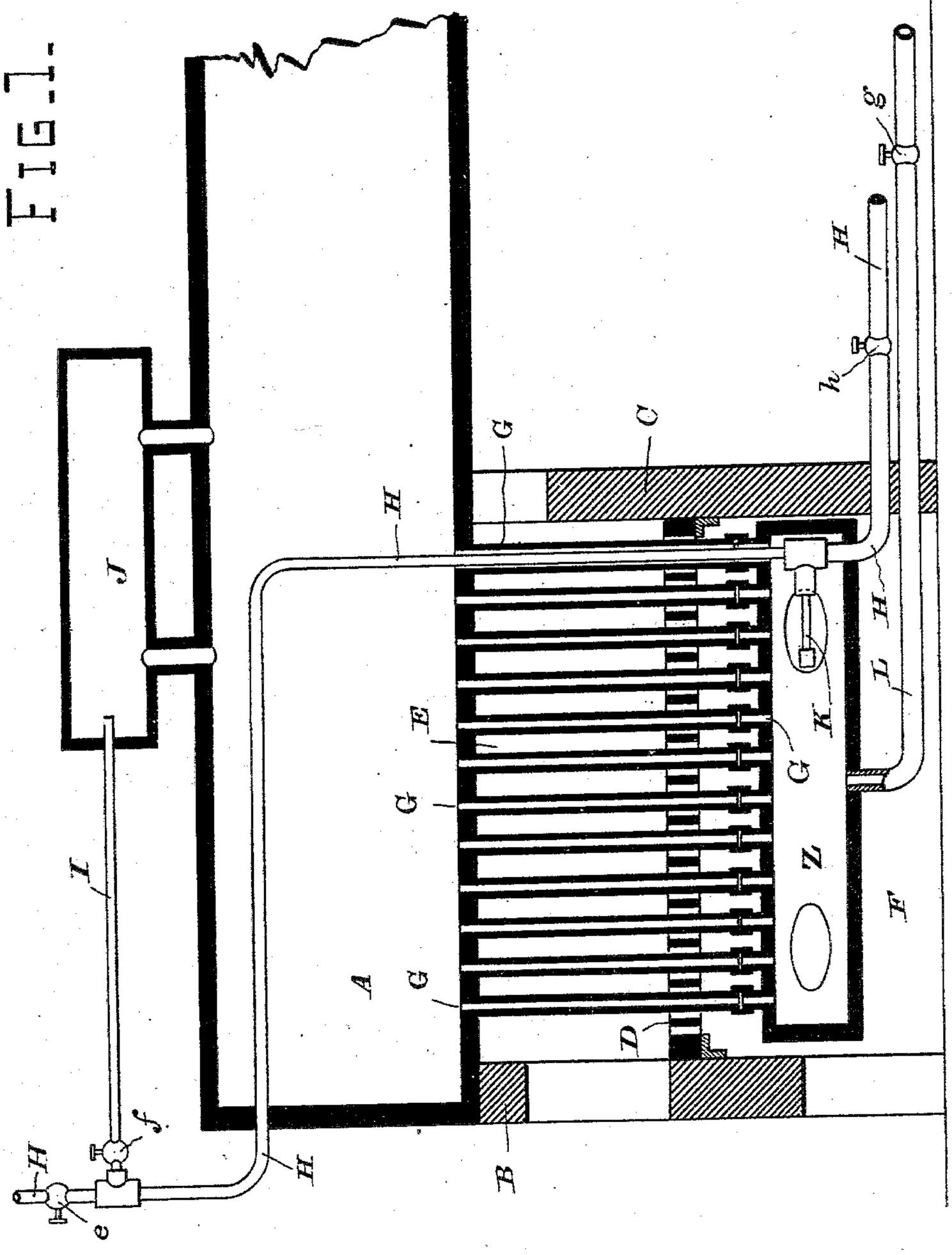
(No Model.) 2 Sheets—Sheet 1.

J. SPAULDING.

STEAM BOILER AND SEDIMENT COLLECTOR COMBINED.

No. 305,857. Patented Sept. 30, 1884.

FIG. 1.



WITNESSES

Wilmer Bradford

Joseph Cooney

INVENTOR.

John Spaulding

By C M M Smith

Attorney.

(No Model.) 2 Sheets—Sheet 2.

J. SPAULDING.

STEAM BOILER AND SEDIMENT COLLECTOR COMBINED.

No. 305,857. Patented Sept. 30, 1884.

FIG. 2.

