

A. FESCA.

Centrifugal Machines for Draining Sugar.

No. 150,012.

Patented April 21, 1874.

Fig. 1.

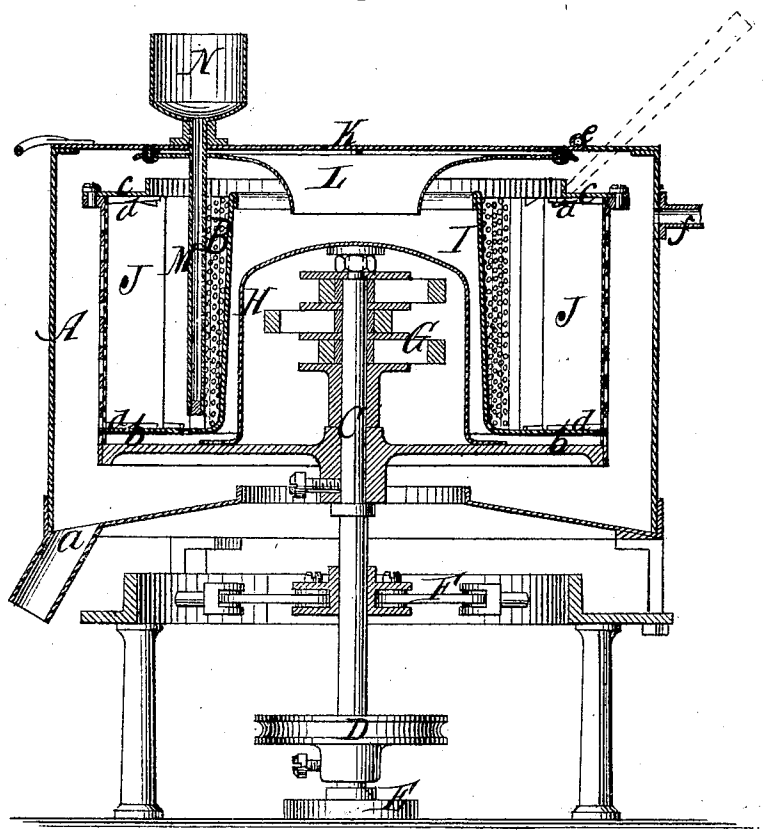
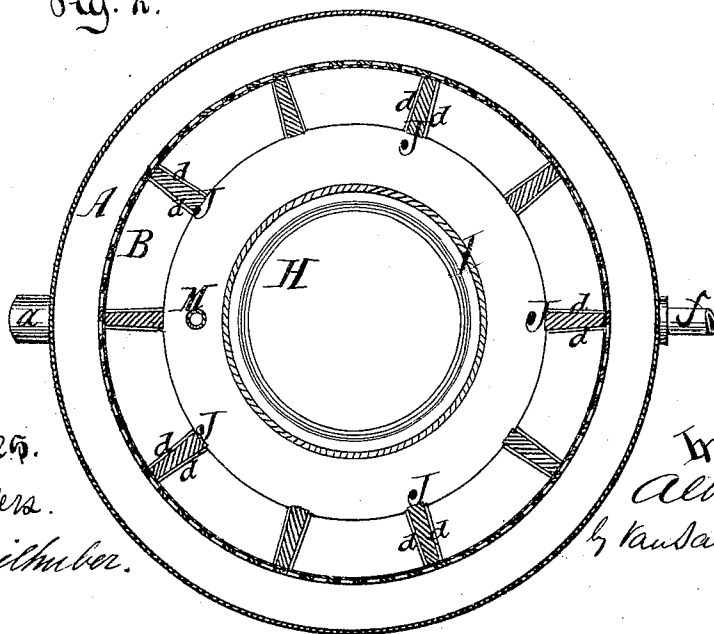


Fig. 2.



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IMPROVEMENT IN CENTRIFUGAL MACHINES FOR DRAINING SUGAR, &c.

Specification forming part of Letters Patent No. 150,012, dated April 21, 1874; application filed February 12, 1874.

To all whom it may concern:

Be it known that I, ALBERT FESCA, of Berlin, in the Empire of Germany, have invented a new and useful Improvement in Centrifugal Machines for Draining Sugar; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a vertical central section of my invention. Fig. 2 is a horizontal section of the same.

Similar letters indicate corresponding parts.

This invention relates to several improvements in the drum and recipient of a centrifugal machine, whereby a hard and pure white sugar is produced in regular loaves or cakes directly out of the crystallized saccharine juice in said drum.

The invention consists in the arrangement of a funnel or hood in the top of the recipient or cylinder for said centrifugal drum, such funnel being suspended from the lid or roof of said cylinder, for the purpose of collecting and leading off the particles of condensed steam forming on the inner surface of said lid, and thereby such condensed steam is prevented from coming in contact with the sugar in the drum. My invention consists, further, in the arrangement of a perforated clarifying-tube, having a feed cup or receptacle on one end thereof, in the annular space of the revolving drum, such tube serving to sprinkle a clarifying solution on the inner casing of said drum, from which it is dispersed in a mist, that percolates through the pores of the sugar and removes any remaining traces of molasses or coloring matter, and also serves to cement the crystals of sugar together.

