No. 75,155. PATENTED MAR. 3, 1868.

C. B. GREGORY.

FIREPLACE.

FIG. 1.

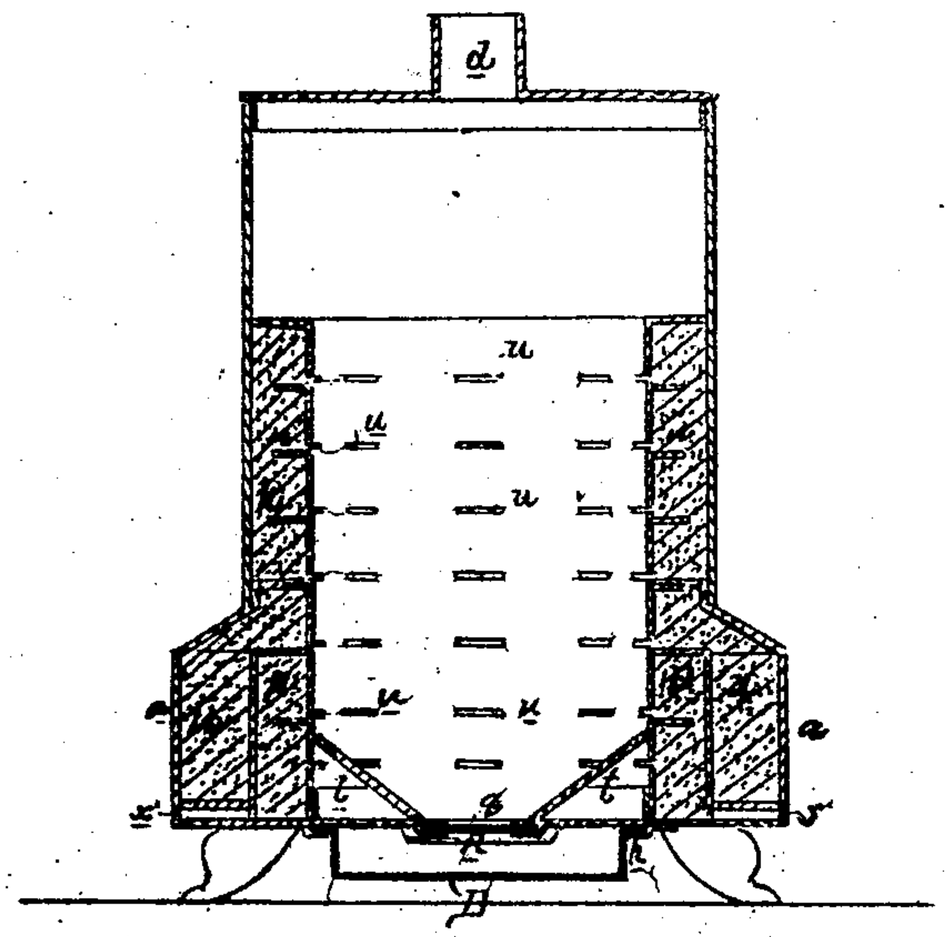


FIG. 2.

