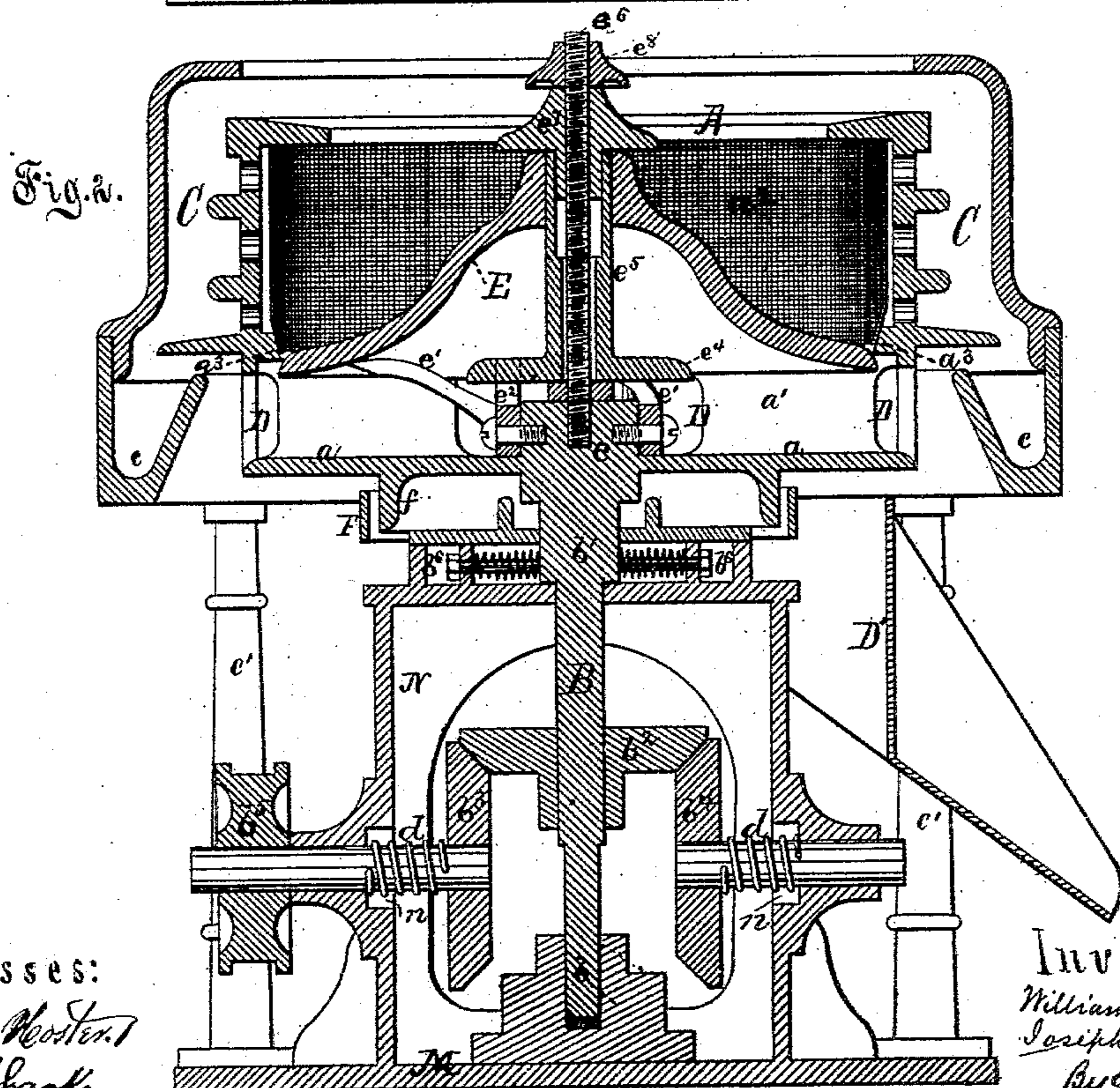
