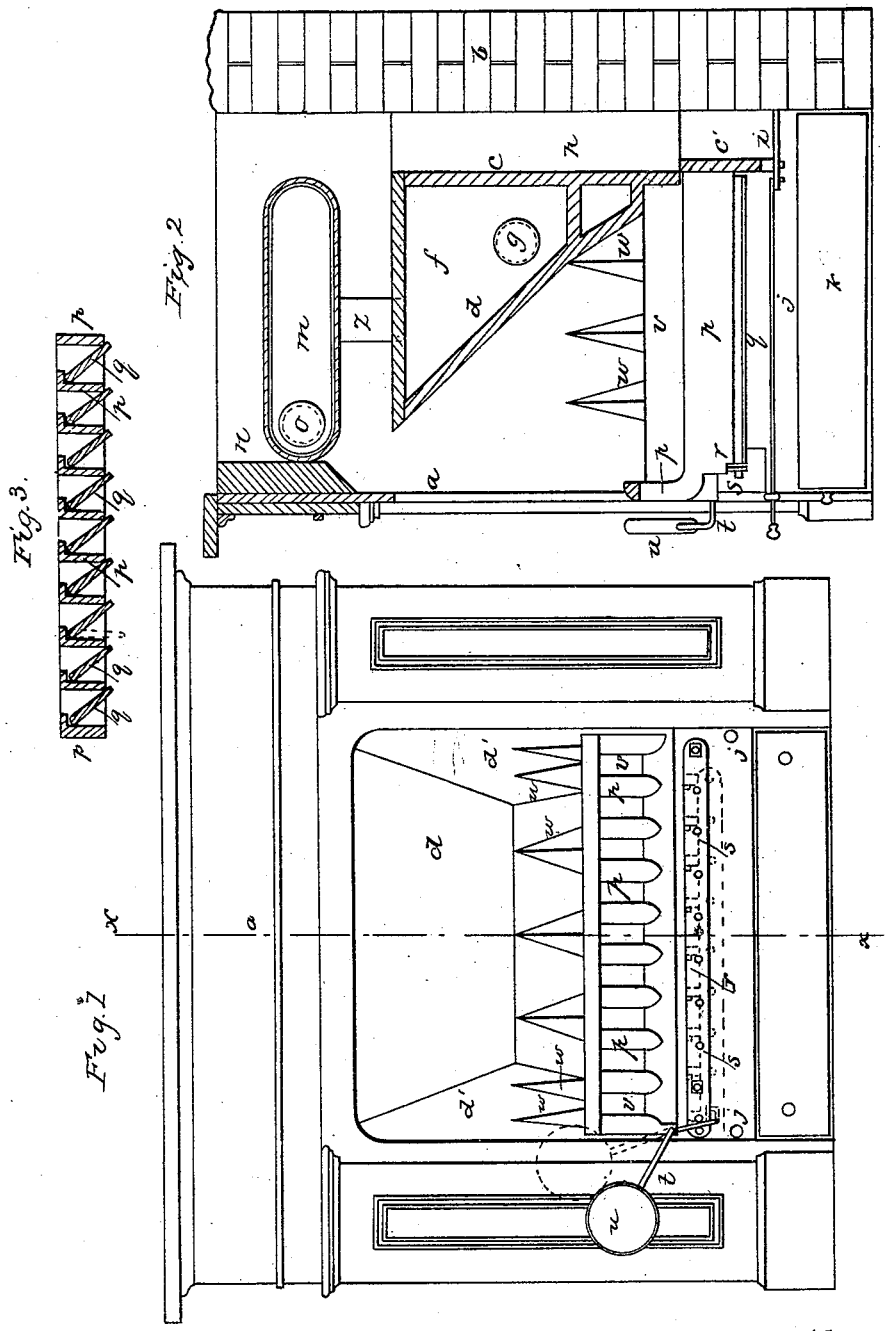
WELLMAN & OLD.

Fire Place.

No. 48,752. Patented July 11, 1865.



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UNITED STATES PATENT OFFICE.

MARSHALL D. WELLMAN AND JAMES OLD, OF PITTSBURG, PENNSYLVANIA.

FIRE-PLACE.

