

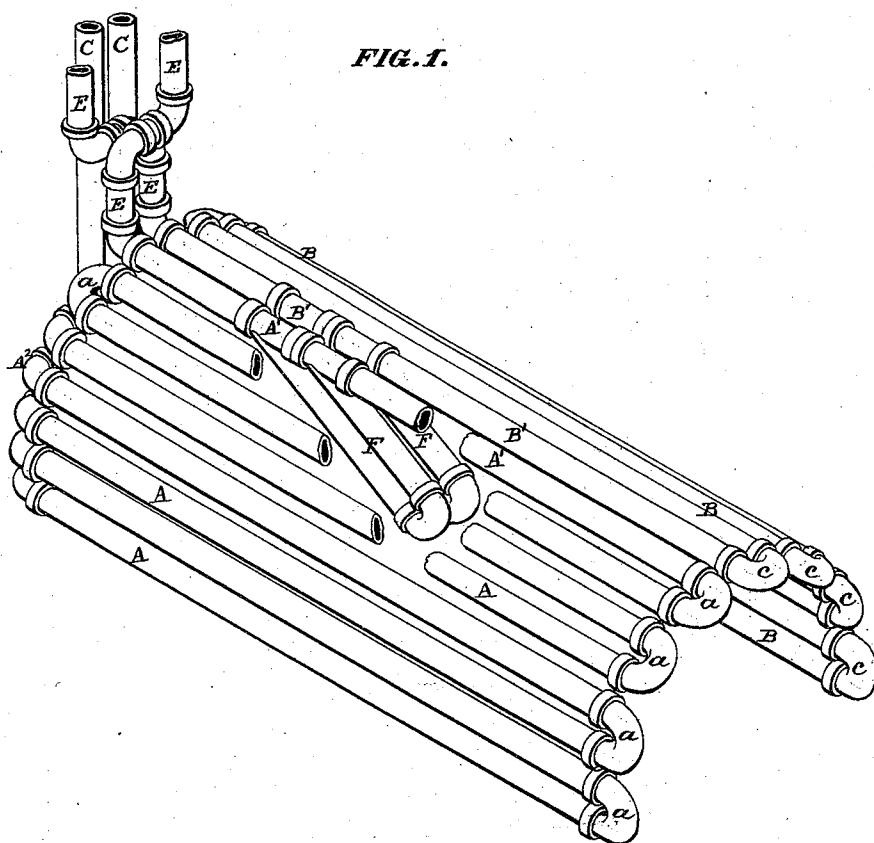
2 Sheets—Sheet 1.

J. M. JORDAN.

BOILERS FOR WATER AND STEAM-HEATERS.

No. 173,300.

Patented Feb. 8, 1876.



ATTEST:

Robert Burns
Charles Porter

INVENTOR:

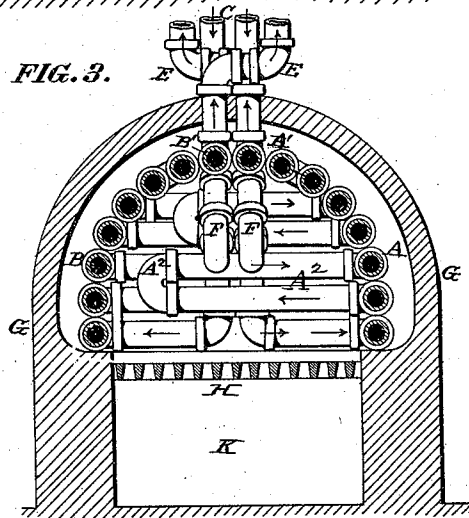
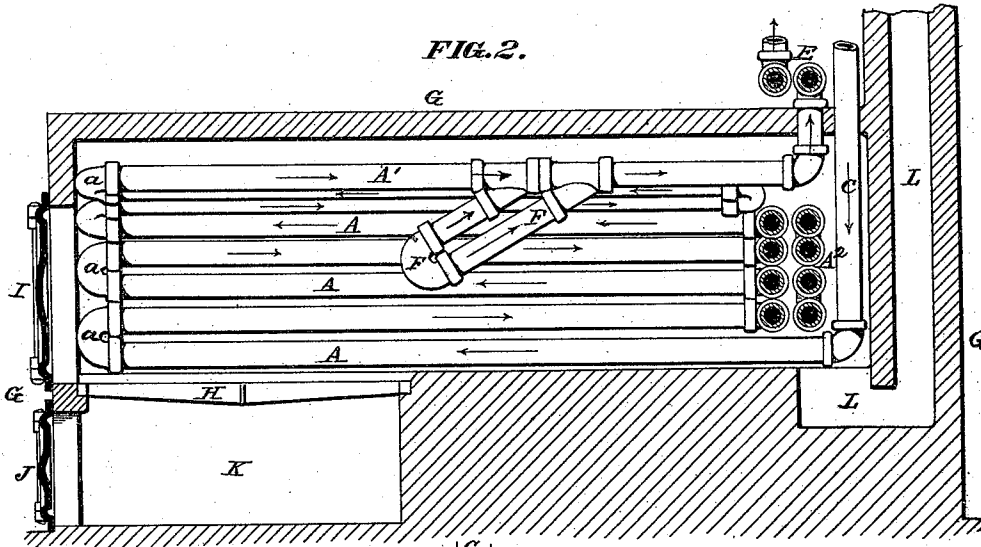
John M. Jordan
By Knight & Bowditch
Attys.

