

(No Model.)

T. CASCADEN.
SUBMERGED HEATING DEVICE.

No. 391,297.

Patented Oct. 16, 1888.

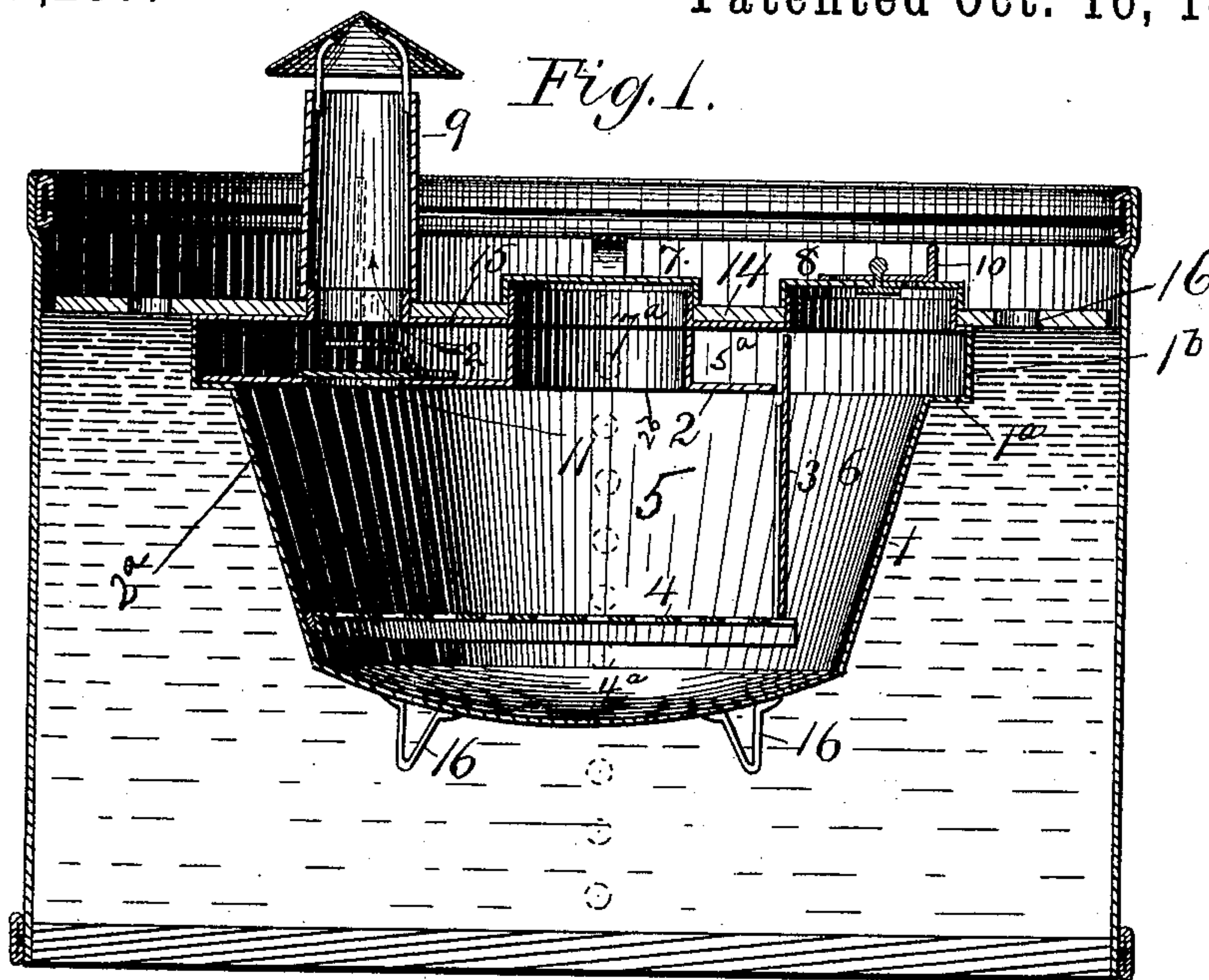
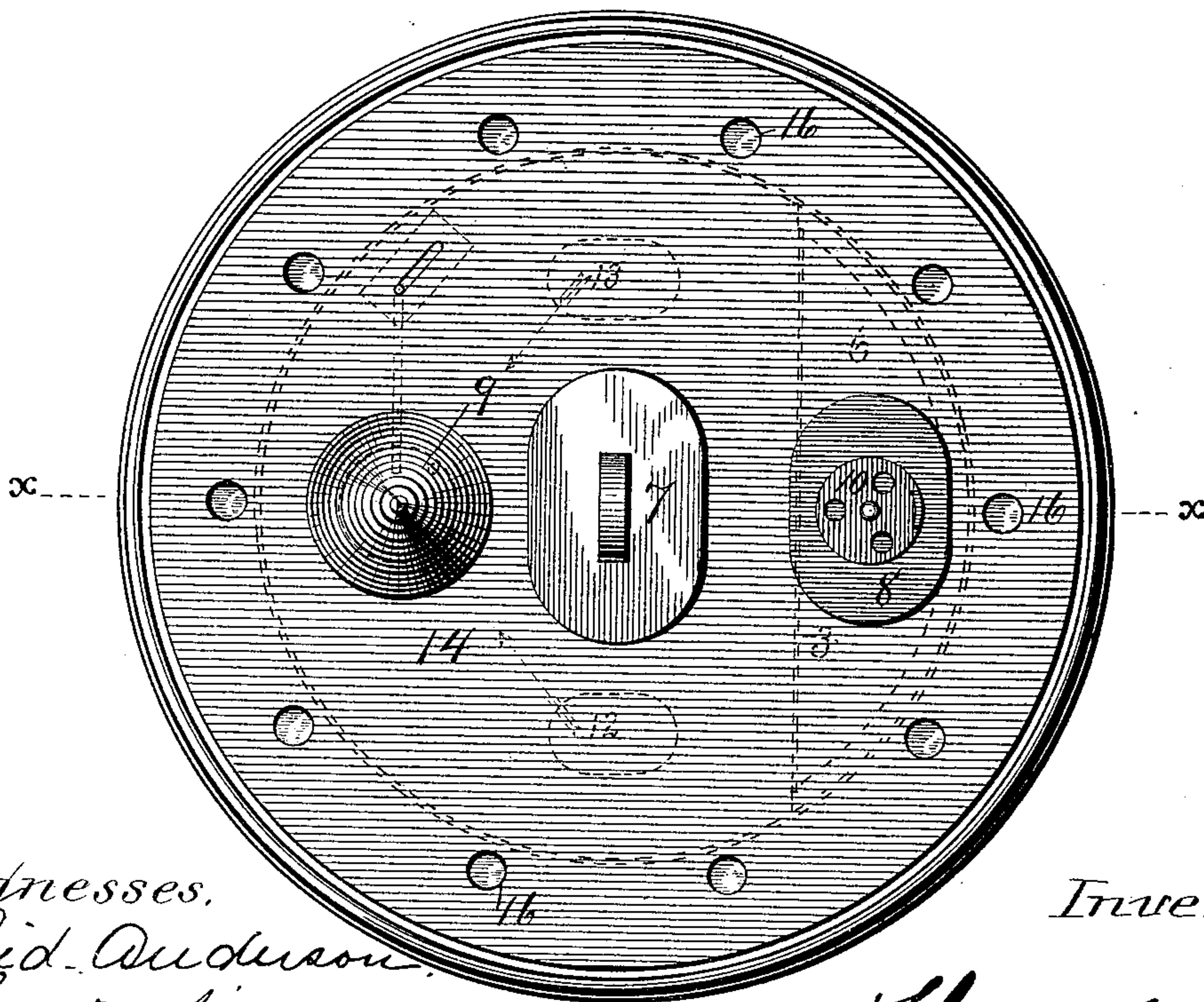


