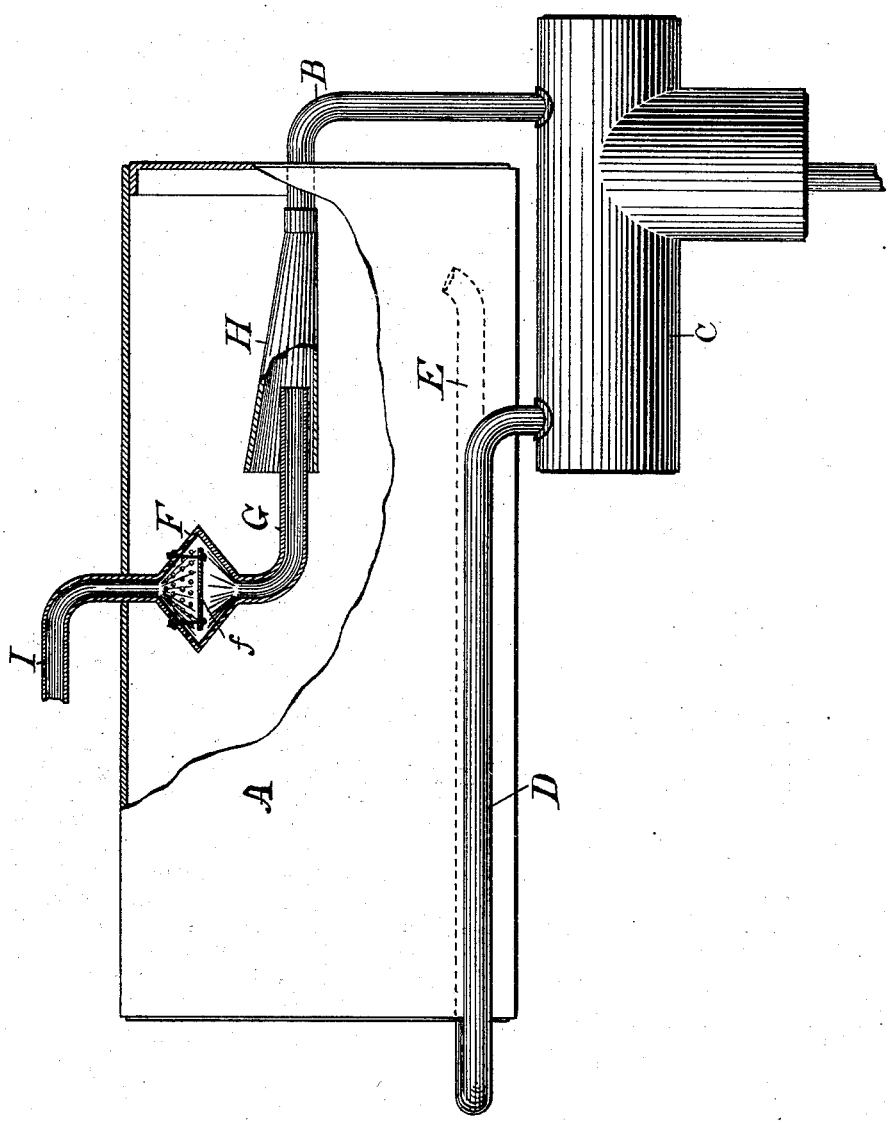
(No Model.)

W. HESTON & J. T. MEAD.

FEED WATER PURIFIER.

No. 262,895. Patented Aug. 15, 1882.



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WILLIAM HESTON, OF MOUNT UNION, AND JOHN T. MEAD, OF CLEVELAND, ASSIGNORS TO THOMAS SHARP, OF SALEM, OHIO.

FEED-WATER PURIFIER.

SPECIFICATION forming part of Letters Patent No. 262,895, dated August 15, 1882.

Application filed March 20, 1882. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM HESTON, of the town of Mount Union, in the county of Stark and State of Ohio, and JOHN T. MEAD, of the city of Cleveland, in the county of Cuyahoga and State of Ohio, both citizens of the United States of America, have invented a certain new and useful Improvement in Feed-Water Purifiers, of which the following is a specification.

Various apparatus for the purifying of water in steam-boilers have been devised by which the water in the boiler, from a point at or near the surface, is led off by means of an outflow-pipe into and through a cleansing or filtering apparatus outside of the boiler, and through return-pipes to the boiler again. A full description and specification of such an apparatus are given in Letters Patent of the United States issued to Thomas Sharp, of Salem, Ohio, and numbered 234,729. Our invention is an improvement on devices of that character in this, that instead of the water being first directly deposited in the boiler and afterward conducted through the filtering apparatus it is first carried from the feed-water pipe into a boiling-chamber within the boiler and there brought in contact with the steam in the boiler, when it becomes heated and partly vaporized, and thence conducted by means of a pipe to the outflow-pipe, and thence through such outflow-pipe, filter, and return-pipe to the boiler again. The advantage of this arrangement is that, the water in the boiling-chamber becoming heated and partly vaporized, as described, the impurities are more easily separated and carried off through the outflow-pipe and deposited in the filter, and that no water is deposited in the boiler before it has been thoroughly cleansed and purified.

In the drawing, A is the boiler. B is the outflow-pipe; C, the filtering apparatus; D, the return-pipe; E, the pipe arrangement within the boiler; F, the boiling-chamber; *f*, a plate within the chamber; G, the pipe-connection between the boiling-chamber and the surface-pipe; H, the surface-pipe, and I the feed-water pipe.

The water coming through the pipe I first falls upon the plate *f*, which is suspended in any convenient manner within the boiling-chamber F, over which it spreads in a thin sheet, and is thus brought more fully and completely in contact with the steam, which enters the boiling-chamber F through perforations in the top thereof, as shown in the drawing. The water thus brought in contact with the steam becomes heated and partly vaporized, and in such a condition that its impurities are more easily separated, when it is conducted through pipes G, H, and B, and through filter C and return-pipe D and interior pipe, E, to the boiler. The pipe G is inserted into the mouth of surface-pipe H, which is made in a funnel shape, so that it may receive not only water coming through pipe G, but also water from the surface of the water in the boiler.

The circulation of the water from the boiler and from the boiling-chamber through the outer pipes and filter to the boiler again is obtained in the manner described in said Patent No. 234,729 and other similar devices.

The boiling-chamber F, as described, and the connecting-pipe G may be used with benefit in combination with any device in which, by well-known principles, water is withdrawn from the boiler and conducted through outside filtering apparatus, and thence to the boiler again.

We claim as our invention—

In a boiler-cleaning apparatus, the combination of a steam-boiler with pipe I and boiling-chamber F, perforated at the top and provided with plate *f*, and pipes G, H, and B, filter C, pipes D, and interior pipe, E, substantially as shown and described.

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Witnesses:
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