

No. 729,400.

PATENTED MAY 26, 1903.

F. L. PATTERSON.
FEED WATER HEATER.
APPLICATION FILED JUNE 23, 1902.

NO MODEL.

Fig. 1

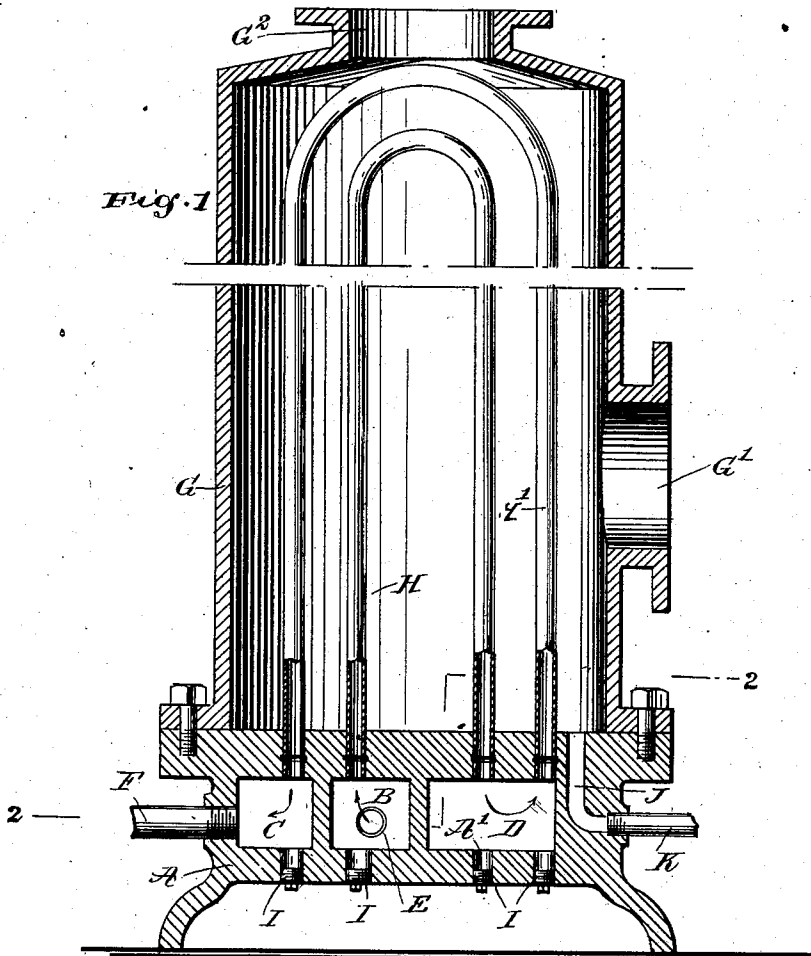
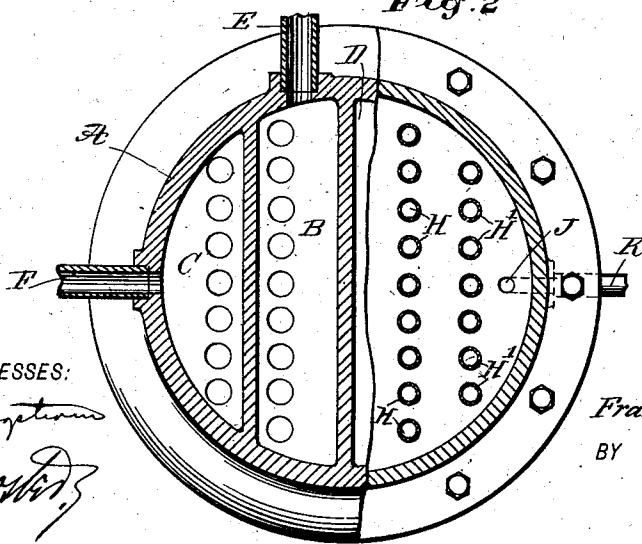


Fig. 2



WITNESSES:

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FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 729,400, dated May 26, 1903.

Application filed June 23, 1902. Serial No. 112,789. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. PATTERSON, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Feed-Water Heater, of which the following is a full, clear, and exact description.

The invention relates to apparatus for heating feed-water for steam-boilers by the use of exhaust-steam; and the object of the invention is to provide a new and improved feed-water heater which is simple and durable in construction, cheap to manufacture, very effective in operation, and not liable to easily get out of order.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional side elevation of the improvement, and Fig. 2 is a sectional plan view of the same.