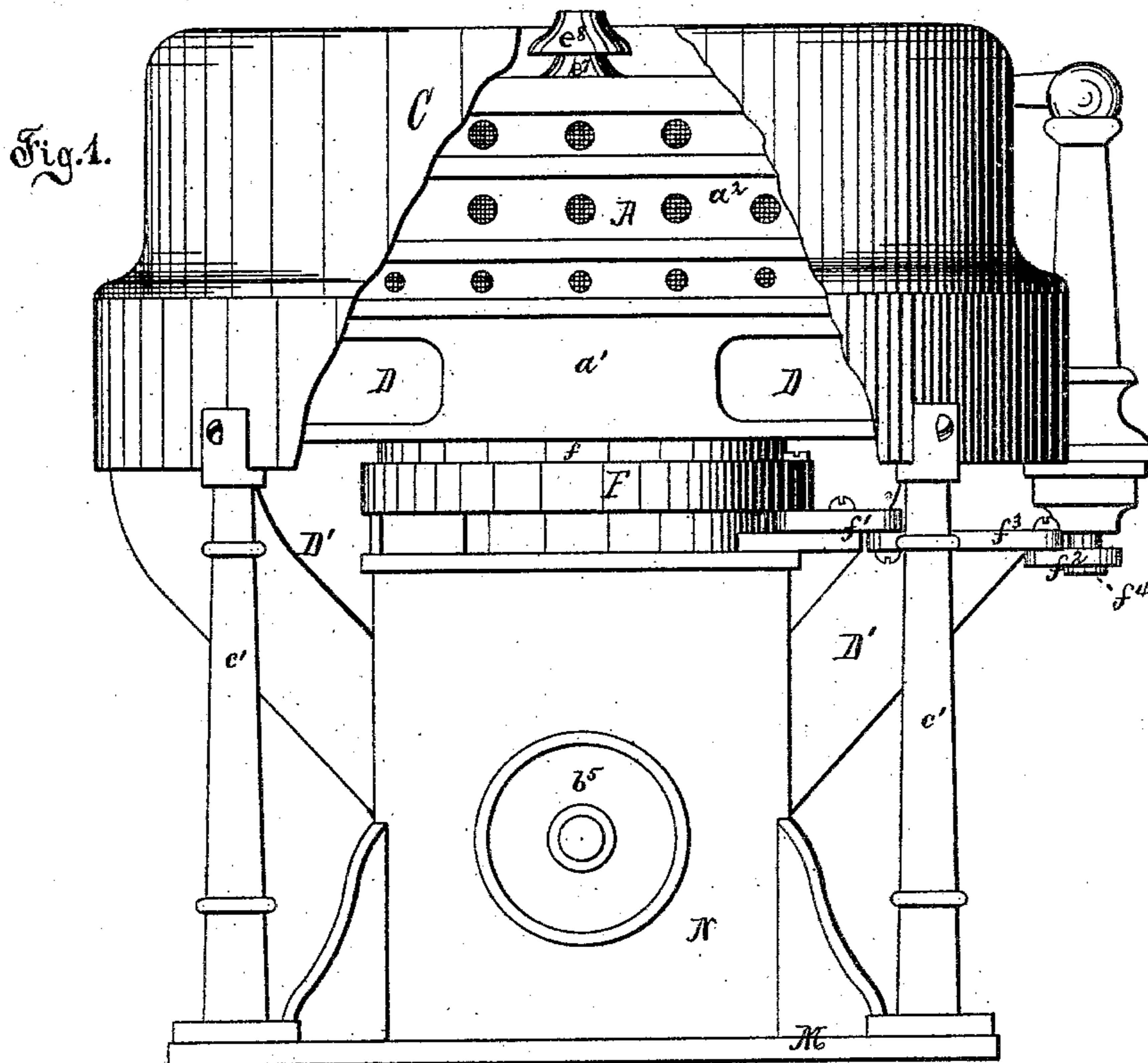