Specification forming part of Letters Patent No. **48,752**, dated July 11, 1865.

To all whom it may concern:

Be it known that we, MARSHALL D. WELLMAN and JAMES OLD, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Fire-Places; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of our improved fire-place. Fig. 2 is a vertical section of our improved fire-place through *x x*, Fig. 1. Fig. 3 is a longitudinal vertical section through the grate-bars of the fire-basket.

In the several figures like letters of reference denote similar parts.

The nature and objects of our invention will appear from the following description, from which others skilled in the art will be enabled to construct and use our improvements.

Our improved fire-place is in some respects similar to the fire-place for which Letters Patent of the United States were granted on the 12th day of April, 1864, to the said Marshall D. Wellman.

In the accompanying drawings, *a* is the front piece of the fire-place, and *b* is the rear wall of the chimney. A hollow cast-iron frame-work, the rear back plate, *c*, of which is perpendicular and parallel to the chimney-wall *b*, and the front plate, *d*, is sloping upward and forward over the fire-basket, forms the back of the fire-place. The slope of the front plate, *d*, extends from the level of the top bar of the fire-basket to the throat of the chimney, the slope being at an angle of about forty-five degrees to the horizon. This frame-work is covered over at top by a horizontal cap or plate, *e*, thus forming a chamber, *f*, back of and over the fire-basket for the purpose of heating air, which is introduced into it from the side or back through an opening, *g*, Fig. 2.

The perpendicular plate *c* of the frame is set a few inches from the rear wall of the chimney, as seen in Fig. 2, thus forming a flue, *h*, which opens at top into the chimney and below into the space below the grate-bars of the fire-basket. The bottom of the flue *h* is closed by a trap-door, *i*, which may move on a pivot or slide so as to open and close the flue at pleasure. The trap-door is worked by a rod, *j*, which extends to the front of the fire-place. The flue *h* serves to receive and collect any soot or ashes which descend the chimney, and may also be used to admit the upward passage of air into the chimney back of the fire-place, so as to regulate the draft of the fire. When the trap-door *i* is opened any dirt, ashes, or soot collected in the flue will fall into the ash-pan *k*, and may be thus readily removed.

From the top plate *e* of the air-chamber *f*, at one side of the fire-place, rises a short perpendicular pipe, *l*, which enters the horizontal air-chamber *m*. This horizontal air-chamber extends across the chimney from side to side, and extends in depth from the front wall, *n*, of the chimney, which it touches, to within a few inches of the back wall, *b*, of the chimney, leaving, however, room for the passage of air and smoke up the chimney in the rear of it. The horizontal chamber *m* has a horizontal pipe, *o*, which passes from it at one side near the front, through which the air from the chamber *f*, heated by the play of flame and smoke against the front plate, *d*, and against the lower side of the horizontal air-chamber *m*, passes away, and is either allowed to escape into the room through a register or is conducted to some other apartment. The pipe *o* on one side and a similar pipe closed at one end (or a journal) at the other side serve as pivots on which the chamber turns, and by means of which it is susceptible of being elevated at the rear end, when it is desired to clean the chimney. When the chamber *m* is raised any dirt or soot which may have collected on it will fall down between the chamber and the front wall, *n*, if the distance of the center of the pipe *o* on which it turns from the surface of the front wall, *n*, is a little greater than half the perpendicular depth or thickness of the chamber *m*. A series of such horizontal air-chambers *m* may be ranged one above the other in the chimney, the rear end of the chambers alternately touching the front and back walls of the chimney, so as to compel the flame, smoke, and heated air which pass up the chimney to pass around each chamber, and thus gradually part with their heat to the current of air traversing the interior of these chambers. The effect of this arrangement is to save a great deal of heat that would otherwise pass up the chimney and be lost.

A chamber similar to *f* may be made on both

sides of the fire-basket by sloping the sides d' of the fire-place inward, as shown in Fig. 1, and these side chambers may either communicate with the back-wall chamber f or separately with the upper horizontal chamber, m.

