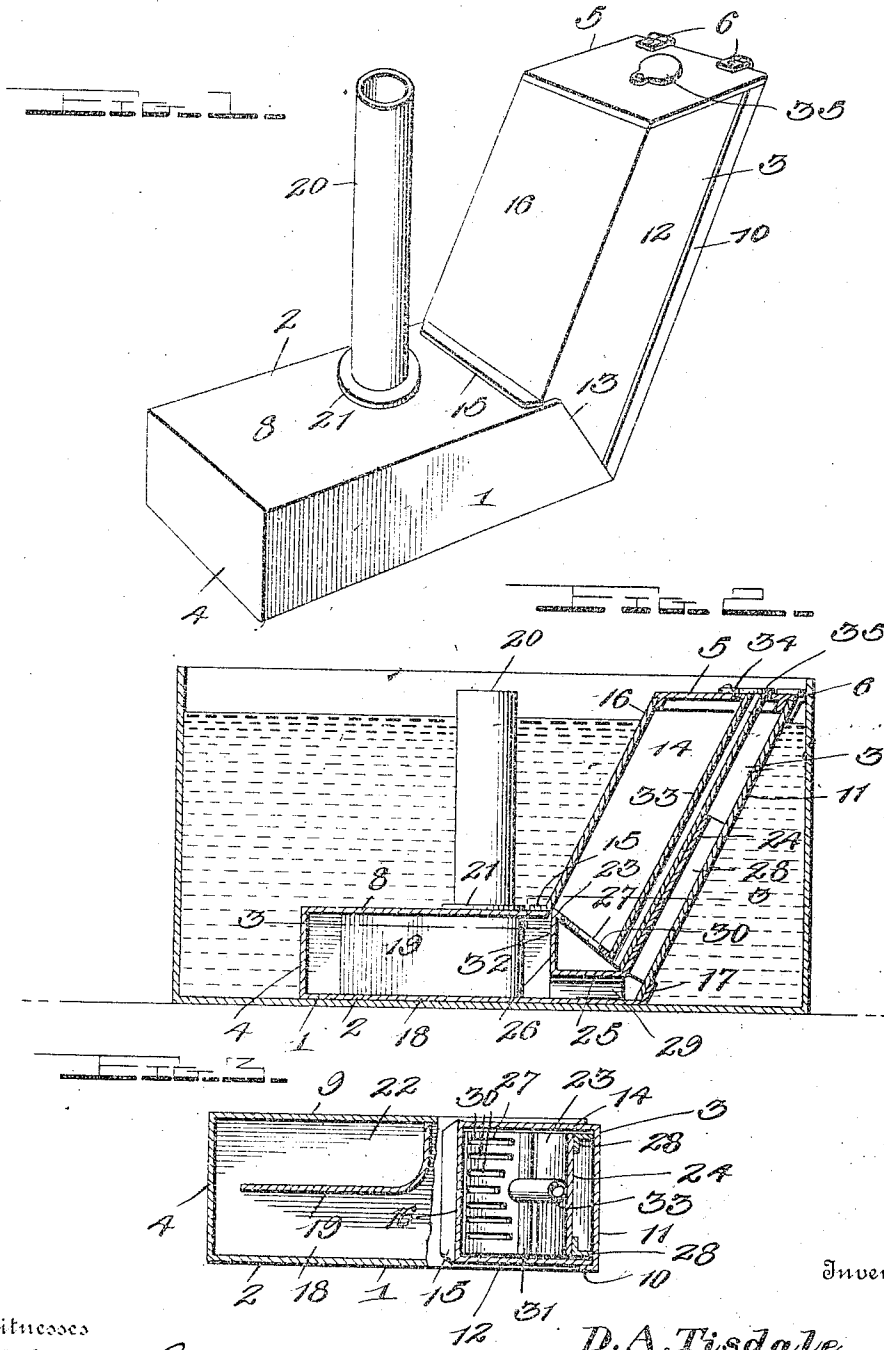


D. A. TISDALE.
TANK HEATER.
APPLICATION FILED JUNE 1, 1912.

1,055,684.

Patented Mar. 11, 1913.



Witnesses

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DENISON A. TISDALE, OF MARSHALLTOWN, IOWA.

TANK-HEATER.

1,055,684.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed June 1, 1912. Serial No. 791,103.

To all whom it may concern:

Be it known that I, DENISON A. TISDALE, a citizen of the United States, residing at Marshalltown, in the county of Marshall and State of Iowa, have invented certain new and useful Improvements in Tank-Heaters, of which the following is a specification, reference being had to the accompanying drawings.

This invention comprehends certain new and useful improvements in tank heaters and relates more particularly to devices of this nature for use in heating drinking water for live stocks.

The primary object of the invention is to provide a heater which will furnish a maximum amount of heat with a small supply of fuel.

