No. 646,368. Patented Mar. 27, 1900.

W. EGLE.

BURNER.

(No Model.) (Application filed July 19, 1899.)

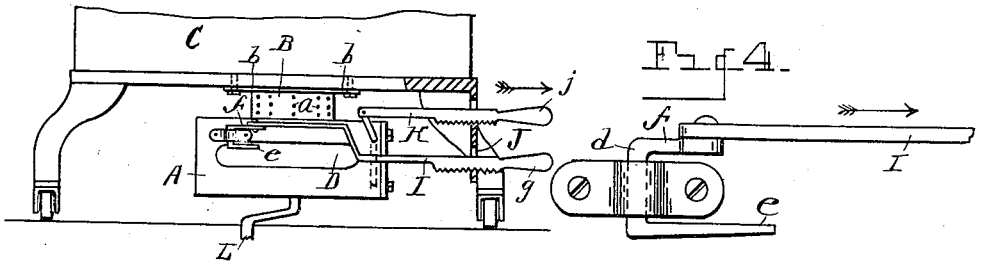

Fig. 4.

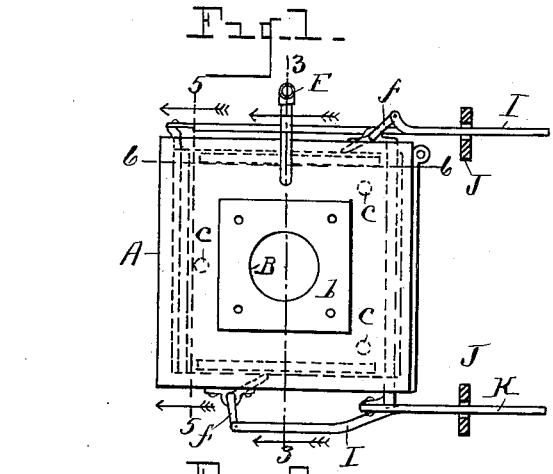

Fig. 1.

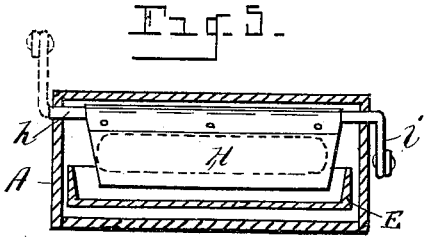

Fig. 5.

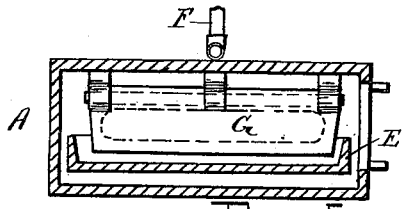

Fig. 2.

Fig. 6.

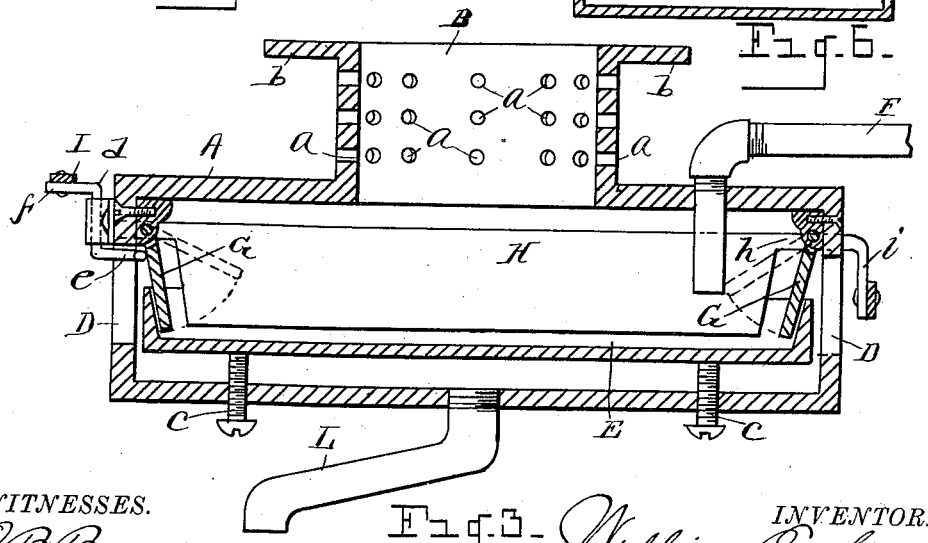

Fig. 3.

WITNESSES.

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BURNER.

SPECIFICATION forming part of Letters Patent No. 646,368, dated March 27, 1900.

Application filed July 19, 1899. Serial No. 724,370. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EGLE, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Burners; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to hydrocarbon-burners more especially adapted for heating firing-kilns; and it consists in the construction and arrangement of parts hereinafter fully set forth, and pointed out particularly in the claims.

The objects of the invention are to produce a burner of simple and inexpensive construction in which the arrangement is such as to enable the focusing of the flame of the burner to intensify the heat of the flame, to provide for supplying air to the flame in such quantity and at such points as to insure proper combustion, to control and direct the flame from side to side of the kiln, and to provide for the adjusting of the fuel pan or tray so as to allow a circulation of air thereunder and to maintain said pan horizontal, so that the fuel may be evenly distributed over its surface.

