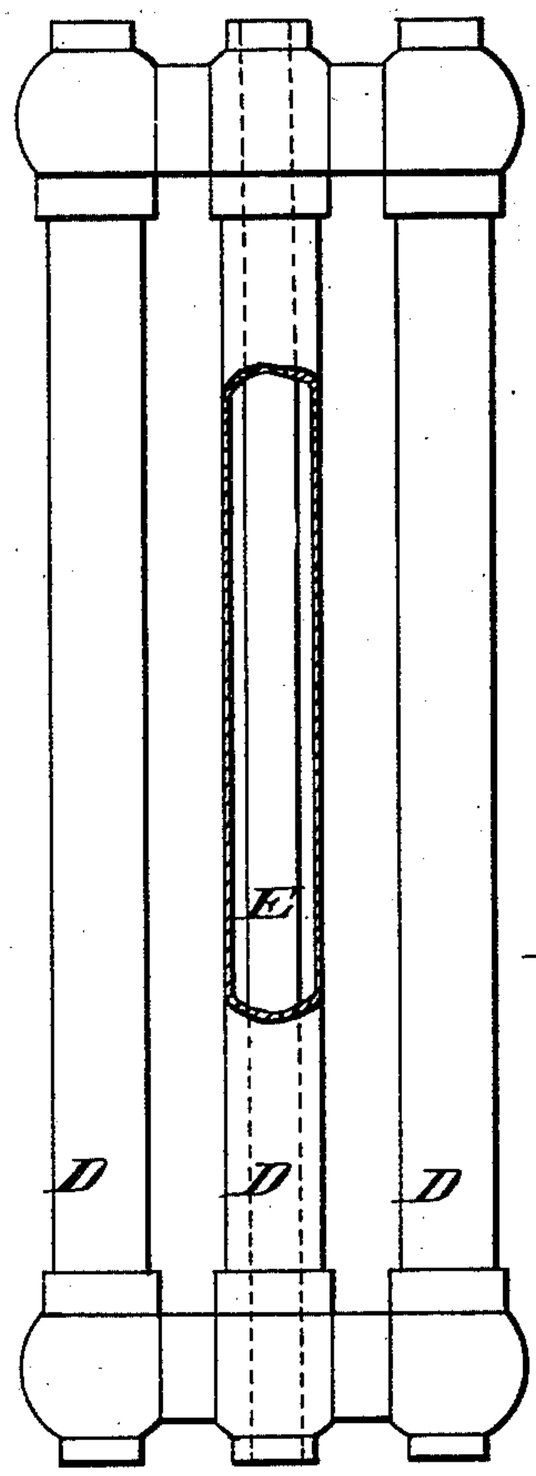


FIG. 2.

