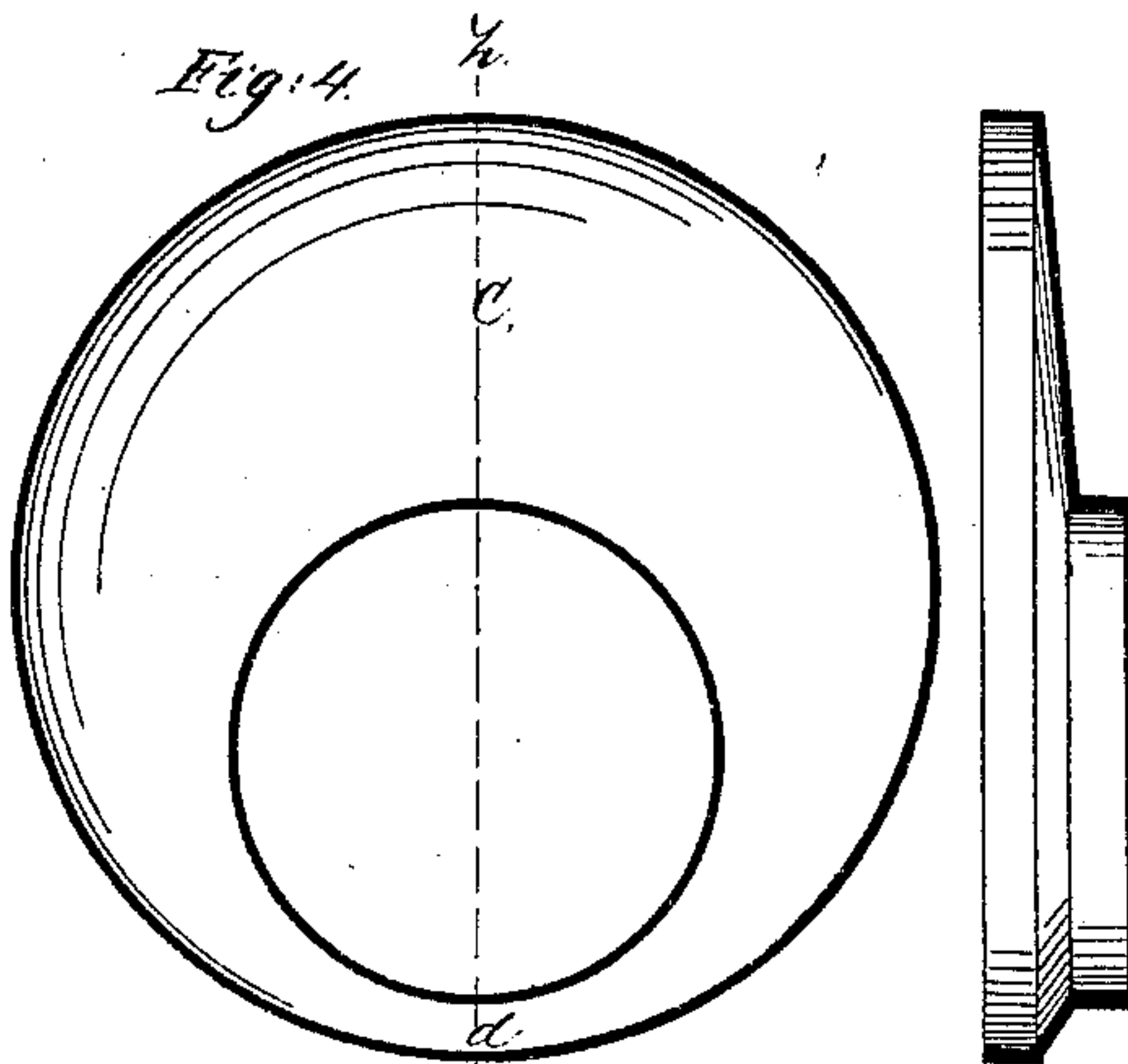
