

W. ALLENSWORTH.
Boiler-Furnace.

No. 159,138.

Patented Jan. 26, 1875.

FIG. 1.

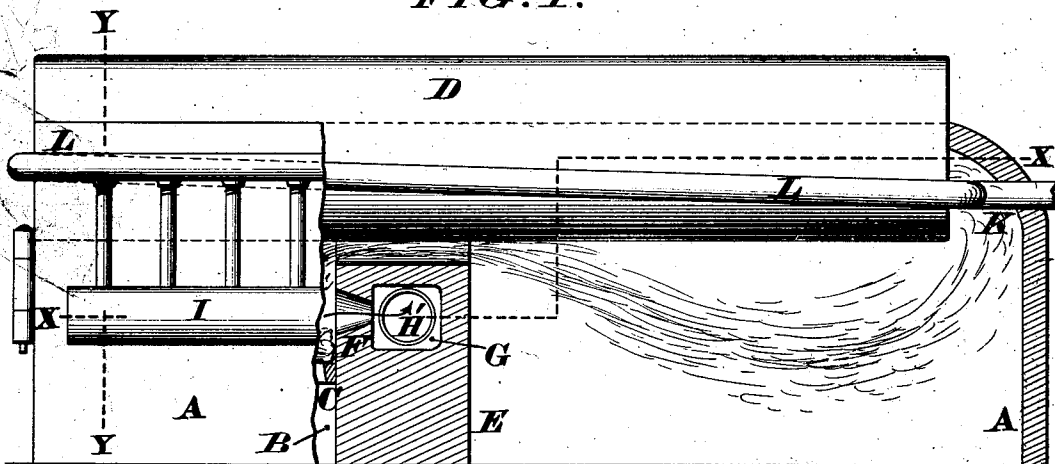


FIG. 2.

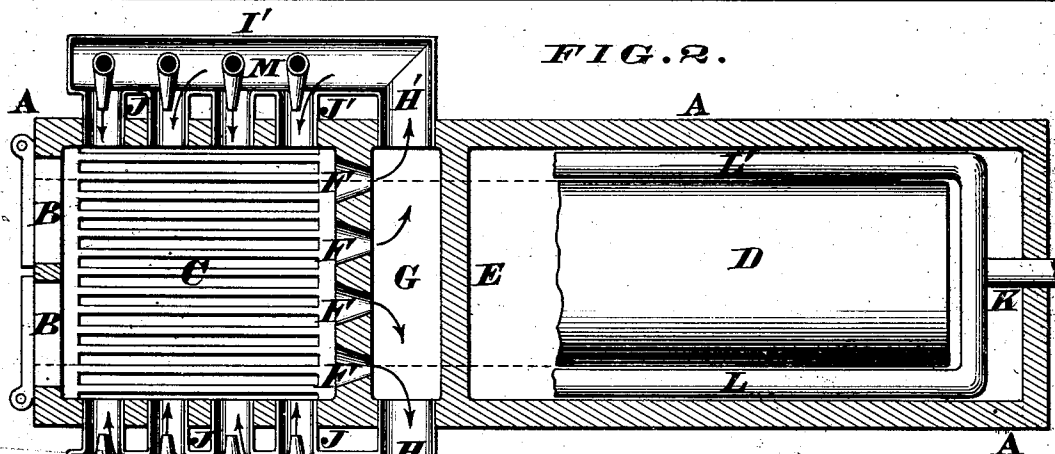


FIG. 4.

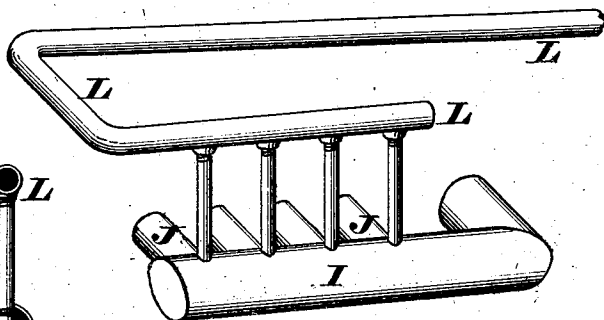
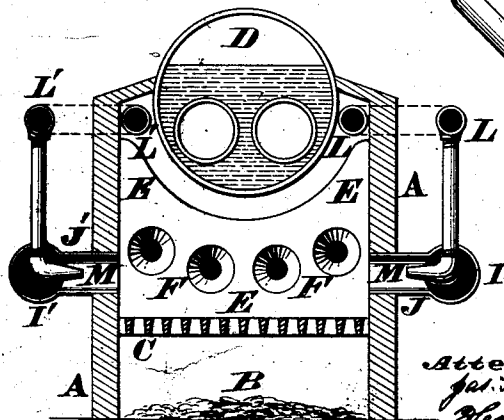


FIG. 3.



