(No Model.)

V. O. STROBEL.

HOT BLAST STOVE.

No. 415,226. Patented Nov. 19, 1889.

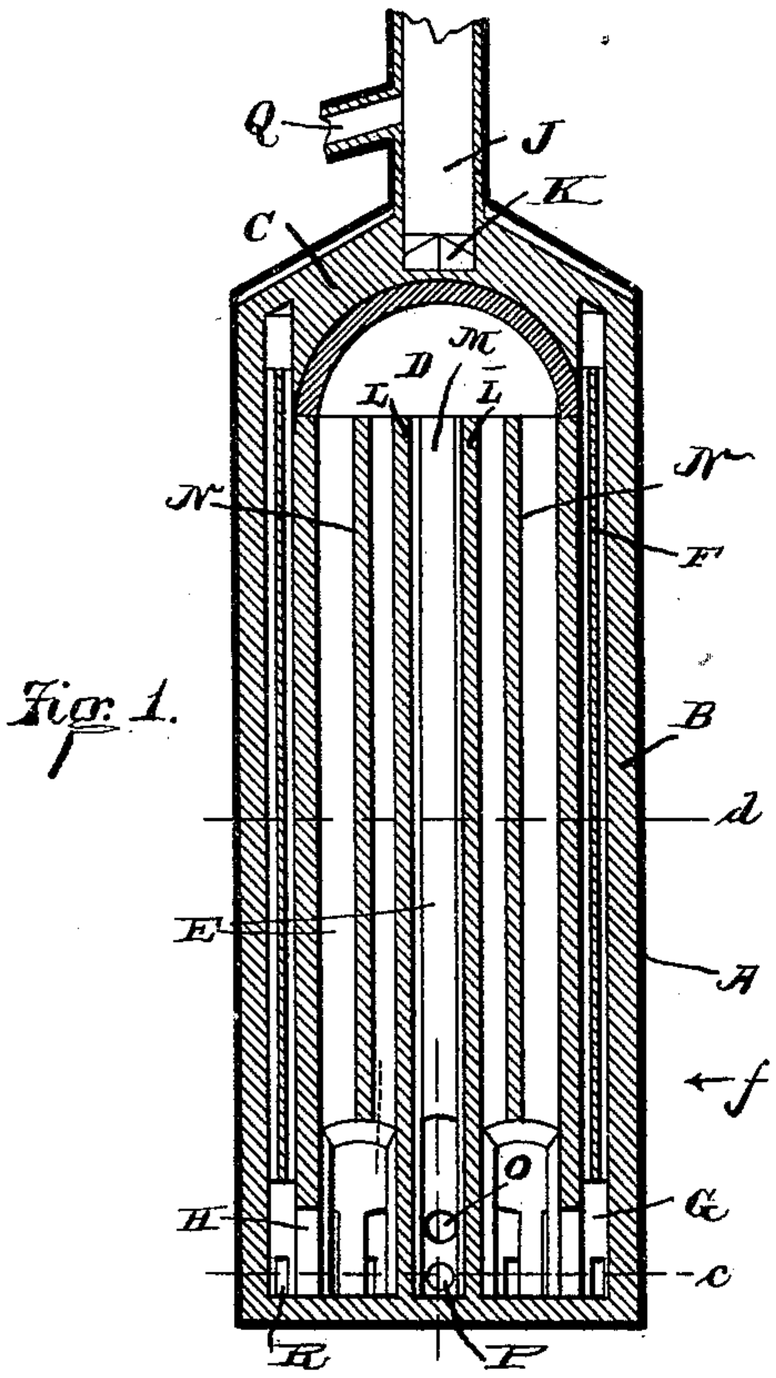

Fig. 1.

