

(No Model.)

2 Sheets—Sheet 1.

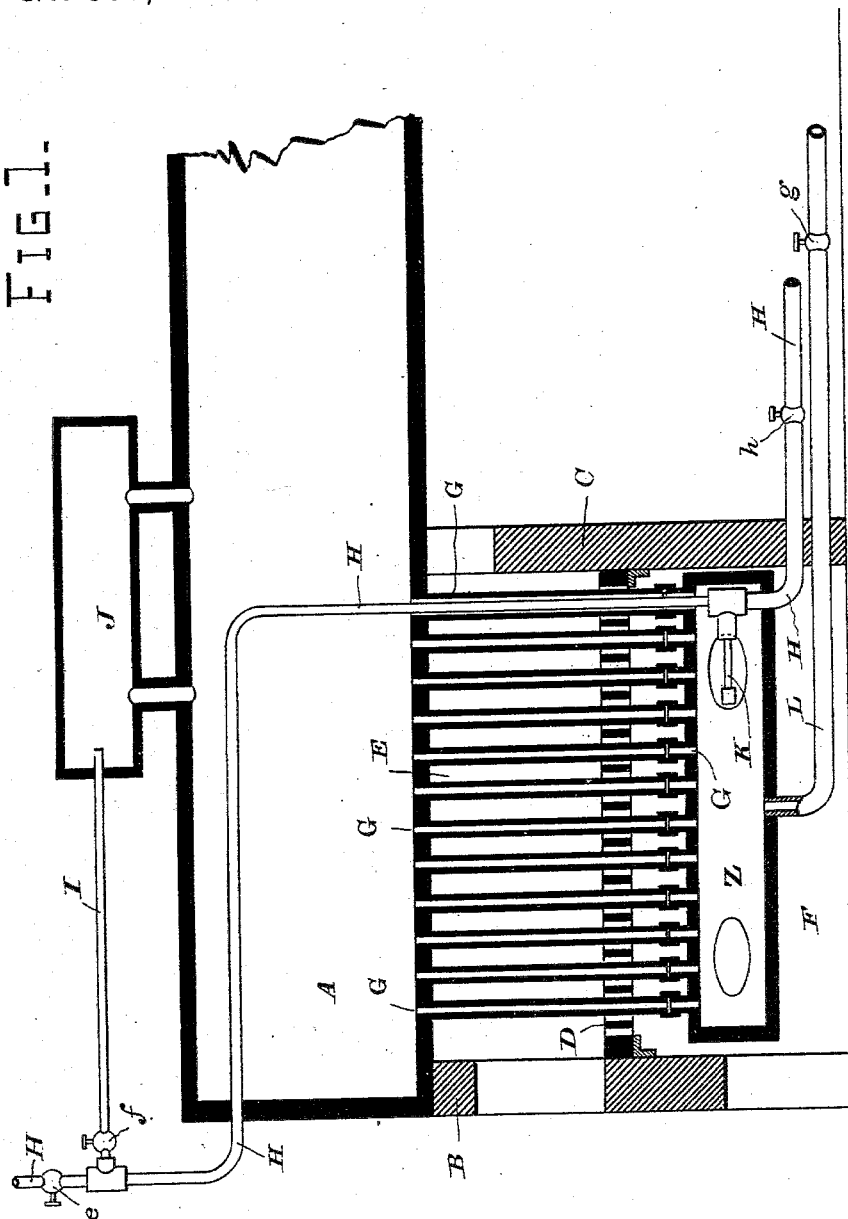
J. SPAULDING.

STEAM BOILER AND SEDIMENT COLLECTOR COMBINED.

No. 305,857.

Patented Sept. 30, 1884.

FIG. 1.



WITNESSES

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FIG. 2 .

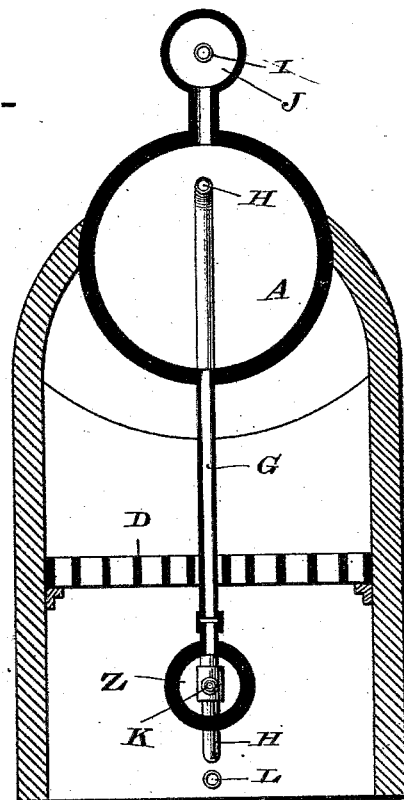


FIG. 3 .

