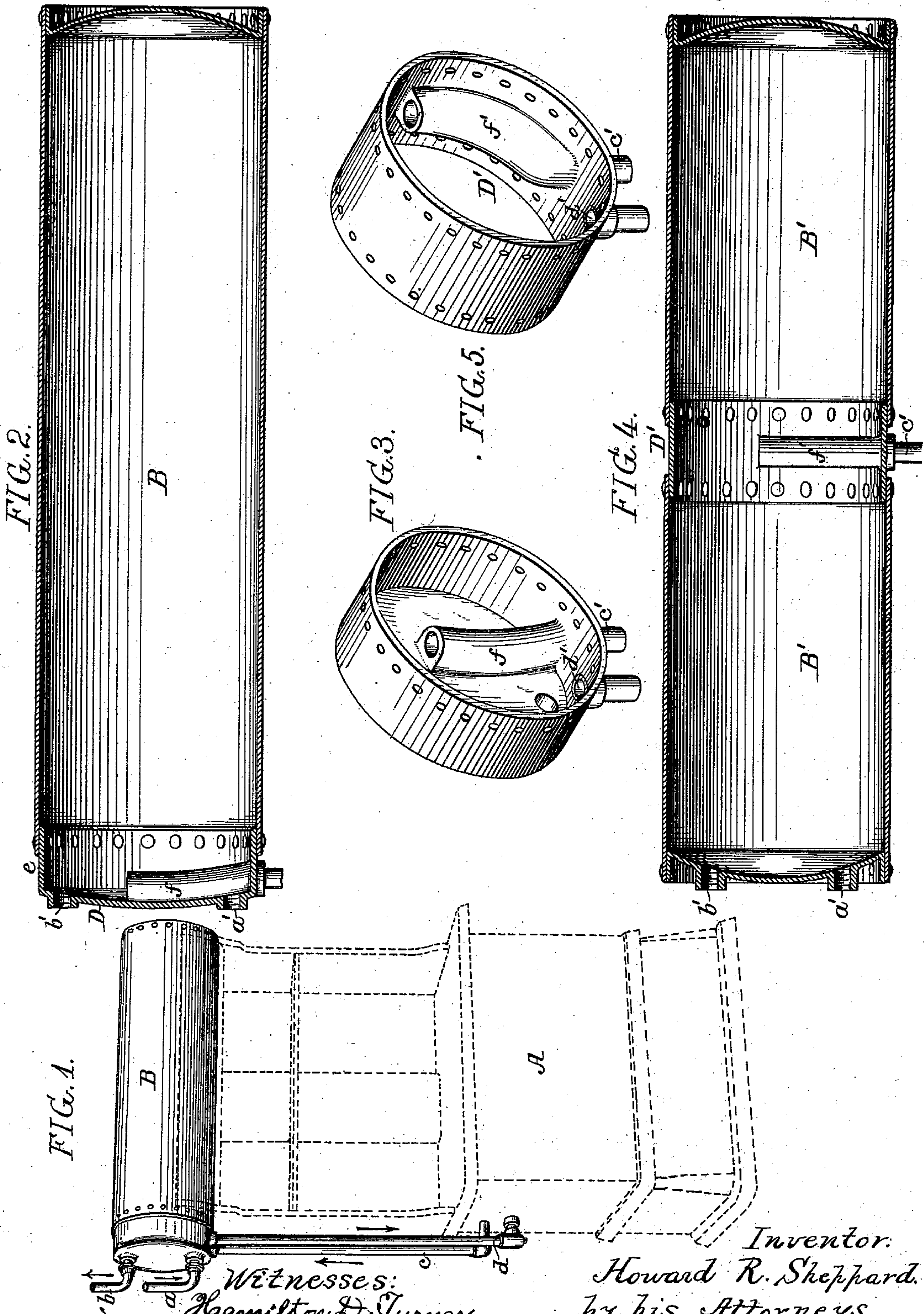


(No Model.)

H. R. SHEPPARD.
HORIZONTAL CIRCULATING BOILER.

No. 501,739.

Patented July 18, 1893.



Witnesses:
Hamilton D. Turner.
R. Schleicher.

Inventor:
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UNITED STATES PATENT OFFICE.

HOWARD R. SHEPPARD, OF PHILADELPHIA, PENNSYLVANIA.

