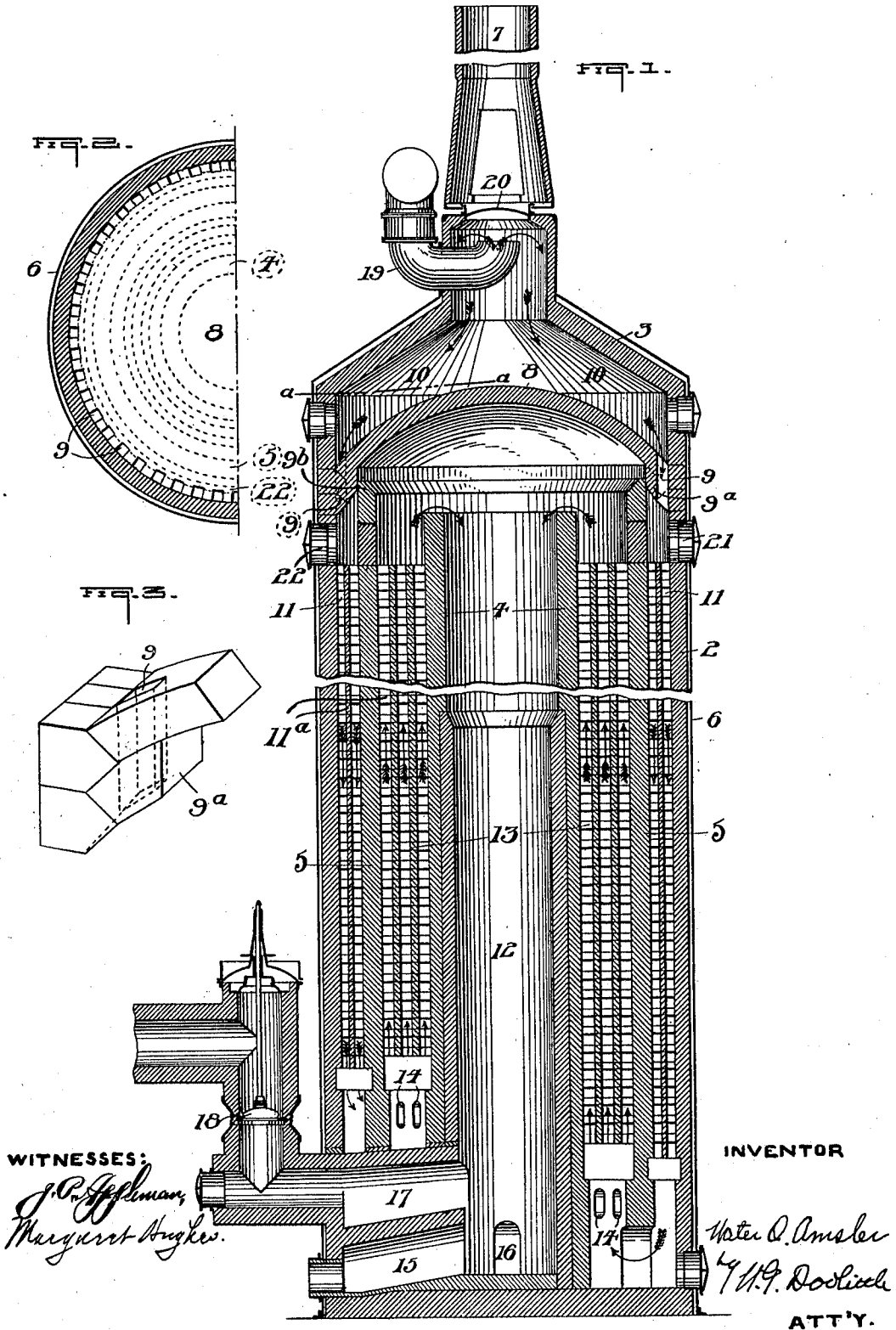


W. O. AMSLER.
HOT BLAST STOVE.
APPLICATION FILED MAY 15, 1905.

945,360.

Patented Jan. 4, 1910.



UNITED STATES PATENT OFFICE.

WALTER O. AMSLER, OF PITTSBURG, PENNSYLVANIA.

HOT-BLAST STOVE.

945,360.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed May 15, 1905. Serial No. 260,451.

To all whom it may concern:

Be it known that I, WALTER O. AMSLER, citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Hot-Blast Stoves, of which the following is a specification.

The object of my invention is to provide a new and improved hot-blast stove and the present invention particularly relates to that type of stoves known as "three-pass" stoves, or stoves having three passes for the gas and air.

In the accompanying drawing which illustrates an application of my invention Figure 1, is a central vertical sectional view; Fig. 2, a detail view partly in plan and partly sectional taken on line *a—d* of Fig. 1; and Fig. 3 a perspective detail view showing manner of supporting the stove-crown on the outer wall of stove.

As illustrated and as preferred the stove comprises an outer-shell, an inner-shell and an intermediate-shell. The outer-shell is formed by a cylindrical-wall 2 and a roof 3; the inner-shell by cylindrical-wall 4; and the intermediate-shell by wall 5. The outer-shell is provided with the usual metallic-casing 6, and 7 represents the stack or chimney-flue.

A characteristic and important feature of the present invention is the construction of and the manner of supporting the arch or stove-crown 8. As shown, crown 8 extends entirely across the stove, rests on and is supported by the cylindrical-wall 2 of the outer-shell.

In "three-pass" stoves as heretofore constructed the arch or stove-crown has not been supported by the outer-shell or by the outer-wall, but on an intermediate-wall. Between the said intermediate shell or wall and the outer-wall it is the practice to employ various forms of checker-work and as heretofore constructed, the thrust of the crown or arch together with the movement of the shell caused by expansion and contraction, has been taken up by said checker-work the result being, that the checker-work is destroyed and frequent repairs are necessary.

