

J. SCHOLES.  
Feed-Water Heater.

No. 217,644.

Patented July 15, 1879.

FIG. I.

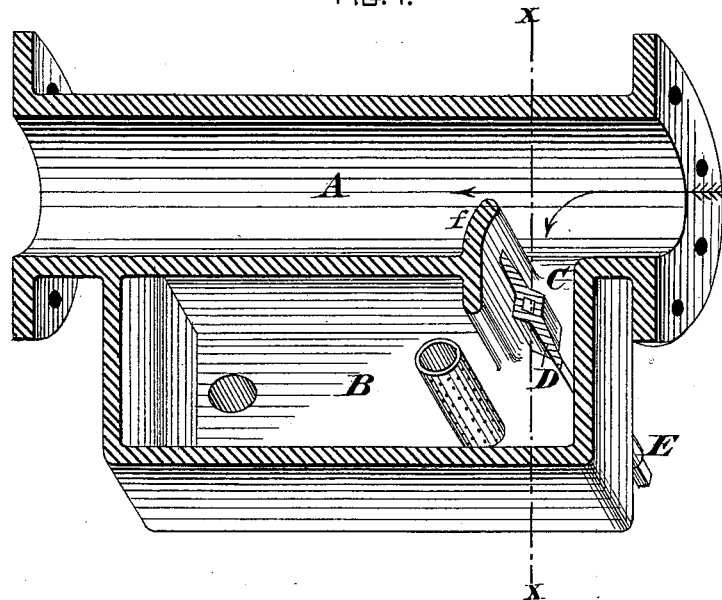
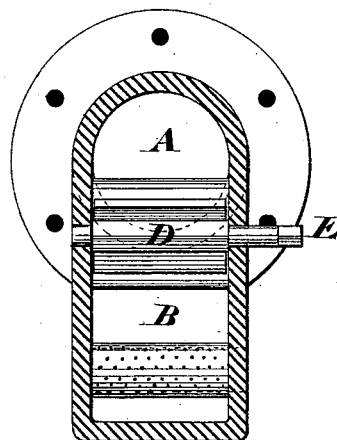


FIG. II.



WITNESSES:

*J. Henry Kaiser*  
*J. A. Rutherford*

INVENTOR,

James Scholes,

By *James L. Norris*  
Attorney.

# UNITED STATES PATENT OFFICE.

JAMES SCHOLLES, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF HIS  
RIGHT TO SAMUEL F. HODGE, OF SAME PLACE.

## IMPROVEMENT IN FEED-WATER HEATERS.

Specification forming part of Letters Patent No. **217,644**, dated July 15, 1879; application filed  
May 29, 1879.

*To all whom it may concern:*

Be it known that I, JAMES SCHOLLES, of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Feed-Water Heaters, of which the following is a specification.

My invention relates to an improvement in that class of feed-water heaters in which the exhaust-steam comes in direct contact with the feed-water in a chamber connected with the exhaust-pipe.

This kind of feed-water heaters is found in practice to work very well when the pressure of the exhaust-steam is low; but when the exhaust-steam has a high pressure it enters the feed-water chamber with such force as to drive the water therefrom into the exhaust-pipe, and forces it therefrom out into the air or into a condenser, thus interrupting the feed.

It is the object of my invention to prevent this forcing of the feed-water from its chamber, and at the same time secure the entrance of a sufficient quantity of the exhaust-steam into said chamber to properly heat the water.

It consists in connecting the feed-water chamber with an exhaust-pipe by means of a suitable steam-passage, in which is arranged a gate or valve adapted to be operated from without to regulate the quantity of steam passing therethrough and to obstruct its flow, whereby the force with which the steam enters the feed-water chamber may be so reduced that it will not drive the water from said chamber.

It consists, further, in prolonging one of the walls of the passage connecting the exhaust-pipe with the feed-water chamber, so that it will extend into the exhaust-pipe and serve to deflect a portion of the steam into the said feed-water chamber, whereby a proper heating of the feed-water is guaranteed.

In the accompanying drawings, Figure I represents an arrangement by which my invention is carried into effect, and Fig. II a section taken on line *xx* of Fig. I.

The letter A indicates an exhaust-pipe, and

B the feed-water chamber connected with the exhaust-pipe by a passage, C, in which is arranged a butterfly-valve, D, the spindle E of which extends outward through the wall of said passage, and is adapted to be turned to operate the valve for the purpose before mentioned.

One of the walls *f* of the passage C is prolonged into the exhaust-pipe, and stands in the path of the steam flowing through said pipe, in order to deflect a portion of said steam into the feed-water chamber for the purpose of heating the water.

The arrow in the drawings indicates the course of the exhaust-steam when the pipe is connected with a steam-cylinder.

In the drawings a portion of the exhaust-pipe forms a portion of the wall of the feed-water chamber; but, of course, I do not confine myself to that construction; nor do I confine myself to a butterfly-valve, as there are other forms which will serve as well.

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

1. The combination, with a feed-water-heating chamber, an exhaust-steam pipe, and a steam-passage connecting said chamber and pipe, of a gate or valve arranged in said passage and adapted to be operated from without, substantially as and for the purpose set forth.

2. The combination, with a feed-water-heating chamber, an exhaust-steam pipe, and a steam-passage connecting said pipe and chamber, of a deflector formed by the prolongation of one of the walls of said passage into said exhaust-pipe, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

JAMES SCHOLLES.

Witnesses:

W. M. LILLIBRIDGE,  
FREMONT WOODRUFF.