HORIZONTAL CIRCULATING-BOILER.

SPECIFICATION forming part of Letters Patent No. 501,739, dated July 18, 1893.

Application filed March 26, 1891. Serial No. 386,434. (No model.)

To all whom it may concern:

Be it known that I, HOWARD R. SHEPPARD, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Horizontal Circulating-Boilers, of which the following is a specification.

The object of my invention is to so construct a horizontal circulating boiler for use in ranges, &c., that the expensive fittings heretofore necessary may be dispensed with to a certain extent. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1, is a perspective view showing the boiler and illustrating my improvements, the range being shown in dotted lines. Fig. 2, is a longitudinal sectional view of the boiler. Fig. 3, is a perspective view of the head. Fig. 4, is a longitudinal view showing another method of applying my improvements to a boiler of a double oven range; and Fig. 5, is a perspective view of the center section shown in Fig. 4.

Referring to the drawings, A is the range on which is mounted the horizontal boiler B. *a* is the cold water inlet pipe to the boiler and *b* is the hot water outlet from the boiler to the house. These two pipes are coupled to the head as heretofore.

c is the hot water connecting pipe extending from the boiler to the water back, and *d* is the cold water connecting pipe extending from the water back to the boiler.

Heretofore the pipes from the water-back have been provided with couplings, return bends and small sections of pipe, making it troublesome and expensive to couple up the boiler to the range.

The range illustrated is of the class termed "portable ranges" dispensing with the use of brickwork in its construction, but my boiler can be coupled to other ranges as well, without departing from my invention.

As shown in Figs. 2 and 3, I preferably make the head D of the boiler B a casting having openings *a' b'* for the pipes *a b* and in the flange of the head *e* are two openings *c' d'* to which are coupled directly the pipes *c d*. I form an extension of the hot water pipe *c* by continuing the pipe in the form preferably of a tube *f* cast in the head of the boiler as shown

in Figs. 2 and 3, this tube extending preferably about midway of the boiler. Thus it will be seen that the joints between the pipes *c d* are plain screw joints being tapped into the flange of the head, as shown in Fig. 1. By connecting the pipes for circulating hot and cold, and return water, as shown and described, the circulation is more readily accomplished by reason of the fact that the hot water from the water back is discharged near the circulating outlet of the boiler, while the cold water coming into the lower part of the boiler cannot interfere with the natural movement of the heated water, which tends to rise to the top of the boiler. The tube *f* is, by preference on the inside of the head and cast therewith, but in some instances it may be bolted thereto or otherwise attached as circumstances may require. The head is readily riveted to the boiler, the flange being deep enough to allow for the openings *c d*. In some instances the boiler may be made with two sheets *B' B'* with the section *D'* in the center as shown in Figs. 4 and 5, said section being riveted to the two sheets of the boiler, as shown in said figures. This section is preferably cast and has openings *d'* and *c'* for the two pipes *c d* and the extension *f'* is preferably cast on the inner side of the section shown in the perspective view opening at about the center of the boiler. In this case the tubes *c d* connect with the water-back on the under side. This form I prefer to use on double-oven ranges, in which the water-back is in the center.

I claim as my invention—

1. In a horizontal circulating boiler, the combination with the shell thereof of a flanged section having radial openings for hot and return water from the water-back, the former being integral with said flanged section, and also having side openings for hot water outlet and cold water inlet, the former being above the line of incoming cold water, substantially as set forth.

2. In a horizontal range boiler, the combination with the shell of said boiler, of a flanged head section projecting beyond the range, provided with radial openings for hot and return water pipes, whereby the said pipes may be directly connected to said boiler, substantially as set forth.

3. A horizontal range boiler placed above and projecting beyond said range, having a flanged section provided on its inner circular side with a passage opening above the central line of said boiler, and also having a return opening and an upper circulating opening and a lower cold water inlet, whereby the circulation is easily maintained, substantially as set forth.

10 4. In a horizontal circulating boiler, a flanged section or head provided with two radial openings, one terminating in a passage integral with and conforming to said flange

for the hot water pipe and the other for the return pipe to the water-back of a range, said head also provided with upper and lower openings for circulating and cold water pipes, respectively, substantially as and for the purpose set forth. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 20

HOWARD R. SHEPPARD.

Witnesses:

HENRY HOWSON,

EUGENE ELTERICH.