

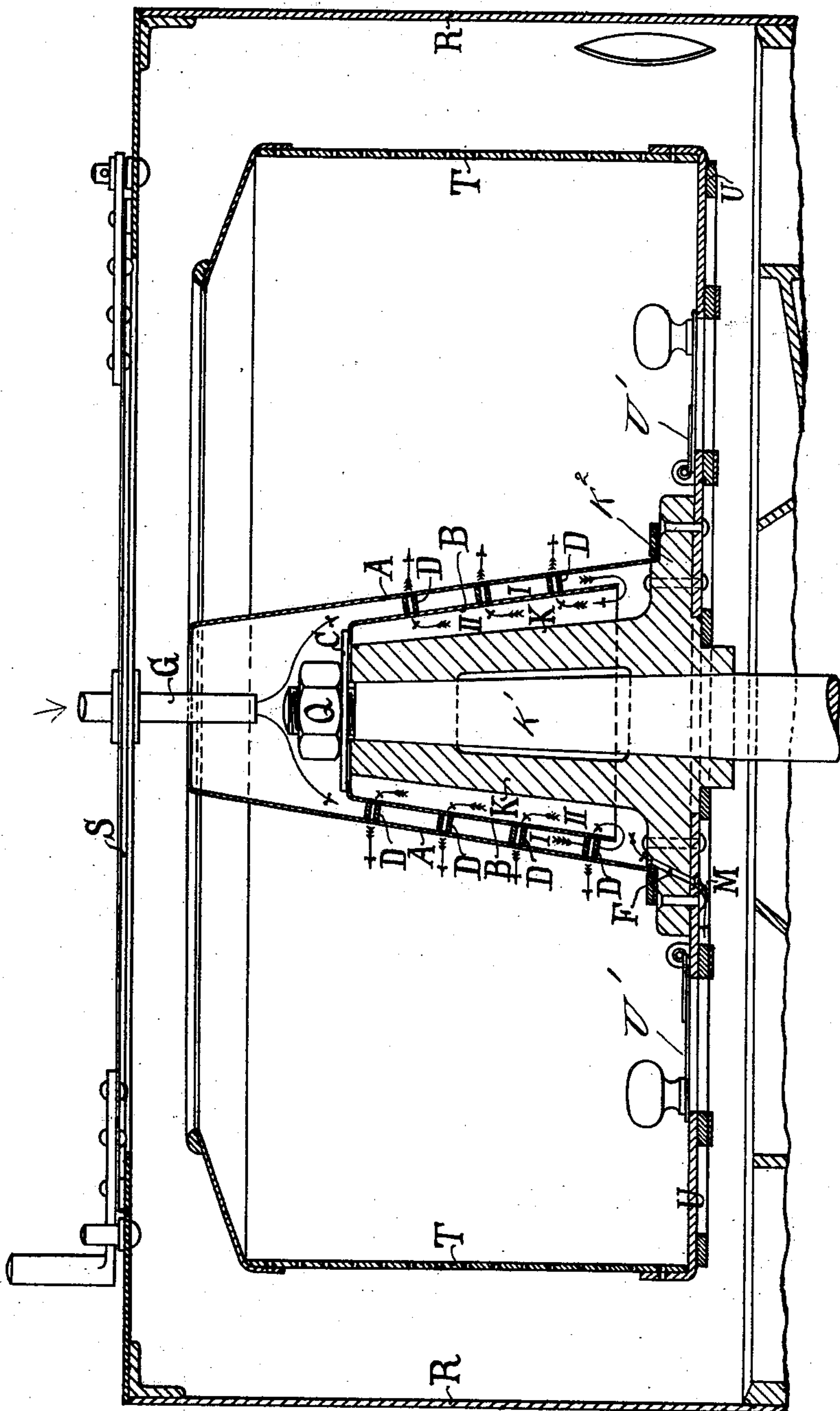
No. 637,258.

Patented Nov. 21, 1899.

L. HIRT.  
CENTRIFUGAL MACHINE.

(Application filed June 13, 1899.)

(No Model.)



Witnesses,  
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# UNITED STATES PATENT OFFICE.

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## CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 637,258, dated November 21, 1899.

Application filed June 13, 1899. Serial No. 720,339. (No model.)

*To all whom it may concern:*

Be it known that I, LUDWIG HIRT, a subject of the King of Prussia, Emperor of Germany, and a resident of Grevenbroich, Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Centrifugal Apparatus for Whitening Sugar by Means of Steam, of which the following is a specification.

10 The invention consists in improvements in centrifugal apparatus, by which improvements sugar after being nearly freed from syrup by whizzing in the centrifugal apparatus is further whitened by the action of steam  
15 thereon.

