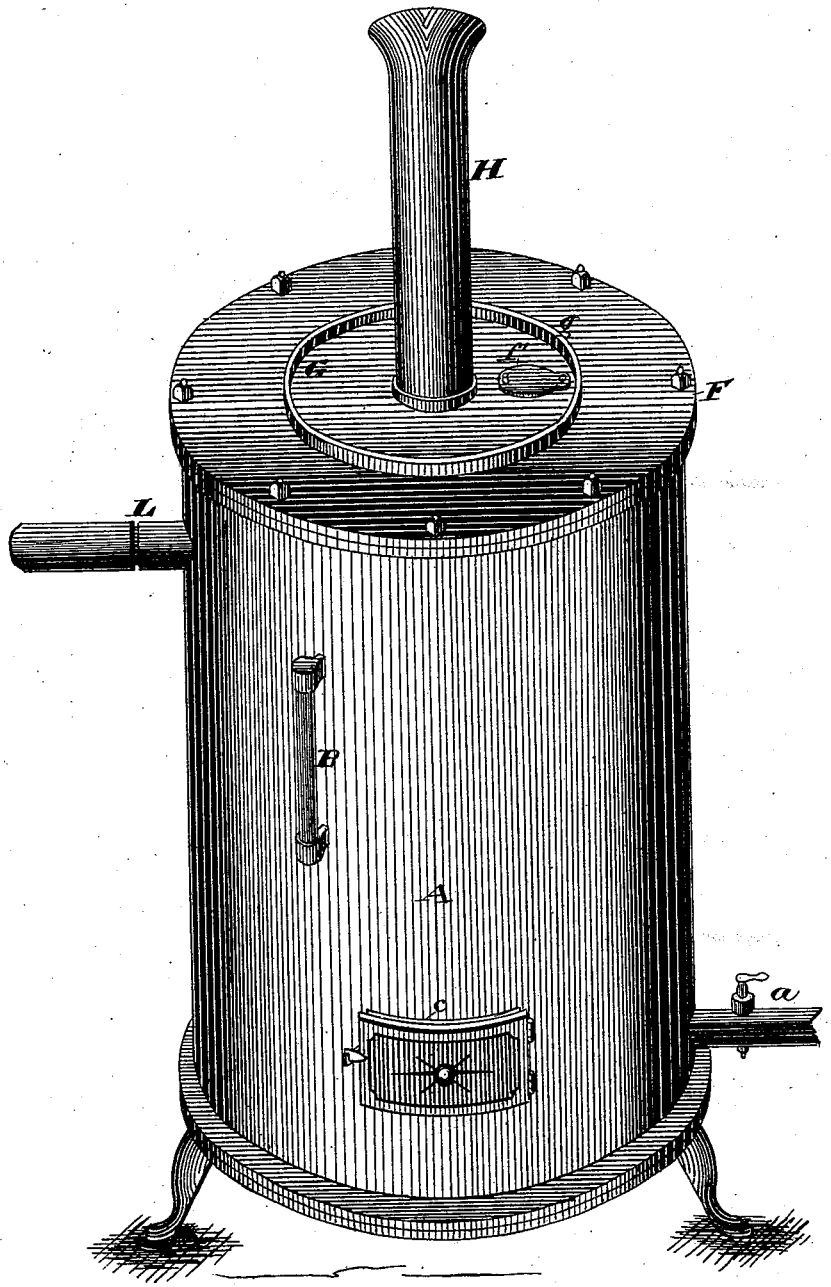
2 Sheets—Sheet 1.

A. J. COLLINGE & B. M. SAVAGE.

Steam-Generator.

No. 204,201. Patented May 28, 1878.

Fig 1.



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2 Sheets—Sheet 2.