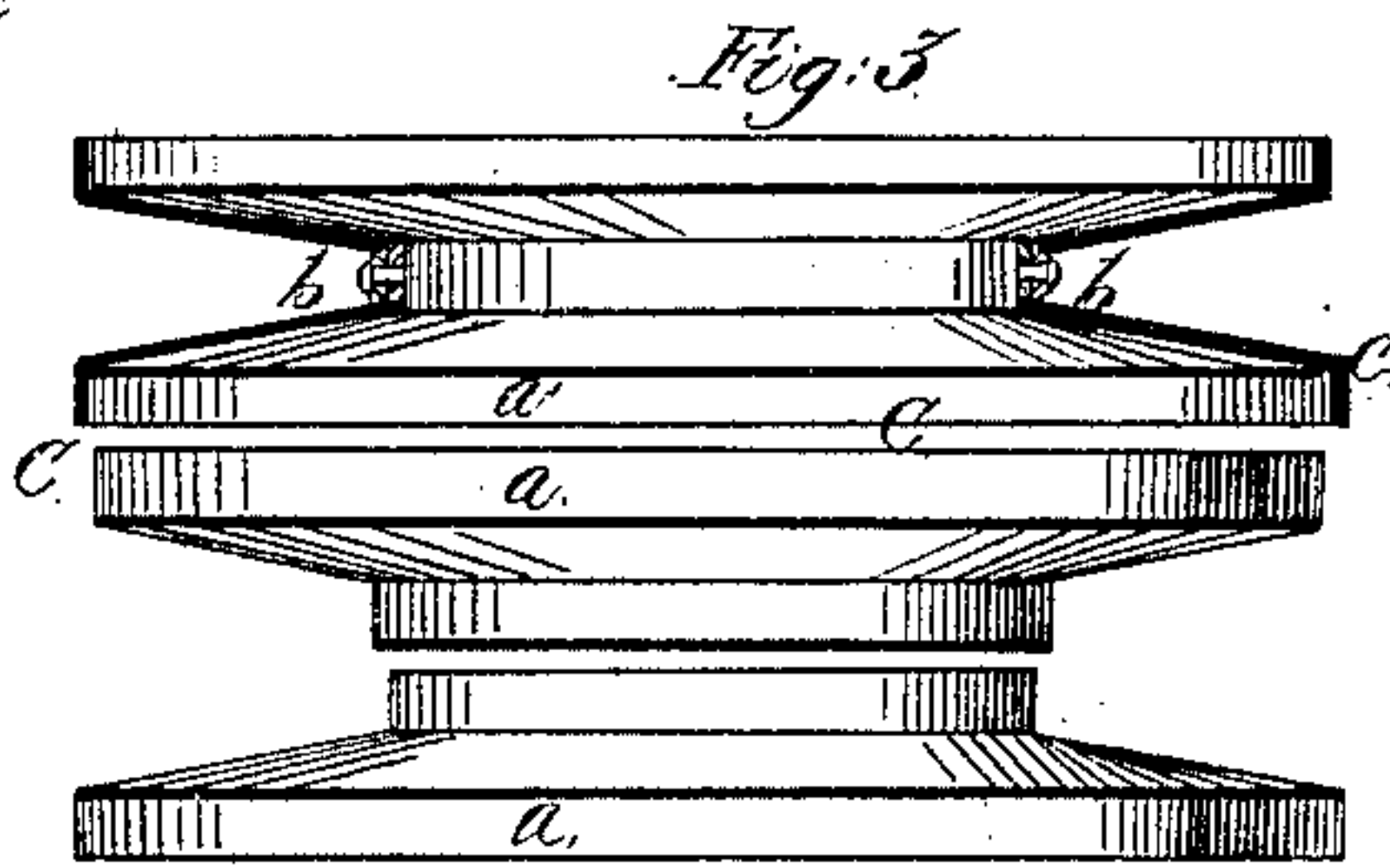
