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G. O. DRAPER & C. E. METCALF.
RING SPINNING OR TWISTING APPARATUS.
APPLICATION FILED SEPT. 15, 1905.

Fig. 1.

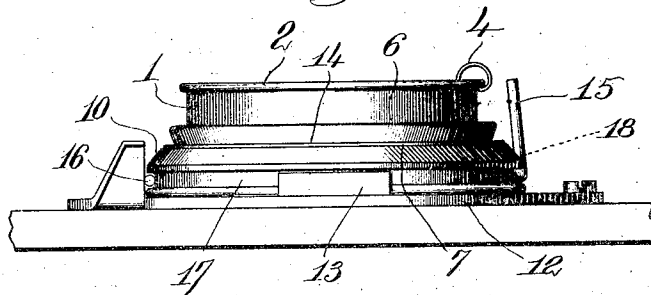


Fig. 2.

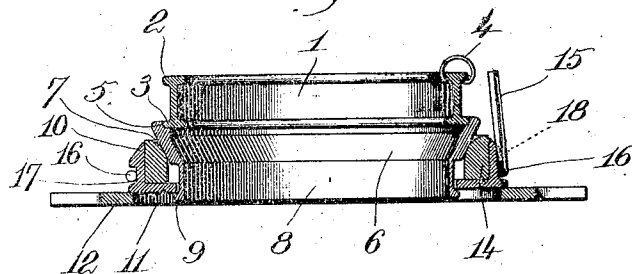
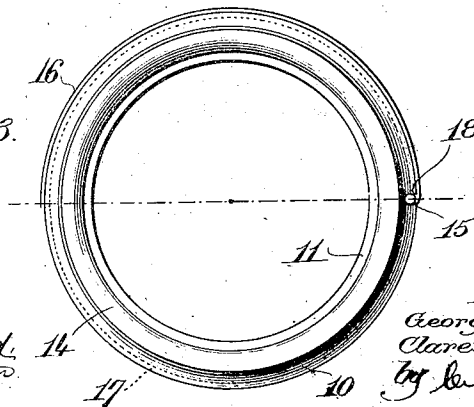


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE O. DRAPER AND CLARENCE E. METCALF, OF HOPEDALE,
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RING SPINNING OR TWISTING APPARATUS.

No. 820,629.

Specification of Letters Patent.

Patented May 15, 1908.

Application filed September 15, 1905. Serial No. 278,539.

To all whom it may concern:

Be it known that we, GEORGE O. DRAPER and CLARENCE E. METCALF, citizens of the United States, and residents of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Ring Spinning or Twisting Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like figures on the drawings representing like parts.

This invention relates to ring spinning or twisting apparatus of the type wherein the ring, provided with a raceway for the traveler, rotates during the spinning or twisting operation, the ring having limited radial and axial movements, whereby when running at speed it seems to "float," as it is technically termed, apparently without support.

Our invention has for its objects the improvement of such rotary-ring apparatus whereby the control of the ring movements is improved, the friction reduced to a minimum, and a smoother and more uniform action of the ring secured.

The various novel features of our invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a side elevation of a rotary-ring apparatus embodying one form of our invention. Fig. 2 is a diametral section thereof on the line 2 2, Fig. 3; and Fig. 3 is a top plan view of the casing and the traveler-clearer, showing also the annular seat for the ring-bearing to be described.

We have herein shown the ring and ring-carrier as separable, inasmuch as they are more conveniently so made; but we wish it to be understood that, if desired, the ring and carrier could be made integral within the scope of our invention.

Referring to the drawings, the ring 1 may be of a well-known type, having upper and lower double flanges 2 and 3, the former providing a raceway for the traveler 4 of suitable construction, the lower flange 3 of the ring in the present instance being shown as tightly fitting in an annular socket 5 in the rotatable ring-carrier 6. The latter is shaped to present an annular beveled or inverted frusto-conical bearing 7 below the socket, said bearing having depending from its smaller lower

end a thin circular web 8, having its lower edge outturned to form a continuous annular lip 9.

