

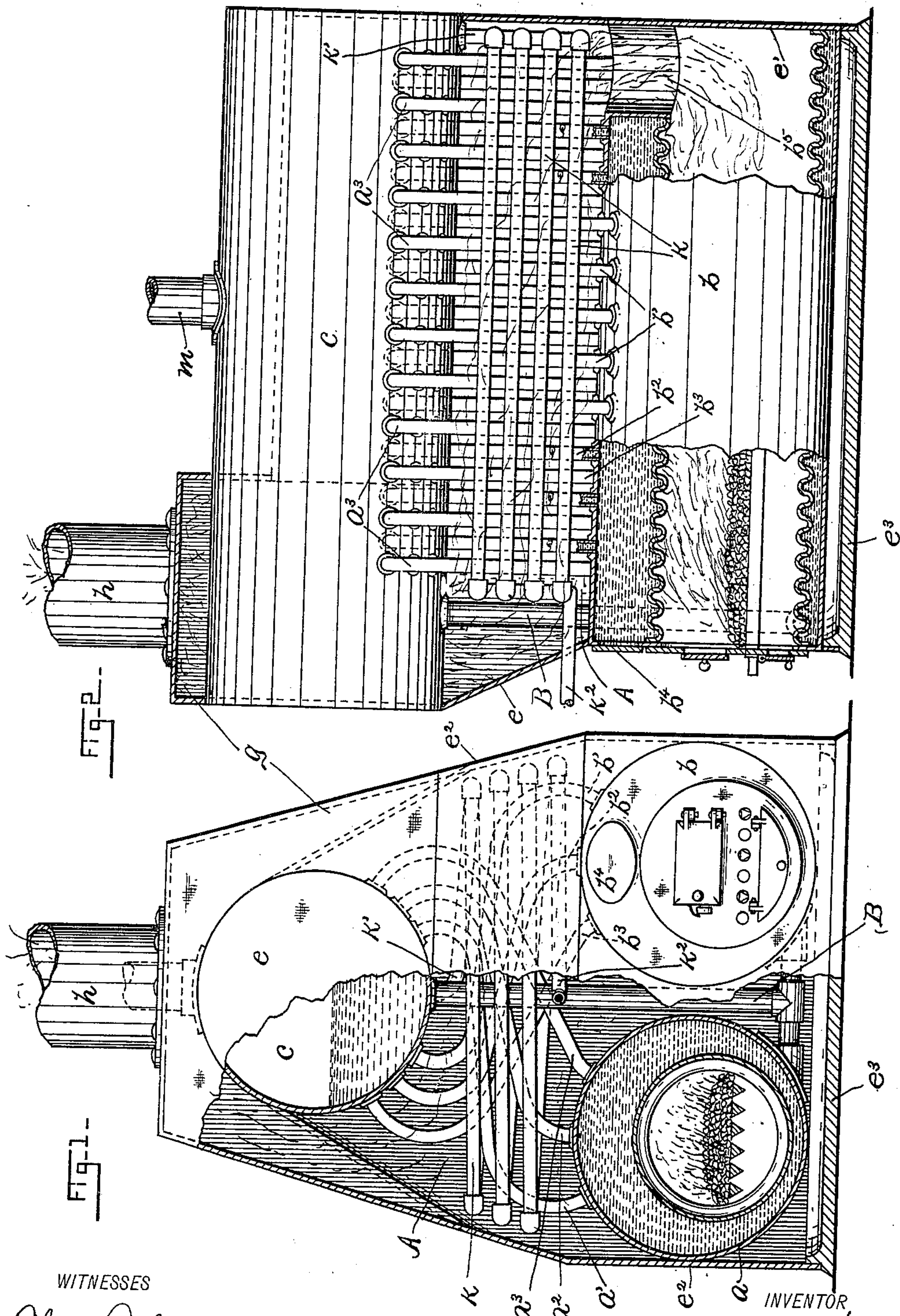
No. 670,276.

Patented Mar. 19, 1901.

A. P. GEER.
STEAM BOILER.

(Application filed Nov. 3, 1900.)

(No Model.)



WITNESSES

Alonzo B. Luther.
May F. Ritchie.

INVENTOR,
Albert P. Geer,
Frank H. Allen
ATTY.

UNITED STATES PATENT OFFICE.

ALBERT P. GEER, OF NEW LONDON, CONNECTICUT.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 670,276, dated March 19, 1901.

Application filed November 3, 1900. Serial No. 35,366. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. GEER, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a full, clear, and exact description.

This invention relates to steam-generators, and has for its object the improvement of the water circulation and of certain details of construction, as I will explain hereinafter.

The drawings annexed hereto illustrate a steam-generator embodying my newly-improved features.

