

UNITED STATES PATENT OFFICE.

ORAZIO LUGO, OF NEW YORK, ASSIGNOR OF ONE-FOURTH HIS RIGHT TO
JOSEPH GANDOLFO, OF BROOKLYN, N. Y.

IMPROVEMENT IN PREPARING BONE-BLACK.

Specification forming part of Letters Patent No. **178,315**, dated June 6, 1876; application filed
April 26, 1876.

To all whom it may concern:

Be it known that I, ORAZIO LUGO, of New York city, in the county and State of New York, have invented new and useful Improvements in the Preparation of Bone-Black, and in the manufacture and refining of cane and beet-root sugars, of which the following is a specification:

The object of this invention is to so treat animal-charcoal or bone-black used in the process of manufacturing and refining sugars, and for other useful application in the arts, that its value as an absorbent of impurities will be enhanced.

Heretofore bone-black has been treated with solutions of hydrochloric acid, washed with water, and charred in suitable kilns for the purpose of revivifying it. By these several operations the bone-black is repeatedly rendered fit for the decolorization of sirups or solutions of sugar, and for other purposes; but by every successive treatment and revivification the decolorizing and deodorizing power of the bone-black is diminished, so that, after repeating said operations about one hundred times, or thereabout, the intelligent refiner will discard the old stock and buy new bone-black.

My invention consists in preparing bone-black with boric acid or its salts, thereby imparting to it a greater bleaching, decolorizing, or absorbing power; and consists, also, in treating sirup or sugar solutions with bone-black prepared with said boric acid or its salts.

The first operation, in carrying out my invention, consists in dissolving in water boric acid to the amount of about one-sixteenth to one part, by weight, of boric acid to one hundred parts of the bone-black to be treated. The quantity of solution of boric acid should be made sufficient to fully saturate the bone-black, in order that the mass may be conveniently boiled by the application of heat. The bone-black thus charged is next drained to extract the watery solution, and, finally, the bone-black is charred in kilns in the usual manner.

The different manipulations employed in carrying out my invention are conducted sub-

stantially as follows: In a vessel, tank, or filter, provided with means for the application of heat, about thirty-five thousand to forty thousand pounds of water are introduced, having in solution about fifty pounds of boric acid. To this solution about thirty thousand pounds of bone-black are added. Heat is now applied to the mass, and the same boiled or kept near the boiling-point for about an hour. If desirable, the heating can be continued beyond one hour, or the time may be lessened, as circumstances may demand. The watery solution is then drained off as much as possible, and either allowed to waste or concentrate, in order to obtain the different salts it contains in solution. Should the solution, after having been used as above described, still contain any free boric acid, it may be used again for a subsequent operation.

The drained bone-black is ready to be charred or revivified in any ordinary kilns. When the bone-black has been properly charred it may be tested by taking a sample of it and treating the same with boiling water. If the water extracts a large amount of salts of lime, iron, or the like, the charred bone-black may be washed in the filter with hot water, and, finally, as much of the water as possible expelled. The sugar solution, sirup, or other matter to be purified is next poured on the bone-black, and filtered by the same in the usual manner. Hot water having in solution the requisite proportion of boric acid may, if desired, be introduced in the filters containing the bone-black, after the bone-black has been washed in the usual manner carried out in sugar-houses. The bone-black, in a wet or dry state, may also be simply sprinkled with a solution of boric acid, and thereupon charred in proper kilns by the applications of heat, and, finally, treated with boiling water, drained and used either in a wet or dry state, for the decolorization of sirups, sugar solutions, or other substances.

The proper proportion of boric acid to the bone-black to be treated greatly depends on the amount of impurities contained in the latter, and which any chemist can readily ascertain. In connection with, or in lieu of, the simple boric acid, various salts from boric acid

or salts of boron may be used for the treatment of bone-black. For use on articles of food non-poisonous salts are, of course, chosen.

The advantages derived by the treatment of bone-black with boric acid, or with a suitable borate, or with either of them, together or separate, are great, as it not only increases the decolorizing power of the bone-black, but the filtered and decolorized solutions readily crystallize when concentrated. The several mother-liquors of each and of repeated crystallization do not degenerate into lactic or other fermentation, as is sometimes the case when a large amount of foreign lime and other salts are present in the bone-black.

I do not claim the bleaching or decolorization of sirups and sugar solution by bone-

black, nor the treatment of bone-black with acids or other chemical reagents than those referred to; but

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The mixture of animal-charcoal or bone-black with boric acid or a salt of boron, substantially as and for the purpose specified.

2. The process herein described of treating sirup or sugar solutions with boric acid or salt of boron in connection with bone-black, substantially as specified.

ORAZIO LUGO.

Witnesses:

JOSEPH GANDOLFO,
A. V. BRIESEN.