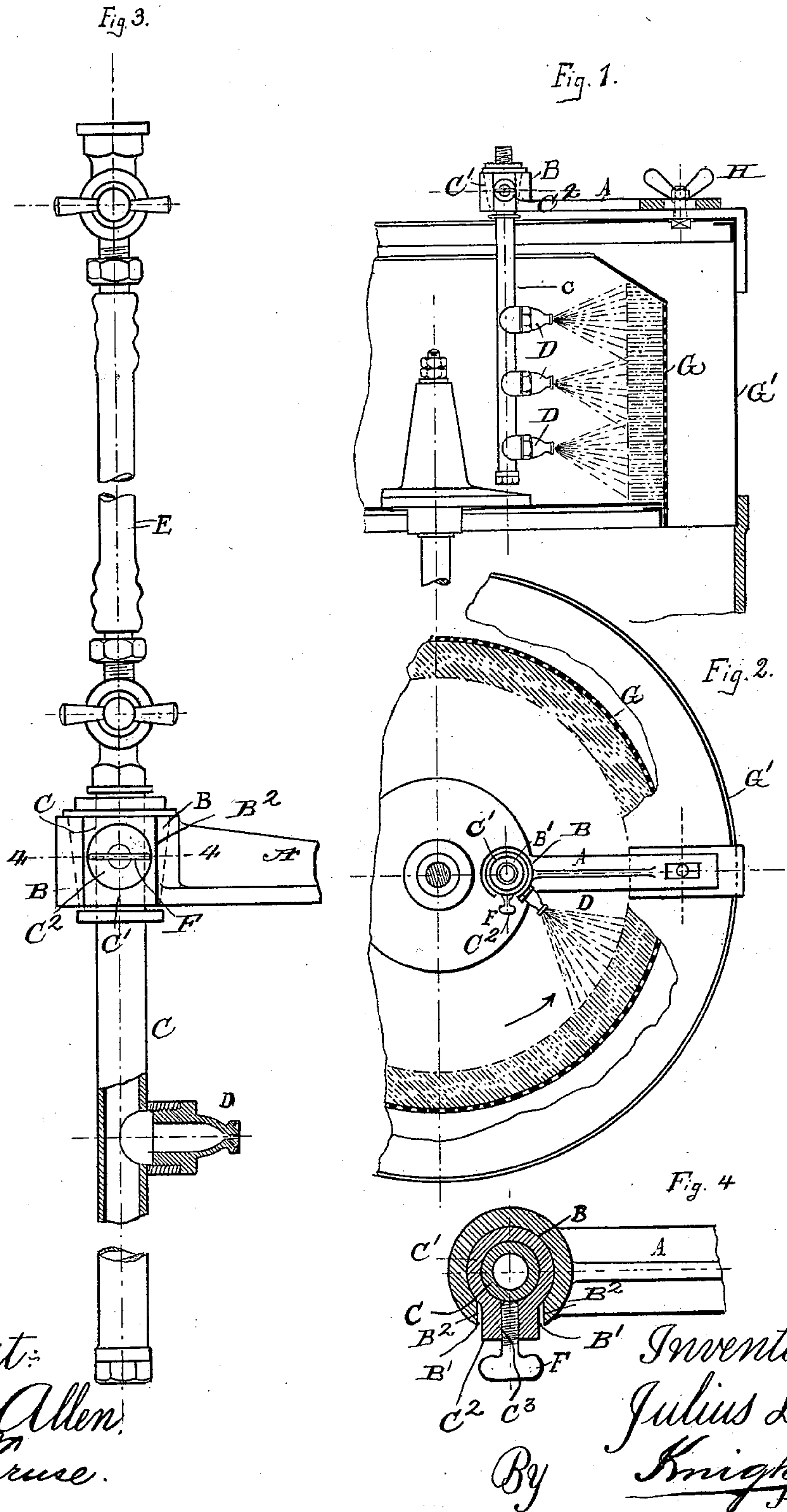


(No Model.)

J. LACH.
APPARATUS FOR REFINING SUGAR.

No. 518,152.

Patented Apr. 10, 1894.



Attest:
W. Allen.
A. C. Eruse.

Inventor:
Julius Lach.
By Knight Bros
Attorneys.

UNITED STATES PATENT OFFICE.

JULIUS LACH, OF MAGDEBURG-NEUSTADT, GERMANY.

APPARATUS FOR REFINING SUGAR.

SPECIFICATION forming part of Letters Patent No. 518,152, dated April 10, 1894.

Application filed September 16, 1892. Serial No. 446,083. (No model.) Patented in Austria-Hungary October 11, 1890, No. 2,867 and No. 2,799; in France May 2, 1891, No. 211,200, and in Belgium June 2, 1891, No. 93,675.

To all whom it may concern:

Be it known that I, JULIUS LACH, a subject of the Emperor of Austria-Hungary, and a resident of No. 16 Mittelstrasse, Magdeburg-Neustadt, in the Kingdom of Prussia and the Empire of Germany, have invented a new and useful Improvement in Apparatus for Refining Sugar, (for which Letters Patent have been granted in Austria, fol. 2,867, tom. 40, dated October 11, 1890, and in Hungary, the corresponding patent, fol. 2,799, tom. 24, dated October 11, 1890; in France, No. 211,200, dated May 2, 1891, and in Belgium, No. 93,675, dated June 2, 1891,) of which the following is a specification.

My invention relates to the washing of sugar in the centrifugal, and it consists in an improved apparatus whereby a very efficient washing of the sugar is obtained in a few minutes without any notable quantity of sugar being dissolved.

