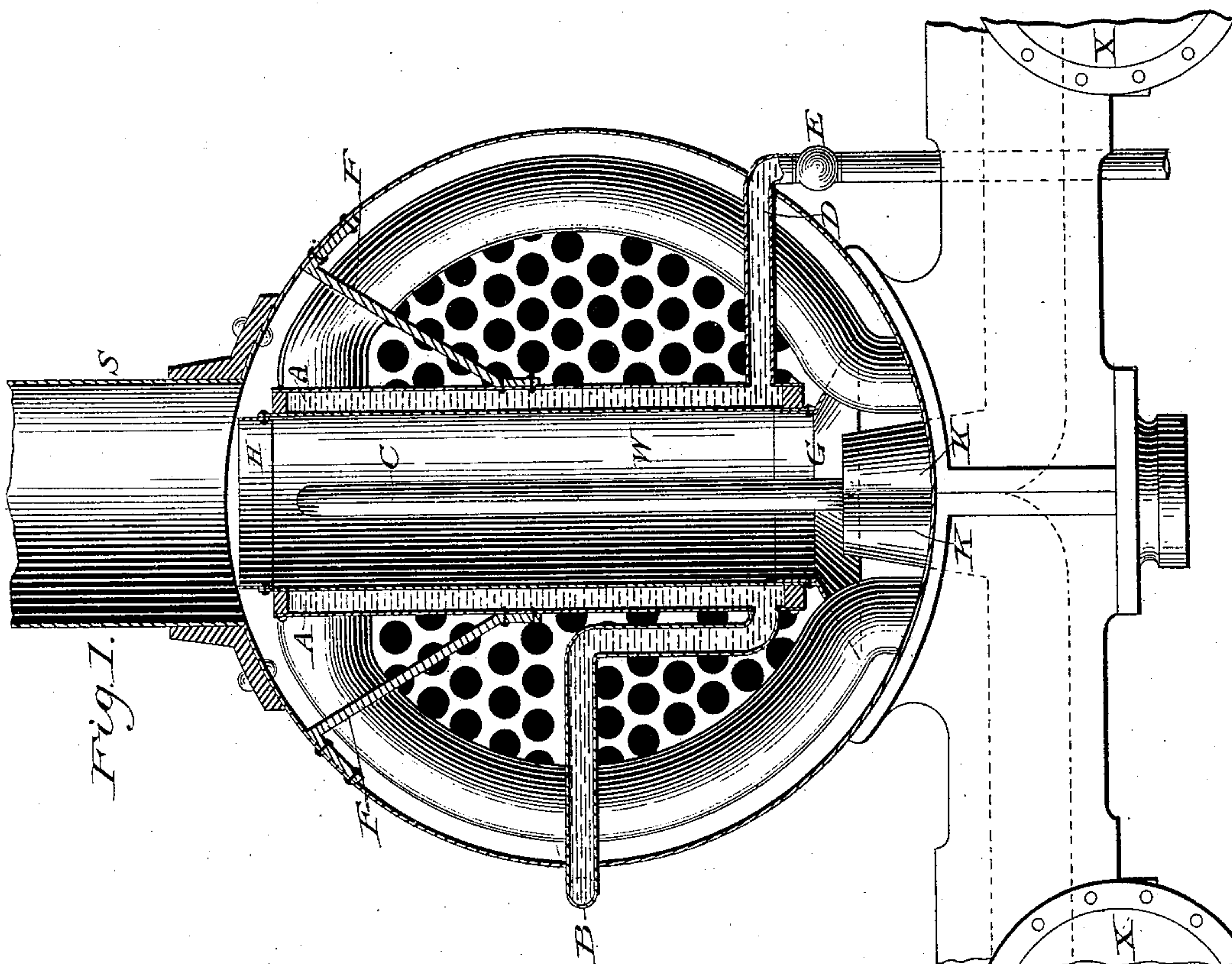
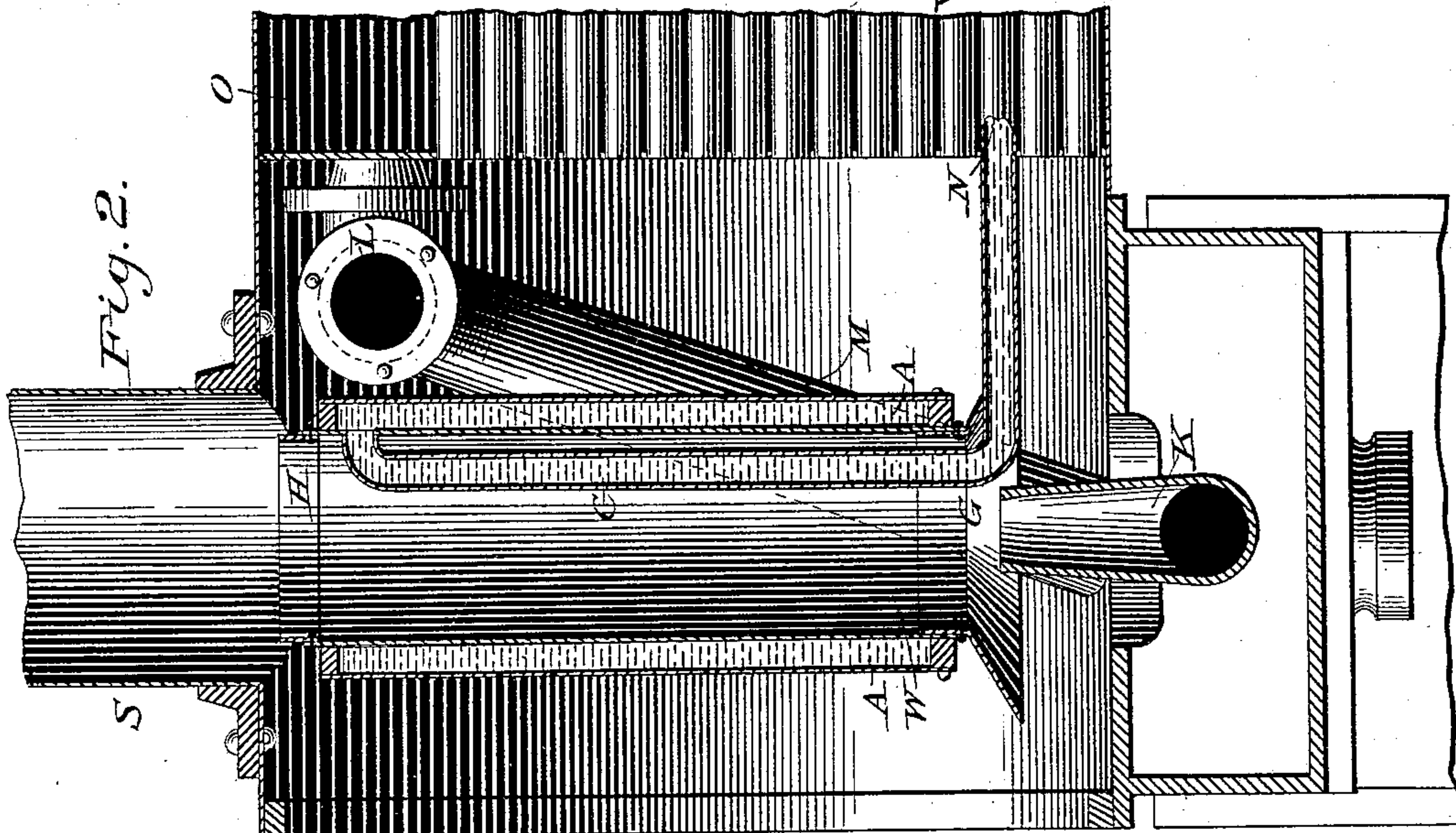


