

No. 791,391.

PATENTED MAY 30, 1905.

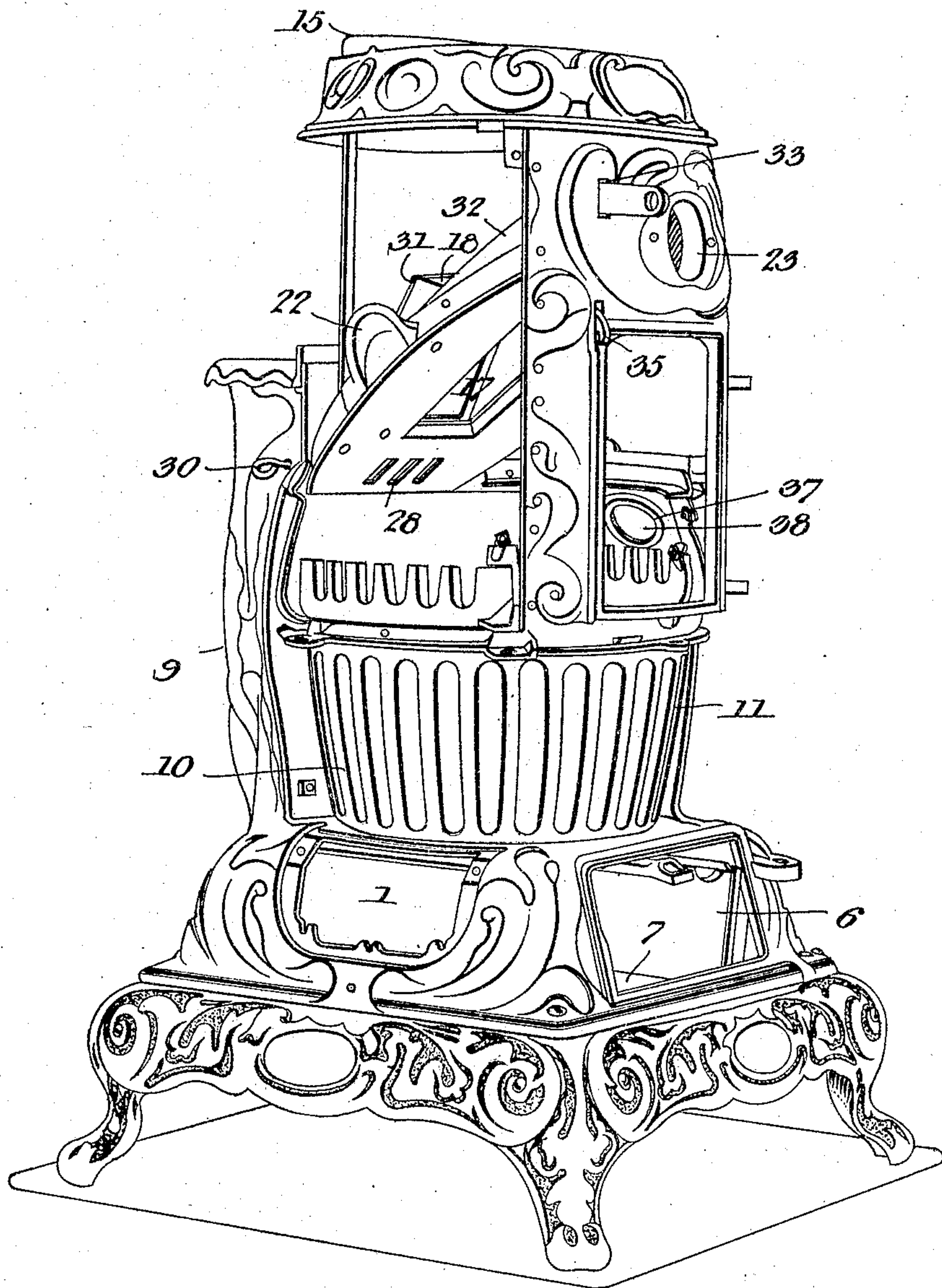
H. WOLF & P. H. LOUGHNANE.

HEATING STOVE.

