

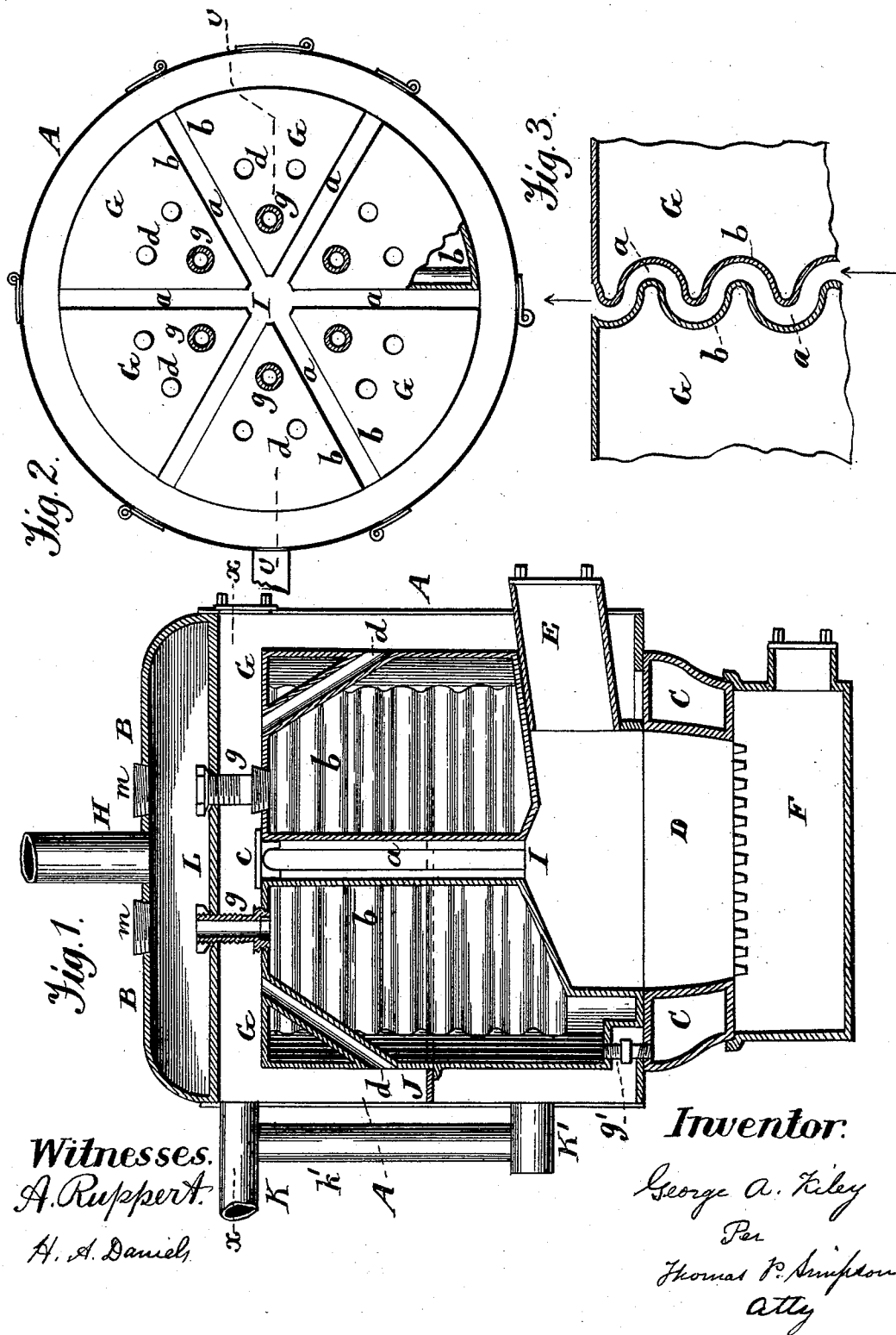
(No Model.)

