(No Model.)

2 Sheets—Sheet 1.

F. H. BAILEY.

STEAM BOILER.

No. 486,017. Patented Nov. 8, 1892.

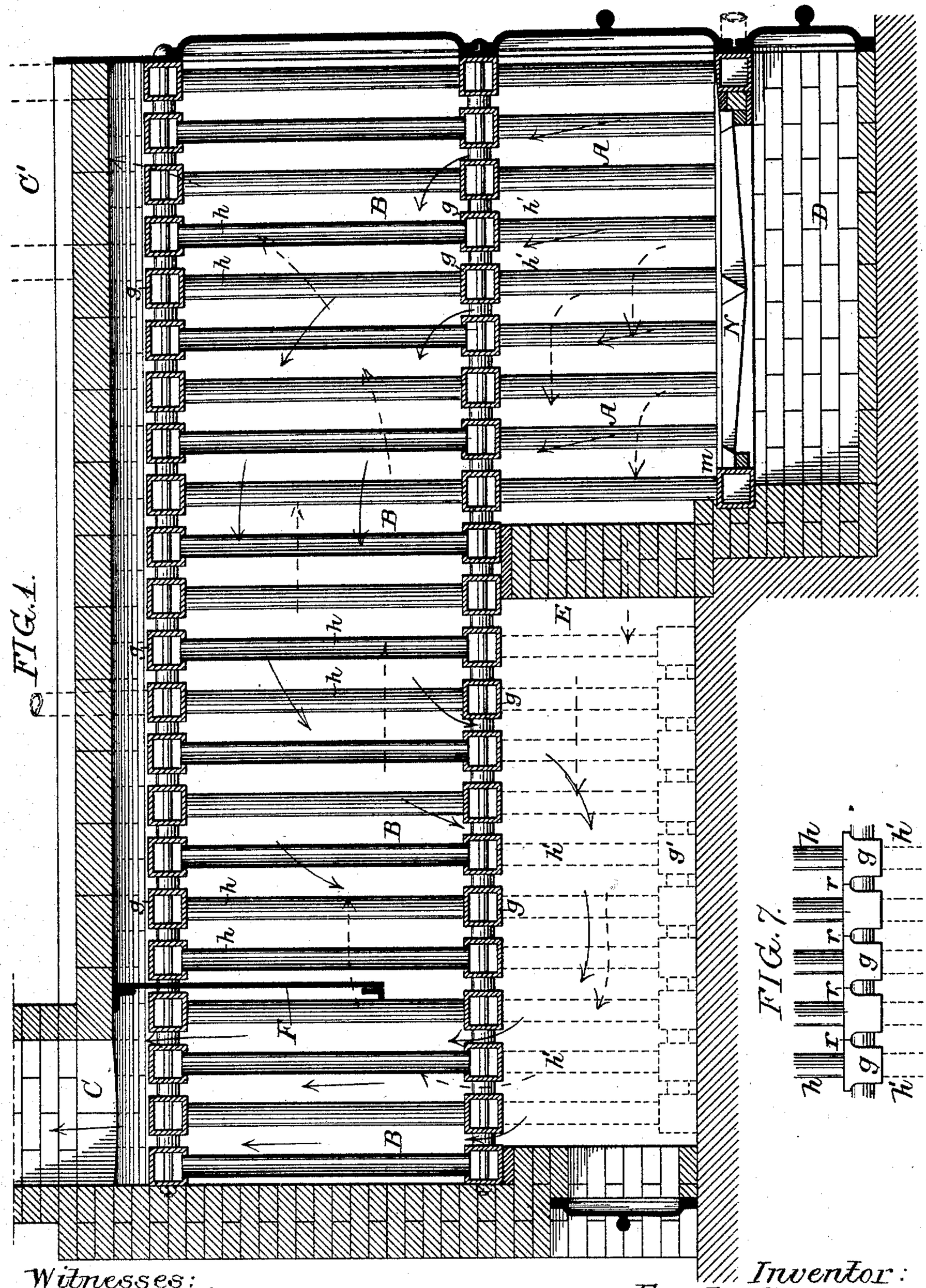

FIG. 1.

FIG. 7.

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(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.

