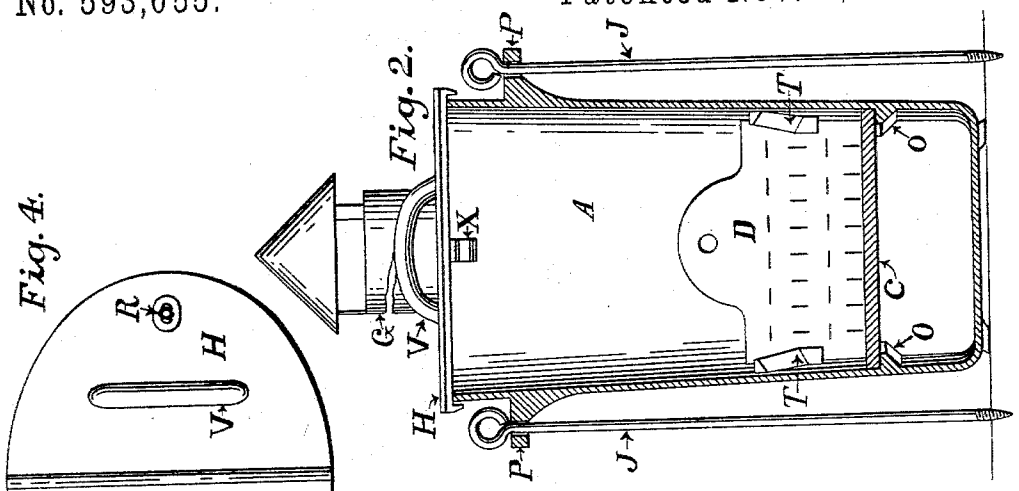
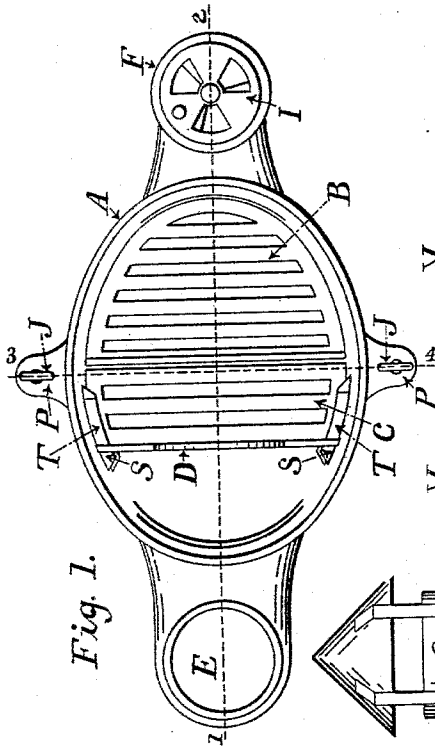
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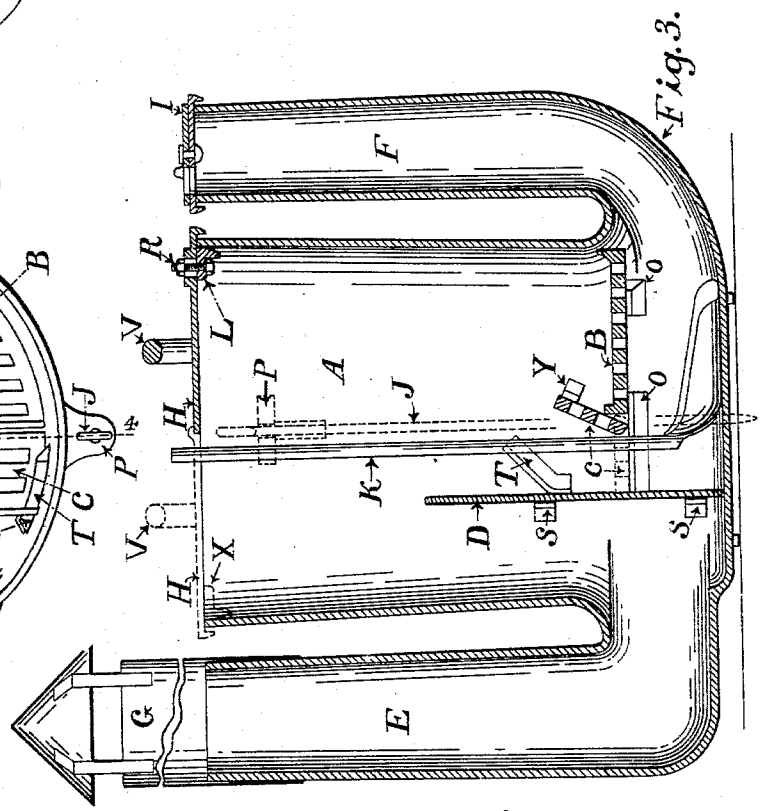
G. S. LONG.

TANK HEATER.

No. 593,055. Patented Nov. 2, 1897.







Witnesses
C. C. Kennedy.
A. J. Willet

Inventor
George Silas Long

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE SILAS LONG, OF HINCKLEY, ILLINOIS.

TANK-HEATER.

SPECIFICATION forming part of Letters Patent No. 593,055, dated November 2, 1897.

Application filed February 3, 1897. Serial No. 621,800. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SILAS LONG, a citizen of the United States, residing at Hinckley, in the county of De Kalb and State of Illinois, have invented certain new and useful Improvements in Tank-Heaters, of which the following is a specification.

