

J. ROGERS.

Apparatus for Making Lamp-Black.

No. 146,951.

Patented Jan. 27, 1874.

Fig. 1

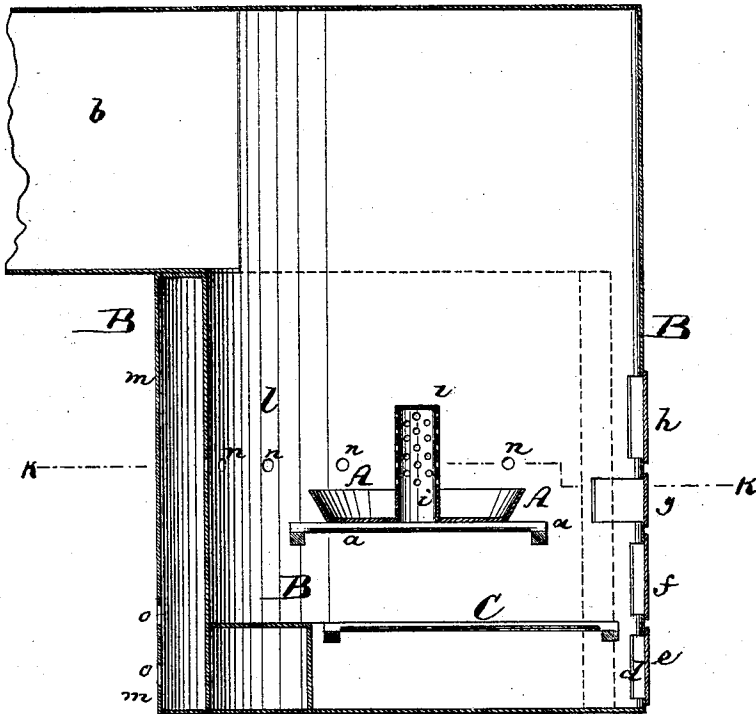
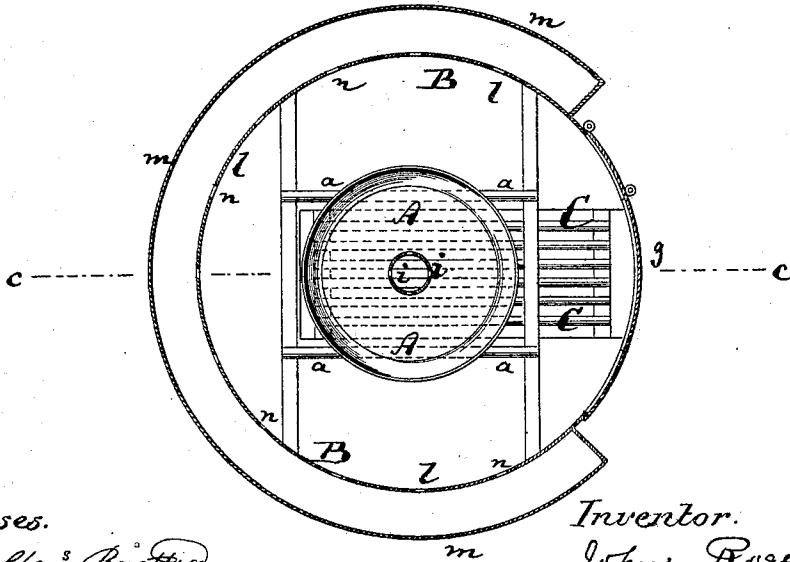


Fig. 2



Witnesses.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN APPARATUS FOR MAKING LAMP-BLACK.

Specification forming part of Letters Patent No. **146,951**, dated January 27, 1874; application filed January 5, 1874.

To all whom it may concern:

Be it known that I, JOHN ROGERS, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Apparatus for Manufacturing Lamp-Black, of which the following is a specification:

Figure 1 is a vertical central section of my improved apparatus for manufacturing lamp-black, the line *c c*, Fig. 2, indicating the plane of section. Fig. 2 is a horizontal section of the same on the line *k k*, Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

The object of this invention is to produce, in an apparatus for converting the dead-oil of tar, petroleum, rosin, or other hydrocarbons or resinous substances, into lamp-black, means for automatically regulating the air admission, that the carbon contained in said substances may all, or nearly all, be obtained in condition for use. Especially for the manufacture of lamp-black to be used in printing-ink, my invention is intended to be available. Apparatus for the same purpose was heretofore made, either to admit no air beneath the vessel containing the burning matter, and thus to have only a horizontal draft, if any, or else to have an artificial draft forcing air against the under-side of the aforementioned vessel, or directly into the flame, and thereby having too violent an upward current.

