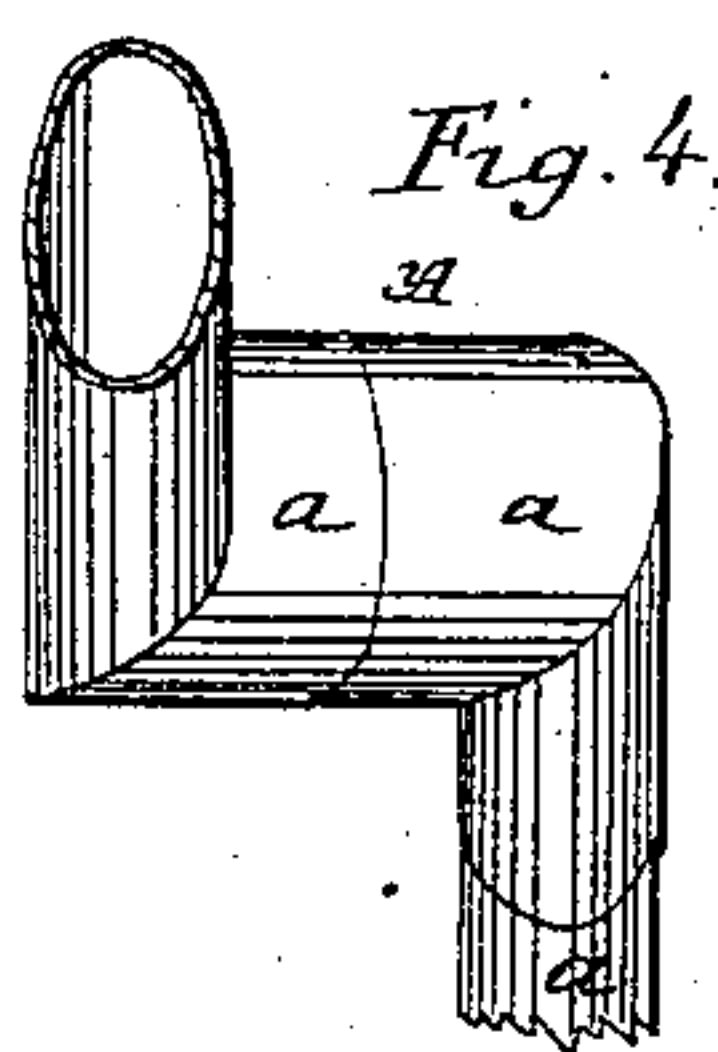
