(No Model.)

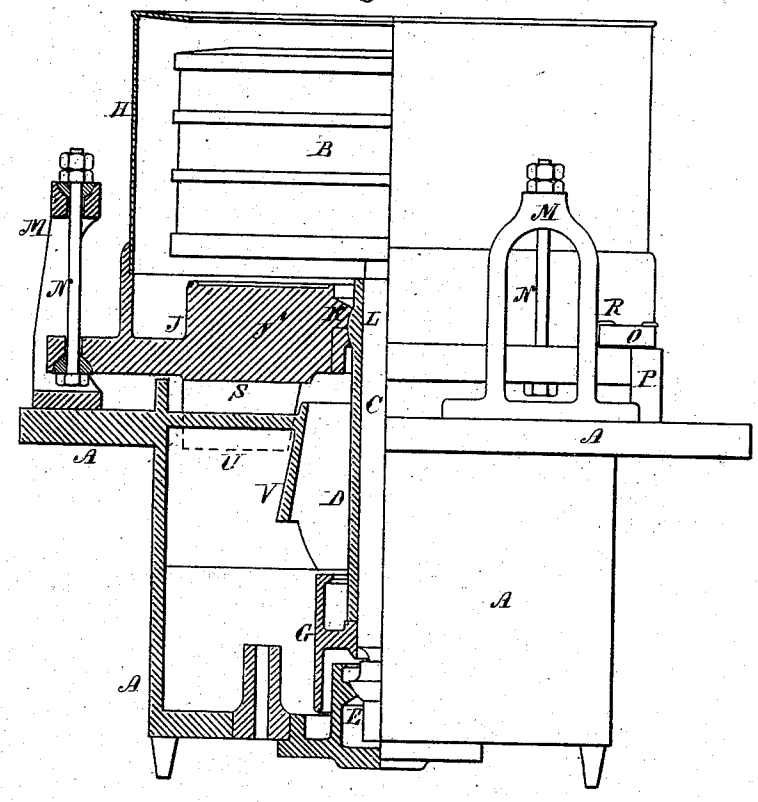
2 Sheets—Sheet 1.

T. H. MÜLLER.

Centrifugal Machine.

No. 240,840. **Patented May 3, 1881.**

Fig. 1



Witnesses

Wendell C. Curtis

Wilmot Horton

Inventor

Jacob H. Müller

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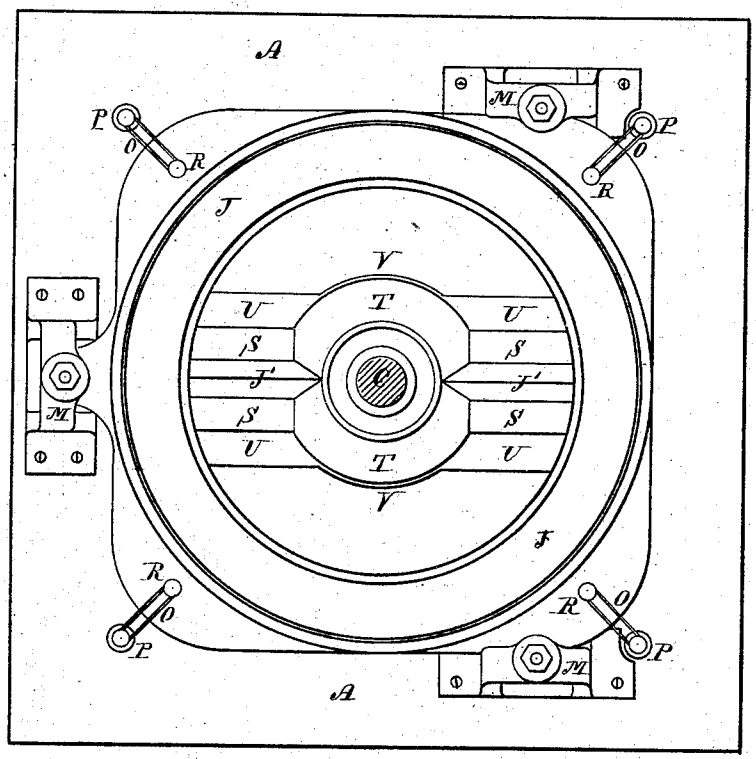
(No Model.) 2 Sheets—Sheet 2.

T. H. MÜLLER.

Centrifugal Machine.

No. 240,840. **Patented May 3, 1881.**

Fig. 2



Witnesses

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Wilmot Horton

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UNITED STATES PATENT OFFICE.

TEILE H. MÜLLER, OF NEW YORK, ASSIGNOR TO SAMUEL S. HEPWORTH, OF YONKERS, AND JOSEPH COLWELL, OF NEW YORK, N. Y.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 240,840, dated May 3, 1881.

Application filed December 6, 1880. (No model.)

To all whom it may concern:

Be it known that I, TEILE H. MÜLLER, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Centrifugal Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, whereby a person skilled in the art can make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Like letters in the figures indicate the same parts.

