No. 710,528. Patented Oct. 7, 1902.

D. D. SHAW.

WATER HEATER.

(Application filed Mar. 11, 1902.)

(No Model.)

Fig. 2.

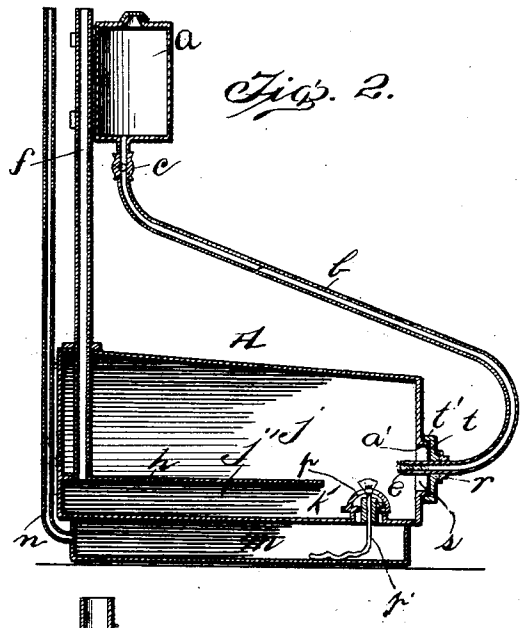


Fig. 4.

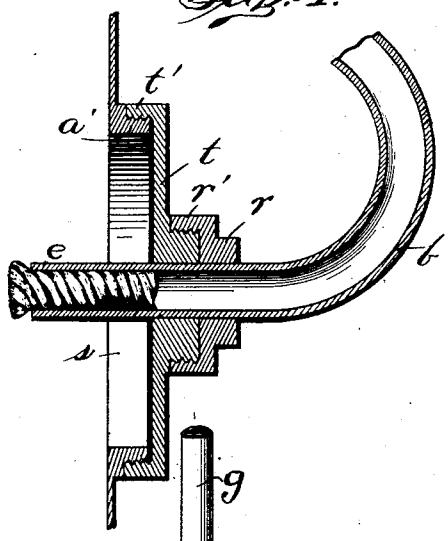


Fig. 3.

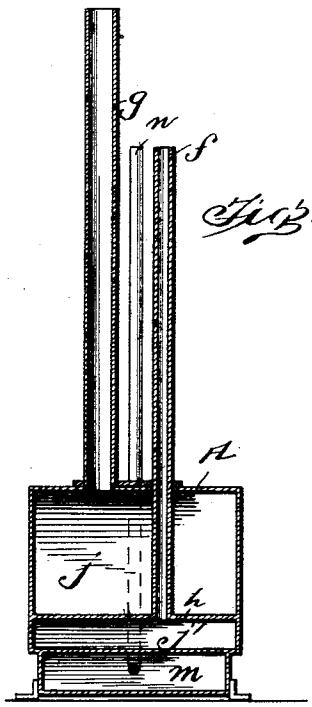
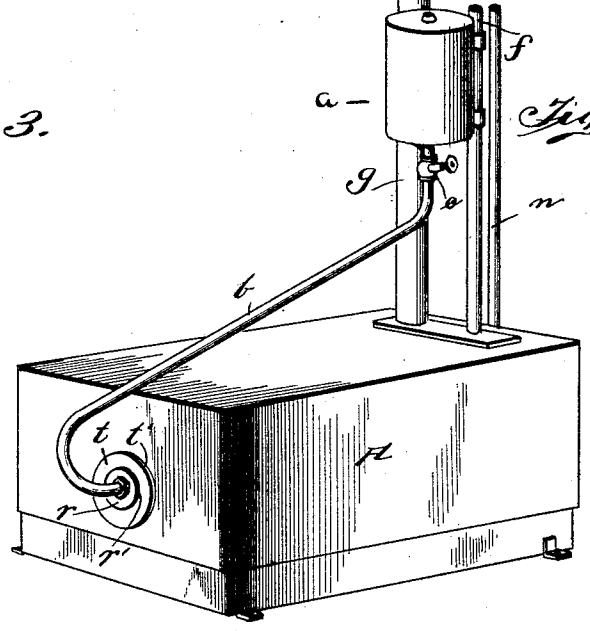


Fig. 1.



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UNITED STATES PATENT OFFICE.

DANIEL D. SHAW, OF DENVER, COLORADO.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 710,528, dated October 7, 1902.

Application filed March 11, 1902. Serial No. 97,746. (No model.)

To all whom it may concern:

Be it known that I, DANIEL D. SHAW, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Water-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in water-heaters, and particularly to such as are adapted to be submerged in water for preventing the same from freezing or for heating water for other purposes.

It consists in certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of my improved heater. Fig. 2 is a longitudinal vertical section through the same. Fig. 3 is a vertical sectional view through an air-supply pipe and a vent-pipe and showing an oil-supply pipe. Fig. 4 is an enlarged detailed view of a portion of a fuel-supply pipe, showing its removable connection with the closure of the heater.