APPLICATION FILED SEPT. 26, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

E. J. Stewart
Wm. Baggett

Henry Wolf and
Phillip H. Loughnane, inventors.

by *C. A. Snow & Co.*
Attorneys

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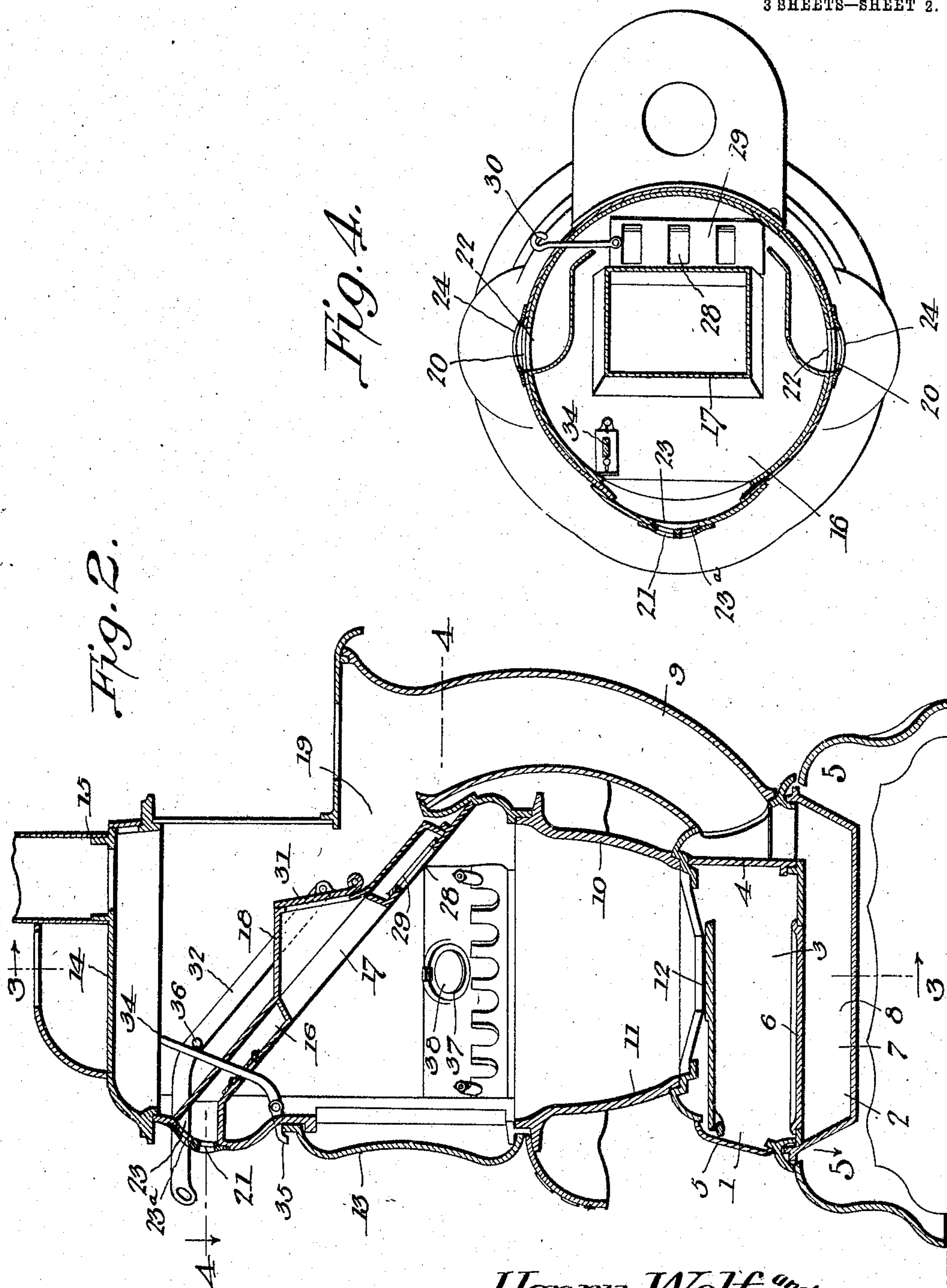
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3 SHEETS—SHEET 2.



Witnesses

Witnesses
E. J. Stewart
Wm. Ragger.

Henry Wolf and
Phillip H. Loughnane, Inventors.
by *Chas. Snow & Co.*
Attorneys

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3 SHEETS—SHEET 3.

Fig. 5.

