2 Sheets—Sheet 1.

D. L. JAQUES.

Heating-Furnace.

No. 203,836. Patented May 21, 1878.

Fig. 1.

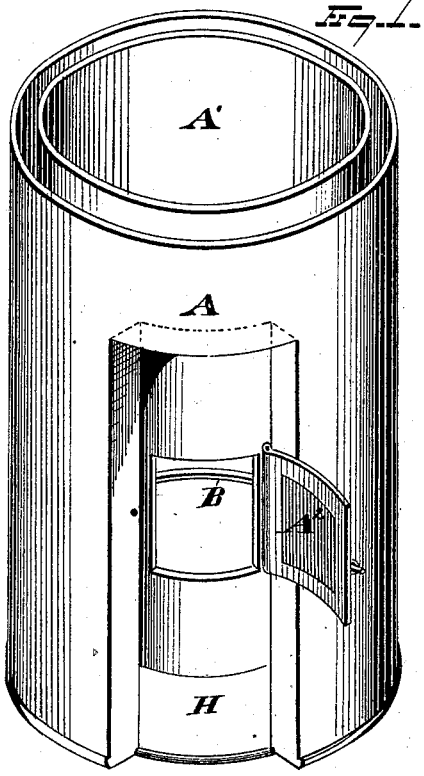


Fig. 2.

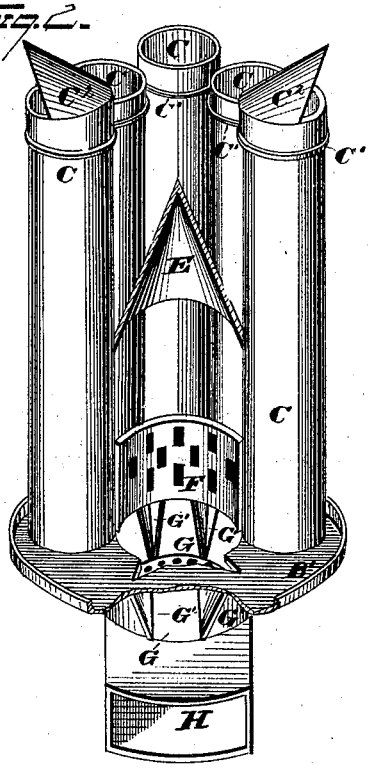


Fig. 3.

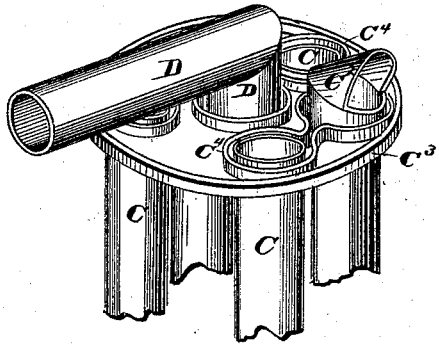
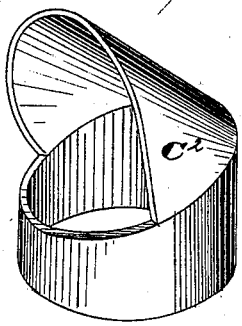


Fig. 4.



WITNESSES

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2 Sheets—Sheet 2.

D. L. JAQUES.

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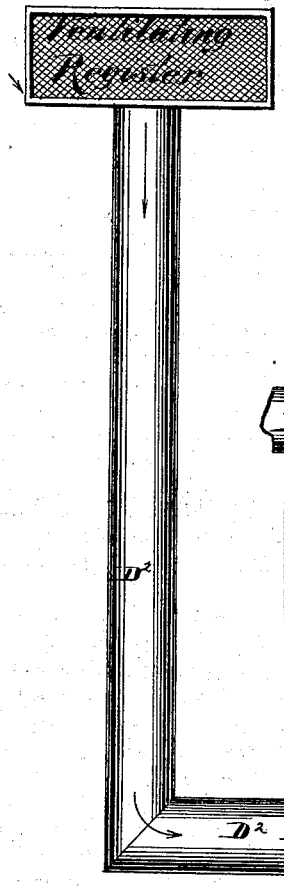


Fig. 5.

