

(No Model.)

D. STUTZMAN.
SUBMERGED HEATER.

No. 462,107.

Patented Oct. 27, 1891.

Fig. 1.

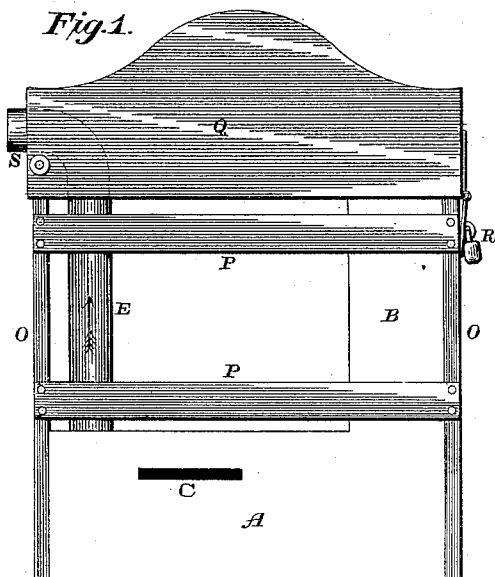


Fig. 2.

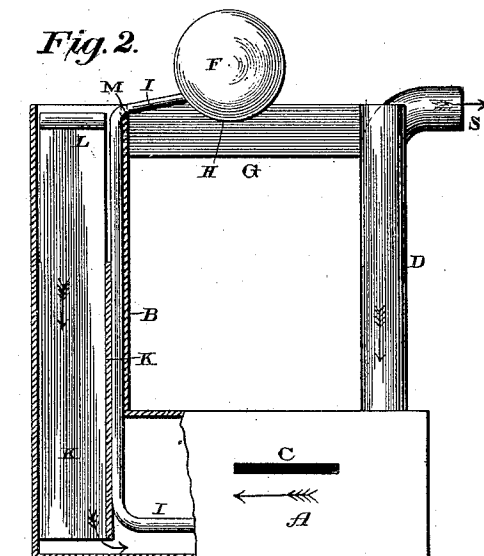
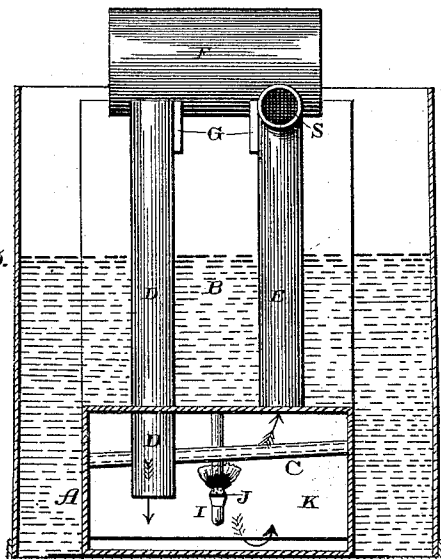


Fig. 3.



Witnesses:

E. O. Ellis,
L. L. Lehmann

Inventor

D. Stutzman,
per
Lehmann & Patterson,
attys.

UNITED STATES PATENT OFFICE.

DAVID STUTZMAN, OF LIGONIER, INDIANA.

SUBMERGED HEATER.

SPECIFICATION forming part of Letters Patent No. 462,107, dated October 27, 1891.

Application filed January 6, 1891. Serial No. 376,868. (No model.)

To all whom it may concern:

Be it known that I, DAVID STUTZMAN, of Ligonier, in the county of Noble and State of Indiana, have invented certain new and useful Improvements in Submerged 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 pertains to make and use it, reference
10 being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in submerged heaters; and it consists in the construction and particular arrangement of parts
15 which will be fully described hereinafter, and pointed out in the claims.

The object of my invention is to provide a submerged heater of the construction herein-
after shown and described, whereby the heater
20 is so constructed that there is a perfect combustion and the heating of the liquid fuel prevented, and to provide a protecting-casing for the heater when in use or when being transported.

Figure 1 is a side elevation of a heater embodying my invention, it being shown placed in the protecting-casing. Fig. 2 is a side elevation of the heater alone, being partly shown in section. Fig. 3 is an end view of the same
30 looking in the direction indicated by arrow shown in Fig. 2.

My heater is composed, essentially, of a horizontal lower portion A, having a vertical portion B extending from one end thereof any
35 suitable distance, and this vertical portion is preferably of the same width as the horizontal portion A. Passing through the portion A, preferably between its ends, is an inclined flat water-passage C, through which water is
40 made to circulate as it is heated, and which will receive further mention hereinafter. Passing vertically through the upper wall of the portion A, at the opposite end from the vertical portion B, is an air-inlet pipe D, which
45 extends downward and has its lower end in close proximity to the lower wall of the said portion. Also extending through the said wall of the portion A, at the same end thereof as the pipe D, is an outlet-pipe E, which has
50 its lower end to just extend through the upper wall of the portion A.

