Charles Wood's
Air-Heating Furnace.

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PATENTED JUL 11 1871

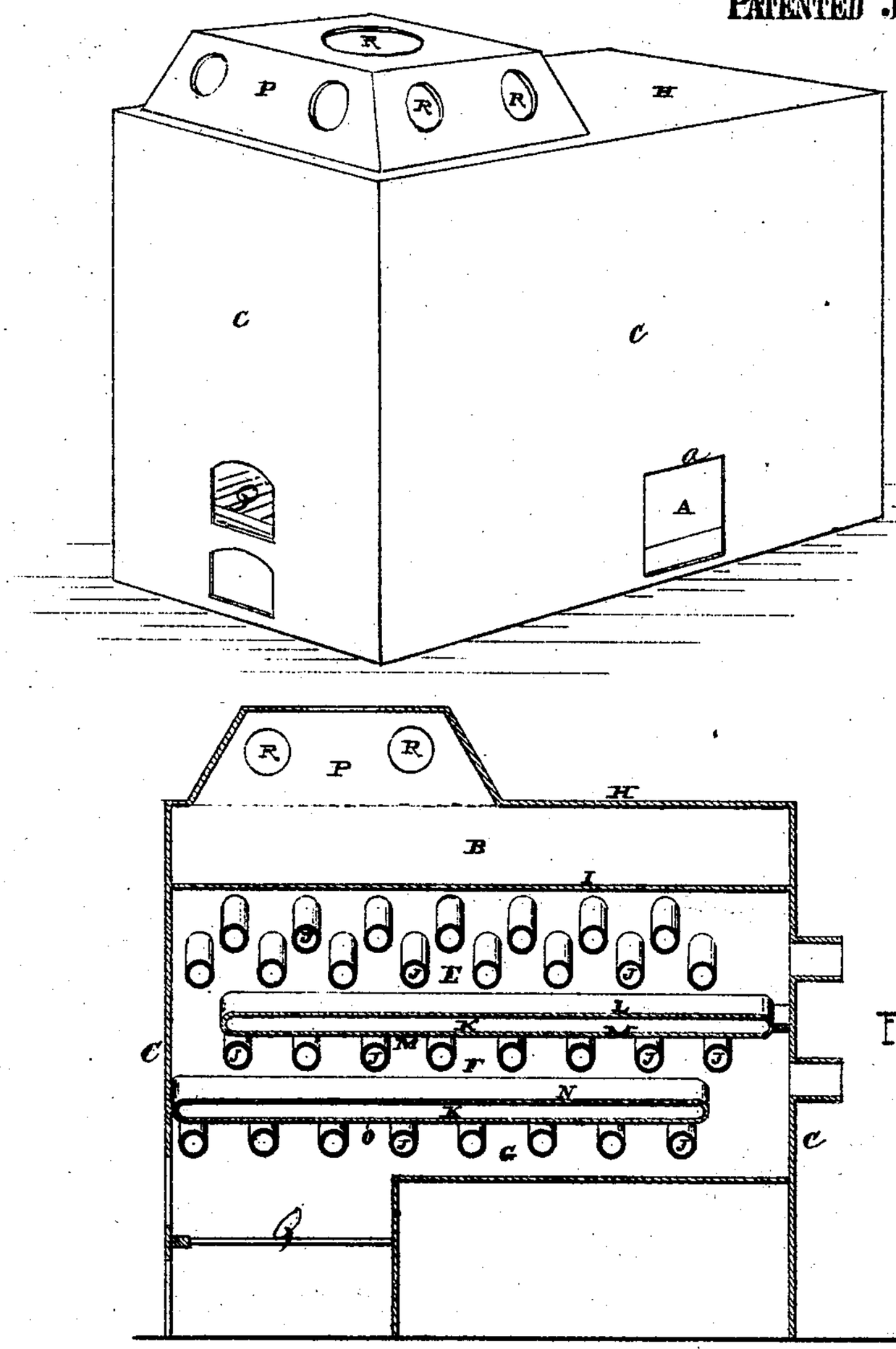

FIG. 1

FIG. 2

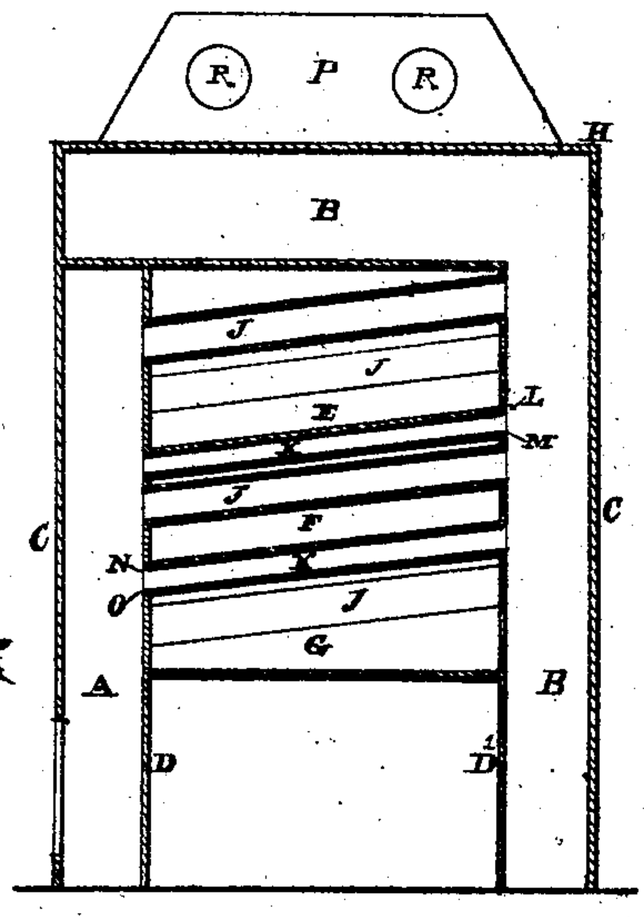

FIG. 3

Witnesses

Thos. H. Dodge

Chas. H. Pinkleigh

Inventor.

Charles Wood

UNITED STATES PATENT OFFICE.

CHARLES WOOD, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 116,908, dated July 11, 1871.

To all whom it may concern:

Be it known that I, CHARLES WOOD, of the city and county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Air-Heating Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification.

Figure 1 represents a perspective view of my improved furnace. Fig. 2 represents a longitudinal vertical section of the same, and Fig. 3 represents a transverse vertical section of the same.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists in certain improvements in air-heating furnaces, as will be hereafter described.

In the drawing, the part marked A indicates the cold-air chamber, into which the external air is conveyed by suitably-arranged pipes or flues, which it is not necessary to herein illustrate. B indicates the hot-air chamber into which the air is passed when heated. C indicates the outer or inclosing-wall of the furnace, and D D′ indicate the walls which separate the fire-passages E, F, and G from the cold and hot-air chambers A and B. H indicates the top plate of the furnace, and I the upper plate of the fire-passage E. The air is conveyed from the cold chamber A, after it has entered the opening *a* in the outer wall C, to the hot chamber B through ranges of tubes J, arranged in the fire-passages, and also through spaces K between the plates L M and N O, which separate the fire-passages E, F, and G from each other.

In furnaces of this class, as heretofore constructed, the tubes J and plates L M N O have all been laid in a horizontal position; but in my improved furnace I arrange the tubes and plates in an inclined position, the ends thereof, which are fixed in the wall D′ at the side of the hot-air chamber, being considerably higher than the ends which are fixed in the wall D′ at the cold-air chamber. By inclining the tubes J and plates L M N O the air is caused to pass through from the cold to the hot-air chamber in a much stronger and more uniform current, so