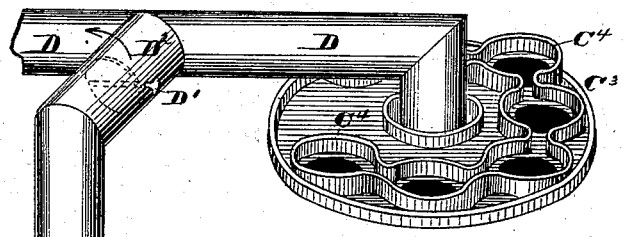


Fig. 7.

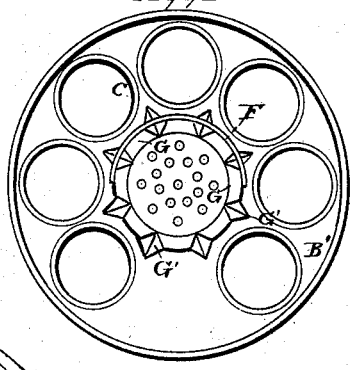
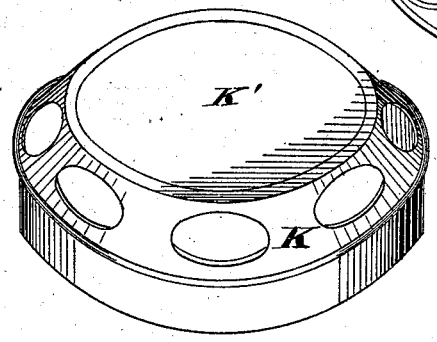


Fig. 6.



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UNITED STATES PATENT OFFICE.

DAVID L. JAQUES, OF CLEVELAND, OHIO.

IMPROVEMENT IN HEATING-FURNACES.

Specification forming part of Letters Patent No. **203,836**, dated May 21, 1878; application filed October 3, 1877.

To all whom it may concern:

Be it known that I, DAVID L. JAQUES, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Heating-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to heating-furnaces.

In the drawings, Figure 1 is the outer shell of my furnace, which consists, essentially, of two walls, which may or may not be joined together, each of the walls being cylinders, open at the top and bottom. Fig. 2 is a separate view, being part in section and part in perspective, of the hot-air flues, combustion-chamber, dome, and ash-pit. Fig. 3 is a separate view of the top fitting over the upper ends of the hot-air flue, also a view of the adjustable device for directing the currents of hot air as desired. Fig. 4 is a separate view of the detached adjustable director; Fig. 5, a separate view of my improved damper attachment; Fig. 6, a detached view of the cap-piece of my furnace. Fig. 7 is a detail plan view, showing the relation of the heating-flues to the peculiarly-formed fire-pot.

My invention consists of the following parts and combinations, as hereinafter specified and claimed, wherein A A^1 are two shells of metal, one placed within the other, so as to admit of an air-space between. These shells are open at the top and bottom; likewise the air-space referred to. The shells A A^1 may be cylindrical, octagonal, square, or any other shape, and are pierced for the introduction of the door A^2. If desired, the shell A, instead of being metal, may be constructed of masonry. B is a flange upon the interior of the shell A^1, upon which rests the plate B′. This plate B′ is designed to support the hot-air flues C, also the perforated wall F. The hot-air flues C open below to the external air, and terminate in the adjustable directors C^2, which are made to turn in any direction, so as to project the current of hot air as desired. C^1 is a shoulder placed upon each flue C, upon which rests the plate C^3. This plate is perforated for the admission of each flue, and also for the exit of the smoke-flue, and around the exit of each flue mentioned is provided a raised portion, C^4. By this provision a groove or gutter is made around each flue as it escapes through the plate C^3, and in this groove or gutter may be packed sand, cement, or any material suitable for a gas-tight joint. In order to attain the best results in this gas-tight joint, it is necessary that the flues C project through and beyond the plate C^3 to a distance at least as great as the height of the projection C^4.

