E. E. GOLD.

Tubular-Heater.

No. 198,766. Patented Jan. 1, 1878.

Fig. 1.

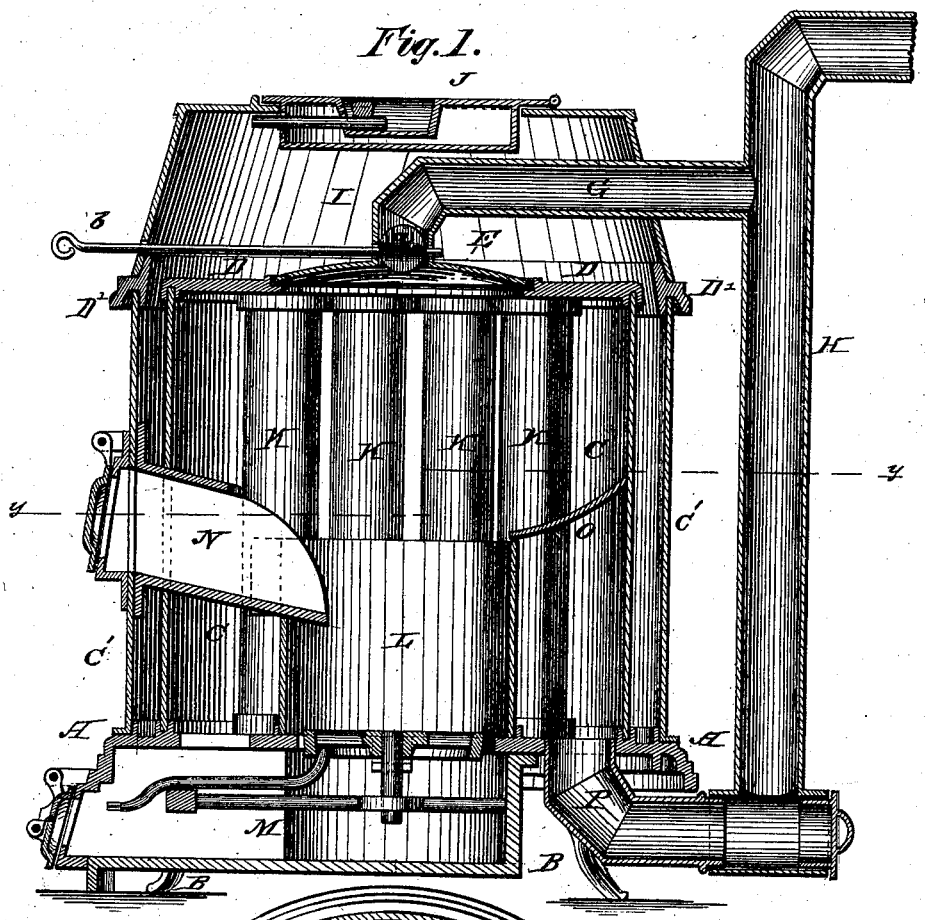
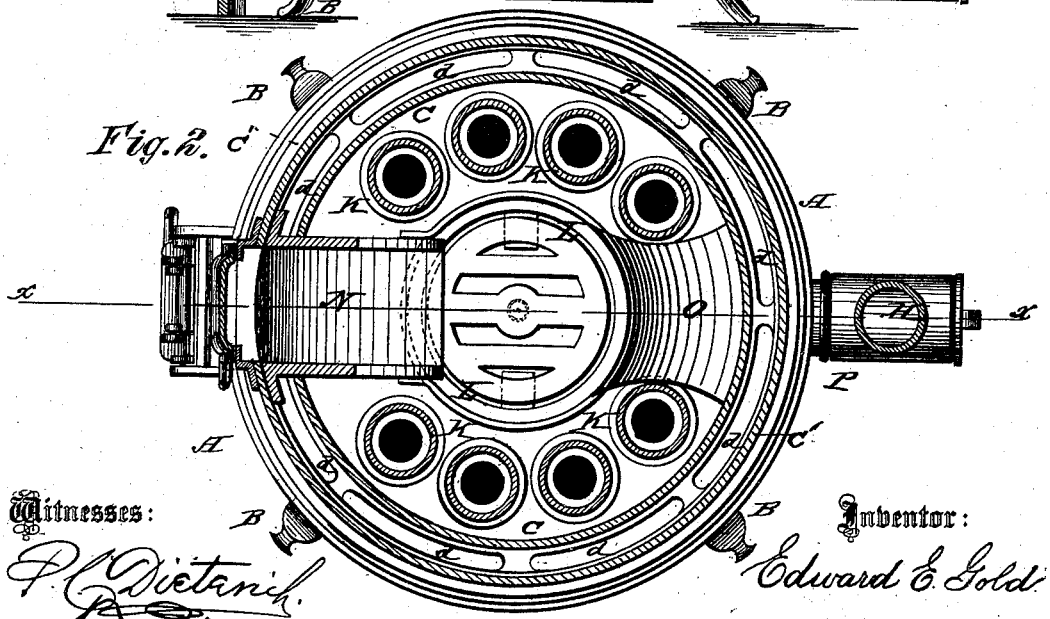


