

No. 626,597.

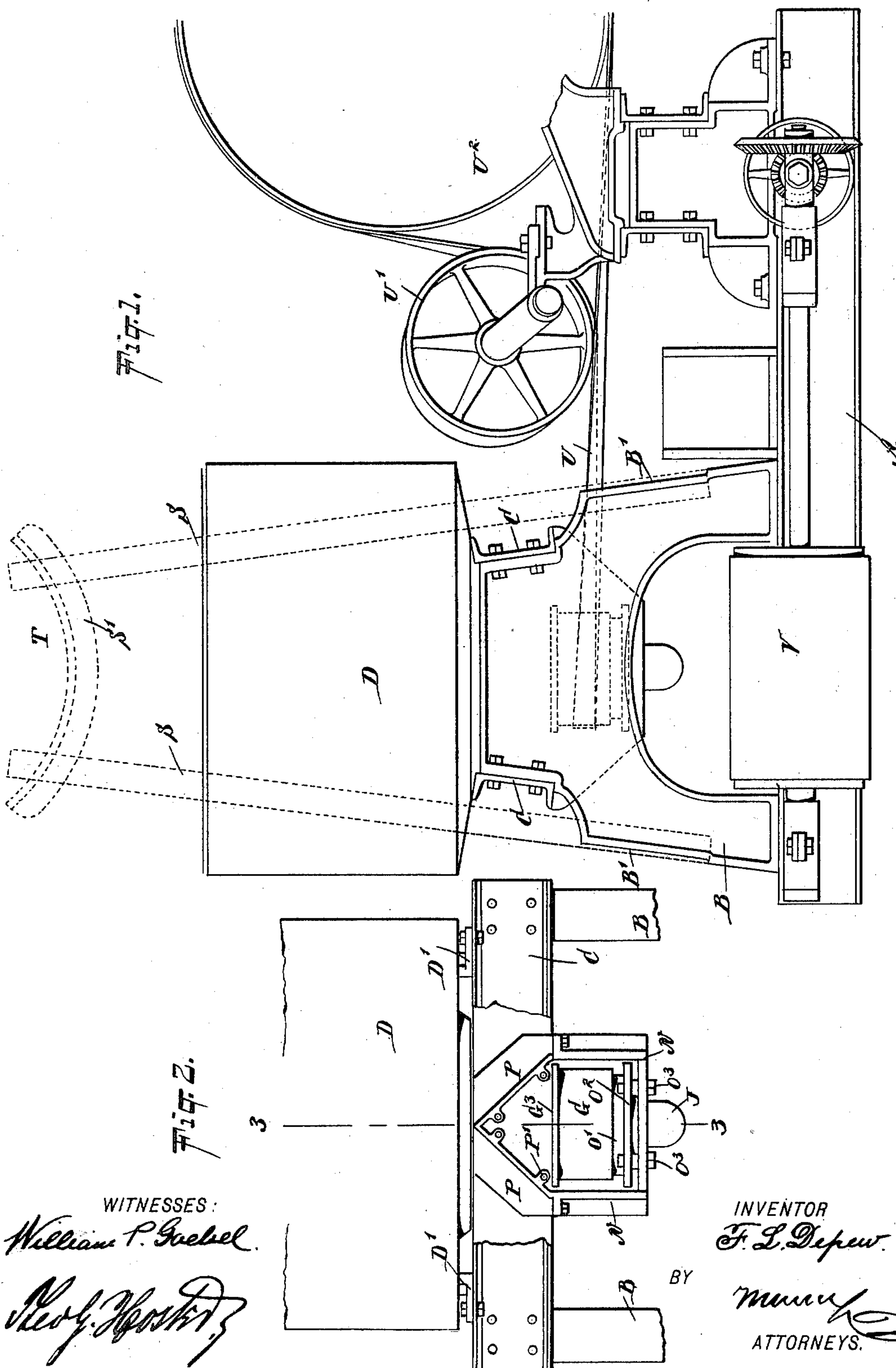
Patented June 6, 1899.

