No. 695,943. Patented Mar. 25, 1902.

E. PAULSON.

TANK HEATER AND FEED COOKER.

(Application filed Apr. 3, 1901.)

(No Model.)

FIG. 1.

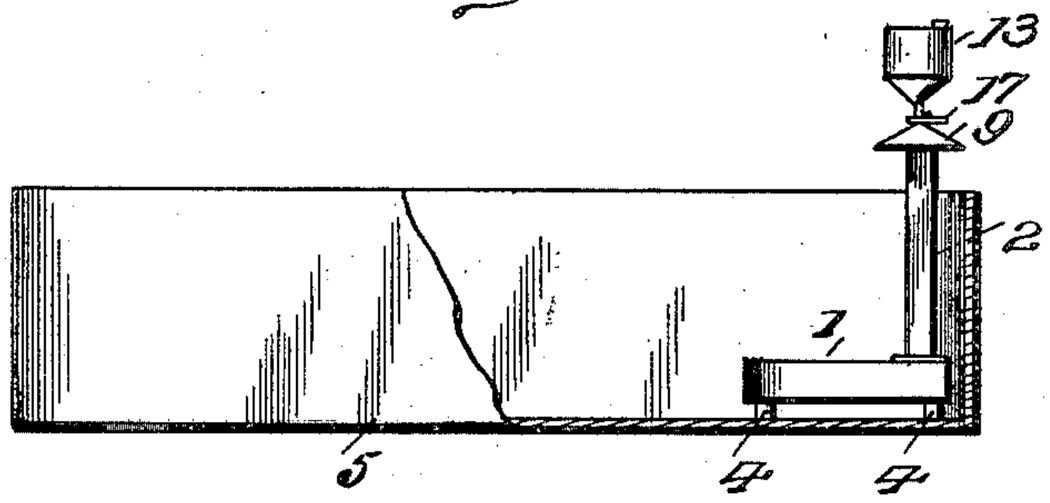


FIG. 2.