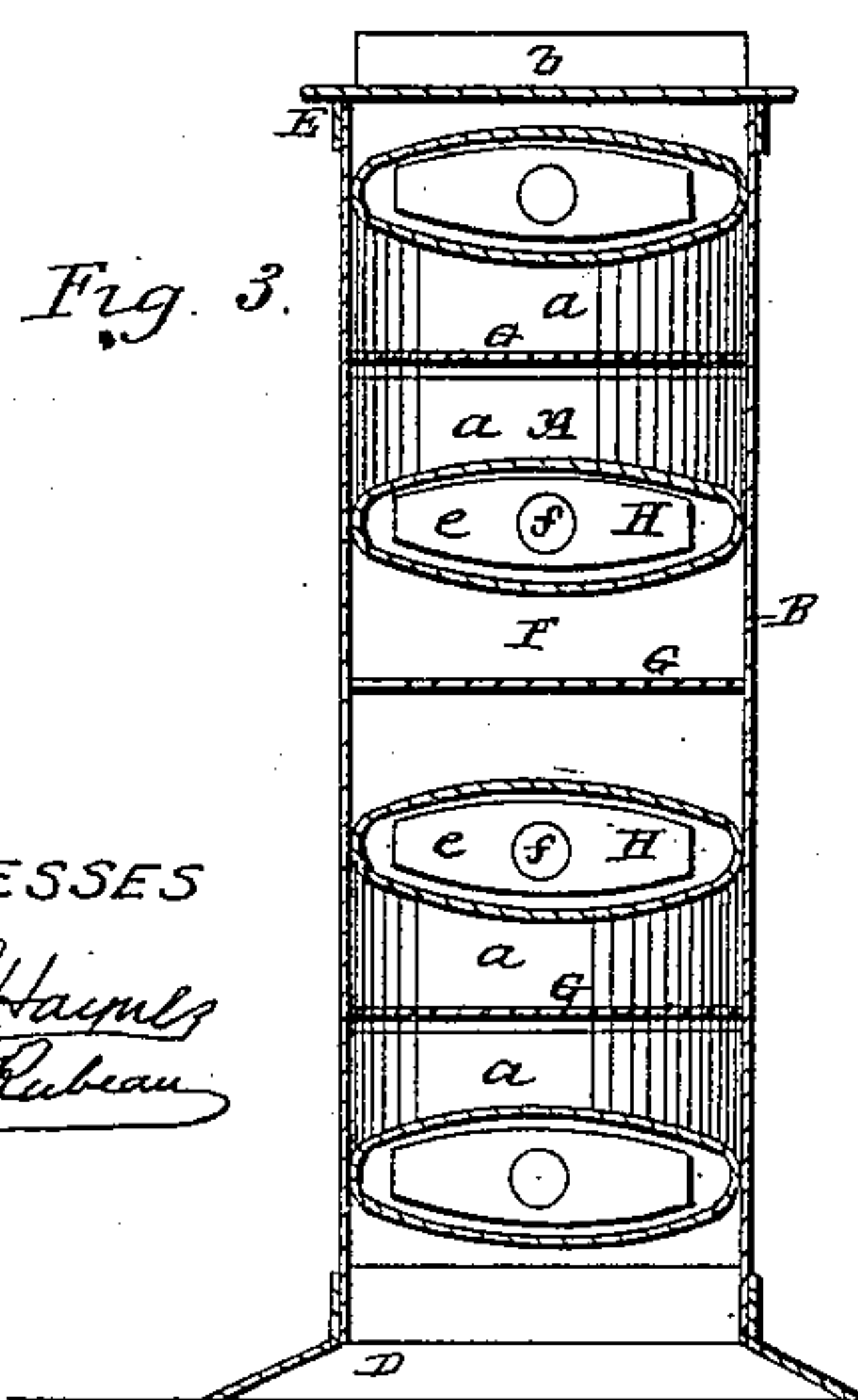
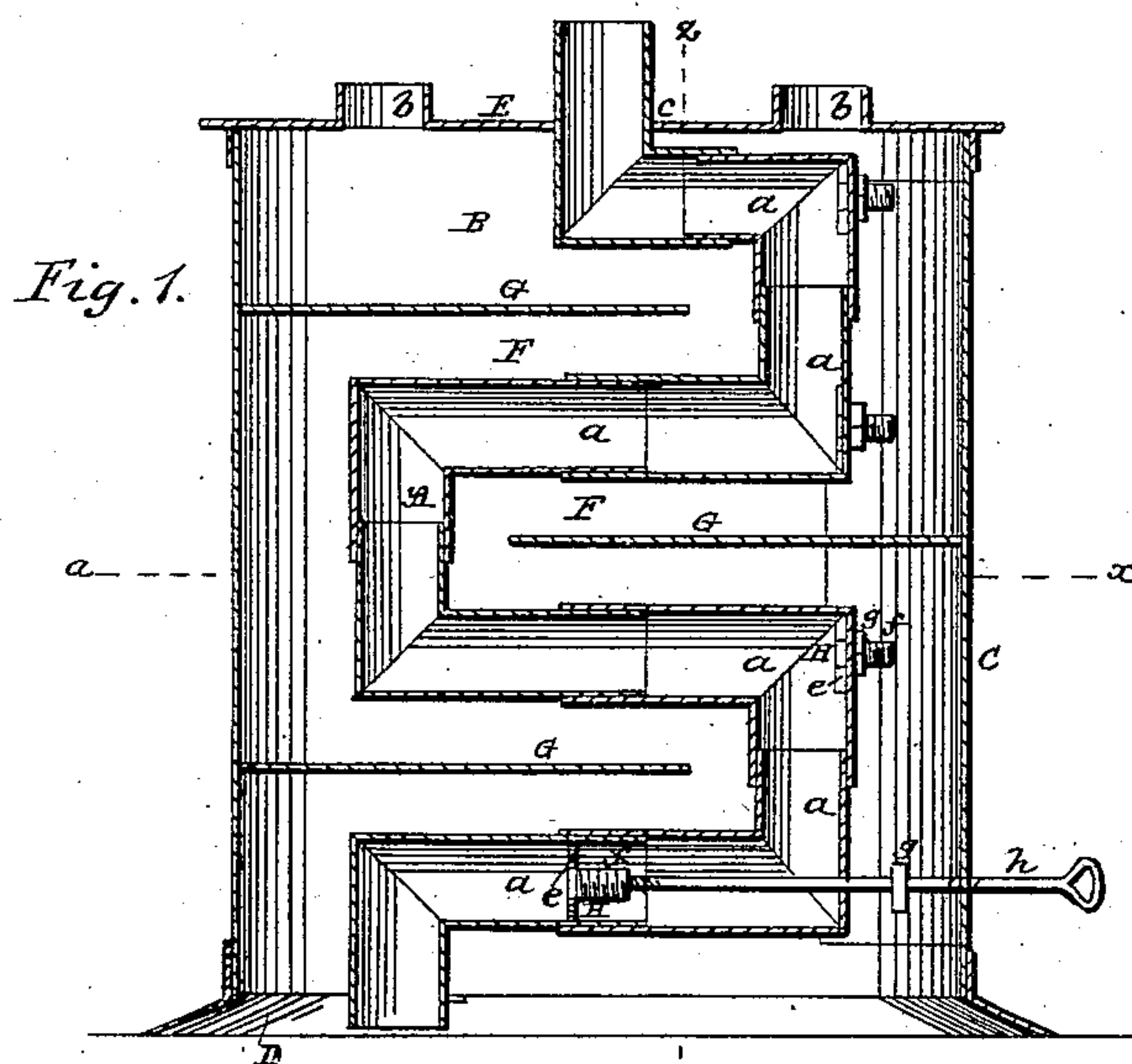