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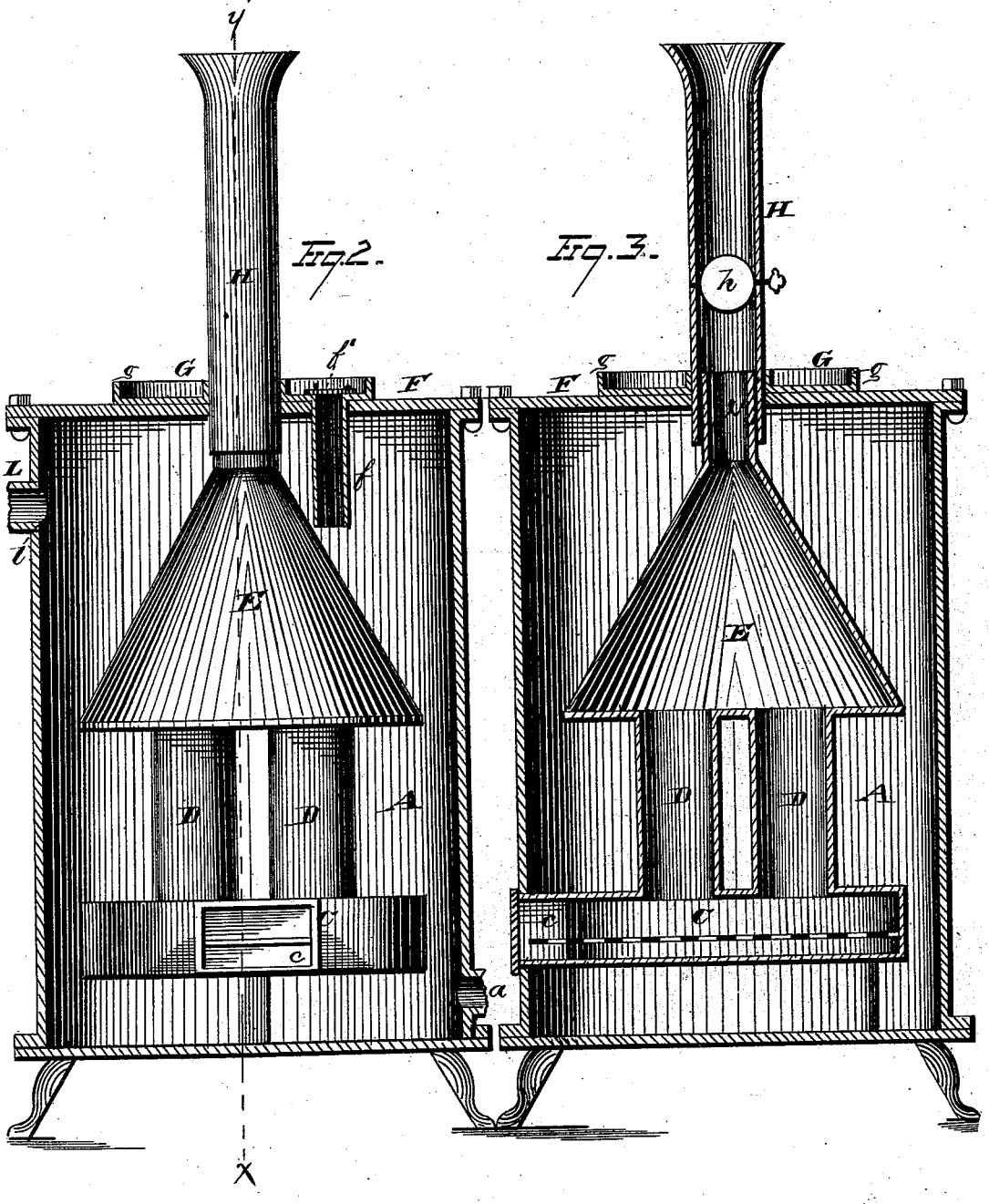

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UNITED STATES PATENT OFFICE.

ALEXANDER J. COLLINGE AND BRIGHAM M. SAVAGE, OF INDEPENDENCE, IOWA.

IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. **204,201**, dated May 28, 1878; application filed March 21, 1878.

To all whom it may concern:

Be it known that we, ALEXANDER J. COLLINGE and BRIGHAM M. SAVAGE, of Independence, in the county of Buchanan and State of Iowa, have invented certain new and useful Improvements in Steam-Generators; and we 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to improvements in steam-generators, and consists in a construction of the following character: An upright cylindrical boiler is provided with a fire-box, supported at a little distance above its bottom, so as to allow the fire-box to be surrounded by water. A horizontal extension is formed at one point on the side of the fire-box, which projects through a suitable opening in the boiler, and which serves as the feeding-mouth of the fire-box. A series of vertical flues connect the fire-box with a conical drum, which fits over them, and whose upper extremity passes through the removable top of the boiler, at which point it is provided with a smoke-flue having a damper located therein.

