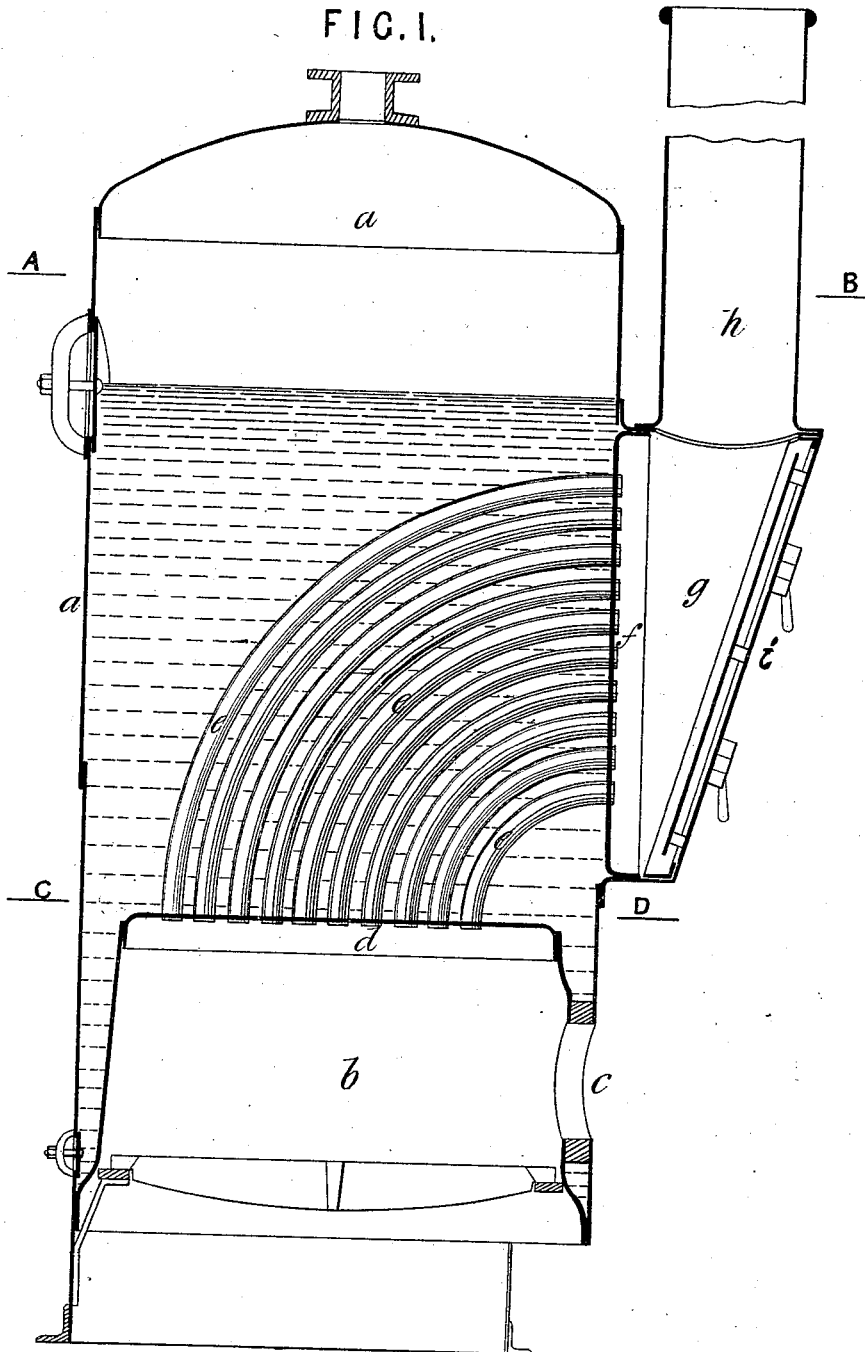W. & J. BEESLEY.

STEAM GENERATOR.

No. 266,078.

Patented Oct. 17, 1882.

FIG. 1.

Attest;
F. W. Howard
Jno. R. Young.