Fig. 2.



Witnesses:

P. C. Dieterich.

Frank H. Duffy

Inventor:

Edward E. Gold.

Per C. H. Watson & Co. Attorneys.

UNITED STATES PATENT OFFICE.

EDWARD E. GOLD, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN TUBULAR HEATERS.

Specification forming part of Letters Patent No. **198,766**, dated January 1, 1878; application filed December 10, 1877.

To all whom it may concern:

Be it known that I, EDWARD E. GOLD, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Tubular Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 of reference marked thereon, which form a part of this specification.

The nature of my invention consists in the construction and arrangement of a heater, as will be hereinafter more fully set forth.

The annexed drawings, to which reference is made, fully illustrate my invention, and in said drawings—

Figure 1 is a central vertical section on the line *x x*, Fig. 2. Fig. 2 is a horizontal section on the line *y y*, Fig. 1.

A represents the base of the heater, supported upon legs B B; and upon this base are placed two cylindrical concentric shells, C and C′. The inner shell is provided with an annular top plate, D, having a center cover, E, from which a pipe, G, extends out to the smoke-pipe H. The outer shell C′ is provided on its upper edge with a ring, D′, which supports the top I of the heater, said top being in the center provided with a hinged cover, J, as shown. In the pipe G is a damper, *a*, operated from the outside of the furnace by a rod, *b*. Inside of the inner shell C is a series of pipes, K K, passing through the base A and the plate D, for the passage of air to be heated. These pipes or flues are arranged in a circle, and surround the fire-box L, which is on the center of the base A. Below the base A, under the fire-box, is the ash-pit M, extending to one side, as shown. In the base A are also a number of openings, *d*, to admit cold air in between the two shells C C′. N is the chute for admitting fuel to the fire-box. This chute is on an incline, and passes through both shells, C C′. Directly opposite this chute is an inclined deflecting-plate, O, extending from the top of the fire-box to the inner shell. Under this deflecting-plate a pipe, P, passes out through the base A, and connects with the smoke-pipe H.

When the fire is started the damper *a* in the plate or diaphragm E is left open, so that the smoke, &c., can pass directly to the smoke-pipe; but when the fire gets under way this damper is closed, which drives or compels the smoke and heat to entirely envelop the air-tubes K, and pass down around said tubes. The heat is deflected by the fuel-chute N and plate O, so as to spread the heat all around, and then it passes through the pipe P to the smoke-pipe.

The tubular heater, it will be seen, is raised so as to permit the ash-pit M being placed below and outside of the heater, giving room for the fire-box at or near the bottom of the heater. This construction admits of the largest possible heating-surface.

The hot air is to be conducted from the heater to the room or rooms where needed by pipes and registers arranged in any of the well-known and usual ways.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a tubular heater, the diaphragm E, arranged at the top of the tubes, and provided with pipe G, having damper *a*, in combination with the chute N, serving as a deflector upon one side, and the deflector O upon the opposite side, the fire-box L at the bottom of the heater-shells C C′, and top D, substantially as and for the purpose set forth.

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

EDWARD E. GOLD.

Witnesses:

C. M. WATSON,

PAUL VON FRANKENBURG.