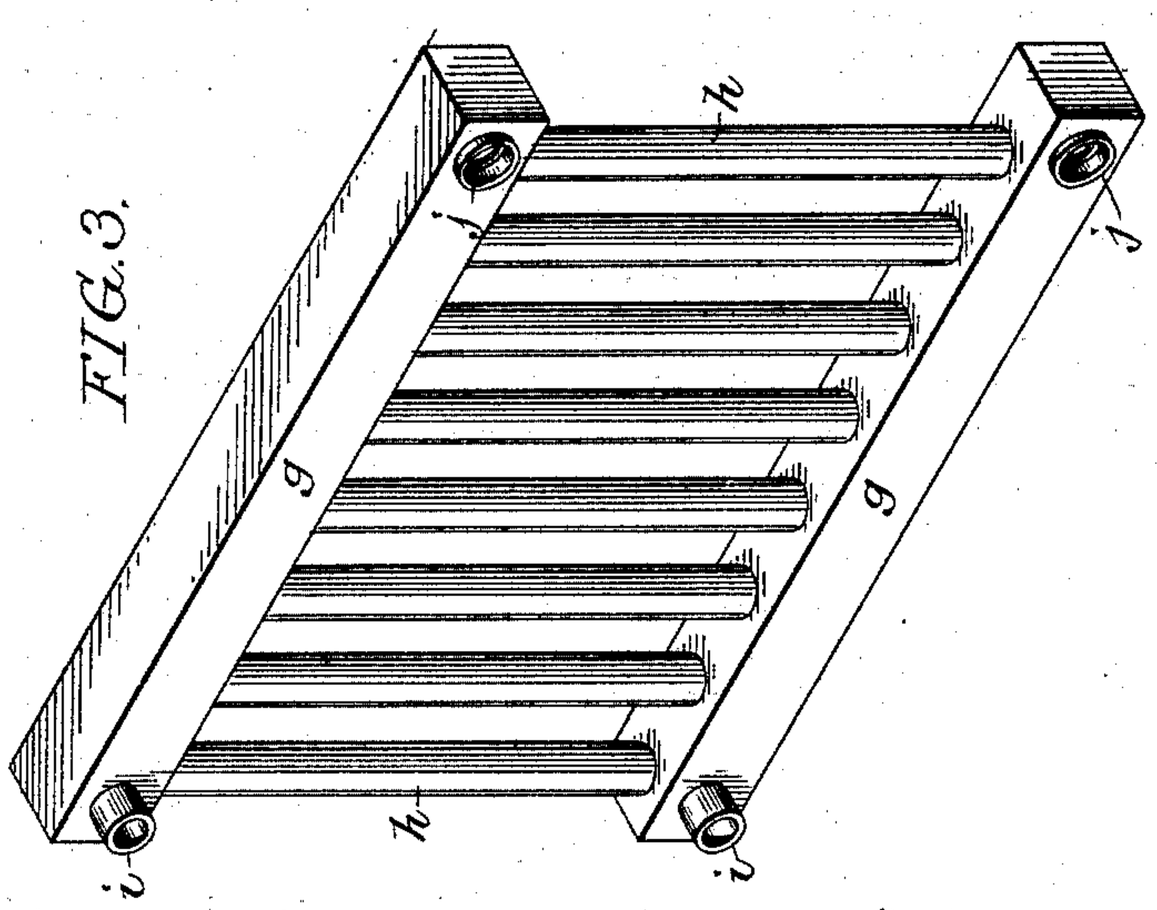


FIG. 6.

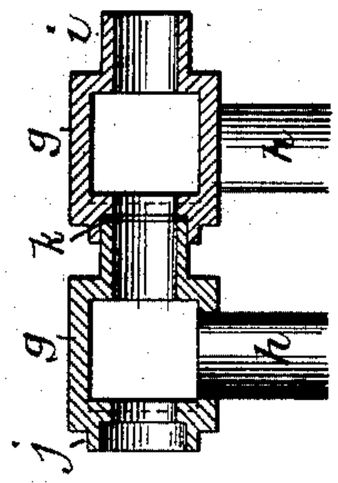


FIG. 2.

