

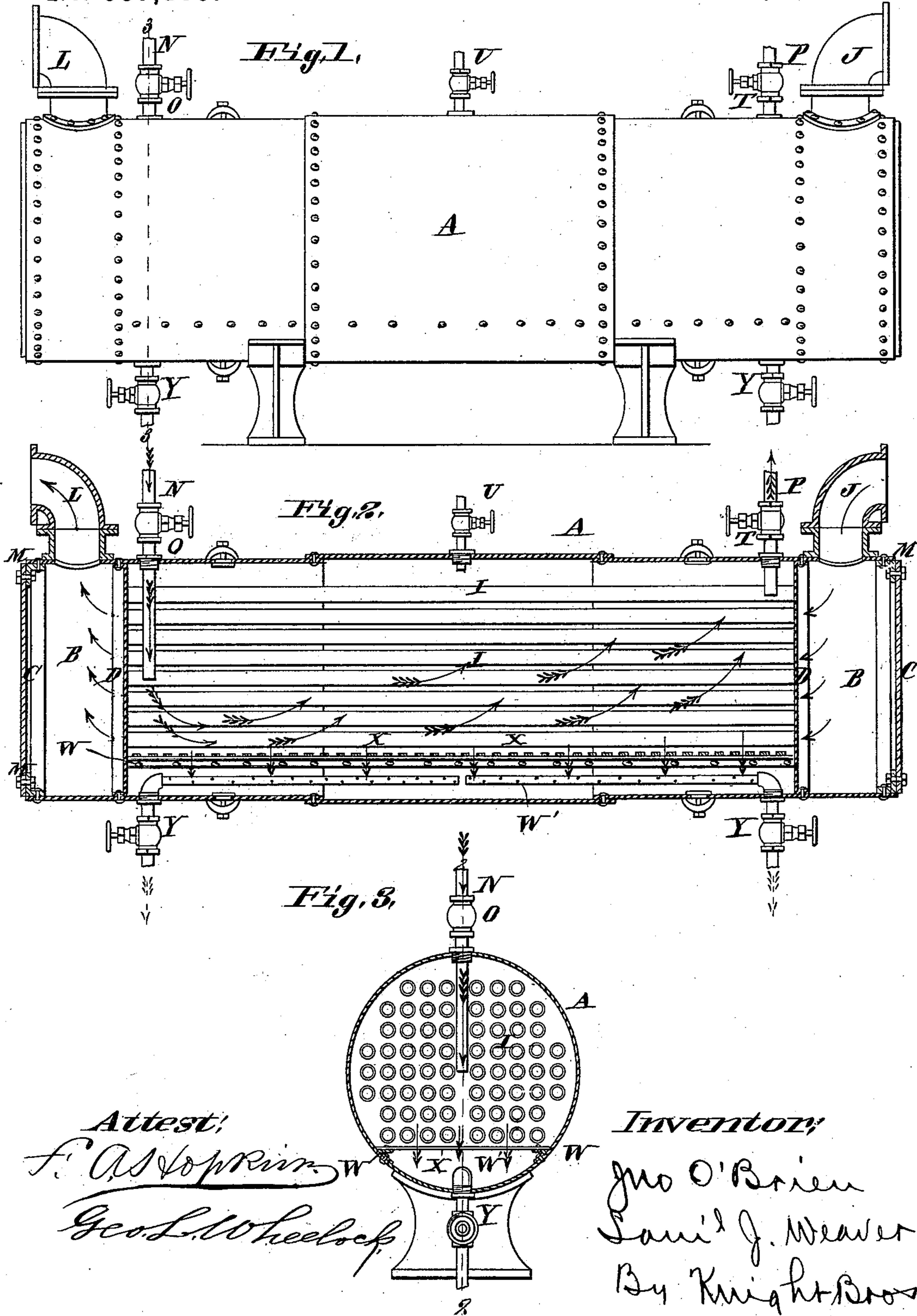
(No Model.)

J. O'BRIEN & S. J. WEAVER.

FEED WATER HEATER.

No. 337,189.

