(No Model.)

G. E. HOPKIN.

Hot Air Furnace.

No. 239,787. Patented April 5, 1881.

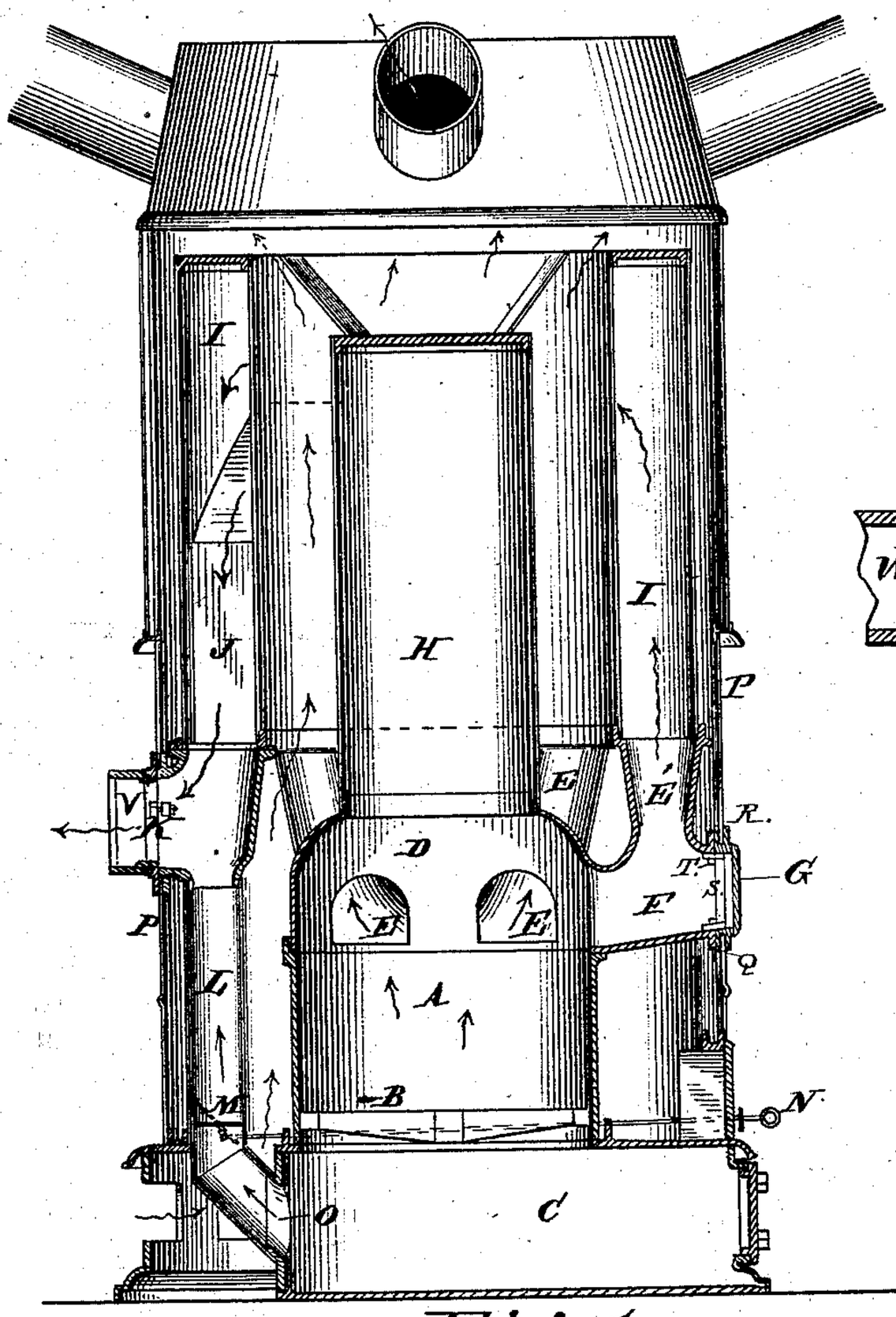

Fig. 1

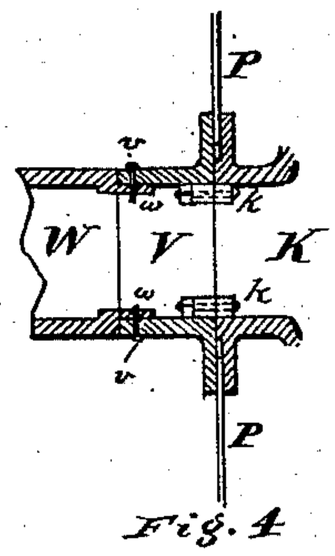

Fig. 4

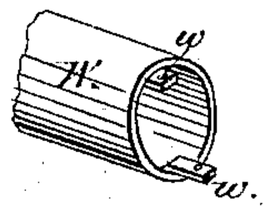

Fig. 5

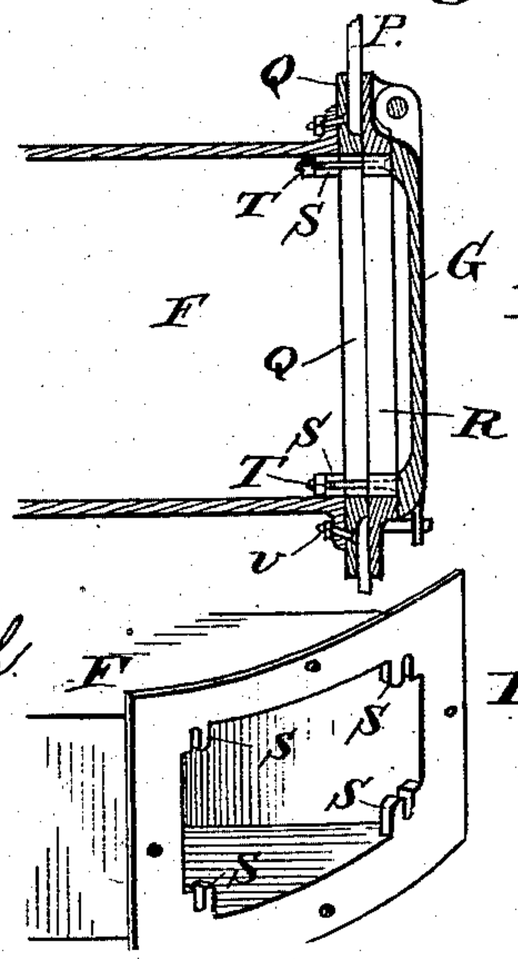

Fig. 2

Fig. 3

Attest:

J. Edward Hursh.

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George E. Hopkin

UNITED STATES PATENT OFFICE.

GEORGE E. HOPKIN, OF PHILADELPHIA, PENNSYLVANIA.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 239,787, dated April 5, 1881.

Application filed January 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HOPKIN, of the city and county of Philadelphia, in the State of Pennsylvania, have invented new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

The object of my invention is to improve the efficiency, convenience, and durability of hot-air furnaces, the general plan of which is shown in the accompanying drawings, forming a part of this specification.

Figure 1 is a vertical transverse section with perspective shading. Figs. 2 and 3—the former a vertical section and the latter a perspective elevation—are enlarged views of the parts immediately connected with the feed-door, and show what provision is made for the unequal expansion of the fire-pot and the outside casing, when, of course, this furnace is finished as a portable heater. Fig. 4 is, in vertical section, an enlarged view of the smoke-flue in its way out from the furnace. It shows how the casing is clamped between flanges, also what provision I have made for combining the two sections of the same outside the furnace-casing. Fig. 5 is a detail, showing in perspective the part W and its tongues *w w*.

A is the fire-chamber; B, grate; C, ash-pit; D, dome of the fire-chamber, and E E E are smoke-flues from it. E′ is a smoke-flue from the chute to the annular smoke-flue. F is a passage from the door G to the fire-chamber. H is a blind drum over the dome of the fire-chamber. I I show the annular smoke-flue between the hot-air drum and the outside hot-air chamber. J is a vertical flue with a wide top, made entirely within the annular smoke-flue I I, so as to extend the flue K up nearly as high as the blind drum H, and thus is obtained a longer diving-draft before the exit of the smoke at K. K is the exit smoke-flue from the heater. L is the dust-flue; M, the damper to the dust-flue; N, damper-rod; O, outlet