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W. B. CASSIDY.

GAS STOVE.

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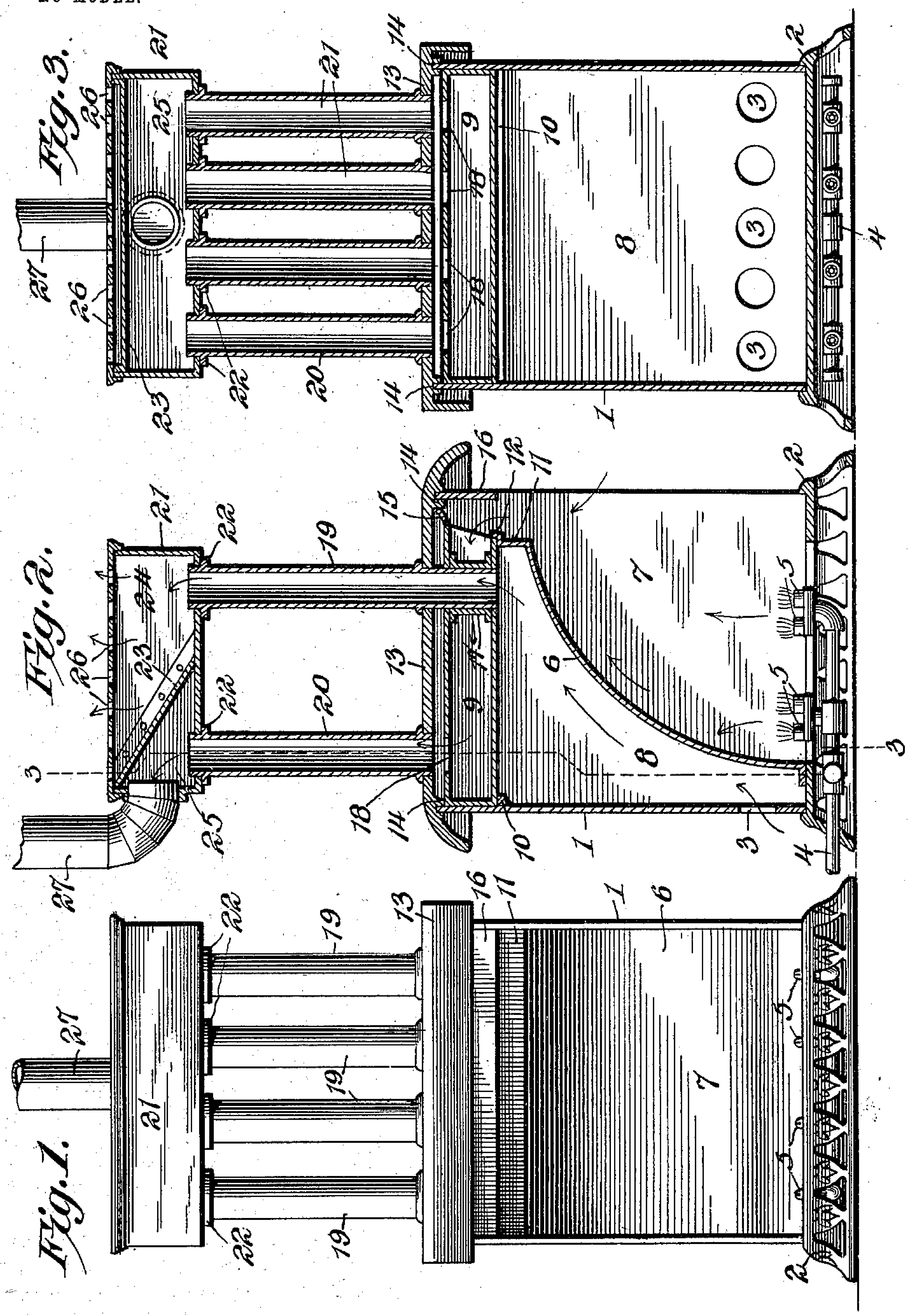
NO MODEL.