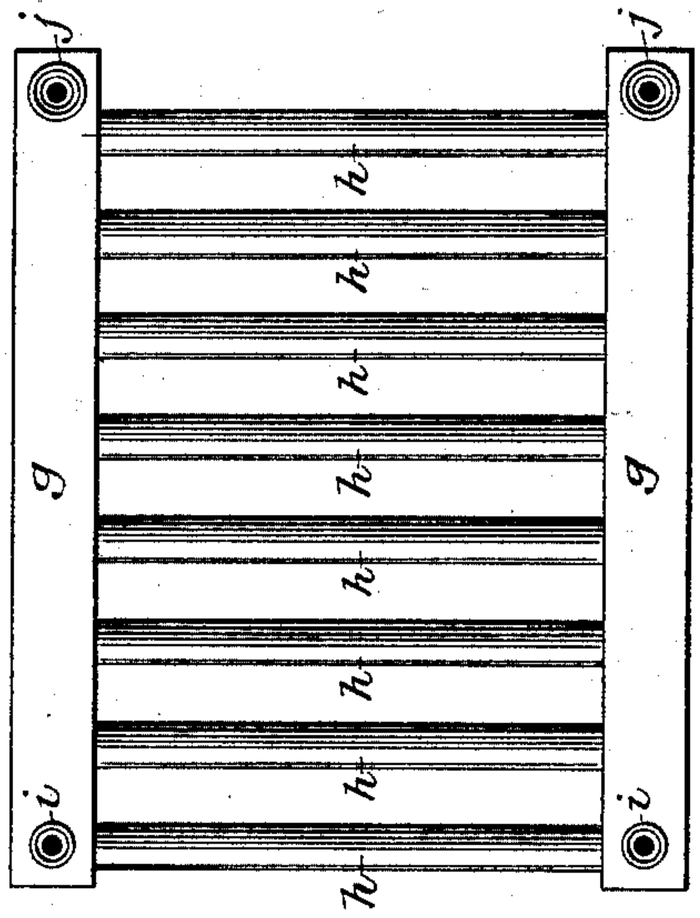


FIG. 5.

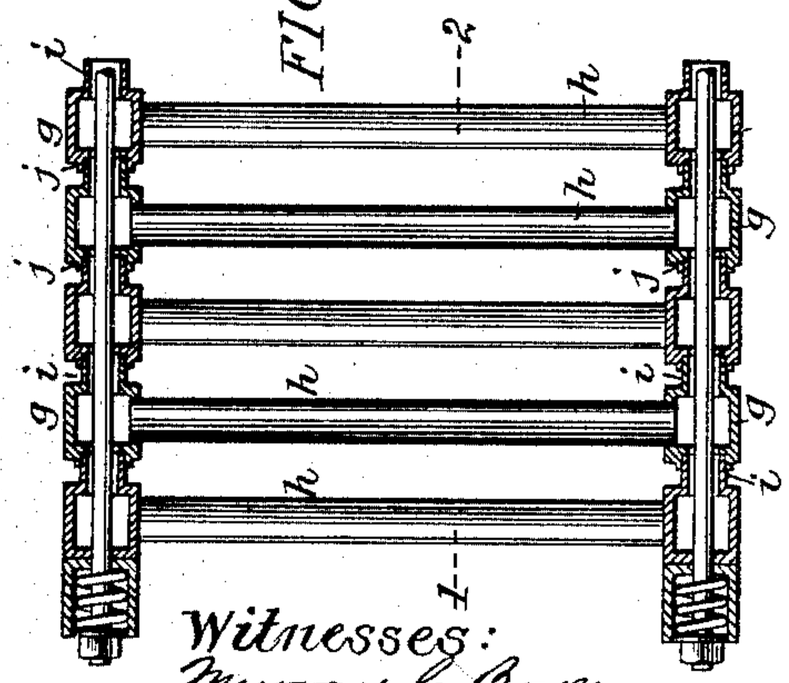
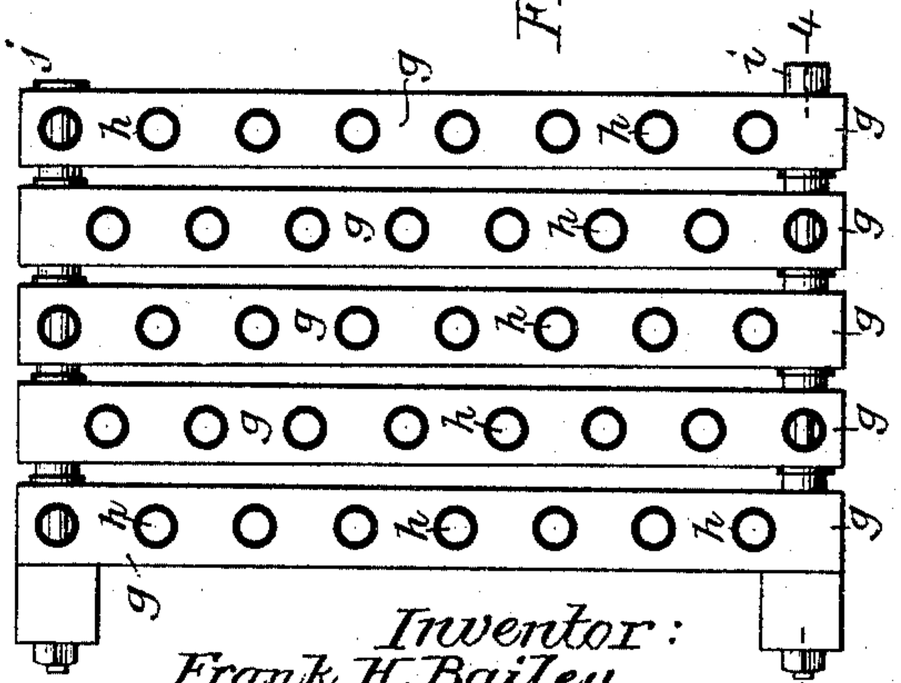


FIG. 4



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UNITED STATES PATENT OFFICE.

