

W. H. DAVIS & R. V. De GUINON.

Steam-Boilers.

No. 136,041.

Patented Feb. 18, 1873.

Fig. 1.

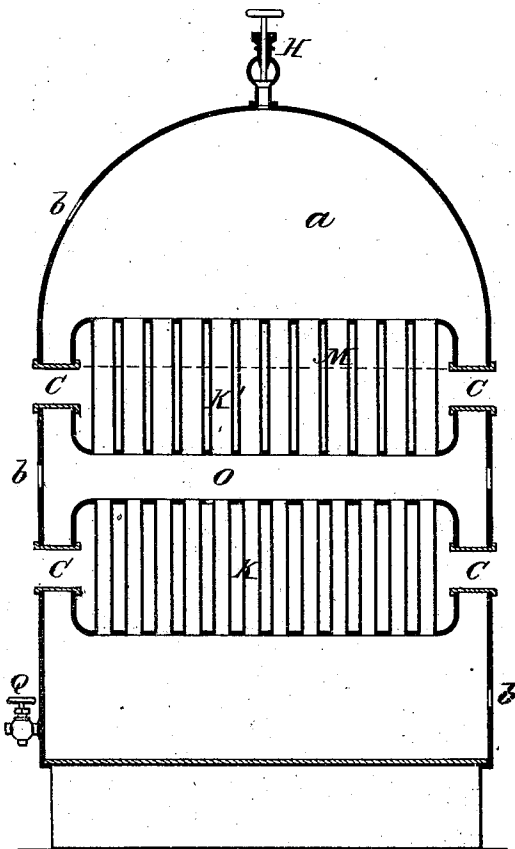
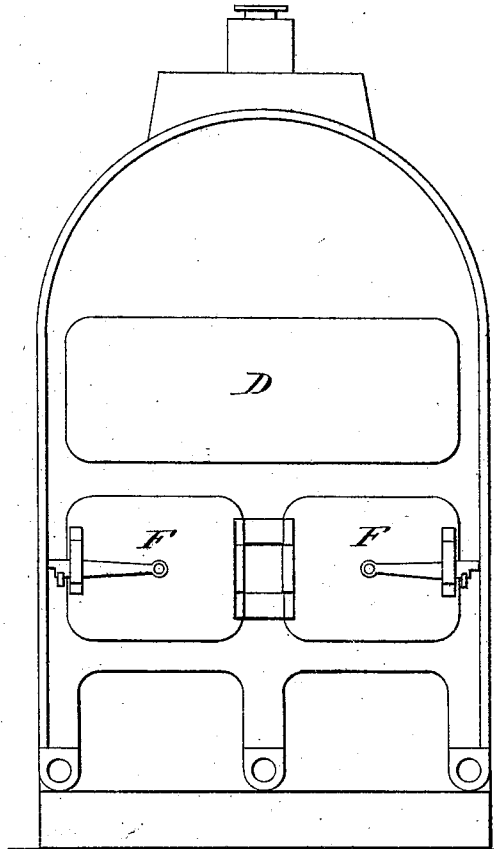


Fig. 2.



Witnesses.

A. B. James.
A. B. Runtz.

Inventors.

W. H. Davis
R. V. de Guinon.

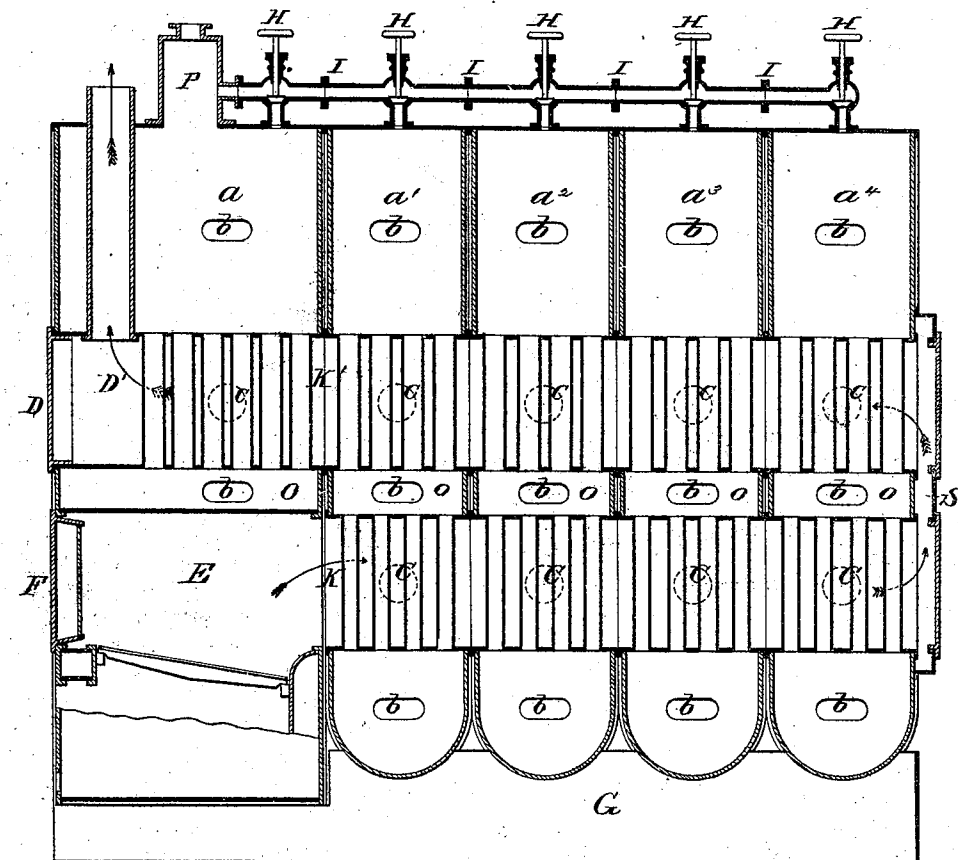
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Fig. 3.