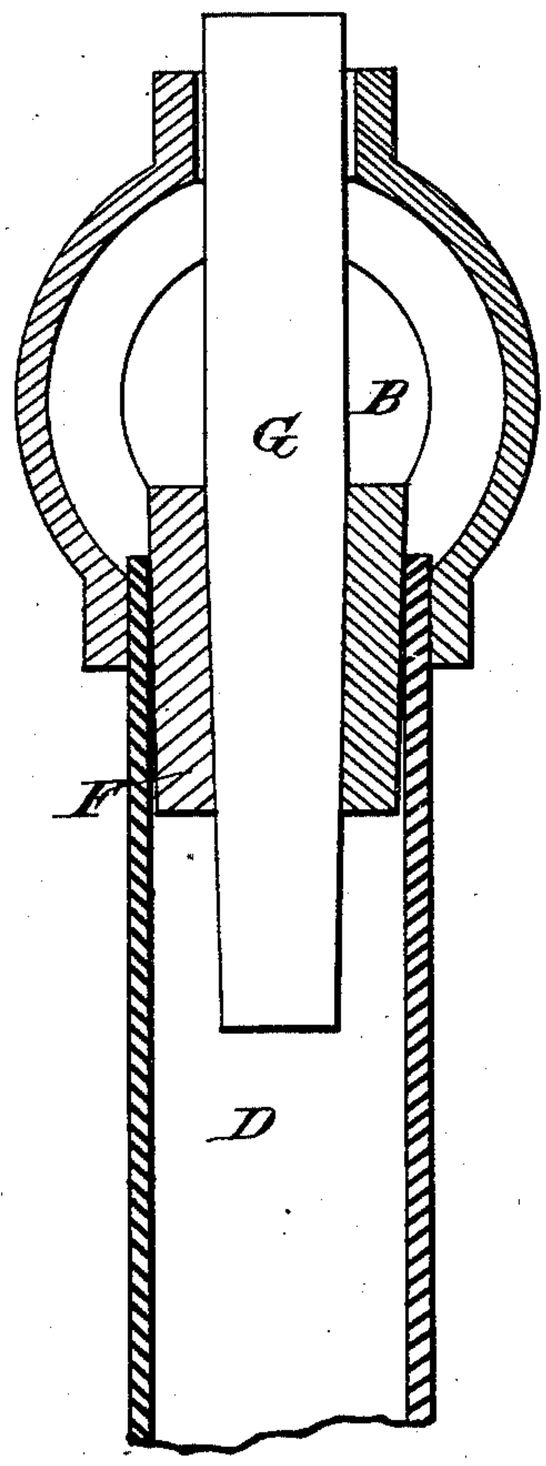


FIG. 3.

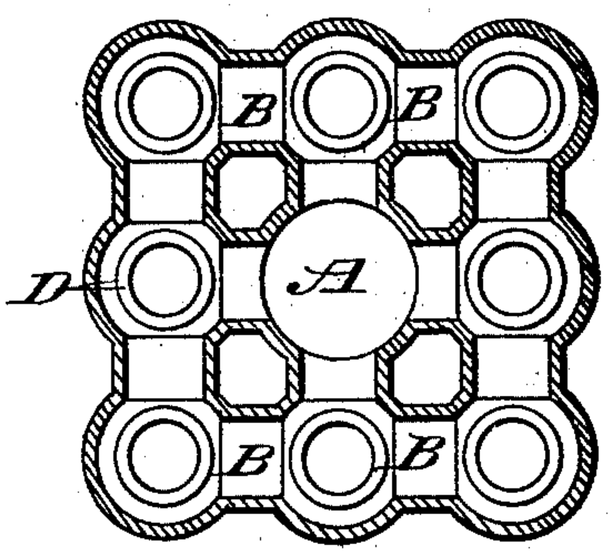


FIG. 4.

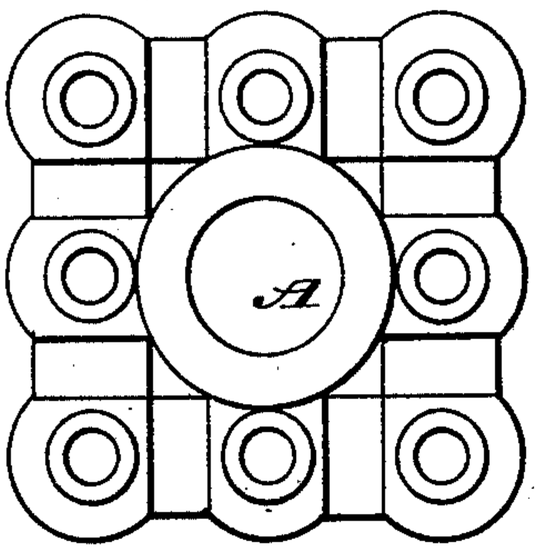
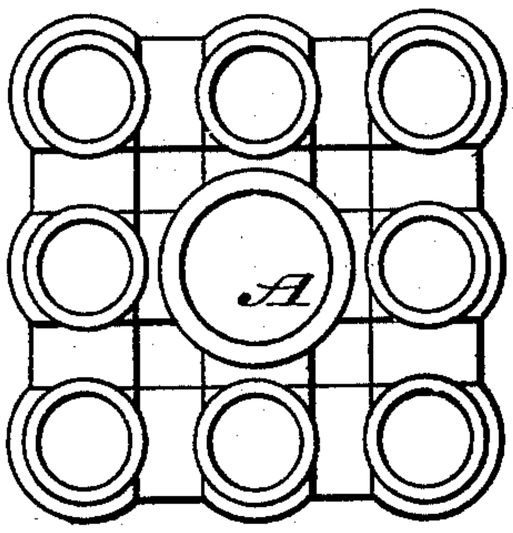


FIG. 5.