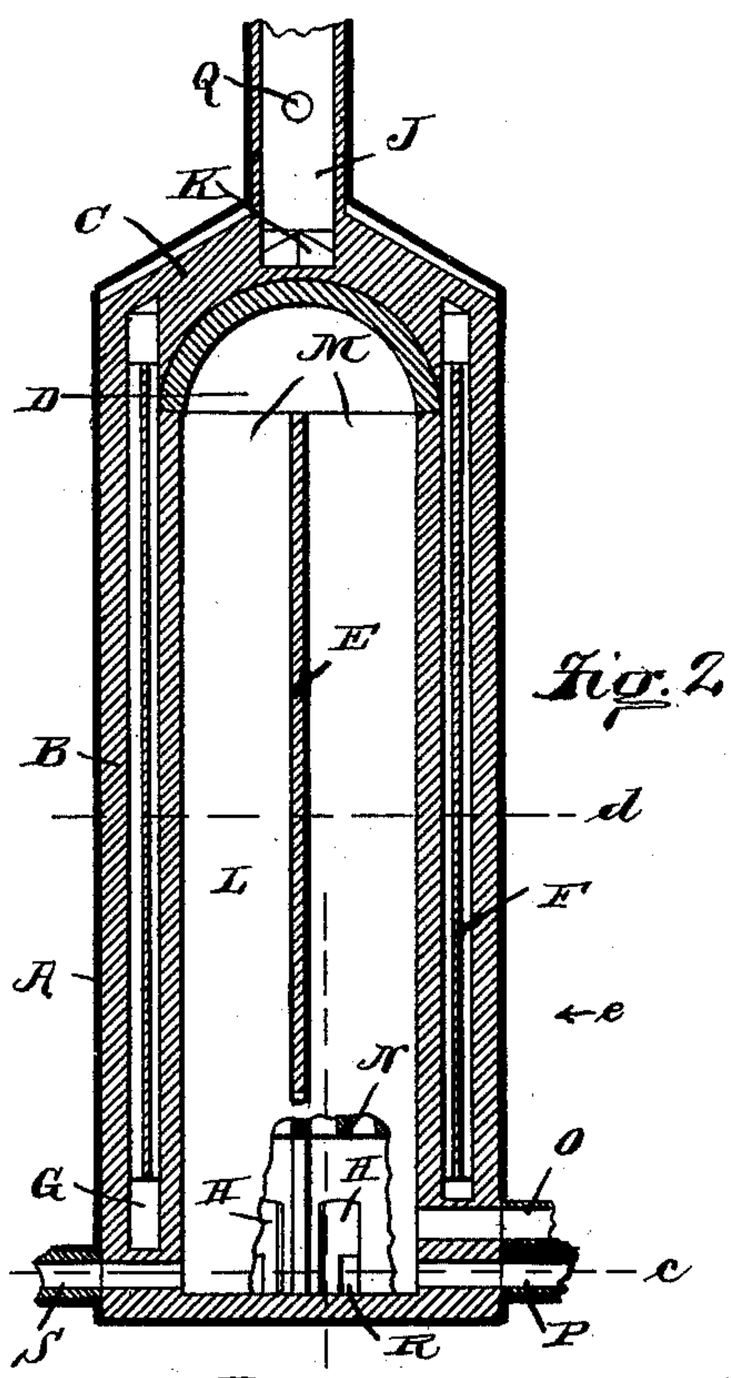

Fig. 2.

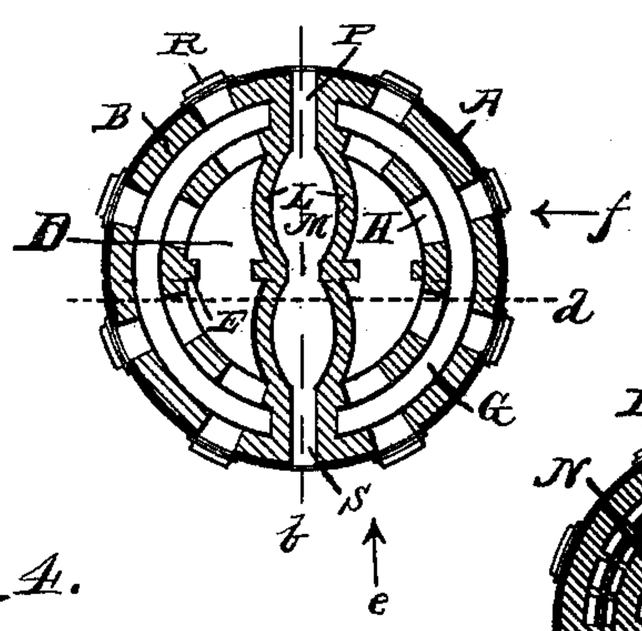

Fig. 4.