As is well known the old process for washing raw sugar in the centrifugal consists in projecting water on the sugar by means of perforated tubes or roses. This mode of operation has been abandoned for the reason that it allows the water to pass slowly through the crystalline mass whereby it is enabled to dissolve away a considerable quantity of sugar. To do away with this defect, jets of steam have been substituted for the water. But these media having their special disadvantages and the water being in all regards the most advantageous one, many attempts have been made to enable the washing of sugar in the centrifugal to be effected by the aid of cold water without the latter being able to act as a dissolvent on the sugar. And in order to facilitate this result to be obtained in as perfect a manner as possible the sugar is operated upon by cold water in the form of a very fine spray, in causing the same to impinge against the sugar under a pressure of several atmospheres. Now experience has shown that the action of the fine cold water spray can be much improved by projecting the same in such a direction that it meets the sugar in a direction which is oblique and opposite to the direction of the rotation of the centrifugal. The greater the impurity of the sugar, the more obliquely the nozzles must be

set in order to obtain the same effect as with a less impure sugar.

The present invention contemplates the utilization of the just described fact by so arranging the spraying device within the centrifugal that it can be turned in order to adjust the obliquity of the spray according to the degree of impurity of the sugar to be washed, so that a centrifugal provided with this arrangement can be made use of for washing with the same effect sugar of greater or less purity.

By preference the spraying device consists of a series of superposed spray-nozzles, by preference Körtling's spray-nozzles arranged within the centrifugal and connected by a tube extending eccentrically in the centrifugal, with a pump or other device for feeding the nozzles with cold water under pressure. This spray-nozzle carrying tube is held stationary in a support; and besides it is so arranged that it can be turned round its axis in the said support in order to increase or diminish the obliquity of the nozzle according to the quantity of sirup contained in the sugar.

In order to make my invention fully intelligible reference is made to the accompanying drawings in which similar letters of reference denote similar parts throughout the figures.

Figure 1 is a part section of a centrifugal provided with the spraying apparatus, and Fig. 2 is a part plan of the same, with the cover partly broken away, and the drum shown in section. Fig. 3 shows the pipes and fitting for the passage of the water, showing the spray-nozzle in section, and Fig. 4 is a horizontal section on line 4—4, Fig. 3.

G is the drum of the centrifugal machine and G' the mantle or casing of the same, the walls of drum G being perforated.

C is the supporting and feeding tube common to the spray-nozzles D.

E is a hose connecting the tube C with a suitable pump not shown in the drawings. The tube C is held in an arm A attached at its outer end to the casing G', as by means of a screw H. The inner end of arm A terminates in a conical ring B. This ring is cut out at one side so that a free space B' is ob-

tained which is wider than the diameter of tube C and limited by straight shoulders B². On the upper end of tube C is fixed an annular conical shoulder C' of such shape as to fit
 5 perfectly into the said ring B. The tube-shoulder C' is provided with a lateral projection C² having a screw threaded hole C³ the axis of which forms a right angle with the long axis of tube C. In this hole works a
 10 screw F.

For mounting the spray-nozzle supporting tube C the same is first passed from the side into the ring B through the opening B' the tube shoulder C' being above the ring and
 15 the projection C² above the opening B', then the tube is lowered so that its shoulder C' is received by the ring B and the projection C² stands within the opening B², and finally it is clamped to the ring by means of the screw F.

20 The tube C is connected by a hose E with a suitable pump not shown in the drawings. In Fig. 4 it is assumed to be in its mean position in which the projection C² is on each side separated from the shoulders B² by an equal
 25 interval, so that, after loosening of screw F, the tube C can be turned to the right or to left, whereby the angle at which the spray-nozzles are set relatively to the direction of rotation of the cylinder G is varied accordingly.

30 The spray-nozzle having been adjusted according to requirements and the centrifugal set in rotation, the nozzles are fed with cold water from the said pump by the hose E and the tube C and the cold water-sprays pro-
 35 duced by them are projected against the sugar in a direction which is simultaneously oblique and opposite to that in which the centrifugal is caused to rotate. The very fine division of the cold water in combination with the
 40 great pressure with which it is blown against the sugar, allow its particles to readily penetrate between the crystals of the sugar, and the angle at which the spray is caused to do so has the effect that the atomized water is

subjected to the action of the centrifugal 45 force within the mass of sugar for a longer time than it would when caused to penetrate the same, at a right angle, so that it is permitted to displace a greater amount of sirup from the interstices between the crystals and 50 at the same time to dissolve or so dilute that portion of the sirup which is adhering to the faces of the crystals that it cannot longer resist the action of the centrifugal force. The operation is finished in a few minutes. 55 In this way I obtain a very efficacious washing of the sugar by the aid of cold water and without dissolving away a noticeable quantity of the sugar itself.

Having thus described my invention, the 60 following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with a centrifugal machine for washing sugar, of an eccentric series of superposed spray-nozzles located therein 65 obliquely and oppositely to the direction of rotation of the centrifugal an eccentrically arranged stationary pump-tube connected with said nozzles, and means for adjusting the obliquity of the spray-nozzles, as set forth. 70

2. The combination, with a centrifugal machine for washing sugar, of the arm A fixed to the casing of the centrifugal, the conical ring B arranged at the inner end of said arm and having a lateral opening B', the spray- 75 nozzles supporting tube C provided with an annular conical shoulder C' having a lateral projection C², and a clamp-screw F working in said projection, as and for the purpose specified. 80

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JULIUS LACH.

Witnesses:

W. EGGELING,
 ERNST KOHLE,