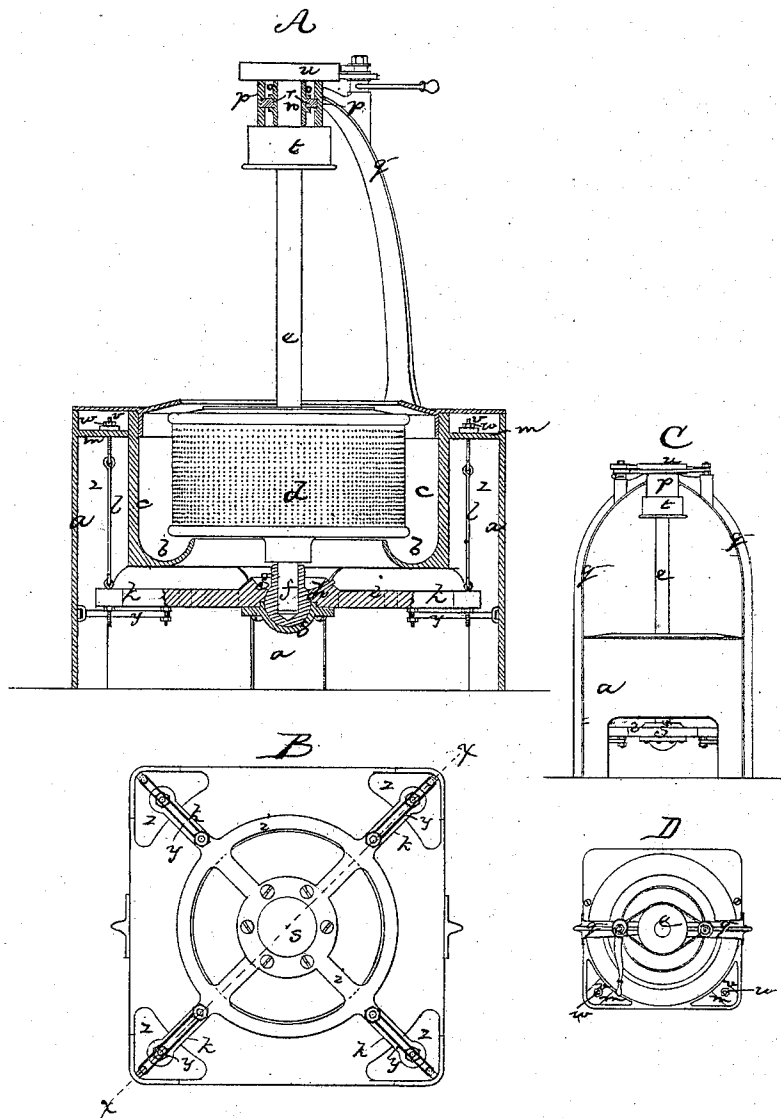


JONATHAN COTTLE.

Improvement in Centrifugal Machines for Draining Sugar.

No. 125,724.

Patented April 16, 1872.



Witnesses.
M. W. Frothingham.
S. B. Kiddle.

Jonathan Cottle,
By his Atty.
Crossing & Gould

UNITED STATES PATENT OFFICE.

JONATHAN COTTLE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN CENTRIFUGAL MACHINES FOR DRAINING SUGAR.

Specification forming part of Letters Patent No. 125,724, dated April 16, 1872.

To all whom it may concern:

Be it known that I, JONATHAN COTTLE, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Centrifugal Machine; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates particularly to the construction or organization of that class of centrifugal machines (used for draining sugar and for other purposes) in which special provision is made for eccentric rotation of the basket in accordance with the unequal distribution of the material contained in it, so that, by such special provision, the injurious effects from vibration are obviated. In one class of such machines the basket is wholly suspended upon a laterally-elastic bearing or joint, which permits of the free gyrating movement of the basket. In another class of such machines the basket is suspended, and is connected to a curb, which is also suspended; both basket and curb partaking equally of the vibratory movements. These constructions, though extensively in use, are to a greater or less extent objectionable; and the object of my invention has been to obtain a simple and strong machine, which can be run with perfect safety, and which shall be free from the faults inseparable from such machines now in use.

In my construction, I mount the foot of the basket-shaft upon a step-bearing on the top of a bearing-plate or spider, which is suspended by chains or rods from the curb-stand, (said stand being supported directly upon the floor,) the upper end of the shaft rotating in an elastic bearing at the top of the standard extending up from the curb-stand, and the lower bearing being made with provision for relative lateral or tipping movement of the shaft and bearing.

