

UNITED STATES PATENT OFFICE.

EDWARD BEANES, OF LONDON, AND CONRAD WM. FINZEL, OF BRISTOL, ENGLAND, ASSIGNORS TO THEMSELVES AND THEO. A. HAVEMYER, OF NEW YORK, N. Y.

IMPROVEMENT IN SUGAR-BOILING.

Specification forming part of Letters Patent No. **46,419**, dated February 14, 1865.

To all whom it may concern:

Be it known that we, EDWARD BEANES, of London, in the county of Middlesex, and CONRAD WILLIAM FINZEL, of Bristol, in the county of Bristol, both places in the Kingdom of Great Britain and Ireland, have invented certain new and useful Improvements in Sugar-Boiling; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to fully understand and make use of the same.

This invention consists in the use of hot water at or as near as may be to the boiling-point or of steam at a very low pressure for the purpose of boiling sugar in vacuum-pans. Hitherto for such purposes steam has been employed at temperatures of 225° Fahrenheit and upward, equal to a pressure of four and three-quarter pounds and upward, whereby there has always been more or less carbonization and consequently coloring of the sugar, for it has hitherto been deemed necessary to use steam of such high temperature in such process, in order that sufficient heat may be obtained throughout and at the end of the worm or tubes used in such vacuum-pans to cause the proper evaporation of the sirup or liquor.

Now, this invention consists in using hot water continuously kept at or as near as may be to the boiling-point or steam at a temperature not exceeding 215° Fahrenheit, or at a pressure not exceeding one pound to the square inch, or as near to such temperature and pressure as it can be kept in practice, so as to boil the sirup or liquor without carbonization. To effect this object, instead of using the long tubular vacuum-pan or the ordinary vacuum-pan with worms as at present in use, we dispense with the use of such vacuum-pans containing worms, using a tubular vacuum-pan,

but reducing the length of the tubes therein, increasing at the same time the number of tubes according to the evaporating-surface required, so that it will only be necessary for the heating thereof to use hot water or steam, as aforesaid, at a temperature below the carbonizing-point of saccharine liquids; while for the shortness of the tubes in the pan the water or steam will continue sufficiently hot during its passage through such tubes, so as to be perfectly effective for the purpose of boiling the saccharine liquids and causing the proper evaporation throughout the pan without causing any carbonization and coloring of the sugar.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

The employment or use in boiling sugar in vacuum-pans of hot water at or as near as may be to the boiling-point, or steam of a pressure of not more than one pound to the square inch, or as near as may be to that pressure, substantially as herein set forth, to prevent carbonization and coloring of the saccharine liquids and of the sugar.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDW. BEANES.

CONRAD WM. FINZEL.

Witnesses to the signature of Edward Beanes:

GEORGE F. WARREN,

HENRY SOUTER,

Both of No. 17 Gracechurch Street, London, E. C., Notarial Clerks.

Witnesses to the signature of Conrad William Finzel:

W. BRITTON,

Solicitor, Bristol.

RICHD. COX,

Accountant, 2 Richmond Place, Bristol.