W. T. BELL & J. GOLDSACK, Jr.  
Centrifugal Machine.

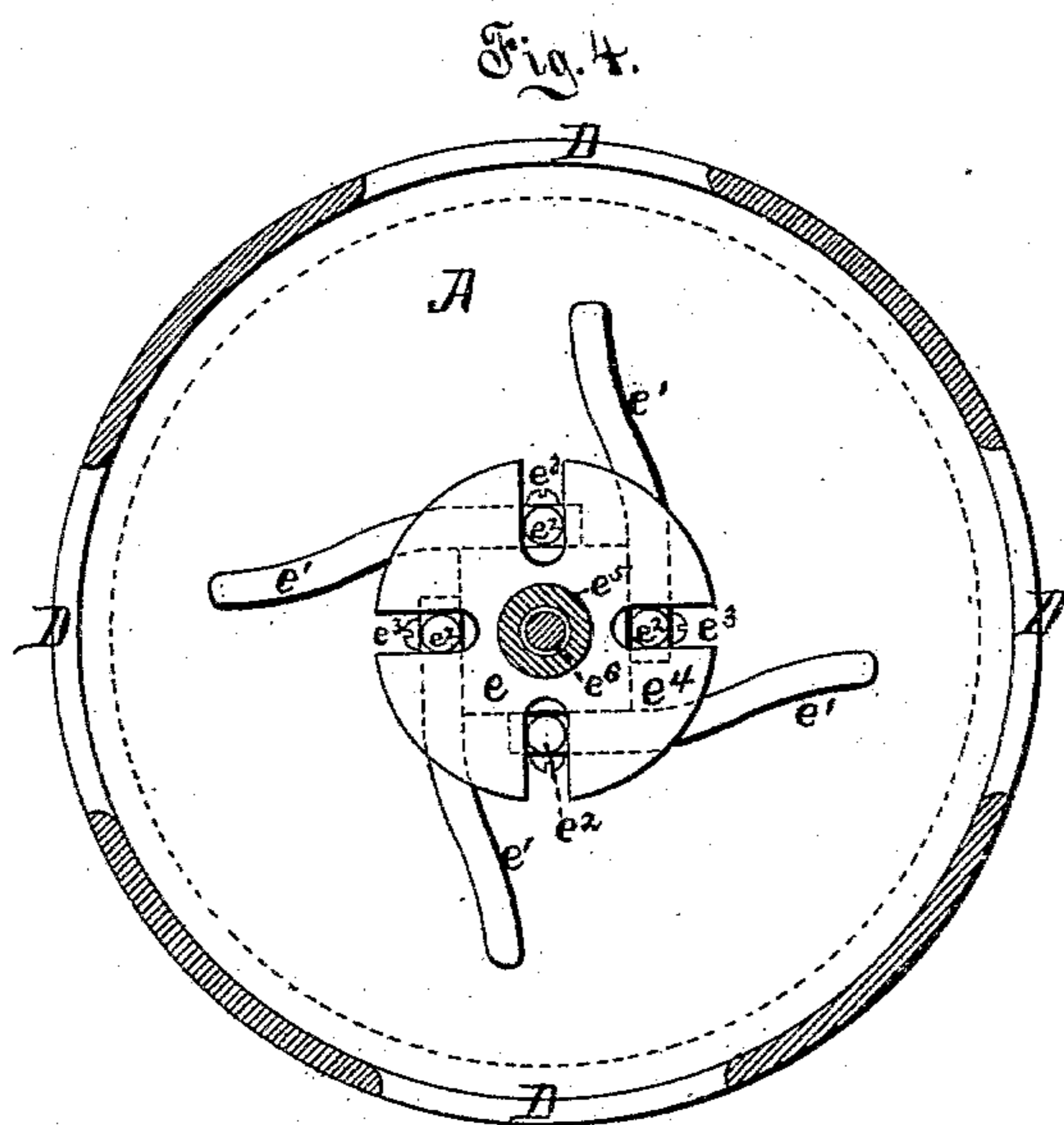