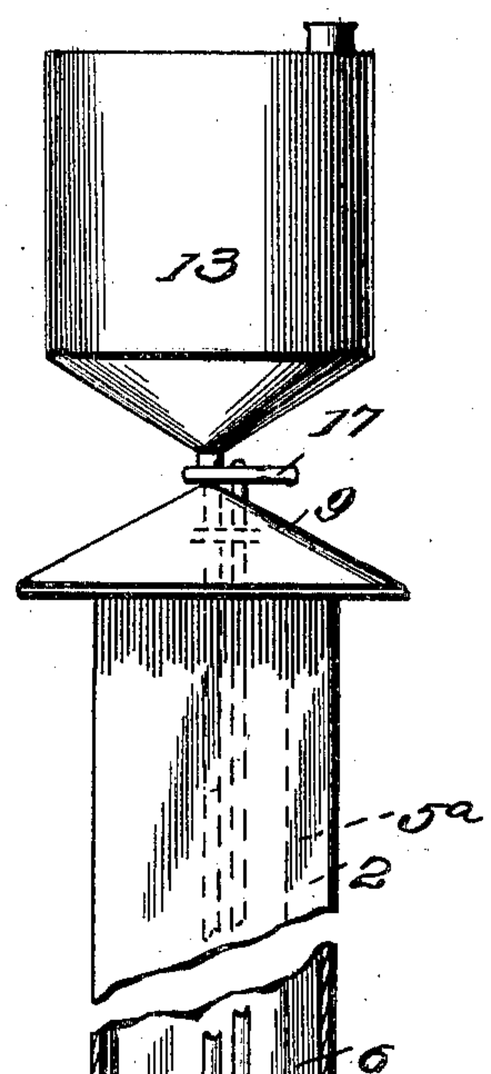
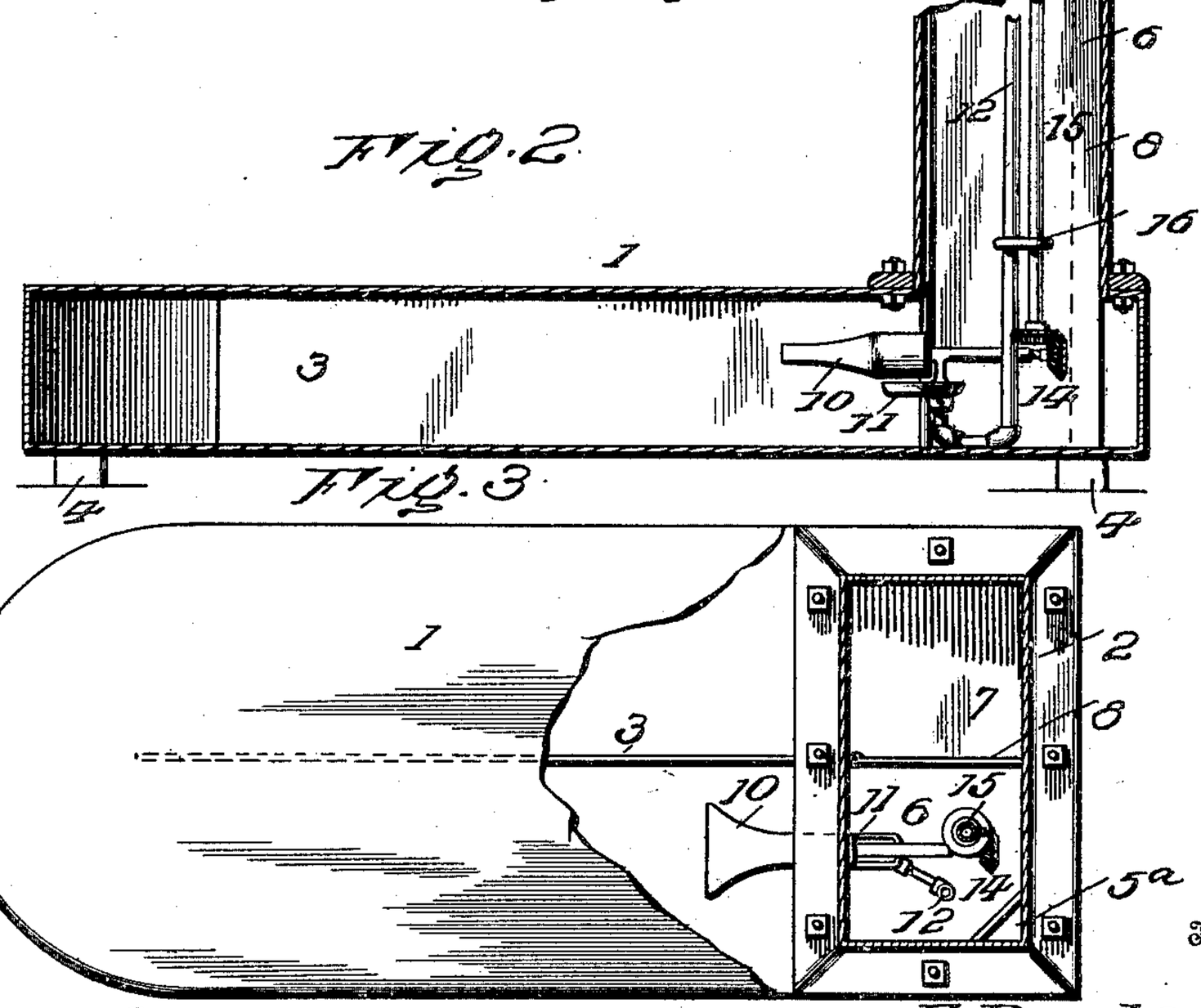


FIG. 3.



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UNITED STATES PATENT OFFICE.

ELECK PAULSON, OF OSAGE, IOWA.

TANK-HEATER AND FEED-COOKER.

SPECIFICATION forming part of Letters Patent No. 695,943, dated March 25, 1902.

Application filed April 3, 1901. Serial No. 54,209. (No model.)

To all whom it may concern:

Be it known that I, ELECK PAULSON, a citizen of the United States, residing at Osage, in the county of Mitchell and State of Iowa, have invented certain new and useful Improvements in Tank-Heaters and Feed-Cookers; 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.

