(No Model.)

J. HACKER, L. W. COLBY & J. W. HELTON.

WATER HEATER.

No. 406,727. Patented July 9, 1889.

Fig. 1.

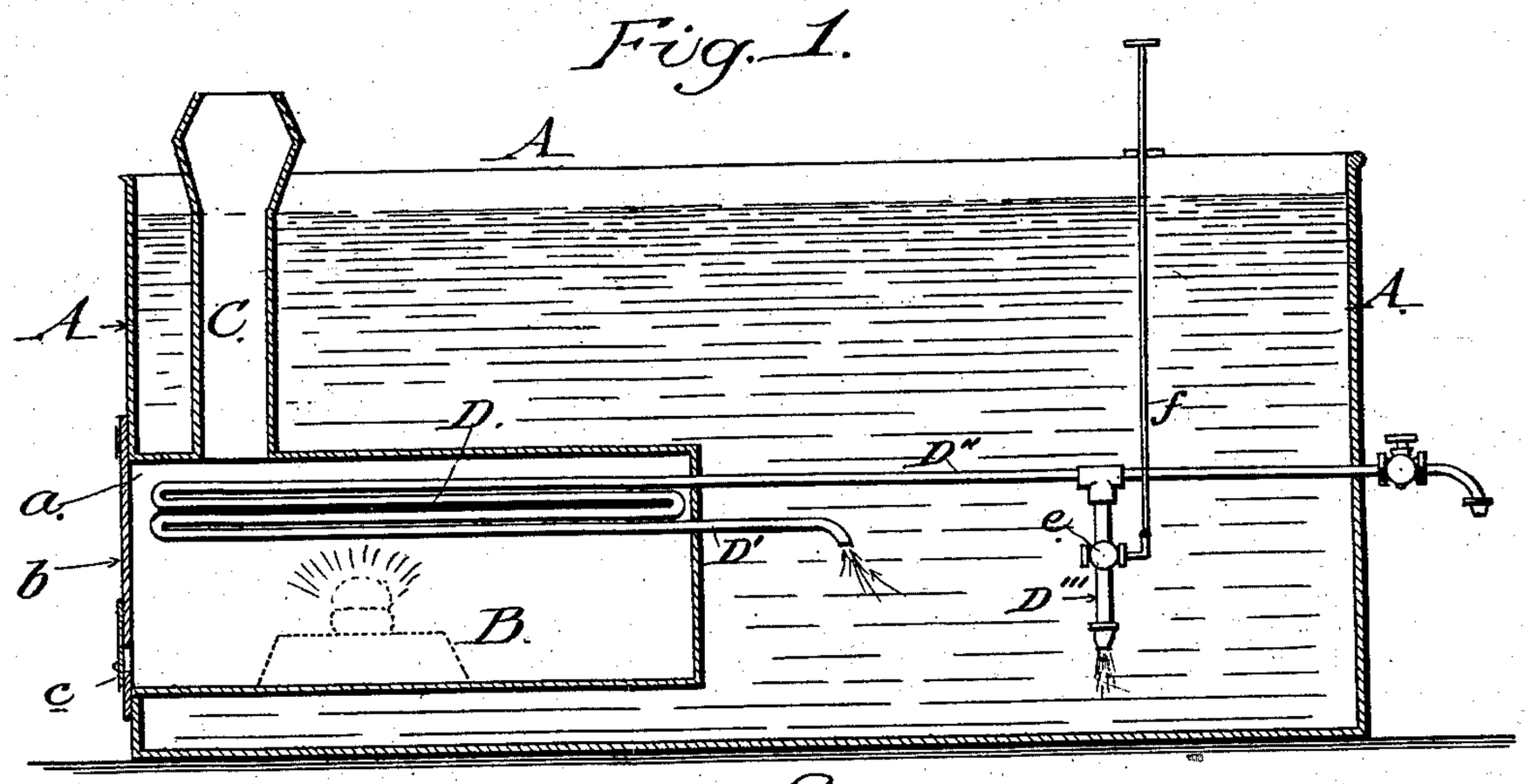

Fig. 2.

