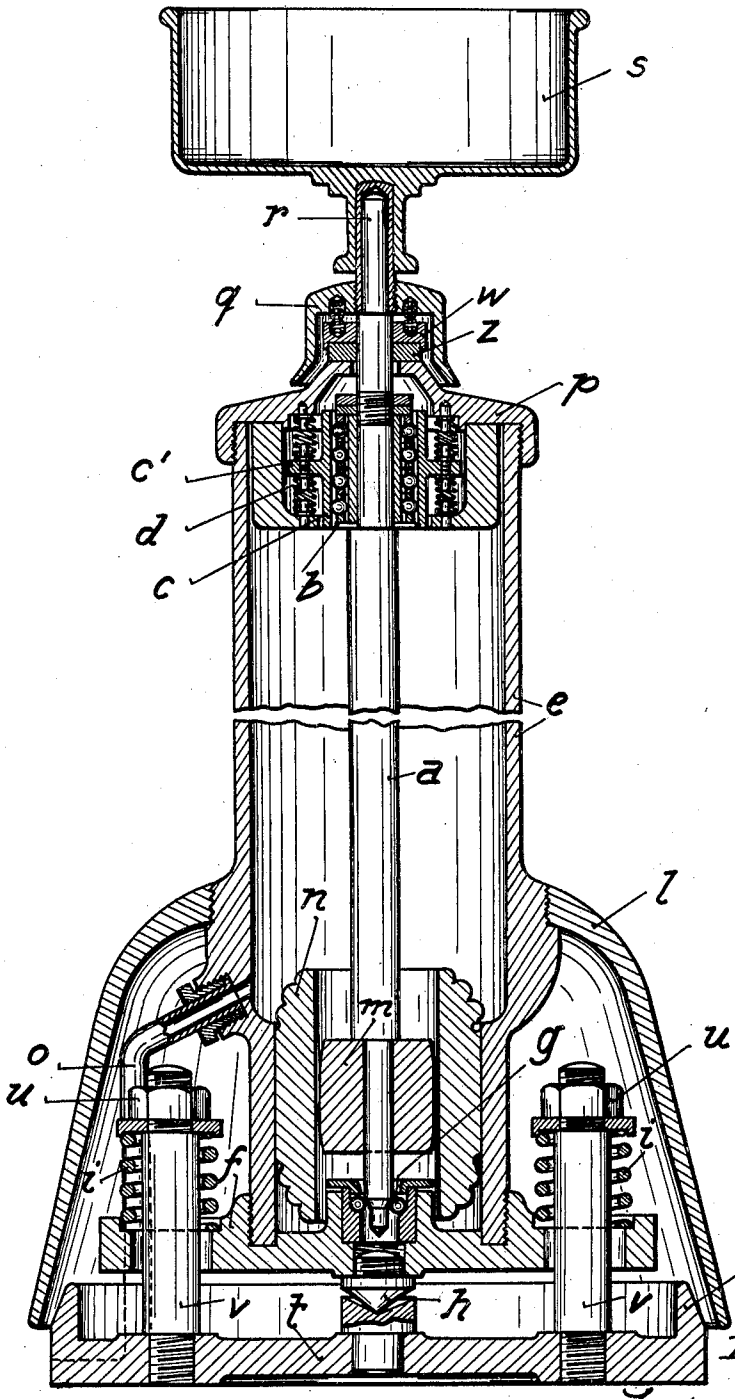
Sept. 22, 1925. 1,554,299

F. SEIBEL

CUP SPINDLE FOR ARTIFICIAL SILK SPINNING MACHINES

Filed Nov. 24, 1924



Inventor:
Fritz Seibel
by Emil Bommelyche
Attorney.

Patented Sept. 22, 1925. 1,554,299

UNITED STATES PATENT OFFICE.

FRITZ SEIBEL, OF CHARLOTTENBURG, GERMANY, ASSIGNOR TO BERLIN-KARLSRUHER INDUSTRIEWERKE A.-G., OF BERLIN-WITTENAU, GERMANY, A COMPANY OF GERMANY.

CUP SPINDLE FOR ARTIFICIAL-SILK-SPINNING MACHINES.

Application filed November 24, 1924. Serial No. 752,046.

To all whom it may concern:

Be it known that I, FRITZ SEIBEL, a German citizen, residing at Charlottenburg, Germany, have invented certain new and useful Improvements in Cup Spindles for Artificial-Silk-Spinning Machines, of which the following is a specification.

This invention relates to a cup spindle for artificial silk spinning machines adapted for a very high rotary speed, and having direct electrical drive, the spindle being characterized by a particularly satisfactory construction and arrangement of the parts provided for damping harmful vibrations and also by the manner in which the internal parts are protected from acid.

The damping of harmful vibration both of the spindle and the spinning cap is effected according to the invention by resiliently supporting the lower bearing race which acts together with a neck bearing sprung in all directions in such a manner that the low centre of gravity of the rotating system prevents the occurrence of a large part of the vibration which tends to occur when the critical rotary speed is exceeded.

Accordingly the spindle undergoes slight deflections during rotation and rotates about a geometric axis more or less removed from the true axis of the spindle.