Inventors;
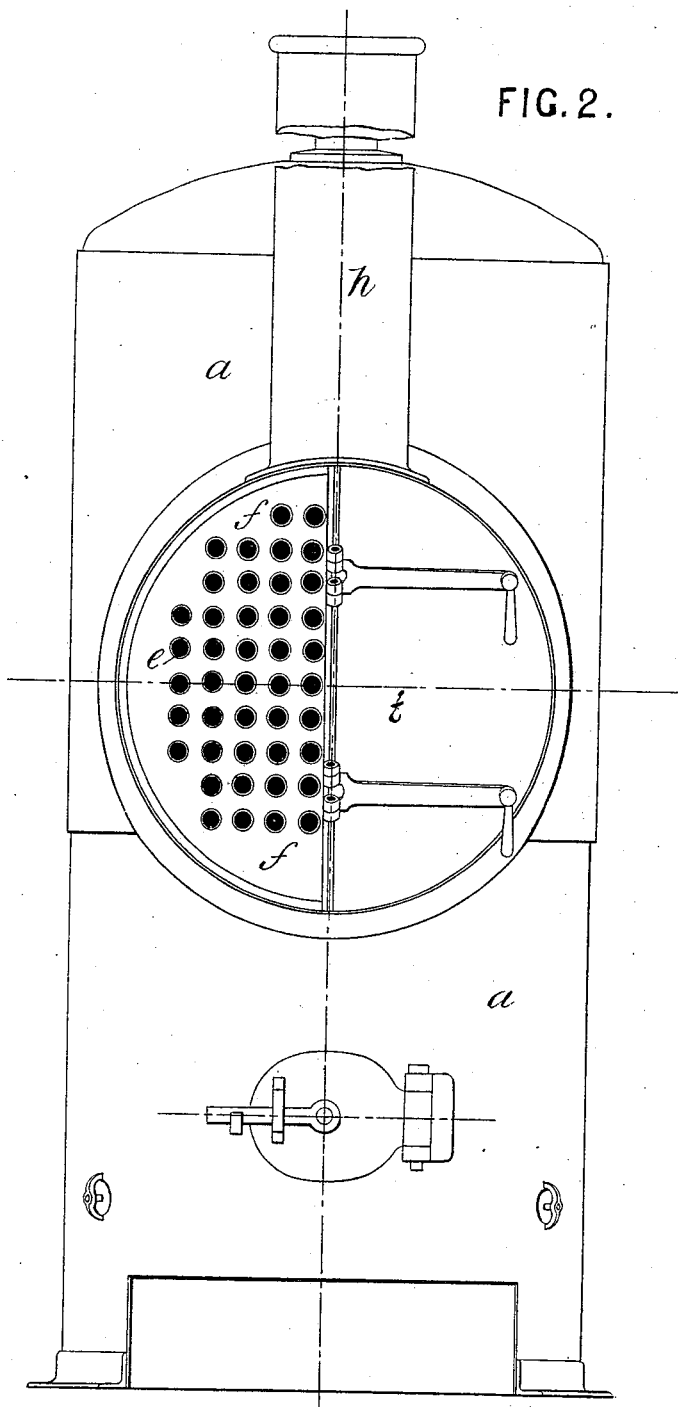William Beesley
James Beesley
by M. A. Doolittle atty

W. & J. BEESLEY.

STEAM GENERATOR.

No. 266,078.

Patented Oct. 17, 1882.

FIG. 2.

Attest;
F. W. Howard
Jno. R. Young.

Inventors:
William Beesley
&
James Beesley
by M. H. Doolittle, att.

W. & J. BEESLEY.

STEAM GENERATOR.
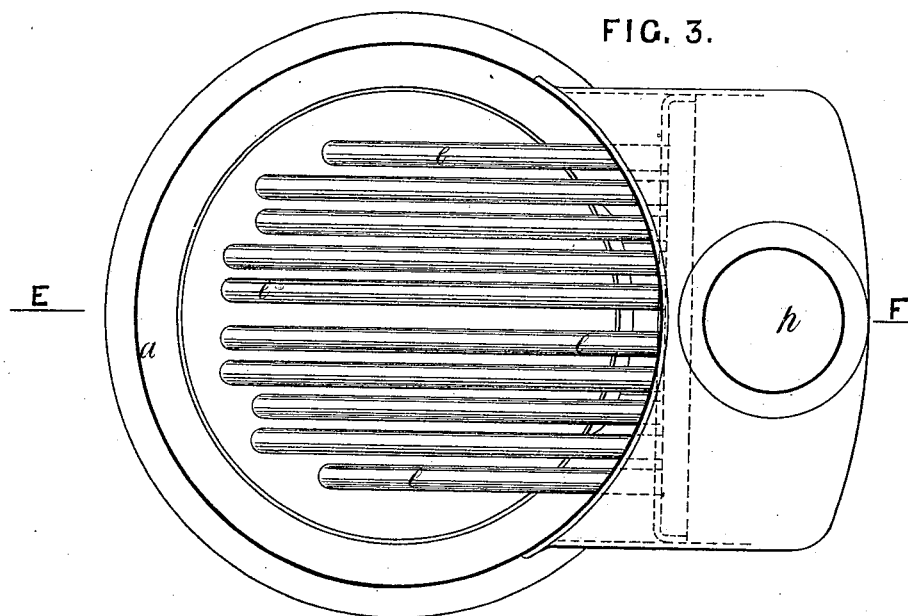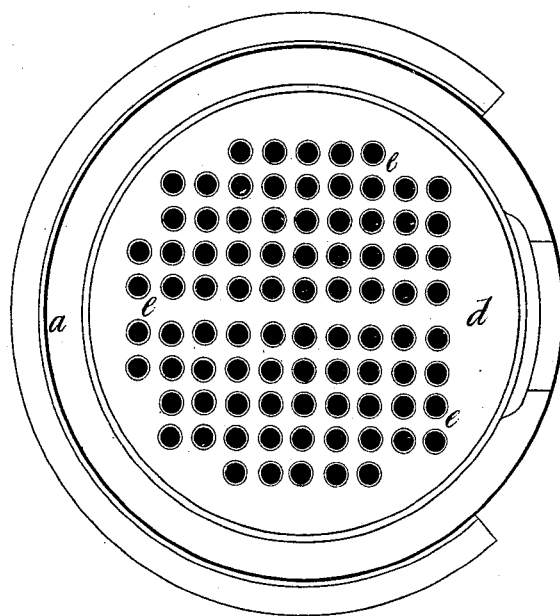
No. 266,078.