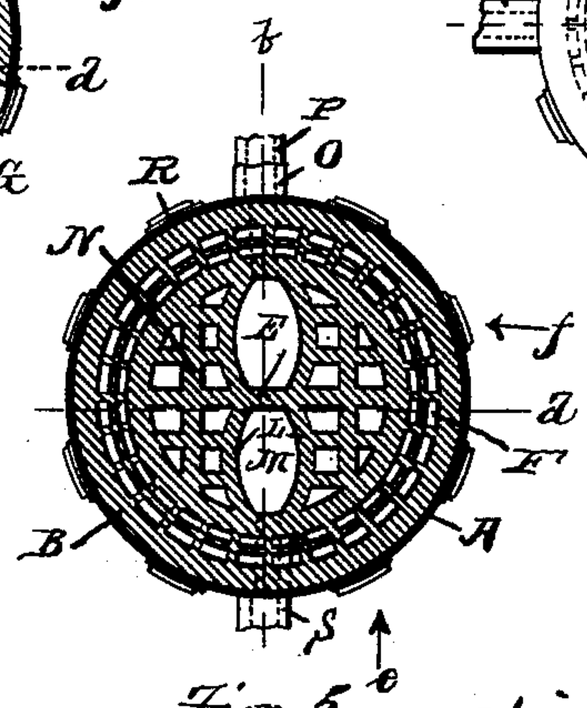

Fig. 5.

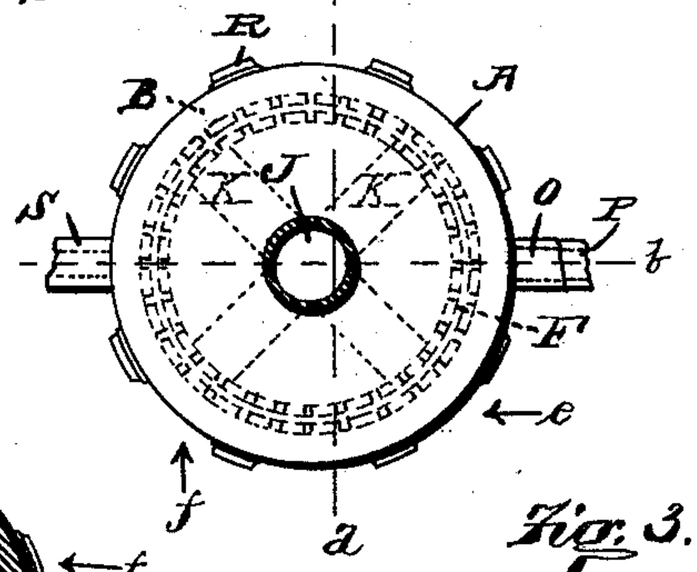

Fig. 3.

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UNITED STATES PATENT OFFICE.

VICTOR O. STROBEL, OF PHILADELPHIA, PENNSYLVANIA.

HOT-BLAST STOVE.

SPECIFICATION forming part of Letters Patent No. 415,226, dated November 19, 1889.

Application filed July 15, 1889. Serial No. 317,579. (No model.)

To all whom it may concern:

Be it known that I, VICTOR O. STROBEL, of Philadelphia, Philadelphia county, Pennsylvania, have invented certain new and useful Improvements in Hot-Blast Stoves, of which the following is a specification.

This invention relates to improvements in the construction of regenerative hot-blast stoves designed for heating of air; &c.

My improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a vertical section of a stove exemplifying my improvements, the plane of this section being indicated by line *a* of Fig. 4, and the direction of view being indicated by the arrow *e* of Fig. 4; Fig. 2, a vertical section of the same, taken in the plane indicated by line *b* of Fig. 4, a portion of the base of the wall L being broken away to exhibit the work beyond, the direction of view in this section being indicated by arrow *f* of Fig. 4; Fig. 3, a plan of the stove; Fig. 4, a horizontal section of the stove in the plane of line *c* of Fig. 1, and Fig. 5 a horizontal section of the stove in the plane of line *d*.

In the drawings, A indicates the usual cylindrical air-tight metallic shell of the stove; B, the lining-wall thereof; C, the brick roof of the stove within the roof of the metallic shell; D, the general interior of the stove within the wall B and extending from the floor of the stove to the ceiling thereof; E, a vertical wall diametrically disposed in the chamber D and extending from the floor of the stove to near the top of the chamber and extending from side to side of the chamber; F, an annular series of regenerative flues in the wall B, these flues extending from near the base to near the top; G, annular chamber in the base of the wall B at the foot of regenerative flues F; H, openings at the base of the stove placing the main chamber D in free communication with the circumferential chamber G; J, the chimney-connection of the stove centrally mounted on the roof thereof; K, radial flues in the roof of the stove leading from the base of the chimney-connection to the top of the annular series of regenerative flues F; L, a pair of vertical walls extending from the base of the stove to near the top thereof and from side to side of the main chamber D, these walls being arranged in the plane substantially at right angles to the plane of the wall E, these walls being preferably curved in horizontal cross-sections, so that each wall will present two convexities outward; M, a combustion-chamber formed between the walls L and extending from the base of the stove to near the top thereof and divided practically into two chambers by the cross-wall E; N, vertical walls in the main interior chamber outside the walls L, these walls extending from near the base of the stove to near the top thereof and being arranged across their chambers in both directions, so as to form regenerative flues extending from near the base to near the top of the stove; O, a connection or passage from the exterior of the stove into the combustion-chamber M and serving as a means for admitting air of combustion to the combustion-chamber from the stove while under gas; P, a similar connection similarly arranged and adapted to convey the gas to the combustion-chamber; Q, a connection at the top of the stove to serve in admitting the cold blast to the stove, this connection communicating with the base of the chimney-connection; R, a series of cleaning-doors arranged circumferentially around the base of the stove and serving to give access to the annular-chamber G; S, a connection leading from the exterior of the stove to the base of the combustion-chamber and serving as a hot-blast outlet.

