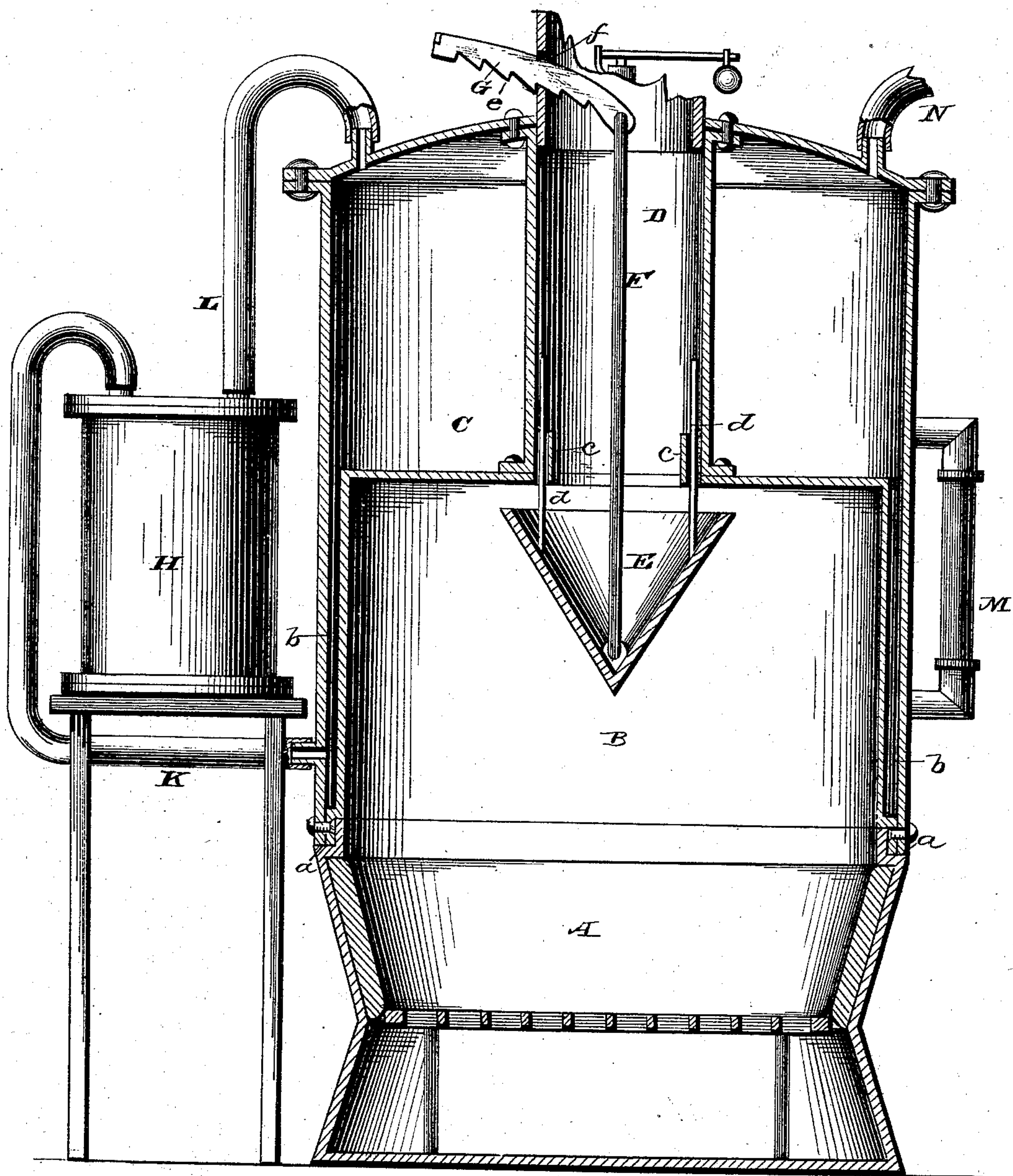


A. J. COLLINGE.
Steam Generator.

No. 232,459.

