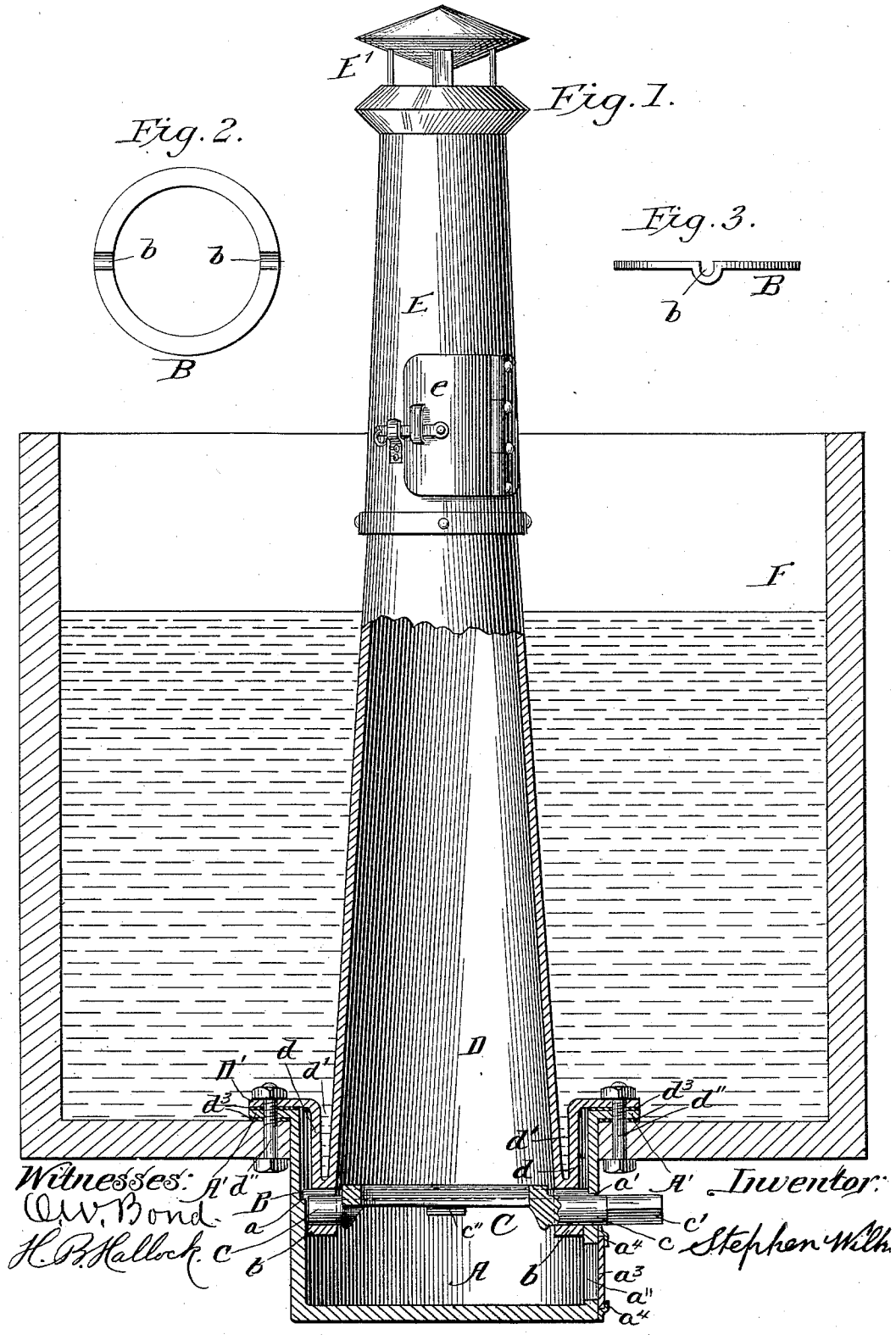
(No Model.)

S. WILKS.

TANK HEATER.

No. 430,717. Patented June 24, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

STEPHEN WILKS, OF CHICAGO, ILLINOIS.

TANK-HEATER.

SPECIFICATION forming part of Letters Patent No. 430,717, dated June 24, 1890.

Application filed December 5, 1889. Serial No. 332,725. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN WILKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Tank-Heaters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a vertical section showing the heater in position in a tank ready for use. Figs. 2 and 3 are a plan view and an edge view, respectively, of the ring supporting the grate.

This invention relates to tank-heaters designed more especially for use in warming water for cattle, and to that class of such heaters in which the water-tank has the heater located inside of the tank and surrounded by water.

The object of this invention is to construct a heater which can be secured in a water-tank, and when therein and surrounded by water allow a fire to be started, no matter whether the tank is frozen or not, and which will permit the fire-pot to be dumped and the ashes removed without removing the heater from the tank; and its nature consists in providing a heater consisting of a lower or base portion supporting a grate and forming the ash-box, and an upper portion forming the fire-pot and heating-surface and entering the base portion for attachment thereto and to the bottom of the tank, and in the several parts and combination of parts hereinafter more specifically described, and pointed out in the claims as new.

In the drawings, A represents the base or lower portion of the heater of a cylindrical shape, and having on its interior a ledge a and on one side a hole a' for the passage of the extension of one of the grate-journals, and an opening a'' for access to the interior of the base to remove ashes and the grate-dumpings, and this opening a'' is closed by a sliding door a^3, held in place by guides a^4. The opening a'' also furnishes a draft when the door a^3 is open. The upper end of the base A has an annular flange A′, through which are holes for the passage of bolts or other fastening devices.