The invention consists in devices by which the steam is admitted into the drum with the greatest possible regularity and equality of distribution in order that it may penetrate  
20 the sugar which has just been whizzed with the greatest thoroughness and equality of action, thereby whitening or "bottoming" it—*i. e.*, separating and removing the syrup which still remains in, on, and among the sugar particles in a highly-efficient and regular manner.  
25

In the accompanying drawing a centrifugal apparatus embodying my invention is shown in vertical axial section.

In the drawing, T is the basket or drum,  
30 the bottom U of which is double, with space between. This bottom may be provided with flap valve or valves U' for removing the treated sugar through said bottom.

R is the outer curb or casing, which can be  
35 closed by a cover S. The bottom of the drum or basket bears a vertical cone K, in which the driving-spindle K' is fixed. This spindle is threaded at its upper end. On this bearing K there rests a cover-plate or packing-plate  
40 C, which is made fast by the nut Q upon the spindle-thread and which also serves to hold the spindle in place in its cone.

The device for the regular and thorough admission and fine distribution of the steam  
45 by which the sugar is whitened after the first whizzing process is arranged on and around the spindle-cone K. It consists of a conical outer shell A, which is properly fastened to the bottom of the drum or basket onto the  
50 flange K<sup>2</sup> of the spindle-cone K and which preferably extends as high as the upper mar-

gin of the drum. Within this conical outer shell is a second and shorter one, B, closed above and leaving a space between the cone A and itself, as well as one between itself and  
55 the spindle-cone K. The space between the spindle-cone K and the shell B is closed at top by the cover-plate C. This inner cone B does not reach to the bottom of the drum or basket. Between and connecting the two  
60 cones or shells A and B, and extending through the space or jacket I between the same, is a number of axially-perforated stay-bolts or conduits D, suitably fastened. These are  
65 preferably bolts drilled throughout their entire length, and the drill-holes therein form a steam connection between the inner space II, which exists between the spindle-cone K and the inner shell B and the interior of the  
70 driver or basket T.

The spaces I and II are put in communication with the space M in the double drum-bottom by means of the channels F, which are shown as passing through the bottom of the drum or basket T and through the spindle-  
75 cone flange K<sup>2</sup>.

Into the interior of the shell A and in the center of the drum-cover there leads the vertical steam-inlet pipe G.

The device operates as follows: After the  
80 syrup has been as far as possible removed from the sugar in the drum or basket by centrifugal action steam from the pipe G is led by way of the outer jacket or space I, the annular opening between the two jackets or spaces,  
85 the inner space II, and the drill-holes in the radial stay-bolts D into the still-revolving drum. In its downward course through the space I it heats the jacket-shells A and B. The water carried with the steam and the  
90 water of condensation flows downward and outward through the channels F into the space in the double bottom M of the drum or basket and thence is discharged through suitable channels—as, for instance, with the syrup  
95 which has been whizzed or driven by centrifugal action from the sugar. The steam passes in a dry condition through the drill-holes in the numerous stay-bolts D into the drum or basket and there acts on the sugar mass. 100

The advantages of this whitening device are as follows: The steam is regularly intro-



duced into and finely distributed through the entire inner basket or drum wall, the result of which is that the sugar in the drum is thoroughly and equally whitened throughout its entire mass. The steam reaches the sugar in a dry condition, as the water of condensation has by the combined action of gravity and centrifugal action been thoroughly removed therefrom. There is, therefore, a notably smaller quantity of sugar dissolved in the steaming or steam whitening process and less steam used than where this separation of the water and drying of the steam does not ensue.

The action of whitening sugar by steam is materially facilitated by the above device, the drum being kept warm by the steam and the bottom of the drum by the off-flowing warm water of condensation, &c.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a centrifugal apparatus for whitening or otherwise operating upon sugar, the combination of a basket, a spindle, a device for admitting steam into the basket, consisting of a double casing arranged around the spindle in the drum or basket with a space between the inner casing and the spindle, conduits spacing the walls of the double casing apart and forming connections between the same, a steam-inlet pipe communicating with the space between the two shells of this double casing, whereby steam may be admitted

first into the space between the shells of the double casing, then into the space between the inner shell of the double casing and the spindle and thence through the hollow conduits into the basket or drum.

2. In a centrifugal apparatus for whitening or otherwise operating upon sugar by means of steam, the combination of a basket, an outer conical shell A rising from the bottom of the basket, an inner conical shell B surrounded by the outer cone, closed at the top and open below, a spindle K supporting the inner cone, a plurality of conduits D spacing the said two cones apart and connecting the same and forming a steam-passage from the inner cone to the outside of the outer cone, an inlet-pipe G for discharging steam into the outer cone, where by the steam will pass through the space between the two cones, around the lower edge of the inner cone into the space between the inner cone and the spindle-cone and thence out into the basket through the conduits and means for draining off the water from the interior of the outer cone.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 16th day of May, 1899.

LUDWIG HIRT.

Witnesses:

CARL KNOOP,  
HERNANDO DE SOTO.