

(No Model.)

2 Sheets—Sheet 1.

I. KIRK.

HEATING APPARATUS.

No. 302,913.

Patented Aug. 5, 1884.

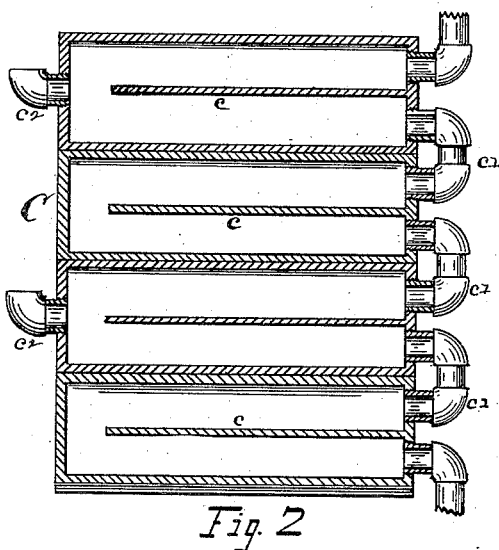


Fig. 2

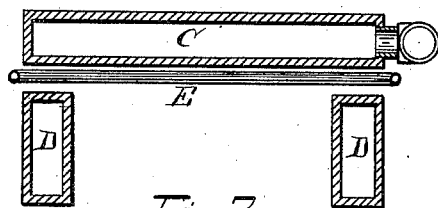


Fig. 3

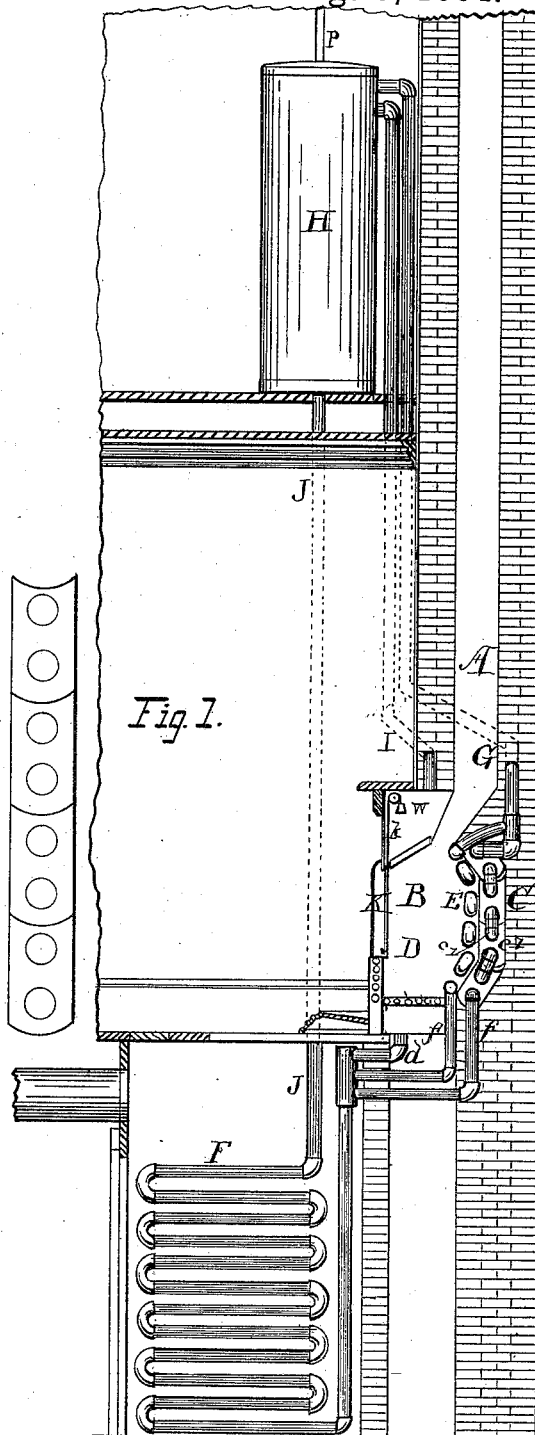


Fig. 1.

Witness.
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Inventor,
Isaac Kirk.
By Geo. W. Tibbitts Atty.

