

L. STEVENS.
Gas-Furnaces.

No. 141,180.

Patented July 22, 1873.

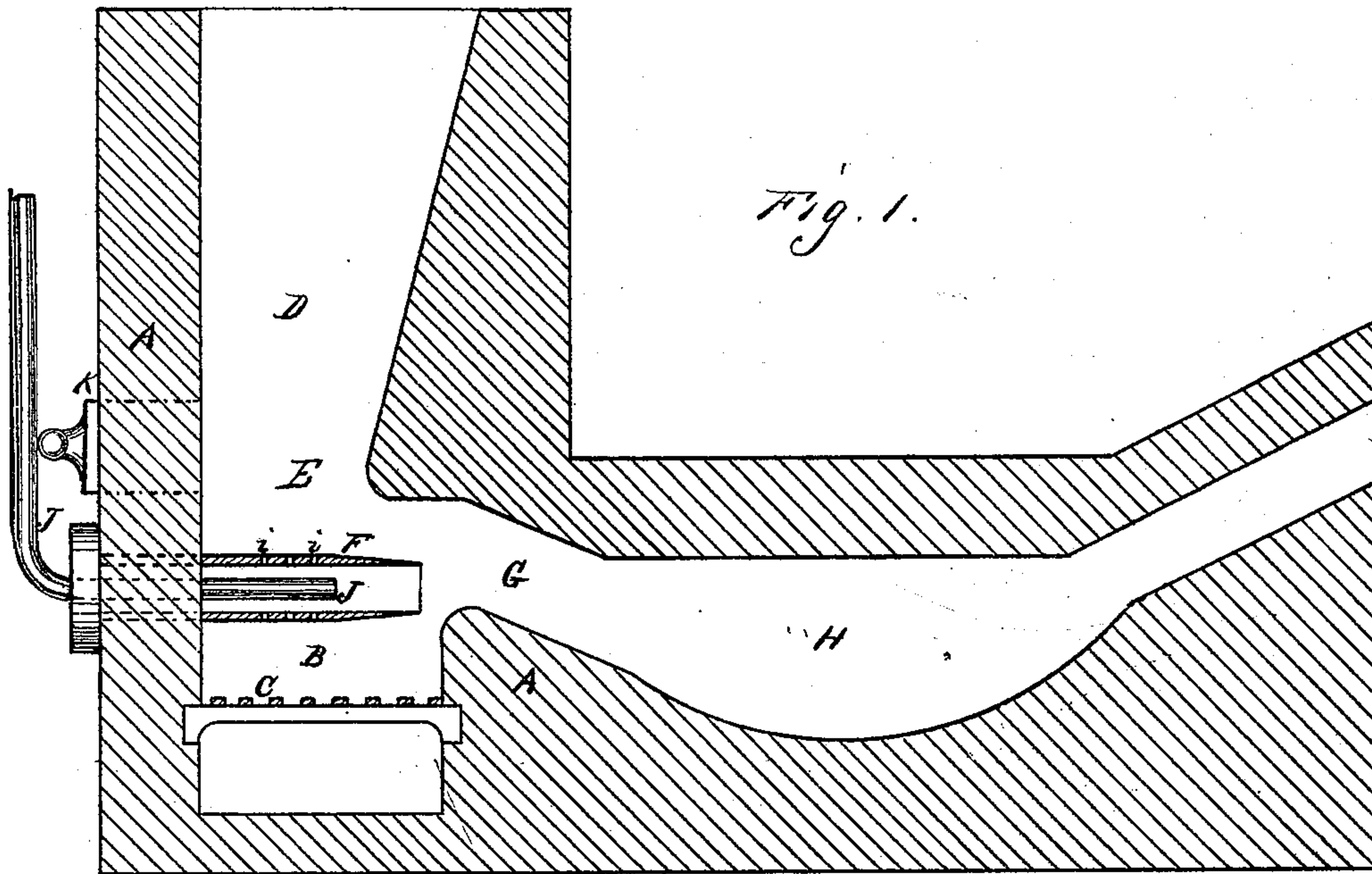


Fig. 3.

