

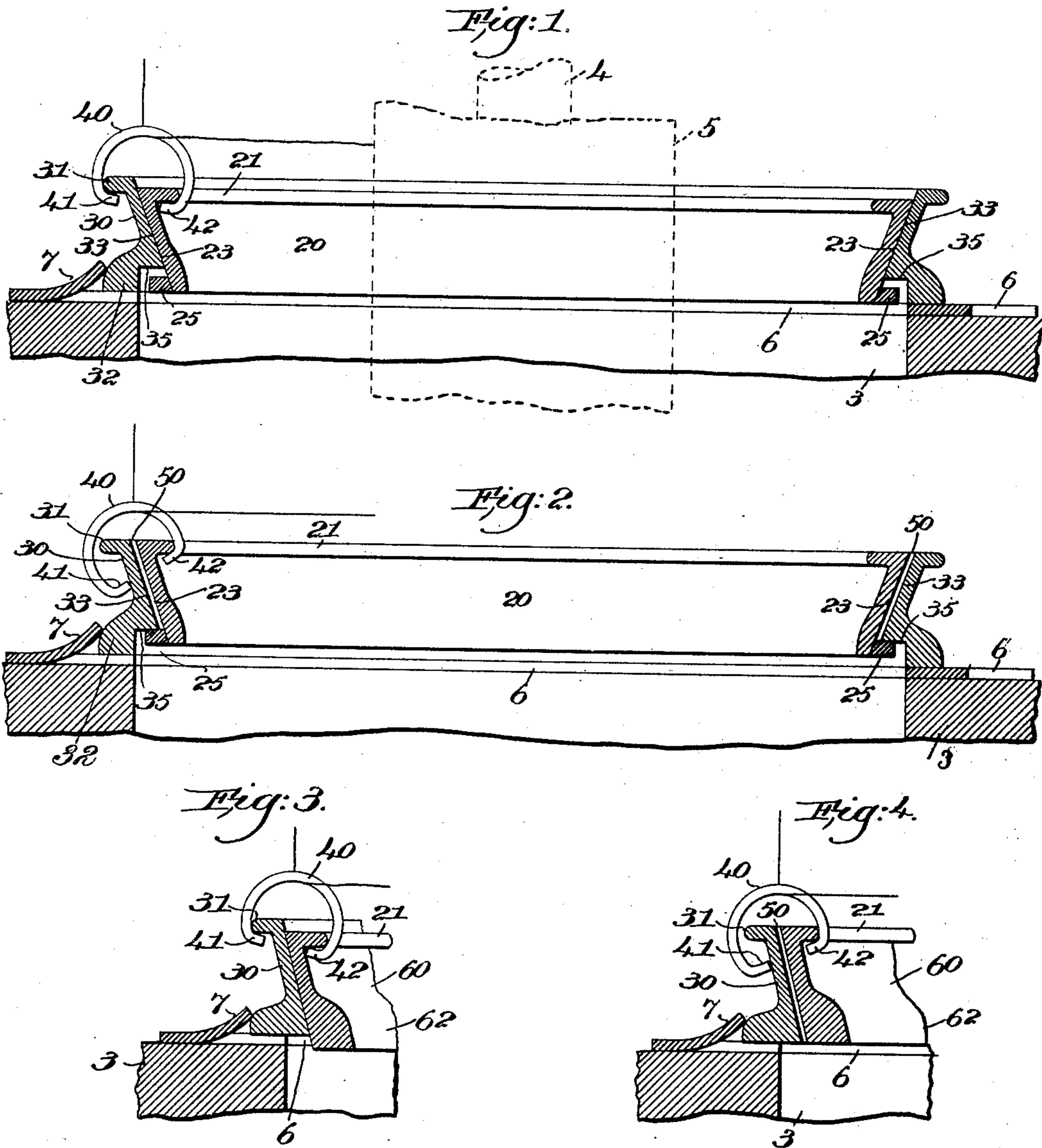
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G. O. DRAPER.
YARN SPINNING OR TWISTING APPARATUS.

(No Model.)

(Application filed May 11, 1900.)



Witnesses,
Edward F. Allen.
Frank G. Kattie.

Inventor,
George O. Draper;
by Leroy & Morgan
attys.

UNITED STATES PATENT OFFICE.

GEORGE O. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO THE
DRAPER COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

YARN SPINNING OR TWISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 660,623, dated October 30, 1900.

Application filed May 11, 1900. Serial No. 16,286. (No model.)

To all whom it may concern:

Be it known that I, GEORGE O. DRAPER, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Yarn Spinning or Twisting Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to apparatus for twisting or spinning yarn, and more particularly to the so-called "rotary-ring" type, wherein the ring is rotated by and apparently in unison with the traveler when the spindle is rotated at high speed—say from ten to fifteen thousand revolutions per minute. In such type of apparatus referred to the annular traveler-support or ring is free to move laterally and axially, as well as rotatably, and herein I have shown a very simple and practical form of traveler-support comprising fixed and rotatable annular members, with both of which the traveler coöperates, the "duplex ring," as it may be termed, being readily applicable to ring-holders of usual construction. In accordance with my present invention the adjacent faces of the ring members are frusto-conical, whereby when the rotatable member rises as the spindle speed increases the said rotatable member is increasingly separated and freed from the concentric fixed member.

