

(No Model.)

2 Sheets—Sheet 1.

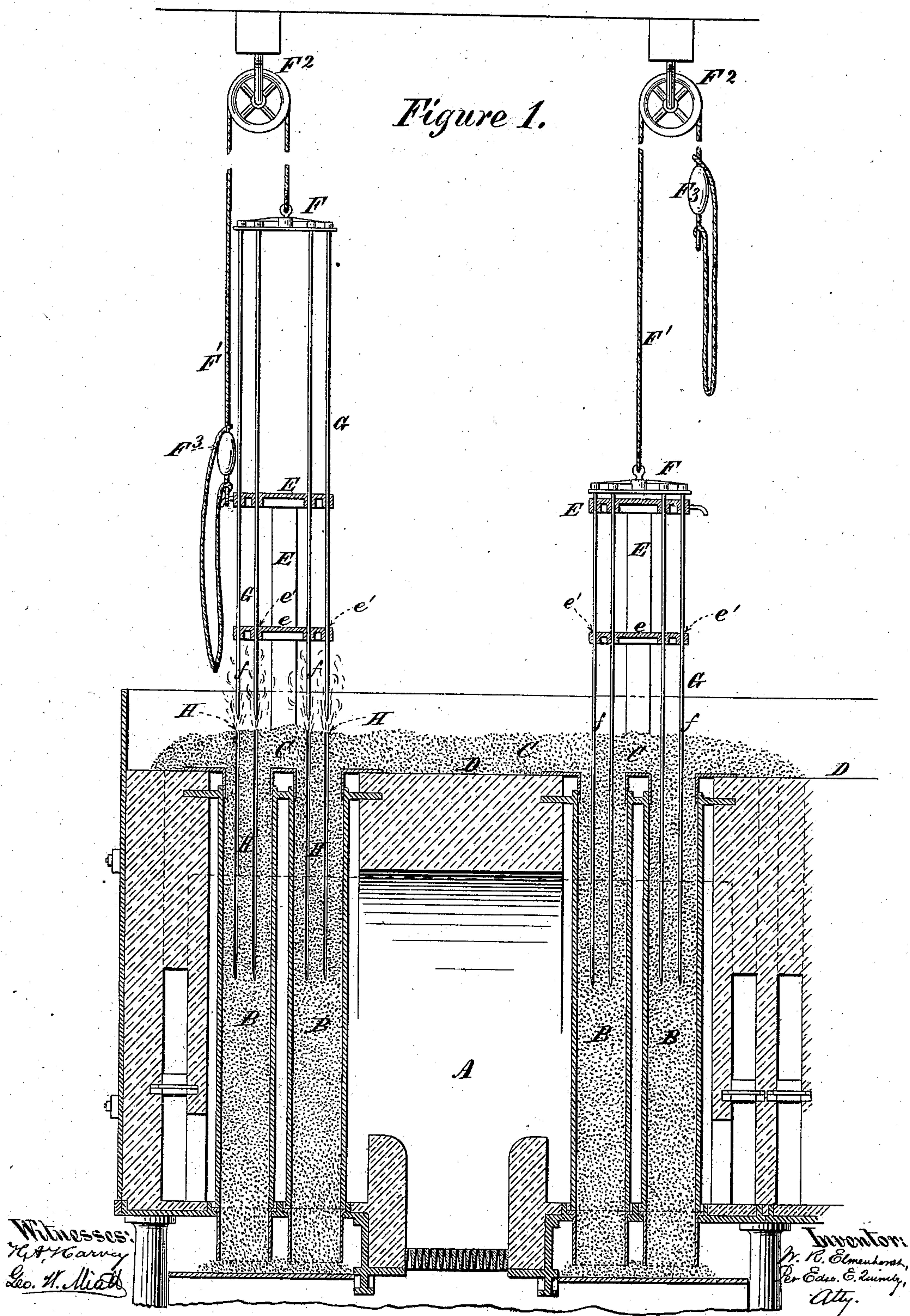
W. R. ELMENHORST.

Kiln for Drying and Revivifying Bone Black.

No. 235,942.

Patented Dec. 28, 1880.

Figure 1.



(No Model.)