To permit such a deflection of the spindle axis without interfering with the satisfactory running of the rotor of the electric motor, the rotor is given a slightly arched (barrel shaped) profile.

A further improvement afforded by the invention consists in that the parts outside the actual spindle casing (foot bearing and casing cover) are protected against acids by the provision of bell shaped covers, which are so arranged that they can participate without restraint in the tilting of the casing in relation to the base plate at one end and in relation to the upwardly projecting part of the spindle at the other end.

A vertical section of an embodiment of the invention is illustrated by way of example in the accompanying drawing.

The spindle a is enclosed by a tubular casing e, which is closed at the top by a cover p and at the bottom is screwed into a foot plate f which rests on a central pivot h so that it is capable of tilting about a base plate t provided with a rim k.

The lower end of the spindle a is carried in a ball bearing g arranged on the inner side of the foot plate f, the rotor m of the driving motor being secured to the spindle above the bearing g, whilst the stator n is secured in the lower part of the casing e.

The position of the whole system tilting about the pivot h is maintained, modified by centrifugal force, by springs i, the tension of which is regulated by the nuts on bolts v which are screwed into the base plate t. The neck bearing b is sprung on all sides, for which purpose springs d or like resilient means are provided, which act from all sides on a flange c', on the outer race c of the ball bearing.

All the lower parts which tilt about the base plate but do not rotate are protected against the entry of fluid by a bell l attached to the casing e. Similarly at the top a packing on the end of the spindle a projecting beyond the cover p and formed of an oil saturated felt washer z and a cover w lying thereon, is protected by a dome q. The spinning cup s is mounted on the free end r of the spindle in known manner.

The current is supplied to the electric motor through a packed a tube o.

The opening in the cover p allows side play to the spindle passing therethrough and is covered by the above mentioned packing washer z of felt or the like, which is under spring pressure. In this way the neck bearing b is protected against the entry of acid vapours.

The rotor m is a slightly barrel shaped form which allows it to take part in the tilting of the spindle a without altering the air gap between rotor and stator beyond allowable limits.

The tubular casing e can be filled with oil in a known way to about the middle of the neck bearing, so that all parts rubbing against one another within the tubular casing remain permanently lubricated. The oil forms at the same time a good electric insulator and hinders chemical action on the metallic parts. by any acid vapour that may possibly be present.

What I claim is:—

1. In a cup spindle for artificial silk spinning machines, a base plate, a foot plate tiltably mounted on said base plate, adjustable spring means for holding said foot plate, a non-revoluble casing on said foot plate, a foot bearing in said foot plate, a sprung neck bearing at the top of said casing, a spindle carried in said bearings, a cover having a hole therein of larger diameter than said spindle, at the top of said casing, and a packed connection between said spindle and said cover.

2. In a cup spindle for artificial silk spinning machines, a base plate, a foot plate tiltably mounted on said base plate, adjustable spring means for holding said foot plate, a non-revoluble casing on said foot plate, a foot bearing in said foot plate, a sprung neck bearing at the top of said casing, a spindle carried in said bearings, a cover having a hole therein of larger diameter than said spindle, at the top of said casing, a packed connection between said spindle and said cover, a motor stator within said casing and a barrel shaped motor rotor on said spindle within said stator.

3. A cup spindle for artificial silk spinning machines, comprising an outer casing, resilient and tiltable supporting means for said casing, a spindle resiliently and tiltably borne within said casing, an electric motor directly driving said spindle within said casing, a cup on said spindle, a packed connection between said spindle and said casing, a bell shaped cover over said packing, and a bell shaped cover on said casing, covering said resilient supporting means.

4. A cup spindle for artificial silk spinning machines, comprising a base plate, a foot plate universally pivoted thereon, adjustable spring means connecting said foot plate with said base plate, a non-revoluble casing on said foot plate, a foot bearing on said foot plate, a sprung neck bearing at the top of said casing, a spindle carried in said bearings, a motor in said casing for driving said spindle, a cover on said casing having a hole therein of larger diameter than said spindle, a packed connection between said spindle and said casing, a domed cover on said spindle over said packing, a domed cover on said casing over said spring connecting means overlapping the rim of said base plate, and a cup on said spindle.

5. A cup spindle for artificial silk spinning machines, comprising a base plate, a foot plate universally pivoted thereon, bolts in said base plate passing through said foot plate, adjustable springs on said bolts bearing on said foot plate, a non-revoluble casing on said foot plate, a foot bearing on said foot plate, a motor rotor in said casing, a spindle carried on said foot bearing, a barrel shaped motor rotor on said spindle within said rotor, a neck bearing on said spindle, universally yielding springs connecting said neck bearing with said casing, a cover on said casing having a hole of larger diameter than said spindle, an oil-saturated felt washer on said cover, a spring pressed disc bearing on said felt washer, a dome cover on said spindle covering said felt washer and disc, a domed cover on said casing over said foot plate and adjustable springs overlapping the rim of said base plate, and a cup on said spindle.

In testimony whereof I have signed my name to this specification.

FRITZ SEIBEL.