The boiler is provided with a steam-conducting pipe to carry the generated steam to the vessels or receptacles to be heated therewith; and it consists in a flexible tube having rigid connections at both extremities, one of which is supported in an opening formed in the side of the boiler near its top. A water-feed opening is also made in the boiler-top, so as to supply the boiler without removing its top, while a metallic plate, having an opening in its center corresponding to that through which the extremity of the flue-drum passes, is secured upon the boiler-top, and formed with upturned annular flanges at both inner and outer peripheries.

The object of this ring-plate is to provide means for heating the feed-water preparatory to its entrance into the boiler, and a pipe provided with a valve at its top connects therewith, so that, as the water is suitably heated, it may be passed down into the boiler.

A water-gage is located in the side of the boiler near its central height, and a water-discharge opening is formed in the lower portion of the same.

Referring to the drawings, Figure 1 is a view in perspective. Fig. 2 is a view, partly in section and partly in side elevation. Fig. 3 is a view, in vertical section, of the same through line *x y* of Fig. 2.

The upright cylindrical boiler A is formed with the water-discharge opening *a* in its lower body and the water-gage B in its approximate vertical central portion. Within the same the fire-box C is supported at a suitable distance above its bottom, so as to allow the water to entirely surround the said fire-box, while the side extension *c* projects through an opening in the boiler, and forms the firing-mouth of the fire-box.

The vertical flues D may be of any desired number, and connect the fire-box with the conical-formed drum E, which fits over them, and whose upper extremity *e* passes through the central opening of the removable boiler-top F. The metallic plate G is secured to the upper surface of this top, and has an opening similar to that of the boiler-top, through which the said drum-extremity passes. It is made with the upturned annular flanges *g* at both inner and outer peripheries. The feed-water is, by any suitable means, emptied upon this ring-plate, and is there heated until it is discharged through connecting-pipe *f* into the boiler. This pipe is provided at its top with a valve, *f'*, the opening or closing of which, respectively, operates to pass the water from the heating-plate to the boiler, or to keep the same thereon.

The smoke-flue H is provided with suitable damper mechanism *h*, so as to control the fire-draft.

The boiler is provided with the steam-conducting pipe L, which consists in a flexible tube having rigid connections at both extremities, one of which is supported in an opening, *l*, made in the side of the boiler near its top. This pipe carries the steam as it is generated in the boiler to the vessels or receptacles to be heated therewith, and the latter may be designed for cooking food, washing clothes, or other desirable objets.

It is evident that our invention may be applied to many different purposes, such as sup-

plying all necessary steam for the use of cheese-factories and creameries.

We prefer to have the water-line a little way up on the drum, so as to cover the head of flues and the joint, which connects the latter with the said drum. So, also, we prefer that the several parts, excepting the boiler and steam-conducting pipe, be made of galvanized iron, having cemented joints.

We do not broadly claim a steamer or steam-generator for the purposes set forth, as we are aware that different kinds of construction have been heretofore made; but our invention is found in the combination of improvements set forth in the claims.

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

1. The combination, with an upright boiler, provided with a removable head having a smoke-chimney secured thereto, of the horizontal fire-box, conical drum, and intermediate vertical flues, said drum provided with a smoke-flue, which detachably connects with said chimney, substantially as set forth.

2. The combination, with the fire-box, conical drum, and intermediate vertical flues, all the same being adapted to be surrounded by water within the boiler, of the smoke-chimney, which passes through the removable head of the boiler, and is connected with the smoke-exit of said conical drum, substantially as set forth.

3. In a steam-generator, the combination, with an upright boiler, of a removable top, provided with an annular water-vessel having inner and outer raised flanges, said inner flanges serving to secure the chimney in place, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 13th day of March, 1878.

ALEXANDER J. COLLINGE.
BRIGHAM M. SAVAGE.

Witnesses:
J. BOEHNLINE,
M. S. WEBSTER.