that a greater quantity of air can be heated with a given amount of fuel than with the ordinary furnace of this class having horizontal tubes and plates. Another great advantage gained by the inclined plates and tubes is that they are much easier kept free from soot and ashes than those which are set horizontal. The action of the draught across them tends to agitate the particles of soot deposited upon the plates and causes them to settle at the lower edge thereof, and to leave the greater portion of the plate surface comparatively free from deposit. The collection of soot and ashes at the lower edges of the plates can readily be removed through small openings which can be arranged for that purpose in the wall at the end of the furnace.

Upon the top of the furnace, directly above the fire-pot or grate Q, I arrange a delivering-dome, P, from which the hot-air flues R extend to the various apartments to be heated. The lower part of the dome P is open into the hot-air chamber B, and the air, after passing through the different tubes and passages J K, and becoming heated to various degrees of temperature, rises into the dome P and there mingles, so that the mass is brought to a uniform temperature before being transferred to the apartments through the flues R. It will be observed that the relative arrangement of the fire-pot or grate Q, air-flues J, and delivering-dome P is such that the heated air and gases from the fire pass in such a direction as to impinge against the sides of the tubes or flues J, and also against the bottom of the upper plate I which forms the bottom of the dome P. The various walls of the furnace may be built of any suitable material, but I prefer to make the tubes and plates of metal.

Having thus described my improved air-heating furnace, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The relative arrangement of the inclined air-tubes J, air-chambers A B, and walls D D′, substantially as and for the purposes set forth.

2. The relative arrangement of the fire-pot or grate Q, and dome P, as respects each other, and the cold and hot-air chambers A and B, with their connecting-tubes, substantially as shown and described.

3. The relative arrangement of the inclined air-tubes J, and division-plates L M N O, as shown and described.

CHARLES WOOD.

Witnesses:

THOS. H. DODGE,

A. E. PEIRCE.