Fig. 2.



Witnesses,
J. L. Anderson.
Geo. W. Miller.

Inventor,
Thomas Cascaden.

UNITED STATES PATENT OFFICE.

THOMAS CASCADEN, OF WATERLOO, IOWA.

SUBMERGED HEATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 391,297, dated October 16, 1888.

Application filed March 12, 1888. Serial No. 267,048. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CASCADEN, a citizen 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 Submerged Heating Devices, of which the following is a full, clear, and exact description, reference being had to the drawings accompanying this specification.

The invention relates to that class of devices used in heating water for stock or domestic purposes; and its object is to provide a heating device that may be used with equal facility in deep or shallow water. This and minor objects are attained by the construction illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical diametrical section taken through the heater and water receptacle or tank. Fig. 2 is a plan view of a tank, float, and heater, and provided with openings to receive the flanges of the smoke-flue 9, the feed-chute 7^a, and air-passage 6, as shown best in Fig. 1.

The heater comprises an outer shell or casing, 1, closed at the bottom and provided near the top with an outwardly-projecting flange, 1^a, from the outer edge of which rises a vertical wall, 1^b, carrying a top plate which is provided at proper points with openings for connection of a smoke-flue, 9, a feed opening or chute, 7^a, closed by a cover, 7, and air-openings closed by a cover, 8, which is fitted with a register, 10. Within this shell or casing, near the bottom, is secured a grate, 4, from the front of which rises a partition, 3, to separate the combustion-chamber 5 above the grate from an air passage or chamber, 6, leading from the register 10 to the ash-pit 4^a, or space beneath the grate. Above the combustion-chamber 5 is a top plate, 2, extending from the flange 1^a to the partition 3 and forming, in connection with the top plate, 15, a flue-chamber, 5^a, openings 2^a, 2^b, 12, and 13 communicating therewith from the combustion-chamber. The opening 2^a is arranged beneath the smoke-flue 9, and is provided with a sliding damper, 11, by means of which it may be closed to prevent the direct passage of the products of combustion and compel them to traverse a tortuous course through the open-

ings 12 and 13, and thence to the smoke-flue through the flue-chamber 5^a, formed by the partition 3, wall 1^b, and top plates, 2 and 15, of the combustion-chamber and casing, respectively. The feed-opening 7^a consists of a vertical wall extending from an opening, 2^b, in the top plate, 2, of the combustion-chamber 5 to and through the top plate, 15, of the casing, as shown in Fig. 1, where it is fitted with a cover, 7, as hereinbefore stated.

The register 10 of the cover 8 affords facilities for admitting more or less air to the combustion-chamber 5 through air-passage 6 and the grate 4, and by removing the cover 8 access can be had to the ash-pit 4^a for cleaning or other purposes.

To the top plate, 15, of the casing is secured a float, 14, of proper size and capacity to sustain the weight of the heater charged with fuel, the outer projecting edge of said float being by preference provided at intervals with perforations or openings 16 of such size as to admit of stock drinking through them. The edges of the float extend beyond the sides of the outer casing of the heater, as shown, and preferably close to the sides of the tank or water-receptacle, thus presenting an extended floating surface and tending to prevent access of trash to the tank.

The heater is designed to be floated in a tank of proper size to heat the water to be consumed by stock, though it will be apparent that it may be used to boil water for scalding hogs or for domestic purposes, and that it may be used as an agricultural boiler in cooking food for stock.

In operation the heater is floated in a tank or other receptacle containing water or feed, and the fuel ignited. Should the draft be too strong, the register 10 on cover 8 can be closed more or less, or the damper 11 can be closed, thus shutting off the direct draft through the smoke-flue 9, and causing it to traverse a tortuous course through the openings 12 and 13, and thence through the flue-chamber to the smoke-flue. By this latter manipulation the radiation of the heater will be increased, as the heat from the fire will be less apt to escape through the smoke-flue 9. To replenish the fuel, the cover 7 is removed, fuel fed in through the chute or opening 7^a, and the cover replaced.

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

1. In a water-heater, the combination of a
5 water-tight casing provided at its top with air-inlet and smoke-discharge flues and a feed-chute, with a float extending beyond the sides of said casing and provided with openings for the air-inlet and smoke-discharge flues and
10 feed-chute, and with marginal openings located between the sides of the casing and circumference of the float, substantially as described.

2. The combination, substantially as described,
15 of the outer casing, the grate and partition forming the air and combustion chambers, an opening in the top of the casing leading to the air-chamber, the plate 2, forming the top of the combustion-chamber and
20 bottom of the flue-chamber and provided with openings 2^a, 12, and 13, the damper arranged to close opening 2^a, the smoke-flue, the regis-

ter, and a feed-chute leading from the exterior of the casing through the flue-chamber to the combustion-chamber.

3. The combination, with a water-tank, of
25 the casing, the grate, partition, and top plate, 2, forming air, flue, and combustion chambers, openings leading from the combustion-chamber to the flue-chamber, a damper to close one
30 of said openings, a smoke-flue leading from the flue-chamber above the damper to the exterior of the casing, a feed-opening leading from the exterior of the casing to the combustion-chamber, a register to control the admis-
35 sion of air to the air-chamber, and means to sustain the casing.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

THOS. CASCADEN.

Witnesses:

GEO. W. MILLER,
GEO. H. HOLLIS.