Patented Oct. 17, 1882.

FIG. 3.

FIG. 4.

Attest;
F. W. Howard
Jno. R. Young.

Inventor;
William Beesley
&
James Beesley
by W. H. Doolittle

UNITED STATES PATENT OFFICE.

WILLIAM BEESLEY AND JAMES BEESLEY, OF BARROW-IN-FURNESS, COUNTY OF LANCASTER, ENGLAND.

STEAM-GENERATOR.

To all whom it may concern:

Be it known that we, WILLIAM BEESLEY and JAMES BEESLEY, subjects of the Queen of Great Britain and Ireland, both residing at
5 Barrow-in-Furness, in the county of Lancaster, Kingdom of Great Britain and Ireland, have invented a new and Improved Steam-Generator, of which the following is a specification.
10 Our invention relates to an improved steam-generator, which we construct with two tube-plates arranged at right angles to each other, or thereabout, and connected together by curved or quadrant-shaped tubes, as described below
15 and shown in the accompanying drawings, wherein—

Figure 1 is a central vertical section, and Fig. 2 a front elevation, (one door of the smoke-box being removed,) of a steam-generator con-
20 structed in accordance with our invention. Fig. 3 is a horizontal section in line A B of Fig. 1; Fig. 4, a horizontal section in line C D, Fig. 1.

a is a vertical cylindrical shell, into which is riveted, near its lower end, the furnace or fire-
25 box *b*. This furnace or fire-box is entered by the door *c*, the opening being surrounded by a ring in the usual way. The part of the shell below the fire-bars constitutes the ash-pit, and is cut away in front to permit access of air.
30 The top of the furnace or fire-box is closed by a tube-plate, *d*, into which is inserted one end of a number of curved or quadrant-shaped tubes, *e*, the other ends of which pass through a second tube-plate, *f*, let into or forming part
35 of the shell *a*, and enter the smoke-box *g*. The chimney *h* is mounted on top of the smoke-box. The generator is provided with all necessary fittings, such as safety-valve, man-hole, and mud-doors. The smoke-box *g* is provided

with doors *i*, which permit of ready access to 40 the tubes, smoke-box, and chimney, for the purpose of cleaning the same.

The operation of the generator is as follows: The products of combustion pass from the fire-box into and through the continuously-curved 45 fire-tubes, where they are, on account of such curvature, continuously retarded in their passage, and consequently impart a greater amount of caloric to the water surrounding the tubes, and from the tubes said products are by the 50 smoke-box and chimney conveyed to the atmosphere without in any degree increasing the heat of the steam produced, thus rendering the apparatus in that regard more safe than if the products were conveyed, after leaving the 55 tubes, through a jacket surrounding the steam-chamber, as has been heretofore done, in which latter construction no facilities are afforded for direct access to the tubes for cleaning purposes. 60

What we claim is—

In a steam-generator, the combination of the fire-box *b*, having the opening *c*, and covered by the horizontal flue or crown-plate *d*, with the smoke-box *g*, provided with doors *i*, located 65 directly above the opening *c*, and a series of continuously-curved flues, *e*, whereby direct and ready access is had to both ends of the flues for cleaning purposes, substantially as shown and described.

<div align="center">WILLIAM BEESLEY.
JAMES BEESLEY.</div>

Witnesses:
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