No. 660,631. Patented Oct. 30, 1900.

J. C. EDWARDS.

YARN SPINNING APPARATUS.

(Application filed June 18, 1900.)

(No Model.)

Fig. 1.

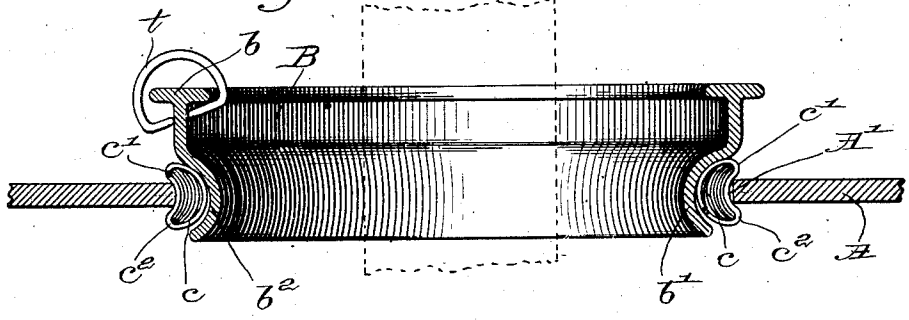


Fig. 1a.

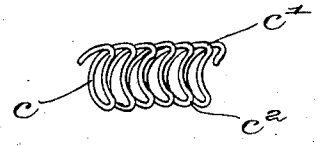


Fig. 2.

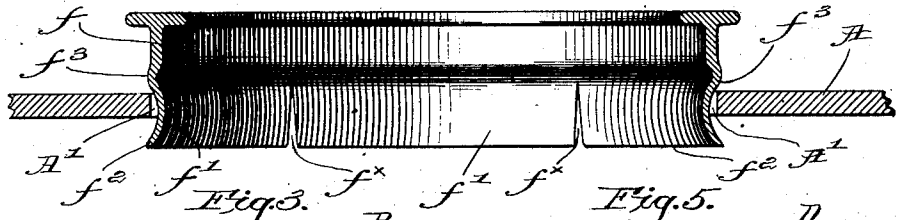


Fig. 3. Fig. 5.

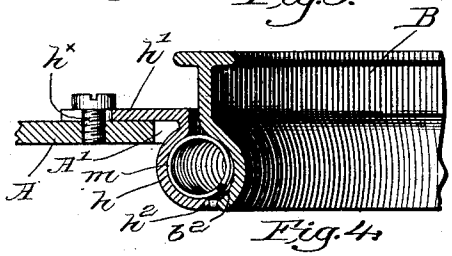
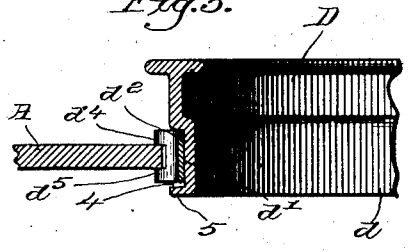


Fig. 4.



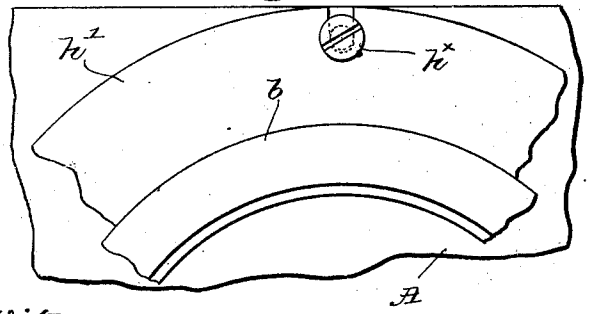
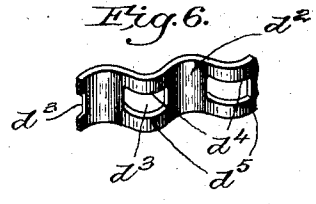


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN C. EDWARDS, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR TO THE DRAPER COMPANY, OF PORTLAND, MAINE, AND HOPEDALE, MASSACHUSETTS.

YARN-SPINNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 660,631, dated October 30, 1900.

Application filed June 18, 1900. Serial No. 20,679. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. EDWARDS, a citizen of the United States, and a resident of Brookline, county of Norfolk, State of Massachusetts, have invented an Improvement in Yarn-Spinning Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to that type of yarn-spinning apparatus wherein the ring is revolubly mounted on the ring-rail, the ring being rotated with the traveler after the spindle has attained high speed, such type of apparatus forming the subject-matter of United States Patent No. 640,525, dated January 2, 1900.

One of the objects of my invention is to simplify the construction of such apparatus, and another object is to readily adapt the revoluble ring for coöperation with sheet-metal ring-rails, which are in extended use.

Various novel features of my invention will be hereinafter fully described, and particularly pointed out in the following claims.

Figure 1 is a diametral sectional view of a portion of a spinning apparatus embodying one form of my invention, the ring-rail being shown in section. Fig. 1^a is a perspective detail of a part of the buffer shown in Fig. 1. Fig. 2 is a sectional view of another embodiment of my invention, the buffer being made a part of the ring. Fig. 3 is a sectional detail of another modification to be described. Fig. 4 is a top or plan view of a part of the construction shown in Fig. 3. Fig. 5 is a sectional detail similar to Fig. 1, but with a different form of buffer; and Fig. 6 is a perspective detail of a part of the buffer shown in Fig. 5.