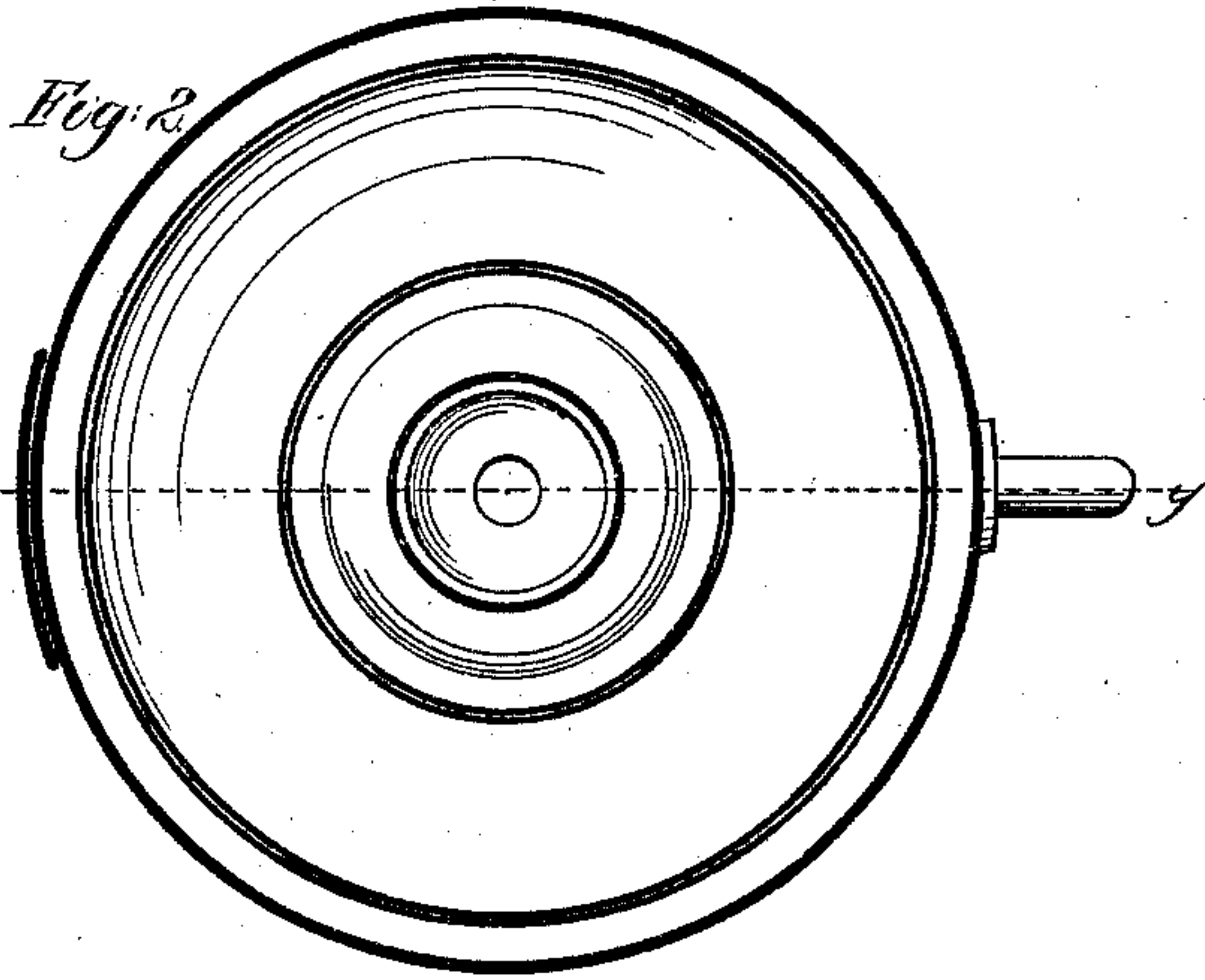
