June 26, 1923. 1,460,328

J. J. KEYSER ET AL

SPINNING AND TWISTING SPINDLE

Filed Aug. 27, 1921

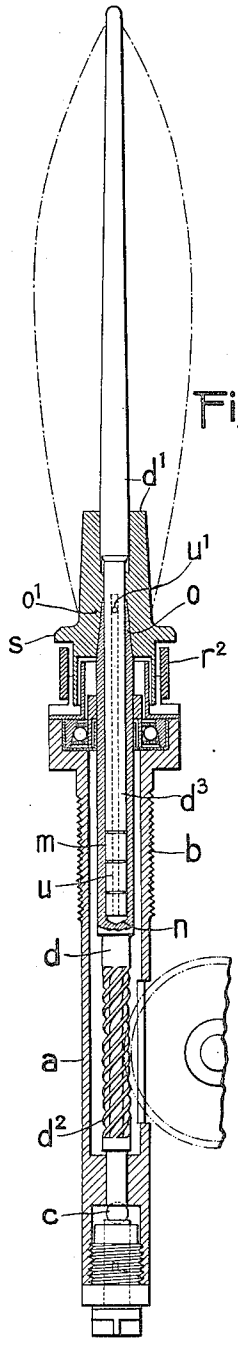


Fig. 1.

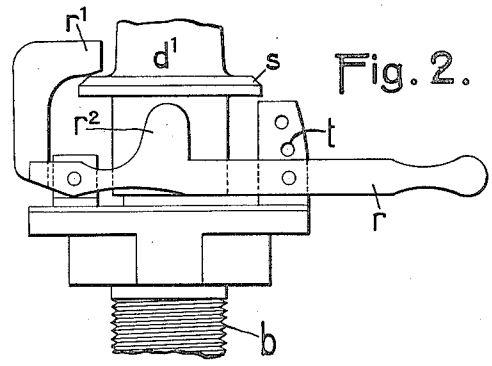


Fig. 2.

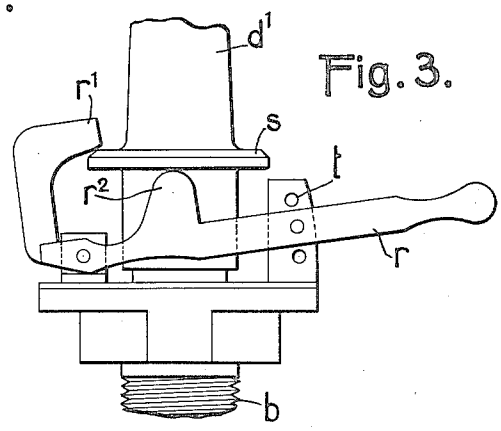


Fig. 3.

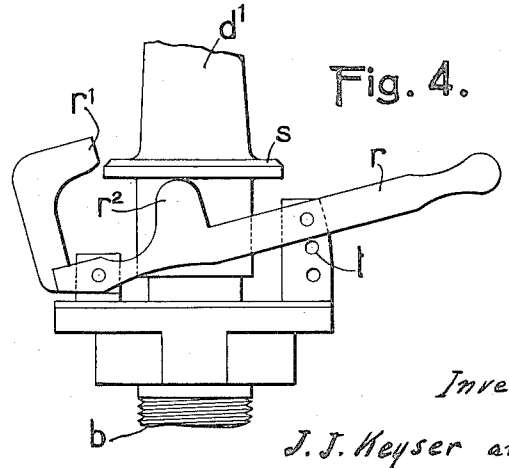


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHANN JACOB KEYSER AND JOHANN JACOB MÜLLER, OF PRATTELN, NEAR BASEL, SWITZERLAND.

SPINNING AND TWISTING SPINDLE.

Application filed August 27, 1921. Serial No. 495,888.

To all whom it may concern:

Be it known that we, JOHANN JACOB KEYSER and JOHANN JACOB MÜLLER, both citizens of the Swiss Republic, and residents of Pratteln, near Basel, Switzerland, have invented new and useful Improvements Relating to Spinning and Twisting Spindles, of which the following is a full, clear, and exact specification.

