

(No Model.)

T. T. McNISH.
GAS FIRE PLACE.

No. 374,801.

Patented Dec. 13, 1887.

Fig. 1.



Fig. 2.

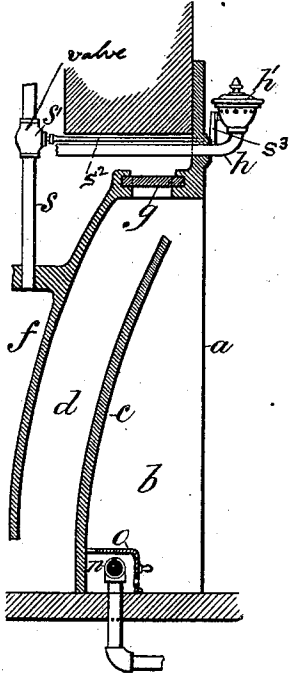


Fig. 3.

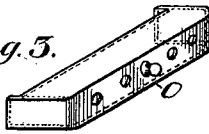


Fig. 4.

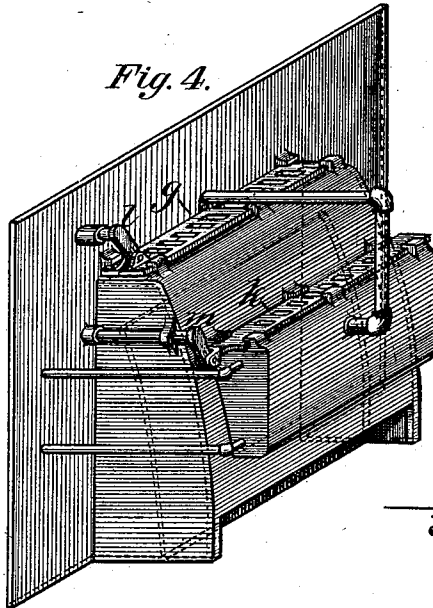
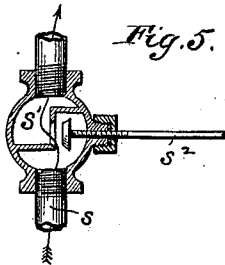


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS T. McNISH, OF ALLEGHENY CITY, PENNSYLVANIA.

GAS FIRE-PLACE.

SPECIFICATION forming part of Letters Patent No. 374,801, dated December 13, 1887.

Application filed May 14, 1886. Serial No. 202,139. (No model.)

To all whom it may concern:

Be it known that I, THOMAS T. McNISH, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Gas Fire-Places; and I do hereby declare the following to be a full, clear, and exact description thereof.

The object of my invention is to improve the construction of gas fire-places to economize the heat, and, secondarily, to provide means for moistening the atmosphere of the room in which the fire-place is situate.

To enable others skilled in the art to make and use my invention, I will now describe it by reference to the accompanying drawings, in which--

Figure 1 is a perspective view, partly in section, of a fire-place constructed in accordance with my invention. Fig. 2 is a vertical section of the same, illustrating a modified form of vapor-vent. Fig. 3 is a detail view. Fig. 4 is a perspective view of the rear side of the fire-place. Fig. 5 is an enlarged vertical section of the valve *s'* which is shown in Fig. 2.

Like letters of reference indicate like parts in each.

In the drawings, *a* indicates the ordinary fire-front surrounding the fire-place *b*, having preferably an inclined and curved back, *c*, which forms the front side of a diving-flue, *d*, though the back may be plain or upright or corrugated, if desired. The flue *d* opens into the chimney *e* at its lower end, being separated from the chimney by a partition formed of metal or other suitable material, in the rear of which is a water chamber or back, *f*, of any desired shape. At the upper end of the flue *d* is an opening controlled by a damper, *g*, by which a direct communication is had between the fire-place *b* and chimney *e*. The water-back *f* is supplied with water by a pipe, *h*, and its height in the water-back may, if desired, be indicated by a suitable gage or indicator, *i*, placed at the side of the fire-front; or it may be ascertained by other suitable or known device—such, for example, as that shown in Fig. 2. The pipe *h* communicates with the upper part of the water-back *f*, and extends therefrom through the fire-front above the fire-place, and is provided with a perforated cap, *k*, and its object is to discharge the vapor from

the water-back into the room to moisten the atmosphere. I have shown but one of these vaporizers *h*; but I do not limit myself thereto, as I can use any desired number. The top of the water-back is provided with an opening which is controlled by a damper, *k*, so that in case the vapor generated by the heat is in excess of the amount desired in the room the damper may be opened and the excess permitted to escape up the chimney *e*. The dampers *g* and *k* can be operated from the outside by means of suitable crank-levers, *l m*, as indicated in Figs. 1 and 4.