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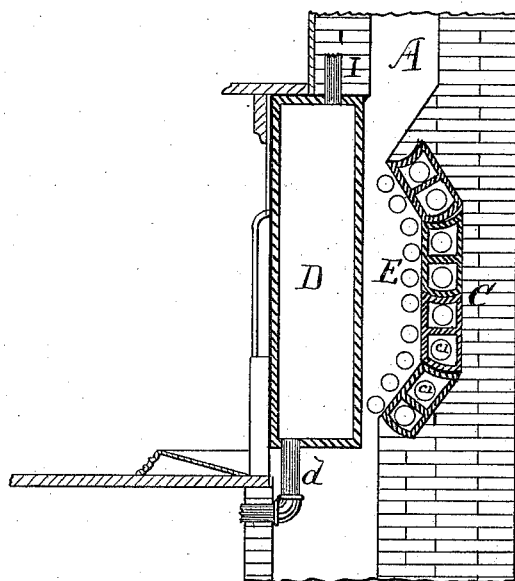


Fig. 4.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ISAAC KIRK, OF WARREN, OHIO.

HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 302,913, dated August 5, 1884.

Application filed January 21, 1884. (No model.)

To all whom it may concern:

Be it known that I, ISAAC KIRK, of Warren, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Heating Apparatus, of which the following is a specification.

These improvements relate to house-heating apparatus; and they consist in the combination, with the customary fire-grate used in dwellings, of a water-back composed of water-chambers and a system of water-pipes connected by pipes to a suitable water-tank from above, and an arrangement of radiating-pipes located below said grate, from which heated air may be obtained, and which may be conveyed away to heat other apartments. The object of this is to utilize the intense heat in the back and jambs of a fire-grate which heretofore has gone to waste.

In the drawings, Figure 1 is a vertical section of a fire-grate and chimney, showing three floors of a house and arrangement of pipes and water-back in connection therewith. Fig. 2 is a sectional view of water-chambers forming the water-back. Fig. 3 is a horizontal section through said water-chambers and side jambs. Fig. 4 is a vertical section, from front, through the side water chambers or jambs.

A represents an ordinary brick chimney, and B a grate fire-place. The fire in grates heats the back and jambs usually to an intense degree, which heat it is the object of my invention to utilize by employing it to heat water for warming other apartments of the house. In the back of the fire-place, usually lined with fire-brick, and in the sides or jambs, I provide water-chambers C D. These consist of cast-iron boxes C, having partitions *c*, arranged to convey the water back and forth. Said chambers are connected with each other by pipe-connections *c'*, as seen in Fig. 2, to form a continuous current through them. In front of this fire-back I also provide a coil of water-pipe, E, for a like purpose to that of the chambers. The lower chamber, C, and lower coil, E, is connected by down pipes *ff*, with a coil of pipes, F, located beneath the floor in a suitable compartment for the purpose. The jamb-chambers D are also connected with the same coil, F, by pipe *d*. The upper chamber, C, and upper coil, E, are con-

nected by pipes G, which may be hid in the walls, and passing upward to an upper room, lead to the upper part of a tank, H. The top of the side chambers, D, are also connected by a pipe, I, to the said tank. A pipe, J, connects the bottom of the tank with the upper branch of the coil F. By this arrangement of pipes a circulation of water is maintained from the tank down through the coil F, and up through the water-chambers C D back to the tank again, by the boiling of the water in the water-back, jambs, and coil in the fire-place. The water-chambers C have connections *c'* with the pipes leading upward to the tank, the purpose of which is to provide sufficient communication upward for the hot water and prevent an excess of steam collecting or remaining in the chambers. The top of the tank is provided with an escape-pipe, *p*. The coil F is contained in a suitable room, box, or chamber for the purpose of heating the air therein, which may be conveyed to other rooms or apartments for warming them.

From the foregoing it will be seen that the surplus heat from a common fire-grate is employed for a useful purpose—that is, for generating heated water and heated air for supplying heat to other and adjoining rooms or apartments.

The grate is provided with an adjustable blower, K, which is suspended by chains *k*, passing up over pulleys in the upper part of the grate-front on the inside, the opposite ends of the chains having counterbalance-weights *w*. The blower may thus be readily raised or lowered by the use of a poker or other implement, and when up is out of the way. This provides a very convenient means of disposing of a blower, and avoids the annoyance and difficulty of handling heated blowers.

Having described my invention, I claim—

The combination, with the grate, of the water-chambers C D and the coil of pipe E, each connected by pipes *ff* and *d* with the coil F below the grate, and by pipes G I with the tank H above the grate, and the tank connected with the said coil F, substantially in the manner and for the purpose specified.

ISAAC KIRK.

Witnesses:

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GEO. W. TIBBITTS.