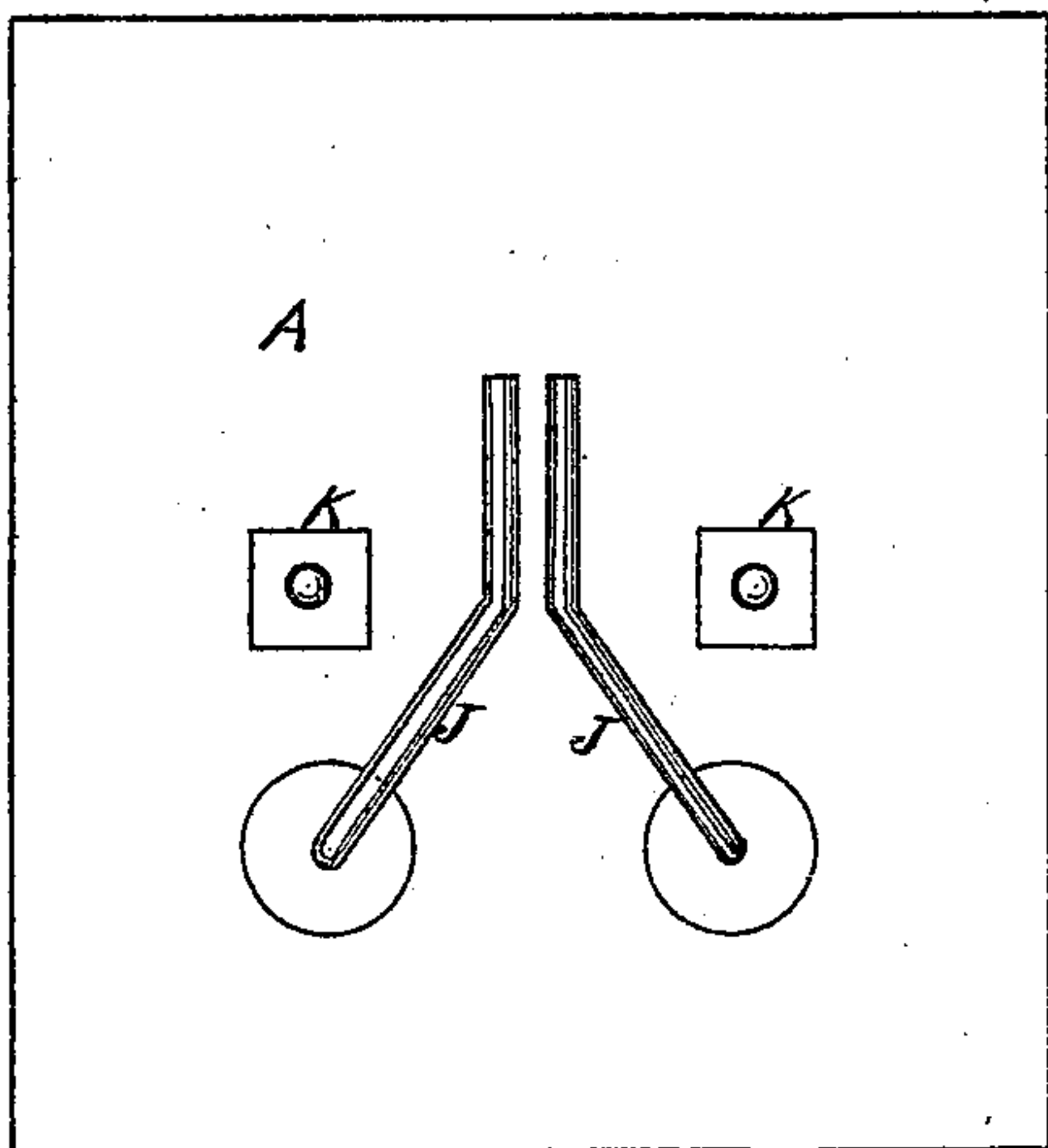
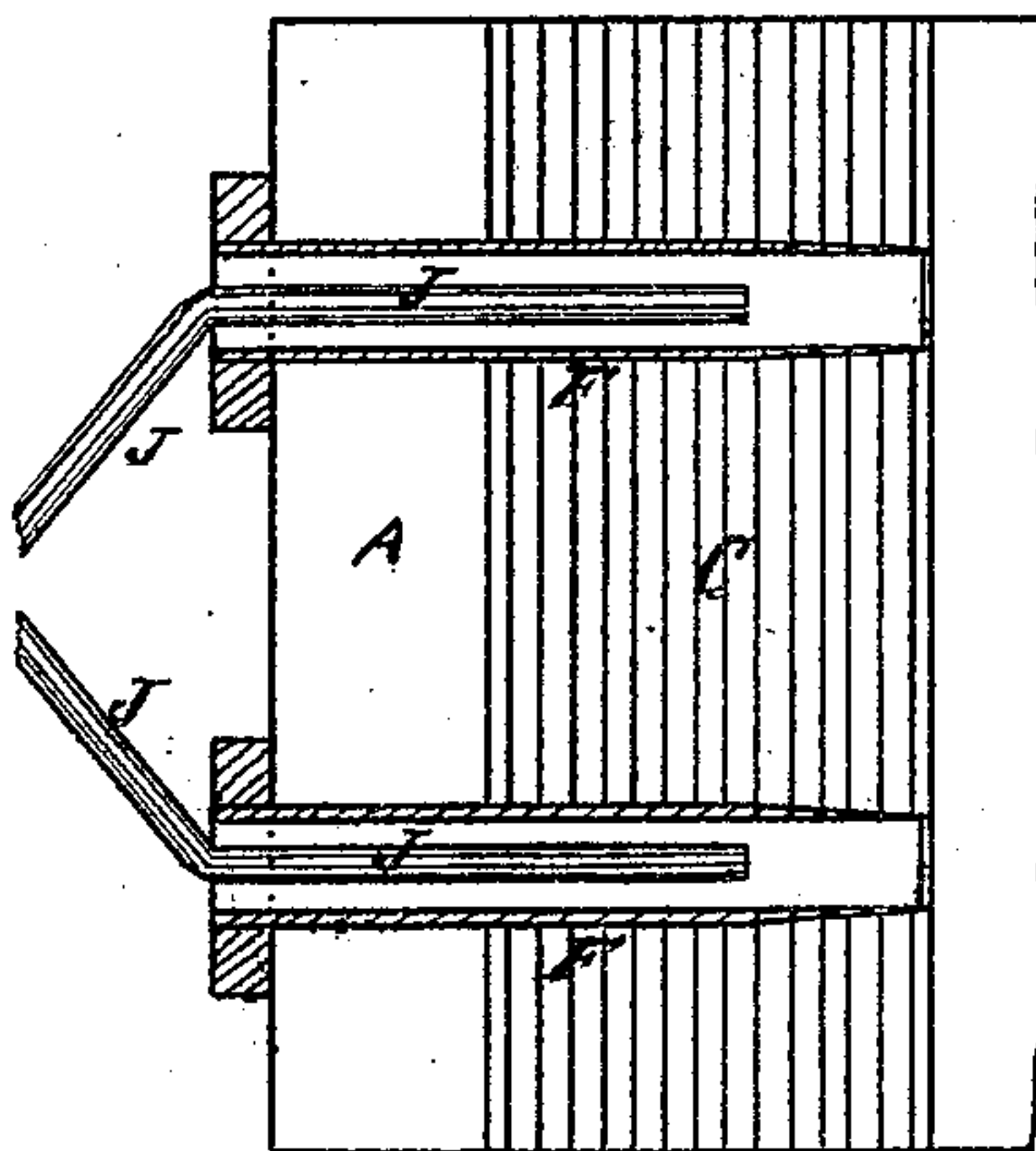
