

G. P. OCKERSHAUSEN.

FURNACES FOR THE MANUFACTURE OF BONE-BLACK.

No. 173,989.

Patented Feb. 22, 1876.

Fig. 1.

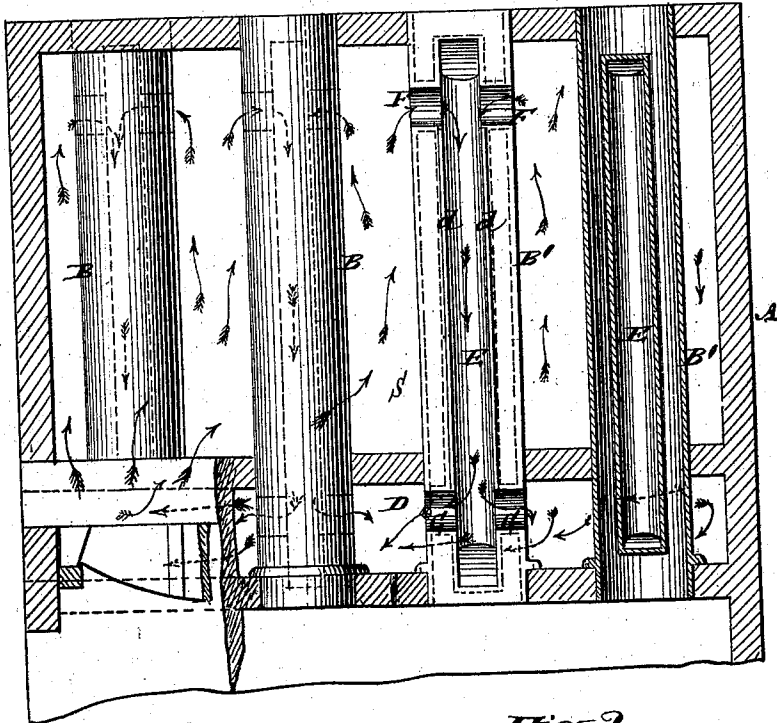
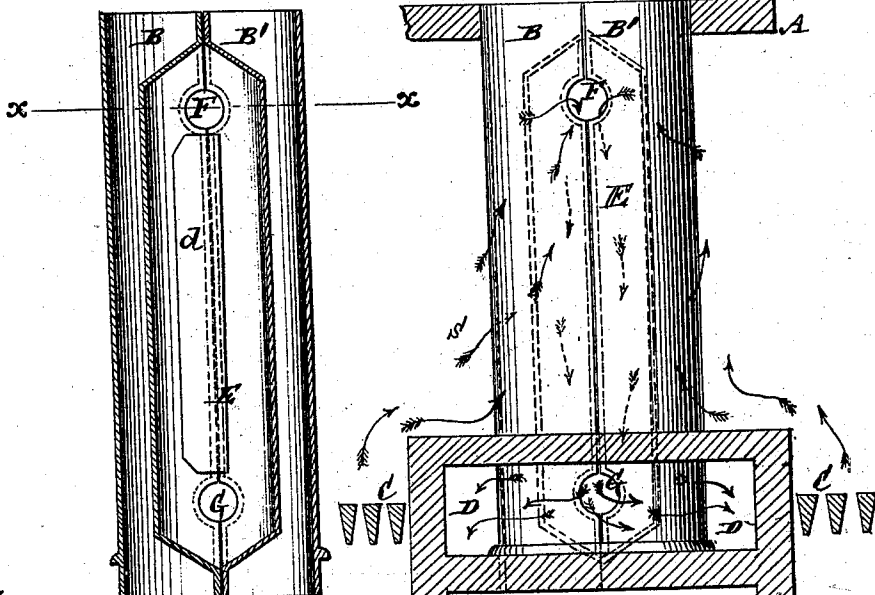


Fig. 3.

Fig. 2.



Witnesses

John Becker
Geo. Haynes

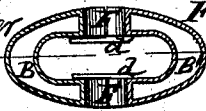


Fig. 4.

G. P. Ockershausen
by his Attorneys
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UNITED STATES PATENT OFFICE.

GEORGE P. OCKERSHAUSEN, OF NEW YORK, N. Y.

IMPROVEMENT IN FURNACES FOR THE MANUFACTURE OF BONE-BLACK.

Specification forming part of Letters Patent No. **173,989**, dated February 22, 1876; application filed December 18, 1875.

To all whom it may concern:

Be it known that I, GEORGE P. OCKER-SHAUSEN, of the city, county, and State of New York, have invented certain new and useful Improvements in Kilns for Revivifying Bone-black; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms part of this specification.