A fixed metallic casing, shown as comprising an upright circular portion 10 and a circular inturned flange 11, Figs. 2 and 3, is secured to the ring-rail by a metallic holding-plate 12, having suitable ears 13 to retain the casing in place. The casing carries an annular non-metallic seat 14 for the bearing 7, concentric therewith and preferably made convex transversely, as shown in Fig. 2, to form a tangential contact with the bearing. Preferably this seat is made of wood impregnated with wax, grease, or other suitable substance to form an antifriction-support for the ring in a vertical direction and also to limit its radial movement.

The lip 9 forms a movable member, and the flange 11 a fixed member, of a downhold to limit the axial or vertical lifting movement of the ring, the lip extending slightly under the flange, with sufficient clearance between to permit sufficient movement of the ring when rotating.

The vertical or axial movement of a rotary ring is very important, and it should, if possible, be controlled by a continuously or circularly acting means, such as is provided herein by cooperation of the lip and flange, as described.

The web 8 is thin, and the external diameter of the lip 9 is very little greater than the internal diameter of the flange 11, so that in assembling the apparatus the lip can be forced past the flange.

As will be seen from Fig. 2, the cooperation of the seat and bearing permits any necessary slight tipping movement of the ring, as well as its requisite radial movement, while forming a vertical support therefor with a minimum of friction. The seat is forced into the casing and is fixedly held therein.

We have provided a novel and simple traveler-clearer consisting of an upright or clearer portion 15 long enough to properly cooperate with the traveler and a curved resilient or elastic base 16, the latter snapping into an external annular groove 17 in the wall 10 of the casing. An upright notch 18 intersects this groove, the clearer portion 15 being held therein by the resiliency of the base, the curvature whereof normally is less than that

of the groove. As a result the curved base 16 hugs the casing tightly, while the coöperation of the notch 18 and clearer portion 15 maintains the latter in proper position. Preferably the base 16 is long enough to embrace about one-half of the circumference of the casing to provide a firm and secure hold for the clearer.

Our invention is not restricted to the precise construction herein shown, as the same may be modified or varied in different particulars by those skilled in the art without departing from the spirit and scope of our invention.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a rotary ring provided with an annular, beveled bearing, a concentric and transversely-convex seat to tangentially engage the bearing, and means to control the lift of the ring.
2. The combination, with a rotary ring provided with an annular bearing, of an anti-friction, wooden seat surrounding the bearing and adapted to engage tangentially therewith.
3. The combination, with a rotary ring provided with an annular bearing, a fixed, annular casing, a wooden seat carried thereby concentric with and to coöperate with the bearing, to vertically sustain and limit radial movement of the ring, and means below the bearing and seat to limit lifting movement of the ring.
4. The combination, with a rotary ring provided with an annular bearing, a fixed, annular casing having an inturned flange, a non-metallic and transversely-convex seat carried by the casing to coöperate with and tangentially engage the bearing, and a downhold depending from the bearing and having an external annular lip to coöperate with the under side of said flange and limit lifting movement of the ring.
5. A rotary spinning-ring, combined with

an annular, beveled bearing connected therewith and having a depending circular extension provided with an external lip, a fixed casing, a transversely-convex annular seat of wood carried by the casing to coöperate with the bearing, the lip on the extension having a continuous circular engagement with the casing when the ring lifts, to limit such movement.

6. The combination, with a rotary ring-carrier having an inverted frusto-conical bearing and a downhold depending therefrom, of a ring fixedly mounted on the ring-carrier, a surrounding and transversely-convex wooden seat for and to tangentially engage the bearing, and fixed annular means below said seat to coöperate with the downhold and thereby limit lifting movement of the ring.

7. The combination, with a rotary ring provided with a beveled, annular bearing, of a fixed casing having a seat for the bearing and having an external annular groove and an intersecting notch, and an upturned traveler-clearer having a resilient curved base to snap into the groove in the casing, the clearer resting in the notch.

8. The combination, with a rotary ring provided with a beveled, annular bearing, of a fixed casing having an annular downhold member, a coöperating annular member movable with the ring, and a concentric, non-metallic seat for the bearing, to limit radial movement of and also sustain the ring, the fixed and movable downhold members having a circular engagement and limiting lifting movement of the ring.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE O. DRAPER.
CLARENCE E. METCALF.

Witnesses:

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