Attest.
Jas. H. Layman
Henry Tamm

William Allensworth
My Knight & Sons. Att'ys.

UNITED STATES PATENT OFFICE.

WILLIAM ALLENSWORTH, OF TROY, OHIO.

IMPROVEMENT IN BOILER-FURNACES.

Specification forming part of Letters Patent No. 159,138, dated January 26, 1875; application filed October 12, 1874.

To all whom it may concern:

Be it known that I, WILLIAM ALLENSWORTH, of Troy, Miami county, Ohio, have invented a new and useful Improvement in Steam-Boiler Furnaces, of which the following is a specification:

The object of my improvement is to secure a more perfect combustion within the furnace, and is effected by means of a series of passages within the bridge-wall, having their inlets directed toward the fire-place, so as to receive the heavier and more carbonaceous products of combustion, which passages communicate, by side ducts or pipes, with a series of nozzles, which discharge into the furnace on both flanks, their draft being assisted by means of a series of steam-jets, one within each nozzle, which jets may be supplied either from the exhaust-pipe or with live steam by communication with the boiler direct.

The effect of this attachment is to produce an intensely incandescent arch of flame entirely over the mass of fuel in the fire-bed—in which the combustible residue are completely consumed—and, being highly heated and volatilized, escape over the top of the bridge-wall into the flue in a nearly transparent or smokeless condition.

In the accompanying drawing, Figure 1 is a partially-sectionized side elevation of a steam-boiler furnace provided with my improvement. Fig. 2 is a section in the line X X. Fig. 3 is a section in the line Y Y. Fig. 4 is a perspective view of a portion of the apparatus detached from the furnace.

A represents the furnace-wall; B, fire-place; C, grate, and D, boiler, all of which parts may be of ordinary or any suitable form. My bridge-wall E has a series of flaring apertures, F, which enter a common chamber, G, within said wall. This chamber communicates, by passages H H', with pipes I I', which, bending rectangularly forward, occupy a horizontal position just outside of and parallel with the wall of the furnace. A series of branches, J J', extending from pipes I I', pass through the furnace-wall and enter the fire-chamber on opposite flanks.

K is a pipe, which carries exhaust steam from the engine, and which, traversing the furnace-wall, enters and passes along the interior of the fire-chamber by two branches, L L', which, again emerging from the said chamber, terminate in a series of nozzles, M, that enter the pipes I I', and, bending rectangularly, occupy an axial position in the branches J J', one nozzle in each branch.

In places where the exhaust steam is appropriated to other uses the forced draft in the nozzles M may be produced by fans discharging air into the pipe K, or live steam may be turned in from the boiler direct.

The operation of my attachment is as follows: The fire having been started in the furnace, and the engine being set to work, the steam which escapes from the engine passes, by pipe K L L' and nozzle M, into the branches J J', and by so doing causes a draft from the fire-chamber into the flaring inlets F of the chamber G within the bridge-wall, and thence through pipes I I' and branches J J' into the furnace on both flanks.

The passage of the exhaust steam, by means of the pipes L L', through the heart of the furnace causes said steam to become highly superheated, and materially conduces to its effectiveness.

I claim as new and of my invention—

As an improvement in steam-boiler furnaces, the chambered bridge-wall G, having front perforations F, and communicating, by end passages H H', side pipes I I', and branch pipes J J', with both flanks of the fire-chamber, in combination with pipe K, connected by branches L L', traversing the heart of the furnace, with nozzles M placed within the branch pipes J, for conducting superheated exhaust steam, as and for the purpose set forth, the whole arranged to operate within the fire-chamber, substantially as described.

In testimony of which invention I hereunto set my hand.

W. ALLENSWORTH.

Attest:

GEO. H. KNIGHT,
O. P. CAYLOR.