The base A, preferably of cast metal, is formed with interior separated chambers B, C, and D, of which the chamber B is the inlet-chamber and is connected with the feed-water-supply pipe E, which leads from a suitable source of feed-water supply, the chamber C is the outlet-chamber and is connected by the pipe F with the boiler into which the feed-water is to be discharged, and the chamber D is the intermediate chamber.

On the top of the base A is bolted or otherwise secured a shell G, provided in one side with an inlet G' for the exhaust-steam or other heating medium to pass into the said shell, and the top of the latter is provided with an outlet G² for conducting the heating medium from the shell. Into this shell G, which is closed at its bottom by the top of the base A, extend the sets of pipes H and H', made in inverted-U shape and arranged in such a manner that the ends of the pipes H are secured in the top of the base A and open into the chambers B and D, while the

ends of the pipes H' are likewise secured in the top of the base and connect the chambers D and C with each other.

Now in order to bead the ends of the pipes H and H' in position in the integral top of the base A, I provide the integral bottom of the base with apertures A', adapted to be closed by screw-plugs I and arranged in alinement with the apertures in the top of the base which receive the ends of the pipes H and H'. Thus convenient access is had to the ends of the pipes H and H' from the bottom of the base to bead the ends of the pipes in the top of the base A.

Now when the apparatus is in operation the feed-water enters the chamber B by the pipe E and then passes upward through one leg of the pipes H and down the other leg into the chamber D, from which the water flows through the pipes H' to the chamber C, and finally through the pipe F into the boiler. Now the water during its passage through the pipes H and H' and chambers D and C is heated by the exhaust-steam passing into the shell G and heating the base A at the top and also the said chambers, so that the feed-water is heated to at least 200° or more.

It will be seen that the feed-water heater is composed of comparatively few parts, and hence is not liable to easily get out of order, and can be cheaply manufactured.

In order to carry off the water of condensation, oil, and the like from the top of the base A, I provide a channel J, which leads from the top of the base to one side thereof, and this side opening of the channel is connected with a pipe K for carrying the water of condensation, oil, &c., to a suitable place of discharge.

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

1. A feed-water heater comprising a shell open at the bottom and having an inlet and an outlet for the heating medium, a base of a single casting having an integral top, bottom, sides and ends and on the said top of which the said shell is secured, the base closing with its integral top the lower open bottom of the said shell, the said base having interior separated chambers between its integral top and

bottom, of which chambers one is the intermediate chamber, one is the inlet-chamber connected with the feed-water supply, and a third is the outlet-chamber for discharging the heated feed-water from the heater, and sets of inverted-U-shaped pipes extending in the said shell and having their ends secured in the top of the base, one set of pipes connecting the inlet-chamber with the intermediate chamber and the other set of pipes connecting the intermediate chamber with the outlet-chamber, as set forth.

2. A feed-water heater comprising a shell open at the bottom and having an inlet and an outlet for the heating medium, a base on which the said shell is secured, the base closing with its integral top the lower open bottom of the said shell, the said base having interior separated chambers between its integral top and bottom, of which chambers one is the intermediate chamber, one is the inlet-chamber connected with the feed-water supply, and a third is the outlet-chamber for discharging the heated feed-water from the heater, sets of inverted-U-shaped pipes extending in the said shell and having their ends secured in the top of the base, one set of pipes connecting the inlet-chamber with the intermediate chamber and the other set of pipes connecting the intermediate chamber with the outlet-chamber, and screw-plugs in the bottom of the base, directly opposite the pipe ends, to give access to the latter for

beading said ends in position in the top of the base, as set forth.

3. A feed-water heater comprising a shell open at the bottom and having an inlet and an outlet for the heating medium, a base of a single casting having an integral top, bottom, sides and ends and on the said top of which the said shell is secured, the base closing with its integral top the lower open bottom of the said shell, the said base having interior separated chambers between its integral top and bottom, of which chambers one is the intermediate chamber, one is the inlet-chamber connected with the feed-water supply, and a third is the outlet-chamber for discharging the heated feed-water from the heater, and sets of inverted-U-shaped pipes extending in the said shell and having their ends secured in the top of the base, one set of pipes connecting the inlet-chamber with the intermediate chamber and the other set of pipes connecting the intermediate chamber with the outlet-chamber, the said base being also provided with a channel leading from the top of the base to one side thereof, to connect with a discharge-pipe, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK L. PATTERSON.

Witnesses:

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