(No Model.)

J. C. EATON.

WATER HEATER.

No. 413,039. Patented Oct. 15, 1889.

Fig. 1

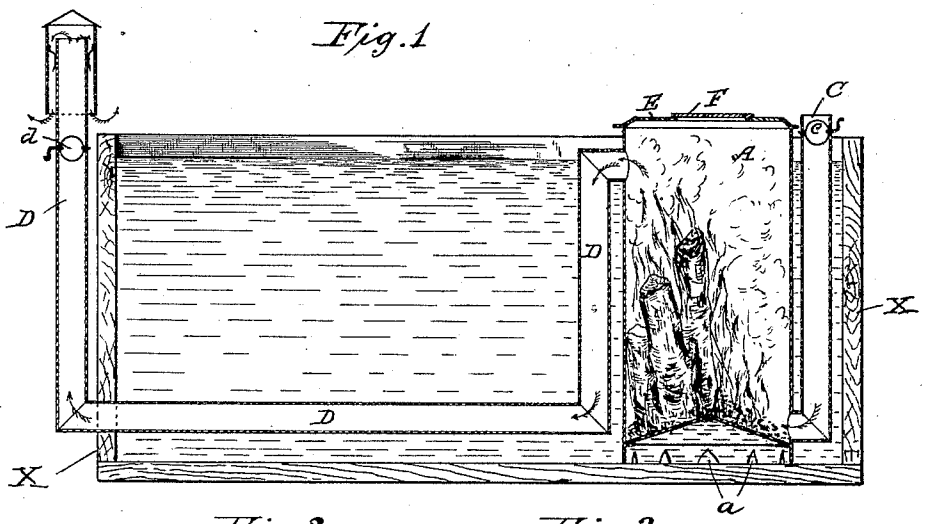


Fig. 2

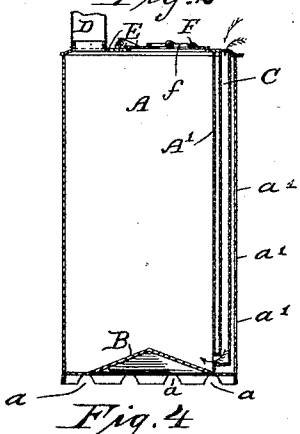


Fig. 3

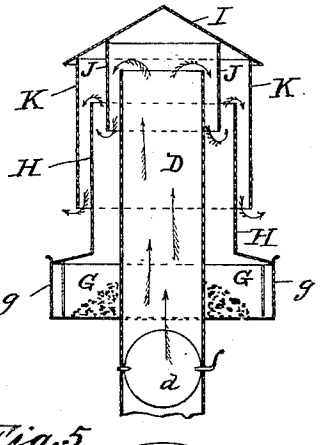


Fig. 4

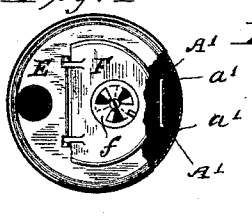
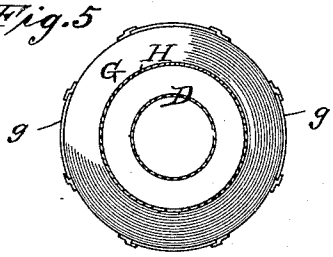


Fig. 5



Witnesses

W. B. Hoover

A. M. Johnson.

Inventor

J. C. Eaton

By his Attorney J. B. Thurston

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JULIUS C. EATON, OF LYNDON, VERMONT.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 413,039, dated October 15, 1889.

Application filed January 19, 1889. Serial No. 296,795. (No model.)

To all whom it may concern:

Be it known that I, JULIUS C. EATON, a citizen of the United States, residing at Lyndon, in the county of Caledonia and State of Vermont, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

The object of this invention is to provide a heater for warming water in drinking-troughs and the like, which shall be both simple and economical of construction and capable of using wood as fuel without necessarily increasing the danger from fire when the water to be heated is in a tub or trough indoors.

The simplicity and construction of my invention will be readily understood by reference to the accompanying drawings, forming an inseparable part of the following specification and claim, of which—

Figure 1 is a sectional view of a tank or trough containing water for stock and one of my improved heaters. Fig. 2 is a vertical section of one of my improved heaters having an interior draft-tube. Fig. 3 is a vertical section showing the top portion of my smoke-pipe, to which is applied my improved cap for catching and protecting the building in which a heater may be located from the cinders from the burning wood. Fig. 4 is a broken plan view of Fig. 2, and Fig. 5 is a sectional plan of Fig. 3.

Similar letters indicate corresponding parts.

My improved heater comprises a cylinder A, having preferably a concaved bottom B, placed a little above the bottom of the cylinder, which may be perforated, as shown at *a*, in order to admit water underneath the said bottom B, a draft-tube C, which may pass exteriorly or interiorly from a point above the top of said cylinder and connect with the same at a point near its bottom, and a smoke-pipe D. All these are preferably formed of galvanized iron. A top E may be formed of cast-iron and provided with a hinged door F, having therein a suitable check draft or slide *f*.

In the simplest form of my improved heater the draft-tube C passes down on the outside of the cylinder, as seen in Fig. 1, and the smoke-pipe D may connect with the cast-iron top E, as in Fig. 2; but when calculated for use in a long and narrow tank or trough X (illustrated in Fig. 1) it will be well to place the heater near one end thereof and connect the smoke-pipe D at the side and near the top of the cylinder A, and by means of "elbows" carry the pipe thence downward and horizontally through the water in the trough to the opposite end of same, where said pipe may rise either within or on the outside of said trough, as desired; and both the draft-tube and smoke-pipe may be provided, respectively, with dampers *c d*, if desired, for regulating the draft. The draft-tube may pass down at the inside of the cylinder A, instead of on the outside, if desired; but in order that it shall not become burned by contact with the flame and heat a partition A′ must be placed with the said cylinder, as seen in Figs. 2 and 4, and the side of said cylinder perforated, as at *a′*, through which openings the water in a trough may enter and surround said draft-tube.

To prevent cinders from escaping from the smoke-pipe and setting fire to buildings, I provide a cinder box or receptacle G upon the smoke-pipe D, having sliding doors *g* for the removal of cinders, a pipe H extending therefrom upward outside said smoke-pipe nearly to the top of same; and the said smoke-pipe I provide with a cap I, having two pipes J K attached to it—the former within the latter and of the proper diameter to rest between said smoke-pipe and said pipe H, and the said pipe K being the longer of the two, as seen in Fig. 3, sufficient space being provided between the pipes D, J, H, and K for the free passage of smoke. The products of combustion taking the course of the arrows pass over the top of the pipe D, under the bottom of the pipe J, (the cinders dropping at once to the box G,) over the top of pipe H, and escape under the bottom of the pipe K.

One of the strongest advantages of my improved heater is, that the flame and all heat from the fuel come in direct contact with the single thickness of sheet or galvanized iron, which is surrounded by water, the concaved bottom serving to keep the fuel around the inner surface of the shell or cylinder A.

Having described my improvements, what I claim as my invention is—

In an apparatus for heating water for stock,

a heater composed of a single iron or metal shell having a slightly-elevated shallow conical bottom, and means whereby water may circulate below it, and provided with a suitable top having an opening for introducing fuel, and a hinged cover for same, a draft-tube connecting with the interior of said shell at a point just above said shallow conical bottom, and a suitable smoke-pipe and spark-arrester attached thereto, all constructed substantially in the manner and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JULIUS C. EATON.

Witnesses:
J. B. THURSTON,
J. H. ALBIN.