G. A. KILEY.

FURNACE BOILER FOR HEATING HOUSES, &c.

No. 496,613.

Patented May 2, 1893.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE A. KILEY, OF HAZELTON, PENNSYLVANIA.

FURNACE-BOILER FOR HEATING HOUSES, &c.

SPECIFICATION forming part of Letters Patent No. 496,613, dated May 2, 1893.

Application filed December 31, 1892. Serial No. 456,909. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. KILEY, a citizen of the United States, residing at Hazelton, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Furnace-Boilers for Heating Houses or Buildings by Water or Steam; and I do 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 drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to boilers for heating buildings either by water or steam and consists in certain improvements in the construction of boilers of this class, as hereinafter described and claimed.

In the accompanying drawings—Figure 1 represents a vertical section of a boiler having my improvements, the section being taken on line *vv* of Fig. 2. Fig. 2 is a horizontal section taken on line *x-x* of Fig. 1. Fig. 3 illustrates in vertical section the corrugated sides of the boiler sections.

A designates the outer casing of the boiler, which is surmounted by a dome B.

C indicates a water chamber which surrounds the fire box D.

E indicates the door for charging the fire-box and F the ash-box.

The boiler is constructed in sections G which are somewhat tri-angular in form, as seen in Fig. 2, each section having three vertical sides, the outer side being on a curve and the other two sides extending inward to an angle at the center, so that when the boiler sections are in place, their outer sides are all on a circle and the sections are separated by radial passages *a* for heat and the products of combustion between said sections. A central passage I, for heat from the combustion chamber, is formed by the relative arrangement of the sections G and communicates with the passages *a*, said passage I being closed at the top by a deflecting plate *c* to turn the heat and products of combustion into the said passages *a* between the sections G.

The converging sides *b* of sections G are formed with corrugations and are so con-

structed and arranged that the convex or projecting portions of the wall of one section extend into the concavities in the side of an adjacent section, so that a zig-zag, vertical passage for heat and the products of combustion is formed between the side of one section and that of another as seen in Fig. 3. Inclined flues *d* are formed in the upper part of each section G, for the downward passage of heat and for water-heating surfaces.

The boiler sections G, forming several water compartments, are removably secured in position by means of threaded nipples *g* and *g'*. The nipples *g* are screwed into the top plates of the sections G and into a plate L at the base of the dome B, and form passages for either water or steam from the sections G to the said dome. The nipples *g'* are screwed into the bottoms of the sections G and into the top plate of the water chamber C and form water passages between said sections and said water chamber.

The pipe H is a conductor for either steam or hot water to be distributed to different apartments.

J is a baffle plate, located between the outer casing A and the sections G, said plate extending partly around the sections G and serving to give direction to the products of combustion to the front of the apparatus from whence they are turned rearward.

K and K' indicate smoke pipes, one of which is connected with the casing A above and the other below the plate J, said pipes being connected by a pipe *k'*. The two pipes K, K', are intended for the discharge of smoke either by the direct or indirect draft.

The heat and products of combustion passing into the vertical passage I, and through the zig-zag passages *a*, between the boiler sections, to the hot-air chamber surrounding said sections, rise and are turned downward by the plate L and pass downward through the passages *d*; the heat, &c., caught by the baffle plate J being turned by the latter to a direction forward, and as they rise, turned down by the plate L.

The boiler sections G may be severally removed, as desired for any purpose, as for cleaning flues or repairing, doors or covered openings being provided in the casing A; the

threaded nipples *g, g'* may be unscrewed so that either of the boiler sections may be detached. The screw plugs *m* in the dome may be removed in order to reach the nipples *g*.

5 I claim—

The combination with the casing A, provided with the dome B, of the removable compartments G, water chamber C, nipples *g, g'*, and baffle plate J, partly surrounding said

compartments, substantially as set forth and described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE A. KILEY.

Witnesses:

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