

E. B. WILLS.
TANK HEATER.
APPLICATION FILED MAR. 12, 1910.

966,147.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

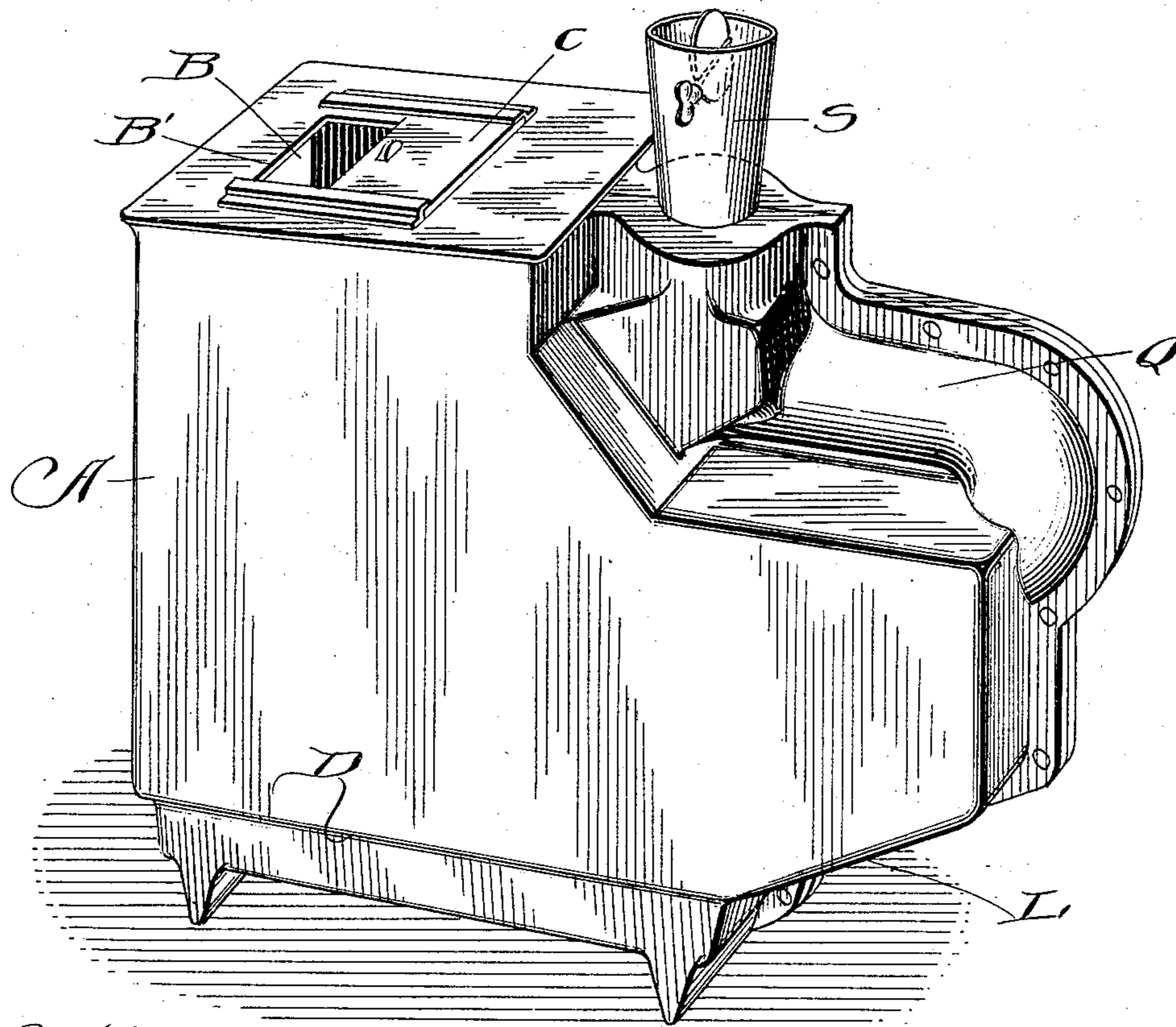


Fig. 1

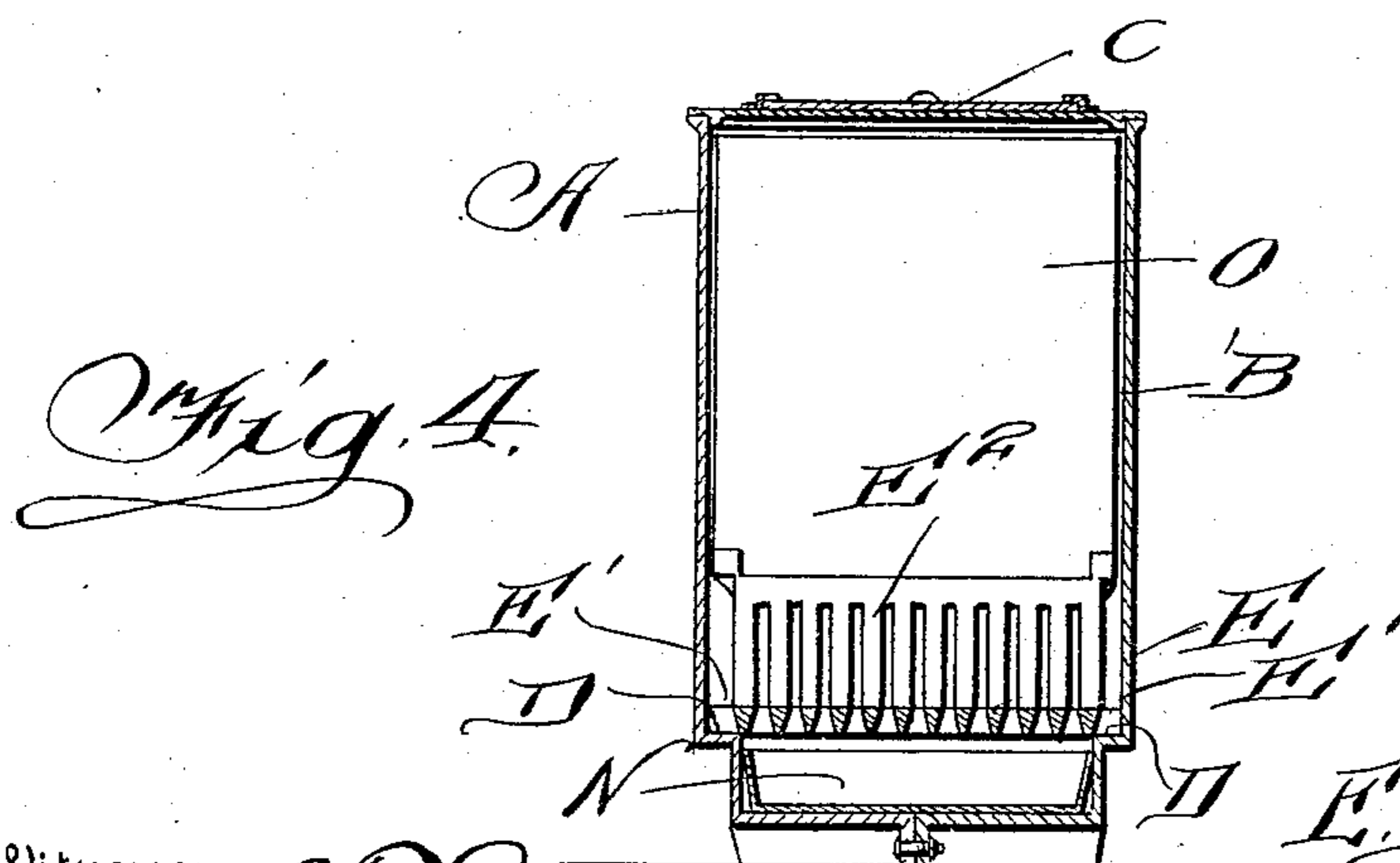


Fig. 4.