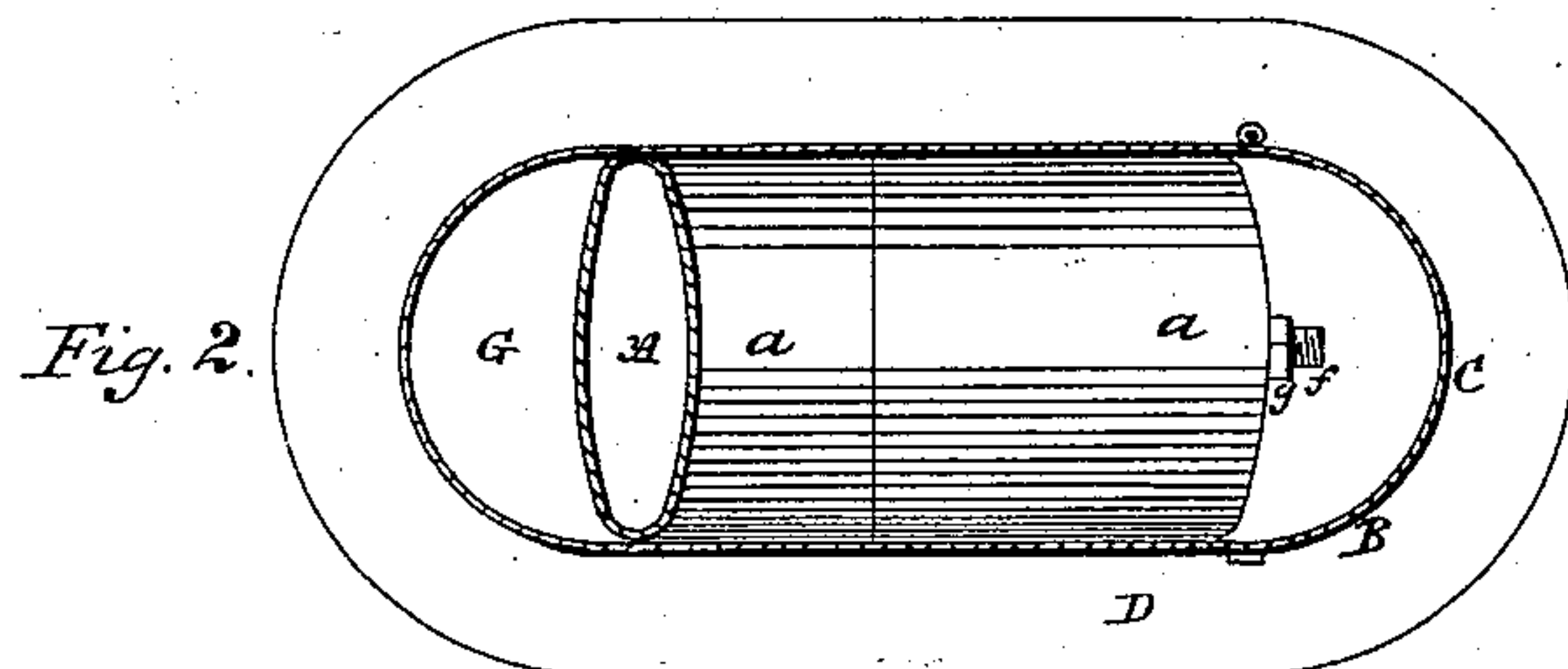


