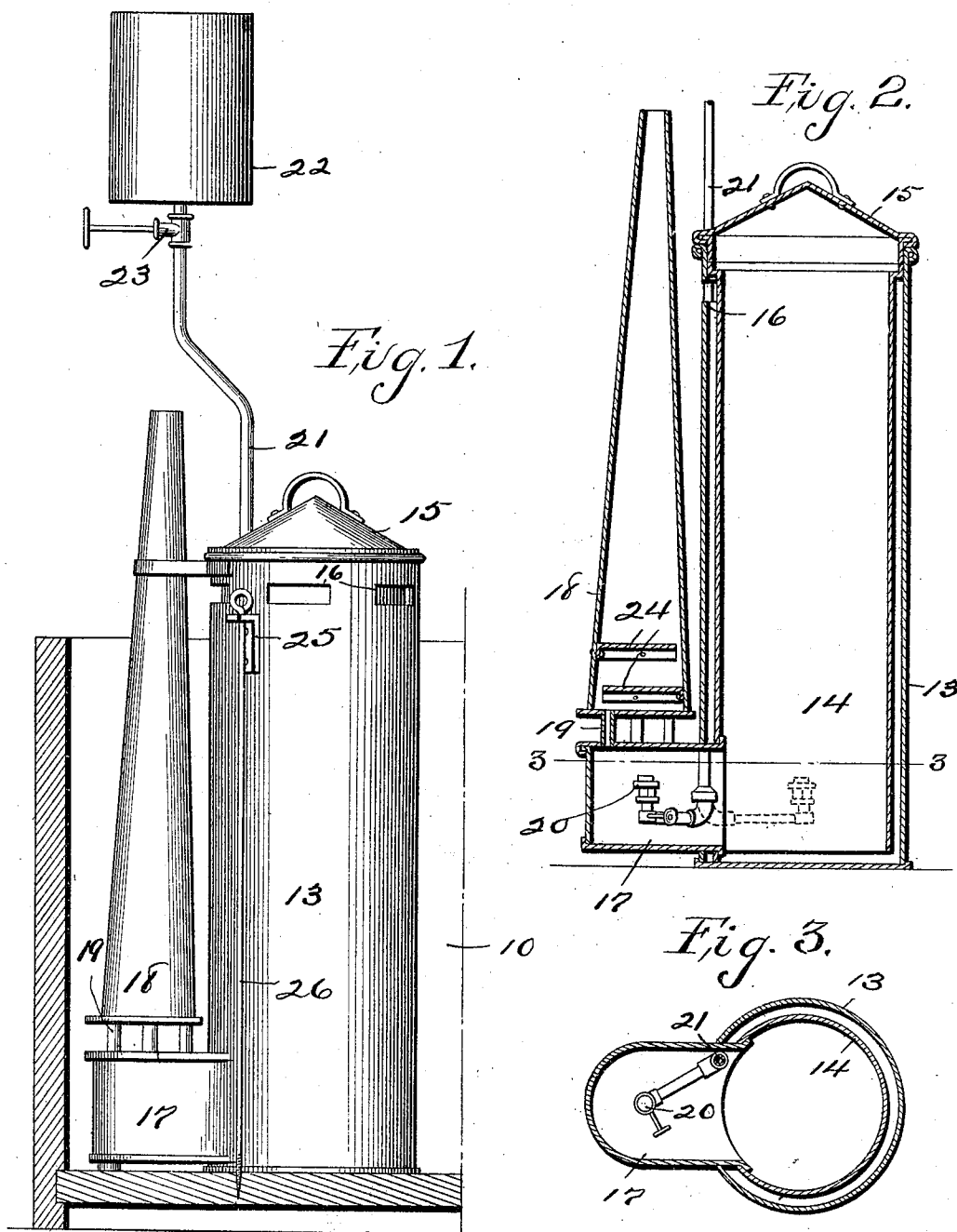


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PATENTED JAN. 23, 1906.

C. C. FIFIELD.
GAS BURNING TANK HEATER.

APPLICATION FILED JUNE 19, 1906.



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GAS-BURNING TANK-HEATER.

No. 810,852.

Specification of Letters Patent.

Patented Jan. 23, 1906.

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To all whom it may concern:

Be it known that I, CHESTER C. FIFIELD, a citizen of the United States, residing at Grand Junction, in the county of Greene and State of Iowa, have invented a new and useful Gas-Burning Tank-Heater, of which the following is a specification.

My object is, first, to provide a tank-heater adapted for operating hydrocarbon-burners therein; second, to provide means for regulating the heat therein as required to regulate the temperature of water in a tank; third, to adapt the heater to maintain a uniform heat of any desired degree twenty-four hours or more without attention from any person for adding fuel, adjusting a damper or registers, or removing ashes; fourth, to reduce the cost of operating a tank-heater, as required to prevent water from freezing and keeping water in a tank at any desired temperature.

