

J. LEEDS.  
Hot-Air Furnace.

No. 11,896.

Patented Nov. 7, 1854.

Fig. 1.

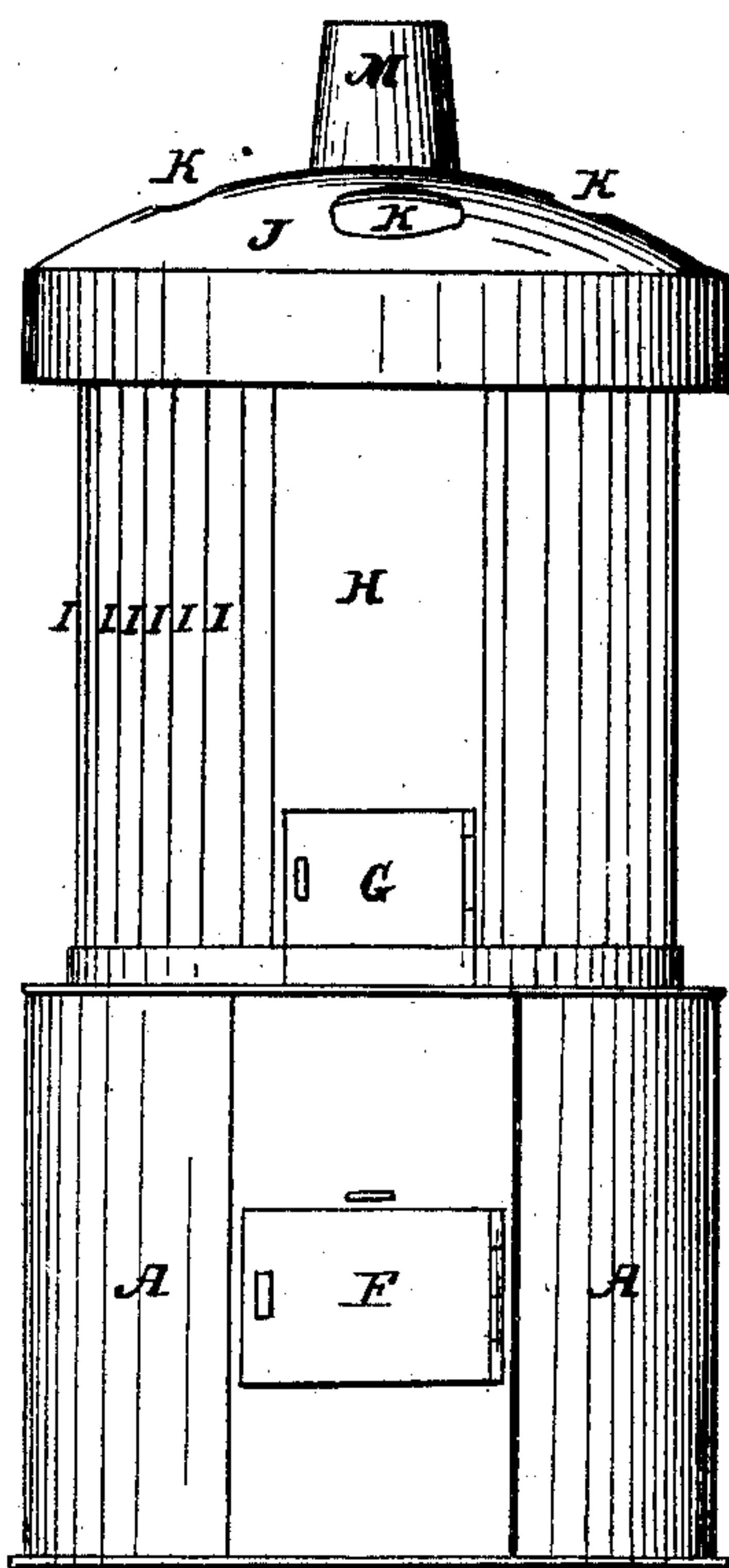
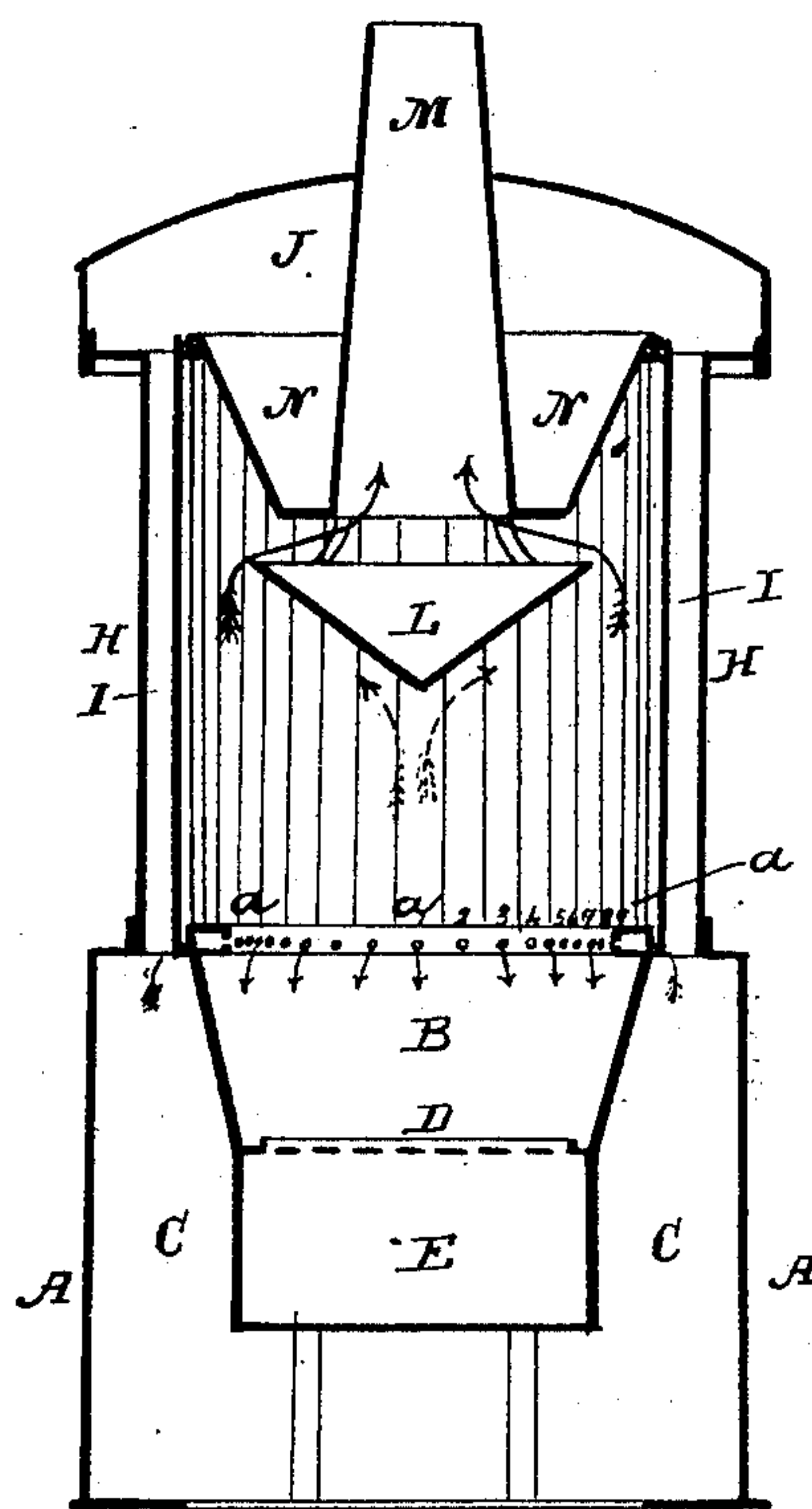


Fig. 2.