2 Sheets—Sheet 2.

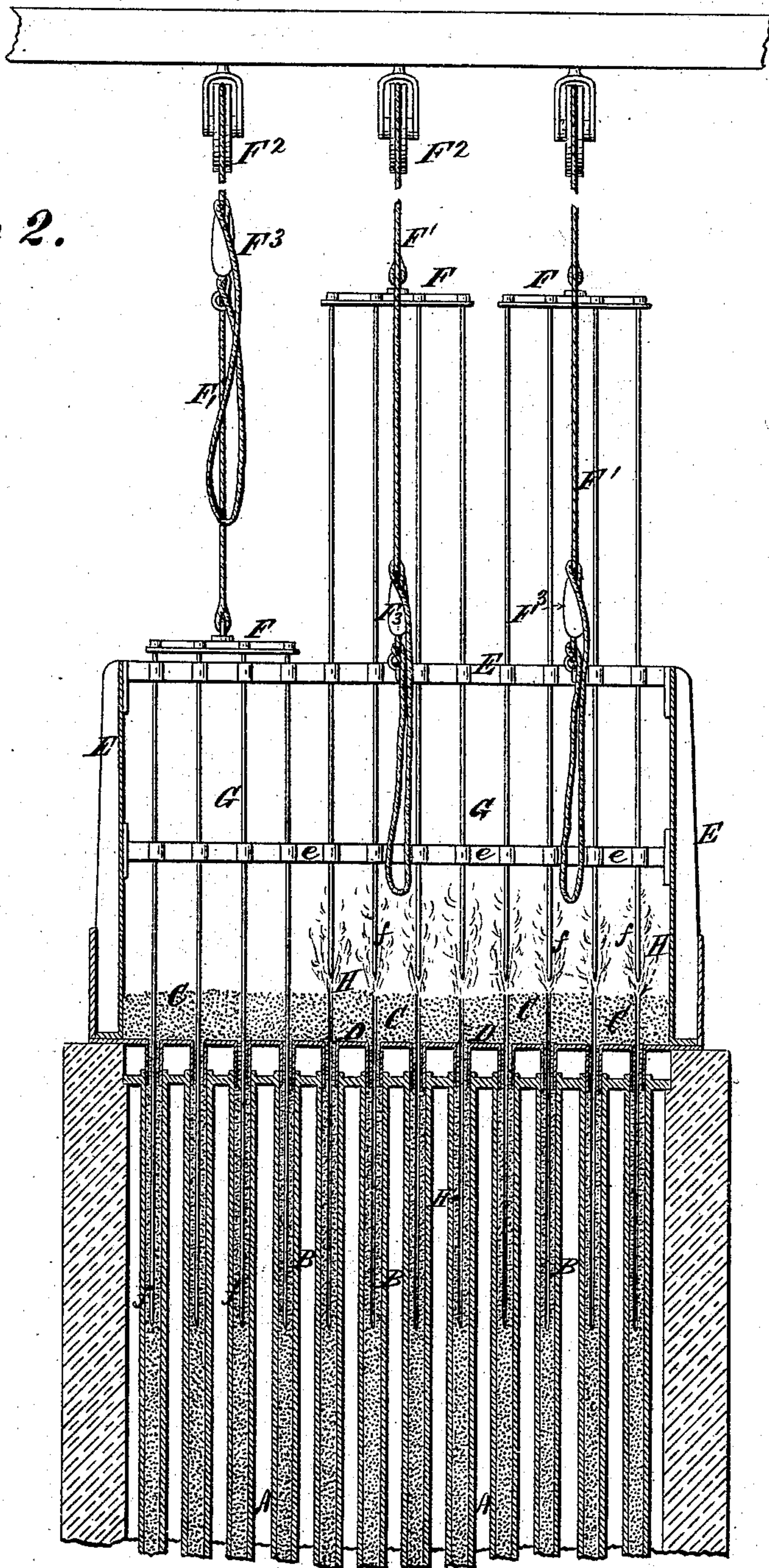
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Figure 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

WALTER R. ELMENHORST, OF MONTREAL, CANADA.

KILN FOR DRYING AND REVIVIFYING BONE-BLACK.

SPECIFICATION forming part of Letters Patent No. 235,942, dated December 28, 1880.