Witnesses
H. J. Shepard.

William B. Cassidy, Inventor

by C. C. Shepherd. Attorney

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UNITED STATES PATENT OFFICE.

WILLIAM B. CASSIDY, OF COLUMBUS, OHIO.

GAS-STOVE.

SPECIFICATION forming part of Letters Patent No. 733,005, dated July 7, 1903.

Application filed November 22, 1902. Serial No. 132,405. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. CASSIDY, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Gas-Stoves, of which the following is a specification.

This invention relates to heating-stoves, and is designed to provide an improved gas-stove which is particularly adapted for burning natural gas and is arranged to prevent the escape of gas and products of combustion into the room in which the stove has been set up.

It is furthermore designed to provide for circulating the products of combustion over the top of the hot-air chamber, so as to increase the heated area thereof.

Another object of the invention is to provide improvements in the combined smoke and hot-air box from which the smoke and hot air are finally discharged, whereby the smoke and products of combustion are directed immediately into the smoke-pipe and are prevented from escaping from the box into the adjoining room.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a front elevation of a gas-stove embodying the features of the present invention. Fig. 2 is a vertical longitudinal sectional view thereof, taken from front to back; and Fig. 3 is a transverse vertical sectional view on the line 3 3 of Fig. 2.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

The present stove embodies a hollow body 1, preferably of sheet metal, which is supported upon an ornamental base 2, of cast metal. The front of the body is preferably open, as shown, but may be closed without affecting the principles of the present invention. In the back of the body are openings or perforations 3, arranged in a transverse series near the bottom of the body for the introduction of fresh air to be heated. A suitable supply-pipe 4 passes through the base and beneath the bottom of the body and communicates with the burners 5, which project upwardly through the bottom of the stove. These burners may be of any common or preferred type. By means of an upwardly and forwardly bowed transverse partition or fire-back 6 the interior of the body is divided into a front combustion-chamber 7 and a rear hot-air chamber 8, the latter of which has communication with the external air through the medium of the series of openings 3 in the back of the stove-body. This partition rises from the bottom of the stove-body, near the back thereof, and bows over toward the front and terminates short of the front and also short of the top of the body, having a concave front side and a convex rear side, whereby it receives the full impact of the heat from the burners. The top of the hot-air chamber is closed by means of box-like compartment 9, the rear end of which rests upon a flange or ledge 10, projected inwardly from the back of the stove-body, while the open front of the box rests upon the top of the partition or fire-back 6, the latter having an upstanding extension 11, terminating at its upper end in an angular flange 12, forming a seat for the front of the box and producing a gas-tight joint between the partition and the box.

Over the open upper end of the stove-body is a cast-metal top 13, which is provided with a pendent marginal flange 14, having its lower side grooved to receive the top edges of the body and to rest against the top of the box 9, whereby the latter is held in place. At the front of the box there is an upstanding transverse flange 15, which rests against the under side of the top 13 and against the rear side of the front portion of the flange 14, thereby to close the space between the box and the top of the stove. A pendent transverse flange 16, which forms the top of the front of the stove-body, extends downwardly to the bottom of the box 9 and is spaced in front thereof, so that the space between the front portion 16 and the open front of the box forms a flue to direct the smoke and other products of combustion into the box, and thereby pre-

vent the same from escaping into the room. Near the front of the box the top and bottom thereof are provided with corresponding openings, between which extend a thimble or tubular jacket 17, it of course being understood that the openings are arranged in a series extending transversely across the box. Near the back of the box the top thereof is provided with a transverse series of openings 18.