Figure 1 is a front elevation of such a generator, and Fig. 2 a side elevation of the same, each of said views being broken away in part to disclose the interior construction of the generator.

Briefly described, my invention consists of two boilers and a single steam-dome so located above the said boilers that circulation-pipes may lead from the upper portion of each boiler to the opposite or farthest side of the said steam-dome, the course of the said circulation-pipes being such that they are suitably curved to permit the free expansion, contraction, and consequent deflection of said pipes.

The boiler-sections are so constructed that those portions which receive the circulation-pipes may be readily entered to expand the pipe ends or to repair the same whenever necessary. I have also provided a novel and effective arrangement of "feed-water" pipes whereby the products of combustion are utilized, after leaving the furnace, to heat the water in said feed-water pipes.

Referring to the drawings, the letters *a b* indicate two boiler-sections, and *c* the steam-dome, said dome being so located above the boilers that considerable intervening flue-space *A* is provided, and in this space are located peculiarly-arranged circulation-pipes connecting the boilers and steam-dome and also the feed-water pipes. As here illustrated, three series of circulation-pipes connect each boiler with the dome. Those that lead from boiler *a* are indicated by the let-

ters *a' a² a³*. These pipes are secured (in the usual manner) in the upper portion of the shell of boiler *a*, as is best seen in Fig. 1. Said pipes curve upward and extend thence through the space *A* to a point over the companion boiler *b* and finally curve upward to the dome-section *c*, to which latter they are secured in the usual manner. The boiler-section *b* is connected with the steam-dome in a like manner by pipes *b' b² b³*. These two series of circulation-pipes furnish unobstructed conduits, through which the heated waters of the two boiler-sections may pass freely upward and be discharged into the dome-section, the peculiar arrangement of pipes, dome, and boilers being such that the water of one boiler is caused to meet in the dome and commingle with the water from the other boiler. The water in the dome returns to the boilers through one or more pipes *B*, that lead downward from the lower part of the dome *c* and discharge into the lower part of the boilers *a b*, as is best seen in Fig. 1 of the drawings.

The boilers *a b* are each formed of two cylindrical shells that are so arranged eccentrically to each other that sufficient space is provided in the upper part of each boiler to allow a man to enter and expand or repair the ends of the circulation-pipes. The inner or fire-box shell is preferably corrugated, as shown, and suitable manholes *b⁴* are provided in the boiler ends.

The boilers, steam-dome, and described pipes are all inclosed by a housing consisting of front *e*, back *e'*, sides *e² e³*, and base-plate *e³*. Exits *b⁵* are provided at the rear of each boiler-section, so that the caloric and other products of combustion may pass freely upward into the chamber *A*, inclosed by the walls *e*, *e'*, and *e²*, where they may influence the water in the circulation-pipes and in the steam-dome as well, and said products of combustion finally find an exit through a hood-like extension *g* and a smoke-stack *h* at the upper front portion of the complete boiler.

It will thus be seen that the caloric products of combustion influence first the water in the boilers surrounding the fire-pot, and they then pass upward from the rear end of

the boilers through the exits b^5 into the chamber A, where they serve to induce and maintain a high degree of heat in the water in the circulation-pipes, as well as in the lower part
5 of the steam-dome c .

The letters k denote the several coils of feed-water pipes, the same being located in the chamber A and coiled around the circulation-pipes, this location and arrangement being
10 such that the water contained in the said feed-water coils is kept (ready to be injected into the boiler) at about the same degree of heat as the water in the circulation-pipes. One end, k' , of the feed-water pipe leads into
15 the boilers or, as here shown, into the dome, the other end, k^2 , being connected with any suitable source of water-supply. The letter m denotes a steam-pipe leading from the dome c .

20 The described construction of boiler, &c., may be produced with reasonable cheapness. All of its parts may be readily reached for inspection or repairs, and the peculiar arrangement of circulation-pipes makes it particularly
25 valuable for marine boilers, for the reason that the rolling movement of the vessel

tends to aid rather than hinder the water circulation.

Having described my invention, I claim as new and wish to secure by Letters Patent— 30

1. In combination, a pair of boilers, a steam-dome located over said boilers, circulation-pipes leading from the upper part of each of said boilers to the farthest side of the steam-dome, and a feed-water pipe coiled around
35 the said circulation-pipes.

2. In combination, a pair of boilers, a steam-dome located over said boilers, circulation-pipes leading from the upper part of each of said boilers to the farthest side of the steam-dome, and a feed-water pipe coiled around
40 the said circulation-pipes; each of the said boilers being formed of two eccentrically-arranged shells as set forth whereby increased space is provided in the upper portions of
45 said boilers.

Signed at Norwich, Connecticut, this 25th day of October, 1900.

ALBERT P. GEER.

Witnesses:

ALONZO M. LUTHER,
FRANK H. ALLEN.