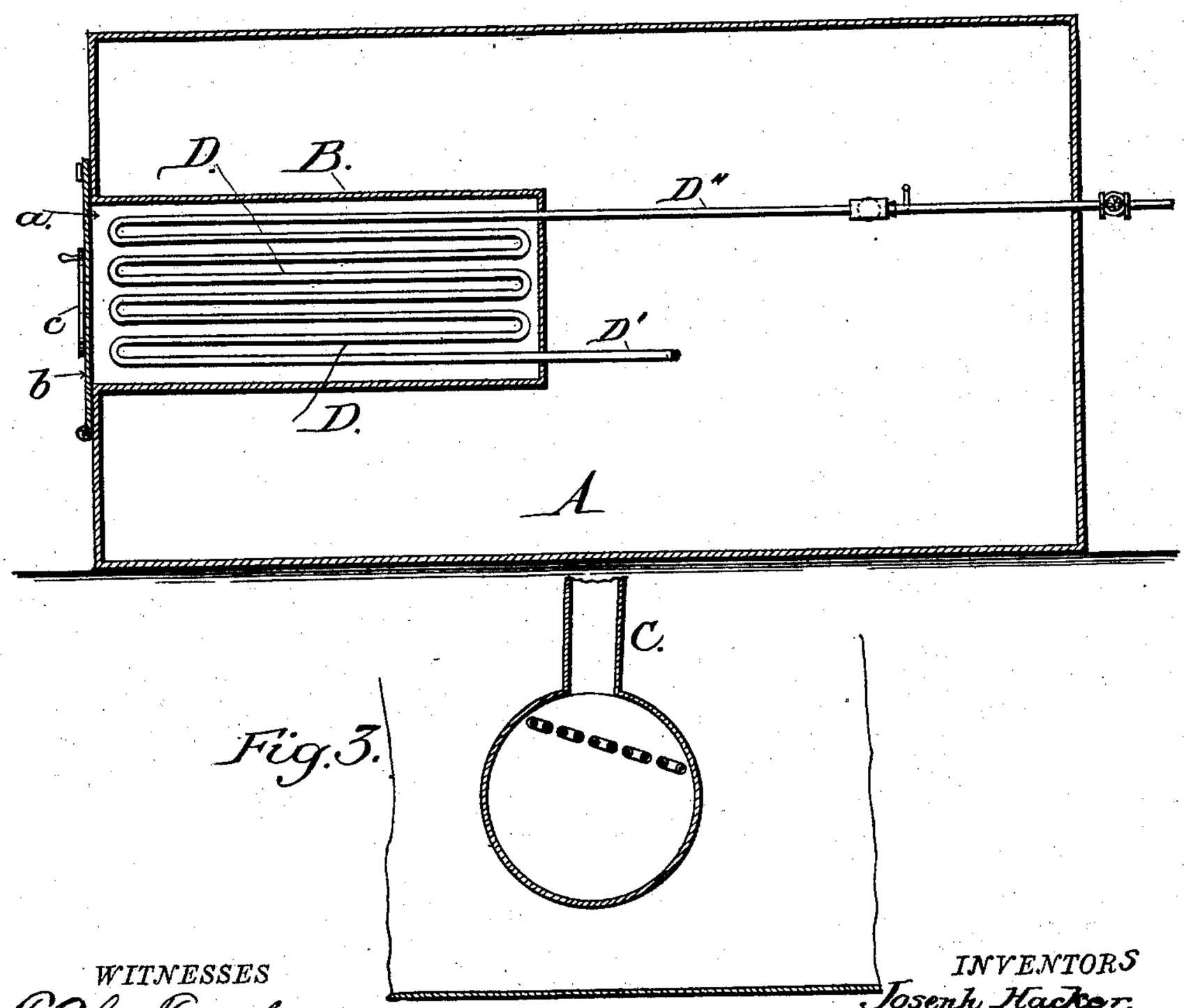

Fig. 3.

WITNESSES

P. H. Fowler.

N. H. Patterson

INVENTORS

Joseph Hacker,
Lucius W. Colby,
John W. Helton,

by— A. H. Evans & Co
Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH HACKER, LUCIUS W. COLBY, AND JOHN W. HELTON, OF WATERLOO, IOWA.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 406,727, dated July 9, 1889.

