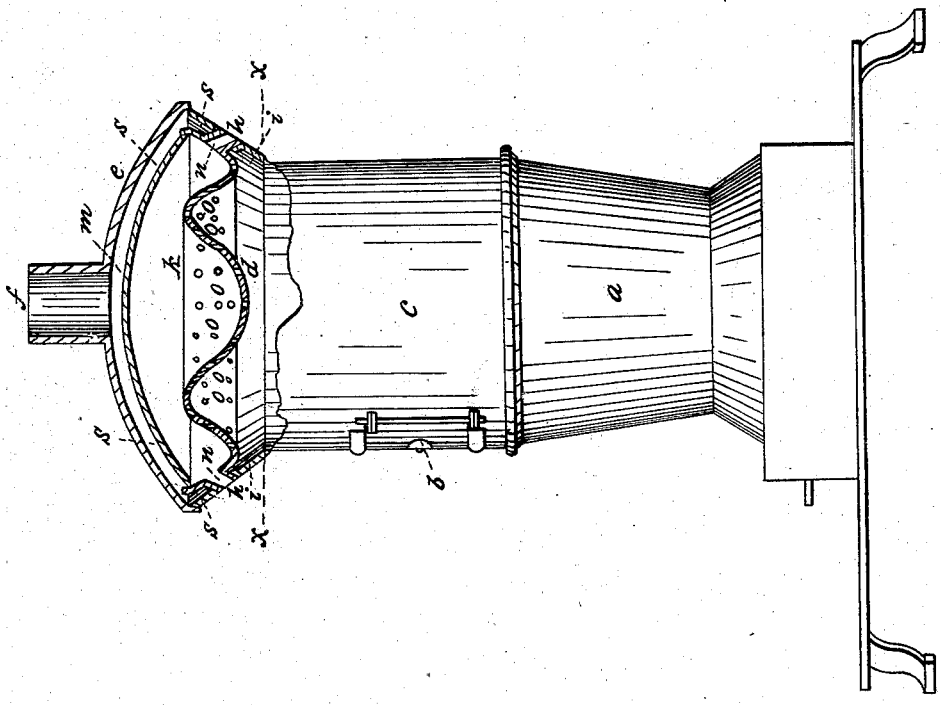
J. CREA.

Heating Stove.

No. 48,501. Patented June 27, 1865.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN CREA, OF ALLEGHENY CITY, PENNSYLVANIA.

IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. **48,501**, dated June 27, 1865.

To all whom it may concern:

Be it known that I, JOHN CREA, of the city of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Stoves; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, which is a side elevation of a stove with the upper part shown in section to exhibit the arrangement and construction of the perforated air-chamber.

To enable others skilled in the art to construct and use my improvement, I will proceed to explain its construction and operation.

The drawing represents a close stove for heating purposes, the lower part of which may be of ordinary construction, having a grating in the lower part of the fire-pot *a* and door *b* in the combustion-chamber *c*.

The top piece, *d*, of the stove is of the shape of a frustum of a cone inverted, or with the smaller diameter downward, the sides above the line *x x* flaring outward all round. The top piece, *d*, is surmounted by a cover, *e*, which is a segment of a sphere, from the center of which rises the cylindrical neck *f*, through which the smoke and products of combustion escape into the stove-pipe.

In the flaring sides of the top piece, *d*, are three or four circular apertures, *h*, on the lower side of which, inside of the top piece, is a small bracket, *i*, which serves to support the hollow feet of the perforated air-chamber *k*. The perforated air-chamber *k* is a metallic bowl, and of less diameter than the interior of the top piece, *d*, of the stove. It has three or four hollow feet, *n*, corresponding in number and position with the circular apertures *h* in the top piece, *d*, so that when set upon the brackets *i* they will coincide with the apertures *h*, and prevent the entrance of air from outside, through the apertures *h*, directly into the space between the sides of the top piece, *d*, and of the perforated chamber *k*, while they afford a free access of the air through the hollow feet *n* into the interior of the perforated air-chamber.

The air-chamber *k* is supported by the feet *n* in the top piece, *d*, of the stove, with its sides at uniform distance from the interior surface of the sides of the top piece, *d*, forming a narrow passage all around the top of the stove, through which the smoke, gases, and heated air from the combustion of the coal in the fire-pot of the stove are compelled to pass. The perforated air-chamber is covered by a loose metallic cap, *m*, which is not perforated, and the shape of which is similar to that of the cover *e* of the stove, so that the surface of the cap *m* is parallel to that of the cover *e*, and at a little distance below it, leaving a narrow space for the passage of smoke, gas, &c., to the stove-pipe.

The bottom of the perforated air-chamber is curved, as shown in the drawing, so as to give a greater amount of surface against which the smoke and gases from the fire will play, and so as to form a circular recess around the central depression in the bottom of the perforated air-chamber, and thus detain the unconsumed gas and smoke and prevent their passing off too rapidly. The bottom of the air-chamber *k* is perforated with a number of small holes, *o*, through which the air which enters the air-chamber by the hollow feet *n* passes into the combustion-chamber *c* of the stove.

It is a well-known fact that in the use of bituminous coal for fuel there is an enormous waste by reason of the escape of a very large percentage of carbureted-hydrogen gas and volatile carbon, which are not ignited for want of a sufficient supply of oxygen to produce combustion. It is difficult to introduce a proper quantity of oxygen to produce this combustion without causing a too rapid consumption of fuel, which only increases the difficulty; and it is important that the air mixed with the gas and smoke should be previously heated.

My invention is designed to accomplish these results, and its operation is as follows: The unconsumed gas and smoke rising in the combustion-chamber *c* play against the curved bottom of the perforated air-chamber *k*, where they mingle with the numerous currents of air which rush down through the perforations in the bottom of the air-chamber *k*. They there burst into flames which rush through the narrow space *s s* around the flaring sides of the top piece, *d*, of the stove, and between the arched cover *e* of the stove and cap *m* of the air-chamber *k*. The flames thus passing in close contact with the cap *m* and cover *e*, and with the flaring sides of the top piece, *d*, of the stove, make those parts very hot, and thus not only heat the air which passes into the air-chamber

k, but also radiate a large amount of heat into the apartment.

The peculiar position of the air-chamber *k* in close proximity to the top of the stove, without actual contact therewith, prevents the collection of soot in that part of the stove, as any that might collect there when the fire is low will speedily be burned out when the fire becomes hot.

Another practical advantage which I have found in the use of my improvement is that it effectually secures a good draft, even in an otherwise smoky chimney and with a long reach of smoke-pipe.

I am aware that the use of a perforated air-chamber in connection with a stove is not new. I therefore do not claim that device in itself considered; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The use of an air-chamber placed at the top of a close stove, and having an imperforate top or cover and a perforated bottom, when such bottom is so curved, substantially as hereinbefore described, as to form a circular recess for the detention of the gas and smoke.

2. So arranging the perforated air-chamber, constructed substantially as hereinbefore described, that its top and sides, or the top alone, shall be parallel, or nearly so, with the top or cover of the stove, and at such a distance therefrom as to leave a narrow passage for the flame.

In testimony whereof I, the said JOHN CREA, have hereunto set my hand.

JOHN CREA.

Witnesses:
W. BAKEWELL,
A. S. NICHOLSON.