

(No Model.)

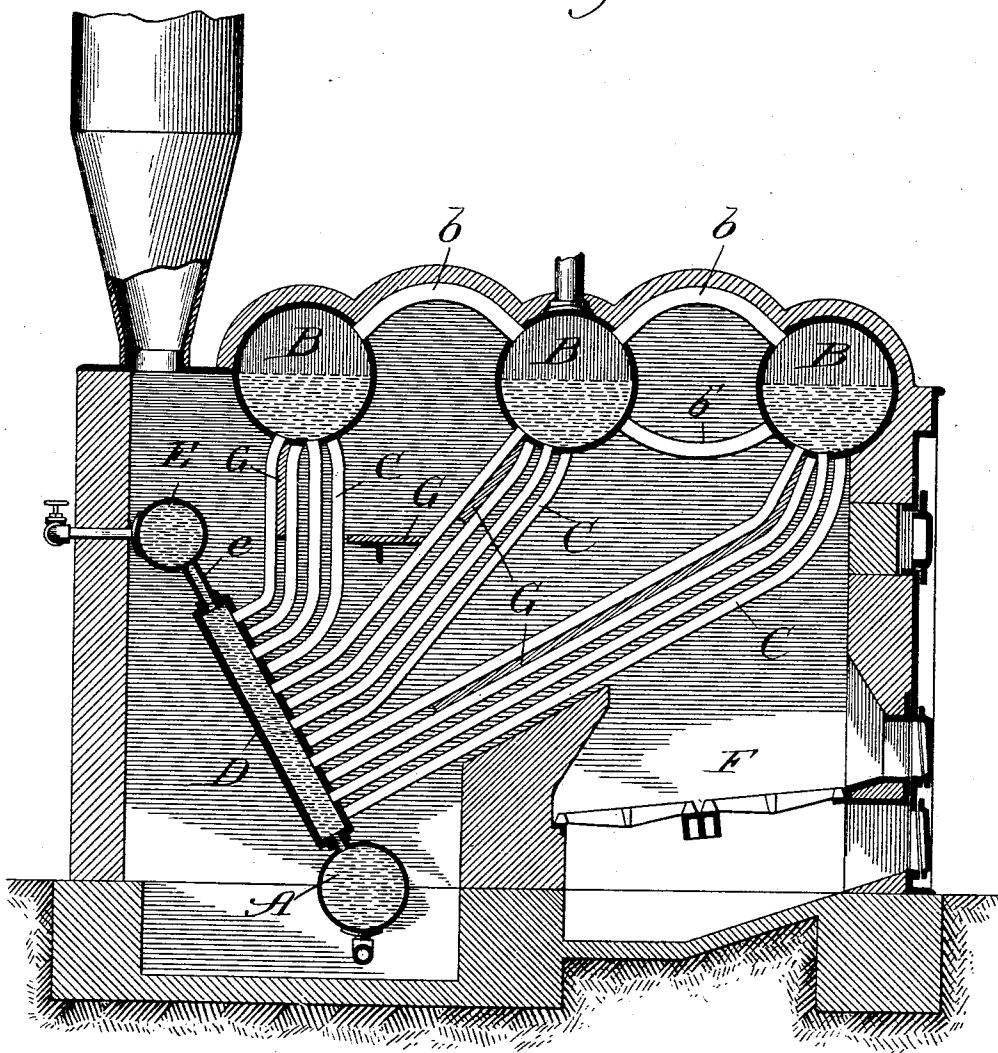
J. E. SCHLIEPER.
WATER TUBE BOILER.

3 Sheets—Sheet 1.

No. 580,197.

Patented Apr. 6, 1897.

Fig. 1.



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(No Model.)