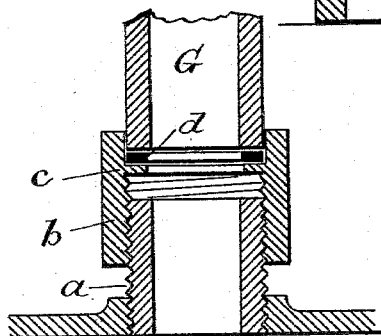
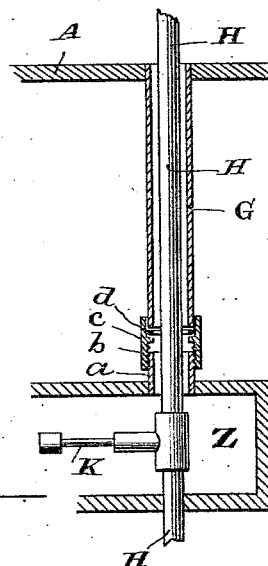


FIG. 4..



WITNESSES —  
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# UNITED STATES PATENT OFFICE.

JOHN SPAULDING, OF SAN FRANCISCO, CALIFORNIA.

## STEAM-BOILER AND SEDIMENT-COLLECTOR COMBINED.

SPECIFICATION forming part of Letters Patent No. 305,857, dated September 30, 1884.

Application filed January 24, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SPAULDING, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Steam-Boilers and Sediment-Collectors Combined, of which the following is a specification.

My invention relates to steam-boilers and sediment-collectors combined; and the objects of my invention are to provide a means whereby the water in a steam-boiler is more quickly brought to such a degree of heat that the sediment contained therein—such as lime and other impurities—will be precipitated and deposited in a sediment-collector attached to the boiler, and not be permitted to settle in the boiler and be converted into scale. I accomplish these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section through the boiler and the sediment-collector. Fig. 2 is a cross-section through the same, and Figs. 3 and 4 are detail views.

Similar letters of reference are used to indicate like parts throughout these several views.

A represents the steam-boiler, which may be of any desired form and construction.

B is the front wall, and C is the bridge-wall. D indicates the grate-bars; E, the fire-box or combustion-chamber, and F the ash-pit.

That portion of the boiler A which is immediately over the fire-box and between the front and bridge wall is pierced with a series of holes, into which are tapped the vertical pipes or tubes G G, which extend down through or between the grate-bars C into the ash-pit, where they are connected to the sediment-collector Z.

The manner of connecting the vertical tubes with the sediment-collector is illustrated in Fig. 3. A short piece of pipe, *a*, is tapped into the top of the sediment-collector, and a sleeve, *b*, is screwed down upon the pipe *a*. This sleeve has an inwardly-projecting collar or band, *c*, near its upper end, upon which the washer *d* rests. The vertical pipe G is now placed in position, with its lower end directly over the pipe *a*, and the sleeve *b* is screwed up until the washer and collar press against the lower end of the vertical

pipe, and thus a steam-tight joint or connection is made, and one that admits of the ready removal and replacement of the tubes. The feed-water pipe H enters the boiler near the top or above the water-line, and is given three or four turns or bends, so that the water contained within the pipe may be heated up before being discharged into the sediment-collector, where the supply of water is first received into the boiler. A branch pipe, I, connects the feed-water pipe with the steam drum J, and a T or branch is tapped onto the feed-pipe at that portion thereof which passes through the sediment-collector, and a pipe, K, is attached to the T and provided upon its end with a back-pressure valve. A waste-pipe, L, is attached to the sediment-collector and connects with the sewer.

In order to provide against the danger of the feed-pipe burning out when the said pipe is full of steam I pass it down inside of one of the vertical pipes G, leaving a space between the two pipes, which forms a water-jacket, and allows a current of water to continuously circulate around the said feed-pipe.

The operation of my improved sediment-collector is as follows, to wit: The water is first heated by being conducted back and forth several times through the steam-space, and the degree to which the water is heated should be sufficiently great to cause the sediment to be precipitated, when it will settle on the bottom of the sediment-collector. After the heated water enters the sediment-collector it passes upward through the vertical pipes and enters the steam-boiler in a comparatively pure state. When it becomes necessary to blow off the sediment which has accumulated in the feed-pipe, I close the cock *e* on the feed-pipe and open the cock *f* on the branch pipe, and also open the cock *h* on the pipe H, when the steam entering through the feed-pipe will drive on the slime and sediment that may have adhered to the interior of the pipe. When I desire to blow out the sediment which may have settled in the collector, I simply open the cock *g*, when the pressure of steam in the boiler will drive out the sediment, slime, &c.

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

1. In a sediment-collector for steam-boilers, the combination, with the boiler A, of the sediment-collector Z, placed beneath the grate-bars, and connected with the boiler by vertical  
5 circulation-pipes G G, substantially as shown, for the purpose set forth.

2. In combination with the steam-boiler A, the sediment-collector Z, circulation-pipes G G, waste-pipe L, and feed-water pipe H, having a branch pipe, I, and traversing the interior of the boiler before entering the sediment-collector, substantially as shown, for the  
10 purpose described.

3. The feed-water pipe H, passing through  
15 the interior of the boiler into the sediment-collector, and provided with a back-pressure

valve, K, and suitable cocks arranged and operating substantially in the manner shown, for the purpose specified.

4. In a steam-boiler, the combination and arrangement of a steam-pipe, I, feed-water pipe H, sediment-collector Z, connecting-pipes G, and blow-off pipe and cock L-g, constructed, arranged, and operating substantially in the  
20 manner as herein set forth and specified.

In testimony that I claim the foregoing I  
25 have hereunto set my hand and seal.

JOHN SPAULDING. [L. s.]

Witnesses:

C. W. M. SMITH,  
CHAS. E. KELLY.