The invention consists in a combination, in a bone-black kiln, of one or more series of retorts and furnaces on both sides of each series of retorts, whereby the latter, which may be of an oblong shape in their transverse section and have their narrowest sides in proximity to the furnaces, are more equally exposed to the action of the heat. The invention also consists in a combination of a series of retorts, with a furnace on each side of them, and an intermediate exit kiln-flue surrounding the lower portions of the retorts, whereby a more extended or efficient action of the heat is obtained. Furthermore, the invention consists in a combination of vertical and lateral flues between contiguous retorts, in like transverse position relatively to the kiln; also in a combination of a through-flue in each or either retort, with upper or under flues in the kiln. Likewise the invention consists in a compound retort divided vertically, and composed of two distinct sections or separate retorts, as distinguished from a single retort, having a vertical partition in it dividing it into two compartments, whereby the section most exposed to or injured by the fire may be renewed without disturbing the other section, and the taking out and turning of the retort as ordinarily, and frequently uselessly, done with the customary single retort is dispensed with.

Figure 1 represents an irregular vertical longitudinal section of a kiln in part, and series or bench of retorts, constructed and arranged in accordance with my invention; Fig. 2, a transverse section through the kiln in front of one of my improved compound retorts. Fig. 3 is a vertical section through one of said retorts, and Fig. 4 a horizontal section thereof on the line *x x*.

A is a bone-black kiln, having one or more series of vertical retorts, each of which is rep-

resented by the letters B B'. These retorts may be of the usual elliptical or oblong shape in their transverse section, and the kiln is fitted with duplicate grates or furnaces C C, arranged on opposite sides of the retorts, which present their narrowest sides to the fires. By this arrangement of furnaces on both or opposite sides of the retort, the latter and its contents are more uniformly heated, and the burning out of the retort on its one side, while the other remains comparatively uninjured, is avoided. This will be apparent when it is considered that the heat of the furnaces on opposite sides of the same retort or series of retorts is applied directly to the latter, or, in other words, the opposite sides of each retort are separately exposed to a separate and direct furnace action, and not to a direct furnace exposure on the one side and indirect furnace action on the other, thus providing for the uniform burning of the whole mass from opposite sides of each retort. The kiln is here represented as containing a series of retorts with a furnace on each side, and constructed with an intermediate exit-flue, D, surrounding the lower parts of the retorts, the gaseous products of combustion passing to said exit-flue after action upon the upper portions of the retorts, and, under certain constructions of the latter, on the interior of the retorts, thus extending the action of the gaseous products of the furnaces on the retorts and economizing fuel. Each retort B B' may be constructed to constitute two separate retorts, and a peculiar construction whereby it is made to do so will be hereinafter described. Between these separate retorts I propose to arrange a vertical flue, E, and lateral flues F G, whereby provision is made for a circulation of the gaseous products of combustion from the furnace or furnaces, first through either lateral flue F, then down the vertical flue E, and afterward out through the lateral flues G, which arrangement materially adds to the economical application of the heat as regards the contents of the retorts. A through-flue is consequently formed in the retort, or between the retorts, supposing the portions marked B B' to constitute separate retorts, and by combining this through-flue with the lower kiln-flue D the heat from the furnace

or furnaces is still further economized, the products of combustion passing first through the main body or upper flue S of the kiln, then through the lateral flues F, down the vertical flues E, and out through the lateral flues G into the lower exit-flue D.

To avail myself of certain of these advantages, as well as to obtain others, it is proposed to make each retort B B' a compound one, which is divided vertically, and composed of two distinct sections or separate retorts represented by the letters B B' respectively, and to arrange the same in close contiguous relation with each other, but still to preserve their individuality, so that they in nowise are identical with a single retort having a vertical partition in it dividing it into two compartments, but are virtually and truly separate retorts or retort-sections, either of which may be renewed without disturbing the other when the one section has been injured by the fire, while the other section remains comparatively uninjured. Consequently such compound retort is a very different thing to a single divided retort, and its utility is greatly superior to that of a single retort of the ordinary construction, which it is usual in practice to take out and turn to expose opposite sides in succession to the action of the fire, but which, owing to the one side having been seriously injured, has often to be thrown away entirely. This compound retort may be constructed with the vertical flue E and lateral flues F G in it,

that is half of said flues in the one retort-section and the other half in the other section, the purpose of said flues being as hereinbefore stated, and the two retort-sections B B', fitting by means of cheek-strips *d d* the one within the other, to hold said retort-sections in proper relation with each other.

I claim—

1. The combination, in a bone-black kiln, of one or more series of retorts and independent furnaces, arranged on opposite sides of each retort in a series, substantially as specified.
2. The combination of a series of retorts with a furnace, C, on each side of the same, and an intermediate exit-flue D, surrounding the lower parts of the retorts, essentially as described.
3. The combination of the vertical and lateral flues E F G between contiguous retorts, substantially as specified.
4. The retorts constructed with vertical and lateral flues in combination with the upper and lower kiln-flues S D, essentially as described.
5. The compound retort divided vertically, and composed of separate vertical retort-sections constituting independent retorts, substantially as and for the purpose herein set forth.

GEORGE P. OCKERSHAUSEN.

Witnesses:

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