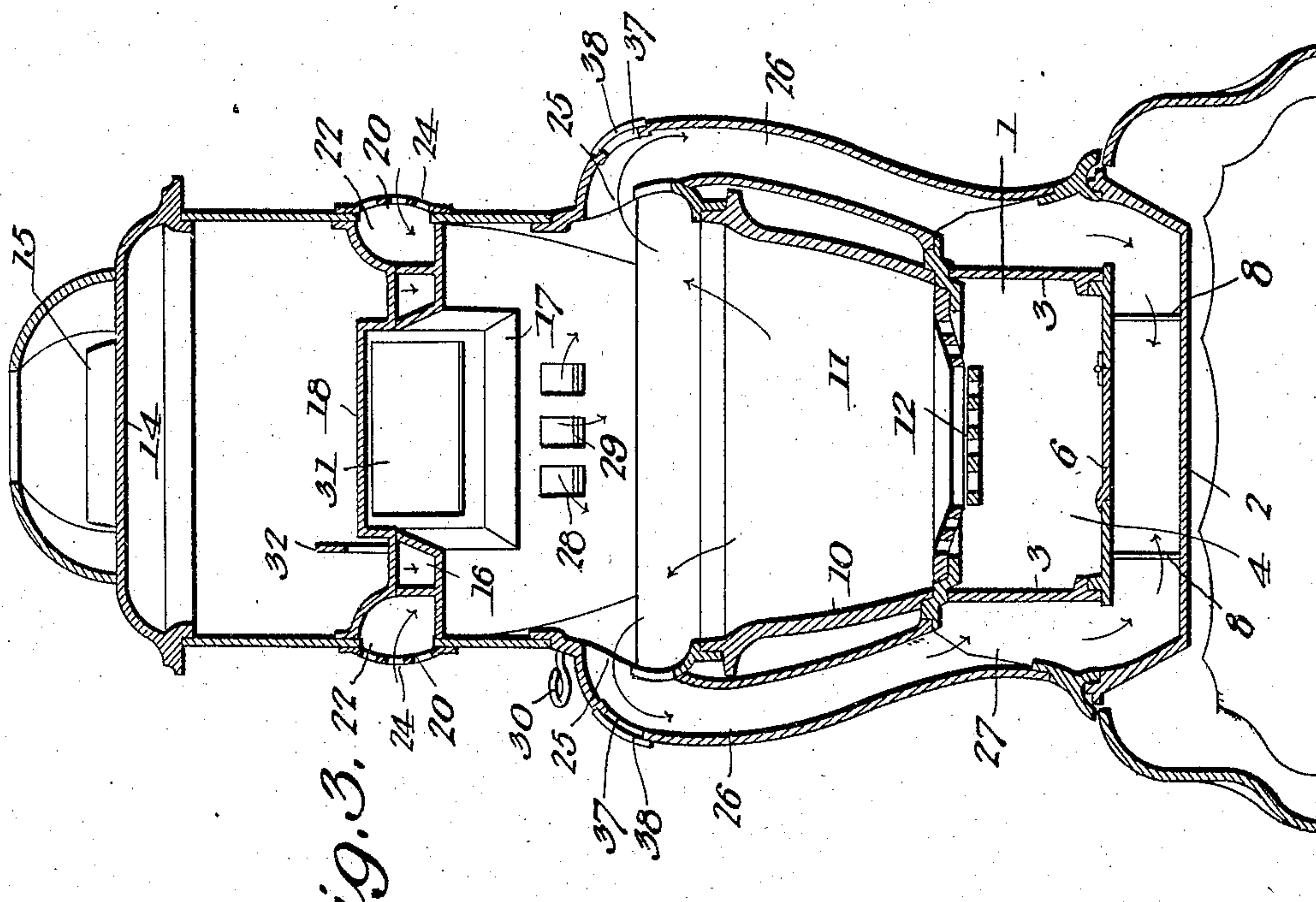