W. ALLCHIN.
Heating Drum.

No. 95,551.

Patented Oct. 5, 1869.



WITNESSES
Fred. Haynes
R. C. Kubeau

INVENTOR
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United States Patent Office.

WILLIAM ALLCHIN, OF NEWBURG, NEW YORK.

Letters Patent No. 95,551, dated October 5, 1869.

STOVE-DRUM.

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, WILLIAM ALLCHIN, of Newburg, in the county of Orange, and State of New York, have invented a new and useful Improvement in Hot-Air Drums or Superheaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a vertical longitudinal section of a hot-air drum or superheater constructed in accordance with my improvement;

Figure 2, a horizontal section of the same, taken as indicated by the line *x x* in fig. 1; and

Figure 3, a vertical section through the line *z z*.

Figure 4 is a view, in perspective, of a portion or section of the pipe or tubular-passage through which the smoke or escaping products of combustion pass in their way through the drum.

Similar letters of reference indicate corresponding parts.

This improvement relates to apparatus which may either be used for ventilating or superheating-purposes, for heating air by the products of combustion as the same escapes from a stove, furnace, oven, range, or other like structure.

The improvement is similar, so far as regards its general principle of action, to the hot-air drum described in Letters Patent, No. 85,554, of the United States, issued to me January 5, 1869, and in which a drum of flattened construction is used, fitted internally, so as to form three tortuous or zigzag channels up through it, and the inner one of which serves to conduct the escaping products of combustion, while the two outer ones are passages for air, which, entering the drum, in a cold or comparatively cool state, at or near its bottom, becomes heated by the plate or partitions within or between which the smoke and escaping products of combustion are passed, and made to circulate or flow in like directions to and simultaneously with the passage of the air to be heated on the exterior of opposite sides of such smoke-flue or passage.