B is a ring of a diameter to enter the base A and rest on the ledge a, and this ring, on opposite sides, in line one with the other, has depressions b to receive the journals of the grate.

C is the grate, formed of an outer ring portion to lie within the ring B with cross bars, and having on opposite sides, in line with each other, journals c, on which the grate can turn, which journals are supported in the depressions b, and one journal c has an extension c' to pass through the opening a', with a square end to receive a handle or lever, by which the grate can be turned or tipped for dumping purposes. The inner face of the base A has a lug or rest c'', on which the grate rests, as shown in Fig. 1.

D is the upper portion of the heater, the lower end of which forms the fire-box and enters the base A to rest on the ring B and hold such ring in position and retain the grate in place. The lower end of the portion D has an outer secondary wall d, between which and the main wall is a space d' for water to enter and prevent the burning out of the fire-pot, as well as assisting in the heating of the water, and the upper end of the wall d has a flange D′ corresponding to the flange A′, with coinciding holes for the passage of the fastening-bolts d'', and, as shown, between the flange A′ and the bottom of the tank and between the flanges A′ and D′ is a packing d^3 of any suitable material to make a water-tight joint.

E is a chimney slipped onto the upper end of the portion D, and having at its upper end a wind-breaker E′. This chimney E has a door e, through which fuel can be passed into the upper portion D of the heater without removing the heater.

F is the water-tank, which may be of a cylindrical or other shape. The bottom of this tank has a hole or opening corresponding in diameter to that of the base A, and through which the base can be passed to lie below the bottom of the tank for easy access to the extension c' and door a^3, and the bolts d'' pass through the bottom of the tank and the

flanges A′ and D′, securing the heater together and fastening it in the tank.

The heater is placed in the tank F by entering the base A from inside the tank through the opening therefor in the bottom of the tank for the flange A′ to rest on the packing d^3 between the flange and the tank-bottom. The ring B is dropped into place to rest on the ledge a, with the depressions b in line with the hole or opening a'. The grate C is placed in position, with its journals c in the depressions b and the extension c' through the hole or opening a'. The upper section D is placed in position for its lower end to rest on the ring C and its flange D′ on the flange A′ with the packing d^3 between the flanges, and the bolts d'' are passed through the flanges A′ D′ and bottom of the tank, and the nuts applied to the bolts fastening the heater in the tank, and the pipe or chimney E is placed on the end of the portion D, when the apparatus is ready for use.

In use the tank is filled with water in any suitable manner and a fire started in the heater by placing kindling and fuel into the fire-pot through the door e, producing the requisite heat for warming the water. After the fire has burned out the grate C can be turned or tipped, dumping the ashes and remains of the fire into the base A for removal through the opening a, and when dumped the grate can be tipped back for another fire when required to warm the water. The water in the tank enters the space d' and prevents the burning out of the fire-pot, and this water will soon become very hot, and, rising, produces circulation which will assist the heating of the water in the tank, and as the heater is immersed in the water, the entire surface of the chamber or upper portion D will radiate heat by which the water in the tank will be very quickly warmed.

The dumping of the grate C beneath the bottom of the tank enables the fire-pot to be cleaned without removing the heater, as the ash-receptacle is below the tank and access is had thereto through the opening a''.

The tank when frozen can be quickly thawed out by starting a fire in the heater, the heat of which will very soon melt the ice adjacent to the portion D, forming a passage by which hot water from the space d' can pass upward and produce a circulation that will act on the ice at once without any breaking and chopping out of the ice.

The stove is adapted to burn wood, coal, corn-cobs, or other fuel, and the tapering shape of the upper portion D will largely increase the draft. If desired, the grate can be removed and an oil-burner be located in the base A, with a supply-pipe from a suitable reservoir passing through the hole a'.

The heater as a whole is very simple in construction and can be easily applied to a water-tank, as all that is required is to make a hole for the passage of the base A in the bottom of the tank, and in use will be found very economical as well as effectual for the purpose for which it is intended.

The water-space d' forms an effectual guard against the overheating of the base and prevents the tank from having its bottom warped or set on fire, and by having the opening a'' with its door a^3 where access can be had thereto, the regulating of the draft is under perfect control.

What I claim as new, and desire to secure by Letters Patent, is—

1. A tank-heater consisting of a base A, supporting-ring B, grate C, and upper part D, having a water-space d' at its lower end around the fire-pot formed by an exterior wall joined to the lower end of said portion D, substantially as and for the purposes specified.

2. The base A, supporting-ring B, and grate C, in combination with the upper part D, having the water-space d' at its lower end formed by the secondary wall d, and chimney E, having the door e, for enabling a heater to be located in a water-tank and operated in building a fire and in dumping without removing the heater, substantially as and for the purposes specified.

3. The base A, supporting-ring B, grate C, upper part D, having the water-space d' at its lower end formed by the wall d, and chimney E, having the door e, in combination with the tank F, substantially as and for the purposes specified.

4. The base A, having the flange A′, in combination with the upper part D, having the water-space d' at its lower end formed by the secondary wall d and flange D′, tank F, having an opening in its bottom for receiving the base A, and packing d^3, for making a water-tight joint between the flanges and the bottom of the tank, substantially as and for the purposes specified.

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Witnesses:
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