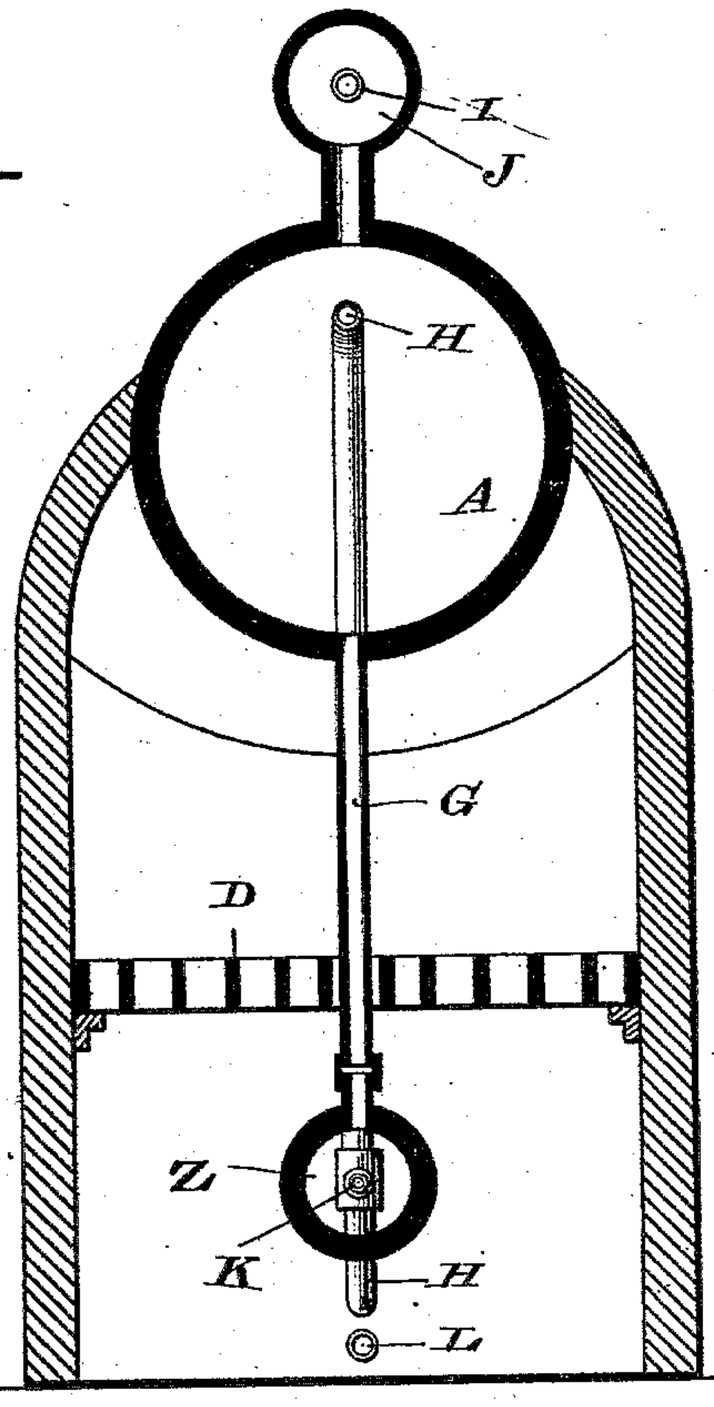


FIG. 4.

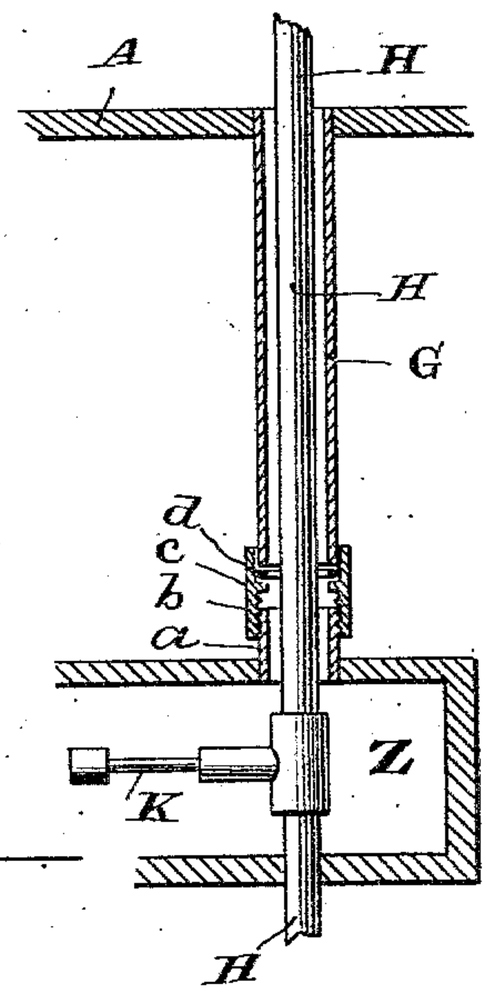
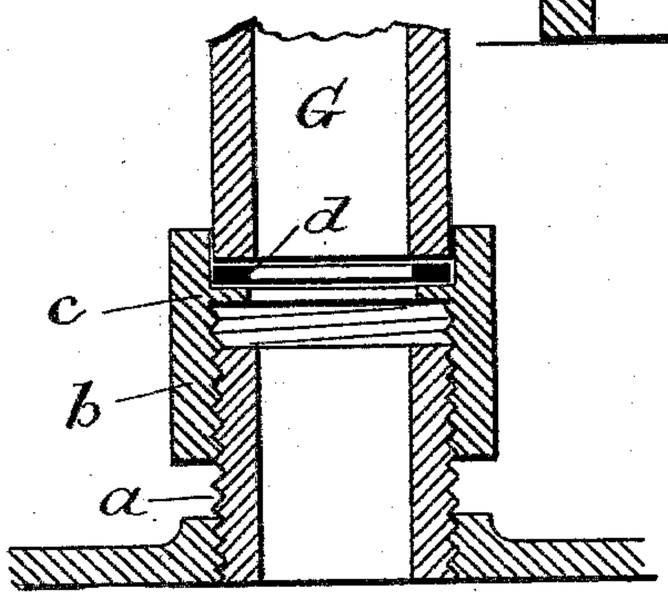


FIG. 3.



WITNESSES—

Wilmer Bradford

Joseph Cooney

INVENTOR—

John Spaulding

By Wm Smith

Attorney

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 the 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 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 purpose described.

3. The feed-water pipe H, passing through 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 manner as herein set forth and specified.

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

JOHN SPAULDING. [L. S.]

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