By extending the crown over to meet the outer-wall, as shown by the drawing, the thrust is taken up by said wall and the injury to both the checker-work and crown

prevented. In the detail view, Fig. 3, I have particularly shown a preferred manner of supporting the crown on the wall 2 and, as illustrated, flues 9 extend through the crown and connect space or passage 10 with an annular-flue 11. The upper end of annular-flue 11 is closed by a series of apertured key-blocks 9^a, these blocks are supported by the outer shell 2, and are arranged in contact with the crown and with annular-wall 5, and form with said wall, an expansion-joint as indicated at 9^b. This construction provides for the expansion and contraction of the intermediate shell, without injury to the shell checker-work or crown.

A central-flue 12, the lower end of which serves as a combustion-chamber when heating the stove, extends upwardly to a short distance below the crown and is in open communication with an annular-flue 13. Flues 11 and 13 are connected by ports 14 and each may be supplied with any preferred style of checker-work.

By supporting the crown on the outer-wall I am enabled to stop the checker-work 11^a, in both the outer-flue and the intermediate-flues, quite a distance below the upper ends of the inner and intermediate shells.

Leading into the lower end of the central-flue or into the combustion-chamber are gas and air-inlet passages 15 and 16, and above the gas passage 15 is a hot-blast outlet passage 17. Hot-blast outlet or main is provided with a suitable hot-blast valve 18.

The cold-blast is admitted at the top of the stove through cold-blast main 19 and enters the chimney-flue immediately below a chimney-valve 20.

21 and 22 designate man-holes extending through the outer and intermediate shells designed to permit access to interior of the stove for the purpose of cleaning and in making repairs.

The operation of my stove is similar to that of hot-blast stoves of this "three-pass" type. That is to say, to heat the stove the hot-blast valve is closed and stack-flue valve opened, after which gas and air are admitted to the lower end of the combustion-chamber.

The course of the gas and products of combustion is up the central-flue to the crown, down annular-flue 13 through ports 14 to annular-flue 11, thence up outer-flue 11 to the stack-flue by way of passage or flue 10.

When the stove and its flues have been

sufficiently heated, gas is shut off and the stack-flue valve closed. The cold-blast is now admitted through cold-blast main 19 and passes, first, downwardly through flue 11 and through ports 14; secondly, up through flue 13 and, thirdly, down central-flue 12 to hot-blast outlet 17, from whence it is conveyed to nearby furnaces.

What I claim is:

10 1. A three-pass hot-blast stove having an outer roofed shell, an inner shell, a stove-crown or arch between the upper end of the inner-shell and the roof of the outer-shell supported by the wall of the outer-shell.

15 2. A hot-blast stove having an outer roofed shell, an inner-shell, a stove-crown or arch between the upper end of the inner-shell and the roof of the outer-shell supported by the wall of the outer-shell, a fluid-passage between the crown and roof, an outer flue, and
20 flues connecting the fluid passage and the outer flue.

3. A three-pass hot-blast stove having an outer roofed shell, an inner-shell, an inter-
25 mediate-shell, a stove-crown or arch supported by the wall of the outer-shell, and a fluid-passage between the crown or arch and the roof of the outer-shell.

4. A hot-blast stove having an outer roofed
30 shell, an inner-shell, an intermediate-shell, a central-flue, an outer flue, an intermediate-flue, a stove-crown or arch supported by the wall of the outer-shell, a fluid-passage between the crown or arch and the roof of the
35 outer-shell, and flues connecting said fluid-passage and the outer-flue.

5. A hot-blast stove having an outer roofed shell, an inner-shell, an intermediate-shell, a central-flue, an outer-flue, an intermediate-
40 flue, a stove-crown or arch supported by the wall of the outer-shell, a fluid-passage between the crown and the roof of the outer-shell, a series of key-blocks interposed between the crown and the wall of the inter-
45 mediate-shell, and flues extending through the crown and connecting the fluid passage and the outer-flue.

6. A hot-blast stove having an outer roofed shell, an inner-shell, an intermediate-shell, a central-flue, an outer-flue, an intermediate-
50 flue, a stove-crown supported by the wall of the outer-shell, a fluid-passage between the crown and the roof of the outer-shell, a series of apertured key-blocks interposed between the crown and the wall of the inter-
55 mediate-shell, and flues extending through the crown and the key-blocks and connecting the fluid passage and the outer-flue.

7. A hot-blast stove having an outer-roofed shell, an inner-shell, an intermediate-shell,
60 a stove-crown supported by the wall of the outer shell, a fluid-passage between the crown and the roof of the outer-shell, a central-flue, an outer-flue, an intermediate-flue, and checker-work in the outer-flue terminating
65 on a line below the upper end of the intermediate-shell.

8. A hot blast stove having an outer roofed shell, an inner shell, an intermediate shell, a stove crown or arch and an expansion-joint
70 construction between the intermediate shell and the crown to permit an independent vertical movement of the intermediate shell.

9. A hot-blast stove having an outer roofed shell, an inner shell, an intermediate shell, a
75 stove crown or arch, and means for permitting an independent vertical movement of the intermediate shell, consisting of a slip-joint construction comprising a series of key-blocks supported by the outer shell and in
80 contact with the crown and the intermediate shell.

10. A three-pass hot blast stove having an outer roofed shell, an inner shell, an intermediate shell, and a stove-crown supported
85 by the outer shell and adapted to move therewith independently of the intermediate shell.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

WALTER O. AMSLER.

Witnesses:

W. G. DOOLITTLE,
MARGARET HUGHES.