My invention relates to improvements in tank-heaters—that is to say, heaters adapted for warming the water in tanks used for watering stock or for cooking feed in same by setting the heater in the tank.

The objects of my invention are, first, to save heat; second, durability; third, to so arrange the different parts that it will be convenient in using the same.

The several parts composing my invention are fully described and explained in the specification, and shown in the accompanying drawings, in which—

Figure 1 is a horizontal view of a heater embodying my invention with covers H H removed and looking downward into heater. Fig. 2 is a central vertical section of the heater, the plane of section being through the line 3 4, Fig. 1, plainly showing flame-spreader D. Fig. 3 is a central vertical section, the plane of section being through the line 1 2, Fig. 1. Fig. 4 is a top plan of covers for heater.

Similar letters refer to similar parts throughout the several views.

In the views, A is preferably a cylindrical oblong casing having water-tight walls and bottom. It may be made of boiler-plate and riveted or bolted together, or made of cast-iron and flues E and F united thereto by bolting or riveting same to body A. Said flues may be made of cast-iron or boiler-plate riveted or bolted together or galvanized iron soldered together, or the heater may be cast in halves, one section representing the wall and bottom of A, E, and F, Fig. 1, then bolt or rivet the two halves together, though it is preferable to cast said flues with main body A, making the entire casing and bottom of A, E, and F one piece of cast-iron, with lugs cast thereon for the retention in place of flame-spreader D, large grate B, small grate C, and lugs P P, for fastening the heater down to the tank, as hereinafter explained. I provide for this heater suitable covers H H, which, while effective, are very simple, having handles V V for convenience in handling, being secured in place by stationary lug X against the inside of wall A, and adjustable lug L, which is held in place by bolt R. The hole in the cover through which this bolt passes being slotted allows adjustment, so when the covers are placed on their own weight forces them together by lug L coming against the inside of wall A.

S S are lugs for holding the flame-spreader in place, as is also lug T, which is slanted upward for convenience in replacing same, which has to be removed to clean ashes from under grates.

O O are lugs which large grate B and small grate C rest on and upon which the fire is built. Flame-spreader D is also held in place by the longest of these lugs O O, as is seen in Fig. 2.

Lifting off covers H H and brushing off coals or fuel from small grate C onto large grate B, the small grate C may be removed from heater or turned up on its edge reclining on lug Y, when a bent poker may be inserted into the hole or eye at the top of flame-spreader D, which may then be removed from the heater, and the process of removing ashes from the heater may then be carried on, as shown in Fig. 3, after which the grate C and flame-spreader D may be replaced and the fire built, covers H H put on, when air, which is regulated by damper I, will pass downward through flue F, thence upward through grates B and C, thence over flame-spreader D, which has the top of its outer edge cut down, allowing its center to be much higher, spreads the draft or fire so it comes in direct contact with walls of heater A as it passes over flame-spreader D, thence down and into the entrance of flue E, on which there is a pipe G, out of which pass the products of combustion. It is evident that there is much more heat saved by the top of this flame-spreader D being higher in the center and bringing the flame in direct contact with wall of body A than if it were square across its top. This flame-spreader D rests on the bottom of the walls of body A (see Fig. 2) and completes the fire-box, it being slightly perforated to prevent warping, but not enough to admit of a draft through the same.

Flues E and F may be joined to body A at

or near the bottom of same and may be any suitable distance from body A, two inches being preferable. They may stand perpendicular or incline toward an angle of forty-five degrees, though it is preferable that they should stand perpendicular, as shown in Fig. 3. They may be round, octagon, or square, though it is preferable they should be round. They may be any desired size, though it is preferable that the top of flues E and F be respectively five and four inches in diameter, increasing in size toward the bottom of each one.

The stability of this heater is secured by having cast, bolted, or riveted onto body A lugs P P, through which pass rods J, which are screwed into the bottom of tank, as shown in Fig. 2.

It is a well-known fact that cool air descends. I therefore build flue F a suitable distance from main body A, so as to have said flue cool, when it will supply the fire with much more oxygen than if said flue were connected the entire length to wall of body A, while with flue E there is much heat saved by bringing the products of combustion down to the base of the heater, then out of said flue.

I am aware that prior to putting my invention into practice there have been many different kinds of heaters made and patented for warming water in stock-tanks, and that a patent was granted to Henry L. Ferris, of Harvard, Illinois, June 18, 1895. I am not aware that this or any other heater is like mine in retaining the heat and bringing it in so close contact with the water after leaving fire-box as mine.

I therefore claim as new and desire to secure by Letters Patent—

1. In a tank-heater, the combination of the casing A having water-tight walls and bottom, covers H, H, for said casing, provided with a stationary lug X and an adjustable lug L, draft-flue F provided with damper I attached to the wall of the casing near the bottom, grates B and C, lugs O for supporting said grates, smoke-flue E, and flame-spreader D interposed between the grates and the smoke-flue, substantially as described.

2. In a tank-heater, the combination of the casing A having water-tight walls and bottom, draft-flue F attached to the wall of the casing near its bottom, covers H, H, for said casing, grates B and C, smoke-flue E, a removable flame-spreader D interposed between the grates and the smoke-flue, and lugs O, S and T for securing the flame-spreader in position, substantially as described.

Signed at Hinckley, De Kalb county, Illinois, this 1st day of February, 1897.

GEORGE SILAS LONG.

Witnesses:

C. C. KENNEDY,

A. J. MILLER.