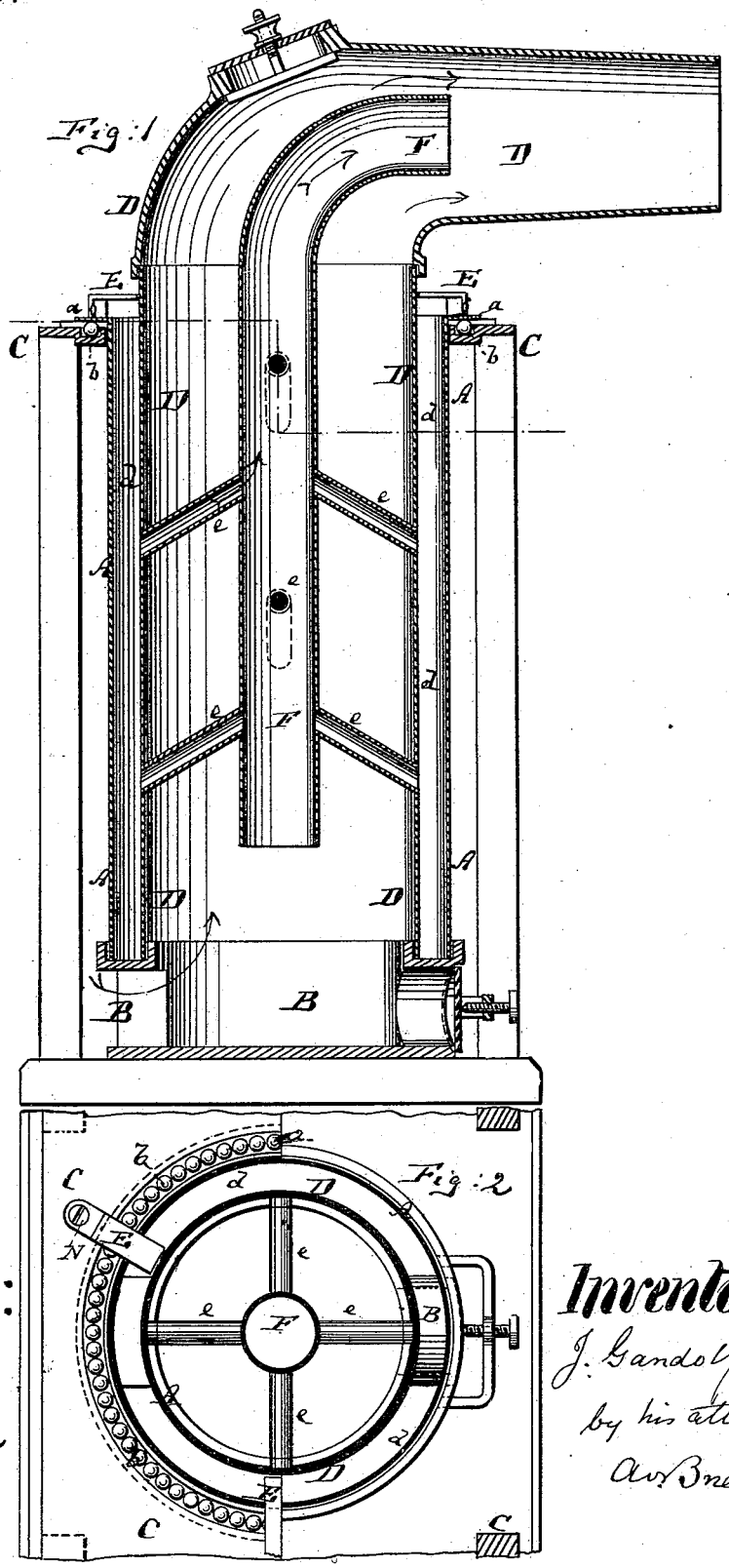
J. GANDOLFO.

Bone-Black Revivifier.

No. 167,235. Patented Aug. 31, 1875.



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JOSEPH GANDOLFO, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN BONE-BLACK REVIVIFIERS.

Specification forming part of Letters Patent No. **167,235**, dated August 31, 1875; application filed August 13, 1875.

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 vertical transverse section of one of the retorts used in my improved bone-black revivifier. Fig. 2 is a top view, partly in section, of the same.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to certain improvements on the bone-black revivifier invented by me, and for which Letters Patent of the United States were granted to me on the 27th day of July, 1875, numbered 165,992.