This invention relates to a sectional spindle for spinning and twisting, having mechanism consisting of a worm or other gear for imperatively controlling the spindle. According to the invention the two sections or parts of the spindle are frictionally coupled, the upper spindle section carrying the bobbin is inserted, by means of a tight fitting rod having an actuating screw, in an axial passage in the lower spindle section, so as to form an air space which is closed in such a manner that the air enclosed in the space, by suctional action, opposes an ascending movement of the upper section in order to maintain an effective frictional coupling between the two sections of the spindle. Owing to such arrangements, any accidental disengagement of the coupling at high speeds of the spindle is avoided. On the contrary, the frictional coupling is rendered active to such a degree that the spindle section used for spinning turns with the same number of revolutions as the controlling spindle section.

For preference, the frictional coupling between the two sections of the spindle is obtained by means of two friction surfaces or cones, one of which is carried by one of the spindle sections and the other by the other spindle section, the driving grip between the two cones being assured by a lock lever, which, in one position, permits the grip to be slightly relaxed for the attachment of a thread, for example, and in another position allows the upper section to be raised and to be entirely suspended without affecting the drive of the lower spindle section which continues to turn constantly.

The accompanying drawing represents, by way of example, one way of carrying out the invention.

Fig. 1 thereof is a vertical section of the spindle, and

Figs. 2, 3 and 4 represent the lock lever device in three different positions.

A vertical socket piece a, provided with a screw thread b for screwing into a spindle carrier serves to support the spinning spindle which rests on a ball footstep bearing c. The spinning spindle comprises two separate sections d, d^1 of which the lower section d is provided with a multiple worm thread d^2, of quick pitch and meshing with a number of teeth on a worm wheel on a horizontal shaft. The upper section d^1, which is removable, is engaged with a fluid tight fit by a rod d^3 having fluid tight grooves and arranged in axial passage m of the section d so as to form a closed air space n in order that the air enclosed in this space may, by suctional action, oppose an ascending movement of the upper section. The frictional coupling of the sections is assured by means of a friction coupling constituted by two friction cones o, o^1, which are provided respectively on the two spindle sections and arranged face to face (Fig. 1) so as to set up an effective coupling by means of the friction between the two sections. This friction coupling is locked in working engagement by means of a lever r (Figs. 2–4) whose beak r^1 engages on the flange s at the foot of the section d^1, lever r being retained in position by a pin and aperture t in a stop (Fig. 2). By raising the lever r to its second position (Fig. 3) or intermediate position, a cam r^2 with which the lever is provided presses lightly on the underside of the flange s to relax slightly the driving grip between the two friction cones o and o^1, which not only admits of the working of the upper section, but also allows an operator, in case of breakage, for example, to reattach the thread. If lever r be raised to the upper position (Fig. 4) the driving engagement between the friction cones o and o^1 is wholly annulled and the upper section can be raised, for example for lubricating and other purposes. In every case the lower section d can continue to turn and its control is unaffected by such operations.

To facilitate the replacement of the upper section, the rod d^3 is bored with an air escape passage u, the air escaping through the lateral orifice u^1 (Fig. 1), which orifice is closed when the rod d^3 of the upper section is completely depressed within the lower section.

It will be seen that owing to the presence of air in the space n, the friction drive

would have an elastic action, easy and compensative with respect to the spinning and the torsion of the thread. The working is not severe in spite of the use of worm-gearing.

What we claim is:—

1. In a sectional spindle for spinning and twisting, a lower spindle section provided with an axial passage, a driving toothed gear connected to said spindle section, a removable upper spindle section with a rod arranged to tightly fit into said axial passage of the lower spindle section and to enclose a sectional air space therein, and a friction coupling between the two spindle sections to connect the same, substantially as described.

2. In a sectional spindle for spinning and twisting, a lower spindle section provided with an axial passage, a driving toothed gear connected to said spindle section, a removable upper spindle section with a rod arranged to tightly fit into said axial passage of the lower spindle section, a friction coupling between the two spindle sections to connect the same and a setting device to secure said friction coupling and to disengage the same, substantially as described.

3. In a sectional spindle for spinning and twisting, a lower spindle section provided with an axial passage, a driving toothed gear connected to said spindle section, a removable upper spindle section with a rod arranged to tightly fit into said axial passage of the lower spindle section, a friction coupling between the two spindle sections to connect the same and an air escape device in connection with the spindle sections to allow of escape of air when the rod of the upper spindle section is being inserted into the axial passage of the lower spindle section, substantially as described.

In witness whereof we have hereunto signed our names this 9th day of August 1921, in the presence of two subscribing witnesses.

JOHANN JACOB KEYSER.
JOHANN JACOB MÜLLER.

Witnesses:
MARGUERITE STACHELI,
AMAND BRAUN.