

George Marlow. Gas and Smoke Consuming Apparatus.

No. 120,299.

Patented Oct. 24, 1871.

Fig 1.a

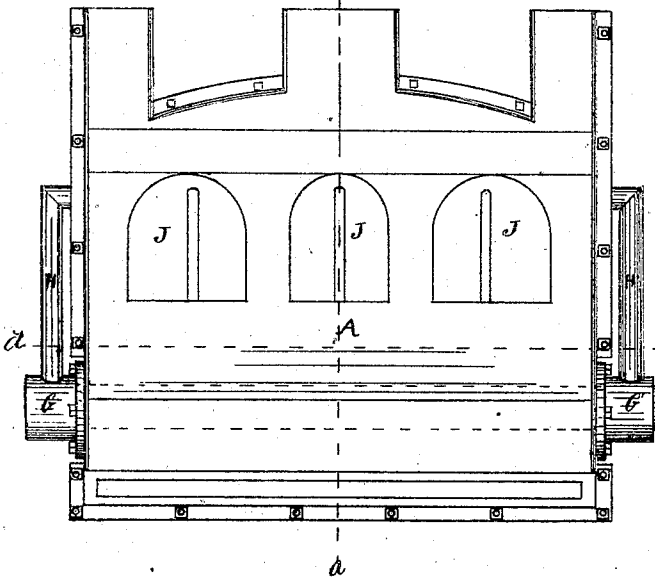


Fig 2.