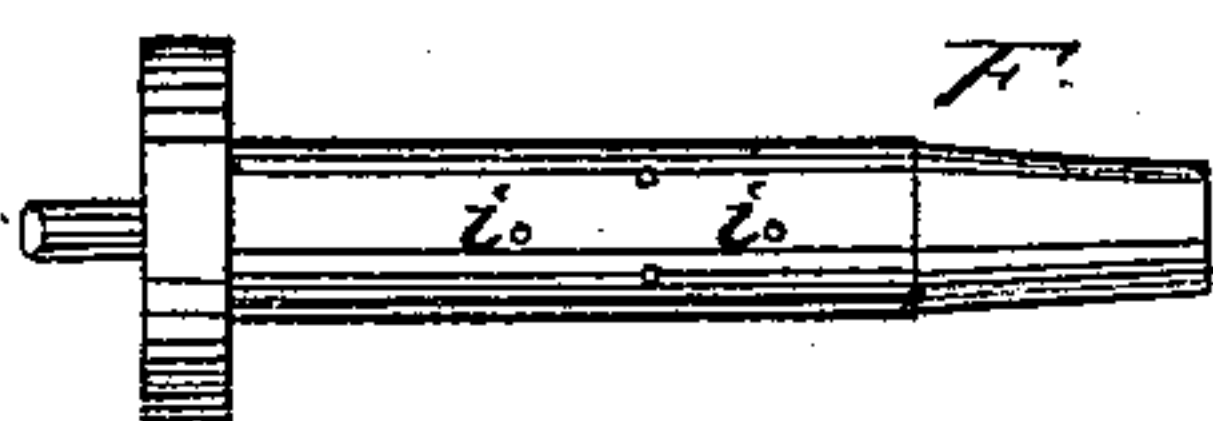


