J. GANDOLFO.

BONE-BLACK REVIVIFIER.

No. 190,676. Patented May 15, 1877.

Fig: 2

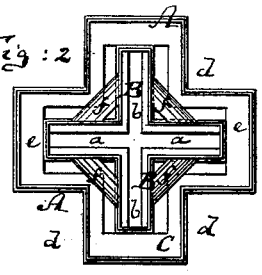


Fig: 4

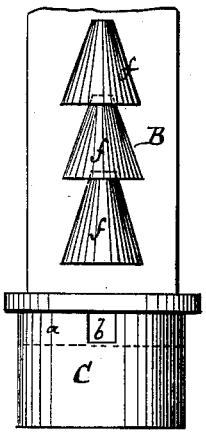


Fig: 1

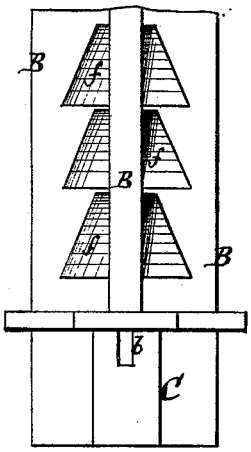


Fig: 5

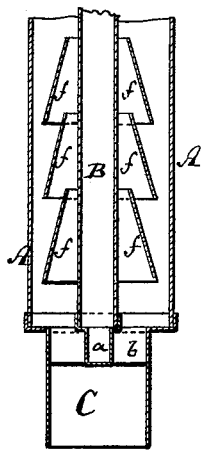
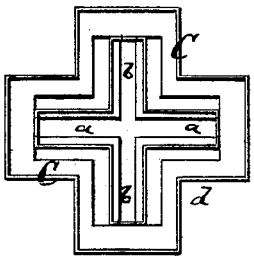


Fig: 3



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH GANDOLFO, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN BONE-BLACK REVIVIFIERS.

Specification forming part of Letters Patent No. **190,676**, dated May 15, 1877; application filed February 21, 1877.

To all whom it may concern:

Be it known that I, JOSEPH GANDOLFO, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Bone-Black Revivifier, of which the following is a specification:

Figure 1 is a side view of my improved bone-black revivifier. Fig. 2 is a top view of the same; Fig. 3, a top view of the lower socket, showing it detatched. Fig. 4 is a side view, and Fig. 5 a vertical section of a modification of the same.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to a new construction of bone-black revivifier, having for its object to increase the heating-surface thereof, and also to provide for a more complete and convenient escape of the gases that are separated from the bone-black during the revivifying process. The invention consists first in making the body of the retort cross-shaped, with three or more wings, horizontally regarded, thereby producing a much larger heating-surface and forming also a series of vertical channels in which the heating-gases will be more or less retarded in their passage around the retort and retained in contact with the surface of the retort. It also consists in piercing the socket which supports the retort with two hollow bridges which are open at both ends, so as to admit products of combustion from four sides into the pipe which is contained within the retort.

The invention also consists in placing against one of the inner walls of the retort a series of semi-conical, open-ended and hollow shelves, which are placed in rows to form a continuous passage for the escape of gases, and on whose inclined faces the bone-black slides down during the revivifying process.

In the drawing, the letter A represents the body of the retort, B the inner pipe, and C the socket which supports said inner pipe and retort. This socket is provided with two hollow bridges, *a* and *b*, which traverse it, and have open ends, to admit the smoke and products of combustion into the pipe B, the said bridges being open on top, where they are covered by said pipe B, as indicated in Fig. 3. The two bridges are not parallel, but at an angle to one another, so that they may receive the products of combustion from four different sides. But for many purposes it may be desirable to close one end of one or both said bridges, so that the products of combustion will enter only at the open ends.

The retort A is in Figs. 2 and 3 shown to be cross-shaped, forming around its circumference a series of deep upright indentures, or channels, *d d*, whose surfaces will retard the passage of the products of combustion around the retort, and produces, moreover, an enlarged heating-surface, so that the heat of the furnace will be more perfectly utilized than where the retort is made without such external channels *d d*.

Internally the retort has the same form, and I prefer to also make the inner pipe B of the same cross-like shape, as shown in Fig. 2, so that the revivifying-space *e*, formed between the walls A and B, will have very extensive heating-surface, both internally and externally.

To the outer face of the inner pipe B, or to the inner face of the retort proper, I attach a series of inclined funnel-like shelves, *f f*, which are of semi-conical, semi-pyramidal or equivalent form, to constitute hollow gas passages that are open at both ends. These hollow cones are arranged in a row or rows, so that the open small end of one cone in each row enters into or closely approaches the open large end of the hollow cone, next above.

By this construction I obtain a gas-outlet without perforating either the pipe A or B, and prevent the bone-black from entering this gas-outlet, as the bone-black in its descent through the retort will rest on, but not enter, the hollow cones. The gas emanating from the bone-black, while it passes through the retort, will freely enter the large open ends of these funnel-like shelves, and be by them conducted into a suitable outlet that may be provided at or near the top of the retort. As far as these funnel-like shelves are concerned, I do not confine my invention to the cross-like form of the retort, nor do I so confine myself thereto in regard to the use of the two bridges, *a* and *b*. Both these features may be applied to retorts having the usual oval or circular

cross section, such as indicated in Figs. 4 and 5.

I claim as my invention—

1. The socket C, constructed with two hollow bridges, *a* and *b*, which cross each other in the socket, in combination with the retort A and inner pipe B, substantially as herein shown and described.

2. The revivifying-retort A, constructed with the external upright channels *d d*, substantially as and for the purpose herein shown and described.

3. The hollow funnels *f f*, placed in a row within the chamber *e* of a revivifying-retort, against the solid wall of said retort, all arranged so that the funnels discharge the ascending gases into one another, substantially as specified.

JOSEPH GANDOLFO.

Witnesses:
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F. v. BRIESEN.