

(No Model.)

J. P. STABLER.
SUBMERGED WATER HEATER.

No. 441,338.

Patented Nov. 25, 1890.

Fig. 1.

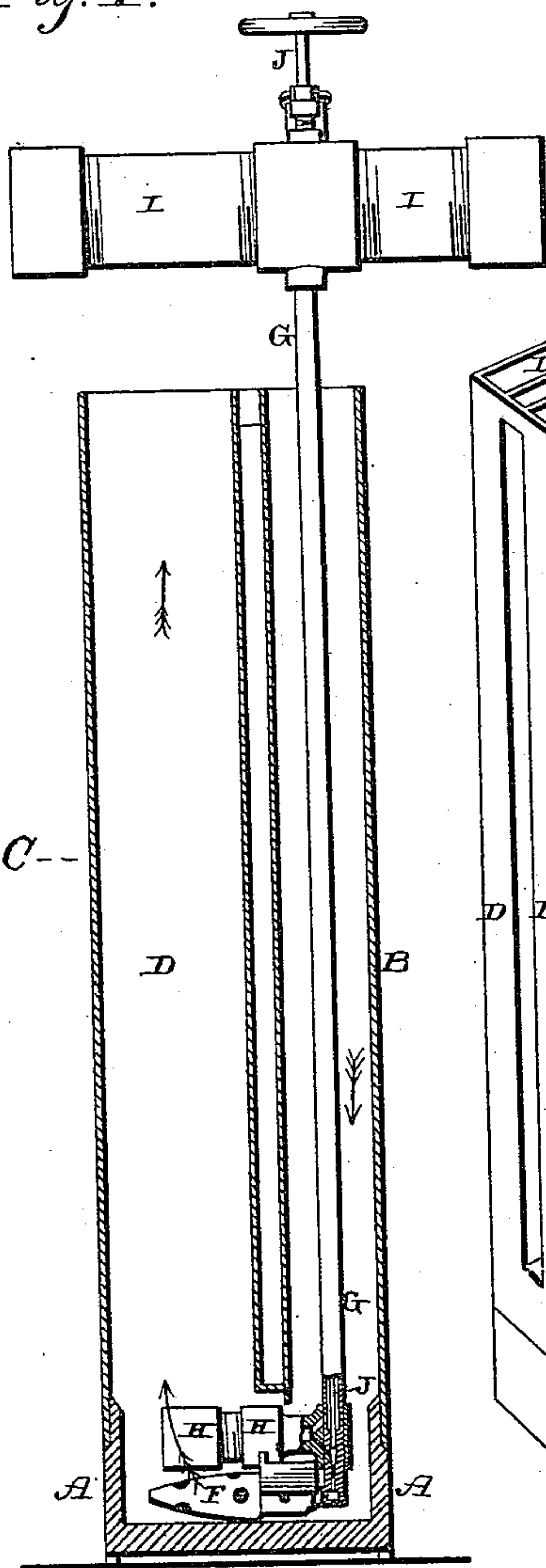


Fig. 2.

