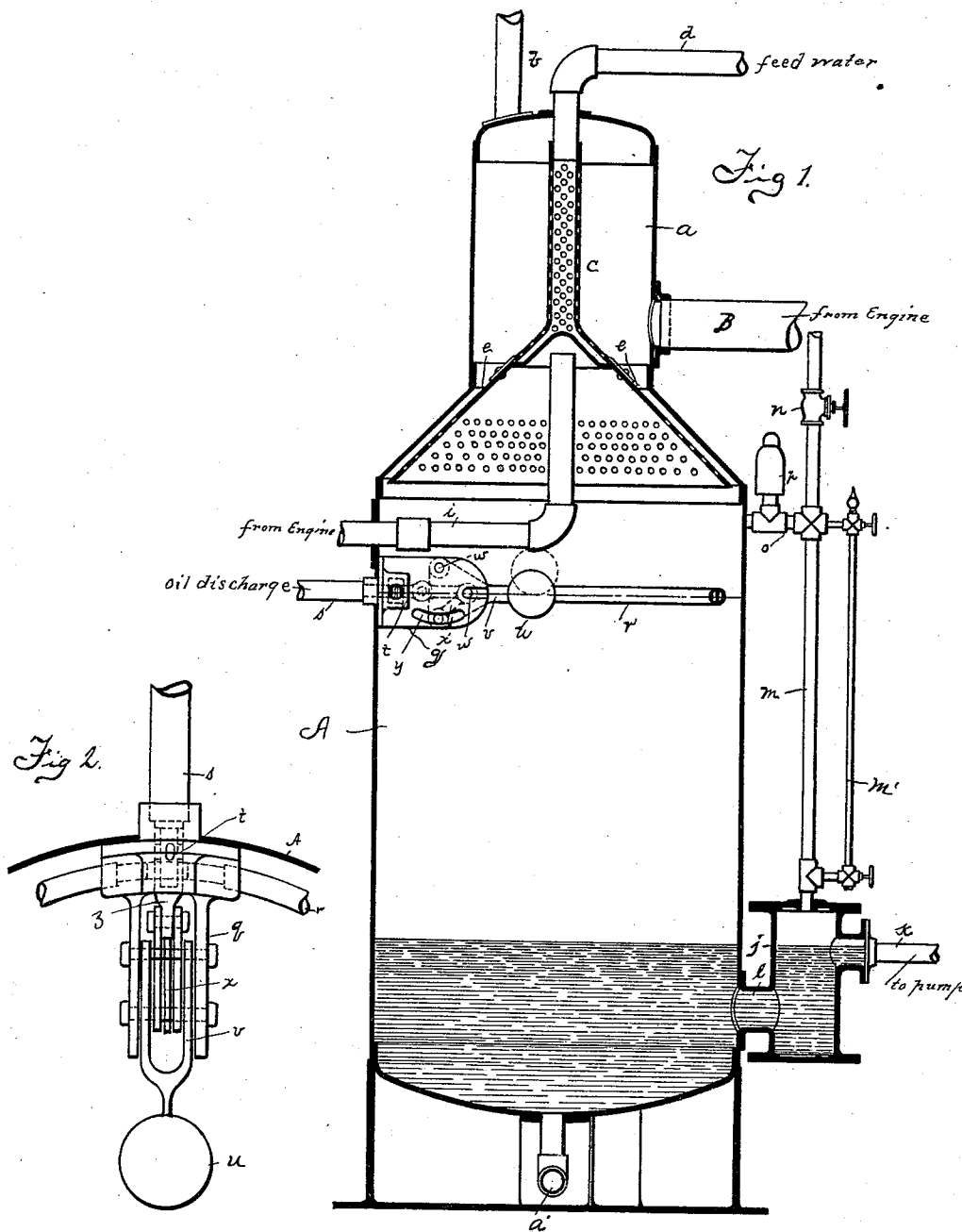


(No Model.)

J. E. SCHLIEPER.  
FEED WATER HEATER.

No. 536,660.

Patented Apr. 2, 1895.



WITNESSES

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*Att'y*

# UNITED STATES PATENT OFFICE.

JOHN EDWARD SCHLIEPER, OF ALLEGHENY, PENNSYLVANIA.

## FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 536,660, dated April 2, 1895.

Application filed January 30, 1894. Serial No. 498,520. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN EDWARD SCHLIEPER, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Feed-Water Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a vertical central section of my improved heater. Fig. 2 is an enlarged detail of swimmer and blow off valve.