The wall E may extend downwardly to near the floor of the stove, or it may extend to the floor of the stove and have openings through its base in the combustion-chamber and in the regenerative-chambers to each side thereof, as shown in the drawings. This wall is a stay-wall, and its presence at the base of the stove is not needed except as a vertical support for its upper portions.

It is to be understood, of course, that the connections J, O, P, Q, and S will be provided with the usual necessary valves to permit the opening or closing of these connections.

When the stove is to be put under gas for the purpose of heating the stove, the chimney-connection is to be opened, the cold-blast

inlet Q and the hot-blast outlet S closed, and the gas-inlet P and the inlet O for the air of combustion opened. The gas and air of combustion enter the combustion-chamber, commingle, and go into combustion and ascend the combustion-chamber. Reaching the top of the combustion-chamber the current divides and passes down the two sets of regenerative flues N. When the currents reach the base of the stove, they pass outwardly through the openings H to the annular-chamber G, and then rise through the annular series of regenerative flues F. Upon reaching the top of these flues the gas passes inwardly through the roof-flues K to the chimney-connection, by which they leave the stove. When the stove is sufficiently heated, then the gas and air of combustion are to be shut off and the chimney-valve closed. The cold-blast inlet Q and the hot-blast outlet S are now to be opened. The cold blast enters the stove through the base of the chimney-connection and passes through the stove in a direction the reverse of that indicated for the burning gases. The heated air leaves the stove at the connection S, the air in its passage through the stove absorbing the heat from the regenerative wall-work of the stove. When the stove requires to be reheated, then the inlet and outlet for blast are to be closed and the stove is again to be put under gas. The stoves are to be employed in multiple in the usual manner, so that one or more can be utilized in heating the blast while one or more are being heated.

I have illustrated separate connections for the inlet of gas and air of combustion and for the outlet of the heated blast. The communication of these connections with the stove may, if desired, be through a single aperture into the combustion-chamber, as is common in the construction of hot-blast stoves.

I claim as my invention—

1. In a regenerative hot-blast stove, the combination, substantially as set forth, of a cylindrical metallic shell, a lining-wall within the shell, forming a circular interior chamber within the stove and containing an annular series of vertical regenerator-flues extending from an annular chamber at the base of said wall to near the top of the stove, a chimney-connection and cold-blast inlet at the top of the stove, roof-flues leading from the top of said regenerator-flues to said chimney-connections and cold-blast inlet, a pair of vertical walls extending across the main interior of the stove and from the base of the stove to near the top thereof, and serving to divide said main interior of the stove into a diametrically-disposed combustion-chamber and two segmental regenerator-chambers, all in communication with each other near the top of the stove, gas and air connections at the base of said combustion-chamber, and vertical regenerative flues in said regenerator-chambers at each side of the combustion-chamber, extending from near the top of the stove to near the bottom of the stove, and communicating with the base of the annular series of regenerator-flues in the lining-wall of the stove.

2. In a regenerative hot-blast stove, the combination, substantially as set forth, of a cylindrical shell, a lining-wall therefor inclosing the main interior of the stove and containing an annular series of vertical regenerative flues F, communicating with the main interior of the stove at their bases, a chimney-connection and cold-blast inlet at the top of the stove and communicating with the top of said regenerative flues, a combustion-chamber extending diametrically across the main interior of the stove and reaching from the base of the stove to near the top thereof, regenerative walls in the main interior of the stove to each side of said combustion-chamber, and forming vertical flues communicating with said combustion-chamber at their tops and with the base of the first-mentioned regenerative flues at their bases, and air and gas connections at the base of said combustion-chamber.

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Witnesses:
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