This invention, however, differs from such previous improvement in a novel construction of the interior smoke-pipe or flue, by making it of elbows of a flat oval form, fitted together as ordinary stove-pipe is fitted, and closely arranging the same within a drum or case of a flattened character, but that may have rounded ends, and which is provided or fitted with horizontal partitions that serve, in concert with the elbows, to direct the air to be heated.

Referring to the accompanying drawing—

A represents the interior smoke-flue of the drum, which may connect at its bottom, in any proper manner, with a stove, furnace, oven, range, or other like structure, for carrying off the escaping products of combustion therefrom to the smoke-stack or outlet.

This smoke-flue A is made up of a series of elbows, *a a*, of a flattened oval form, fitted together as stove-pipes are usually joined or fitted, and forming a continuous crooked or zigzag pipe, running up through an outer sheet-iron or other metal case, B, and extending across the latter, so that the sides of said case touch the narrower sides of the elbows.

The outer case B, which in its general contour is of a flat shape, may be made up of side, end, and top plates, suitable secured or held together, or its body may be composed of sheet-metal, bent to the required form, and so as to give to its ends a rounded character, and the one or both of said ends fitted with or constructed to form a lid or door, C, while the lower edge of the body is made to fit within a base, D, of open or flange-like construction, and its top covered by a cap, E, having escape-opening or outlets *b b* and *c*, for the heated air and smoke.

Arranged to project from the ends of the case B to a suitable distance within the crooks or bends of the smoke-flue A, so as to form, in connection with the elbows of the latter, zigzag or tortuous air-passages F F, are horizontal partitions G G G, which may be connected with the case, or be carried by the elbows in any suitable manner.

Supposing the structure to be arranged so that the smoke-flue A connects at its bottom with the smoke-pipe or outlet of a stove, while the base D is open to a wall in air-space surrounding said stove, which is the arrangement it is generally designed to adopt, then the drum acts as a superheater, the partially heated air passing from said space in a tortuous or zigzag manner up the passages F F, through the drum, on both or opposite sides of the elbows, while the escaping products of combustion make a similar travel up the flue A, causing the air escaping at the outlets *b b* to be superheated.

The sides of the case B should fit close up against the narrower edges of the elbows *a a a*, so that no air will pass by them directly through the case to the outlets, but all air admitted below be forced to travel along the passages F F.

The construction of the smoke-flue A, as described, by making it of elbows, not only affords increased facility for putting the structure together, but in giving to said elbows an elliptical shape, which secures to the drum a more proportionate appearance, and reduces its height, a wide and flat surface or enlarged area is given to the smoke-flue, for heating or superheating the air in the passages F F without imparting or losing heat through the outer case by direct exposure of the products of combustion to contact with the sides of the case.

To clean out the smoke-flue A, whether made of oval or other shape in its transverse section, I provide the sides of the elbows *a a*, at the end or ends of the

horizontal courses of the smoke-flue, and facing the door in the end of the case, with scrapers H H, which may be made by riveting a piece of sheet-metal, *e*, on to a short piece of iron tube, *f*, arranged to project through an aperture in the elbow from the inside, and having an outside and inside thread cut upon it, so that when not required to use the device as a scraper it forms a plug, to prevent the egress of smoke or gas, and may be secured by a nut, *g*, made to screw on to the outside of the tube *f*, while, when it is required to work the device as a scraper, a rod, *h*, may be connected with the tube by screwing it into the inner thread thereof so that on slacking the nut *g*, and allowing it to

slide on said rod, the plate *e* may be forced inward, and drawn backward and forward by the rod.

What is here claimed, and desired to be secured by Letters Patent, is—

The smoke-flue A, constructed of elliptical-shaped elbows, and arranged within a drum, having parallel sides, so that the greatest diameter of said smoke-flue shall be close to the sides of the drum, and in combination with the partition G, form zigzag air-passages F F, as shown and described.

Witnesses:

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