Patented Mar. 2, 1886.



Attest:

F. A. Voprin
Geo. L. Wheelock

Inventor:

John O'Brien
Sam'l J. Weaver
By Knight Bros
attys

UNITED STATES PATENT OFFICE.

JOHN O'BRIEN AND SAML. J. WEAVER, OF ST. LOUIS, MISSOURI.

FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 337,189, dated March 2, 1886.

Application filed December 12, 1885. Serial No. 185,511. (No model.)

To all whom it may concern:

Be it known that we, JOHN O'BRIEN and SAML. J. WEAVER, both of city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Feed-Water Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side elevation of our improved heater. Fig. 2 is a vertical longitudinal section taken on line 2 2, Fig. 3. Fig. 3 is a vertical transverse section taken on line 3 3, Fig. 1.

Our present invention relates to the heater shown and described in our Patent No. 330,612, issued November 17, 1885; and our present invention consists in features of novelty, hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents a horizontal receiver provided at each end with a steam-chamber, B, formed by outer heads, C, and inner heads, D, the inner heads being connected by tubes I, through which the steam passes from one chamber to the other, as shown by the featherless arrows, Fig. 2, the exhaust-tube from the engine entering one of the chambers through a pipe, J, and the escape from the other through a pipe, L. The heads C are removable beneath, connected to the receiver by bolts M, so that they can be taken off to permit access to the interior of the receiver when desired for repairs, &c.

N represents the cold-water supply-pipe provided with a valve, O, and which preferably extends down a distance into the receiver, as shown. The water discharged therefrom is thus carried a distance below the top of the receiver, and by the force with which it is discharged from the pipe it is precipitated still farther down and then flows upward and toward the other end of the receiver, as shown by the full arrows, where it passes off to the boiler through a pipe, P, supplied with a valve, T. As the water passes through the receiver it comes in contact and is heated

by the tubes I, through which the steam passes.

U represents the surface blow-off pipe provided with a valve, V.

Thus far the heater is the same in every particular as that shown and described in our former patent, and we will now describe the features of the present heater which are not shown and described in the former patent.

W represents plates riveted to the sides of the receiver near the bottom and extending the entire distance between the heads D. They preferably consist of angle-plates, as shown in Fig. 3. Resting upon and secured to these plates W are cross-strips X, spaces being left between the strips, as shown in Fig. 2. These strips and plates divide the receiver horizontally into two compartments, the compartment W' beneath the strips and plates acting as the mud-drum of the receiver and serving the function of the extension shown in our patent referred to, thus avoiding the necessity of cutting the lower part of the receiver and the use of the material and work necessary to apply the extension. The bars L will act to prevent the current of water from the supply-pipe passing into the mud part of the drum, thus permitting the mud to settle and not allowing it to be disturbed. They do not, however, prevent the mud settling to the bottom of the receiver, as there is a space between each of them, as before stated. The mud-drum is provided with blow-off pipes Y, the pipes being of the same construction as in our patent referred to.

We claim as our invention—

1. In a feed-water heater, the combination of the horizontal receiver, supporting-plates secured to the lower part of the receiver, and cross-strips secured to the plate, substantially as shown and described, for the purpose set forth.

2. In a feed-water heater, a receiver divided into two compartments by means of cross-strips with spaces between them, the part beneath the strips serving as a mud-drum, as shown and described.

3. In a feed-water heater, a receiver di-

vided into compartments by means of transverse strips, the compartment beneath the strips serving as a mud-drum, in combination with blow-off pipes penetrating the mud-drum
5 of the receiver, as shown and described.

4. In a feed-water heater, the combination of the horizontal receiver, steam-chamber at each end of the receiver, longitudinal steam-tubes connecting the chambers, supply and
10 exhaust pipes communicating with the steam-

chambers, water pipes communicating with the receiver, and mud-drum formed in the lower part of the receiver by means of angle-plates and transverse strips, substantially as set forth.

JOHN O'BRIEN.

SAML. J. WEAVER.

In presence of—

GEO. H. KNIGHT,

SAML. KNIGHT.