In developing this invention in a practical manner I provide a box or receptacle A, which is closed upon all sides, and provide the same with a horizontal partition h in the lower portion thereof, so as to divide the said receptacle into an upper or combustion chamber j and a lower or air-supply chamber j'. The partition h is provided with an opening, as at k, so as to establish proper communication between the two chambers j and j'. A pipe f rises from the partition h, passing through the chamber j and to a suitable height so that its open upper end will always be above water, the said pipe being adapted to conduct air below the partition h into the air-supply chamber j'. The upper chamber j is provided with a comparatively large vent-pipe g, through which the products of combustion and heat escape from the chamber j.

The heater is preferably provided with more than one heating means. As illustrated in the drawings, I preferably employ a gasolene-burner, as at e, and a coal-oil burner, as at p. The gasolene-burner e may be formed in any suitable manner and is supplied through a pipe b with gasolene or other similar volatile hydrocarbon fuel from a supply-tank a, supported above the receptacle A. A convenient manner of supporting said tank is shown in Figs. 1 and 2, where it will be seen that the said tank is secured to the air-supply pipe f near the upper end thereof. This tank is preferably arranged sufficiently high to extend above the surface of the water which is to be heated, so that it can be filled from time to time as may be found necessary without removing the heater from the water. The discharge of the gasolene or other fuel from the tank a is regulated by means of a valve c, which is interposed in the pipe b between tank a and burner e.

The manner of connecting the supply-pipe b with the receptacle A forms an important feature of the invention. The burner e projects through an opening s, formed in one end of the receptacle A. This opening is made of sufficient size to afford free access to the burners for lighting them. The supply-pipe b is provided with a collar r, which has an internally-screw-threaded flange r'. A connecting bushing or nipple t is slipped upon the end of the supply-pipe b and is formed with an inwardly-extending internally-screw-threaded flange t' at its outer periphery for engaging a correspondingly externally threaded flange a', formed around the opening s of the receptacle A. The bushing t is also formed with a thickened screw-threaded portion surrounding the pipe b, which is adapted to engage the threads of the collar r. The internal threads of the bushing t on its outer flange are preferably right-handed threads, while the exterior threads at the central portion of the said bushing are left-handed threads, so that when the bushing t is turned in one direction it will become disconnected from the flange a' and the collar r simultaneously, thus permitting of access through the opening s to the interior of the receptacle A and to the burners e and p, which are preferably arranged in close proximity to said opening. Of course it is merely necessary to rotate the bushing t in the opposite direction to draw the collar r and the flange a' together again, closing the opening s and excluding water from the receptacle A at this point. This bushing af-

fords a very simple and yet an easily and quickly manipulated means for getting at the burners within the receptacle A.

The burner p is preferably a coal-oil burner of suitable or ordinary construction, the wick p' of which projects into an auxiliary chamber m, formed in the bottom of the receptacle A. The receptacle m is supplied with coal-oil or similar fuel through a pipe n, which preferably rises from the end of said chamber m to a height equal to the height of the pipe f.

I do not need to use both of the burners at once, but preferably thus provide the heater with two means of heating the same, one which is adapted to be operated by one kind of fuel, while the other is adapted to be operated by another kind of fuel. Those who object to the use of gasolene can thus employ kerosene or coal-oil if they so wish. It will be seen that after either one of the burners has been lighted the heater can be submerged in the water which is to be heated, the combustion being supported by the air which passes down through the pipe f into the chamber j', while the products of combustion fill the chamber j, thoroughly heating the walls of said chamber which are in contact with the water, but passing out the vent-pipe g.

A heater of this kind will be found very valuable for preventing the freezing of water in tanks which are used for watering stock of various kinds. Of course it can be employed for heating water for other purposes as well.

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

1. A water-heater formed with a combustion-chamber, an air-supply chamber beneath the same and connected with the combustion-chamber by a single aperture, a plurality of burners arranged to project, each into the same aperture so as to be supplied with air from the same source, different sources for supplying fuel separately to each burner, piping sufficient to reach to the top of the body of water which is to be heated, said piping leading to the air-chamber and permitting of a discharge of the products of combustion from the heater, substantially as described.

2. A water-heater, comprising a tank having a combustion-chamber and an air-supply chamber, a burner located at a suitable point in said tank, means for supplying said burner with fuel, a bushing for removably connecting the burner with the tank for closing an aperture therein, the structure being such that when the bushing is removed access may be had to the burner for lighting the same, and means for venting the combustion-chamber, to the top of the water, substantially as described.

3. A water-heater, provided with double means for generating heat comprising a combustion-chamber, an air-chamber beneath the same, an aperture in the floor of the combustion-chamber affording communication between the two chambers, a fuel-supply chamber beneath the air-chamber, an oil-burner extending upwardly through the apertured floor of the combustion-chamber from the said fuel-supply chamber, the end of the combustion-chamber being apertured opposite the aperture in said floor for admitting a second burner, a burner projecting into the same, and a tank for supplying the second burner arranged to project above the surface of the water, tubing connecting all of the chambers below the water with the atmosphere above the water, the structure facilitating the heating of the receptacle which is to be submerged with either one or both of the burners as desired, the same system of draft furnishing oxygen for both of said burners, substantially as described.

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

DANIEL D. SHAW.

Witnesses:

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