S. W. KIMBLE.

Air-Heating and Ventilating Furnace.

No. 163,786. Patented May 25, 1875.

Fig. 1.

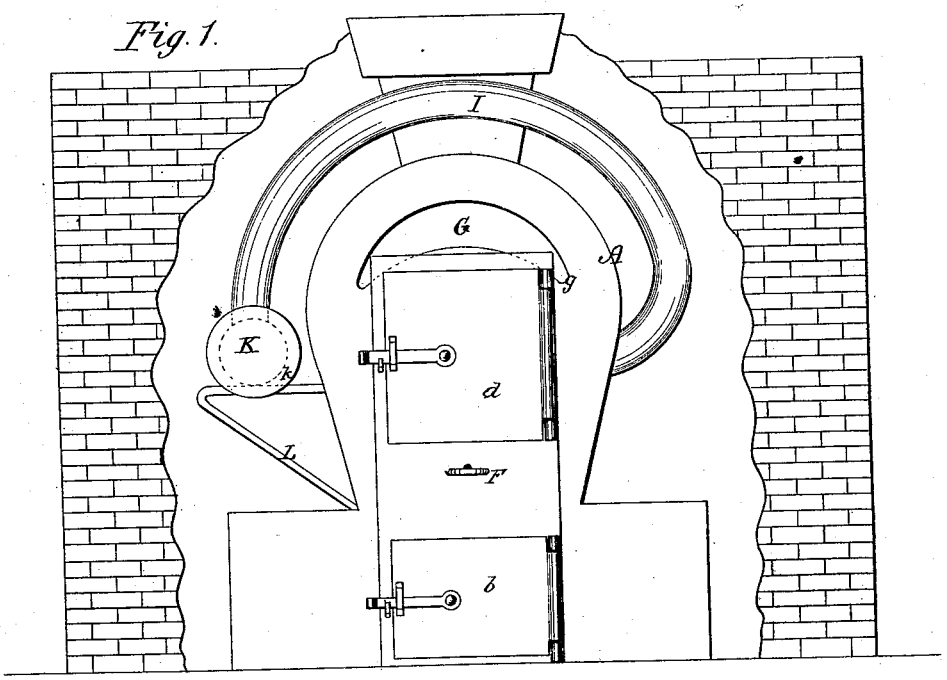


Fig. 2.

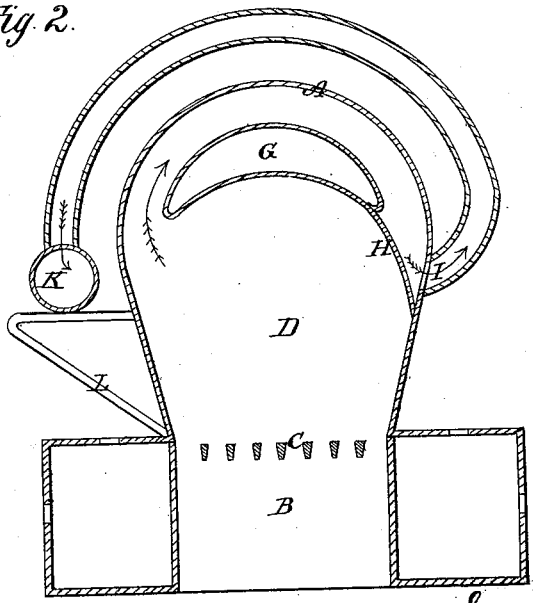
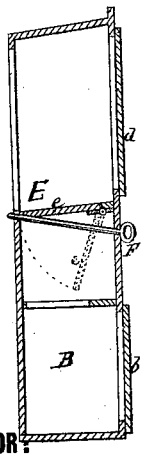


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SMITH W. KIMBLE, OF SPRINGFIELD, ILLINOIS, ASSIGNOR OF THREE-FOURTHS HIS RIGHT TO ARTHUR LEGGOTT, SILAS W. HICKOX, AND AUGUSTIN RAFTER, OF SAME PLACE.

IMPROVEMENT IN AIR-HEATING AND VENTILATING FURNACES.

Specification forming part of Letters Patent No. **163,786**, dated May 25, 1875; application filed April 14, 1875.

To all whom it may concern:

Be it known that I, SMITH W. KIMBLE, of Springfield, in the county of Sangamon and State of Illinois, have invented a new and Improved Air-Heating and Ventilating Furnace; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

The invention relates to hot-air furnaces; and consists in certain improvements which will first be fully described, and then pointed out in the claims.

A represents the shell of furnace, made preferably of boiler-iron, with circular top, sides drawn in, and riveted heads. B is the ash-chamber, having door *b*, and over this the grate C and combustion-chamber D. *e* is a drop-door in the neck or throat E, between feed-door *d* and door *b* of the ash-pit. The ash-pit and combustion-chamber are thus so connected that the clinkers and unconsumed coal that will not pass the grate may be raked into this throat, and then discharged into the ash-pit. This door is held by the detachable rod F, which extends to the outside, and is readily manipulated. This furnace is surrounded by a brick or other casing, in the usual manner. Through the combustion-chamber D I pass the crescent-shaped tube G, which connects at its front end *g* with the cold-air pipe, and at the other end opens into the hot-air case. H is a plate, which connects the crescent tube with side of shell, passes down, on the right, below the mouths of flues I I, but leaves a clear inlet for the products of combustion on the left side, the said products being thus compelled to travel all around the air-tube G before they find an exit through flues I I. The air thus abstracts a very great proportion of their caloric before they pass from the furnace. The flues I are bent around over the furnace, and empty into a horizontal pipe, K, that rests loosely upon brackets L. One end of pipe K connects with the smoke-flue, while the other receives a detachable cap, *k*, whereby the pipe may be caused to receive the cooled pieces of unconsumed matter, and be readily cleaned by a suitable scraper, or other suitable device. The flues I are, through the pipe-connection K, which is unfastened, allowed to expand and contract without difficulty or liability of injury to the joints.

Having thus described my invention, what I claim as new is—

1. The throat E, connecting the combustion-chamber and ash-pit, provided with drop-door *e*, as and for the purpose described.

2. The flues I, connecting on one side of furnace with combustion-chamber, passing over it, and on the other side attached to a pipe, K, resting loosely on brackets L, as and for the purpose described.

SMITH W. KIMBLE.

Witnesses:

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