Any suitable gas-burner may be used in this fire-place. I have shown a common perforated T-pipe, *n*, over which is placed a shield or cap, *o*, perforated in the vertical side to admit air, and also slotted or perforated in its upper side adjacent to the fire-back *c* to permit the escape of the combined air and gas which burns in the fire-place *b*. The flame ascends in a sheet through the fire-place, hugging the fire-back *c* by reason of the inclination or curvature of the latter, passing the upper edge of the fire-back, and entering the chimney from the opening controlled by the damper *g*. When the draft in the chimney *e* is established, the damper *g* may be closed, and the flame will then be drawn down through the diving-flue *d* and up back of the water-back *f*. By this arrangement the flame is caused to impinge on both sides of the fire-back, and thus to cause a much greater radiation of heat than if it should come into contact with only one side and then escape directly into the chimney-flue. The flame also circles around the water-back *f* and generates vapor, which is discharged into the room, as described. Instead of having the upper side of the water-back open, a pipe, *s*, may be extended upward therefrom into the chimney, the upper end terminating above the vapor-pipe *h*, as shown in Fig. 2. This pipe is controlled by a damper or valve, *s'*, so as to regulate the discharge of vapor from the water-back into the chimney. This valve *s'* is operated by a rotary stem, *s²*, which extends through the flue-wall, and has at its outer end a crank or handle, *s³*, whereby it is turned. In Fig. 2. In Fig. 5 I show the valve *s'* in detail. The indicator *i* may then be omitted,

and the water-back filled from time to time through the pipe *h*, as it will be apparent to the attendant when the back is filled by the rising of the water in the pipe *h*.

5 A basket grate filled with fire-brick, &c., may be used as a burner apparatus in connection with the other parts of the device; or any other burner apparatus—such, for example, as the terra-cotta logs—may be used.

10 I have shown the fire-back *c* made concave and forwardly inclined, and think that this is the preferable construction. The function of the curvature is to concentrate or focalize the radiated heat upon the floor in front of the
15 fire-place, thus causing the lower strata of air to receive the initial heat. The function of the inclination of the fire-back is not only to direct the heat toward the floor, but also to cause the flame to hug the back as it rises to
20 the chimney-flue. The combustion is thus bettered, and more sensible heat is obtained from a given amount of gas.

I do not limit myself to the construction of the burner, nor of the cap *o*. The latter operates to form an air-mixing chamber with the
25 gas-pipe, in which the gas from the pipe is properly mixed with the air from the outside, the latter being more or less heated by passing through the chamber formed by the cap *o*. If
30 desired, the cap *o* may be made integral or in connection with the burner-pipe *n*. Nor do I limit myself to the particular form of water-back shown, as it is apparent that the shape of the water-back may be varied in many ways.

I claim—

1. A gas fire-place or stove having a diving-flue, with a water-back arranged between the diving-flue and chimney, and a vaporizing-pipe leading therefrom into the room, substantially as and for the purposes described. 35 40

2. A gas fire-place having a water-back, with vaporizing-pipes leading out into the room, and an opening leading from the water-back into the discharge-flue controlled by a damper or valve, substantially as and for the
45 purposes described.

3. In a gas fire-place, a fire-back, a gas-pipe at the base of the fire-back, and a removable cap or shield covering the gas-pipe and having an outlet for the gas adjacent to the fire-back,
50 substantially as and for the purpose specified.

4. In a gas fire-place, a fire-back, *c*, a partition between fire-back and the chimney extending above the top, but not as far as the bottom, of said fire-back, and the damper *g*,
55 placed at the top of said partition, in combination with a water-back, *f*, situated between the said partition and the chimney, substantially as and for the purpose specified.

In testimony whereof I have hereunto set
60 my hand this 13th day of May, A. D. 1886.

THOMAS T. McNISH.

Witnesses:

W. B. CORWIN,
THOMAS W. BAKEWELL.