In the drawing, the letter A designates a cylindrical case, which receives or contains an inner drum, B, that revolves on a vertical shaft or spindle, C, connected with the driving-shaft by means of a pulley, D. The foot of this spindle has its step in a box, E, while the middle portion thereof is supported in an elastic journal, F, the object of which is to allow the spindle to accommodate itself to any overcharge on one side of the drum; and a

balance-governor, G, composed of a number of rings hung loosely on the spindle C, is situated within said drum B, being inclosed on all sides by a hood or dome, H. The cylindrical part of the drum B is profusely perforated, and it is lined with a fine gauze, so as to permit the molasses of the saccharine juice to escape and retain the crystals. The molasses expelled by centrifugal force from such revolving drum is collected in the outer cylindrical case A, from which it is drawn off through an outlet, a. Outside of the dome H is a conical casing, I, which has a flange, b, on its lower end, forming a false bottom for the drum B, and between such casing I and the outer casing of the drum is an annular space, (seen in Fig. 2,) that contains the saccharine liquor under treatment. An inwardly-projecting ring or flange, c, is secured to the rim on the top of the drum B, by means of screws or other fastening devices, that render said ring removable, and on the under side of such ring, and also on the upper side of the false bottom b of the drum B, are guides or supports d d for a number of movable partitions, J J, which extend radially from the cylindrical part of the drum B, being situated in, and extending to about midway of, the annular space already mentioned. Said partitions slide in the guides d d toward and from the center of the drum, and they have notches in the upper ends thereof, to facilitate their removal by means of a chisel, as indicated in dotted outlines in Fig. 1 of the drawing. The lid K of the recipient or cylinder A is fastened down by means of bolts or screws, and it is made in sections, which are united by a hinge-joint, e, and by these means only a portion of the lid need be loosened in order to examine the inner drum B. The saccharine juice to be treated is filled into the annular space of the drum B in a pulpy consistency, and, a rapid revolving motion being imparted to said drum, the whole mass is centrifugally driven outward, and the sugar crystals fill up the compartments formed by the partition J J, (see Fig. 2,) and at the same time steam is let in at the side of the cylinder A by means of a pipe, f, so as to inclose the inner revolving drum B in a hot moist atmosphere, and thereby the molasses contained in the sugar becomes more fluid, and is more easily and quickly expelled.

A hood or funnel, L, is suspended beneath the roof or lid K of the cylinder A, such hood consisting of a metallic flaring ring, converging toward the center of the drum B, and the outer diameter of said hood is sufficiently large to effectually cover up the annular space or opening in the drum. The object of this hood or funnel is to prevent the vapors condensing on the under surface of the roof or lid K from falling into and becoming mixed with the saccharine matter in the drum B. Said funnel is supported by means of screws on the under side of the lid in the cylinder A, being retained at a short distance from such lid by an intermediate disk or washer held by the supporting-screws, and by these means the products of condensation will drop on said hood or funnel L, and thence on the dome H within the casing I, and, flowing downward into the space beneath the false bottom *b*, are thrown off by centrifugal force through the perforated side of the drum. After the loaves have been duly formed in the drum, it is found that the sugar still contains a few traces of molasses, and in order to remove these last traces, said loaves are treated with clarifying liquor, such as concentrated solution of sugar, which should be forced centrifugally and radially through the loaves. This purpose I have effected in the most perfect manner by means of a clarifying-tube, M, suspended in the annular space of the drum B, which tube is connected with a cup, N, containing the clarifying liquor or solution. The lower end of this tube is closed, and it is provided with rows of small holes, from which such solution issues in fine jets in the direction of the center of the revolving drum B, sprinkling the inner casing I, which, being revolved with such drum, throws off the clarifying solution in a centrifugal and tangential direction, transforming the same into a whirling mist or rain, which spreads equally over the whole surface of the rotating sugar, and is uniformly distributed throughout its pores, and thereby every trace of molasses or coloring matter is removed from the sugar, and the crystals are firmly cemented together. It is evident that the su-

gar loaves are now in a heated condition, the drum being constantly surrounded with steam entering the cylinder by means of the pipe *f*, and the sugar having attained the necessary degree of whiteness, the steam is shut off, the tube M is drawn out of the machine, and the lid K of the recipient or cylinder A is opened, when said drum, which remains revolving for a short time, acts as a ventilator, sucking in the surrounding cool air, and by this contact with the atmosphere the loaves cool rapidly, and the clarifying or sugar solution crystallizes, partly by cooling, and partly by the evaporation of moisture in the pores of the sugar, connecting and binding the crystals, and forming a compact mass of hard and pure white sugar. By now removing the top ring and forcing back the partitions J J, the sugar loaves or cakes are set free, and may be taken out of the drum.

I do not claim the arrangement of a series of radial partitions on the inner side of the perforated drum of a centrifugal machine for forming cakes of sugar in said drum; neither do I claim, broadly, introducing into the mass of sugar fine jets or streams of syrup under pressure to avoid melting of the crystals and expedite the passage of the cleansing liquid through the mass, for such is not new with me; but

What I claim as new, and desire to secure by Letters Patent, is—

1. The hood or funnel L, suspended upon the inside of the cover or lid K, for carrying off the condensed steam forming on the under surface of the lid or cover, substantially as described.

2. The perforated pipe M, depending from the feed-cup N, in combination with the casing I and drum B, substantially as described.

3. The casing I, forming the sides and a false bottom for the drum B, in combination with the guides *d d*, for holding the movable partitions, substantially as described.

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Witnesses:

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