March 31. 1925. 1,531,919

J. S. GAUNT ET AL

CAP SPINNING FRAME

Filed Sept. 14, 1922

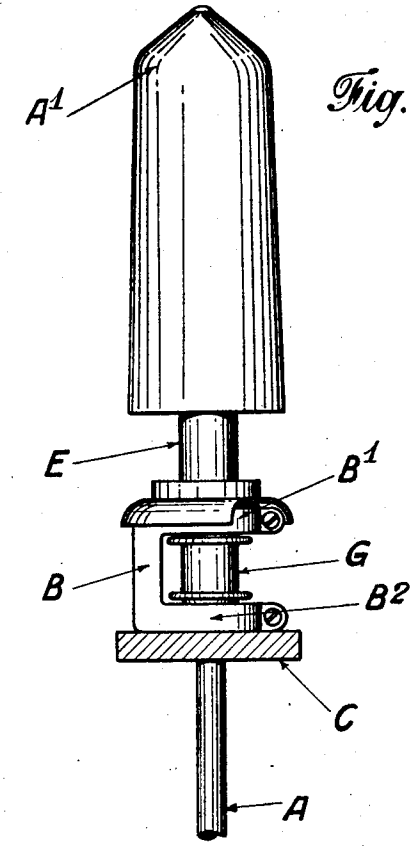
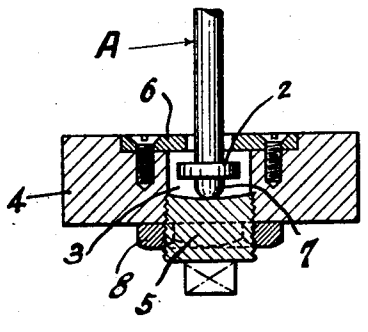


Fig. 1.



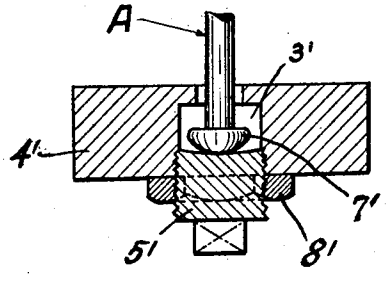
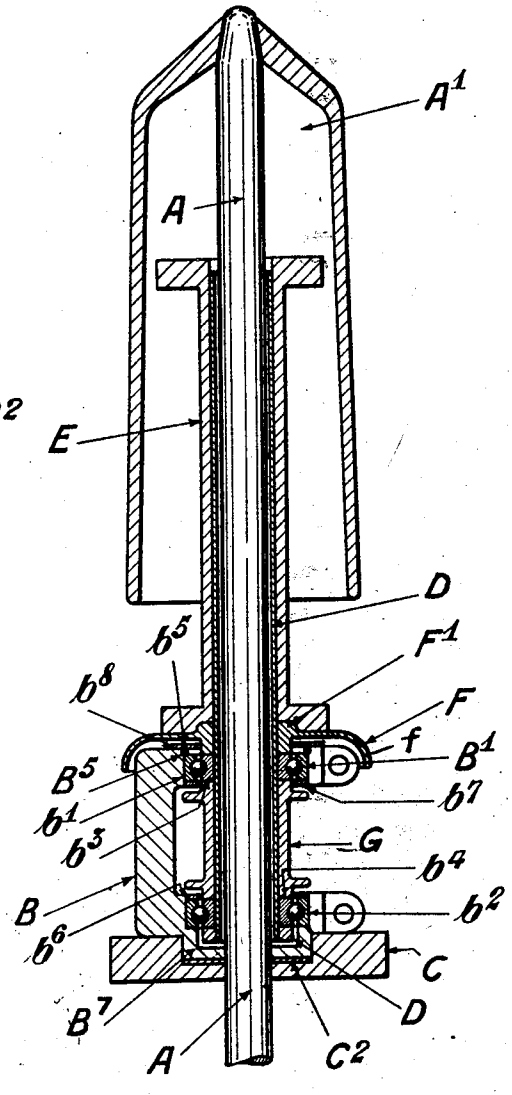


Fig. 1a

Fig. 2.



Inventors
J.S. Gaunt & H. Dyson
By Lawrence Langner
Attorney :-

Patented Mar. 31, 1925. 1,531,919

UNITED STATES PATENT OFFICE.

JOSEPH SHAW GAUNT, OF MANCHESTER, AND HARRY DYSON, OF HUDDERSFIELD, ENGLAND.

CAP SPINNING FRAME.

Application filed September 14, 1922. Serial No. 588,244.

To all whom it may concern:

Be it known that we, JOSEPH SHAW GAUNT, residing at 6 Cromford Court, Market Street, Manchester, England, and HARRY DYSON, residing at 67 May Street, Crosland Moor, Huddersfield, England, both British subjects, have invented certain new and useful Improvements in Cap Spinning Frames, of which the following is a specification.

This invention relates to the spindle mechanism of cap spinning frames and the chief objects are, to reduce the power required for driving the machine, to enable the revolving parts to be sufficiently lubricated without danger of the lubricant soiling the yarn, to enable the speed of spinning to be increased, and to provide a mounting for the spindles that support the caps whereby the running of the mechanism is facilitated and undue vibration is avoided.