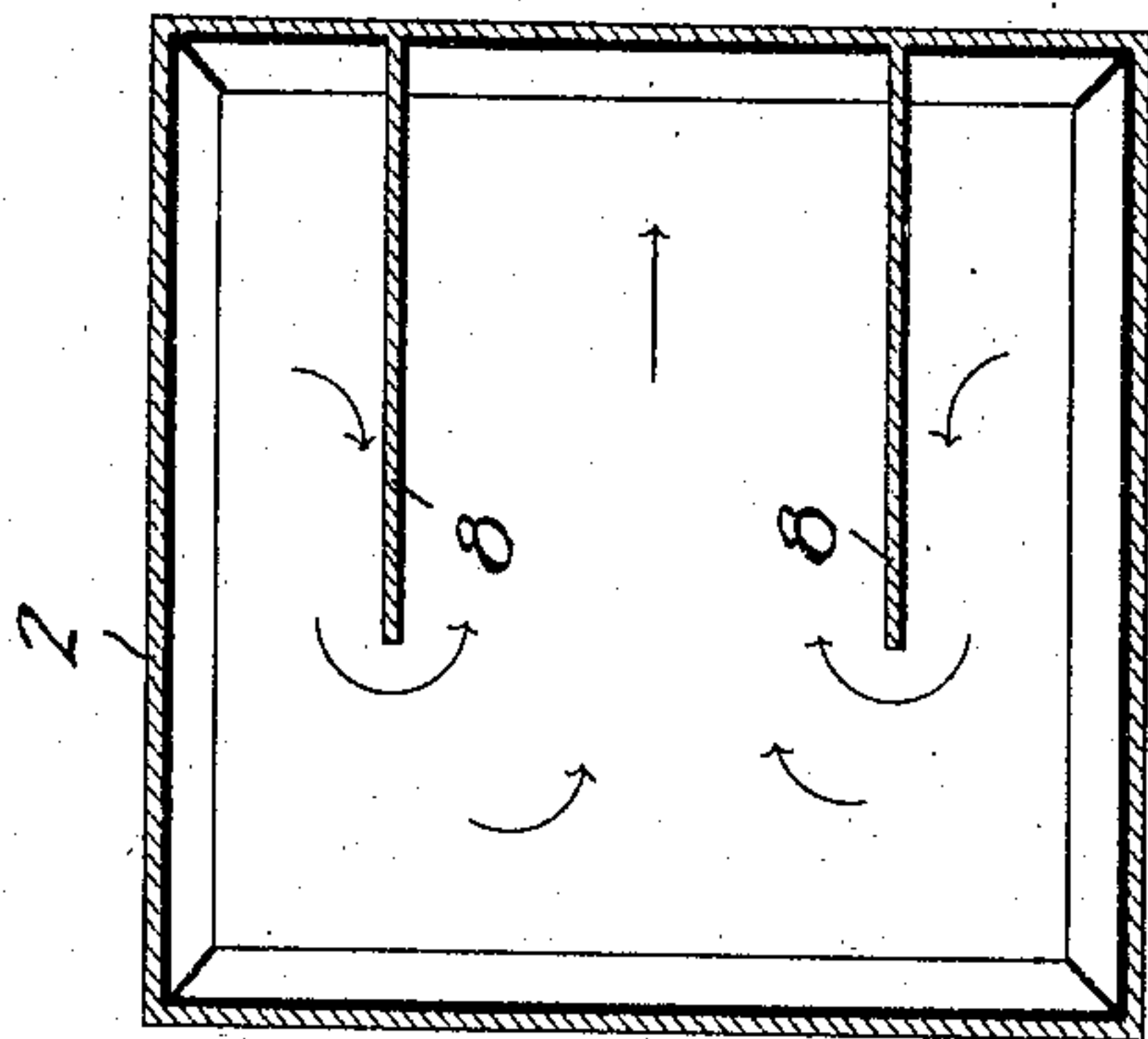