Figure 1 is a diametral sectional view, very much enlarged, of a traveler-support or duplex ring embodying one form of my invention, the spindle and bobbin being only partly shown. Fig. 2 is a similar view, but showing the rotatable member lifted as it appears at high spindle speed. Fig. 3 is a sectional detail, also enlarged, of a modified form of my invention; and Fig. 4 is a similar view showing the parts in running position at speed.

The ring-rail 3, spindle 4, bobbin 5, and ring-holder 6, Figs. 1 and 2, may be of any usual or well-known construction, the spindle being adapted for high-speed rotation, the ring-holder 6 being made of sheet metal, suitably secured to the rail and provided with upturned holding clips or lugs 7 to engage the fixed member of the ring.

The traveler-support is shown as comprising two concentric annular members 20 30, the member 20 having at its upper end an inturned circular flange 21, which forms a traveler-race, the member 30, which in the present instance of my invention is fixed, having at its top an outwardly-extended flange 31 and an enlarged foot 32, which is sprung into the clips or prongs 7 of the holder 6. The adjacent faces 23 33 of the concentric members are made frusto-conical and inverted, and when the rotatable member is at rest it is supported by engagement with the conical surface of the fixed member, as in Fig. 1.

I have shown the usual form of traveler 40, comprising a substantially semicircular body with inturned ends 41 42, which extend beneath the flanges 21 31 and are thereby retained on the duplex ring. When the frame is started, the parts being in the position shown in Fig. 1, the traveler engages the under faces of the two flanges and travels around the same; but as the speed of rotation of the spindle gradually increases the friction of the traveler on the member 20 will cause it to rotate faster and faster until the said member and traveler appear to be moving in unison. At the same time the tension of the yarn acts to gradually lift the rotating member 20, and the higher it is lifted manifestly the greater freedom is permitted for radial movement, as shown in Fig. 2, due to the clearance 50. The traveler by centrifugal force assumes the position shown in Fig. 2, the end 41 descending and running on the inclined outer face of the member 30, which face, with the flange 31, forms a traveler-race exerting a slight controlling drag or retardation on the traveler.

Variations in spindle speed will effect axial or up-and-down movement of the member 20 proportionally thereto, so that the variable clearance between the fixed and rotatable members is self-regulating.

In order to prevent the lifting movement of the rotatable member from exceeding proper limits, an external annular rib 25 may be sprung onto the foot of the said member, said rib extending beneath an overhanging shoulder 35 on the fixed member.

I have shown in Figs. 3 and 4 another

mode of preventing undue lifting of the movable member 60—viz., by increasing the thickness of its foot 62, so that the additional weight will serve the purpose of the rib and shoulder heretofore described. In other respects the modified construction is practically the same as that shown in Figs. 1 and 2.

With the construction herein shown and described it will be obvious that the slightest upward movement of the rotatable member will at once permit of some radial movement to adapt itself to varying conditions of speed, yarn tension, &c.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a spinning or twisting frame, a duplex traveler-support composed of concentric fixed and movable members having frusto-conical adjacent faces, and a traveler to cooperate with both members.

2. In a spinning or twisting frame, a duplex traveler-support composed of concentric fixed and movable members having adjacent inverted frusto-conical faces, and a traveler to cooperate with both members.

3. In a spinning or twisting frame, a duplex traveler-support composed of concentric fixed and movable members having frusto-conical adjacent faces, and a circular flange at the upper end of each member, to retain a traveler upon the support.

4. The combination of a rotatable ring capable of radial and axial movement, a fixed ring concentric therewith, and a traveler cooperating with both rings, the adjacent faces of the latter being conical, whereby rise of the rotatable ring correspondingly increases the clearance between it and the fixed ring.

5. The combination of rotatable and fixed concentric rings having frusto-conical body portions, a traveler-race on each, a traveler in simultaneous engagement with both races, and means to limit upward movement of the rotatable ring.

6. The combination of a rotatable ring capable of radial and vertical movement under the stress of the yarn and having a traveler-race, of a concentric fixed ring, and means to

increase automatically the lateral clearance between said rings as the rotatable ring rises.

7. In a spinning and twisting frame, a duplex ring composed of fixed and rotatable sections, each provided with a traveler-race, the adjacent faces of said sections being frusto-conical, a traveler to cooperate with both races, and means to limit axial movement of the rotatable section.

8. In a spinning and twisting frame, a rotatable, flanged ring having a conical external face, a surrounding fixed ring having a conical inner face and also provided with a flange, and a traveler in engagement with both rings and retained thereon by the flanges.

9. In a spinning and twisting frame, a duplex ring composed of fixed and rotatable sections, each provided with a traveler-race, the adjacent faces of said sections being frusto-conical, the movable section being weighted at its foot to prevent undue lifting movement.

10. In a spinning or twisting frame, a rotatable ring capable of radial and axial movement, a traveler cooperating therewith, and a conical support for and concentric with said ring and with which the traveler also cooperates.

11. The combination of a rotatable ring axially and radially movable relatively to the spindle, said ring having a race, a traveler revoluble about said race, and means for limiting the described movement of the ring, constructed and arranged to present a variable clearance between it and the ring proportional to the axial movement of the latter, the traveler being also in operative engagement with said means.

12. In a spinning and twisting frame, a duplex ring composed of fixed and rotatable sections, each provided with a traveler-race, the movable section being weighted at its foot to prevent undue lifting movement.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE O. DRAPER.

Witnesses:

E. D. BANCROFT,
ERNEST W. WOOD.