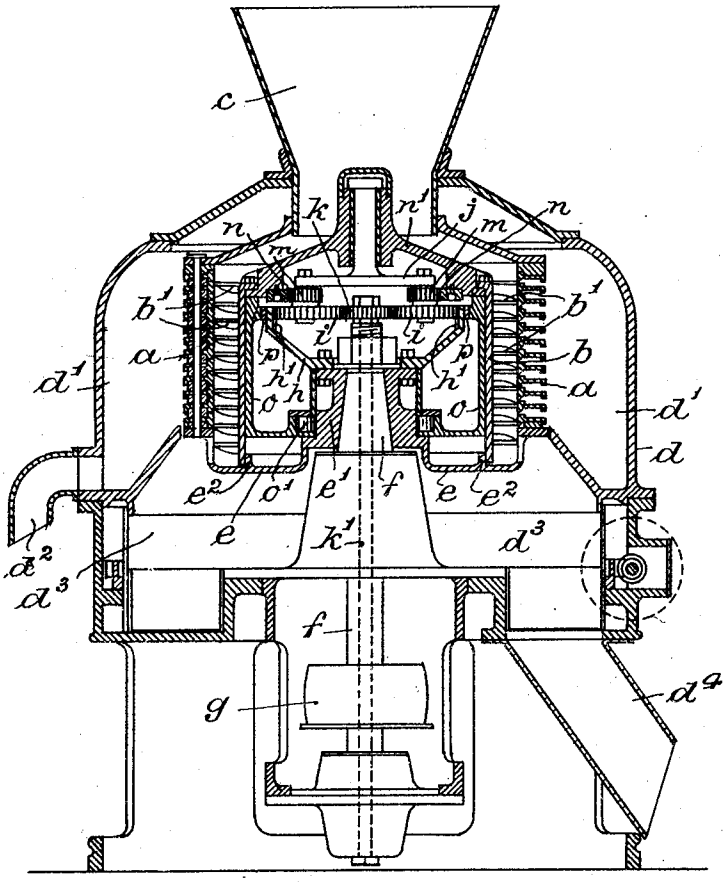
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CONTINUOUS DISCHARGE CENTRIFUGAL MACHINE

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CONTINUOUS DISCHARGE CENTRIFUGAL MACHINE

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The invention relates to continuous-discharge centrifugal machines of the type comprising an outer drum and an inner drum revolving at different speeds, the inner drum being provided with an external helix which conveys the solid material upwardly or downwardly with respect to the outer drum, and the latter being either perforated or otherwise constructed to convey away or permit of the discharge of liquid separated by centrifugal action from the solids.

The invention has for its object to provide improved means for driving the two drums at the required relative speeds, and is characterized in that an internally toothed wheel, associated and revolving with the outer drum, is arranged to drive the inner drum by means of a differential sun-and-planet spur gearing.

The accompanying drawing illustrates, in sectional elevation, a centrifugal machine embodying the invention, the particular machine selected for the purpose being of the type in which the solid materials are fed downwardly by the inner drum, and in which the outer drum is perforated to permit of the discharge of the separated liquid. It will be understood that a machine of this construction is selected solely for the purpose of facilitating the description of the invention, and that such invention is not limited in its application to that particular construction or arrangement.

Referring to the drawing a represents the outer perforated drum and b the inner drum provided with the helix b'. The material to be treated is fed in through a hopper c and is fed downwardly by the helix b' due to the difference in rotary speed between the inner and outer drums. During the descent of the material the contained liquid is thrown off centrifugally through the perforations of the outer drum into a chamber d' constituted by the outer casing d of the machine, an outlet d^2 in the lower part of the collecting chamber permitting of the escape of the liquid.

The dried material escapes from the lower end of the helix into a lower chamber d^3 constituted in the casing, from which chamber it finds its exit through an outlet d^4.

The general features above described are of known construction and in themselves form no part of the invention which, as before stated, relates to the means for driving the two drums at different speeds.

According to the invention, the outer drum is carried by a plate e secured on a central under-driven spindle f, which is shown as carrying a belt pulley g but which may alternatively carry the rotor of a suitable electric motor. The plate e has suitable openings, through which the dried material may pass down into the chamber d^3.

An annular member h, shown as being connected to the boss e' of the plate e but which may be integral with the said boss, is formed at its upper end with an internal spur gear h' which meshes with spur pinions i, i, carried by spindles depending from a member j. The pinions i, in addition to meshing with the internal gear h' also mesh with a central pinion k fast on a fixed axial spindle k'. As the spindle f and outer drum a rotate, therefore, the pinions i are caused to revolve.

Also fast on the same spindles as the pinions i are other pinions m, which are smaller in diameter than the pinions i, and these pinions m mesh with an internal gear n on a member n' rotatable about the axis of the spindle f. The member n' is secured to the upper end of the inner drum b. As the pinions i rotate the pinions m are also rotated and cause the inner drum to be driven, but by reason of the difference in diameter between the two sets of pinions i and m, the speed at which the inner drum is driven differs from that of the outer drum.

An annular shell o bears against the inner face of the inner drum and, through a bearing ring p, against the outer face of the upper end of the member h, the lower end of the shell o being supported about the boss e' of the plate, e, by a bearing o'. The lower end of the inner drum b fits over an upstanding annular flange e^2 on the plate e. The internal gear h' and the inner drum are thus effectively centred.

The member j by which the pinions i and m are carried may take the form of a box or casing with gaps or openings through

which the pinions may protrude to mesh with their respective internal gears. Such a construction will enable support to be afforded to the lower ends of the pins or studs about which the pinions revolve.

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

A continuous-disharge centrifugal machine comprising in combination an outer perforated rotary drum, an inner rotary drum having an external helix and disposed within said outer drum, an annular member carried by said outer drum and revolvable within the inner drum, an internal spur gear on said annular member meshing with spur pinions carried by spindles depending from a member journalled in a part fast with the inner drum, said spur pinions also meshing with a central spur pinion fast on a fixed central spindle, and said spur pinions having rotatable therewith other spur pinions which mesh with an internal spur gear carried by the part fast with the inner drum.

In testimony whereof I affix my signature.

WILLIAM HALLITT.