Witnesses.

A. B. James.
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UNITED STATES PATENT OFFICE.

WILLIAM H. DAVIS AND RICHARD V. DE GUINON, OF JERSEY CITY, NEW JERSEY; SAID DE GUINON ASSIGNOR TO SAID DAVIS.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. 136,041, dated February 18, 1873.

To all whom it may concern:

Be it known that we, WILLIAM H. DAVIS and RICHARD V. DE GUINON, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Steam-Boilers for Marine or Stationary Purposes, of which the following is a specification:

The Nature and Object of the Invention.

The nature and object of our invention relate to the construction of marine and stationary steam-boilers consisting of two or more sections. These sections are made of wrought boiler-plate, riveted, and having a large number of tubes arranged so as to utilize all the heat. These tubes are set vertical in two tube-chambers, one above the other, with a water-space between, and, at stated distances, having openings through the side of the boiler into the tube-chamber to clean and inspect the tubes. The tubes in the upper chamber are larger than those in the lower chamber, and are arranged vertically opposite to each other, so that the lower tubes will pass to their places in the lower tube-chamber through the upper tubes, thus allowing the water-space between the two tube-chambers to be made only sufficiently large to admit a man or boy to expand the tubes. By this arrangement any repairs to the tubes may be easily accomplished.

Much advantage is gained by having the water-space between the tubes and extending over the crown-sheet of the fire-box. A uniform and rapid circulation, together with a free escape of steam to the dome, is thus obtained, together with a superior advantage in bracing. The boiler, when constructed in sections, can be put on board of ship, and in position, with less labor and cost than could be done if made whole, though it can be constructed complete in one part; and we reserve such right for further application.

Description of Accompanying Drawing.

Figure 1 is a vertical transverse sectional view of our improved steam-boiler. Fig. 2 is a view of the front. Fig. 3 is a vertical longitudinal sectional view.

General Description.

K and K' are the tube-chambers. C C C are

openings through the side of boiler into the tube-chamber to clean and examine the tubes; M, the water-line; *b b b*, man-holes; Q, blow-off cock. D and F F are doors; P, the dome; H H, globe-valves; I I, pipe and couplings to couple sections together; D', combustion-chamber. *a a¹ a² a³ a⁴* are sections forming the boiler; G, the iron frame for bottom of sections to sit in to keep them in place. The arrows indicate the direction of the heated air and gases passing between the tubes to the smoke-stack. The sections forming our improved boiler are made of wrought-iron, and of the shape and form shown in the drawing forming part of this specification, having two tube-chambers with a water-space between of sufficient size to admit a man to expand the tubes entering therein. These tubes may be of any diameter desired. We prefer them two inches and two and one-half inches in diameter and two feet long. The two-and-one-half inch tubes we place in the upper tube-chamber, and slip the two-inch tubes through them to their place in the lower tube-chamber. By this arrangement we can freely remove any tube in any part of the boiler without cutting or injuring the same. The sections are secured together with bolts traversing the boiler longitudinally at top and bottom, and by the iron frame fitting the bottom of the sections closely. The spaces or openings between the sections are stopped by any suitable packing or cement. The sections are also connected by pipes and couplings I I, forming steam-connections with the dome P; also suitable water-connections at the bottom of the sections, (not shown in the drawing.) To each section are arranged suitable blow-off cocks; and to the sections is also arranged a series of globe-valves, so that any one or two of the sections may be blown off at the same time that the boiler is in operation without disarranging the other sections. The openings C C C are four in number in each section, and opposite to each other, or at stated distances in the boiler when only formed of two sections, or all in one boiler. These openings for examining the tubes, and also to clean them, may be closed by a simple cover or by a door, and so arranged that the same may be opened or closed by the fireman in front of the boiler, and in this manner may be used to regulate the draft and to more fully burn the

gases by admitting a current of air in the tube-chamber. A suitable device, S, is arranged on the rear of the boiler to turn the heated air and gases through the second tube-chamber; thence into the smoke-stack, as shown by the arrows. The water-line M, which is shown in the tube-chamber K, leaves a space of one-third of the upper part of the tubes, together with the crown-sheet of that chamber, to form and dry the steam.

Claims.

We claim as our invention—

1. A marine or stationary steam-boiler, when made in two or more sections and constructed substantially as described, having two tube-chambers with vertical tubes, and a water-

space between said chambers of sufficient size to admit a man to expand the tubes entering the said water-space.

2. Having the tubes in the upper tube-chamber so large that the tubes in the lower tube-chamber will pass through them to their place, as set forth.

3. The openings C C C in the tube-chamber for cleaning and examining the tubes, arranged as herein set forth, and for the purpose specified.

WM. H. DAVIS.

RICHARD V. DE GUINON.

Witnesses:

A. B. BUNTING,
GEORGE NIMMO.