These objects are attained by the device illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of my improved burner attached to the bottom of a portable kiln, the top of the kiln being broken away. Fig. 2 is a plan view of the burner. Fig. 3 is an enlarged vertical transverse section through the burner as on line 3 3 of Fig. 2. Fig. 4 is an enlarged detail of a crank-arm and operating-rod for adjusting the dampers of the burner. Fig. 5 is a sectional view through the body of the burner as on line 5 5 of Fig. 2. Fig. 6 is a transverse section as on line 6 6 of Fig. 2.

Referring to the letters of reference, A designates the body of the burner, which is formed integral and preferably of cast-iron.

Projecting centrally from the top of the burner and communicating with the interior thereof is a cupola B, having the perforations *a* through the annular wall thereof. The upper end of the cupola is open and communicates with the interior of a furnace or kiln C, as shown in Fig. 1, the lateral flange *b*, projecting from the top of the cupola, affording means for attachment to the bottom of said kiln.

Formed in each of the four walls of the burner is an oblong opening D, through which air is admitted to the interior of the burner to support the combustion of the hydrocarbon fuel within the fuel-pan E, which lies within the interior of the burner and is adapted to contain the oil which supplies the flame, the oil being fed into the pan through the pipe F. The fuel-pan E is also formed, preferably, of cast-iron and is supported upon the adjusting-screws *c*, of which there are three, (see dotted lines in Fig. 2,) whereby said pan may be maintained in a level position, so that the fuel may be evenly distributed over the surface thereof, insuring a uniform flame from all parts of said pan.

Hinged before the draft-openings D within the burner are dampers G and H, of which the dampers G are the side dampers and the dampers H are the front and rear dampers. These dampers are heavy and are adapted by their own weight to swing downward against the inner flange of the oil-pan, by which arrangement the air entering through the draft-openings D is directed downward under the bottom of the pan, which is supported above the bottom of the burner on the screws *c*, so that a circulation of air is maintained under said pan, preventing the bottom of the burner from becoming excessively heated. The air rises around the edge of the pan and supplies sufficient oxygen to support the flame burning therein.

To regulate and control the amount of air admitted to the flame-space of the burner through the draft-openings D, the dampers covering said openings are raised or lowered, as required. The movement of each of the side dampers is accomplished by means of a crank *d*, journaled to the outer face of the burner in a vertical bearing, the arm *e* of said crank projecting inwardly through the opening D and engaging the damper G and the

end *f* of said crank projecting outwardly and being pivoted to the horizontally-projecting rod I, which extends through the base J of the kiln and carries a ratchet-handle *g* on its outer end supported in said base, said ratchet serving to lock said rod when moved longitudinally in either direction. It will be seen on referring to Fig. 3 that as the rod I is drawn outward the crank *d* will be turned to throw the end *e* thereof against the damper G and swing said damper inwardly, as shown by dotted lines in Fig. 3, thereby increasing the opening through which the air passes to the flame in the burner, enabling the quantity of air admitted to the burner to be regulated.

The dampers H at the front and rear are hung upon a transverse shaft *h*, having a crank *i* on one end thereof, to which is attached a rod K, having a ratchet-handle *j*, which also passes through the wall of the base J, whereby by a longitudinal movement of the rod K the damper H may be swung upon its shaft *h* to increase or decrease the volume of air admitted through the draft-openings in the burner. The ratchet enables the dampers to be locked at any point of adjustment, and by opening a damper on one side and closing the damper on the opposite side the flame may be directed from side to side of the kiln, thus enabling the volume of heat to be directed to that point of the kiln where it is most required.

The flame from the oil within the pan E passes upward through the cupola, the perforations in the annular wall of which admit additional air, which assists in the combustion of the burning gases and at the same time tends to concentrate or focus the flame, thereby increasing its intensity and attaining the maximum degree of heat for the amount of oil consumed.

Combustion in this burner is so complete that there is but little, if any, smoke from the burning oil, so that the annoyance due to an accumulation of soot is largely, if not entirely, overcome, while the burner is so compact, simple, durable, and susceptible of such perfect adjustment and regulation as to render it of great utility.

The pipe L, leading from the bottom of the burner, is a drip-pipe adapted to carry away the oil should the pan E overflow.

Having thus fully set forth this invention, what is claimed is—

1. In a burner, the combination of the integral body having the draft-openings through the wall thereof, dampers for controlling said draft-openings, an oil-pan within said burner, a cupola rising from the top of the burner and communicating with the interior thereof, said cupola having perforations through its wall.

2. In a burner, the combination of the integral burner-body having the draft-openings therethrough, hinged dampers controlling said draft-openings, means for operating said dampers, a fuel-pan within said burner supported above the bottom thereof, a cupola rising from the top of said burner and communicating with the flame-space, said cupola having a perforated wall.

3. In a burner, the combination of the burner-body having a draft-opening through the side thereof, a fuel-pan within the body of the burner, a hinged or pivoted damper adapted to control said draft-opening, said damper mounted on the inner face of the burner-body, its lower edge depending within said pan, a crank journaled to the side of the burner one end of which passes through said opening and bears against said damper, and a rod pivoted to the other end of said crank by means of which it may be actuated.

In testimony whereof I sign this specification in the presence of two witnesses.

WILLIAM EGLE.

Witnesses:
E. S. WHEELER,
M. A. MARTIN.