My invention relates to that class of heaters, in which exhaust steam from engines, is utilized to heat water to a considerable temperature, previous to its admission to a boiler or boilers, and my object is not only to heat water, as aforesaid, but to wholly prevent the introduction of oil, dirt or other sediment into the boiler, and to this purpose consists in the novel construction and arrangement of parts, hereinafter specifically set forth, reference being had to the accompanying drawings.

I will now describe my invention, reference being had to the accompanying drawings, forming part hereof, in which like letters indicate like parts wherever they occur.

Referring to said drawings A is a heater, adapted to heat water from waste or exhaust steam, from an engine not shown. To accomplish this purpose, steam admitted to the heater through the exhaust pipe B which is connected with the upper portion *a* of the same acting on the water falling through the perforated pipe *c* raises the temperature of said water. The upper portion of said perforated pipe *c* is connected with the inner end of the water supply pipe *d* and the lower end thereof is bolted or otherwise suitably secured upon the upper end of the bell *e* which is suspended therefrom. The lower edge of the bell is perforated to permit the heated water overrunning from the perforated pipe to fall into the heater.

*b* is a pipe opening to the atmosphere and controlled by a valve adapted to be opened when the steam becomes excessive in the heater.

*i* is a pipe for the purpose of conveying ex-

haust steam from a different engine, if desirable, than that connecting the heater by the pipe B, and to discharge the same beneath the apex of said bell. Secured to and connected with said heater below the water line therein, is a chamber *j* which is connected with a pump, not shown, by the pipe *k*. the opening *l* between said chamber and heater is of much greater diameter than the pipe connecting said chamber and pump, and on a plane below the same, thereby enabling the same water level to be maintained in said chamber, as in the heater, and preventing the introduction of oil or other impurities on the surface of the water in the heater into the boiler or boilers fed by the pump. Secured in the upper head of said chamber is a vertical pipe *m* open to the atmosphere and provided with a valve *n* to which is secured a gage glass *m'*, as shown. Connected with said pipe *m* and heater above the high water line, is a short horizontal pipe *o* which is provided with a steam alarm *p* adapted to operate when the steam pressure becomes excessive in said heater, upon which the safety valve on pipe *b* will operate and reduce such excessive pressure. Suitably secured in a bracket *q* secured in the inner surface of said heater, at the high water level therein, is a perforated pipe *r* elliptical in form, whereby oil, &c., may be drawn into and collected in said pipe, and discharged therefrom through the pipe *s* in the side of said heater, at such times as the valve *t* controlled by the swimmer *u* is opened. Said swimmer is attached to the end of a forked shape arm *v* which is pivotally attached at the points *w*—*w* to the bracket *v* secured to the inside of the shell of the heater and is adapted to be elevated by the height of the water, as shown by the dotted lines, thereby drawing the lower end of the link *x* and drawing the piston *z* attached to the upper end of the link *x* inwardly and opening the port of said valve *t* and discharging the contents of said pipe as heretofore stated.

*a'* is a blow off pipe, secured in bottom of heater, and may be provided with a valve.

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

1. In a water heater, the combination of a heater adapted to heat water by exhaust

steam, and a chamber adapted to be connected to a pump connected and communicating with said heater below the low water line therein, by an orifice of greater diameter than  
5 that connecting said chamber and pump, and below the line or plane of the pipe connecting said chamber and pump, substantially as and for the purpose set forth.

2. In a feed water heater, the combination  
10 of a shell, a water supply pipe entering the top of the same, a perforated pipe and bell suspended thereon in the upper portion of said shell, and a chamber connected and communicating with said heater below the low  
15 water line therein, by an orifice of greater diameter than the pipe connecting said chamber with the pump, and below the level or plane of the same, substantially as and for the purpose set forth.

3. In a feed water heater for boilers, the  
20 combination of a shell adapted to receive exhaust steam, a water supply pipe, the part thereof within said shell being perforated, a perforated bell suspended from said pipe, a  
25 perforated elliptical pipe suspended in said shell at high water line, and a swimmer adapted to control a valve for the purpose of discharging impurities entering said elliptical  
30 pipe through the perforations, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I  
hereunto affix my signature this 29th day of  
January, A. D. 1894.

JOHN EDWARD SCHLIEPER. [L. S.]

In presence of—

JAS. J. MCAFEE,  
C. A. WILLIAMS.