

S. S. HEPWORTH.
Centrifugal Machines.

No. 150,688.

Patented May 12, 1874.

Fig. 2.

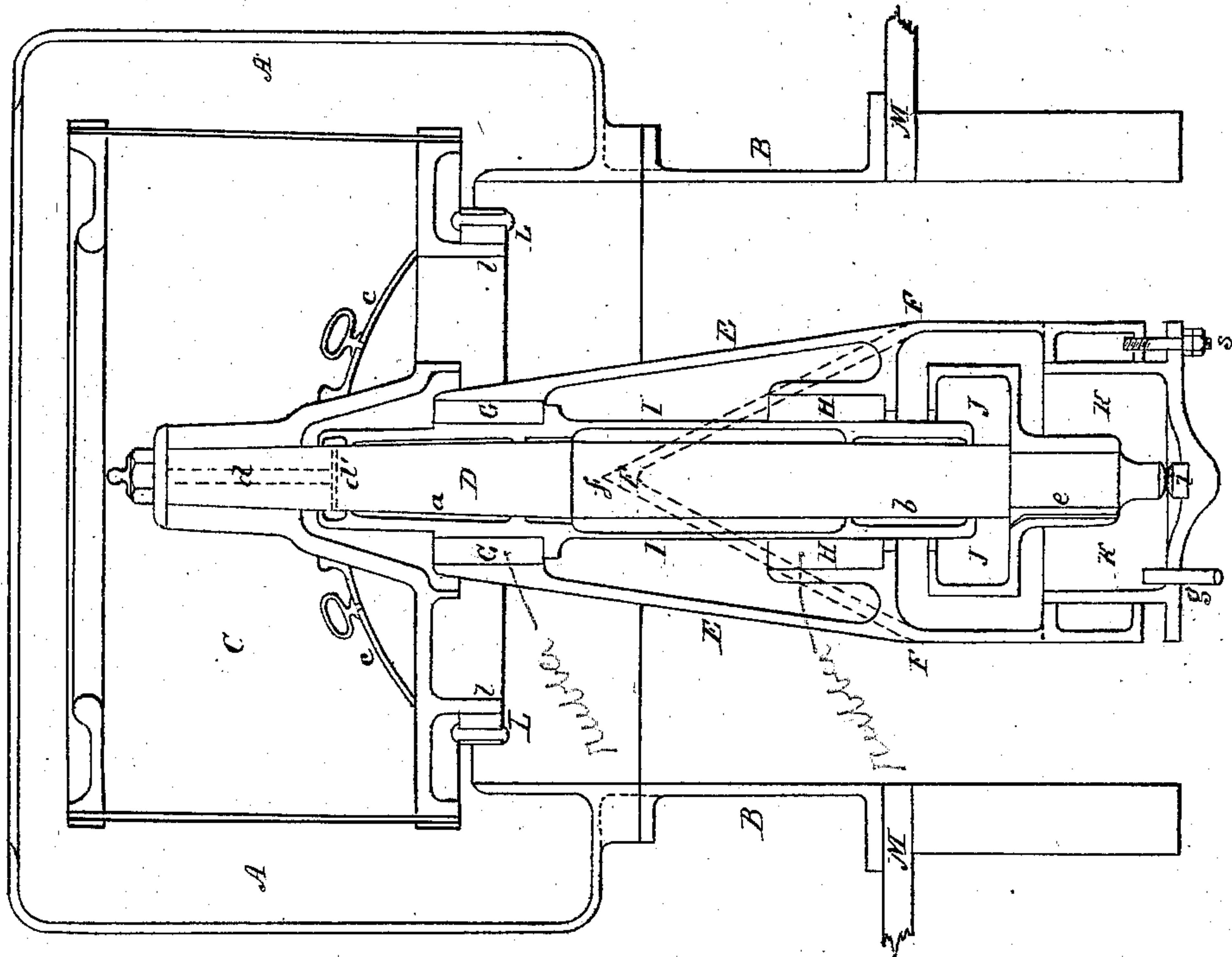
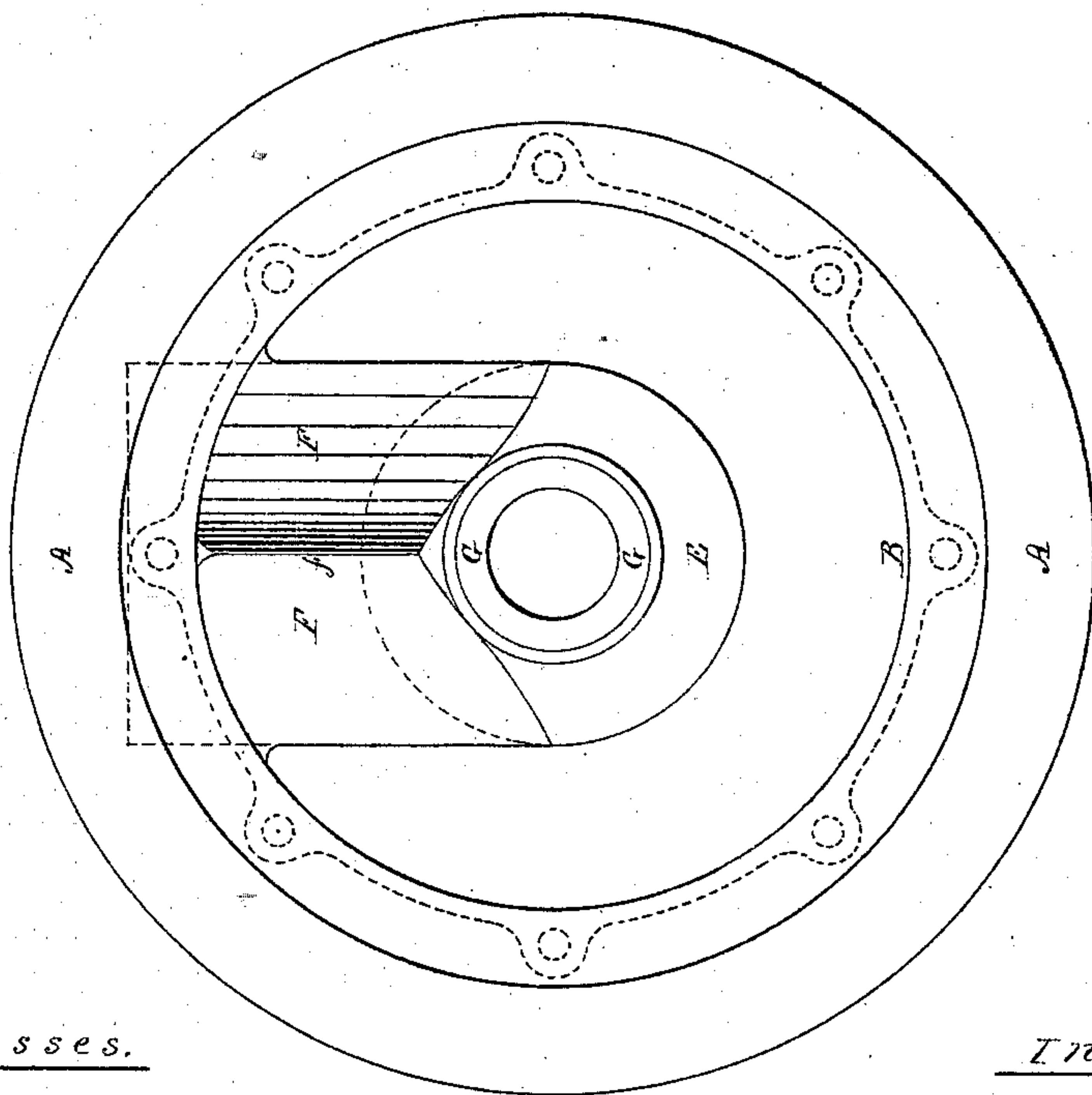


