

UNITED STATES PATENT OFFICE.

JOHN R. KIRKPATRICK, OF KENDALLVILLE, INDIANA.

TANK-HEATER.

SPECIFICATION forming part of Letters Patent No. 667,711, dated February 12, 1901.

Application filed May 14, 1900. Serial No. 16,639. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. KIRKPATRICK, a citizen of the United States, residing at Kendallville, in the county of Noble and State of Indiana, have invented a new and useful Tank-Heater, of which the following is a specification.

This invention relates to submerged heaters, and has for its object to provide an improved device of this character which may be conveniently applied to a tank or the like to effectively heat the liquid contents thereof. It is furthermore designed to provide improved means for directing the draft downwardly beneath the grate and upwardly through the bed of fire and also to arrange the grate and ash-pan so as to be conveniently fitted in place within the shell or body of the heater and to be removable therefrom to clean out the ashes.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a vertical central longitudinal sectional view of a submerged heater constructed and arranged in accordance with the present invention. Fig. 2 is a transverse sectional view thereof, taken on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of the combined grate and ash-pan removed from the shell of the heater.

Corresponding parts in the several figures of the drawings are designated by like characters of reference.

Referring to the drawings, 1 designates the body or shell of the heater, which may be of any preferred shape and is herein shown and described as rectangular and having the feet 2 to space the heater above the bottom of the tank in which the device may be placed, so that there may be a free circulation of the water or other liquid beneath the bottom of the heater.

The upper open end of the shell or body of

the heater is partly closed by means of a fixed top or lid section 3, which is provided with an opening 4, which is surrounded by an up-standing flange 5 for the reception of a pipe-section, (not shown,) whereby the smoke and products of combustion may be carried off. It will be understood that this fixed top section is comparatively short and is designed merely to support the stovepipe-section. At this end of the shell there is provided an outwardly-directed lip or flange 6 to facilitate the application and removal of the heater. A removable cover or top plate 7 closes the greater portion of the open upper side of the shell and is provided with a marginal pendent flange 8 at its opposite longitudinal sides and its outer end to embrace the shell and prevent lateral displacement of the cover. The inner end of the cover has no flange in order that it may fit flush against the adjacent edge of the fixed top section, as clearly shown in Fig. 1 of the drawings. At the outer end of the removable cover or opposite the smoke-opening there is provided a draft-opening in the form of a transverse slot 9, which is controlled by a swinging damper-plate 10, which is pivoted upon the upper side of the cover by means of a suitable pivot-bolt 11. At the inner longitudinal side of the draft-opening there is provided a pendent transverse flange 12.

The grate is best shown in Fig. 3 and is in the form of a rectangular box-like frame 13 of a size to snugly fit the interior of the shell of the heater and is open at its top and bottom sides. Each longitudinal side and one end of the grate-frame is provided with a pendent flange 14, which is offset inwardly, as best shown in Figs. 1 and 2, thereby forming inwardly-directed marginal shoulders 15 for the support of the grate-bars 16, which may be separate or cast with the frame of the grate. The rectangular ash-pan 17 is formed of sheet metal and has its opposite longitudinal sides and one end embracing the outer sides of the respective pendent flanges of the grate and secured thereto by means of suitable removable fastenings, as bolts 18, so that the nuts or heads at the outer ends of the fastenings may be flush with or within the outer periphery of the grate in order that the latter may have no projections to inter-

fere with the application and removal thereof. It will be observed that the ash-pan has no end wall at that end of the grate which is without a pendent flange, and secured to this latter end of the grate is a vertical plate 19, which forms a partition extending to the under side of the removable cover and against the outer side of the transverse flange 12 thereof, so as to form, with the adjacent end of the shell and the opposite sides thereof, a draft-passage to conduct a draft of air downwardly and beneath the grate-bars to insure a proper burning of the fuel in the grate. Upon the outer side of the plate or partition 19 are the outwardly-directed lugs 20 to engage the inner side of the adjacent end wall of the shell, and thereby space the partition so that the draft-opening in the cover may lie between the partition and the end of the shell. It will now be observed that the flange 12 of the cover fits against the inner side of the partition-plate, so as to hold the latter and the grate in their proper position should the shell be longer than the grate.

From the foregoing description it will be seen that the present invention provides an exceedingly simple and durable heater in which the parts are few in number and the grate may be readily placed in position and removed, while the ash-pan is connected to the grate so as to be removable therewith and also to provide for a draft to be directed beneath the grate. By having a comparatively large removable cover or top the heater is capable of receiving and burning long sticks of wood, although it is capable of burning any character of fuel. It will also be noted that the walls of the grate extend above the grate-bars, so as to retain thereon any live coals when the grate is taken from the body of the device for cleaning out the ashes.

What is claimed is—

1. In a tank-heater, an outer shell, having a smoke-passage located at the top and at one end thereof, a removable top for the shell and provided with a draft-opening located at that end of the shell which is opposite the smoke-passage, means for controlling the draft-opening, a removable grate fitting snugly the sides of the shell and terminating short of the end wall which is adjacent to the draft-opening, an ash-pan secured to the grate and forming a support therefor, and also having an open end at the draft-opening end of the shell, and an upright partition rising from the grate at the open end of the ash-pan, the upper edge of the partition fitting against the under side of the removable top and at the inner side of the draft-opening, whereby a draft-passage is formed between the partition and the adjacent sides of the shell and leading beneath the grate.

2. In a tank-heater, an outer shell, having a smoke-passage located at the top and at one end of the shell, a removable top for the shell and provided with a draft-opening located at

that end of the shell which is opposite the smoke-passage, a damper-plate for controlling the draft-opening, a pendent transverse flange at the inner edge of the draft-opening, a removable grate fitting snugly the sides of the shell and terminating short of the draft-opening end thereof, an ash-pan secured to the grate and forming a support therefor, and also open at the draft-opening end of the shell, and a partition rising from the grate and at the open end of the ash-pan, the upper edge of the partition fitting against that side of the pendent flange which is next to the draft-opening, and spacing-lugs provided upon the partition and bearing against the adjacent end of the shell, the flange and the lugs forming means for holding the grate against endwise displacement.

3. In a tank-heater, an external shell, and a removable combined grate and ash-pan, comprising a grate-frame fitting snugly the interior of the shell and having inwardly-offset and pendent flanges at all but one side, grate-bars supported upon the shoulders formed by the flanges, and an ash-pan embracing the flanges, and secured thereto by headed fastenings, said ash-pan being open at the end of the grate which has no pendent flange.

4. In a tank-heater, an external shell, and a removable combined grate and ash-pan, comprising a grate-frame fitting snugly the interior of the shell and having inwardly-offset flanges, and an ash-pan embracing the flanges, and removable headed fastenings securing the pan to the flanges, the heads of the fastenings being located against the outer sides of the flanges and within the periphery of the grate.

5. In a tank-heater, an external shell, and a removable combined grate and ash-pan, comprising a grate-frame fitting snugly the interior of the shell and having a pendent inwardly-offset marginal flange at all sides but one, an ash-pan embracing the pendent flanges and having an open end at the end of the grate which has no flange, bolts securing the pan to the flanges, nuts fitted to the bolts and within the periphery of the grate, and an upright partition-plate secured to the grate at the open end of the ash-pan, and provided with spacing-lugs upon the outer face of the plate, said lugs engaging the adjacent side of the shell and holding the grate fixedly in place, and the space inclosed by the partition-plate and the adjacent sides of the shell forming a draft-passage communicating beneath the grate.

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

JOHN R. KIRKPATRICK.

Witnesses:

THOMAS L. GRAVES,
ASHER S. PARKER.