Patented Sept. 21, 1880.



WITNESSES

B. Nottingham
A. M. Bright

INVENTOR

A. J. Collinge

By Serrett & Serrett, ATTORNEYS

UNITED STATES PATENT OFFICE.

ALEXANDER J. COLLINGE, OF INDEPENDENCE, IOWA.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 232,459, dated September 21, 1880.

Application filed December 11, 1879.

To all whom it may concern:

Be it known that I, ALEXANDER J. COLLINGE, of Independence, in the county of Buchanan and State of Iowa, have invented certain new and useful Improvements in Steam-Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

The drawing represents the invention in vertical central section.

The fire-pot A is formed with an annular shoulder, *a*. The shell C, which forms the boiler, fits over the shell B, which forms the combustion-chamber, and forms the annular water-space *b* between the walls of the two shells. These shell-walls are secured together at their lower portions and rest on the shoulder of the fire-pot.

A vertical flue, D, passes centrally through the boiler, and thus the products of combustion are caused to heat the water in their egress from the generator. This flue, together with the water-jacket, aids materially in heating the boiler-water.

A conical damper, E, depends into the combustion-chamber, and is adapted, by guides *c* and guide-rods *d*, secured respectively to the flue and damper, to maintain the latter in vertical position.

A rod, F, passes up through the flue and connects the damper with the lever G, which latter is provided with serrations *e* on its under side. The lever works in a slot, *f*, formed in the top of the flue, and is adapted, by engagement of said serrations with the lower wall of said slot, to hold the lever against displacement. By operating this lever the damper may be located any desired distance from the lower extremity of the flue, and thus regulate the draft.

The products of combustion strike the conical side of the damper, and are thereby deflected radially outward to the sides of the combustion-chamber. They are thereby directed toward the circumference of the boiler-bottom, and after impact against the same

they pass along the boiler-bottom to the central flue and find exit. In this way as strong a draft as is desired may be obtained without causing the flame and heat to center toward the flue and escape without coming in contact with the circumferential portion of the boiler-bottom.

The boiler is supplied with water from a reservoir, H, formed independent of the steam-heater, and located at any suitable distance therefrom. A water-pipe, K, connects the top of the reservoir with the water-space *b* of the steam-heater.

A steam-conduit, L, connects the top of the boiler with the top of the tank, thereby warming the water in the latter, and also equalizing the pressure in both tank and boiler.

Inasmuch as said water and steam pipes constantly provide free communication between the parts connected thereby, the boiler is automatically supplied with water, the construction being adapted to cause the pressure of steam generated within the boiler to force the water in the reservoir out from its top, through the water-pipe, and into the water-space of the boiler.

The water-jacket which surrounds the combustion-chamber is provided with a gage, M, which indicates the height of the water in said jacket.

Steam is conducted from the boiler by pipe N to any point for use, as may be desired.

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

1. In a steam-generator, the combination, with the combustion-chamber shell and the boiler-shell, connected together at their lower portions, said boiler-shell fitting over the combustion-chamber shell and forming an annular water-space between their walls, of a fire-pot whose upper portion is provided with an annular shoulder, on which the connected walls of said shells loosely rest, substantially as set forth.

2. In a steam-generator, the combination, with the flue and the inverted conical damper, provided with vertical guide-rods which fit in guide-openings formed within the flue, of the damper-connecting rod and the lever, which is loosely jointed to the latter, said lever work-

ing in a slot formed in the flue-wall and having its lower edge serrated to engage therewith, substantially as set forth.

3. In a steam-generator, the combination,
5 with the flue, the inverted conical damper, and means for vertically adjusting the latter, of the boiler-shell, which fits over the shell of the combustion-chamber and forms the annular
10 water-space between the walls of the two shells, said walls having their lower portions

secured together and resting on the fire-pot, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of November, 1879.

ALEXANDER J. COLLINGE.

Witnesses:

FRANK B. WILLIAMS,
WM. H. UREN.