FRANK H. BAILEY, OF WILKES-BARRÉ, PENNSYLVANIA.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 486,017, dated November 8, 1892.

Application filed January 13, 1892. Serial No. 417,911. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. BAILEY, a citizen of the United States, and a resident of Wilkes-Barré, Luzerne county, Pennsylvania, have invented certain Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to steam-boilers or water-heaters of the sectional type, its object being to provide a boiler which can be conveniently constructed of any desired size or capacity, in which the various sections are interchangeable, and in which the greatest possibe amount of surface will be presented to the heat. These objects I attain in the manner more fully set forth hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of a boiler constructed in accordance with my invention. Fig. 2 is an elevation of one of the sections of which the boiler is composed. Fig. 3 is a perspective view of the same. Fig. 4 is a sectional plan view on the line 1 2, Fig. 5, of a number of the sections. Fig. 5 is a sectional elevation on the line 3 4, Fig. 4. Fig. 6 is an enlarged sectional view of a portion of two of the sections, showing the manner in which said sections are joined together; and Fig. 7 is a view of a modification.

In the drawings, A represents the fire-box; B, the combustion-chamber; C, the escape-flue, and D the ash-pit.

In Fig. 1 the boiler is shown as composed of a single row or series of sections, each of the construction illustrated in Figs. 2 and 3, the whole being inclosed within a suitable casing and being provided with a bridge-wall E and a plate F for directing the course of the products of combustion. Each of the sections G is of precisely the same construction, each comprising the headers *g* of any suitable shape and connected to each other by a series of tubes *h*, secured therein in any suitable manner, and each of the headers of each section is provided with two male and two female joints, the male joints *i* being situated one at each end on the opposite sides of the headers and the female joints *j* being placed directly in line with the male joints on the opposite side of the header from that on which the male joint is situated, so that when the various sections are placed together the male joints *i* of each header will adapt themselves to the female joints *j* of each succeeding header. The end sections of the boiler are preferably made without joints on one side, so that a series of bolts may be passed through the joints, connecting the whole series of sections in such a manner that the water will be allowed free circulation, the bolts being of comparatively-small diameter, so as to take up only a portion of the space in the passage through the joints from section to section. Between the joints of the various sections are gaskets or packing-rings *k*, as shown in Fig. 6, and, if desired, I place at the end of each bolt a spring *l*, as shown in Fig. 5, which will permit any amount of expansion and contraction and still keep the joints always tight. The male and female joints are arranged as previously described, and the vertical tubes *h*, which connect the headers, are so placed that when all the sections are made alike and put together in the same manner the tubes of the various sections will be in line with each other; but if every other section is reversed the sections will fit together in the same manner and the tubes will then be staggered—that is, the tubes of one section will come opposite to the spaces between the tubes of the next section.

In Fig. 1 I have illustrated the fire-box as being formed by tubes extending from the lower headers *g* of the front portion of the boiler to headers *m*, extending around the grate M, although of course any desired form of fire-box may be used. This figure also illustrates in dotted lines a boiler of this character constructed on the return-flue principle with the outlet through a flue C′, the whole series of sections being made with depending tubes *h′*, which extend to lower headers *g′*, and the products of combustion take the course illustrated by dotted lines, the bridge-wall being of course removed. When the boiler is used on this principle, the headers *a* intermediate between the tubes *h* and the tubes *h′* are preferably made as illustrated in Fig. 7—that is, with flanges *r*—so as to form a comparatively-tight joint and to close up the passage between the headers; or, if desired, two or more distinct sets or series of sections, each provided with its tubes and headers, may be mounted one above the other

and separated by a plate, so as to form a tier of boilers, through which the products of combustion may be made to pass before they finally escape.

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

1. A steam-boiler comprising a series of connected sections, each section being composed of transverse upper and lower headers, vertical tubes connecting said headers and forming a complete circulating section, male joints situated one at each end on the opposite sides of each header, and a female joint on each end of each header on the opposite sides of the header from that on which the male joint is situated, substantially as specified.

2. A steam-boiler or water-heater comprising a series of connected sections, each section being composed of opposite headers, joints thereon, and tubes connecting the headers, the tubes being so situated that when the sections are connected together they may be in line with each other or staggered, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK H. BAILEY.

Witnesses:
D. A. FELL, Jr.,
S. E. INNES.