

UNITED STATES PATENT OFFICE.

ROBERT ROBSON LITTLE, OF SOUTH SHIELDS, COUNTY OF DURHAM, AS-
SIGNOR OF ONE-HALF TO JOHN HALL, OF NEWCASTLE-ON-TYNE,
ENGLAND.

APPARATUS FOR HEATING FEED-WATER.

SPECIFICATION forming part of Letters Patent No. 367,760, dated August 2, 1887.

Application filed March 22, 1887. Serial No. 231,950. (No model.) Patented in England February 19, 1887, No. 2,625.

To all whom it may concern:

Be it known that I, ROBERT ROBSON LITTLE, timber agent, a subject of the Queen of Great Britain and Ireland, and residing at 3 Meldon Terrace, Westoe, South Shields, county of Durham, England, have invented certain new and useful Improvements in or Connected with Apparatus for Heating Feed-Water for Steam-Boilers, or for other purposes, (for which I and John Hall have applied for a patent in Great Britain on the 19th of February, 1887, No. 2,625,) of which the following is a specification.

This invention has for its object to provide apparatus by means of which the water is withdrawn from the heater at or toward the surface of the water, in the latter case the distance from the surface at which the supply is drawn being predetermined and adjustable, if desired. The outlet for the hot water is provided with a hinged or swiveling connection furnished with a float or buoy, by which the inlet to this connection is carried up as the level of the water in the heater rises, and allowed to fall as the level of the water falls, so that the inlet to the continuation is constantly maintained at the surface of the water or at any desired distance beneath the surface.

The float or buoy may be connected to the continuation by a chain or other means, by which the distance below the surface of the water of the inlet to the continuation may be adjusted. The water only reaches the outlet from the heater by passing through the inlet of the continuation and therethrough to the outlet to which the said connection is hinged or swiveled.

I will describe, with reference to the accompanying drawings, manners in which the invention may be carried out in practice. I do not, however, limit myself to the precise details shown.

Figure 1 is a vertical section and Fig. 2 a sectional plan illustrating the arrangement without provision for adjustment of the inlet to the connection relatively to the surface of the water, while Fig. 3 shows a section of an

arrangement wherein such a provision is made, and Fig. 4 shows a modification thereof.

Referring to Figs. 1 and 2, A is the vessel in which the feed-water is heated by steam entering the pipe B.

C is the pipe supplying cold water, and D is the outlet-pipe leading to the boiler or other place where the hot water is to be utilized.

The outlet-pipe is angled at d , and in it is inserted the angled end or elbow of the pipe E, forming the hereinbefore-described continuation. The pipe E communicates with the pipe D at the joint formed by the angled ends d and e , as shown in Fig. 1. To the outer end of the pipe E is fixed the ball-float F, and near the upper end of the lower side of the pipe E are openings e' . The float F maintains these openings near the surface of the water as the height of the water in the heater varies, the pipe E turning upon its jointing with the pipe D, whereby the water is drawn off where it is hottest, or at the heat required, the said water passing in through the openings e' , along the pipe E, and through the joint $d e$ out by the pipe D to the boiler or other place.

Fig. 3 shows an arrangement whereby the distance at which the inlets e' are maintained below the surface of the water can be adjusted, the pipe E being connected to the buoy F by means of a chain, f , which can be adjusted so that the distance of the top of the pipe E from the bottom of the float can be altered in accordance with the depth below the surface at which it is desired to draw off the water.

Fig. 4 shows a modification wherein the chain is replaced by a stem, f^2 , hinged to the pipe E and passing through the buoy F, and connected thereto by a loop or eye, e^2 , in which engages a pin or screw, e^3 , which enters one or other of the holes f^3 , in accordance with the depth below the surface at which it is desired to draw off the water.

The inlets e' are shown as being on the under side of the pipe E, so as to prevent foreign matter passing therethrough.

I claim—

In water-heaters, a hinged, jointed, or swiv-
eling connection with the passage for water to
the outlet, in combination with a float or buoy
attached to and adjustable relatively to the said
5 hinged connection, in order to vary the dis-
tance below the surface at which the inlet end
of said connection is maintained, as hereinbe-
fore set forth.

In testimony whereof I have signed my name

to this specification in the presence of two sub- ro
scribing witnesses.

ROBERT ROBSON LITTLE.

Witnesses:

CHARLES WILLIAM SWAINSTON GOODGER,
27 Grey Street, Newcastle-on-Tyne, Solicitor.

FRANCIS EDWARD MESSENT,
Clerk to Messrs. Philipson, Cooper & Goodger, Solicitors,
27 Grey Street, Newcastle-on-Tyne.