My invention primarily consists in a centrifugal machine in which the basket is supported, by means of its shaft, upon a swinging bearing-plate or spider, which is suspended by rods or chains directly from the stationary curb-stand; the invention also embracing details more or less adjunctive to such an organization.

The drawing represents a machine embodying the invention.

A shows the machine in sectional elevation on the line *x x*. B is a reversed plan or bottom view of it. C is a side elevation, and D a plan; the views C D being made on a scale one-half the size of the views A B.

a denotes a strong metal stand or casing, preferably formed of cast-iron, within and forming part of which casing is the annular trough *b*, that receives the liquid from the basket; said trough being a ring projecting inward from the cylindrical curb *c*, that also forms an integral part of the casing or stand. *d* denotes the basket, by rapid rotation of which the sirup or liquid parts of saccharine or other matters placed within it are separated from the solid parts thereof, as in other centrifugals. This basket is fixed to the lower part of a vertical axial shaft, *e*, the foot *f* of which shaft is supported and rotates in a bearing, *g*, which bearing is mounted in a socket, *h*, at the center of a horizontal plate-frame or spider, *i*. Arms *k* extend diagonally from this bearing-plate, and to these arms the lower ends of vertical chains or rods *l* are connected, the upper ends of the chains or rods being connected to bridges or supports *m*, forming parts of the stand *a*, the bearing-plate and the basket supported thereupon being thereby suspended from the stand. The upper end *n* of the shaft turns in a bearing, *o*, which bearing has a flexible support (laterally) in a sleeve or socket, *p*, at the top of a standard, *q*, extending up from the curb-stand *a*, there being between the bearing *o* and the sleeve *p* an elastic cushion or ring, *r*. The bearing *g* at the foot of the shaft is preferably made as a spherical bearing, supported in a socket made in the center of the bearing-plate *i* and by a cup-shaped step-plate, *s*, fastened under the plate *i*, the bearing being entered from below, and its lower end then covered by the plate *s*. *t* denotes the driving-pulley, and *u* a pulley, (fast on the spindle,) to which a suitable binder mechanism may be applied to gradually stop the rotation of the basket.

Rotation being imparted to the shaft or spindle and its basket, it will be readily seen that the basket can freely respond to its tendency to gyrate and vibrate, caused by the unequal distribution of its contents; and that the strain

from such movements is not only not upon the operative mechanism, but is expended upon the flexible connections of the basket to the firm and rigid stationary stand within which the basket rotates. Furthermore, in this construction no weight or strain comes upon the upper bearing, as the weight of the basket is wholly supported upon the curb-stand, the advantages of a suspended basket being obtained without suspending it from the shaft.

In suspending the basket I prefer to use chains instead of rods, connecting each chain to its bridge or support by an eyebolt, *v*, and a nut, *w*, and I seat the nut upon an elastic cushion, *x*, turning up the nut to bring the bearing and spindle into correct relative position. Under each arm *k* of the bearing-plate or spider *i* I connect the plate to the stand by a strong spring, *y*, (preferably a loop-spring;) these springs drawing equally upon the basket, and tending to center it, or to correct or overcome any excessive vibration; the spring being fastened at one end to the stand, and at the other end to the spider.

It will be readily seen that the machine thus made presents a very compact organization, that the basket and all parts of the machine are very accessible, and that the support of the basket is such as to insure an entire free-

dom from danger in running the machine at great velocity.

Of course the curb and trough are circular; but, to obtain the requisite room for suspending the basket-supporting plate, I make the curb-stand quadrangular, thereby obtaining beyond the cylindrical curb the vertical spaces *z* for receiving the suspending-chains without increasing the lateral dimensions of the stand, the corner spaces being formed by the tangential extensions of the opposite vertical sides of the curb-cylinder. The curb is covered by a plate, which may be made in two parts for ease of application and removal.

I claim

1. A centrifugal machine, in which the basket-shaft is supported upon a bearing-plate suspended from the curb-stand, substantially as shown and described.

2. Supporting the foot of the shaft upon the spherical bearing *g*, the upper part of the shaft being supported in a laterally-yielding bearing, substantially as shown and described.

3. The stand *a*, made with the corner-spaces *z* for receiving the suspending devices, substantially as shown and described.

Witnesses: JONATHAN COTTLE.

FRANCIS GOULD,
M. W. FROTHINGHAM.