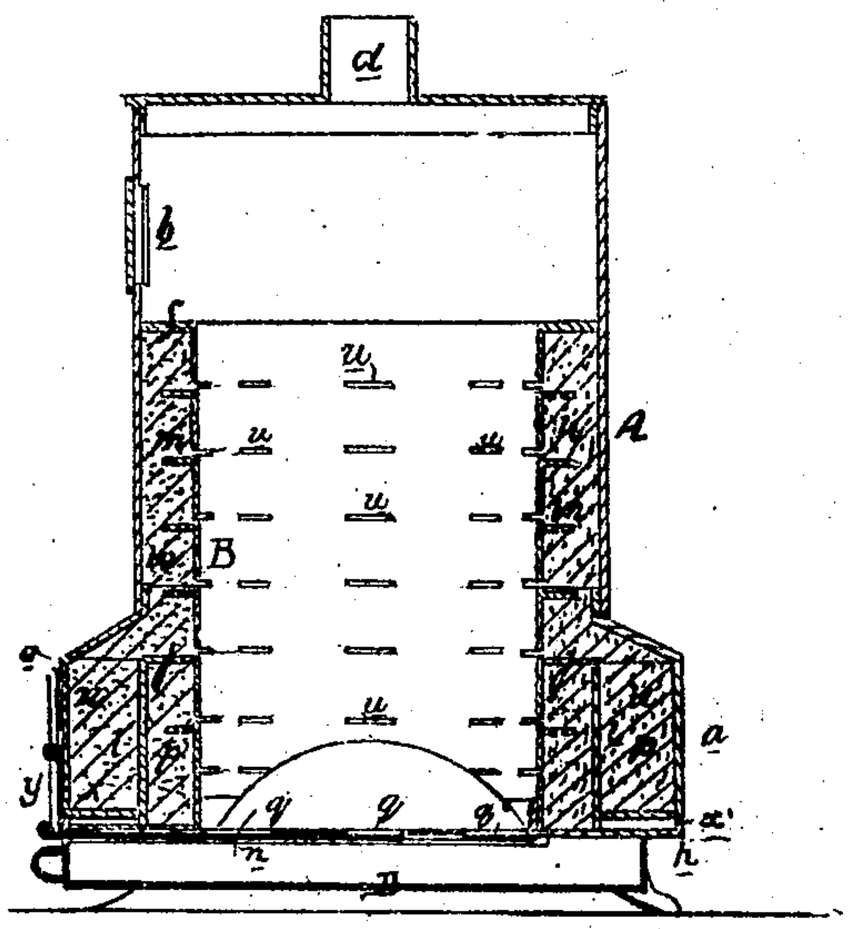
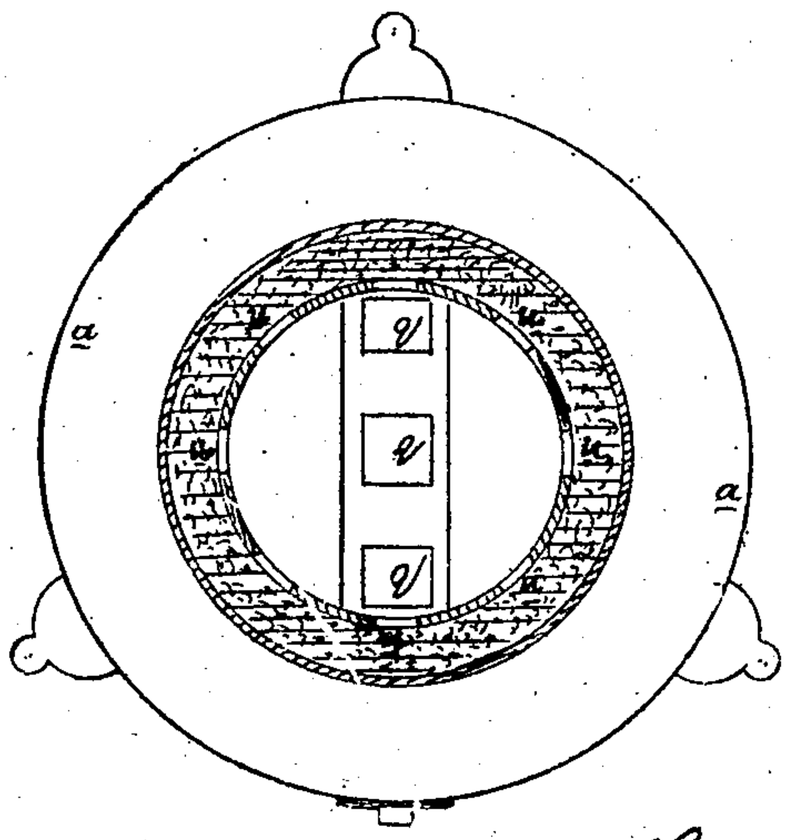


FIG. 3.



Witnesses { Wm. Affleck Steel. John Parker. }

C. B. Gregory
By his Atty
H. Howson

United States Patent Office.

C. B. GREGORY, OF BEVERLY, NEW JERSEY.

Letters Patent No. 75,155, *dated March* 3, 1868.

IMPROVEMENT IN FIREPLACES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, C. B. GREGORY, of Beverly, Burlington county, New Jersey, have invented certain Improvements in Fireplaces; and I do hereby declare the following to be a full, clear, and exact description of the same.