WITNESSES.

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UNITED STATES PATENT OFFICE.

GOLDSBURY H. POND, OF NEW YORK, N. Y., ASSIGNOR TO POND & BRADFORD BOILER COMPANY, OF SAME PLACE.

SECTIONAL STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 223,451, dated January 13, 1880.

Application filed February 12, 1879.

To all whom it may concern:

Be it known that I, GOLDSBURY H. POND, of New York city, in the county and State of New York, have invented certain new and useful Improvements in Sectional Steam-Boilers, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is an elevation of one side tier of tubes, one of the outside tubes being broken away to show the inside tube, also showing how the upper and lower heads are connected together by the tubes. Fig. 2 is an enlarged view of a section of one of the spheres, showing the large wrought-iron tube in place, the cast-metal tubular openings and the expanding-tool entered, and the mandrel in place, ready to be forced down to cause the expansion of the end of the tube inside the spherical head. Fig. 3 is a cross-section of the head, showing the hand-hole and cast-metal tubular openings from the hand-hole to the spheres and from one sphere to the other, through which the expanding-tool is to pass to the inside of the sphere, also showing the end of the large wrought-iron tube in place, as seen from the inside of the sphere. Fig. 4 is a view of the outside ends of the spherical heads. Fig. 5 is a view of the inside ends of the spherical heads.

My invention consists in making a double tubular boiler-head of cast metal in a single piece, composed of a series of spheres, with openings on opposite sides of each sphere to receive two sets of wrought-iron tubes of different sizes and passages, larger than the largest wrought-iron tubes, connecting the spheres together, and with a hand-hole to said passages, to admit of a sectional expanding-tool being passed through and entered into the end of the large wrought-iron tube from within the sphere, so that a mandrel entered through the opening for the small tube on the opposite side of the sphere will enter the expanding-tool, and being forced down will expand the large end of the wrought-iron tube.

The object of my invention is greater strength combined with ease of construction.

A is the hand-hole. B is the cast-metal tubular connections. C is the spheres. D is a large wrought-iron tube. E is the small wrought-iron tube. F is the expanding-tool. G is the mandrel to force the expansion.

The upper and lower heads are alike, and are made of cast-metal, consisting of spheres connected together by tubular openings from one to the other, the entire head being cast in one piece without seam.

The inside end of each sphere has an opening to receive the end of the large wrought-iron tube, and the outside or opposite end of each sphere has an opening to receive the end of the small wrought-iron tube.

The cast tubular openings from the hand-hole to the spheres are larger than the openings for the large wrought-iron tubes, and are so constructed in order to admit of the sectional expanding-tool being passed through them to the inside of the spheres and entered into the end of the large wrought-iron tube from within the sphere, and a mandrel passed through the small hole on the opposite side into the sectional expanding-tool to force the expansion of the end of the large tube on the inside of the sphere.

The small tubes E pass entirely through the large tubes D and through the spheres to the outside ends thereof, and are expanded from the outside in the ordinary way.

I claim—

1. A double tubular spherical boiler-head of a single piece of cast metal composed of a series of spheres, C, and tubular passages B and hand-hole A, with openings on opposite sides of each sphere to receive two sets of different-sized wrought-iron tubes, one within the other, the passages B being larger than the largest opening in the outside wrought-iron tube to admit the passage of the expanding-tool, substantially as and for the purpose set forth.

2. The cast-metal spherical heads C, with the cast-metal tubular passages B larger than the

inner diameter of the largest wrought-iron tube connecting them, and provided with the hand-hole A, the spheres having two sets of holes of different diameters to receive two different sizes of wrought-iron tubes, one within the other, substantially as and for the purpose set forth.

3. The combination of the cast-metal spherical double boiler-heads, in combination with the two sets of wrought-iron tubes of different sizes, all constructed and arranged substantially as and for the purpose set forth.

GOLDSBURY H. POND.

Witnesses:

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