Fig. 1.



Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL S. HEPWORTH, OF NEW YORK, ASSIGNOR TO HIMSELF AND
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IMPROVEMENT IN CENTRIFUGAL MACHINES.

Specification forming part of Letters Patent No. 150,688, dated May 12, 1874; application filed
October 11, 1873.

To all whom it may concern:

Be it known that I, SAMUEL S. HEPWORTH, of New York city, 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.

In centrifugal machines of ordinary construction it is well known that there is a great amount of vibration and jar, occasioned by the rapid motion of the machine and the unequal disposition of the charge in the basket, so that the center of gravity does not coincide with the axis of revolution. There have been many devices for the prevention of this vibration, which in some cases is so violent as to injure the supports of the machine. In machines which have been driven from below the basket, elastic bushings have been used near the top of the spindle, and also springs connecting with the frame of the machine; but these devices have been heretofore so arranged as to obstruct the space below the basket, or have received their support from the bottom of the tub in such a manner as to prevent the discharge of sugar or other material through valves in the bottom of the basket. Thus the means taken for preventing vibration in such machines has precluded their being arranged to discharge at the bottom, which is much more advantageous than removing the material from the top of the basket.

The object of my invention is to provide a machine driven from below, and supported in elastic bearings, which shall likewise discharge the contents of the basket downward through the bottom, in whatever position it may be stopped. My invention consists in the construction and arrangement of the several parts necessary to produce this result.

In the accompanying drawing, on one sheet, Figure 1 is a top view of my improved machine with the basket and spindle removed to show the parts underneath. Fig. 2 is a vertical section through the whole machine.

A is the tub or curb. It is supported by the standard B. This standard rests upon the floor of the room in which the machine is placed. It may be cast in one piece with the tub A, or be made separate and be bolted to it, as shown in the drawing. C is the basket, revolving within the tub A upon the spindle D. E is a conical sleeve firmly held in place in the center of the machine by means of the hollow arm F, which connects it with the standard B. A top view of this arm is shown in Fig. 1, and a section by the dotted lines in Fig. 2. Its top is formed of two sloping planes meeting above at a sharp edge, *f*. Below these slopes the sides are carried down, so as to cover a belt running over the pulley J. G and H are two rubber or other elastic bushings or collars sustaining the hollow sleeve I, which forms the bearings of the spindle D. These bushings are for the purpose of rendering the bearings elastic, by giving to the hollow sleeve I an elastic resistance in all directions, so as to prevent any vibratory movement from being communicated to the stationary parts of the machine, in case there should be an unequally-balanced load in the basket. J is a pulley attached to the spindle D, for the purpose of giving it a rapid rotary motion. The belt which passes over this pulley runs under the arm F, which shields it from the sugar when it falls from the basket C. K is a cylinder attached to the lower end of the fixed conical sleeve E, as shown in Fig. 2. It carries the step *i*, upon which the spindle rests, and is supported by the bolts *s*. These bolts are for the purpose of adjusting the height of the spindle, and to compensate for any wear in its bearings. The spindle D rests in the sleeve I in the bearings *a b*, which are of the ordinary construction for such purposes. These bearings are lubricated by putting oil into the hole *d*. It is thrown out of the transverse hole *d'*, and runs down the inside of the sleeve I, lubricating the bearings, and into the pulley J, and thence through the groove *e* into the cylinder K, where it lubricates the rest *i*. From this cylinder it is intended to allow it to flow out by the overflow-pipe *g*. L is a brake, for the purpose of checking the motion of the machine when it is desired to stop it. It acts upon a rim or flange, *l*, upon the lower part of the basket C. The basket C is provided with open-

ings in the bottom, of any ordinary construction, to discharge the sugar after the sirup is thrown out by centrifugal force. The valve *c*, in the form of a section of a sphere, is intended to show one form of valve to cover the openings in the bottom of the basket. The valve can be made to turn or to lift out of the machine. *M* is the floor or support of the machine.

The operation of my invention is as follows: The basket is charged and emptied in the usual manner in such machines. The sirup passes out into the tub *A*, from which it is drawn off by a suitable pipe. The sugar is discharged through the openings in the bottom of the basket, and falls down through the space around the outside of the conical sleeve *E* to a proper receptacle. That which falls over the arm *F* strikes the inclined faces, and passes down without interfering with the operation of the belt over the pulley *J* to drive the machine. When the charge in the basket is unevenly balanced, which is more or less the case with every charge, the basket is set in rapid vibration by the difference of centrifugal force upon opposite sides of the axis. By means of the elastic bushings *G* and *H* the bearings of the spindle are allowed a slight movement lat-

erally, so that the yielding of the rubber bushings permits the center of motion to accommodate itself to the center of gravity, and prevents any jar from being communicated to the building.

What I claim as my invention is—

1. A centrifugal machine, driven from below, in which the elastic bearings of the spindle are inclosed in a central sleeve, around which is an open space for the contents of the basket to be discharged to a receptacle below, substantially as specified.

2. The hollow arm *F*, which sustains the central sleeve containing the spindle, and covers the belt from the pulley in such a manner as not to impede the descent of the material discharged from the basket, substantially as described.

3. The combination and arrangement of the standard *B*, the arm *F*, and the conical sleeve *E*, with a bottom discharging-basket in a centrifugal machine driven from below, substantially as herein described.

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Witnesses:

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