# UNITED STATES PATENT OFFICE.

JOSEPH LEEDS, OF PHILADELPHIA, PENNSYLVANIA.

## FURNACE FOR HEATING BUILDINGS.

Specification of Letters Patent No. 11,896, dated November 7, 1854.

*To all whom it may concern:*

Be it known that I, JOSEPH LEEDS, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces for Heating Buildings, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1, represents a front elevation, and Fig. 2, a vertical central section through the same.

Similar letters where they occur refer to like parts in both figures.

The nature of my invention relates to the method of diffusing the ascending gases and heated products, through the chamber over the fire, and of preventing a stronger draft through the center than at the sides of the body of burning coal.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

I have found in practice that, when the gases and other heated products of combustion, are allowed free or unbroken escape from the furnace, the draft tends to the center of the burning mass, and does not aid combustion at the sides or outside of the mass, and thus produces irregular burning. A great amount of heat also thus escapes which it is desirable to retain, and throw to the sides where the air to be heated is with the most facility brought in contact with the heated metallic surfaces. I have also found that, to produce an equable burning over the top surface of the fuel, atmospheric air properly introduced will mingle with the gases, and produce an uniform glow over said top surface of coal, causing it to burn with the greatest regularity, which is essential in furnaces of this kind, as they are generally placed where they are not always subject to inspection, and are generally left to burn for hours without any regulation of draft.

By the improvements as herein specially claimed, I have effected a great reduction in the amount of fuel consumed, and a preservation of much of the heat which is ordinarily lost.

My furnace may be made portable, or built into brick work as may be desired, and consists of a round, square, or many sided case

A which forms the base of the furnace. Within this case A, so as to leave an air space C, around it is placed the fire box B, having a grate D, and an ash box E, underneath it.

F, is a door communicating with the ash box, for the purpose of cleaning it, and through which door, by register, or other openings the necessary air to promote combustion may be introduced.

G is a door communicating with the fire box to feed the fire. The cylinder H, resting on the base A, may be composed of a series of tubes I, I, through which the air taken in at the bottom of the furnace may ascend, and become heated. These tubes all unite in one common hot air chamber J, over the top of the furnace whence by means of the openings K, therein it can be conveyed to the apartments to be heated.

Around the top of the fire box, I arrange a chamber *a*, which may slightly project over the inner edge of the fire box, and into this chamber *a*, air is admitted from C, as shown by the arrows. In this surrounding chamber *a* there are a series of holes 1, 2, 3 &c. through which jets of air are introduced over the top of the burning coal, so as to commingle with the heated gases, and cause them to burn. These jets meeting each other, prevents anything like a current in any one direction, and supplies air without causing undue draft. Instead of holes, they may be slots, or a thin continuous sheet of air, through a surrounding open space.

Within the fire chamber and over and above the fuel is suspended an inverted cone shaped deflector L, which causes all the ascending currents to be thrown from the center toward the sides of combustion, and preventing a center draft through the burning mass. The bulk of air which furnishes the means of combustion, will find its way always where there is the greatest amount of heat, and this being at the center of the burning mass, the object aimed at by me, is to prevent this, and cause it enter equably all around and this I accomplish by the deflector L, because the only direct ascending current is at the sides, while it is broken at the center. The arrows will show how the gases pass from the fire chamber to the exit pipe M, there being a frustum of an inverted cone N placed over the cone L, through the center of which the exit pipe M passes. The inverted frustum N is open at top, and may



be considered a part of the hot air chamber J.

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

In combination with the chamber above the fire box, the deflector L, and frustum N with the exit pipe M passing through it, for

the purpose of regulating the draft, and throwing it from the center toward the sides 10 of the burning mass, and thus produce equal combustion, substantially as described.

JOSEPH LEEDS.

Witnesses:

CHARLES D. FREEMAN,  
A. THOMPSON.