Fig. 2.



Witnesses
Geo. H. Strong.
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UNITED STATES PATENT OFFICE.

LEVI STEVENS, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN GAS-FURNACES.

Specification forming part of Letters Patent No. 141,180, dated July 22, 1873; application filed March 24, 1873.

To all whom it may concern:

Be it known that I, LEVI STEVENS, of Washington city, District of Columbia, have invented an Improved Furnace; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains, to make and use my said invention or improvements without further invention or experiment.

My invention relates to certain improvements in furnaces for the burning of coal, and the utilizing the gases produced by the coking, in combination with a jet of superheated steam; and it consists in the employment of a fire-place having a grate at the bottom, and so constructed that it can be fed with coal from the top. The exit-passage is placed a short distance above the grate, and the coal will be coked in the upper part of the chamber. One or more perforated pipes pass across the furnace a short distance above the grate, and are provided with nozzles, which discharge into the exit-passage. Superheated steam is brought into the perforated pipes, and by its forcible discharge causes a strong draft through the perforations, thus bringing into the pipe the gases and products of the coking of the coal, which are there mingled with the superheated steam and discharged through the nozzle. The strong draft thus created furnishes sufficient air through the grate for the combustion of the coke.

Referring to the accompanying drawings for a more complete explanation, Figure 1 is a side elevation, showing one side of the furnace removed. Fig. 2 is a top view of the fire-place with a section of one of the nozzles. Fig. 3 is an end view of the furnace, showing the steam-pipes and the stirring or draft passages.

A A are the walls of a furnace inclosing the fire-place B, within which is the grate C. Above this grate and fire-place is a chamber, D, which extends upward to a considerable distance, and is open at or near the top to receive the coal. This chamber is somewhat contracted at the bottom E, and just above the fire-place, and serves as a retort or coking-chamber for the coal. Just above the grate C one, two, or more pipes, F, enter the furnace, extending across it, and having dis-

charge-nozzles which open in a line with the exit-passage G. This passage leads to the reverberatory or other chamber H. The pipes F are perforated, as shown, *i i*, and the pipes J bring superheated steam and enter the near ends of the pipes F, as shown, extending along within the pipes F so that their discharge ends open beyond the perforations *i i*.

The operation of my furnace will be as follows: Fire being built upon the grate C, the chamber D is filled with coal, and the top of which may then be closed, and superheated steam let on to the pipes J, which creates a strong draft through the perforations *i i*, and thus draws the gases distilled by the heating of the coal in the chambers D into pipes F, and commingles them with the superheated steam discharged from pipe J. This jet ejects the commingled gases into the furnace, causing a strong draft through the furnace, thus enabling me to control the combustion and heat at will. As the coke is consumed on the grate-bars C, the coke formed above is forced down by the weight of coal, so that the grates are always supplied with coke.

The gases having been distilled and drawn from the chambers by the current of superheated steam from pipe J, the supply of atmospheric air through the grate-bars will always be regulated by the amount of steam discharged through pipe J, which thus serves the double purpose of drawing the gases from the chamber D and forcing them into the furnace, and also making a strong draft of air through the grate-bars C, and burning the coke as rapidly as desired.

Two openings or passages, K, are made through the walls into the furnace, for the purpose of stirring up the coke, or of admitting more atmospheric air at certain times.

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

The coking-chamber D, with the pipes F and the pipes J or their equivalents, in the combination with the grate C.

In witness whereof I hereunto set my hand and seal.

LEVI STEVENS. [L. s.]

Witnesses:

GEO. H. STRONG,

C. M. RICHARDSON.