My invention consists in the construction, arrangement, and combination of a double-walled air-conductor, air-heater, and heat-radiator, a combustion-chamber, a serpentine hot-air conductor and radiator and flue, and an adjustable hydrocarbon-burner and oil-tank, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my tank-heater in position in the end portion of a water-tank as required for practical use. Fig. 2 is a vertical sectional view of the tank-heater and shows the relative positions of all the interior parts. Fig. 3 is a transverse sectional view on the dotted line 3 3 of Fig. 2.

The numeral 10 designates the end portion of a water-tank in which my tank-heater is detachably fixed, as shown in Fig. 1.

The air-conductor is composed of two concentric sheet-metal walls 13 and 14, as shown in Fig. 2. The outer wall is closed at its bottom and has a removable cover 15 at its top and a plurality of openings 16 near its top to admit air. The inner wall 14 is open at its top and bottom, enlarged in diameter, and fitted in the top portion and inside of the outside wall, as required to close the top of the annular air-chamber thus produced between the two walls 13 and 14. By thus closing the top of the annular chamber by means of the enlarged top of the inner wall the air that is admitted through the opening 16 will be drawn downward and heated so that the heat will radiate from the outer wall.

The combustion-chamber 17 is fixed in an opening in the lower ends of the two concentric walls to communicate with the lower end of the air-chamber produced by the inner wall 14 and the annular air-chamber between the two walls 13 and 14, as required to feed air to a burner in the combustion-chamber 17. A flue 18 is connected with the top of the combustion-chamber 17 by means of a plurality of open-ended tubes 19, fixed in the bottom of the flue and in the top of the combustion-chamber, as shown, or in any suitable way, as required to allow heated air to pass up from the combustion-chamber into the flue and to produce a draft for a burner in the combustion-chamber that will draw air from the double-walled air-conductor to promote combustion in the combustion-chamber.

A hydrocarbon-burner 20 is swiveled to a pipe 21, fixed to the outside of the double-walled chamber in such a manner that the burner can be turned into the double-walled chamber, as indicated by dotted lines in Fig. 2, for the purpose of lighting the burner and adjusting it as required to regulate it. A tank 22 for a supply of gasolene is fixed to the top of the pipe 21, and the pipe is provided with a valve 23 for regulating the flow of oil to the burner 20.

A plurality of deflectors 24 are fixed in the lower end portion of the flue 18, as required, to produce a serpentine passage-way for the products of combustion that rise through the tubes 19 from the combustion-chamber 17, as required, to restrict the upward passage of heat and to allow the heat to radiate from the flue into the water surrounding the lower end portion of the flue.

Perforated angle-irons 25 are fixed to the outside and top portion of the wall 13, and rods 26, terminating in screws at their lower ends, are passed down through the angle-irons into the bottom of the tank, as required, to detachably fasten the tank-heater in the tank.

In the practical use of my invention air admitted into the top of the annular air-chamber between the two walls 13 and 14 is drawn down to feed the burner in the combustion-chamber and to fill the large air-chamber produced by the inner wall, and the air thus fed into the combustion-chamber, the annular chamber, and the large air-chamber communicating therewith becomes heated, as required, to promote combustion and also to

radiate heat to aid in heating the water in the tank surrounding the double-walled air-chamber.

Having thus set forth the purpose of my invention and its construction and manner of use, its practical operation and utility will be readily understood by farmers and others familiar with the art to which it pertains.

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

1. In a tank-heater the combination of a chamber comprising two concentrically-arranged walls, spaced from each other, forming an air-chamber, the inner wall being suspended from the outer wall and open at its bottom, the outer wall being provided with air-inlet openings near its top, a combustion-chamber secured to and extending from said walls and in communication with said air-chamber, a fuel-supply pipe and a burner swiveled thereto, said burner adapted to swing either into said combustion-chamber or into said first-named chamber.

2. In a tank-heater the combination of a chamber comprising two concentrically-arranged walls, spaced from each other, forming an air-chamber, the inner wall being suspended from the outer wall and open at its

bottom and the two walls being provided with alining openings near their bottoms and the outer wall provided with an inlet near its top, a combustion-chamber extended through said alining openings and secured therein to communicate with the double-walled chamber.

3. A tank-heater comprising a double-walled air-chamber, closed at its top and open at its bottom, the outer wall closed at its bottom and provided with openings near its top, the inner wall open at its bottom covered at its top and fitted to the inside and top portion of the outer wall, a combustion-chamber fixed in coinciding openings in the lower ends of the top walls, a pipe for conveying oil fixed to the outer wall, a hydrocarbon-burner swiveled to the lower end of said pipe, a flue connected with the top of the combustion-chamber, an oil-tank fixed to the top of the pipe for conveying oil and a valve in the pipe, arranged and combined to operate in the manner set forth for the purposes stated.

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Witnesses:

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