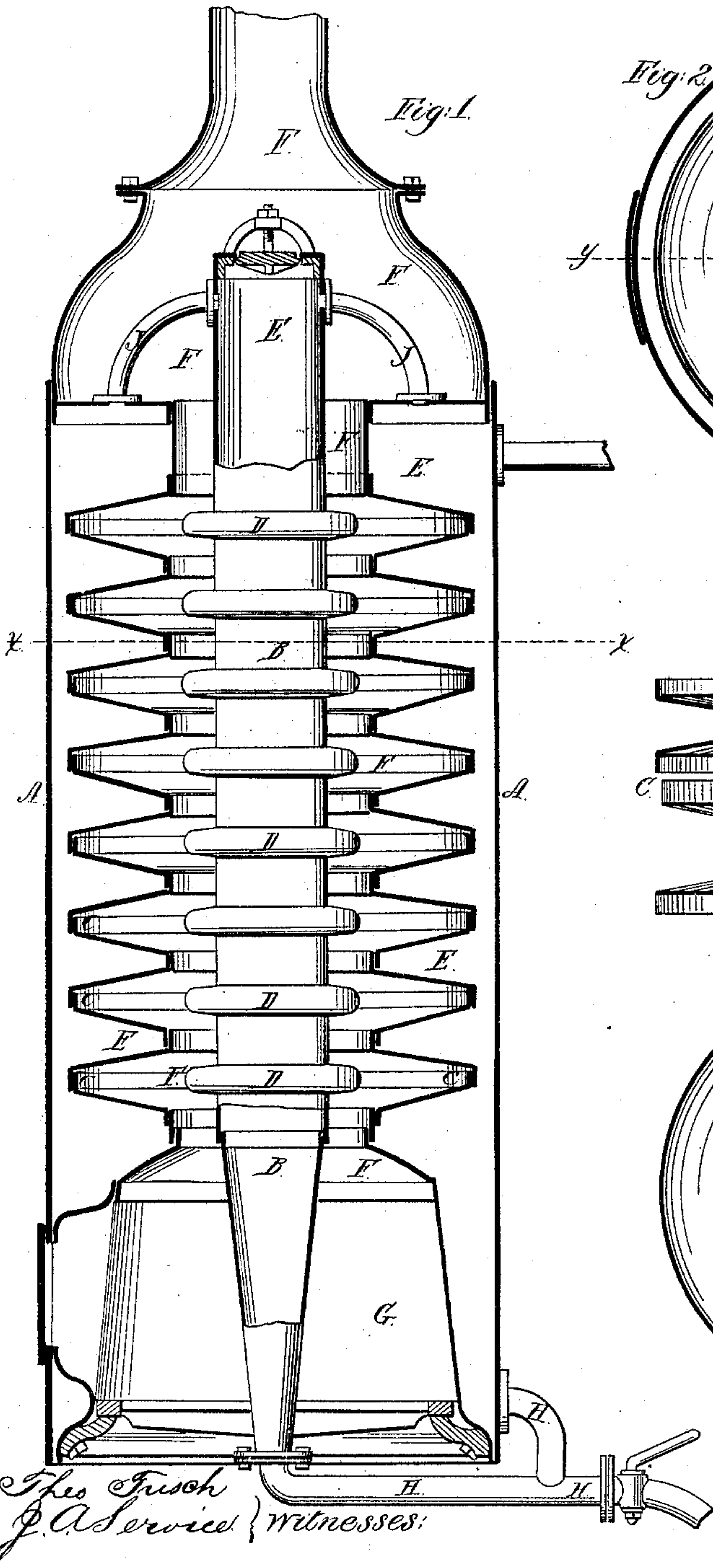