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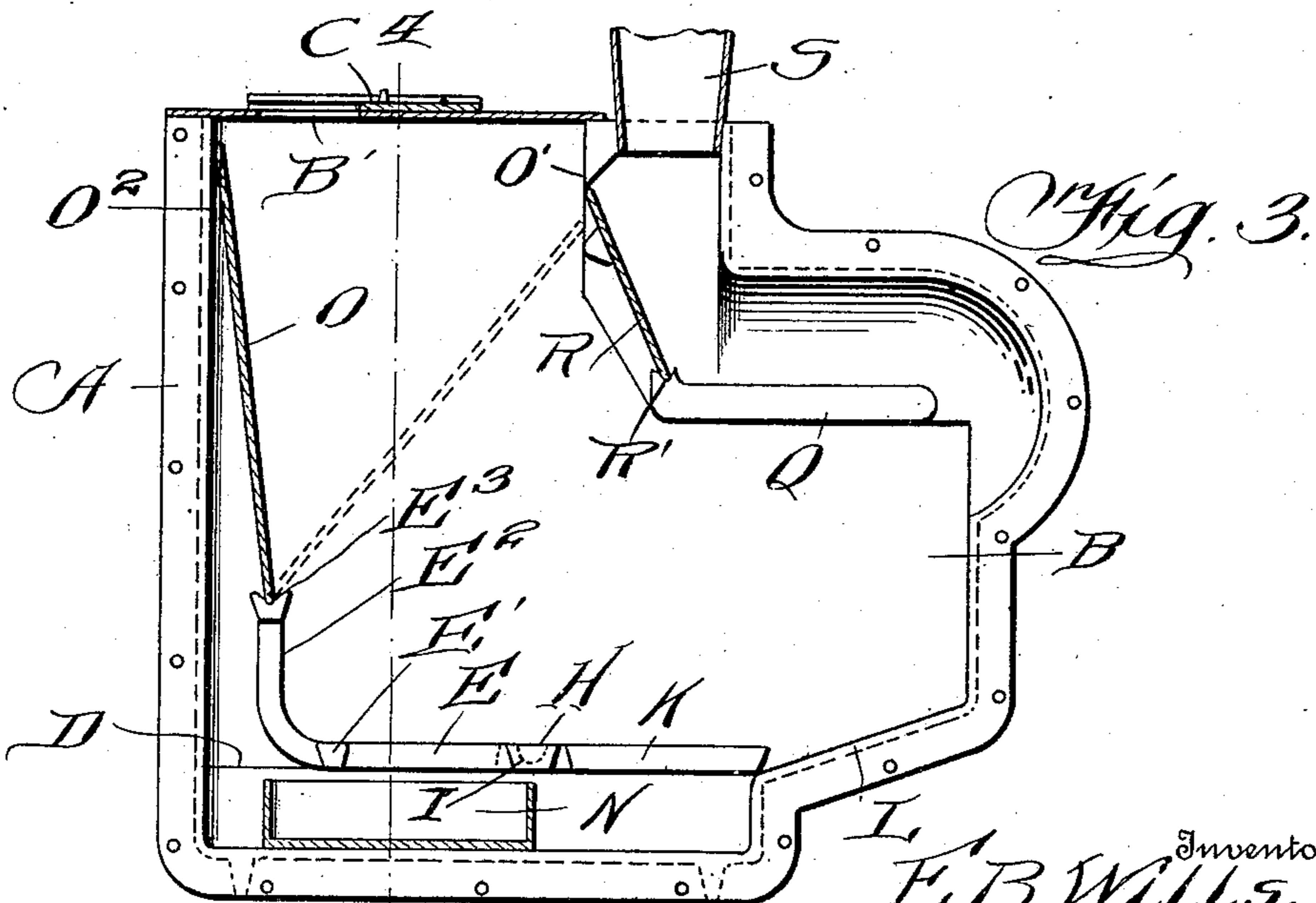
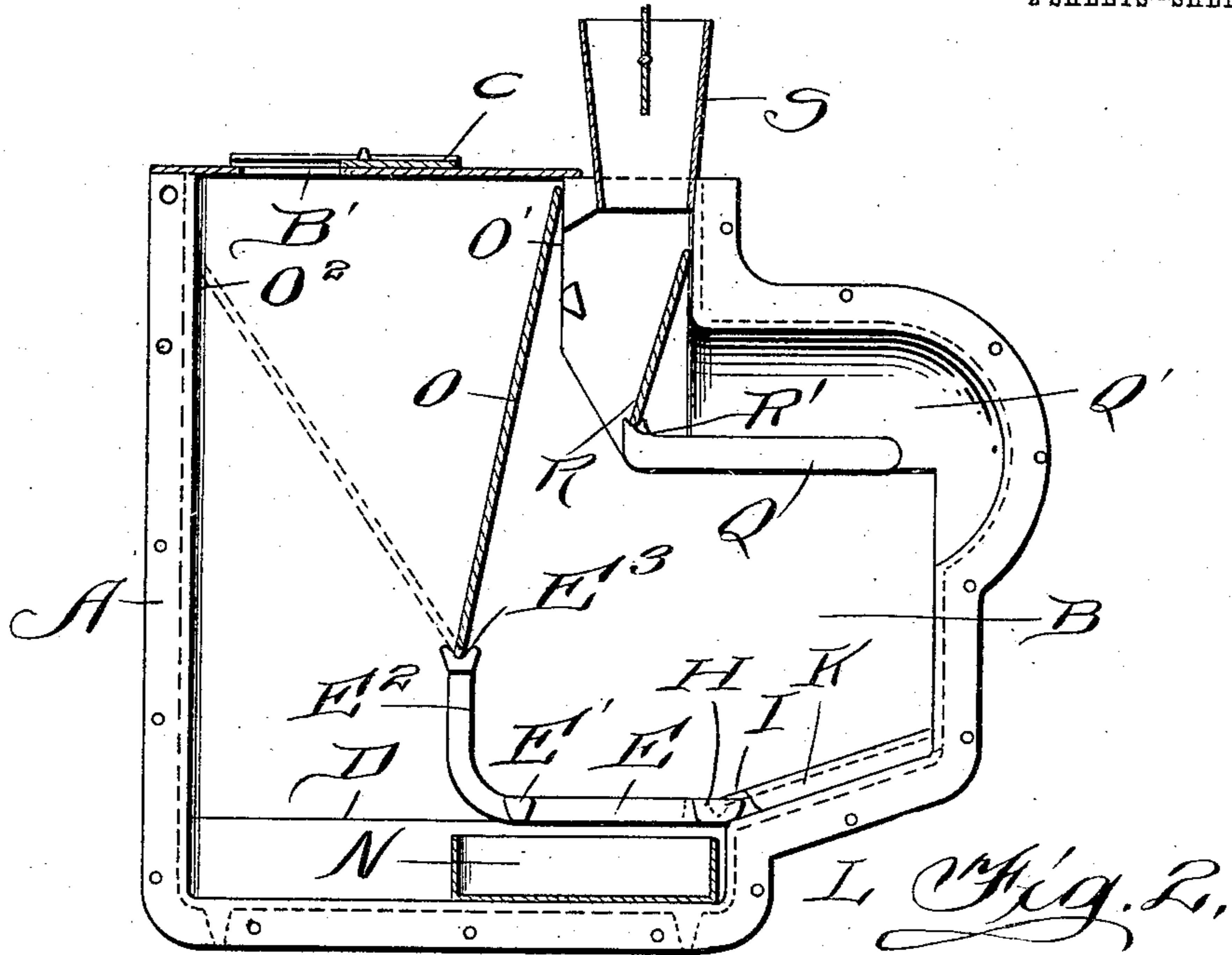
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDGAR B. WILLS, OF MENDOTA, ILLINOIS.