Fig. 3.

Witnesses

E. J. Stuart
Wm. Baggett

Henry Wolf
Phillip H. Loughnane, Inventors
by *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

HENRY WOLF AND PHILLIP H. LOUGHNANE, OF QUINCY, ILLINOIS,
ASSIGNORS TO THE COMSTOCK-CASTLE STOVE CO., OF QUINCY,
ILLINOIS.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 791,391, dated May 30, 1905.

Application filed September 26, 1904. Serial No. 226,025.

To all whom it may concern:

Be it known that we, HENRY WOLF and PHILLIP H. LOUGHNANE, citizens of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Heating-Stove, of which the following is a specification.

This invention relates to heating-stoves, and more especially to that class of heaters which are specially adapted for the consumption of soft or bituminous coal.

Among the objects of the invention are to promote as far as possible the thorough combustion of the fuel by consuming the gases of combustion and the combustible particles held in suspension therein, to provide an increased radiating-surface, to make provision for the convenient cleaning out of the flues in which deposits of soot may be made, and, generally speaking, to provide a stove of the class referred to which shall possess superior advantages in point of simplicity, durability, and general efficiency.

With these and other ends in view, which will readily appear as the nature of the invention becomes better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being understood, however, that no limitation is necessarily made to the precise details herein exhibited, but that the right is reserved to any changes, alterations, and modifications which may be resorted to within the scope of the invention and without departing from the spirit or sacrificing any of the advantages of the same.

Figure 1 is a perspective view of a heating-stove constructed in accordance with the principles of the invention, parts having been removed for the purpose of exposing the interior construction. Fig. 2 is a vertical sectional view. Fig. 3 is a vertical transverse sectional view of one side of the stove, taken

on the line 3 3 of Fig. 2. Fig. 4 is a horizontal sectional view taken on the line 4 4 of Fig. 2. Fig. 5 is a horizontal sectional view taken on the line 5 5 of Fig. 2.

Corresponding parts in the several figures are indicated by like characters of reference.

The base of the stove includes an upper portion 1 and a lower portion 2. The upper portion constitutes the ash-pit, the sides 3 3 and rear wall 4 of which are spaced from the sides and rear wall of the casing. The front wall of the latter is provided with a door 5, through which access may be had to the ash-pit. The bottom of the latter is provided with a trap-door 6, through which the flue-chamber 7 in the lower part of the base is accessible.

Extending forwardly from the rear wall of the flue-chamber 7 are baffle-plates 8 8, the space between the rear ends of which communicates with the lower end of a back flue 9, the upper end of which is connected with the rear part of the stove-casing 10, which is supported upon the base. The upper end of the back flue may be flared or enlarged, as shown, and provided with a griddle 11. The lower part of the stove-casing 10 constitutes the fire-pot 11, in the bottom of which is mounted the grate 12, whereby it is separated from the ash-pit. The front part of the stove-casing is provided with a feed-door 13, and the upper portion of the casing supports the top plate 14, having a pipe-collar 15 for the attachment of the pipe by which the products of combustion are to be carried to the point of final exit.

In the upper part of the stove-casing—that is to say, above the fire-pot—is located a diaphragm or division member, which may be described as an annular casing 16, having a central opening 17, above which is placed a deflector 18. This diaphragm or division member is arranged, preferably, in an inclined position extending from a point above the feed-door in front to a point below the opening 19, which connects the upper end of the back flue 9 with the rear part of the stove-casing. The diaphragm should be fitted tightly in the stove-casing, so as to prevent the upward passage

of smoke and flames between said casing and diaphragm. The stove-casing, however, is provided at the sides and front with openings 20 and 21, which communicate with openings 22 and 23 in the wall of the annular chamber constituting the diaphragm. These openings are preferably protected by vents or valves of suitable construction, 23^a, whereby the admission of cold air to the annular chamber 16 may be regulated. Such valves may, however, be dispensed with, and the openings may be simply covered by ornaments of a grated or open nature, as shown at 24.

The sides of the stove-casing are provided between the upper edge of the fire-pot and the division member or diaphragm with openings 25, which are connected by flues 26 with openings 27 in the base and communicating with the sides of the flue-space 7 in the latter. The flues 26, as well as the back flue 9, are spaced from the stove-casing, as clearly shown in the drawings, thus forming intermediate air-spaces. By this construction the radiating-surface of the stove is greatly increased and the apartment in which the stove is placed for operation may be quickly and effectively heated.

The bottom of the division member 16 is provided contiguous to the rear part of the stove-casing with openings 28 for the downward passage of air, the passage of which may be regulated by means of a suitably-constructed damper 29, the operating arm or handle 30 of which extends through the side of the stove-casing.