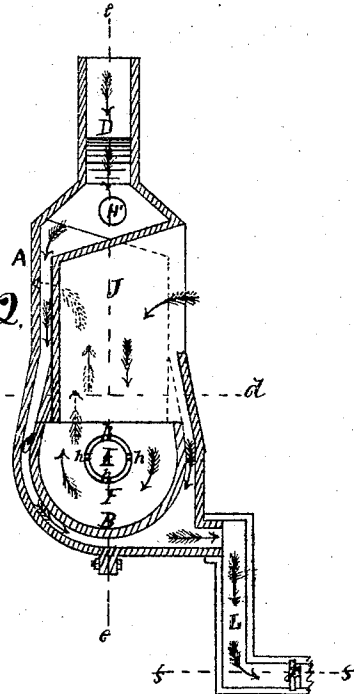


Fig 3

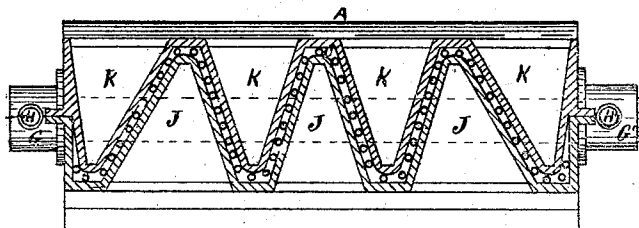


Fig 4

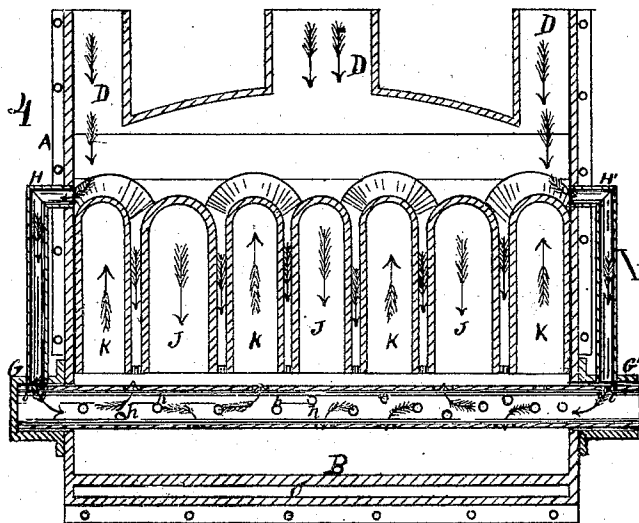


Fig 5



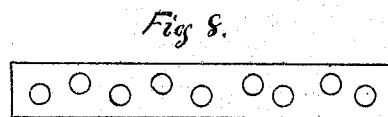
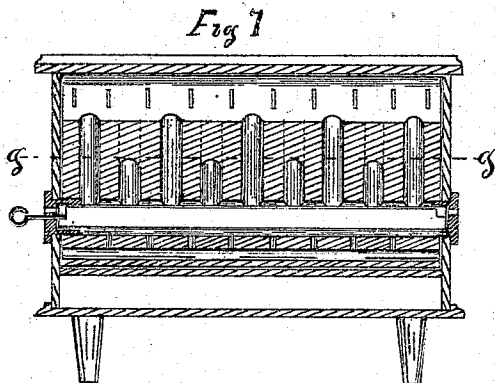
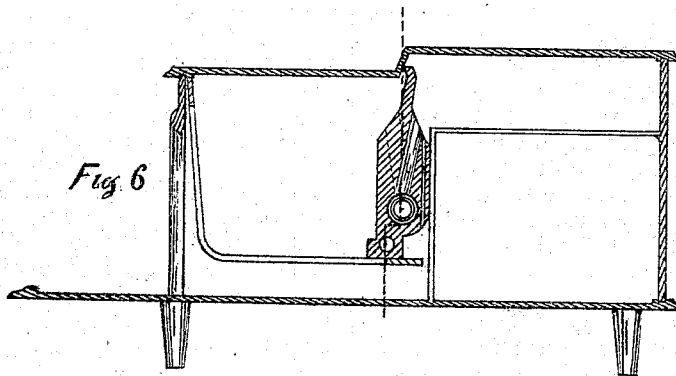
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UNITED STATES PATENT OFFICE.

GEORGE MARLOW, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GAS-AND-SMOKE-CONSUMING APPARATUS.

Specification forming part of Letters Patent No. 120,299, dated October 24, 1871.

To all whom it may concern:

Be it known that I, GEORGE MARLOW, of Chicago, in the county of Cook and State of Illinois, have invented a new, useful, and Improved Gas-and-Smoke-Consuming Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1, Plate 1, is a side elevation of a gas-and-smoke-consuming apparatus embodying my improvements. Fig. 2, Plate 1, is a vertical transverse section of the same, showing those parts which are at the right hand of the line *a a*, drawn vertically across Fig. 1. Fig. 3, Plate 1, is a transverse longitudinal section or plan taken on the line *d d*, drawn horizontally across Figs. 1 and 2. Fig. 4, Plate 1, is a vertical longitudinal central section, showing those parts which are at the left hand of the line *e e*, drawn vertically across Fig. 2. Fig. 5, Plate 1, is a transverse longitudinal section of the valve and a portion of the air-flue employed in graduating the blast of the furnace, which section is taken on line *f f* drawn across Fig. 2. Fig. 6, Plate 2, is a vertical longitudinal central section of an ordinary cooking-stove, showing a cross-section of my improved apparatus as attached thereto. Fig. 7, Plate 2, is a vertical transverse section of the same, showing a vertical longitudinal section of my said improvement. Fig. 8, Plate 2, is a transverse longitudinal section or plan of my said apparatus taken on the line *g g* drawn across Fig. 7.

Similar letters of reference indicate like parts in the several figures of the drawing.

My invention has for its object to provide a gas-and-smoke-consuming apparatus so arranged as to be applicable to all classes of smelting and heating-furnaces and to all classes of stoves; and to that end consists in the employment of a retort through which the flame is passed in such a manner as to come in direct contact with and around an air-distributing cylinder having therein a series of openings through which pass currents of air, whereby the flame from the fuel is brought in direct contact with the air as it is discharged from the cylinder, thereby producing a more perfect and complete combustion of the carbonic gases, the whole of which will be more fully understood from the following description.

