(No Model.)

D. A. DICKINSON.

STEAM AND HOT WATER GENERATOR.

No. 454,459. Patented June 23, 1891.

Fig. 1

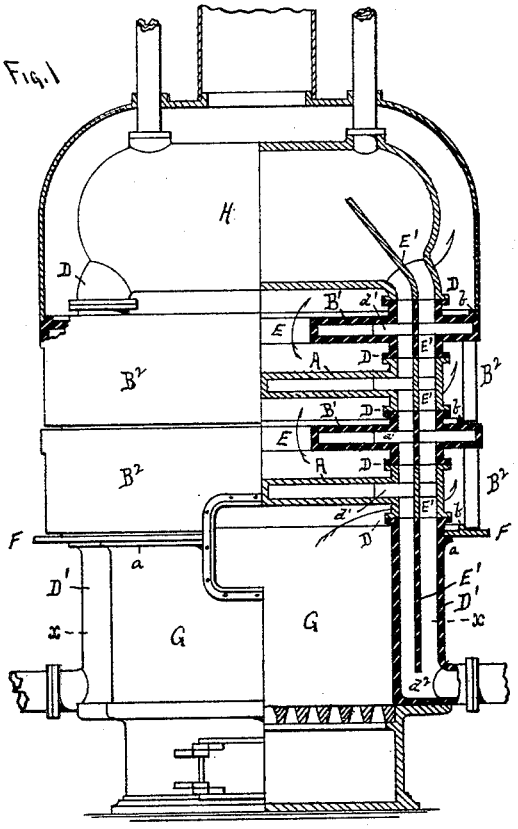


Fig. 3

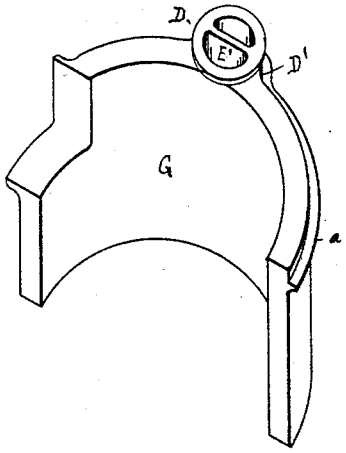


Fig. 4

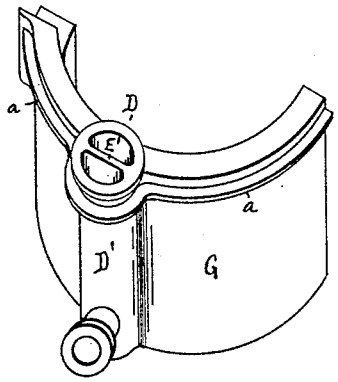
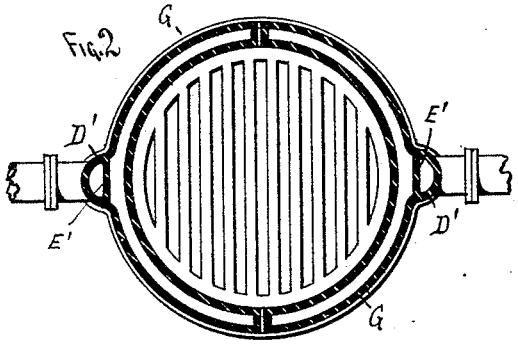


Fig. 2



WITNESSES.
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UNITED STATES PATENT OFFICE.

DANIEL A. DICKINSON, OF ST. PAUL, MINNESOTA.

STEAM OR HOT-WATER GENERATOR.

SPECIFICATION forming part of Letters Patent No. 454,459, dated June 23, 1891.

Application filed March 7, 1891. Serial No. 384,073. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. DICKINSON, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Steam or Hot-Water Generators, of which the following is a specification.

This invention relates to sectional steam and hot-water generators; and it consists in the manner of constructing the independent generating-chambers, whereby a more uniform and free means of circulation are provided, as hereinafter shown and described, and specifically pointed out in the claim.

In the drawings, Figure 1 is a semi-sectional side elevation. Fig. 2 is a plan view in cross-section on the line X X of Fig. 1. Figs. 3 and 4 are perspective views of the two parts of the fire-pot detached.

The generator is built up of independent hollow sections A B′, the sections A formed of a less diameter than the sections B′, and the latter provided with hollow downwardly-projecting outer sides B^2, forming, when the sections are connected by the branch pipes D, a water-jacket or wall to the generator. Each of the sections A B′ and also the dome H and fire-pot G are shown formed in two parts, and may be temporarily united by bolts or rivets or in any other suitable manner.

While I have shown the sections and the dome and fire-pot formed in two parts, I do not wish to be limited to any precise number, as a greater number may be employed, or each section may be constructed in one piece, as preferred. The sections B′ are formed with central openings E for the passage of the smoke and other products of the combustion, which thus passes in zigzag lines through and around the sections, as indicated by the arrows. The lower edge of the lowermost jacket-section B^2 rests above an annular plate F, supported by a rim *a* on the fire-pot G, but does not quite touch it, while the lowermost edge of the jacket-sections B^2 of the upper section B′ rests above, but does not quite touch, the upper surface of the lowermost of the jacket-sections B^2. The upper surfaces of both the lowermost of the sections B′ and also the ring F are formed with ribs *b* rising just inside the water-jacket sections, as shown, to assist in holding the cement which is placed between the adjacent portions of the sections. By this simple construction the sections A B′ are surrounded by a hollow wall B^2, through which the hot water freely circulates, thereby accomplishing two very important results—viz., utilizing the heat radiating from the generator by absorbing it into the water flowing through the jacket-sections and transmitting it therefrom back again into the interior of the sections, and also preventing the heat being absorbed into the surrounding atmosphere. If found necessary, a casing of asbestus or other non-heat-conducting material may be placed around the sections as a further protection.

As before stated, the sections A B′ and dome H and fire-pot G are united by branches D, and within each of these branches which occur between the sections A B′ a curved cross-partition E′ is formed, which extends backward into and across the interior of the steam-dome H, the sections A B′, and drop-sections B^2, as shown at *d*′, and into and nearly to the bottom of the fire-pot G, as at d^2, so that the water in circulating throughout the sections is caused thereby to flow downward into the jacket-sections and fire-pot, and insures the complete and perfect circulation through every portion of the system. The partitions E′ thus divide each of the connecting branches into two compartments, as in my patent, No. 431,037, dated July 1, 1890. The partitions E′ are extended downward into the fire-pot nearly to its bottom line, as shown, the fire-pot having projections D′ corresponding to the branches D and forming continuations thereof when the parts A, B′, and G are united. By this means the circulation of the water is secured down, into, and throughout the fire-pot, so that in no part of the system will the water fail to freely circulate.

Having thus described my invention, what I claim as new is—

In a steam or hot-water generator, a series of hollow alternating sections A B′, united by branches D, integral therewith, and partitions E′ within said branches and extending

into the interior of said sections, in combination with the fire-pot G, having the projections D′ and partitions E′ extending downward therein nearly to the bottom, whereby the circulation of the water in all the sections and fire-pot is insured, all arranged substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DANIEL A. DICKINSON.

Witnesses:
C. N. WOODWARD,
H. S. WEBSTER.