Application filed October 25, 1880. (No model.)

To all whom it may concern:

Be it known that I, WALTER R. ELMENHORST, of Montreal, Canada, have invented certain Improvements in Kilns for Drying and Revivifying Bone-Black, of which the following is a specification.

Bone-black is usually dried in vertical retorts, which are of small cross-area in proportion to their lengths, and which are erected in a furnace or heating-chamber, through the top of which the upper ends of the retorts project. The bone-black contained in the lower portion of the retort is subjected to the greatest heat, and the steam arising therefrom has to make its way upward through a superincumbent mass of bone-black which is cooler than itself. It results that the operation of drying is prolonged by the partial condensation of the steam in its passage through the bone-black contained in the upper part of the retort.

It is the object of my improvement to facilitate the escape of steam from the bone-black contained in the retort; and my invention consists in combining with each retort one or more vertical sliding pricker-rods held in longitudinal alignment with the retort by suitable guides, and in forming, by means of these rods, in the mass of bone-black contained in the retort one or more vertical vent-holes of any desired depth, which will serve as free outlets for the steam generated from the moisture of the bone-black contained in the retort.

In the accompanying drawings, representing a bone-black kiln provided with my improvements, Figure 1 is a vertical section of a portion of the kiln, showing one of the heating-chambers containing two rows of vertical retorts on either side of the furnace, and showing the systems of pricker-rods in front elevation, the retorts being shown in central vertical section on a line taken through their longer diameters. Fig. 2 is a vertical section of the upper portion of one row of retorts on a line taken through their shorter diameters, showing the pricker-rods in side elevation.

The drawings represent a furnace or heating-chamber, A, containing a number of vertical retorts, B. The bone-black C is represented as filling the retort B and as covering the floor D of the bone-black room, in which the open upper ends of the retorts B terminate. A

suitable frame-work, E, is erected above the floor D, for supporting and guiding a vertically-sliding carriage, F, to which the upper ends of the pricker-rods G are affixed.

If very long retorts are used, it may be desirable to affix to the frame the guide-bar e, provided with the vertical perforations e', to receive the pricker-rods and insure their alignment, so that their pointed lower ends, f, will be guided downward into the retorts.

A suitably long hoisting-rope, F', fastened by one end to the center of the carriage F, is carried over the pulley F², mounted in fixed bearings, either upon the upper part of the frame E or in a hanger depending from the ceiling of the bone-black room. The other end of the hoisting-rope may be provided with a weight, F³, of sufficient magnitude to partially counterbalance the carriage F and the pricker-rods dependent therefrom, so that while gravity will operate to cause the pricker-rods to fall and penetrate the mass of bone-black in the retorts, the counterbalancing-weight will lessen the labor of hoisting the carriage F and withdrawing the pricker-rods.

It will, of course, be understood that the pricker-rods may be inserted into or withdrawn from the masses of bone-black contained in the retorts by positive motion, if desired; but I have found no difficulty in depending on gravity for effecting the insertion of the pricker-rods, and therefore prefer the mode of construction which I have described.

In operation, when the retorts have been filled the pricker-rods are allowed to fall or are pressed downward into the masses of bone-black contained in the retorts, and are then withdrawn, thus forming in the bone-black the long vent-holes H, which may, of course, be made to any desired depth, and which afford free outlets for the steam generated in the lower portions of the retorts.

Owing to the stickiness of the moist bone-black the vent-holes usually preserve their shape until the drying operation is completed.

I claim as my invention—

1. In a kiln for revivifying bone-black, the combination of the retorts with a series of movable pricker-rods preserved in longitudinal alignment with the retorts by suitable guides, substantially as and for the purpose set forth.

2. The retorts B, in combination with the pricker-rods G, the carriage F, and the hoisting-rope F', substantially as described.

3. The carriage F, pricker-rods G, and hoisting-rope F', provided with the counter-weight F³, in combination with the pulley F² and suitable guiding devices for preserving the longitudinal alignment of the pricker-rods with respect to the retorts B, substantially as described.

4. The method of facilitating the drying of bone-black herein described, which consists in forming the deep vent-holes H in the masses of bone-black contained in the retorts, substantially as and for the purpose set forth.

W. R. ELMENHORST.

Witnesses:

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