UNITED STATES PATENT OFFICE.

WILLIAM HENRY HIGGIN, OF BOLTON, ENGLAND.

PROCESS OF MAKING SODIUM ACETATE.

SPECIFICATION forming part of Letters Patent No. 511,143, dated December 19, 1893.

Application filed May 27, 1892. Serial No. 434,651. (No specimens.) Patented in England August 8, 1891, No. 13,409; in Germany May 8, 1892, No. 69,786; in France May 9, 1892, No. 221,481; in Belgium May 9, 1892, No. 99,602, and in Austria-Hungary May 11, 1892, No. 24,840 and No. 37,915.

To all whom it may concern:

Be it known that I, WILLIAM HENRY HIGGIN, a subject of the Queen of Great Britain and Ireland, residing at Lever Grange, Great Lever, Bolton, in the county of Lancaster, England, have invented certain new and useful Improvements in the Treatment and Utilization of Esparto-Liquor and other Similar Alkaline Liquors and By-Products; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, and for which foreign patents have been obtained as follows: British, No. 13,409, dated August 8, 1891; French, No. 221,481, dated May 9, 1892; Belgian, No. 99,602, dated May 9, 1892; Austro-Hungarian, No. 24,840 and No. 37,915, dated May 11, 1892, and German, No. 69,786, dated May 8, 1892.

My said invention relates generally to an improved method of treating the alkaline liquors which have been used to boil raw fibrous materials for use in paper making and other manufactures, such for example as the caustic soda lye which has been used to boil esparto-grass, straw, wood or other fibrous materials for the purpose of obtaining the fibers in a condition suitable for paper making as is well understood.

The object of my invention is to obtain acetate of sodium from such alkaline liquors and by-products and to recover part of the alkali used in their preparation.

The ordinary method of treating alkaline liquors of the class described consists of evaporation of the water and calculation of the residue by the use of a high degree of temperature.

The essential feature of my invention consists in maintaining the temperature so low that the acetate formed is not decomposed.

The improved process is carried into effect by evaporating the water contained in the solution and subjecting the residual mass obtained thereby in any suitable apparatus to carefully regulated heat in such a manner that it is maintained at a temperature slightly below that at which acetate of sodium begins to decompose and which in the case of the residue from esparto-liquor for example, would be about 400° centigrade. The mass is subjected to this heat until it ceases to give off strongly smelling gases containing nitrogenous bases and other impurities, but no acetic acid which are evolved under this treatment. The subjection of the residual mass to this carefully regulated temperature is the chief point in my improved process, because if the indicated temperature should be unduly exceeded the acetate of sodium present in the mass would be decomposed and lost while if too low a temperature were employed the acetate of sodium would be obtained in considerably less quantity. When properly conduced at or about the temperature I have indicated the result of the process is that some of the organic matter is not destroyed but remains combined with a proportion of soda in the commercially valuable form of acetate of sodium. The mass is maintained at the requisite temperature until the strongly smelling gases are no longer given off whereupon it may be withdrawn. I have mentioned 400° centigrade as a suitable temperature to use because the production of acetate is practically complete at that temperature which is nevertheless still about 50° below the point at which decomposition of the acetate under these circumstances would take place whether the operation is carried on in a closed or open vessel. Another advantage of the high temperature is that the resulting mass or "char" produced at that heat is of the most favorable nature for the extraction of the acetate and its subsequent refining by any well-known and acceptable method. I wish however to state expressly that the application of any temperature below the decomposing point of acetate and above 200° centigrade will result in the production of acetate in large quantity in the mass although as I have already stated the results will not be so good as where a temperature of about 400° centigrade is used as directed. The resulting mass or "char" produced at the lower temperatures is also less amenable to treatment for the recovery of the acetate than is the mass or "char" obtained by the higher temperature. The said resulting "char" or mass, as obtained preferably

from the higher temperature under the most improved method of carrying my invention into effect, consists of a dry easily pulverized coke-like mass which contains frequently about fifteen per cent. of its own weight of anhydrous acetate of sodium. When treated with water in a suitable manner it yields the most of the contained acetate of sodium along with some carbonate of sodium and organic matter as a solution from which the sodium acetate may be removed by fractional crystallization, or the solution may be otherwise utilized. There is also a quantity of black insoluble residue which after drying may be burned, when it leaves as a white ash a large proportion of the alkali (originally used in the preparation of the liquor) as carbonate of soda.

In practice it will be found that different liquors or by-products require slight variations in the temperatures at which my improved process can be best carried out but in any case the temperature should always be as nearly below the point at which the acetate decomposes as is safe, regard being had to the danger of local or accidental overheating.

Too low a temperature is to be avoided because as I have explained not only is the acetate obtained less in quantity but also the mass is more soluble in water and the acetate cannot therefore be so effectually separated.

What I claim is—

The improved method of treating esparto-liquor and other similar alkaline liquors, solutions and by-products so as to obtain solutions containing acetate of sodium therefrom, consisting in evaporating the water from such liquors or solutions, and treating the residue by carefully regulated heat so that the temperature of the residue shall exceed 200° centigrade but shall never reach the heat at which sodium acetate is decomposed thereby producing a mass or "char" which upon treatment with water yields a solution of acetate of sodium along with other matters substantially as described and shown.

This specification signed and witnessed the 4th day of May, 1892.

WILLIAM HENRY HIGGIN.

Witnesses:

JOSHUA EMPIRSLE,

RICHARD IBBERSON.