T. Holt,

Sectional Steam Boiler.

N^o 63,518.

Patented Apr. 2, 1867.



Thos Frisch
J. A. Service } witnesses:

Inventor:
T. Holt
Per Munn & Co.
Attorneys.

United States Patent Office.

THOMAS HOLT, OF TRIESTE, AUSTRIA.

Letters Patent No. 63,518, dated April 2, 1867.

IMPROVEMENT IN STEAM GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS HOLT, of Trieste, in the Empire of Austria, but now of 66 Chancery Lane, in the county of Middlesex, have invented "Improvements in the Construction of Steam Boilers;" and I do hereby declare that the following is a full and exact description of my said invention.

My invention consists in constructing steam boilers or steam generators, both marine and land boilers, in such a manner that while the evaporative power of the boiler is not diminished the dimensions of the boiler may be materially lessened, whereby fuel is greatly economized.

The mode of applying the invention and adapting it to use in the various kinds of boilers, is as follows: Instead of conducting the heated products of combustion directly into flues and smoke-stack, as is usual, a series of narrow or shallow dish-shaped or oblate spheroidal chambers are arranged inside the shell of the boiler, which chambers form the interior portion and steam-generating surface of the boiler. The construction and adaptation of these chambers to the various kinds of boilers is the chief feature of my invention.

Figure 1 represents a vertical section of an upright boiler with the chambers in place.

Figure 2 is a plan or horizontal section of the same through the line *x x*.

Figure 3 represents a view (partly in section) of the chambers or sections.

Figure 4 is a view of the section as it is constructed and used for horizontal boilers.

Similar letters indicate corresponding parts.

In the drawing, fig. 1, A represents the shell of the boiler; B is a central water and steam tube; C represents the chambers or sections placed one above the other, as before mentioned; D represents ribs (either solid or hollow) upon the central tube B, which are for the purpose of deflecting the heated gases and products of combustion from a vertical to a lateral direction, so that the heated gases may enter the chambers; E represents the water and steam space of the boiler; F represents the space occupied by the smoke and heated products of combustion; G is the furnace or fire-box; H is the pipe through which the boiler is supplied with water; J the pipes which connect the central water tube with the annular water space. The hot-air chamber or sections C are constructed as represented in fig. 3, where the parts of the section are shown separate, as *a a*, and where two sections are joined together, as at *b b*. To form one section, *a* and *a'* are slipped together and riveted or bolted at *c* as the two sections are at *b*. They set one upon another, surrounding the central tube B, as represented in fig. 1. It will be seen that this arrangement greatly increases the steam-generating surface of the boiler.

My object is not so much to show and describe the particular details in the construction of the boiler as to demonstrate the applicability of my hot-air chambers or sections to this as well as to other kinds of boilers. In the example of my invention here shown I adapt them to the vertical boiler. In constructing horizontal boilers the sections are formed in the same manner and united in the same manner, except that the flue is placed eccentrically through the section, as seen in fig. 4. The object of this will at once be understood, as it is important that the steam-generating surface should be as much above the fire as possible. *d* is beneath the fire and the interior portion of the section which forms the flue, so that in adapting my chambers or sections to horizontal boilers the interior water tube is dispensed with. Two, or even more, series of my hot-air chambers may be combined in such a manner that they may lap by or interlock each other when it is desired to increase the heating surfaces of boilers. A suitable supply of air may be introduced into these hot-air chambers by curved air tubes communicating with a supply tube upon the outside of the boiler. A much more perfect combustion of the heated gases may thus be obtained. In passing through the hot-air chambers the products of combustion are so detained or retarded in their course that the surrounding water absorbs the caloric which they contain to a good degree, thus greatly economizing fuel.

I do not confine myself to the particular manner herein described of forming my hot-air chambers or sections, although I prefer the dish-shaped or convex form.

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

The hot-air chambers or sections C, enclosing the steam and water tube B, and enclosed within the boiler A, constructed and arranged as herein set forth for the purpose specified.

THOMAS HOLT, [L. s.]
In Trieste, Contrada Chiadino 130.

Witnesses:

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AMES OEZAUP, *in Trieste, Exchange, No. 557.*