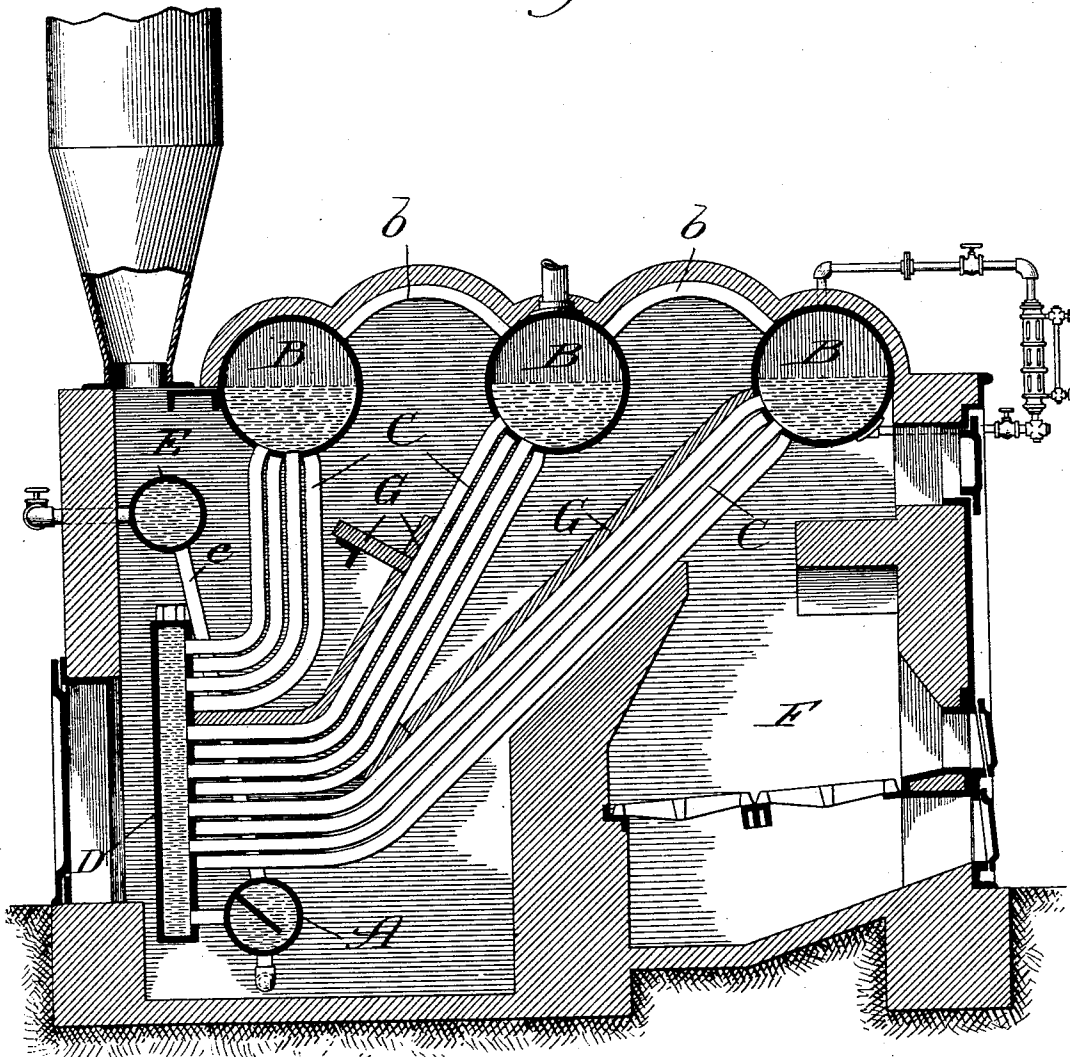
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No. 580,197.

Patented Apr. 6, 1897.

Fig. 2.