This invention has relation to means for heating stock water troughs and tanks and cooking feed for stock, the purpose being to provide in a compact form a device of great heating power and which can be easily managed.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view showing the heater in position, a portion of the near side of the trough being broken away. Fig. 2 is a side elevation of the heater on a larger scale, the lower part being in section and the vertical part having an intermediate portion broken away. Fig. 3 is a plan view of the heater, the top of the drum adjacent the vertical tube being broken away and the said tube and operating-rod being in section.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The heater comprises a drum 1 and a tube or pipe 2, projected vertically from an end thereof. The drum 1 is oblong and preferably rounded at one end and is subdivided by a partition 3, which extends from about in line with the inner wall of the tube 2 to within a short distance of the rounded end of the drum, forming, in effect, a tortuous passage through the drum to insure a circulation of the hot air therethrough. This drum is comparatively shallow and is provided with feet 4 to hold it a short distance above the bottom of the tank, trough, or other receptacle 5, into which it may be placed. The tube 2 is preferably of rectangular form in cross-section and is bolted or otherwise firmly attached at its lower end to an end of the drum 1, with which it communicates. An air-passage 5^a is provided with the tube 2 at a convenient point for the admission of air when starting the burner and placing the same in position. This passage 5^a is located at one corner and is formed by a strip spanning said corner and riveted or otherwise attached to the sides of the tube adjacent to and forming the angle or corner in which the passage 5^a is formed. The tube 2 is subdivided into flues 6 and 7 by means of a vertical partition 8, which extends from the bottom of the drum 1 to the upper end thereof and which is hinged at one edge to a wall of the tube, preferably the inner wall. The partitions 8 and 3 aline and the opposing edge portions thereof abut, so that, in effect, one forms a continuation of the other. By having the partition 8 hinged or pivoted at one edge it can fold, so as to leave the tube 2 unobstructed, whereby the burner can be placed in position and removed as desired. This tube is of a length to project a safe distance above the highest level of the liquid in the tank or trough, so as to prevent the liquid or food from splashing into the tube. A cover 9 is fitted to the upper end of the tube 2 and is spaced therefrom, so as not to interfere with the free ingress and egress of air. This cover is removable, so as to admit of access being readily had to the interior of the tube for any desired purpose.

The burner 10 may be of any make, pattern, or design of the type for consuming gas or vapor produced from any of the volatile hydrocarbons, and, as shown, this burner is flattened, so as to spread the flame in one passage or chamber of the drum 1. A cup 11 is connected with the burner to receive a small quantity of the hydrocarbon when starting the burner preliminary to heating the same, so as to vaporize the oil on its way to the burner. The hydrocarbon is supplied to the burner by means of a pipe 12, which is connected with a reservoir or font 13, located at a safe distance above the tube 2. The valve

for controlling the supply of vapor to the burner is controlled by means of bevel-gearing 14 and a vertical stem or rod 15, the companion elements of the bevel-gearing being secured to the proximal ends of the valve stem and rod 15, as shown most clearly in Fig. 2. The pipe 12 and rod 15 are connected by ties 16 in such a manner so as to enable their use in removing and placing the burner in position. An operating-handle 17 of any design is fitted to the upper end of the rod 15 for rotation of the latter to open and close the valve, as will be readily comprehended.

The heater can be used in connection with a water-trough to preventing freezing of the water in cold weather or may be placed in a tank or other receptacle for cooking or heating feed of any character. The flattened form of the drum 1 admits of the head being radiated to the best possible advantage, and the partition 3 therein insures a circulation of the heat through the entire extent of the drum. When it is required to start the heater, the burner is removed and a small quantity of oil is placed in the cup 11 and ignited and heats the burner, so as to convert the hydrocarbon into combustible vapor, which when ignited is consumed at the opening of the burner. After the flame has been started the burner is replaced by passing it through the tube 2 into the drum, the partition 8 being turned aside, so as to admit of the burner being passed through the tube, and after the burner is properly positioned the partition 8 is turned so as to divide the tube into the flues 6 and 7, the flue 6 admitting air to support combustion and the flue 7 providing an exit for the hot air after circulation through the drum and tube.

Having thus described the invention, what is claimed as new is—

In a water-heater, the combination of a drum, and a vertical tube communicating with one end of the drum, said drum and tube being divided by vertical partitions, the partition of the tube being hinged to the side thereof, and a removable burner adapted to be lowered into said tube and to extend into one side of the drum, said burner being of greater length than the width of said tube, substantially as described.

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

ELECK PAULSON. [L. S.]

Witnesses:
A. E. ROBERTS,
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