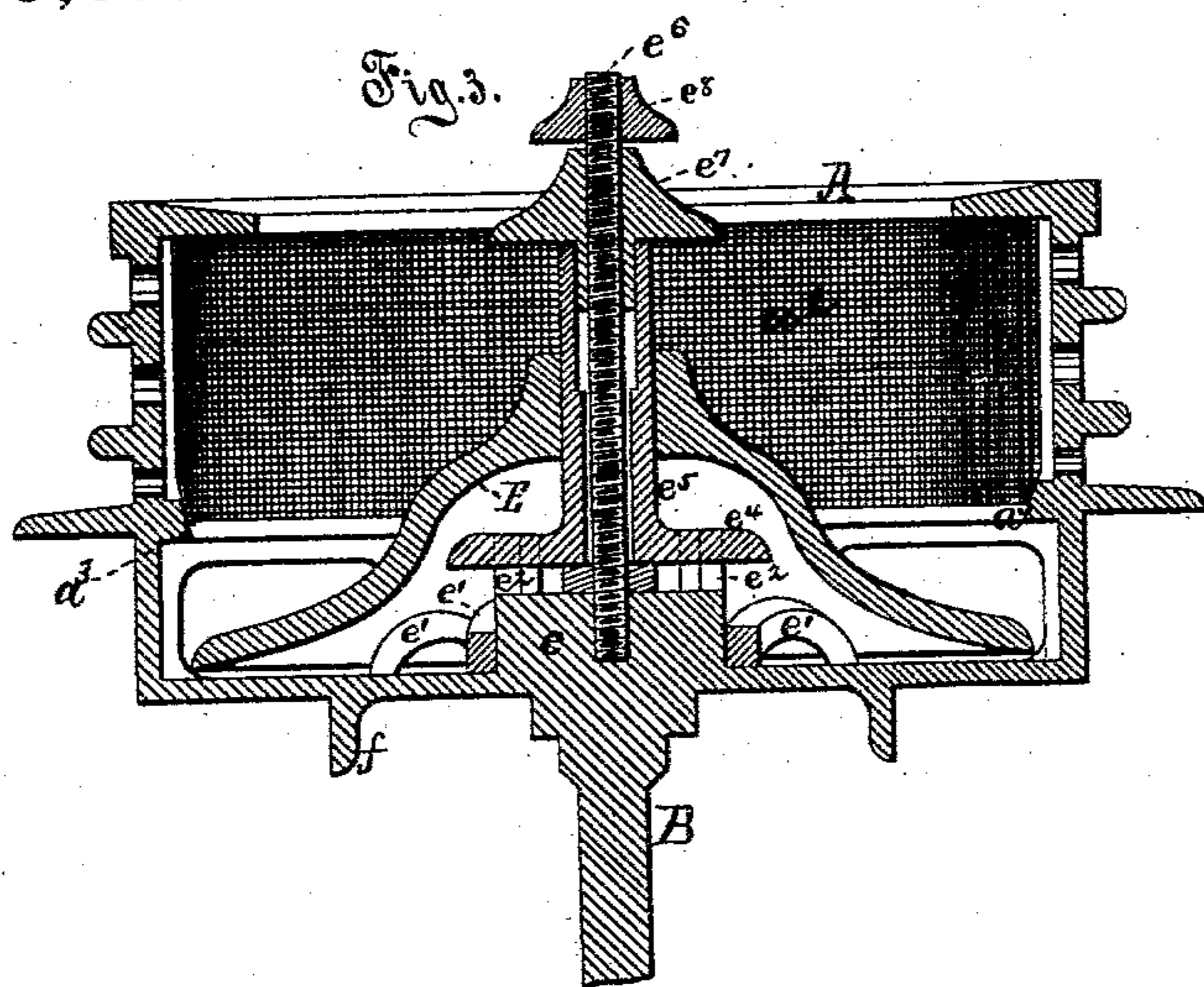
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN CENTRIFUGAL MACHINES.

