A. WINTON.

Furnace-Grate for Steam-Generators.

No. 168,075. Patented Sept. 21, 1875.

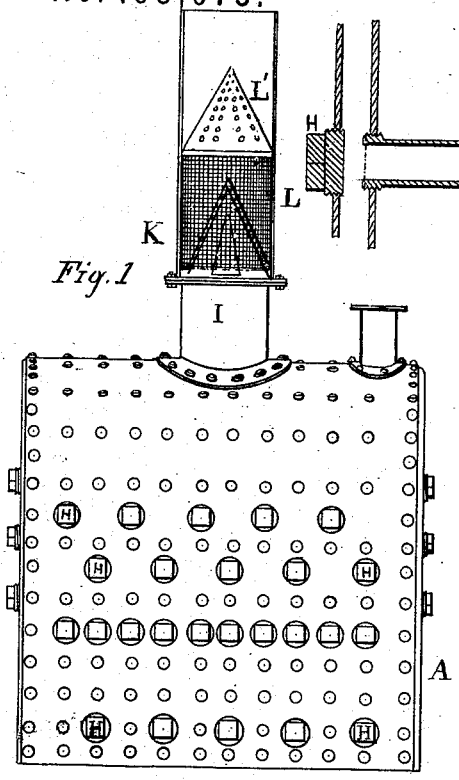

Fig. 1

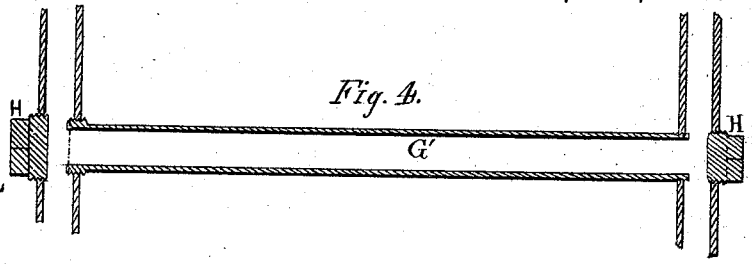

Fig. 4.

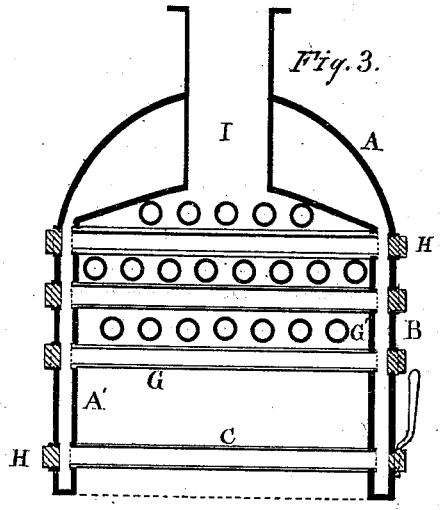

Fig. 3.

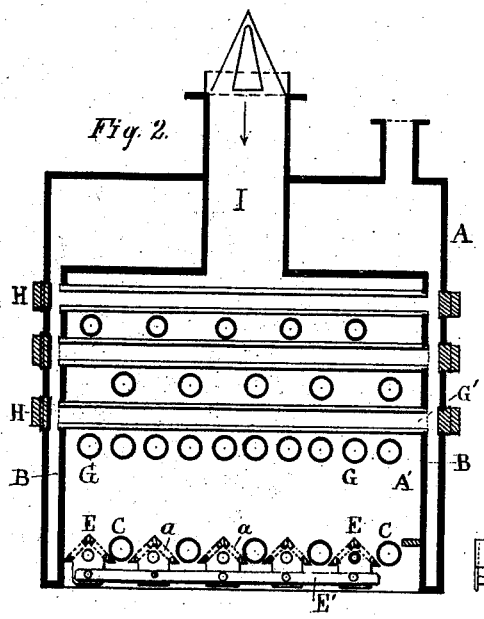

Fig. 2.

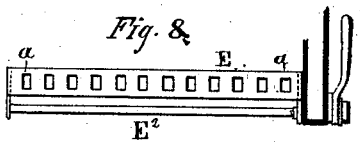

Fig. 8.

Attest
E. M. Connell
E. A. Bulley

Inventor
Allen Winton
By Blanchard & Singleton
Attys.