TANK-HEATER.

966,147.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed March 12, 1910. Serial No. 548,918.

To all whom it may concern:

Be it known that I, EDGAR B. WILLS, a citizen of the United States, residing at Mendota, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in Tank-Heaters; 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in tank heaters, the object in view being to generally improve upon the form of construction of apparatus of this nature covered by Patent No. 908,182.

The present invention comprises essentially in a heater a return flue of any shape turning over the fire box to a point near the fuel opening and a pivotal damper within the casing covering the opening above the fire box and adapted to swing so as to admit a direct draft from the fire box to the pipe or to cause the draft to pass through the return flue.

The invention consists further in a heating tank of an adjustable fire box adapted to accommodate different kinds of fuel and provided with a removable grate and also in the provision of a swinging damper mounted upon the movable grate and serving as a partition to guide the fuel in a heater.

The invention comprises various details of construction, combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a perspective view of a heater made in accordance with my invention. Fig. 2 is a vertical sectional view through the heater. Fig. 3 is a vertical sectional view showing the grate at its farthest limit in one direction. Fig. 4 is a sectional view on line 4—4 of Fig. 3.

Reference now being had to the details of the drawings by letter, A designates a heater which may be of any size and made up preferably of two complementary parts bolted together and adapted to be submerged underneath the surface of the water. With-

in said heater is a chamber B having an opening B' in the top over which a sliding door C is mounted. Mounted upon the shoulders D projecting from the inner walls of the casing is a grate E having lugs E' projecting therefrom which rest upon said shoulders and one end of said grate is curved vertically as at E² and has a groove E³ in its upper edge, while its other end is provided with curved lugs H adapted to engage the recesses I formed in an imperforate plate K, affording means whereby the ashes falling upon the same may work down upon the grate E and pass through the openings therein. Said grate E, when interlocked with said plate K, may be moved back and forward and, when adjusted in the position shown in Fig. 2 of the drawings, the plate K assumes an inclined position and the fire box is adjusted to its contracted form, where- as in Fig. 3 the grate and plate connected thereto are horizontally disposed and the apparatus adjusted for a large fuel capacity.