F. L. DEPEW.
CENTRIFUGAL MACHINE.

(Application filed Mar. 8, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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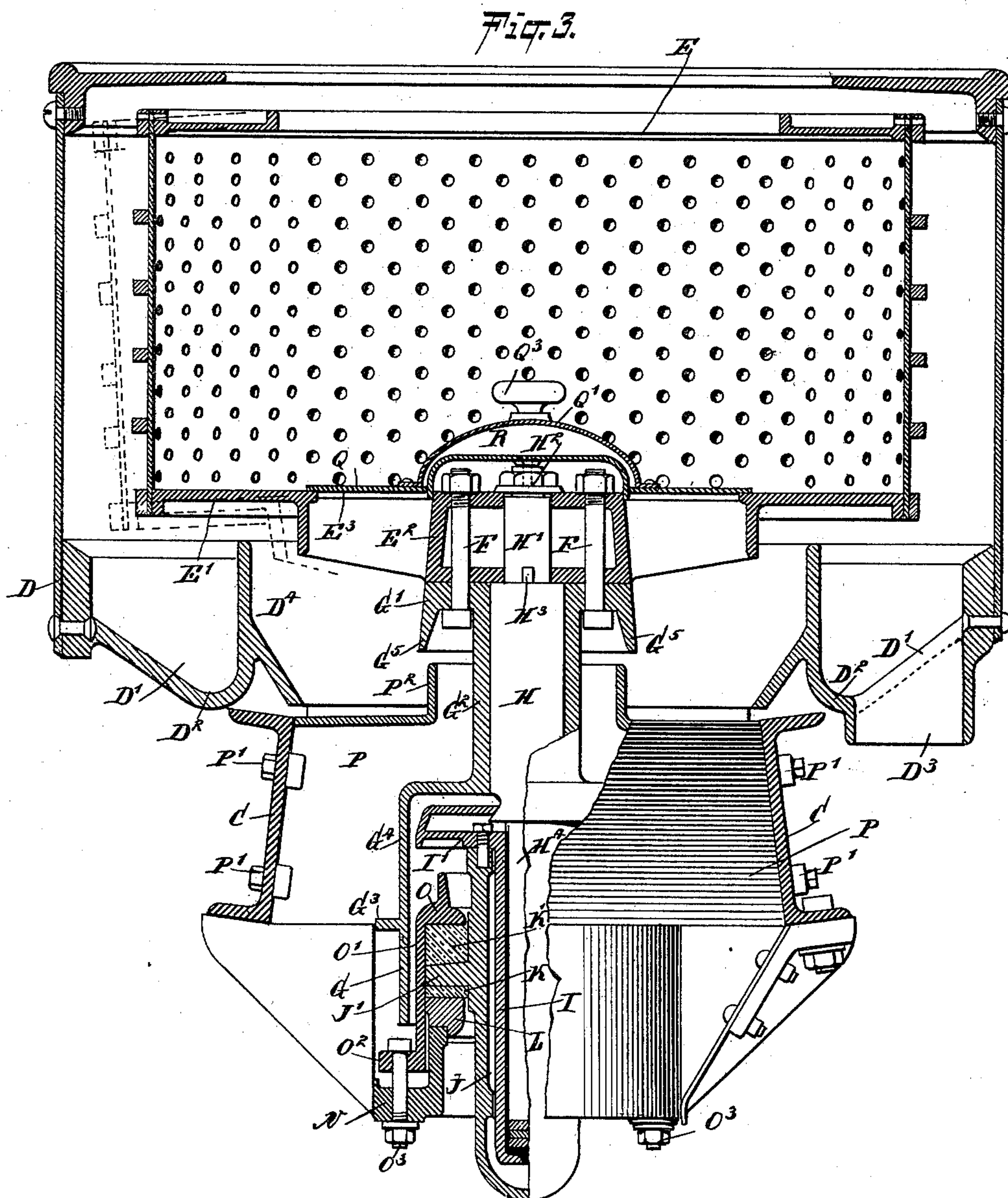
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

FRANK L. DEPEW, OF BROOKLINE, MASSACHUSETTS.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 626,597, dated June 6, 1899.

Application filed March 8, 1898. Serial No. 673,049. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. DEPEW, of Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Centrifugal Machines, of which the following is a full, clear, and exact description.