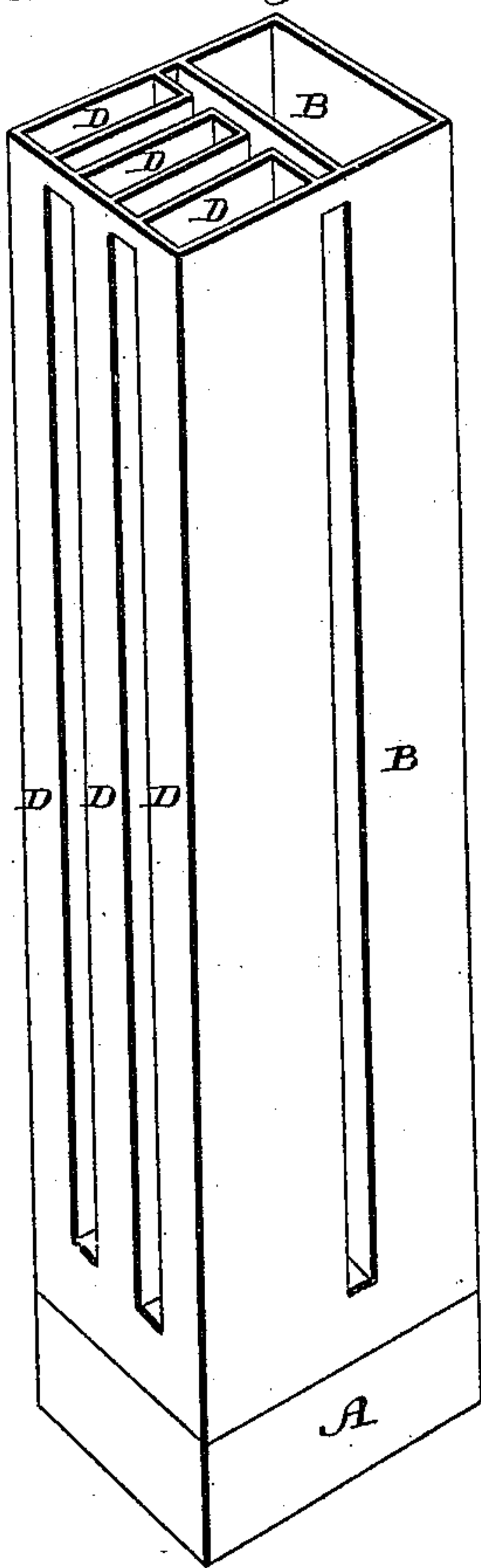


Fig. 3.

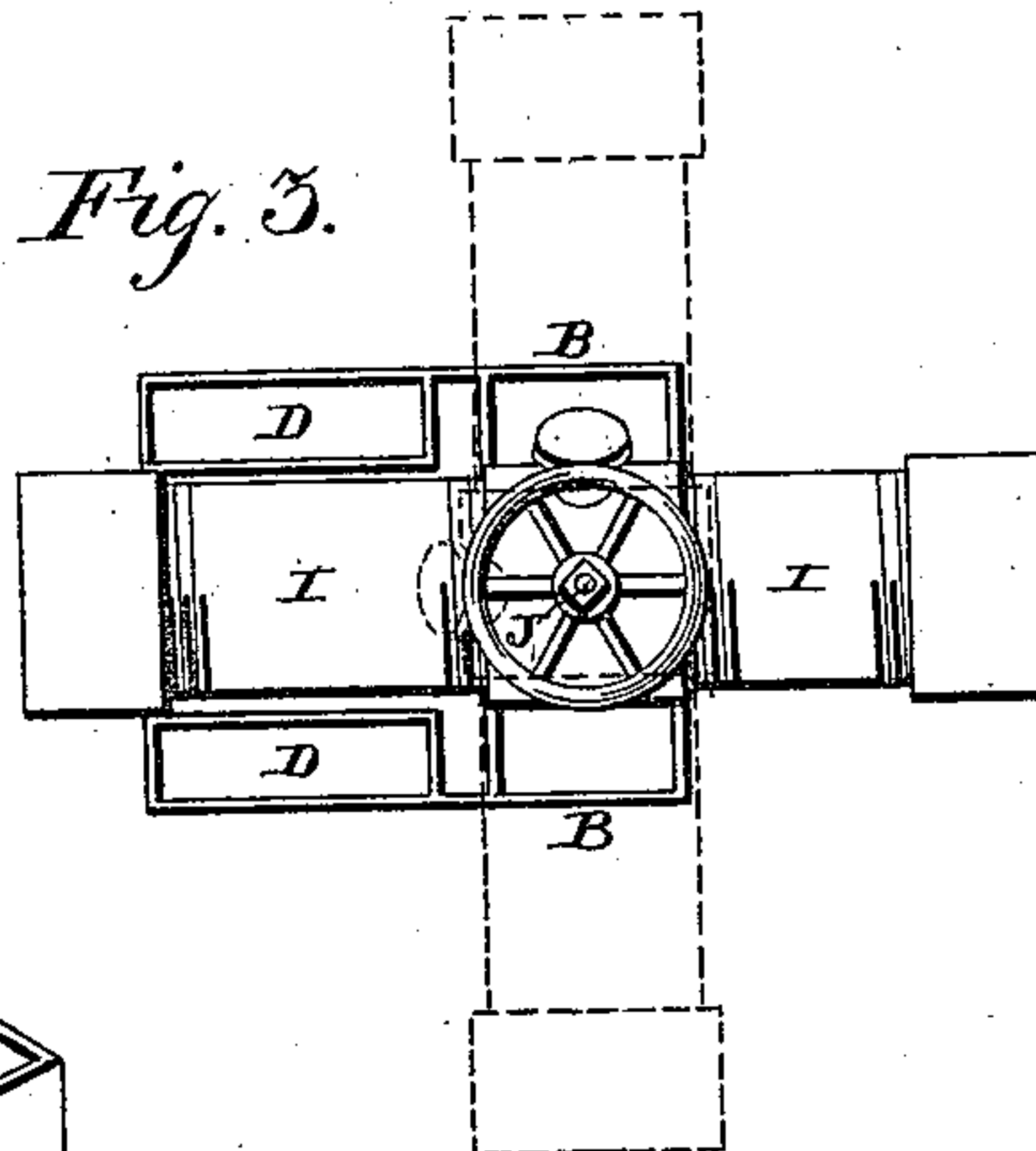
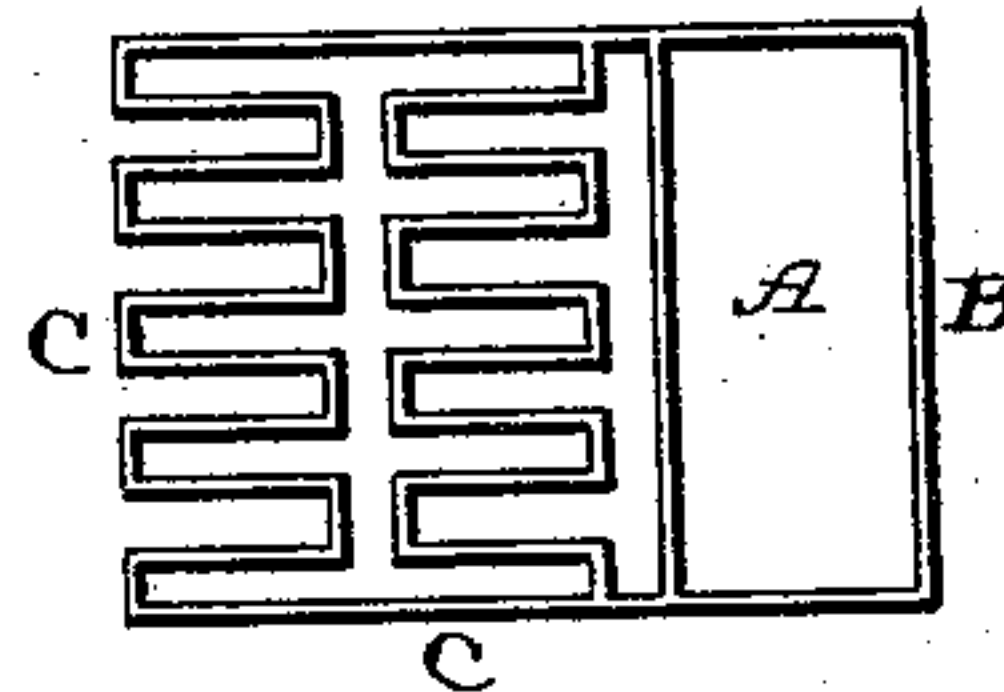