The main feature of my invention consists of a fireplace composed of a perforated casing surrounded by a mass of gravel, or other equivalent granular material, substantially as described hereafter, so that the heat generated in the fireplace may be more intense and uniform than in ordinary fireplaces, to which the air for supporting combustion is admitted from below through a grate or through perforated casings.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figures 1 and 2 are vertical sections, illustrating the application of my invention to a stove, and

Figure 3 a sectional plan.

Similar letters refer to similar parts throughout the several views.

A, is the exterior casing of the stove, which is enlarged at the base, *a*, has a suitable opening, *b*, for the introduction of the fuel, and a door adapted to this opening, and has an exit-pipe, *d*, for the escape of the products of combustion to the chimney. The inner casing or fire-pot B of the stove may be made of cast iron or fire-clay, and consists of a hollow cylinder with a flange, *f*, on the top, which flange fits snugly against the interior of the outer casing. To the bottom plate *h* of the stove is secured a short hollow cylinder, *i*, which fits at its upper edge against the flange *j* of the inner cylinder B, the latter having, in the present instance, a number of narrower flanges, *m*, for a purpose described hereafter. In the bottom plate *h* of the stove are any desired number of openings, *q*, and beneath the plate is a sliding damper, *n*, having corresponding holes, so that by operating the said damper, the holes in the bottom plate may be exposed or closed, at pleasure. Beneath the bottom plate *h* is a sliding ash-box, D, which should be so fitted as to be air-tight, or nearly so. Two inclined plates *t t'* are arranged near the bottom of the inner cylinder B, as seen in fig. 1, for directing the ignited fuel to the middle of the fireplace, and directing the ashes to the openings *q*. The space *w* between the outer cylinder A and the inner cylinder B is filled with gravel, granulated bricks, iron-turnings, or planings, or other equivalent granular substance, which cannot be easily affected by the heat, and in the mass of which are numerous interstices for the passage of air through the perforations *u* in the inner cylinder. These perforations consist of simple slits, in the present instance, but regular or irregular openings of any desired form may be made in the cylinder, providing they are not large enough to permit the particles of granulated material to escape into the fireplace. The inner cylinder is thus perforated throughout its entire height, and the space *p* between the short cylinder *i* and the inner cylinder B is filled with granulated material in the same manner as the space above alluded to. Although the narrow flanges *m m* may be dispensed with, I prefer them, as they prevent the particles of gravel or its equivalent from crowding into too close and compact a mass at any one point. In front of the base, *a*, are two openings, *x* and *x'*, through the former of which air is admitted to the gravel-charged space *w* between the outer and inner casings A and B, the lower opening, *x'*, permitting the air to pass to the space *p* between the casing B and cylinder *i*, a damper, *y*, being so arranged that it can cover both openings, or the upper opening only, the air, in the latter case, gaining access to the fuel in the lower portion of the fireplace, while it is excluded from the upper portion.

In igniting the fuel, in the first instance, the ash-box D is moved outwards, and the damper *n* so operated as to permit the air to pass to the fuel from below, the damper *y* being in the mean time closed. After the fuel has been thoroughly ignited, the damper *n* and ash-box D are closed, so that little or no air can gain access to the fuel from below, the air to support combustion being admitted through the opening *x'* to the lower space *p* charged with the granulated material, and thence to the fuel through the perforations of the cylinder B, or the air may, by adjusting the damper *y*, be admitted through both openings *x* and *x'*, as the condition of the fire may suggest.

I am aware that perforated casings have been used in connection with a perforated fire-pot, as in the stove

patented by Sidney Smith, July 31, 1866; but, after many careful experiments, I have found that by causing the air to pass through the circuitous interstices presented by the mass of gravel before it reaches the fuel, a much more intense and uniform heat is produced therefrom than when the air is admitted from below through the usual grate, or through perforated casings only.

Although I have alluded to my invention as applied to an ordinary stove, it will be evident that it is applicable to heaters, furnaces for steam-boilers, and, in fact, to all fireplaces in which an intense heat is required; and although I have described the inner and outer casings as being cylindrical, they may be of any other form which the particular application of my invention may suggest as the most appropriate.

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

A fireplace, consisting of a perforated casing, surrounded by a mass of gravel, or other equivalent granulated material, through which the air must pass to the fuel, substantially as and for the purpose herein set forth.

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

C. B. GREGORY.

Witnesses:

H. HOWSON,

W. J. R. DELANY.