D is the smoke-flue heretofore mentioned, which passes through the cap-piece K and is led by any suitable means to the external air. Shortly beyond its escape through the cap-piece K, I place upon the exit-flue my peculiar damper arrangement, which consists of the following device: D^2 is a branch pipe, which is led from the smoke-flue D, in which is placed any suitable valve or damper D^1, which is made to close the pipe when this device is not desired to be used. The branch pipe D^2 is made to dive downward a sufficient distance to prevent the smoke from passing through in opposition to the natural draft, and then is turned and led upward to a ventilating-register in any part of the house.

It will thus be seen that when the valve D^1 is open air will pass into this ventilating-register, down the pipe D^2, into the smoke-flue D. This will of necessity operate to decrease the amount of combustion within the furnace, and this effect may be intensified by shutting off more or less of the draft below the grate-bars.

E is a dome, placed above the combustion-chamber and within the circle or space defined by the hot-air flue C. This dome is designed to afford a space wherein the unconsumed gases will be confined and held in contact with the burning fuel long enough to become thoroughly consumed. It moreover acts as a retainer and distributer of the heat around about the hot-air flues C.

F is the perforated wall hereinbefore mentioned, projecting upward from the upper surface of the fuel-reservoir or combustion-chamber proper. The design of perforating the wall F is that the heat may escape through

the said perforations, and impinge more thoroughly against the hot-air flues C, while at the same time it acts as a director in the direction of the dome E.

G is the fire-box, provided with the angular projections or extensions G′ upon its circumference. These projections are in number in proportion to the number of hot-air flues C. They are so formed as to cause each flue to have the inner circumferential portion of its lower extremity partially inclosed between a consecutive pair of said extensions and the intermediate body of the fire-pot. The design of the extensions or projections G′ from the side of the fuel-magazine is that the heat from the same may be permitted to escape under and upon the outside of the perforated wall F. Another office performed by the openings behind the perforated wall F, caused by the extensions G′ referred to, is this. In the operation of the furnace, ashes will collect between the shell A^1 and the flue C, and these ashes, after a certain quantity have been collected, will, by their own gravity, escape down through the openings at the top of the extensions G′ into the combustion-chamber and fire-box. H is the ash-pit, placed below the fire-box, and may be of any suitable construction.

K is a cap-piece over the top of the shell A. This cap-piece is provided with means of exit for the desired number of hot-air flues to be conducted over the plate. This cap-piece K has a removable top or lid, K′. The object of having this removable top is that at any desired time access may be had to the directors C^2 when it is necessary that they should be shifted in order to change or modify the currents of hot air, also for the purpose of repairing any of the sand joints hereinbefore mentioned.

The operation of the adjustable directors C^2 is as follows: As heretofore specified, they are made to turn freely about, so as to turn in any direction. If made to face any particular flue, the hot air from them will be projected into this flue. It will thus be seen that any two or three may be combined, so that all the hot air escaping from them, or the main portion thereof, may be directed into a central flue, and a corresponding increased heating effect produced through that particular flue. Likewise they may be turned away from any flue when it is not desired that said flue shall operate.

The flues leading from the cap-piece K should all be provided with dampers, whereby heat may be prevented from passing through them, and be forced to take a direction through any other flue or flues, as may be desired.

What I claim is—

1. The combination, with the two shells inclosing a hot-air space, of the system of heating-flues, adapted to be readily disconnected therefrom, and whose base-plate seats upon the flange formed on the interior lower body of said inner shell, substantially as described.

2. The combination, with the heating-flues, of the adjustable deflectors for directing the heat of two or more of said flues toward a single exit-flue, substantially as described.

3. The combination, with the hot-air flues and the adjustable deflectors, of the cap-piece provided with openings for the exit-flues, substantially as described.

4. The combination of the shell A^1 and the extensions G′, for the purpose of clearing the ashes collecting about the bottom portion of the flues C, substantially as described.

5. The combination, with the heating-flues and adjustable deflectors, of the cap-piece provided with openings for the smoke and heat exit-flues, said cap-piece being formed with the removable lid, substantially as described.

6. The combination, with the system of heating-flues C and the perforated fire-wall F, of the extensions G′, formed upon the side of fire-pot G, the whole being adapted, as described, to permit heat to escape under and pass up on the outside of the said perforated fire-wall, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID L. JAQUES.

Witnesses:
F. TOUMEY,
WILLIAM E. DONNELLY.