Fig. 4.



Witnesses:

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per
F. A. Lehmann, atty.

UNITED STATES PATENT OFFICE.

JAMES P. STABLER, OF SANDY SPRING, MARYLAND, ASSIGNOR OF PART TO
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AND ROBERT BRUCE DONALDSON, OF WASHINGTON, DISTRICT OF CO-
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SUBMERGED WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 441,338, dated November 25, 1890.

Application filed January 7, 1890. Serial No. 336,171. (No model.)

To all whom it may concern:

Be it known that I, JAMES PLEASANTS STABLER, of Sandy Spring, in the county of Montgomery and State of Maryland, have invented
5 certain new and useful Improvements in Submerged Water-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as
10 it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in submerged water-heaters; and it consists in
15 a water-heater of the particular form and construction to be fully described hereinafter.

The object of my invention is to produce a cheap and simple water-heater in which a
20 burner, constructed as hereinafter described, is used for producing the heat, and which is specially adapted for heating water in barrels, tanks, bath-tubs, laundry-tubs, and wherever a water-heater is desirable.

Figure 1 is a vertical section of a heater
25 which embodies my invention. Fig. 2 is a perspective of the same. Fig. 3 is a plan view. Fig. 4 shows a slight modification in the construction of the flues which conduct the products of combustion.