The invention relates to a centrifugal used in the manufacture of various products—such as sugar, salt, soda, &c.—in fact, any solid material having a large per cent. of moisture or mixed with liquor where it is desired to separate the solid and fluid and that in a rapid and economical manner by the employment of centrifugal force.

My invention providing for the above object is a machine that is simple and compact in form and construction and effective in operation, and the liability to get out of order is reduced to a minimum, and I have also several new and novel features and parts and constructions of the same, as will be described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is an end elevation of the improvement. Fig. 2 is a front elevation of the same with part broken out, and Fig. 3 is an enlarged sectional end elevation of the improved centrifugal proper on the line 3 3 of Fig. 2.

The improved centrifugal machine is mounted on a suitable bed A, on which are erected standards B, connected with each other at the top and on opposite sides by channel-beams C, to which the legs D' of the curb D are bolted, it being understood that two or more properly-spaced curbs may be set on one pair of beams between the standards B, if desired. In each curb D is mounted to rotate a basket E, formed at its bottom E' with a downwardly-extending hub E², fastened by bolts F to a flange G' of the hub G² for a pulley G, disposed vertically and below the lower ends of the beams C, as is plainly indicated in the drawings, so that the belt passing over the said pulley G for rotating the basket E passes under one of the beams to the driving machinery. (See Fig. 1.)

The hub G² for the pulley G is fitted on the spindle H, (see Fig. 3,) which is provided at its upper end with a reduced portion H', upon which fits the hub E² of the basket E. The spindle is engaged at its top by a nut H², screwing on its extreme upper threaded end and securing it to the hub of the basket E. A key H³ on the reduced portion H' engages in an aperture in the hub E², so that the spindle rotates with the hub and consequently with the basket and pulley.

It is evident that by the arrangement described the spindle is not only the axis on which the basket revolves, but it also at the same time guides and steadies it; but no power is conveyed through the spindle, as the pulley G is bolted directly to the hub of the basket E, and consequently the rotary motion given to the pulley by the driving-belt rotates the basket E in contradistinction to machines as heretofore constructed in which the power is transmitted to the pulley and the spindle and then from the spindle to the basket. It will be seen and readily understood that the long hub G² of the pulley, which fits the spindle H and is bolted to the hub of the basket E, virtually forms a long hub for the basket E, and whatever strain there may be from the gyration of the basket when in operation it will produce no shearing effect on the bolts F.

The lower end H⁴ of the spindle H is set to turn in a bearing I, having a flange I' bolted to the upper end of an oil-box J, formed with an external annular flange J', which is seated or rests on a rubber ring K, and pressing on it at its top is a similar but thicker rubber ring K', as plainly indicated in Fig. 3.

The lower rubber ring K rests on a step L, carried by an annular flange on a bracket N, which is bolted to the under side of the beams C. An annular downwardly-extending rim O incloses both rings and has at its upper end an inwardly-extending flange that covers the upper ring K', and at the lower extremity of the above-mentioned rim O it has an outwardly-extending flange O², engaged by bolts O³, carried by the bracket N, so that the cup O can be drawn downward with the desired force to give the necessary tension and resistance to the upper ring K'.

The office of the rubber rings K K' is two-

fold: first by their friction to prevent the oil-box and bearing from revolving with the spindle H, and, second, to allow the basket E to gyrate to a certain degree, as indicated in dotted lines in Fig. 3, for in operation it is impossible that the material will wall up on the inside of the basket when it is started up, so that the center of gravity of the combined basket and its load will coincide with the center line of the machine, so the flexibility of the box allows the machine to find its own center when running. Now by making the upper ring K' the yielding one and the lower one K to be a thinner one and of less compressibility the whole compression of the rubber ring tends to keep the box, which of course includes the spindle and basket, in an upright vertical position and to resist to a certain extent the gyrations of the basket.

Between the beams C is fitted a pulley-shield P, preferably made in two parts and fastened by bolts P' to the inner faces of the beams C C, the said pulley-shield being inclined and constructed in such a manner that the discharge from the basket E passes downward between the beams C C without coming in contact with the pulley and the belt for driving the pulley.