(No Model.)

H. CUMMINGS.  
FEED WATER HEATER.

No. 326,203.

Patented Sept. 15, 1885.



Witnesses:  
A. B. Richmond  
Chas. E. Richmond

*Inventor.*

*Hannibal Cummings*



# UNITED STATES PATENT OFFICE.

HANNIBAL CUMMINGS, OF MEADVILLE, PENNSYLVANIA.

## FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 326,203, dated September 15, 1885.

Application filed March 30, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, HANNIBAL CUMMINGS, a citizen of the United States, residing in the city of Meadville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Feed-Water Heater and Draft-Pipe for Locomotive Engine Boilers, of which the following is a specification.

The object of my invention is to purify the water before it enters the boiler by causing the sediment to be deposited in such a way that it can be blown out of a pipe without entering the boiler. I attain these results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a sectional view of my device looking in at the front end of the locomotive, and showing the smoke-arch. Fig. 2 is a sectional side view of the same.

W, Fig. 1, is a pipe that conveys the smoke from the fire and the exhaust-steam into the smoke-stack S, the exhaust-steam passing into it through the pipes K K, which lead from the steam-cylinders. Around this pipe W is the petticoat-pipe A A, larger than W, leaving a space of two or more inches between them, which is filled with water from the tube B, which is connected with the injector or pump and enters the bottom of the petticoat-pipe A A. At the top of the tube A A, which encases the tube W, there is connected a tube, C, (better shown in Fig. 2,) which passes downward and into the boiler V at N, in the place of one of the flue-tubes, as shown at Fig. 2.

At the bottom of the petticoat-pipe A A is a tube or blow-off pipe, D, with a shut-off cock, E. Through this pipe the sediment which is deposited by the heating of the water in A A can be blown off, the boiler being supplied by pure water from the top of A A through the tube C, as described.

G and H are two adjustable sleeves that may be moved up or down to regulate the draft, being held in position at different adjustments by friction, like the sections of a stove-pipe.

F F are two braces to keep the water-pipe A A in place.

O is the steam-space in the boiler. L is the T-head, and M the steam-pipe, all constructed in the usual manner, and only represented in drawings to show the relative positions of my device with the ordinary parts of a locomotive-boiler.

S represents the smoke-stack, and X X the steam-cylinders.

The great object which I have in view is to precipitate the mud, scale, and other sediment before the water reaches the boiler, and in such a way that it may be readily blown off. This prevents the spaces between the boiler-flues from being filled and a frequent removal of said flues so that they may be cleaned.

As the supply-pipe B delivers the water at the bottom of the thin column of water in the jacket between smoke-pipe W and petticoat-pipe A, it quickly becomes warm, deposits its sediment and rises toward the top of jacket. From this top the purified water enters pipe C, is carried down through the smoke-pipe, becomes heated, and is delivered at N into the boiler. As soon as the sediment accumulates in the bottom of jacket to a sufficient extent to be objectionable, the blow-off pipe D, which also connects with the bottom of water-jacket, may be opened and said sediment readily blown out.

What I claim as my invention, and desire to secure by Letters Patent, is as follows, to wit:

The combination, with a smoke-pipe and surrounding water-jacket, of a pipe, C, starting near the top and on the inside of said jacket, passing thence down through the smoke-pipe, and connecting with the boiler at N, as and for the purpose specified.

HANNIBAL CUMMINGS.

Witnesses:

A. B. RICHMOND,  
CHAS. E. RICHMOND.