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ELECTRO-MOTOR DRIVEN VERTICAL
CENTRIFUGAL MACHINE
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Fig. 1.

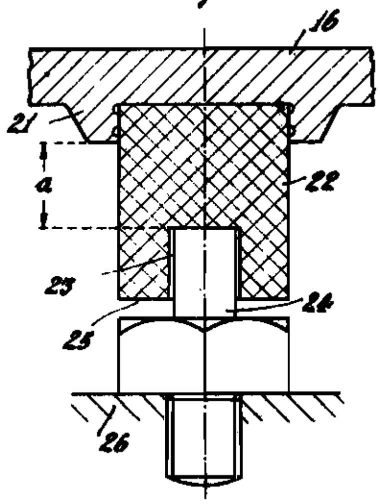


Fig. 2.

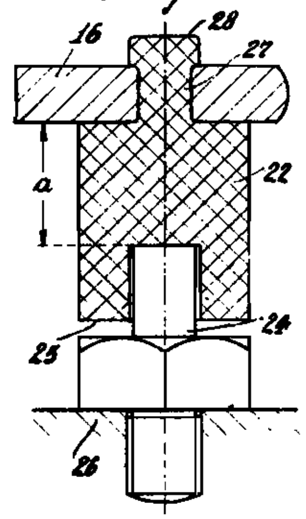


Fig. 3.

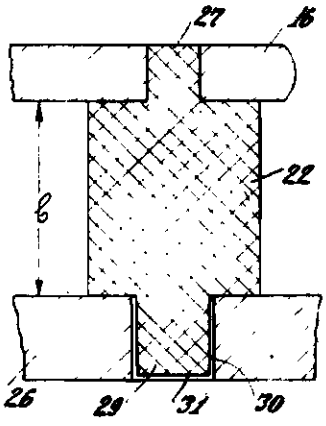
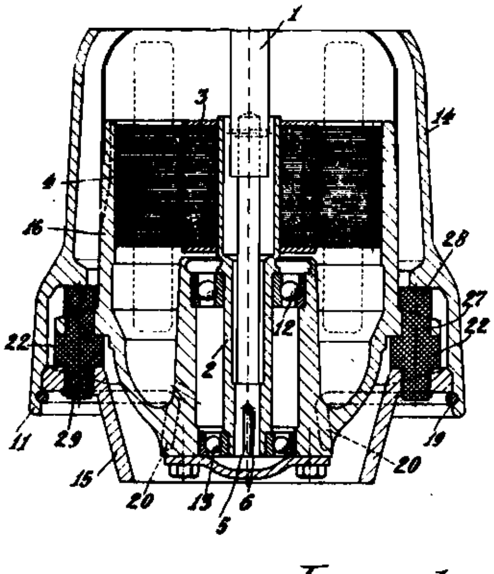


Fig. 4.



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ALIEN PROPERTY CUSTODIAN

ELECTRO-MOTOR DRIVEN VERTICAL CENTRIFUGAL MACHINE

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The invention relates to an electro-motor driven vertical centrifugal machine in particular a spinning pot for artificial silk, provided with elastic supporting means, such as rubber shock absorbers, connected to the casing of the machine.

This way of resiliently supporting the motor is generally known. In known constructions, however, the particular requirements to be fulfilled by these supporting elements were not sufficiently taken into account. The invention is based upon the consideration that the motor, upon being started and as long as the number of revolutions has not yet reached the first critical number, should be able to follow the oscillating movements of the spinning pot. The motor should then be able to make an oscillating movement on the shock absorbers which movement at the top is much stronger that at the bottom. Therefore the motor has a tendency to tilt whereafter it is returned by its own weight into the vertical position. When supporting the motor on a plurality of shock absorbers some of them will be slightly lifted and the oppositely located shock absorbers will be slightly compressed. If the motor has surpassed its critical number of revolutions then during the rotation of the spinning pot the axis of gravity remains in position and the motor should then be able to perform a small precession motion at the bottom. Based on this insight the invention consists in this that the shock absorbers each have a portion that is freely slidable over centering pins or in centering holes of the foundation or stationary motor support whereas between the upper side of said pins or holes and the lower side of the motor casing there is a laterally non-clamped or free shock-absorber-length.

The shock absorbers are thus vertically compressible while at the same time the amount of play between the shock absorber portion surrounding the centering pin or inserted into the centering hole of the stationary support enables the motor to be tilted and to fall back in a limited degree. The motor once having reached its normal number of revolutions, the laterally free shock-absorber-length referred to above may be slightly distorted by the shearing stresses produced; in the case of a laterally clamped in shock absorber this would be impossible and also in the case of a shock absorber rigidly attached to the motor by means of a bolt or pin passing therethrough. Thus, according to the invention, a free shock absorber length affording the shock absorbing effect is combined with a shock absorber length for the centering of the motor.