My improvement relates to centrifugal machines such as are commonly used for the draining of sugar and other similar purposes, and which are driven and supported by a shaft below the revolving basket.

The object of my invention is to prevent and counteract the vibrations of the machine caused by an unequal distribution of the material with which the basket is charged for the purpose of expelling the contained liquid.

In the accompanying drawings, illustrating my invention, Figure 1 represents a front view of my improved machine, having a portion of the left side removed so as to show the basket, and also to show a vertical section of the working parts from the center of the supporting-spindle outward. Fig. 2 is a top view with the parts above the bottom of the basket removed, so as to show the supports for the spindle.

A is the base or fixed frame of the machine.

B is the revolving basket, which may be of any common construction.

C is the spindle upon which the basket is supported, turning freely in the sleeve D, and supported upon a ball-and-socket foot-bearing, E, at its lower end. It is driven by a belt over the pulley G, which is keyed to it near the lower end.

H is the curb, which is furnished with a base, J, forming the sirup-gutter. This part H is made strong and heavy, and is furnished with a socket, K, which, with the ball L upon the sleeve D, forms a flexible joint for the upper bearing or support of the basket. The sirup-gutter is hung to the fixed frame by flexible and elastic supports in the following manner:

M M M are standards (preferably three) attached to the fixed frame or base A, from which the sirup-gutter is suspended by the rods N N N, furnished with ball-and-socket joints at the top and bottom, upon which the rods can swing freely, the holes through which they pass in the standards and gutter being sufficiently large to permit a swinging motion. The sirup-gutter is thus flexibly suspended in a manner which permits it and the upper bearing of the spindle to move laterally in any direction. The weight of the gutter and curb hangs suspended from the standards M like a pendulum, so that it moves with a little resistance at first, and as it is more deflected offers more and more resistance to motion. This confines the position of the basket to certain limits when the charge is very unevenly distributed, as in first starting with material difficult to separate and before it has acquired its equilibrium in the basket. It also allows a very sensitive play for the smaller vibrations afterward.

In order to give a quick and elastic motion for the rapid and short vibrations which occur when the basket is revolving at a high velocity, I provide, in addition to the suspension of the curb and gutter, the elastic bands O, which are attached to the standards P upon the fixed base or frame of the machine, and to studs R upon the edge of the gutter. These bands, by their elastic resistance, tend to hold the bearing of the spindle C in its geometrical center and sustain the spindle in a vertical position.

When the basket of the machine is charged with a material to be drained the center of gravity of which does not conform to the axis of the basket and spindle, and is rapidly revolved, the centrifugal force of the unbalanced load causes a vibration of the basket and contents. When the spindle is held in fixed bearings this vibration is communicated to the frame of the machine, and, indeed, to the whole building in which the machines are used. In my improved construction this vibration is communicated only to the suspended gutter and curb, and is, to a great extent, counteracted by the inertia of the suspended parts. As the basket revolves the centrifugal force of

the unbalanced load is constantly changing from side to side, tending to draw the heavy gutter in opposite directions in almost infinitesimal intervals of time, so that it does not fairly acquire motion in one direction before the opposing force counteracts it. The weight of the suspended parts thus serves to check the motion and hold the basket to a fixed center of revolution, which may or may not be in its geometrical axis. The elastic bands O and the suspending-rods N permit the basket and spindle to assume a position of equilibrium.

The suspended parts may be made of any sufficient weight to counteract the vibrations of any inequality of load, depending upon the materials operated upon by the machine.

My improved machine is adapted to be used as a hand-machine in which the contents are removed from the top, or for a bottom discharge in which the basket is provided with openings covered by valves. In the latter case the sugar or other material passes down through the openings in the bottom of the basket and falls into the space around the central spindle. It is prevented from interfering with the space occupied by the belt running to the pulley G by the sharp-edged arms J′, the sides S, and the cone T, which conduct the discharged sugar over the sides U, and the cone V, which protect the space occupied by the belt. The parts S and T are movable with the gutter J, and the parts U and V form part of the fixed frame of the machine.

What I claim as my invention is—

1. In a centrifugal machine driven from below the basket, the independently-suspended curb and gutter provided with a flexible joint for the upper bearing of the spindle, substantially as described.

2. The combination of the revolving basket and spindle of a centrifugal machine with a flexibly-suspended part, J, containing the upper bearing of the spindle, substantially as described.

3. In a centrifugal machine driven from below the basket, the combination of the independently-suspended curb and gutter and the elastic bands with the basket and spindle for which said curb sustains the upper flexible bearing, substantially as described.

4. In combination with the flexibly-suspended part J, the sides S and cone T, attached to said part J and moving with it, forming guides for the descending sugar, substantially as described.

TEILE HENRY MÜLLER.

Witnesses:

JAS. OSCAR BERTHOLF,

F. W. COLWELL.