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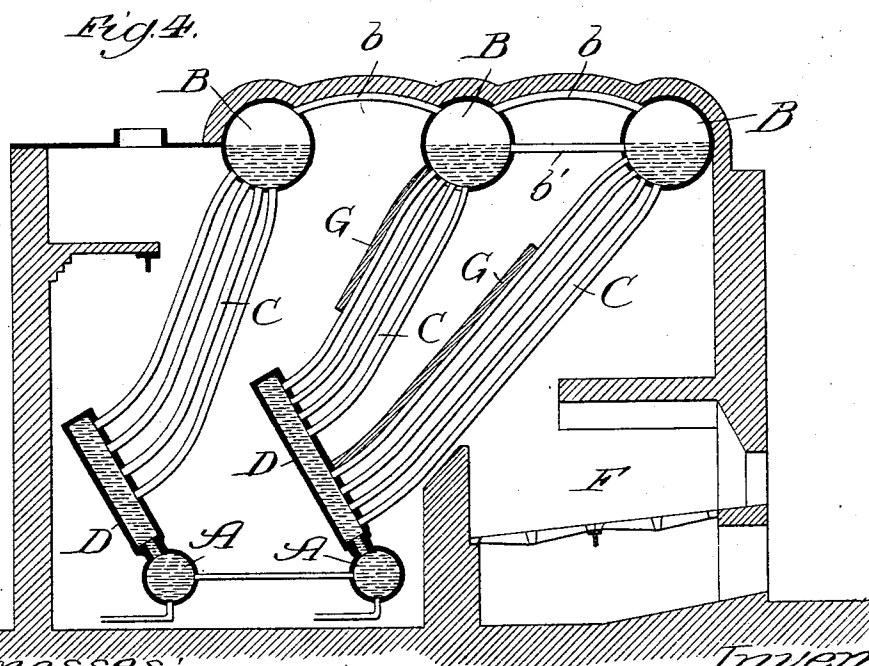
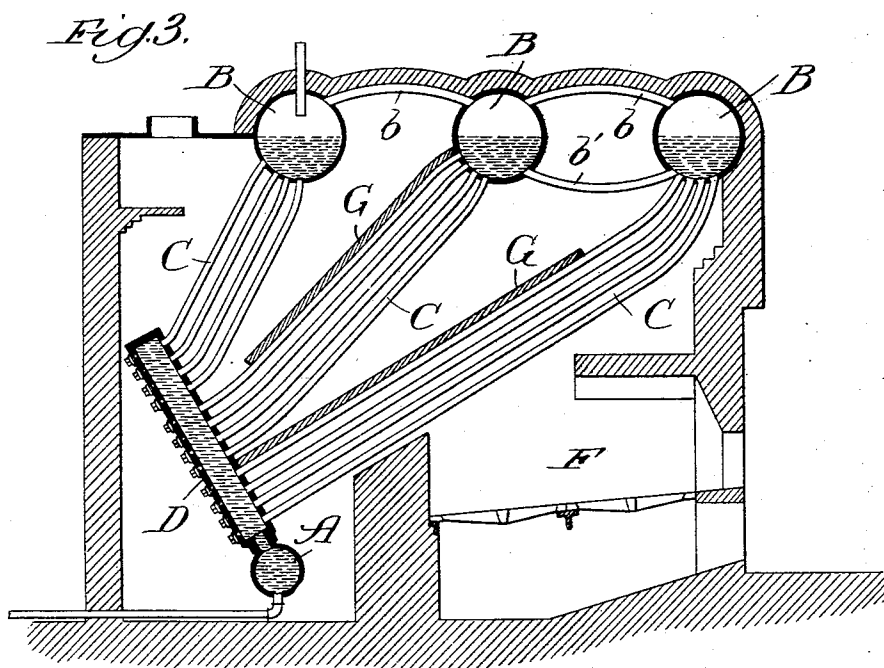
(No Model.)

3 Sheets—Sheet 3.

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WATER TUBE BOILER.

No. 580,197.

Patented Apr. 6, 1897.



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UNITED STATES PATENT OFFICE.

JOHN E. SCHLIEPER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
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WATER-TUBE BOILER.

SPECIFICATION forming part of Letters Patent No. 580,197, dated April 6, 1897.