Further features of the invention will be described hereinafter with reference to the accompanying drawings, in which

Fig. 1 is a vertical central section of an electrical driving device according to the invention e. g. of a spinning pot for artificial silk.

Fig. 2 is a section perpendicular to that shown in Fig. 1 of a detail.

Fig. 1, 2 and 3 are vertical sections of three embodiments of shock absorbers for an electro-motor-driven vertical centrifugal machine according to the invention.

Fig. 4 is a vertical section of an electrical driving device for a spinning pot illustrating various structural details.

In Fig. 4 a vertical spindle **1**, upon the upper end of which a spinning pot may be mounted, has been inserted into the hollow shaft **2** of a rotor **3** which together with a stator **4** constitutes the electromotor driving the spindle. The spindle is of the type disclosed e. g. in the U. S. patent specification No. 2,089,933, but it may of course be of other type. The spindle is axially slidable but non-rotatable with respect to the hollow rotor shaft by reason of the fact that the lower end of the spindle is provided with a slot **5** which in the position shown in Fig. 1 and 2 receives a transverse pin **6** secured in the lower end of the hollow rotor shaft. The spindle may be removed from the hollow rotor shaft by taking it out axially and upwards.

It is also possible to couple the lower spindle end to the hollow rotor shaft in any other way than shown in Fig. 4. The spindle at its lower end might have laterally projecting ribs received in corresponding vertical longitudinal grooves in the lower wall portion of the hollow rotor shaft so that the spindle may be inserted from above with said ribs into the grooves of said wall portion which to this end will have to be thicker than the wall portion located thereabove.

The cap at its lower edge is provided with an annular bead **11** adapted to receive under tension an annular spring **19** for securing the cap to a lower casing **15**. The spring is of the type shown in dotted lines and is constituted by a resilient wire in the form of a split ring having outwardly projecting ends **20**, **20** adapted to be moved towards one another so as to reduce the diameter of the spring and thereby unlock the cap **14**.

Insertion and removal of the spindle as well as of the motor and bearings is thus very simple.

Screw connections need not be established or unscrewed.

The hollow rotor shaft 2 is supported exclusively underneath the stator 4 in two superposed and spaced bearings 12 and 13. They may both be combined axial-and-radial-thrust-bearings, or one of them may be a bearing of this type and the other one a tubular bearing, the essential point being that they enable the rotor shaft and rotor to be inserted and removed in axial direction. The stator casing 16 is supported upon elastic, e. g. rubber shock-absorbers 22, shown separately in Fig. 3.

In Fig. 1 in the lower side of the stator-casing 16, in a recess defined by a depending collar 21, the upper end of a rubber shock absorber 22 is clamped. This shock absorbed is in its bottom provided with a recess 23 into which projects with some circumferential play a centering pin 24 upon the upper surface of which the rubber shock absorber is supported with the bottom of its recess. The lower end surface 25 of the shock absorber is located at some distance above the foundation or stationary support 26 into which the centering pin 24 is secured. It follows that there is a laterally non-clamped or free shock absorber length *a* between the lower side of the casing 14 and the upper side of the pin 24 and that further the rubber shock absorber will be compressed between said surfaces. The rubber is thus confined between said surfaces and is not subjected to tensile stress.

In Fig. 2 the rubber shock absorber 22 is clamped in the stator casing 16 by means of a relatively thin portion 27 having at its upper end a collar or thickened head 28. For the rest this embodiment is equivalent to that according to Fig. 1.

In Fig. 3 the rubber shock absorber 22 is provided at its upper end with a collarless relatively thin portion 27 clamped in the casing 14. At its lower end the shock absorber 22 is provided with a relatively thin portion 29 which is inserted with circumferential play into a hole 30 of the stationary support 26. The shock absorber 22 is entirely solid.

In Figs. 1 and 2 the hollow or tubular lower end of the shock absorber 22 and the centering pin 5 have essentially the same centering function as the thin portion 29 of the shock absorber and the hole 30 in the stationary support in Fig. 3. Also in the latter embodiment the rubber of the shock absorber is confined between the stationary support 26 and the lower side of the stator-casing 16 and again there is a laterally non-clamped or free shock-absorber-length, denoted by *b*, between the casing and the stationary support. The lower end of the shock absorber at 31 is entirely free.

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