Referring first to Fig. 1, the ring-rail A, of sheet metal, is provided with the usual circular spindle-aperture A′, and the ring B, cooperating therewith, is shown as having a flanged head *b* for the traveler *t*, of usual construction. The web of the ring is shown as provided with a depending base *b′*, which extends freely into the spindle-aperture, said base being bent to present an external annular recess or seat b^2. A yielding annular buffer *c* is mounted in the seat between the ring-base and the edge of the aperture A′ in the rail, and in Figs. 1 and 1^a the buffer is shown as a spring-coil convex on its inner circumference to rest in the seat b^2 and having the turns of the spiral bent in or concaved along the outer circumference to present two series of projecting portions c' c^2, which straddle the edge of the aperture A′. The curvature of the seat b^2 is slightly greater than the curvature of the adjacent part of the buffer (see Fig. 1) to permit a limited vertical or axial play of the ring and also to permit some radial movement thereof. When the spindle is speeded up, the pull of the yarn on the traveler will rotate the ring, and its axial and radial movements are limited in a yielding manner by the buffer, which latter also maintains the ring in operative position relative to the rail.

In assembling the parts the buffer is inverted in the spindle-aperture of the rail, and the base of the ring is then pushed into place within the buffer, the latter yielding to permit it.

Referring to Fig. 5, the base *d* of the ring D is provided with an annular recess *d′* to receive the buffer d^2, which is in this instance made as a band of corrugated spring metal, alternate bends being punched, as at d^3, to leave projections d^4 d^5, which extend above and below the rail, respectively. A clearance 4 is left between the lower edge of the buffer and the external lip or flange 5 of the ring-base, which forms the bottom of the external recess *d′*, permitting limited axial movement of the ring under the strain of the yarn.

In Fig. 2 I have shown the buffer formed as a part of the ring itself, and for this purpose the web *f* of the ring has a depending portion *f′*, concavo-convex in cross-section and made thin and having several slits or notches $f^\times$ extended thereinto upward from its lower outturned edge f^2. I prefer to provide an external rib or annular projection f^3 at the top of the notched portion *f′*, of greater diameter than that of the spindle-aperture A′ of the ring-rail, and normally the edge f^2 is of greater diameter than the aperture A′. To assemble the ring and rail, the buffer portion *f′* of the former is compressed sufficiently to permit the edge f^2 to pass through the spin-

dle aperture and then released, and the resiliency of the buffer portion restores it to the form shown in Fig. 2. When the ring is at rest, the rib or projection f^3 rests on the top of the rail and supports the ring, and during spinning, when the ring is revolving, the edge f^2 limits its vertical or axial movement, while the clearance between the edge of the spindle-aperture and the concaved portion of the buffer permits radial movement of the ring.

Referring to Figs. 3 and 4, the ring B is of substantially the construction shown in Fig. 1, its external annular recess or seat b^2 receiving the buffer, which is made as a spiral spring or coil m; but the outer circumference of the buffer is shown as seated in an annular concaved holder h, having at its top a laterally-extended flange h', which is secured to the rail A by suitable screws $h^\times$, the buffer being located below the upper surface of the rail. By this arrangement small rings can be used with rails having large spindle-apertures, and as the curvature of the recess b^2 is greater than that of the buffer provision is made for axial and radial movement of the ring under the stress of the yarn, while such movements are limited by the coöperating portions of the buffer and ring. The lower lip h^2 of the holder extends beneath the buffer far enough to support the latter in an effective manner.

My invention is not restricted to the precise construction and arrangement shown, as the same may be modified or rearranged without departing from the spirit and scope of my invention.

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

1. The combination with the ring-rail having a circular spindle-aperture, of a revoluble ring movable radially and axially under the stress of the yarn and extended into said aperture, and a yielding means to retain the ring in operative position.

2. The combination with the ring-rail having a circular spindle-aperture, of a revoluble ring freely movable under unbalanced strains and having its base extended into the aperture and means to coöperate with the edge of the aperture and limit the radial and axial movements of the ring.

3. The combination with the ring-rail having a circular spindle-aperture, and a revoluble ring having a traveler-race and a base depending below the top of the rail, of yielding means interposed between the ring and the rail to limit movement of the ring under unbalanced strains of the yarn.

4. The combination with the ring-rail having a circular spindle-aperture, of a ring having an external annular recess in its lower portion, and yielding means coöperating with the rail and the recessed portion of the ring to retain the latter in operative position.

5. A sheet-metal ring-rail having a circular spindle-aperture, a revoluble ring capable of radial movement, and an annular yielding buffer interposed between the ring and the edge of the aperture in the rail to limit radial movements of the ring.

6. A sheet-metal ring-rail having a circular spindle-aperture, a revoluble ring capable of axial and radial movement, and an annular yielding buffer interposed between the ring and the rail and provided with means to limit axial movement of the ring.

7. A sheet-metal ring-rail having a circular spindle-aperture, a revoluble ring capable of radial movement and having an annular seat, and a spring mounted in said seat and in engagement with the edge of the spindle-aperture.

8. A sheet-metal ring-rail having a circular spindle-aperture, a revoluble ring capable of axial and radial movement and having an annular, external recess, and a spring seated in said recess and having peripheral projections extended above and below the edge of the spindle-aperture to limit the axial movement of the ring.

9. A sheet-metal ring-rail having a circular spindle-aperture, a revoluble ring, and yielding annular means coöperating with the edge of the spindle-aperture and connecting the ring operatively with the rail.

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

JOHN C. EDWARDS.

Witnesses:
GEO. W. GREGORY,
AUGUSTA E. DEAN.