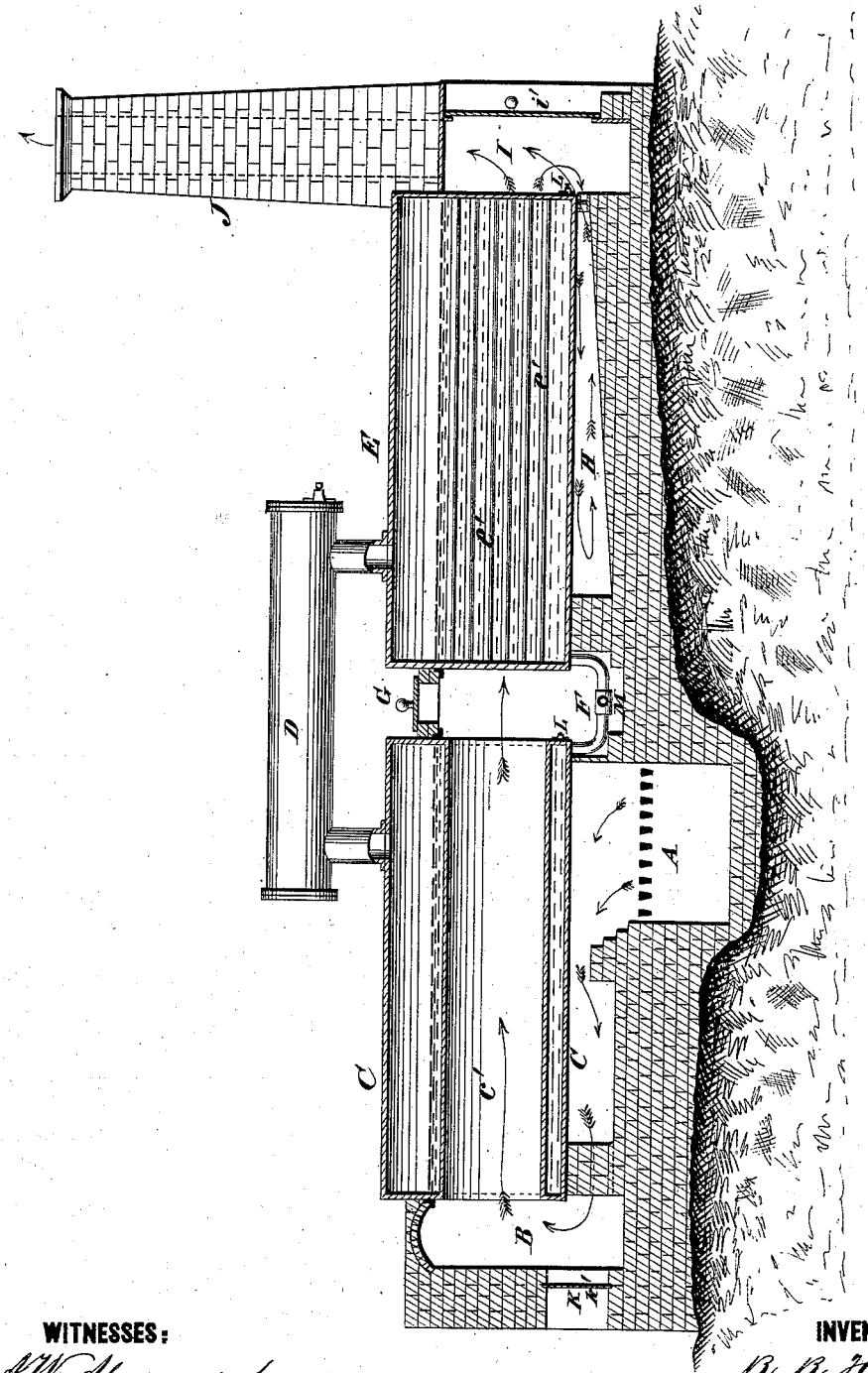
R. R. HIND.

COMPOUND STEAM-BOILERS.

No. 192,165. Patented June 19, 1877.



WITNESSES:

A. W. Almqvist

J. H. Scarborough

INVENTOR:

R. R. Hind.

BY

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT R. HIND, OF KOHALA, HAWAII, HAWAIIAN ISLANDS.

IMPROVEMENT IN COMPOUND STEAM-BOILERS.

Specification forming part of Letters Patent No. **192,165**, dated June 19, 1877; application filed January 29, 1877.

To all whom it may concern:

Be it known that I, ROBERT R. HIND, of Kohala, Hawaii, Hawaiian Islands, have invented a new and useful Improvement in Compound Steam-Boiler, of which the following is a specification:

The figure is a vertical longitudinal section of my improved boiler.

The object of this invention is to furnish an improved compound boiler, designed especially for use with cane-trash or other light fuel, and which shall be so constructed as to greatly economize the fuel while making steam rapidly and plentifully.

The invention consists in the combination of the single-flue boiler and the many-flue boiler, placed end to end, with a space between them, and connected together by the steam-drum and the circulating-pipe, with each other and with the furnace and chimney, as hereinafter fully described.

C represents a single-flue or Cornish boiler, and E represents a tubular boiler.

The boilers C E are set in line with each other, and at a little distance apart.

The rear boiler C is set directly over the furnace, with its forward end over the grate A, and with a return-space, B, at its rear end, which space is deepened to serve as an ash-pit, and is provided with an opening, K, through the brick-work, for convenience in removing the ashes and cinders from the space B. The opening K is closed with a door, K′, and is covered with an arch of brick-work, the inner foot of the arch resting upon angle-irons bolted to the end of the boiler C. The side walls of the furnace close in to boiler at or near the water-line, so as to leave a flame-space below and at the sides of the boiler.

From the space B the flames return through the flue *c′* of the boiler C into the space between the two boilers C E, and thence through the flues *e′* of the boiler E to the space I at the forward end of the boiler E, and out through the chimney J. The upper parts or steam-spaces of the boilers C E are connected by a steam-drum, D.

The lower parts of the adjacent ends of the boilers C E are connected by a circulating-pipe, F, which is provided with a branch, M, to enable it to be used as a blow-off.

To the adjacent ends of the boilers C E, at or near the water-line, are attached angle-irons, upon which is placed an iron grate upon which are laid two courses of bricks. Through this brick-work and grate is formed a man-hole, which is covered with an iron plate, G.

Around the bottom and sides of the boiler E is formed a hot-air space, H. The space H is made in the brick-work in which the boiler is set, and is made wide in its rear part and narrow in its forward part, where it opens into the flue I of the chimney J.

The space I is provided with a door, *i′*, for convenience in removing the ashes that may settle in it. The space between the ends of the boilers C E should be provided with side openings and doors for convenience in removing ashes.

In the lower part of the ends of the boilers C E are formed mud-holes L in the usual way. The boilers C E are provided with man-holes, safety-valves, gages, inlet-pipes, and the other usual appliances, but which are not shown in the drawings.

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

The combination of the single-flue boiler C and the tubular boiler E, placed end to end, with a space between them, and connected together by the steam-drum D and the circulating-pipe F, with each other and with the furnace and chimney, substantially as herein shown and described.

ROBERT R. HIND.

Witnesses:

SAMUEL STAINES,

WILLIAM UPCHURCH.