UNITED STATES PATENT OFFICE.

ALBERT VERLEY, OF COURBEVOIE, FRANCE, ASSIGNOR TO THE SOCIÉTÉ ANGLO-FRANCAISE DES PARFUMS PERFECTIONNÉS, LIMITED, OF LONDON, ENGLAND.

DEFECATING PROCESS.

SPECIFICATION forming part of Letters Patent No. 648,577, dated May 1, 1900.

Application filed October 2, 1897. Serial No. 653,810. (No specimens.)

To all whom it may concern:

Be it known that I, ALBERT VERLEY, electrician, a citizen of the French Republic, residing at 7 Quai de Seine, Courbevoie, near Paris, in the Republic of France, have invented certain Improvements in the Manufacture of Sugar, of which the following is a specification.

My invention relates to the application of ozone to the juice obtained from cane or beet in the manufacture of sugar; and it has for its object to increase the yield of sugar as well as to improve its color.

Many attempts have been made to use ozone for the purpose of bleaching the juice from which sugar is obtained. It is well-known that ozone possesses the property of bleaching such juice; but all attempts to commercially use this principle have failed, because the juice in the subsequent processes regains its color and the bleaching is not permanent. I have discovered that the bleaching effect of the ozone may be rendered permanent by adding a suitable alkali (or alkaline earth) to the juice, so that it gives a slightly-alkaline reaction before the ozone is applied to it and by continuing the action of ozone until such alkaline reaction is almost or wholly removed. It is necessary to take great care that the action of ozone is not continued beyond the point of neutrality.

By way of example I will describe a practical application of the invention to the treatment of the juice in the manufacture of beet-root sugar.

To the juice extracted by any usual or suitable method I add lime in the proportion of four parts, by weight, of lime to ninety-six parts, by weight, of the juice, and then I treat this with carbonic acid, so as to leave an alkalinity corresponding to about 1.5 grams of lime per liter. The juice is then passed through a filter-press in order to separate it from the carbonate of lime and then is subjected to the action of a current of ozone or ozonized air, and by this the ammoniacal matters are oxidized, the albuminoids are precipitated, and the coloring-matter destroyed. Afterward a current of sulfurous acid is passed through the mass to completely neutralize the alkali, and then the mass is filtered. The sulfurous acid acts in this case as a reducing agent on certain organic peroxides formed in the action of the ozone.

Other alkali or alkaline earth can be employed in place of lime and carbonic acid, or other acid may be used instead of sulfurous acid; but I prefer sulfurous acid, because it acts as a reducing agent and destroys certain organic peroxides which are sometimes formed by the action of the ozone or ozonized air, which would, if not so destroyed, interfere with the success of the process.

The juice is afterward treated by the usual or any suitable method, and the sugar is crystallized out very readily. The sugar crystals are obtained in larger quantities and the formation of molasses is greatly reduced, while the bleaching effect is permanent.

The process may be simplified, especially in the case of treating cane-juices, by dispensing with the treatment with carbonic acid to form a carbonate, it being then sufficient to add to the juice a small quantity of alkali or alkaline earth, such as lime, baryta, or strontia, treat with ozone or ozonized air, and afterward neutralize with sulfurous or any other acid.

The same process may be applied to the purification or discolorization of saccharine juices or syrups generally.

If desired, the action of the ozone may be prolonged, so as to entirely get rid of this alkalinity; but I prefer to proceed as hereinbefore described.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The process for purifying saccharine juices or syrups, consisting in subjecting the same to carbonation, and then subjecting the completely-carbonated juices while alkaline to the action of ozone.

2. The process of purifying saccharine juices or syrups, consisting in subjecting the same to carbonation, then subjecting the completely-carbonated juices while alkaline to the action of ozone and finally neutralizing the juices with an acid.

3. The process of purifying saccharine juices or syrups, consisting in subjecting the same to carbonation, then while the juices show an alkaline reaction subjecting them to the action of ozone and finally neutralizing with sulfurous acid.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT VERLEY.

Witnesses:
EDWARD P. MACLEAN,
DAVID T. S. FULLER.