The object of the present invention is, first, to facilitate the rotation of the retort, so that fresh surfaces of the same may be turned to the fire to prevent its burning through at one place, and to permit the complete consumption of the entire body of the retort. In this respect my invention consists in providing the upper end of the retort with an outwardly-projecting flange, which rests on balls that are sunk into an annular groove of the surrounding frame. On these balls the retort is supported by means of said flange, and on them it can be readily revolved, while at the same time they do not constitute an obstacle to the elevation of the retort and its removal and replacement, which may be required for purposes of repair, inspection, or otherwise. With a retort thus supported are combined a series of radial brackets, supported on the surrounding frame-work, and extending over and above the flange of the retort, toward and in contact with the inner tube, through which the products of combustion ascend. These radial brackets serve as stays for the upper part of said inner tube, and hold it vertically in its proper position. Another object of this invention is to provide convenient means for the escape of the gaseous products of the heated bone-black; and consists, in this regard, in applying within the inner smoke-flue an interior tube, which is open at both ends, and which, by means of small radial, but inclined, tubes, connects with the annular space of the retort, to carry the gases and fumes away from the bone-black. The upper end of this central pipe entering the smoke-flue will allow the products of combustion to create suction enough for withdrawing the fumes from the bone-black as quick as they are created; but the degree of suction is such that it will not suffice to allow the body of the bone-black to be raised into the central tube and discharged into the smoke-flue.

In the accompanying drawing, the letter A represents a cylindrical vertical or slightly-inclined retort. The lower end of the same enters a socket, B, of substantially the same construction as described in my aforementioned Letters Patent of July 27, 1875. The upper end of the retort has an outwardly-projecting flange, *a*, which extends over the surrounding and supporting frame C, and rests on balls *b b*, that are placed in an annular groove formed in said frame C, in the manner clearly indicated in Figs. 1 and 2. By this means of suspension the lower end of the retort is held clear of the lower socket, and the rotation of the retort is facilitated, so that when the part which has been turned to the fire is about burned out the retort may be slightly turned to expose another surface to the fire until the entire body of the retort has been utilized. D is a pipe, placed within the retort, its lower end supported on the socket B, and its upper entering the chimney of the furnace. This pipe serves to receive the products of combustion from the furnace. These products of combustion first surround the retort; then pass through the bridged socket B into the pipe D, and ascend thence into the chimney, so that thus the annular space *d*, through which the bone-black to be revivified is passed, will be contained between two heating-surfaces, in the manner substantially described in my aforementioned Letters Patent. The upper part of the pipe D, where the same issues from the mouth of the retort, is braced and held in place by three or more radial brackets, E E, which are fastened upon the frame C, and extend against the pipe D, in the manner indicated in Fig. 2. These radial arms serve to hold the pipe D at the proper distance from the walls of the retort, and allow its ready removal when they are swung aside on their fastening pins or pivots N. The retort itself can thus also be readily raised and removed and replaced. F

is a tube, placed centrally within the pipe D, open at both ends, and of a diameter considerably smaller than that of D, as clearly shown in the drawing. This pipe F communicates, by branch pipes *e e*, with the annular space *d*, said branch pipes extending radially from the circumference of the pipe D to the pipe F, as shown in Fig. 1, they being open at both ends, and slightly inclined downward at their outer ends. The products of combustion, as they escape through the pipe D, cause a slight degree of suction to take place in the pipe F, and thereby draw off the fumes or gases that are or may be created in the burning bone-black through the branch pipes *e e* into the central pipe F, and thence into the chimney; and thus, by this apparatus, the bone-black is not only burned, but also thoroughly dried and freed of all matter that is during the revivifying process transformed into a gaseous condition.

I claim as my invention—

1. The retort A, provided at its upper end with the flange *a*, and combined with the grooved frame C and supporting-balls *b*, substantially as herein shown and described.

2. The radial bracing-arms E E, combined with the grooved frame C, flanged retort A, and inner pipe D, substantially as specified.

3. In combination with the revivifying-retort A, inner pipe D, and central open-ended tube F, the inclined branch pipes *e e*, which connect the annular space *d* with the tube F, substantially as herein shown and described.

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