In the bottom E' of the basket E and next to the hub E² is arranged the usual outlet E³ for discharging the material from the basket after the operation is completed. This outlet E³ is normally closed by a ring-valve Q, of thin sheet metal, and I provide in the valve a cap Q' of inverted-dish form for closing the opening in the center of the valve Q and of such form as to allow the valve to rest on and cover the opening or discharge in the basket E. With this construction I can make the internal diameter of the valve Q a loose and easy fit over the stationary cup R, protecting the nuts of the bolts F and the nut H² on the end of the spindle without any leakage being possible at the internal diameter of the valve. I place and attach to the cap Q' a handle Q³ of convenient form to lift out and operate said valve.

The hub E² is slightly beveled and terminates in a similarly-beveled overhang G⁵, formed on the flange G', the base of the flange overhanging the annular flange P² of the pulley-shield P, so that the material falling down through the outlet E³ onto the shield P and down the inclined sides thereof is deflected and cannot pass inside of the flange P² of the pulley-shield.

The curb-gutter D' pitches toward the inside or center of the curb and terminates in a rounded channel D², and an opening D³ at one side is provided for the discharge of the purgings from the basket.

It will be understood that the pitch or inclination given to the gutter reduces the area that purgings will adhere to and lie at, as in flat bottoms as usually constructed, and the rounded part D² being disposed as near the center or inside as possible reduces the travel

of the purgings seeking the outlet and so making a more ready discharge of liquors of a viscous nature.

The standards B have their sides B' inclined, as plainly indicated in Fig. 1, and are constructed to receive and have attached thereto beams S, which extend upwardly, and on their upper end are secured to a saddle or cradle S' to support a mixer or receptacle T to hold the material to be drawn off and run through the machine.

A belt U, which passes over the pulley G, passes with one run under an idler U' and around the driving-pulley U², driven in the usual manner to give the desired rotation to the pulley G and the basket E. The material discharged from the basket over the pulley-shield P, between the beams C, as previously explained, falls upon the usual conveyor-belt V, driven from the machine to carry the material to one side. The pulley G is provided at its upper end with a flange G³, which prevents the belt U from slipping upward, and the hub portion G⁴, above the belt-flange G³, permits the application of a brake-band for braking the machine to bring the basket quickly to a standstill after the driving-belt is stopped.

By the construction described great stability and compactness are given to the machine, as the curb and machine are brought down as near as possible to the foundation.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a framing, of a bearing held thereby, a spindle mounted in the bearing, a pulley encircling the bearing and having a hub receiving the spindle and attached thereto, a hub having at its outer end a downwardly-projected flange, a pulley-shield the top of which is provided with an opening through which the hub of the pulley passes, and the opening of the top of the shield being provided with an upwardly-projecting flange meeting that of the hub, a basket attached to the upper end of the hub of the pulley and having a central discharge-opening delivering upon the top of the pulley-shield, and a curb inclosing the basket.

2. In a centrifugal machine, the combination with a frame, of a bearing held thereby, a spindle mounted in the bearing, a pulley the hub of which is attached to the spindle, and the pulley inclosing the bearing, a flange attached to the hub of the pulley, a basket, a hub for the basket, fastening devices passed through the basket-hub and flange to attach the basket to the pulley, a curb inclosing the basket and mounted on the frame and at the periphery thereof, and a pulley-shield secured to the frame and located below the basket and having a central orifice through which is passed the hub of the pulley.

3. In a centrifugal machine, the combination with a framing, of a bearing mounted to gyrate in the framing, a spindle mounted to

turn in the bearing and to gyrate therewith, a basket attached to the spindle, a pulley in connection with the basket and encircling the spindle below the basket, and a pulley-shield mounted below the basket and above the pulley, and having a central opening through which the spindle is passed, so that the spindle may gyrate in the opening.

4. In a centrifugal machine, the combination with a framing, of a bearing mounted to gyrate therein, a spindle mounted to turn in the bearing and to gyrate therewith, a basket attached to the spindle, a pulley the hub of which is provided with a flange, fastening de-

vices for holding the flange of the pulley to the basket, and a pulley-shield mounted below the basket and above the pulley, and having a central orifice through which the spindle extends, whereby to permit the spindle to gyrate with the basket, the pulley-shield having an upwardly-extended flange around said opening, the said flange extending upward to proximity with the flange on the hub of the pulley.

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Witnesses:

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