Specification forming part of Letters Patent No. **210,657**, dated December 10, 1878; application filed March 4, 1878.

*To all whom it may concern:*

Be it known that we, WILLIAM T. BELL, of the city, county, and State of New York, and JOSEPH GOLDSACK, Jr., of Jersey City, Hudson county, in the State of New Jersey, are the inventors, jointly, of an Improved Centrifugal Sugar-Draining Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a machine embodying our invention, a portion of the wall of the chamber inclosing the basket being cut away to disclose the basket. Fig. 2 is a vertical central sectional view of the same, showing the discharge-apertures in the sides of the basket closed. Fig. 3 is a similar view of the basket detached from the remainder of the apparatus, and showing the discharge-apertures in its sides open; and Fig. 4 is a plan, partly in section, on the line *xx*, Fig. 3, of the basket, the gate which we preferably employ to open and close the discharge-apertures of the basket being removed.

Our invention relates to centrifugal machines for draining sugar; and it consists, first, in a basket for such machines having the apertures for the discharge of the sugar therefrom in the side or circumferential wall thereof; second, in the peculiar gate and its operating mechanism which we employ to open and close the discharge-apertures of the basket, all as hereinafter particularly set forth, and more at length recited in the claims.

A is the basket of our improved machine, and is constructed with the closed or solid bottom *a*, and has its circumferential wall perforated and lined with netting or gauze, as is usual in machines of this class. The basket is mounted upon a vertical driving-shaft, B, which has a bearing at its lower end in a step, *b*, on the platform or base M, and at its upper part a bearing in the frame N at *b'*, as shown. The basket is inclosed by the customary chamber O, to receive and carry off by a gutter, *c*, the molasses drained from the basket, said chamber being arranged as shown, supported by columns *c'*, fixed in the machine-platform. The shaft B is rotated by

means of the friction-wheels *b<sup>2</sup>* and *b<sup>3</sup>* and balance or guide friction-wheel *b<sup>4</sup>*, as shown, the shafts of the wheels *b<sup>3</sup>* and *b<sup>4</sup>* having bearings in frame N, and one or both being driven by a pulley, as at *b<sup>5</sup>*. The frame N and the friction-gearing are preferably arranged below the basket, as shown.

In the circumferential wall of the basket, and preferably in the lower portion thereof, we make one or more of the wide apertures D, and we find it preferable to have that portion of the said wall in which these apertures are made continuous, as seen at *a<sup>1</sup>*, and without the perforations or netting lining which extend over the other portion of said wall, as at *a<sup>2</sup>*. It is desirable that a number of these apertures D should be ranged around the wall of the basket, as shown in the drawing. Communicating with these apertures are arranged the spouts or chutes D', one upon each side of the basket, and mounted on the frame of the machine. Only one of these chutes is shown in the drawings.

We find that the device shown in the drawings is to be preferred for opening and closing the apertures D. This consists of a gate or valve, E, preferably conical in shape, as shown, arranged to fit horizontally in the basket and to have a vertical movement within the basket. An annular projection, *a<sup>3</sup>*, is formed upon the interior of the wall of the basket, above the line of the apertures D, and against this the rim of the gate or valve E abuts and rests when the disk is raised in the position shown in Fig. 2. When thus raised the apertures D are closed to the upper part of the basket, and the contents of the basket cannot escape through said apertures. When it is desired to open said apertures D, the gate or valve E is lowered until its rim is below the line of the said apertures, when it is evident that the contents of the basket may be readily discharged through the apertures D.

It will be perceived that this arrangement of parts is admirably adapted for a sugar-drainer. The apertures D being closed by raising the gate or valve E, as stated, the wet sugar is introduced into the basket. When the draining is completed and the rotation of the basket has ceased, the apertures D are

opened by lowering the disk, and the sugar which has collected upon the wall of the basket is detached therefrom, and may be readily discharged from the basket through the apertures D into the chutes D', the conical shape of the disk aiding the ready discharge, and cars being conveniently placed at the lower ends of the chutes the sugar is received by them and may be conveyed away.

Various devices may be employed to raise and lower the gate or valve E; but we prefer the following, as shown in Figs. 3 and 4.