30 A represents the fire or heating chamber, of any desired shape, size, or construction, but which will preferably be made of cast-iron not only for the purpose of giving the heater a greater amount of durability than it would
35 have if made of sheet metal, but also to give the heater sufficient weight to cause it to remain in position in the water even after the burner has been removed therefrom. Connected to this chamber, either at one side or
40 edge or directly with its top, as is here shown, is a vertical air flue or pipe B, which is made sufficiently large not only to allow the passage of a sufficient quantity of air to supply combustion, but which is made sufficiently
45 large to allow the heating-burner to be freely inserted into or removed from the chamber A through it. Extending from the fire-chamber at one side, or directly from its top, as is here shown, is a single flue or pipe C, which is

formed of corrugated metal, as shown in Fig. 50 4, or a series of separate flues or pipes D, which are not only separated from each other, but from the air-flue B. By separating these pipes from each other a sufficient space is
55 formed between these pipes or flues to allow the water to circulate freely between them, and a much larger heating-surface is formed than if but a single pipe or flue were used. The air flue or pipe B and the flues D will be
60 made of sufficient length to project a distance above the top of the water which is to be heated. If used for only heating water in a
65 bath or laundry tub, not as great a length is needed as if water is to be heated in barrels or deep tanks.

In heating the chamber and the flues D, and through them the water, I use a burner F, so constructed that the flame is radiated therefrom in a direction to impinge directly against the walls of the heating-chamber, and which
70 is connected to the lower end of a vertical pipe G, and which extends to one side of the lower end of the pipe, as shown. In order to generate sufficient heat it is necessary to so construct the burner that the flame therefrom
75 will impinge directly against the walls of the heating-chamber. If the burner is not so constructed and the flame allowed to extend upward, the products of combustion pass directly up the flue without thoroughly utilizing
80 the heat of the flame by direct application to the walls of the chamber and through them to the water, which is in contact with the walls. To this pipe just above the burner
85 is connected a vaporizing-chamber H of any suitable size, and in which a portion of the gasoline or other fluid used for heating purposes is vaporized. Secured to the upper end
90 of the connecting-pipe is a reservoir I of any desired shape, size, or construction, and into which the fluid is poured. A valve-rod J, projecting down through the reservoir and the conducting-pipe and provided with a
95 valve at its lower end, regulates the supply of fluid to the burner and controls the amount of heat desired.

In inserting the burner into position in the heater it must first be turned so as to

extend in a line with the air-flue B, and then after it has been inserted into the chamber A it is given a partial turn, so as to bring the burner into the position shown in Fig. 1. By thus turning the burner partially around it is brought directly into the chamber and away from directly under the lower end of the air-flue, and thus the air is allowed to flow directly to the burner and supply combustion without interfering with it. If this burner were not thus turned the products of combustion would rise through the flues B and D alike, and thus prevent a proper supply of air to the burner, and thus cause the burner to be extinguished. The burner must be turned out of line with the longer axis of the flue B if a proper combustion is to be maintained. If a reservoir is formed, as shown in Fig. 1, it will extend directly across the upper ends of the flues D and be heated to a greater or less extent by the rising products of combustion, and thus prevent the vapor which is generated in the pipe below from becoming condensed.

As this heater has sufficient weight of its own to prevent it from floating, it will remain in position in a barrel, tank, or tub independently of the weight of the burner and its attachments, and hence, even if the burner is removed at any time, the heater will remain in position. The flames from the burner impart their heat directly to the walls of the chamber A, and from this chamber the water receives the greatest amount of heat, and directly at the bottom of the barrel, tank, or tub, and the heated water, rising both from around the chamber and the flues D, causes an active circulation of the water during the whole of the time the burner is in operation.

It will be seen that the upper portion of this heater will be made of any suitable light material and that the parts are few, simple, cheap, and durable, and that there is nothing

in the heater itself that is likely to get out of order.

Having thus described my invention, I claim—

1. In a water-heater, the combination of a heating-chamber, an air-supply inlet-flue, a combustion-outlet flue, and a burner within the heating-chamber having flame-exits opposite the walls of the heating-chamber, whereby the flame impinges directly against the said walls, substantially as shown and described.

2. In a submerged water-heater, the combination of a casing having a vertical air-inlet flue extending across one side thereof and a combustion-flue at the opposite side thereof, being separated at its inner side from the inlet-flue and provided at its outer side with spaces for the water to enter, and the casing having openings for the passage of water into the space between the inlet and outlet flues and to the water-spaces formed in the outer side of the combustion-flue, and a heating apparatus, substantially as described.

3. In a submerged heater, the combination of a casing having a heating-chamber at its lower end, an air-inlet flue at one side thereof and extending to the said heating-chamber, and a combustion-outlet flue at the opposite side thereof and extending to the heating-chamber, and one or more water-spaces formed in the outer side of the combustion-flue and having their lower ends above the said heating-chamber, whereby a heating apparatus can be placed under the said water-spaces, substantially as shown and described.

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

JAMES P. STABLER.

Witnesses:

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