The invention also aims to provide a tank heater of the submerged type which shall be of extremely simple structure, relatively cheap to manufacture and very economical in use.

With these and other objects in view, as shall become apparent as the description proceeds, the invention consists in certain novel features of construction and arrangement of parts as I shall hereinafter fully describe and claim.

For a complete understanding of my invention reference is to be had to the following description and accompanying drawing, in which—

Figure 1 is a perspective view of my invention. Fig. 2 is a vertical sectional view partly in elevation and showing the heater positioned within the tank, and Fig. 3 is a sectional view on the plane of line 3—3 in Fig. 2.

Referring to the drawing by numerals 1 designates the angular body of the heater having the horizontal portion 2 and the upwardly and outwardly extending portion 3. The body 1 is rectangular in cross-section and has one end closed by the wall 4 and the other end closed by the cover 5 which is secured to the body 1 by the hinges 6. The sections are made of sheet metal stamped and bent to the proper shape. A flange 10 secures the back 11 of the section 3 to the side wall 12 thereof. The side walls of the horizontal section 1 have their inner edges beveled as at 13 and overlap the beveled inner edges of the side walls 12 and 14 of the upwardly extending portion 3. A flange 15 secures the front 16 of the sec-

tion 3 to the top 8 and a similar flange 17 secures the bottom 18 of section 1 to the back 11 of section 3. A vertical division plate 19 extends lengthwise of the horizontal section 2 and has its outer end spaced from the end wall 4 and its inner end portion bent outwardly and connected to the side wall 9. A vertical tubular flue 20 having the flanged end 21 is secured to the top 8 and communicates with the inner end of the compartment 22 formed by the division plate 19 and the side wall 9.

A removable fuel support 23 fits within the upwardly extending section 3 of the body 1 and comprises a rear wall 24, a bottom section 25, a front wall 26 and a grate 27. The flanges 28 and 29 space the rear wall 24 and the bottom sections 25 from the bottom 18 and back 11 respectively and the front wall 26 extends transversely of the horizontal section 2. This fuel support 23 may be formed of a single piece of sheet metal bent into proper shape and slotted as shown at 30 to form the grate 27. The flange 31 secures the grate to the rear wall 26. The triangular casing 32 formed by the bottom section 25, the grate 27 and the front wall 26 has its ends open for a purpose to be explained later. A draft pipe 33 is secured to the rear wall 24 and has its lower end in communication with the casing 32 and its upper end registers with the opening 34 in the lid 5. The portion of the pipe 33 which extends beyond the rear wall 24 provides a handle for withdrawing the fuel support out of the section 3. A damper 35 is pivotally secured to the cover 5 to swing over the opening therein.

The operation of my improved heater is as follows: The heater is positioned in a tank of water and a fire lighted in the section 3. The burning fuel is supported on the grate 27 and the heat and smoke from the same passes upwardly over the rear wall 24 then downwardly under the bottom section 25, through the horizontal section 1 to its front end, then back through the compartment 22 and up the flue 20. The ashes created by the burning fuel drop through the grate 27 into the casing 32. When it is desired to remove the ashes the fuel support 23 is lifted out of the body 1 through the open end and tilted so as to cause the ashes contained therein to discharge through one of its open ends.

From the foregoing description in con-

nection with the accompanying drawing it will be apparent that because of the circuitous course which the gases follow a major portion of their heat is utilized.

5 Minor changes in shape and construction may be made without departing from the scope of the invention as defined by the appended claims.

10 Having thus described my invention, what I claim is:—

1. The combination with a tank heater of a removable fuel support therefor, comprising a hollow base the upper wall of which is slotted to form a grate, an upwardly
15 extending wall secured at its lower edge to said base and a draft pipe communicating at its lower end with the interior of the hollow base.

2. The combination with a tank heater
20 of a removable fuel support, comprising a hollow base extending transversely of the tank heater and open at each end, the upper wall of said base being slotted to form a grate, an upwardly extending wall secured to the base and spaced from the
25 heater, and a draft pipe communicating at its lower end with the interior of the base.

3. The combination with a tank heater of a removable fuel and ash support, compris-

ing a hollow base triangular in cross section
30 and open at each end, the base being spaced from the bottom of the tank heater and having its upper wall provided with slots to form a grate, an upwardly extending wall
35 carried by said base and also spaced from the walls of the tank heater, and a draft pipe communicating with the hollow base extending parallel to said upwardly extending wall.

4. The combination with a tank heater of
40 a removable fuel and ash support therefor, comprising a hollow base triangular in cross section and having its upper wall slotted to form a grate, said base being open at
45 each end and provided on its under side with downwardly projecting flanges, an upwardly extending wall carried by said base and a draft pipe communicating with the
50 hollow base and extending upwardly parallel to said upwardly projecting wall carried by the hollow base.

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

DENISON A. TISDALE.

Witnesses:

HAZEL MCCARTNEY,
M. D. KLISE.