Rising through the top of the stove, at the front thereof, are a plurality of hot-air pipes or tubes 19, the lower ends of which pass through suitable openings in said top and also pass through the corresponding thimbles or jackets 17, the said lower ends being open and in communication with the hot-air chamber of the body of the stove. Similar smoke pipes or tubes 20 pierce the back portion of the top of the stove-body and are registered with the openings 18 in the back portion of the top of the box, so as to carry off the smoke and other products of combustion. The two sets of pipes rise to the same height and pierce the bottom of a distributing-box 21, which is supported by the pipes upon annular flanges or shoulders 22 thereon. From about the middle of the bottom of the box 21 a transverse partition 23 inclines upwardly and rearwardly, with its upper edge connected to the top of the box, preferably at the intersection of the back and the top, thereby dividing the interior of the box into a front hot-air compartment 24 and a rear smoke-compartment 25. The top of the box is provided throughout with perforations 26, or it may be in the form of a grating or any other preferred openwork construction to permit of the free escape of the heated air. A suitable smoke-pipe 27 pierces the back of the box 21 and communicates with the smoke-chamber to carry off the smoke and other products of combustion.

From the foregoing description it will be understood that the air which enters through the openings 3 in the back of the stove-body and passes into the hot-air chamber 8 is heated by the flames from the burners, after which it rises through the pipes 19 into the distributing-box 21, from which it escapes into the adjoining room. The smoke and other products of combustion pass upwardly and enter the smoke-box 9, and hence circulate across the top of the hot-air chamber, whereby the heated area of the latter is materially increased. From the box 9 the smoke passes upwardly through the pipes 20 and into the smoke-compartment of the box 21, and by reason of the partition 23 inclining across the tops of the pipes the smoke impinges against the partition and is thereby directed rearwardly to the smoke-pipe 27 without having a chance to circulate to any appreciable extent within the smoke-compartment, whereby leakage of the smoke and other products of combustion is reduced to the minimum. Furthermore, by having the inclined partition 23 connect with the top of the box at the intersection of said top with the back there is one joint only instead of two at the top of the compartment, which is a further guard against leakage.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a gas-stove, the combination with a hollow body, of burners therefor, a hot-air chamber within the body, a smoke-box within the body and forming the top of the hot-air chamber and also provided with an open front, the top of the box having an opening at the back thereof, a smoke-pipe piercing the top of the stove-body and in communication with the opening in the top of the box, and a hot-air pipe piercing the top of the stove, the top and bottom of the smoke-box and also in communication with the interior of the hot-air chamber.

2. In a gas-stove, the combination of a hollow body, a partition rising from the bottom of the body and dividing the interior thereof into a hot-air chamber and a combustion-chamber, burners within the combustion-chamber, a smoke-box forming the top of the hot-air chamber and having an open front in communication with the combustion-chamber, the top of the box having an opening at the back thereof, a smoke-pipe piercing the top of the stove and in communication with the opening in the top of the box, and a hot-air pipe piercing the top of the stove, the top and bottom of the box and also in communication with the interior of the hot-air chamber.

3. In a gas-stove, the combination of a hollow body having a transverse flange upon the inner side of the back thereof and near the top of the stove, a partition rising from the bottom of the stove and dividing the latter into a combustion-chamber and a hot-air chamber, a smoke-box supported upon the flange and the partition, the front of the box being open and in communication with the combustion-chamber, and the top of the box having an opening at the back thereof, a smoke-pipe piercing the top of the stove and in communication with the opening in the top of the smoke-box, and a hot-air pipe piercing the top of the stove and the top and bottom of the smoke-box and also in communication with the hot-air chamber.

4. In a gas-stove, the combination with a hollow body which is divided into a combustion-chamber and a hot-air chamber, and burners for the combustion-chamber, of a smoke-pipe rising from the top of the stove and in communication with the combustion-chamber, a hot-air pipe rising from the top of the stove and in communication with the hot-air chamber, and a distribution-box supported upon the tops of the pipes and provided with a partition located between the pipes to divide the box into a hot-air compartment and a smoke-compartment, both compartments being provided with outlets.