The inclined portion L of the heater and upon which the plate K rests when adjusted as shown in Fig. 2 is grooved as at L' and serving as means to guide the plate K as it is moved back and forth. Underneath said grates is an ash box N which, when the parts are adjusted as shown in Fig. 2, may be moved horizontally and taken out through the opening at one side of the upright portion E² of the grate E. A partition, designated by letter O, rests in the groove E³ and is adapted to be swung into the position shown in solid and dotted lines in Figs. 2 and 3. When said partition assumes the position shown in solid lines in Fig. 2, in which position the damper rests against the wall O' it closes the upper portion of the fire box from communication with the opening B' and affords a passageway leading to the opening B' whereby air for draft purposes may pass through to the grate E and also afford means whereby the ash pan may be removed without disturbing the fire.

Pivotaly mounted in a notch R' formed in one end of the laterally projecting partition Q forming one wall of the return flue Q' is a damper R adapted to be swung from the position shown in Fig. 2 to a position shown in Fig. 3 whereby a direct current may be derived, as shown in Fig. 2, or a return current produced by swinging the

partition R to the position shown in dotted lines whereby the heat may be caused to pass through the return flue and thence through the pipe S.

5 The operation of my invention will be readily understood and is as follows:—When the parts are adjusted as shown in solid lines in Fig. 2, a direct draft will be estab-
10 lished from the grate direct to and through the exit pipe S, the space intermediate the partition O and the opposite wall of the passageway underneath the opening B' af-
15 fording means for supplying air for combustion purposes to the grate, the air pass- ing not only through the openings in the horizontally disposed part of the grate E but
20 also through the openings in the upright part E'. When the partition O is in the position shown in dotted lines in Fig. 2, it will serve
25 as a means for directing the fuel as it is passed through the opening and cause said fuel to fall upon the said grate and plate and, by swinging the damper R to the posi-
30 tion shown in Fig. 3, a circuitous current will be formed through the flue Q'. By the provision of the hinged grate plate, the ashes
35 may be drawn down through the openings in the grate E to the box which may readily be removed without disturbing the fire. By
40 this construction of heater as shown, the fire may be so positioned upon the adjust- able grate as to come within the submerged
portion of the casing. The fuel slide or damper may be removed, if not desired, and
45 may be conveniently taken out of the casing through the opening in the top thereof.

What I claim to be new is:—

1. A tank heater comprising a casing hav-
40 ing an opening therein and adapted to be submerged in water and provided with a return flue, a damper loosely hinged upon the wall of said flue and adapted to have a swinging movement within an exit opening
45 from the casing and cooperating with the wall of the latter and said flue to form a direct and indirect draft, an adjustable grate, shoulders upon the wall of the casing upon which said grate is mounted, an ash
pan underneath said grate, and a swinging

partition upon an upturned portion of the 50 grate.

2. A tank heater comprising a casing hav-
ing an opening therein and adapted to be submerged in water and provided with a
55 return flue, a damper loosely hinged upon the wall of said flue and adapted to have a swinging movement within an exit opening from the casing, an adjustable grate and
plate hinged thereto, said grate being pro-
60 vided with integral hooked lugs, and said plate with recesses engaged by said lugs, a
portion of the bottom of the heater being
inclined and adapted to receive said plate.

3. In combination, in a heater, a casing
having an opening therein and having a
65 laterally projecting wall adapted to coop- erate with the wall of the casing to form a return flue, a damper pivotally mounted in a recess at one end of said wall and movable
70 within a passageway leading to an exit pipe and cooperating with the wall of the casing and said flue to form a direct and indirect draft, a grate having a vertically
disposed portion which is grooved at its
75 top, its other end having curved lugs, a partition pivotally mounted in said groove,
a plate having recesses in its opposite edges
and engaged by said lugs, and an ash pan
beneath said grates.

4. In a heater, the combination with a
80 casing having an opening therein and hav- ing a return flue and an exit opening, a damper pivotally mounted underneath said exit opening, a portion of the bottom of the
casing being inclined, a grate movable upon
85 shoulders upon the casing and having an upturned portion grooved at its top, a par-
tition pivotally mounted in said groove, lugs upon said grate, a plate having recesses in
90 its opposite edges engaged by said lugs.

In testimony whereof I hereunto affix my signature in the presence of two wit-
nesses.

EDGAR B. WILLS.

Witnesses:

J. R. WOODS,
GILBERT FABER.