

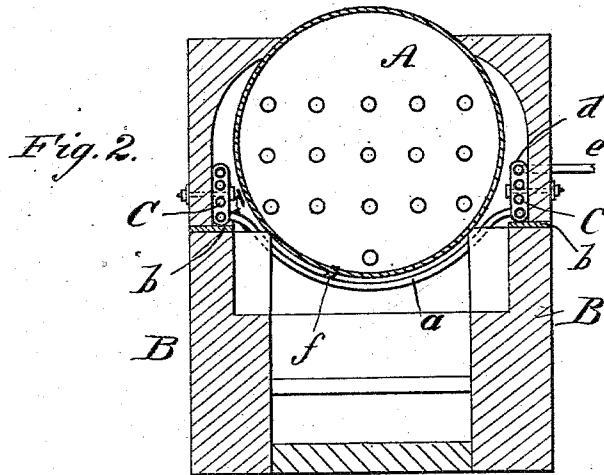
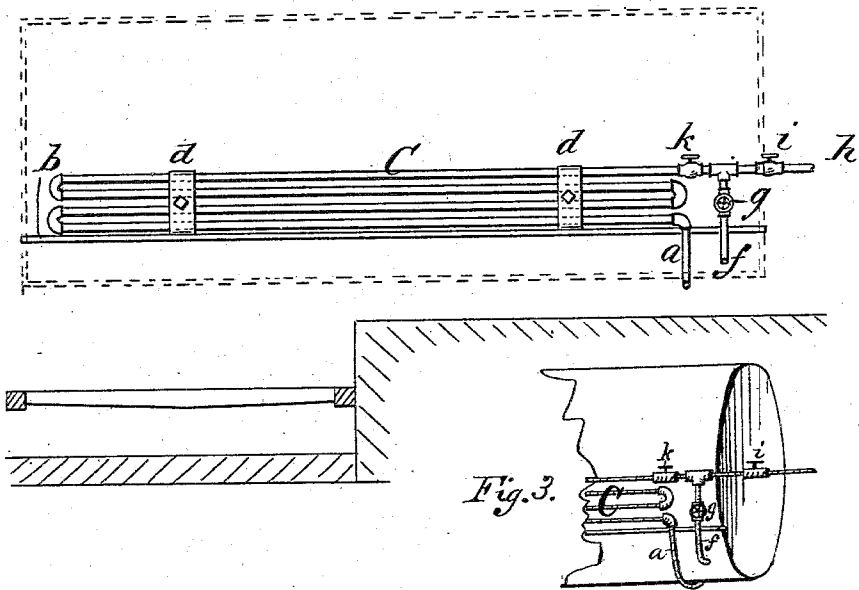
(No Model.)

J. O'D. KELEHER.  
FEED WATER HEATER.

No. 288,064.

Patented Nov. 6, 1883.

*Fig. 1.*



WITNESSES:

*Donn Twitchell.*  
*L. Sedgwick*

INVENTOR:

*J. O'D. Keleher*  
BY *Munn & Co.*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

JOHN O'D. KELEHER, OF GOLD DIRT, COLORADO.

## FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 288,064, dated November 6, 1882.

Application filed May 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN O'D. KELEHER, of Gold Dirt, in the county of Gilpin and State of Colorado, have invented a new and useful Improvement in Feed-Water Heaters for Steam-Boilers, of which the following is a full, clear, and exact description.

My invention is an improvement in the class of feed-water-heating attachments for steam-boilers which consists of a series of water-conducting tubes arranged within the fire-box.

The improvement consists in the construction and combination of parts, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side view of a boiler-setting, showing the arrangement of my improved heating-pipes, the boiler proper being removed. Fig. 2 is a vertical transverse section of the boiler complete. Fig. 3 is a detail perspective view.

A is a tubular horizontal boiler of the ordinary character fitted in the furnace-walls B B.

C C are the heating-pipes, extending back and forth beneath the boiler and adjacent to the side walls of the furnace, so as to form a continuous series of pipes at each side, the two sides being connected at the rear by a cross-pipe, *a*. The series of pipes at each side is supported by a shelf, *b*, that is set into the walls, and the pipes are held in place by plates *d*, that are attached to the walls by bolts passing through them. *e* is the feed-water pipe from the pump, connected to one of the series of pipes C, for supplying water thereto. *f* is the connection from the heating-pipes and the boiler. *g* is a valve fitted in the connection between the heating-pipes and the boiler, and *h* is an exhaust or blow-off pipe provided with

a valve, *i*. There is also a valve at *k*, between the pipe *f* and the heating-pipes, for the purpose of cutting off the water when it is desired to blow out the boiler. When the boiler is being supplied with water, the valves *k* and *g* will be opened and the valve *i* closed. When it is desired to clean the pipes of sand or sediment, the valve *g* is to be closed and the valves *k* and *i* opened, thereby allowing the water to be blown through the heating-pipes and out through the pipe *h*. These heating-pipes may be arranged as far up at the sides of the boiler as found most desirable, and in this position they are subjected to the intense heat of the furnace and present a large extent of heating-surface compared to the water they contain, so that the water fed by the pumps to the pipes becomes highly heated or converted into steam before passing to the boiler. I prefer to use four lines of pipes at each side, and these with a boiler of ordinary length will give a large amount of tubing that is presented to the action of the heat. In this manner there will be great economy in the use of fuel, and steam can be rapidly made.

I disclaim tubes arranged beneath a boiler for supplying it with water in a heated state.

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

The combination, with the boiler A, of the tubes C, arranged in two series or groups, one on each side of the boiler, the pipe *a*, connecting them and passing under said boiler, and the pipes *g* and *h*, having cocks *g i k*, arranged as shown and described, for the purpose specified.

JOHN O'D. KELEHER.

Witnesses:

PATRICK HIGGINS,  
PATRICK MURPHY.