Now, my invention chiefly consists in so constructing the lamp-black furnace that a natural vertical air-current will be created all around the pan in which the oil of tar or other matter is burned, and thus the flame be supplied with just so much air as will be necessary to properly convert into lamp-black the products of the combustion. It is well known that too much air admitted to the flame, prevents the deposition or even the formation of lamp-black, whereas an insufficiency of air favors the production of charcoal or unconsumed matter, also reducing the quantity of lamp-black obtained. By allowing a natural draft to be produced by the flame itself so that the more powerful the heat, and the larger the bulk of the flame, the more plentiful will be the supply of air, whereas less air will at once follow a smaller flame, the operation is made

self-regulating and automatic in the supply of the exact quantity of air required.

I attain the above-mentioned result by placing the pan, in which the matter to be burned is contained, upon horizontal bars within a shell or furnace which has ample air admission beneath the above bars, and an escape of usual construction for the products of combustion above the pan. Beneath the pan-supporting bars, and above the air-admitting opening, is a perforated plate or grate by which the current of air ascending to the pan is cut and divided into several small currents, said plate or grate also serving to receive any clinkers or solid matter that may drop out of the pan.

My invention consists, secondly, in constructing the pan of annular form, with a central upwardly-projecting perforated pipe, which is open at the bottom, and through which air is admitted to the middle of the flame, and thus made immediately effective.

My invention also consists in making the shell or furnace which embraces the combustion-chamber with double walls, the inner of which is perforated on a line about on a level with the pan, while the outer is also perforated at suitable places, so that the external air may be admitted into the space between the double walls, and thence projected in a series of radial horizontal currents toward the flame. The horizontal currents will thus mingle with the upright currents, deflecting the latter centrally inward, and causing the top of the flame to be properly affected.

In the accompanying drawing, the letter *A* represents the pan on which the liquid or resinous substance from which the lamp-black is to be produced is burned. This pan is rested upon two or more horizontal bars, *a a*, which are by suitable means firmly built into a furnace, *B*. This furnace may be of cylindrical or other form, built of brick or other material, and has at its upper part a suitable chimney-connection, *b*, for receiving the products of combustion and detaining the lamp-black. Some distance beneath the bars *a a*, is built into the furnace *B* a horizontal perforated plate or grate, *C*, which will detain larger pieces falling from the pan, and allow smaller pieces to pass through downwardly. *d* is an air-opening to the furnace beneath the grate *C*, and

can be more or less opened by means of a door, *e*. Air is constantly admitted through this opening *d* into the chamber beneath the grate while the contents of the pan are on fire, such air being then drawn up through the grate, by the suction and rarefaction caused by the flame, into contact with the latter, to affect it in the proper manner.

For enabling the proper sweeping of the grate, I have provided another opening, *f*, through the furnace, said opening being closed by a proper door, unless the grate is to be swept. *g* is another opening in the side or front of the furnace, and about on a level with the pan *A*. Through it the pan can be conveniently removed, filled, and replaced. This opening *g* is also closed by a proper door when not required. A fourth opening, *h*, in the furnace above the level of the pan is, or may be, for the purpose of cleaning and of admitting fuel to the pan; and is also closed by a door when not needed.

The pan *A* is, as I prefer to make it, of annular form with a central air-pipe, *i*, projecting upwardly, as shown. This pipe *i* is open at the bottom, and perforated at the sides to admit air to the center of the flame.

The shell of the furnace *B* is made with double walls *l m*, the inner, *l*, being perforated at *n n*, about on a level with the pan, and the outer also perforated, as at *o o* in Fig. 1. By these perforations horizontal air currents are admitted to the flame, the double walls of the furnace meanwhile protecting the apparatus against an undue loss of heat.

I claim as my invention—

1. An apparatus for producing lamp-black, consisting of the furnace *B*, having the bars *a*, perforated plate or grate *C*, and the air-opening *d'* beneath the grate, all arranged substantially as herein shown and described.

2. The combustion-pan *A* of a lamp-black apparatus, made annular with a central perforated air-pipe, *i*, substantially as herein shown and described.

3. The lamp-black furnace *B*, made with double walls *l m*, which are perforated at *n* and *o*, respectively, substantially as and for the purpose herein shown and described.

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Witnesses:

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