In the drawing, A represents the retort, the walls of which are constructed of metal, in the form shown in Figs. 1 and 2, of proper thickness to retain its normal shape when subjected to a high degree of heat, and when used in smelting or other furnaces is attached to the rear walls of the fire-box, (not shown.) B is a semi-annular case, which is firmly secured within the lower portion of the said retort, in such a manner as to provide a vacant space, C, between its outer sides and the inner sides of the walls of the retort, which extends upward and communicates with a series of openings, D, formed in the upper portion of the retort, (as shown in Fig. 2,) and through which openings a current of air is forced by means of any suitable blower, (not shown,) thereby graduating the temperature and protecting the internal parts from the intensity of heat by the admission of the cold air. E is a distributing-cylinder, secured centrally within the said semi-annular case B, and so arranged as to provide a vacant space, F, between its outer sides and the inner sides of said case, and is provided with a series of perforations, *h*, and extends the width of the retort, and is loosely fitted at its ends within collars G G', which are firmly affixed to the outer sides of the walls of the retort, as shown in Fig. 4. The said cylinder is made solid or tight at one end, and is closed at the opposite end by coming in contact with or against the solid end of collar G, and so arranged as to admit of a free and easy and partial rotating movement. Firmly secured to the said collars G and G', and communicating with the interior of cylinder E through openings *i i* formed therein, are pipes H H', which extend upward to and communicate with the vacant space C at a point near the upper surface of the retort. These pipes are so arranged that as the said cylinder is turned to the proper position to bring the openings *i i* in communication with the openings in the collar a current of air is forced from said vacant space through said pipes into the said cylinder, and is discharged therefrom through the perforations therein, as indicated by the arrows shown in Fig. 4. J is a system of openings which are formed in the side of the retort and extend downward to and communicate with the vacant space F, as shown in Figs. 2 and 4, forming the inlets through which the flame is introduced into the retort. K is a like system of openings, which extend downward to and communicate with the said space in a like manner,

forming the outlets through which the flame is discharged. Firmly secured to the lower portion of the retort is an air-flue, L, extending downward and forward under the grates of the fire-box, and is perforated on its upper surface in such a manner as to discharge a current of air through the grates, thereby producing, as desired, the requisite blast. Within the said air-flue is secured a partition, M, which extends transversely from side to side, as shown in Fig. 5, and is provided with a series of perforations, *m*, of a graduated distance one from the other. Secured within the said flue against the said partition is a valve, M', which also extends transversely from side to side, and is so arranged as to admit of a free and easy sliding movement. This valve is also provided with a series of perforations, *m'*, graduated to correspond with the perforations in the partition, and so arranged that as the said valve is moved in the direction of its length the solid portion thereof is brought against the opening in the partition, firmly closing the same, and by a backward movement of said valve the perforations are brought in position to communicate one with the other, thus allowing a free current of air to be discharged from the flue. The said valve extends through the side of the flue, and has its end bent to a right angle with its side, as shown at P. The said flue is provided with an opening, R, formed through its side, and is so arranged as to be closed by the bent portion of the valve, when the same is adjusted to admit the

air through the perforations, or opened when said perforations are closed, the object of which is to admit at all times of a free current of air through space C of the retort.

In using my said apparatus the blast of air ordinarily applied to the furnace is introduced into and through the openings of the retort, and is discharged into the furnace through the perforations of the flue, thus bringing the air discharged from the distributing-cylinder in direct contact with the flame as it passes through the retort, thereby producing a complete combustion of the carbon and gases. In using my apparatus in stoves a slight change of form is necessary, as shown in Plate 2 of the drawing.

Having thus described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The retort A, provided with the respective series of openings J and K, so arranged as to admit the flame through the said retort around the distributing-cylinder E, substantially as and for the purpose described.

2. The perforated distributing-cylinder E, in combination with pipes H and H', substantially as and for the purpose described.

The foregoing specification of my invention signed by me this 29th day of March, A. D. 1871.

GEORGE MARLOW.

Witnesses:

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