J. M. JORDAN.

BOILERS FOR WATER AND STEAM-HEATERS.

No. 173,300.

Patented Feb. 8, 1876.



ATTEST:

Robert Burns.
Charles Pickley

INVENTOR:

John M. Jordan
By Hinkley & Bros
Atty.

UNITED STATES PATENT OFFICE.

JOHN M. JORDAN, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN BOILERS FOR WATER AND STEAM HEATERS.

Specification forming part of Letters Patent No. **173,300**, dated February 8, 1876; application filed December 18, 1875.

To all whom it may concern:

Be it known that I, JOHN M. JORDAN, of the city and county of St. Louis, and State of Missouri, have invented a new and useful Improvement in Boilers for Water-Heaters, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The first part of my improvement consists in a boiler, which consists of two series of pipes lying parallel, or nearly so, with return bends, the pipes being of the same interior diameter as the pipes through which the water is conducted through the building to be heated.

The second part of my improvement consists in a generator, which extends into the hotter part of the fire-chamber, as shown, so as to move the body of water before that in the rest of the boiler has attained sufficient heat to cause it to flow.

In the drawings, Figure 1 is a perspective view of the boiler proper, part of one of the outer series of pipes being broken away to show the propelling arrangement. Fig. 2 is a longitudinal section at *a a*, Fig. 3. Fig. 3 is a transverse section at *b b*, Fig. 2.

A A, &c., are a number of pipes, horizontal, or nearly so, and connected together at alternate ends, as shown, by return bends *a*, so as to form a continuous water-course upon one side of the furnace. Pipes B, B, and C form a similar series upon the other side of the furnace. The return water from the building heating-pipes returns to the boiler through pipes C C, commencing with the lower pipe of each series, A and B, and the water flows upward from the boiler through pipes E, which form continuations of the upper pipes of each series A and B. Extending forward from the lower side of each of the pipes A¹ and B¹ is a U-formed pipe, F, whose end communicates with said pipe A¹ or B¹, and which extends downward, so that the bend F is in near proximity to the burning fuel. The purpose of these U pipes or propellers is to cause a flow of the water through the main pipes before sufficient heat is imparted to the water to cause such flow without this device, and to cause a more rapid flow at all times.

The action of the propeller is as follows: The water in it is converted into steam, and is injected into the pipes A¹ and B¹ in an inclined direction, so as to communicate motion

to the water in the pipes A¹ and B¹. The side pipes A A and B B are extended around at the rear of the furnace, as shown at A², in Figs. 2 and 3.

The walling or casing G of the boiler may be of any suitable material or construction. H is the fire-grate; I, the furnace-door; J, the ash-pit door, and K the ash-pit. L is the chimney.

This boiler, being formed of separate sections A A¹ and B B¹, with separate attachments, being independent of each other, can be so used that each section heats a separate room or rooms.

By making the pipes throughout the whole length of the boiler and heater of the same interior diameter there is an even flow through the pipe at all parts, and no shoulders in the pipe to cause any check to the flow.

It is obvious that the boiler-pipes being exactly the same interior size as the radiator and connecting-pipes, a new and quite valuable result is obtained, as the simultaneous movement of the water is insured through the whole series of pipes at the same speed, thus preventing any eddy and dead water.

The U-formed steam water-propeller, by descending into the furnace and entering the water-pipe at an inclination, causes a circulation in the water-pipes almost immediately the fire is lighted, and before the water has time to become heated in the water-pipes. The end bends of the water-pipes, which close partially the back of the fire-space, receive the full blast of the products of consumption.

The boiler, being constructed of two separate sections having no communication, each occupying its own side of the furnace, each section is adapted to heat one or more buildings simultaneously.

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

1. The U-formed steam-propeller F, in combination with the arched boiler, consisting of pipes, said propeller depending from or near the center of said arch, and inclined forward, as and for the purpose set forth.

2. The arched boiler, consisting of pipes having overlapping pipe-bends A² at its rear end, as and for the purpose set forth.

Witnesses: JOHN M. JORDAN.

SAML. KNIGHT,
H. HUTCHINS.