F indicates a reservoir in which is placed liquid fuel, preferably gasoline, and this reservoir rests, preferably, upon the horizontal supports or stays G, which have their ends
55 connected, respectively, to the upper ends of the pipes D E and to the upper end of the inner vertical wall of the portion B. In order to hold the reservoir firmly in its proper place upon the supports G, they are provided with
60 circular recesses H, in which the reservoir is placed. A supply-pipe I has its upper end extended horizontally from the reservoir to the inner side of the inner vertical wall of the
65 portion B and then downward against the said wall and within a suitable distance of the bottom of the horizontal portion A. The pipe I then extends horizontally forward and has attached to its forward end a burner J,
70 which is directly under the inclined water-passage C. The supply of liquid to the burner will be regulated by means of a valve of any suitable construction, which will have, preferably, an operating-rod, which extends
75 to the top of the vertical portion B. A U-shaped sheet of metal K is placed in the vertical portion B against its inner wall outside of the supply-pipe I, which forms a damper for regulating the amount of air which shall pass
80 through this portion to the horizontal portion A. One of the side walls of this damper K extends upward and is formed into a handle L above the top of the portion B, by means of which the damper is raised and lowered,
85 and the opening at the lower end of the portion B thus contracted or enlarged, as desired, to regulate the inflow of cold air at this end of the horizontal portion A. The upper horizontal part of the supply-pipe I rests in a
90 notch M, made in the inner wall of the portion B, and which, together with the damper K, holds the supply-pipe I firmly in its proper position. By means of this construction I am enabled to prevent the heating of the liquid
95 in the reservoir for the reason that the reservoir is directly over the water being heated and not in close proximity to any part of the heater, while at the same time the liquid fuel is sufficiently heated as it passes through the
100 lower horizontal portion of the pipe to cause a generation of vapor. It will also be noticed that cold air is admitted at each end of the

horizontal portion A, so that back-drafts are absolutely prevented in my heater, which in other heaters has heretofore been a very objectionable and impracticable feature. Where
5 back-drafts occur in a submerged heater, the flame is gradually extinguished or so reduced because of imperfect combustion that but little heat is generated therefrom. The water
10 is heated much more quickly by having the burner directly under the inclined passage C, as the heated water moves up the incline and is replaced by the colder water, thus causing a continuous circulation of the water which is being heated.

15 For the purpose of protecting the heater, which is composed of sheet metal of any suitable kind, but preferably galvanized sheet metal, I provide a casing or crating which consists of the corner-posts O, which are
20 united by the transverse strips P, and hinged to one side of the upper end of this crating is a cover Q of sheet metal. This cover is bulged upward, as shown, so as to provide sufficient space for the reservoir, and has applied to its opposite end a lock R. By means
25 of this arrangement the heater is entirely protected against damage when in or out of use or when being transported, and the cover Q protects the heater from rain or other
30 storms, which would fill the heater with water and cause the flame to be extinguished thereby or by blasts or sudden currents of air being forced through the heater. In order to prevent the heated air which escapes
35 from the exit-pipe E from entering the cover and thus heating the reservoir, the upper end of the pipe is turned outward through the cover, as shown at S. By this means only cold air is admitted under the cover, while the
40 heated air is conveyed outside. Another object of this cover is to prevent any one tam-

pering with the heater after it has once been properly adjusted and set to working.

Having thus described my invention, I claim—

45 1. The submerged heater consisting in the combination of the lower elongated horizontal heating-chamber, the inclined water-passage extending transversely therethrough, the vertical inlet-flue opening into one end of said
50 chamber, the vertical escape-pipe from the top of the other end of said chamber, the vertical inlet-pipe into the same end as said escape-pipe, opening into the chamber near the bottom thereof, as set forth, supports at the upper
55 ends of said pipes and flue, and the elevated tank carried thereby and provided with a supply-pipe terminating in a burner beneath said inclined water-passage, substantially as shown and described.

60 2. In combination, the horizontal heating-chamber having the inclined water-passage passing therethrough, the large vertical inlet-flue B, opening into one end of said chamber, the vertically-movable damper K therein, reg-
65 ulating the opening into the chamber, the vertical escape-pipe from the opposite end of the chamber, the vertical inlet-pipe D at said opposite end of the chamber, opening near the bottom thereof, the supporting-beams G, se-
70 cured to the upper ends of said pipes and flue, the tank on said pipes having the pipe extending down said flue and terminating in a burner beneath said water-passage, substantially as specified.

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

DAVID STUTZMAN.

Witnesses:

THOMAS PRICKETT,
JOHN WEIR.