5. In a gas-stove, the combination with a

hollow body which is divided into a combustion-chamber and a hot-air chamber, and burners for the combustion-chamber, of a smoke-pipe rising from the top of the stove and in communication with the combustion-chamber, a hot-air pipe rising from the top of the stove and in communication with the hot-air chamber, a distribution-box supported upon the open tops of the pipes, a partition within the box and between the pipes and also inclined across the top of the smoke-pipe, whereby the box is divided into a hot-air compartment and a smoke-compartment, the hot-air compartment having an outlet, and a discharge-pipe piercing that side of the smoke-compartment toward which the partition is upwardly inclined.

6. In a gas-stove, the combination with a hollow body which is divided into upright combustion and hot-air chambers, the top of the hot-air chamber terminating short of the top of the body and the space between the top of said chamber and the top of the stove forming a smoke-box with one open end in communication with the combustion-chamber, a smoke-pipe rising from the top of the stove and in communication with the smoke-box, a hot-air pipe rising from the top of the stove and in communication with the hot-air chamber, a distribution-box supported upon the open tops of the pipes, one of the latter being located at the front of the box and the other at the back thereof, the top of the box being provided with perforations, a partition disposed within the distribution-box between the pipes and inclined upwardly and rearwardly to the top of the box and across the open top of the smoke-pipe, and a discharge-pipe piercing the back of the box.

7. In a gas-stove, the combination with a hollow stove-body having a partition rising from the bottom thereof and terminated short of the top of the body, whereby the body is divided into a front combustion-chamber and a rear hot-air chamber, the hot-air chamber having an inlet, and a substantially horizontal flange upon the inner side of the rear wall of the hot-air chamber, of a smoke-box supported upon the flange and the top of the partition, the front of the box being open and in communication with the combustion-chamber, the top of the box being provided with a transverse series of openings at the back thereof, and the top and bottom of the box being provided with registered openings disposed in series transversely of the box, smoke-pipes piercing the back of the top of the stove and registered with the openings at the back of the box, hot-air pipes passing through the openings in the top and bottom of the box at the front thereof and in communication with the hot-air chamber, a distribution-box supported upon the open tops of the pipes and provided with a perforate top, a partition located between the tops of the pipes and inclined from the bottom of the distribution-box upwardly and rearwardly over the open tops of the smoke-pipes dividing the box into a front hot-air compartment and a rear smoke-compartment, the partition forming a deflector to direct the smoke from the smoke-pipes to the rear of the smoke-compartment, and a discharge-pipe piercing the back of the smoke-compartment.

8. In a stove, the combination with a combustion-chamber and a hot-air chamber, of a distribution-chamber, a hot-air pipe leading from the hot-air chamber to the distribution-chamber, a smoke-pipe leading from the combustion-chamber to the opposite side of the distribution-chamber, a partition within the distribution-chamber and between the two pipes and also inclined across the open end of the smoke-pipe to form a deflector for the smoke emerging from the pipe, and a discharge-pipe piercing that wall of the distribution-chamber toward which the partition is inclined.

9. In a stove, the combination with a combustion-chamber and a hot-air chamber, of a hot-air pipe rising from the hot-air chamber, a smoke-pipe rising from the smoke-chamber, a distribution-box supported upon the open tops of the pipes, a partition within the box and between the pipes and dividing the box into a hot-air compartment and a smoke-compartment, said partition being inclined upwardly across the open top of the smoke-pipe to form a deflector, and a discharge-pipe piercing that upright wall toward which the partition is inclined.

10. In a stove, the combination with a front combustion-chamber and a rear hot-air chamber, of a smoke-pipe rising from the top of the combustion-chamber, a hot-air pipe rising from the top of the hot-air chamber, a substantially horizontal distribution-chamber supported upon the open tops of the pipes, the top of the box being perforated, a partition within the box and located between the pipes, said partition dividing the box into a front hot-air compartment and a rear smoke-compartment and also being inclined upwardly and rearwardly across the open top of the smoke-pipe to form a deflector for the smoke emerging therefrom, and a discharge-pipe piercing the back of the smoke-compartment.

WILLIAM B. CASSIDY.

In presence of—
C. C. SHEPHERD,
A. L. PHELPS.