UNITED STATES PATENT OFFICE.

ALBERT WINTON, OF MIDDLETOWN, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO EPHRAIM G. FISHBURNE, OF SAME PLACE, AND JACOB S. ENGLE, OF PALMYRA, PENNSYLVANIA.

IMPROVEMENT IN FURNACE-GRATES FOR STEAM-GENERATORS.

Specification forming part of Letters Patent No. **168,075**, dated September 21, 1875; application filed March 20, 1875.

To all whom it may concern:

Be it known that I, ALBERT WINTON, of Middletown, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Generators; 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 pertains 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—

Figure 1 being a side elevation, partly in section, of a steam-generator, having my improvement applied thereto. Fig. 2 is a longitudinal sectional elevation, showing the arrangement of the compound grate. Fig. 3 is a transverse sectional elevation, showing the arrangement of the tubes in the fire-box and the handle for moving the grates. Fig. 4 is a sectional elevation of one of the tubes, and a portion of the fire-box and shell of the generator, with the arrangement of the screw-plugs, which close the apertures through which the tubes are inserted. Fig. 5 is a side elevation of one of the oscillating grate-bars, and of the handle for operating the same.

Corresponding letters refer to like parts in the several figures.

This invention relates to steam-generators; and it consists in the combination and arrangements of some of the parts of which it is composed, as will be more fully described hereinafter.

In constructing generators of this type I form a shell, A, of any desired dimensions, within which there is placed a fire-box, A′, which is similar in form to the shell A, but is of smaller dimensions, in order that when inserted in said shell it shall leave between its outer surface and the inner surface thereof, a water-space, B, as shown in Figs. 2 and 3. This fire-box is secured within the shell in the usual manner—that is, by having a flange turned upon its lower end, through which rivets pass, or there may be a bar of metal inserted between the two, through which the rivets may pass, as well as through the sheets of the shell and fire-box. For holding the upper portion of this box in position and for strengthening it and the shell, stay-bolts of the usual form are used. Near the lower portion of the generator, and extending transversely from side to side of the fire-box thereof, tubes C C are inserted, they being placed at such distance apart as to admit of there being arranged between them an oscillating grate-bar, D, as shown in Fig. 2. These tubes terminate in the side sheet of the fire-box, and thus they are made to form water communications between the water-spaces on each side of said box, they being supplied with water from the chamber or spaces B B. Between the tubes C C, which form portions of the grate upon which the fuel rests, there are placed V-shaped and perforated grate-bars E E, which are so arranged as to act in conjunction with the tubes C C, and thus form a compound grate, and in order that these V-shaped bars may be oscillated for the purpose of clearing the furnace of ashes and clinkers they have upon their ends plates through which pass parts secured to the generator, and upon which they can turn, one of these plates being extended downward in the form of an arm, to the lower end of which there is secured a bar, E^1, which is connected with all of the oscillating bars E, they being moved by means of a rod, E^2, which extends across the generator, and is provided with a handle, E^3, upon the outside thereof.

This arrangement of grate enables me to use a portion of its surface as heating-surface, and at the same time provides for the proper cleaning out of ashes and other deleterious substances from the fire by oscillating the triangular portion thereof.

In order that these tubes may be inserted in, and removed from, the box when it is in its position within the shell perforations are formed in said shell, as shown, said perforations being of such diameter as to allow the tubes to pass freely through them, and are filled with screw-plugs H H, which form tight joints with the shell, but which may be re-

moved at any time for removing, replacing, or cleansing the tubes.

Fig. 4 represents a tube as drawn on an enlarged scale for the purpose of showing how it is constructed, in order that it may be inserted when the fire-box is in position.

It will be observed that a thread is formed upon its surface at one of its ends, while at its other there is formed upon it a collar, which is of greater diameter than the tube, but not of so great a diameter as that of the aperture in the shell. By this means it can be inserted or removed by unscrewing one of the plugs H, and then screwing in or unscrewing the tubes.

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

The combination, in a steam-generator, of alternate inverted V-shaped oscillating grate-bars and tubular water-bars, they being arranged to operate substantially as set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

ALBERT WINTON.

Witnesses:

JNO. A. WITMAN,

JOHN MCCREARY.