from the ash-pit to the dust-flue; P, the sheet-iron casing; Q, a wide flange upon the casting inside the casing at the door, to correspond with R, a wide flange upon the casting outside the casing at the door, so that between these two flanges, and in conjunction with two similar flanges upon the smoke-flue at the back of the furnace, space is allowed for the self-adjustment of the casing P to meet the unequal expansion of itself with the fire-chamber A. S S are lugs. T T, U, and K K are bolts, all of the usual kind, for connecting the castings shown. V and W are two castings—parts of the smoke-flue—connected in a novel manner to avoid the evils of screw bolts and nuts.

I have found, year by year, that the strong acids in the smoke-flue so affect the screw-bolts, when used in this flue, that they cannot be operated. I therefore provide the casting W with tongues *w w*, with holes to match similar holes in V, and, bringing the two together, confine them by the nails *v v*, which can always be removed with ease, and thus the danger of breaking the castings, as in the former way, is removed.

I obtain by my new arrangement of the dust-flue, which in this style of heater has heretofore been in the front, the following advantages: First, it delivers no dust upon any of the radiating-surfaces or within any of the smoke-flues inside the heater, so that the efficiency of the heater is not in that way obstructed; second, it keeps the dust back from the front more effectually, so that it is a greater convenience than formerly; third, it joins the smoke-flue close to its exit and just under its diving-draft, so that the heavier portions of dust will be checked at that point and fall back to the ash-pit; fourth, whatever deposits are left at K are easily reached for removal by the aid of my improved mode of connecting the castings V and W by the nails *v v*.

I claim—

1. In combination, the converging diving-flue J, the three-way casting K, and the dust-flue L, substantially as and for the purpose herein set forth.

2. The castings W and V, connected by the tongues *w w* and the nails *v v*, substantially as shown.

3. In combination, the dust-flue L and the exit K of the smoke-flue, composed of the castings W and V, connected by the tongues *w w* and the nails *v v*, substantially as and for the purpose herein set forth.

GEORGE EDWARD HOPKIN.

Witnesses:
J. EDWARD HURSH,
JNO. W. FRANCIS.