The fire-basket consists of grate-bars p, the horizontal part of which is of the shape shown in Fig. 3, being of greater depth than common, with a recess on one side to receive a slat, q, which is hung in the bar by means of a pin at each end. There is one slat to each grate-bar, which extends horizontally from the front of the fire-basket to the back plate, c', and wide enough to reach from the point of suspension, near the top of the grate-bar, to the bottom of the next adjoining bar, as shown in Fig. 3, when it is desired to close the space between the bars. When the space between the bars is to be opened the slats are turned so as to hang down perpendicularly, as shown at one of the bars by dotted lines in Fig. 3. The opening and closing of the slats is effected by means of a transverse horizontal bar, r, in front of the grate, into which a pin, s, at the bottom of each slat enters, so that by moving the slat sidewise the slats are opened or closed. A lever, t, attached to the bar r with a weight, u, at the end of it will serve to keep the bar r and slat q either open or closed. The lever and weight are shown in Fig. 1 in front of the fire-place, but they may be placed inside the fire-front a.

The grate-bars p turn upward in front to form the front of the fire-basket; but we make the fire-basket much shallower than is common, as shown in Fig. 2.

A recess, v, is made in the back wall and two side walls of the fire-place, which is two or three inches in depth and extends from about the level of the under side of the horizontal grate-bar at top of the front of the fire-basket. The object of this recess is to prevent the ignited fuel packing closely against the back and side walls of the fire-chamber, and to allow the air to get at the back and sides of the fire and into the flutes w in the back and side plates, which plates are widest at bottom and taper upward to a point, the base of each flute opening into the recess v. The number of these flutes may vary to suit the size of the fire-basket. They should be so large at their base as to allow the air to pass freely up them, and sufficiently narrow to prevent the fuel choking them. The grate-bars and slats extend backward and on each side into the back and side recesses, v, so that when the slats are closed the free passage of air is prevented, and the ashes from the fuel will soon close any space which may be left by reason of the slats not fitting exactly to the grate-bars.

The use of the slats in the grate-bars and the flutes in the back and side plates is to give a more perfect control of the combustion of the fuel. When a brisk fire is required the slats are opened, which allows of a free admission of air to the fire, and especially to the back and sides, the effect of which is not only to cause the fire to burn up rapidly, but to supply oxygen to that part of the fire-basket from which it is usually excluded, the air in fire-places of ordinary construction passing up the chimney without reaching the back part of the fire, which causes a large quantity of smoke and gas to pass off up the chimney without being consumed.

By the arrangement we have described the air mingles with the gas and smoke, causing a vivid combustion and a brilliant flame, which plays upon the sloping back plate, d, and throws a great deal of heat into the room. When the slats are closed the fire quickly becomes dead from a lack of air, and will keep alight and burn slowly without going out until the fuel is entirely consumed.

The arrangement of hot-air chambers also utilizes a large proportion of the heat which would otherwise be lost for all purposes of heating the apartment.

Having thus described our improvements, what we claim as our invention, and desire to secure by Letters Patent, is—

1. The use of recesses in the back and side walls of the fire-place, or in either of them, the top of which is below the level of the top of the fire-basket, in combination with flutes in the fire-walls, for the purpose of preventing the packing of the fuel at the back and sides of the fire, and thus giving the air access to the back part of the fire, and allowing it to pass up the flutes, so as to mingle with the unconsumed gas and smoke, substantially as described.

2. The combination of a bar-grate or fire-basket, p, having slats between its bars, with the air spaces or recesses v in the back wall or overhanging back plate, d, for the purposes hereinbefore described.

3. The arrangement of a hot-air chamber or chambers in the back and side walls of a fire-place, and the sloping or overhanging back wall and air-passages in the rear of the fire-chamber, for the purpose of more readily heating the air passing through such chambers to warm the apartments, substantially as hereinbefore described.

4. The use of one or more hot-air chambers, constructed substantially as described, and placed in the throat of the chimney, so that the smoke and hot air passing up the chimney shall play around or upon them, and thereby heat the air passing through them, for the purpose hereinbefore set forth.

In testimony whereof we, the said MARSHALL D. WELLMAN and JAMES OLD, have hereunto set our hands.

MARSHALL D. WELLMAN.
JAMES OLD.

Witnesses:
JOHN MAFFETT,
GEORGE THOMPSON.