Application filed March 11, 1889. Serial No. 302,822. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH HACKER, LUCIUS W. COLBY, and JOHN W. HELTON, citizens of the United States, residing at Waterloo, in the county of Black Hawk and State of Iowa, have invented certain new and useful Improvements in Water-Heaters, of which the following is a full and clear description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a vertical longitudinal sectional view of a heater embodying our invention. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a cross-sectional view of the boiler, showing the internal coil of pipe inclined.

Our invention relates to that class of heaters which is designed to supply warm water for bathing, stock, and other purposes. It is an improvement on our former application filed February 13, 1889, Serial No. 299,688, for a similar invention; and it consists in the construction and combination of devices which we shall hereinafter fully describe and claim.

To enable others skilled in the art to make and use our invention, we will now describe its construction and indicate the manner in which we carry the same out.

In the accompanying drawings, A represents a tank of any suitable form, construction, and dimensions, adapted to contain water, which may be used for domestic or stock purposes; and B is a longitudinally-disposed furnace or receptacle, supported in the tank near its bottom and extending from one end thereof toward the center, the said tank being formed with an opening *a*, leading to the furnace or receptacle, and permitting the insertion or removal of any well-known form of heating medium.

If desired, a fire may be built within the furnace or receptacle to supply the necessary heat.

The open end of the furnace is covered or closed by a hinged door *b*, secured to the tank, and said door is provided with a valve or damper *c*, for regulating the supply of air to the heating device or medium. The furnace or receptacle B communicates at its top with a flue C, which carries off the products of combustion from the heating device, and within the upper portion of the furnace or receptacle is a coil of pipe D, which may be horizontally placed or slightly inclined, and having two ends D′ D″, which project rearwardly through the back wall of the furnace. One of these ends or arms D′ opens into the body of water in the tank and is designed to conduct the cold water therein to the coil, whereby it is heated, while the other end D″ extends rearwardly through the body of water and through the wall or side of the outer tank, being provided exterior of the tank with a valve or stop-cock to prevent the escape of the hot water and to permit the withdrawal of the hot water from the coil when the same is needed for domestic purposes and for mixing feed for cattle. The long arm D″ of the coil D has a downwardly-extending branch D‴, which discharges near the bottom of the tank, and said branch has a valve *e*, connected with a rod *f*, by means of which the discharge of water through the branch is regulated and controlled when the valve or stop-cock is closed.

From this description it is obvious that, the furnace being submerged and the heating medium applied to or inserted therein, the heat strikes directly against the coil of pipe D, and as the ends of this pipe are in communication with the water in the outer tank it is manifest the water which the coil contains is rapidly heated, the said water being drawn from the tank through the end D′ of the pipe D, and being discharged in a heated condition through the branch D‴ of said pipe and back into the body of water in the outer tank, whereby a continuous circulation of water is maintained.

In addition to the water being heated by the coil D, it is evident the walls of the furnace or receptacle B are also heated by the heating device, and as the said furnace is surrounded by the body of water in the outer tank it greatly assists in raising the temperature of the water.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a heater, the combination, with the outer water-tank, of the longitudinally-disposed furnace supported therein above its bottom and having one end opening through one end of the outer tank, a door closing said end, and the coil D within the furnace, having its ends D′ D″ passing through the inner end of the furnace, one of said ends communicating with the water-tank and the other extending through one of the walls of said tank and having a valve exterior thereof, whereby water may be drawn directly from the coil, substantially as described.

2. The combination, with the outer tank and the furnace therein having an open end closed by a door and provided with the flue C, of the coil D within the furnace, having its opposite ends D′ D″ passing through the rear of the furnace at different levels, one of said ends communicating with the water-tank and the other extending through the outer tank and provided inside of said tank with the downwardly-extending branch pipe D‴, the valves in the end D″ and branch pipe D‴, and the operating-rod connected with the valve-stem of the valve in the branch pipe, substantially as described.

JOSEPH HACKER.
LUCIUS W. COLBY.
JOHN W. HELTON.

Witnesses:
GEO. E. LICHTY,
J. M. WALKER.