Hingedly connected to the upper side of the division member, adjacent to the rear edge of the opening 17, is a damper 31, adapted to close against the deflector 18. Said damper is provided with an operating-rod 32, which extends through a slot 33 in the front part of the stove-casing. 34 is a trip-lever pivoted in the stove-casing directly above the feed-door and having a toe 35, which extends downwardly in front of the upper edge of the feed-door, so as to lie directly in the path of the latter. The inner end of said trip-lever is extended upwardly adjacent to the damper-handle 32, and the latter is provided with laterally-extending stud 36, disposed in the path of said trip-lever and occupying a position adjacent to the latter when the damper and the stove-door are closed. When the stove-door or feed-door is opened, the trip-lever will swing upon its fulcrum, thus engaging the lug 36 and actuating the damper-handle to open the damper. It is obvious, of course, that the damper may be manually operated independently of the automatic trip mechanism just described.

In operation when a fire is started in the stove the damper 31 is thrown open, thus providing a direct draft, whereby the products of combustion are enabled to pass up-

wardly through the opening 17 into the upper part of the stove-casing and thence to the chimney. As soon as the fire has been well started the damper 31 is closed and the products of combustion will now be compelled to take a circuitous course through the flues 26 into the flue-chamber 7, passing by the baffle-plates in the latter to the back flue and upwardly through the latter to the upper part of the stove-casing and thence to the point of final exit. At the same time cold air will enter freely into the annular chamber of the division member. The latter being exposed to the intense heat of the incandescent contents of the fire-pot will cause the air entering therein to be rapidly and intensely heated, the hot air being discharged through the openings 28 in a downward direction into the combustion-chamber, where it intermingles with the gases of combustion, causing the combustible particles held in suspension therein to be thoroughly consumed. Combustion will take place not only in the combustion-chamber, but during the passage of the gases through the side flues, the base flue-chamber, the back flue, and the upper part of the stove-casing, all of said parts becoming quickly and thoroughly heated to an extent which will cause the radiation of intense heat from all parts of the stove. When the feed-door is opened for the purpose of supplying fresh fuel, the trip-lever 34 will be operated to automatically open the direct-draft damper 31, thus preventing the escape of smoke and gas into the room.

This improved stove, as will be seen, is of an exceedingly simple, inexpensive, feasible, and practical construction, and it provides for the consumption of soft coal in an effective and economical manner.

It is preferred to provide the upper ends of the flues 26 with openings 37, having closures 38, which may be conveniently moved to afford access to the said flues for the purpose of cleaning the latter when necessary. The bottom flue-chamber is conveniently accessible for a like purpose by removing the trap-door 6.

Having thus described the invention, what is claimed is—

1. In a stove, a hollow annular casing provided with a central passage for the products of combustion and constituting a diaphragm supported intermediate the upper and lower ends of the stove-casing, said hollow casing being provided with openings for the intake of cold air and for the downward discharge of heated air; and means in said passage for obstructing and regulating the flow of the products of combustion therethrough.

2. In a stove, a valved diaphragm separating the lower from the upper part of the stove-casing, and circuitous passages connecting the lower with the upper part of said casing, said diaphragm consisting of an annular

casing having communication with the outer air and provided with a valved opening discharging in a downward direction.

3. In a stove, a valved diaphragm consisting of an annular casing separating the lower from the upper part of the stove-casing, the front end of said diaphragm being disposed above the feed-door, a base having a flue-chamber, side flues connecting the combustion-chamber below the diaphragm with said flue-chamber, a back flue connecting said flue-chamber with the stove-casing above the diaphragm, and a direct-draft damper in said diaphragm.

4. In a stove, a division member consisting of an annular casing fitted in the stove-casing and separating the lower from the upper part of said casing, said annular casing being provided with openings communicating with the outer air and with a downwardly-discharging valve-opening, a deflector upon said division member extending over the central opening therein, a damper hinged at the rear edge of

said opening, and an operating-rod extending from said damper forwardly through a slot in the stove-casing. 25

5. A stove-casing having a feed-door, a division member consisting of an annular chamber mounted in an inclined position in said stove-casing with its front end above the feed-door, a damper mounted adjacent to the central opening in said casing, a damper-rod extending through a slot in the casing and having a laterally-extending lug, and a trip-lever, pivoted on the stove-casing, extended in the path of said lug and having a toe extended in the path of the upper edge of the feed-door. 30 35

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

HENRY WOLF.

PHILLIP H. LOUGHNANE.

Witnesses:

H. C. STOLL,

W. F. SIMPSON.