Application filed September 12, 1895. Serial No. 562,310. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. SCHLIEPER, a citizen of the United States, residing at Pittsburg, in the State of Pennsylvania, have invented a new and useful Improvement in Water-Tube Boilers, of which the following is a specification.

The object of my invention is to make a boiler which shall have in one construction the advantages usually attained by having tubes connected directly into drums and also the advantages usually attained by having them connected into headers; and the invention consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of my improved boiler; Figs. 2 and 3, the same, illustrating modifications, particularly in reference to introducing feed-water; and Fig. 4, the same, illustrating a modification in reference to the header and mud-drums.

A is the lower mud drum or drums; B, elevated steam and water drums; *b*, steam-pipes, and *b'* water-pipes connecting the elevated drums; C, banks of tubes connecting the header or headers with the elevated steam and water drums; D, the header or headers; E, a feed-drum, and *e* a pipe or pipes connecting the feed-drum to the header or lower mud-drum; F, the fire-chamber, and G fire-brick arches, partitions, or shelves.

In constructing my improved boiler I provide for connecting the upper ends of the tubes of the several banks directly into the elevated steam and water drums and for connecting the lower ends into a suitable header or headers. The elevated drums may have steam and water communication with each other after the manner of an ordinary Stirling boiler or in any other convenient way, and suitable fire-brick arches or partitions may be used to direct the heated gases and products of combustion in and among the banks of tubes and up and down along the same, as desired.

The upper ends of the tubes are connected into the elevated drums and the lower ends into a header or headers in the usual way. The header or headers may be provided with hand-holes or not, as desired.

A mud-drum is placed at some convenient point in the lower part of the boiler, preferably at the lower end of each header. This mud-drum being in communication with the header, impurities are deposited therein, which impurities may afterward be blown off or removed in any convenient way.

In the form of boiler shown in Fig. 1 the feed-water is introduced into a feed-drum above the header and communicating therewith. After entering the feed-drum the water passes down through the header to the mud-drum and flows on in general circulation from the header and up and through the several banks of tubes into the elevated steam and water drums.

In the form of boiler shown in Fig. 2 the feed-drum has separate communications with the mud-drum, the latter also communicating with the lower end of the header. After entering the feed-drum the water passes down into the mud-drum, thence back and up into the header, and thence out and up in general circulation through the several banks of tubes into the elevated steam and water drums.

In the form of boiler shown in Figs. 3 and 4 the feed-water is introduced into the rear upper drum, after which it passes down through the rear bank of tubes into the header, and thence into the mud-drum, also flowing out and up into the elevated steam and water drums. As shown in Fig. 4 also, there are two headers and mud-drums having water communication with each other. The water passing down into the rear header and mud-drum immediately passes on into the forward mud-drum and thence up through the forward header and out and up through the front and middle banks of tubes or one of them into the front and middle steam and water drums.

The water communication between the elevated feed-drum and lower mud-drum may be directly through the header, as shown in Figs. 1, 3, and 4, or by means of separate tubes or pipes, one or more, as desired, as shown in Fig. 2.

I claim—

1. In a water-tube boiler, the combination of elevated steam and water drums, a header in the rear part of the boiler, banks of tubes

connecting the elevated drums with the header, a lower mud-drum communicating with the header, and means for introducing feed-water into the header and lower mud-drum, substantially as described.

2. In a water-tube boiler, the combination of elevated steam and water drums, a header in the rear part of the boiler, banks of tubes connecting the elevated drums with the header, a lower mud-drum communicating with the header, and an elevated feed-drum communicating with the lower mud-drum, substantially as described.

3. In a water-tube boiler, the combination of elevated steam and water drums, a rear header, a bank of tubes connecting the rear elevated drum with the rear header, a forward header, banks of tubes connecting the front and middle elevated drums with the forward header, two lower mud-drums communicating with each other and with the headers, substantially as described.

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