Upon the bottom of the basket, under the disk, is fixed a block or standard, *e*, and upon the sides of this block are pivoted the levers *e*<sup>1</sup>, each of which is provided with a pin, *e*<sup>2</sup>, engaging a slot, *e*<sup>3</sup>, in the plate *e*<sup>4</sup>. This plate is on the end of a hollow shaft, *e*<sup>5</sup>, on the exterior of which, by means of a central opening in the disk, the disk slides vertically. Through this hollow shaft *e*<sup>5</sup> rises vertically from the block *e* the post *e*<sup>6</sup>, which has a screw-thread, as shown.

To the upper end of the shaft *e*<sup>5</sup> is fixed a nut, *e*<sup>7</sup>, which works on the post *e*<sup>6</sup>, and above this is a jam-nut, *e*<sup>8</sup>, on the end of the post.

To raise the gate or valve E, the slotted plate *e*<sup>4</sup> is, by means of the shaft *e*<sup>5</sup> and its nut *e*<sup>7</sup>, turned upon the post *e*<sup>6</sup> in one direction, so that the pins *e*<sup>2</sup> in the levers *e*<sup>1</sup> will swing the long arms of the levers upward, and said arms, bearing against the under face of the disk, will raise the disk to the desired height and support it, when the parts may be secured in position by the jam-nut *e*<sup>8</sup>.

To lower the disk the jam-nut is loosened and the plate *e*<sup>4</sup> turned in the reverse direction, when the levers will fall and the disk descend.

At F is seen the brake which we employ to check the rotation of the basket. It consists of a band or strap, as shown, which encircles a ring or hub, *f*, projecting downward from the base of the basket, the brake F being secured at one end to a pin set in the machine-frame, and closed down upon the hub *f* by means of a bell-crank lever, *f*<sup>1</sup>, to which its opposite end is hinged, said lever being pivoted on the machine-frame, and operated by a lever, *f*<sup>2</sup>, through a connecting-rod, *f*<sup>3</sup>, said lever *f*<sup>2</sup> being on the end of a shaft, *f*<sup>4</sup>, arranged

in bearings at the side of the apparatus, so as to be convenient to the operator.

To prevent the shaft B from swaying in its upper bearing, *b*<sup>1</sup>, we provide the spring-bolts *b*<sup>6</sup>, arranged radially about the said shaft, and seated at their outer ends in studs or an annulus, as shown in Fig. 2. Thus, when the shaft tends to sway from a vertical position during the rotation of the heavy basket, the spring-bolts, impinging upon it from all sides, will operate to force and hold it in proper position in the bearing *b*<sup>1</sup>.

Upon the shafts of the friction driving-wheels *b*<sup>3</sup> and *b*<sup>4</sup> are arranged the coil-springs *d*, which bear at one end against the perimeter of the wheel, and at the other in suitable recesses *n* against the frame of the machine, in which the shafts have bearings. These springs operate to press the wheels *b*<sup>3</sup> and *b*<sup>4</sup> against the wheel *b*<sup>2</sup> on the shaft B, and thus insure the constant and continuous friction between the wheels requisite to secure the proper rotation of the shaft B and its imposed weight.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a centrifugal sugar-draining machine, the circumferential side wall of the basket, provided with one or more openings, D, whereby the drained sugar may be discharged from the basket through said wall, as described.

2. In a centrifugal sugar-draining machine, the basket A, having one or more apertures, D, in its circumferential side wall for the discharge of the sugar from the basket, together with the gate E, whereby said apertures may be opened and closed, as described.

3. In a centrifugal sugar-draining machine, the combination, with the basket A, having the discharge-apertures D in its circumferential side wall, and the interior annular projection *a*<sup>3</sup>, of the conical gate or valve E, with the levers *e*<sup>1</sup>, provided with pins *e*<sup>2</sup>, engaging slotted plate *e*<sup>4</sup>, adapted to be revolved on its axis and held in a desired position thereon, as described, and for the purpose set forth.

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