With these objects in view, the usual rotating tube carrying the bobbin and the whorl by which the said tube is rotated, are, according to this invention, mounted independently of, but co-axially with, the spindle by which the cap is carried; the said tube is formed with its internal diameter slightly larger than the diameter of the spindle, so that it rotates clear of the latter, and it may extend downward to provide means whereby it is rotatably mounted in the lifting rail; this mounting is effected by means of ball bearings arranged between the upper and lower portions of a bolster mounted in the lifting rail or plate and the said downward extension of the tube, which may pass through the bolster; and between the upper and lower ball bearings the whorl may be mounted upon the tube. The usual rigid fastening at the foot of the cap-carrying spindle is dispensed with and the spindle is mounted in the lower or spindle rail sufficiently loosely to permit of a slight degree of play in its support, thus allowing the spindle to accommodate itself to any irregularities in the lifting-rail movement and also simplifying the setting of the spindle by avoiding fine adjustments.

The invention will now be described with reference to the accompanying drawings in which,

Figure 1 is an elevation,

Figure 1ª is a sectional elevation of a modification of the spindle mounting, and

Figure 2 is a sectional side elevation.

Like letters indicate like parts throughout the drawings.

A is a spindle carrying a cap A^1 and having an enlargement 2 formed or provided at its lower end; the enlargement 2 is fitted loosely within a recess 3 in a rail 4 and is prevented from being withdrawn during doffing by a ring or washer 6 sunk into the rail 4; and the lower face of the enlargement 2 is made slightly convex at 7, as shown, and a screw 5 constitutes an adjustable support, which is secured in position by lock nuts 8.

The modified spindle mounting of Fig. 1ª comprises a rail 4′ having a recess 3′ therein. A screw 5′ is received in the recess and affords an adjustable support for a convexed end 7′ on the spindle A, a lock nut 8′ holding the screw 5′ in adjusted position.

C is a lifter rail or plate, and B is a bolster comprising upper and lower members B^1 and B^2 bored to receive the outer rings b^1 b^2 of upper and lower ball bearings, the inner rings b^3 b^4 of which are mounted upon a bobbin tube D. Between the upper and lower ball bearings, and also between the upper and lower members B^1 B^2 of the bolster B, the whorl G is mounted. For the purpose of clamping the outer ball race rings b^1 b^2 within the bolster, the members B^1 B^2 thereof are divided as shown at B^x and are clamped closely in contact with the said rings b^1 b^2 by screws b^x passing through lugs b^o.

E is a bobbin mounted upon a bobbin flange F by means of the usual lugs F^1: this flange may be shrunk or otherwise secured to the tube D and forms an abutment against which the inner ball rings b^3 b^4 and the whorl G are clamped by means of a nut d, which is screwed upon the lower end of the tube D, the inner ball rings b^3 b^4 being respectively in contact with the upper and lower bosses of the whorl G, as shown at Figure 2. The edge of the flange F is curved downward as at f to afford protection against dust and fluff to the bearing in the upper member B^1 of the bolster.

The outer ring b^1 of the upper bearing is held within the recess in the member B^1 of the bolster B by a divided ring or wire spring b^5, which engages with an annular groove B^5 in the said member B^1.

Between the bobbin flange F and the upper bearing there is arranged an annular cover b^8 for the latter, and b^6 is a corresponding cover ring for the lower ball bearing: the cover b^8 is shown resting upon the upper member B^1 of the bolster, but it may be dispensed with in some cases in view of the protection given by the downwardly bent flange f described above; the cover b^6 is pressed into a recess in the lower member B^2 of the said bolster. Further, beneath the upper ball bearing there is provided an annular ring b^7, which is pressed upward into the recess in the lower member B^2.

The bolster B is formed on its under side with a boss B^7 having a hole S through which the spindle A passes. The said boss B^7 is fitted into a corresponding recess in the upper face of the lifting rail C, which is also bored to permit the spindle A to pass through, the holes bored in the boss B^7 and in the lifting rail are made a sliding fit upon the spindle and thus serve as supports for the latter. A washer C^2 of felt or other suitable material may be interposed between the lower face of the bolster B and the bottom of the recess in the lifting rail. The said washer should closely embrace the spindle thus preventing undue leakage of lubricant from the lower bearing.

The bolsters B are secured to the lifting rail by means of screws passing through holes in lugs (not shown in the drawings) on the lower member B^2.

What we claim and desire to secure by Letters Patent is:—

1. In a cap spinning frame the combination of a spindle rail, a spindle mounted thereon, and a cap supported by the spindle, with a lifting rail, a bobbin support, a bolster mounted upon the said lifting rail and bearings carried by the bolster within which bearings the said bobbin support is rotatably mounted.

2. In a cap spinning frame the combination of a spindle rail, a spindle having its lower end supported loosely in a recess in the said spindle rail, and a cap supported by the spindle, with a lifting rail, a bobbin support, a bolster mounted upon the said lifting rail and bearings carried by the bolster within which bearings the said bobbin support is rotatably mounted.

3. In a cap spinning frame the combination of a spindle rail, a spindle mounted thereon, and a cap supported by the spindle, with a lifting rail, a bobbin support, a bolster mounted upon the lifting rail and comprising upper and lower members, bearings for the bobbin support the said bearings being mounted in the said upper and lower members of the bolster, and a whorl movable with the said support and situated between the said members of the bolster.

4. In a cap spinning frame the combination of a spindle rail, a spindle having its lower end supported loosely in a recess in the said spindle rail, and a cap supported by the spindle, with a lifting rail, a bobbin support, a bolster mounted upon the lifting rail and comprising upper and lower members, bearings for the said bobbin support the said bearings being mounted in the said upper and lower members of the bolster, and a whorl movable with the said support and situated between the said members of the bolster.

5. In a cap spinning frame the combination with a cap and a spindle supporting same, of bobbin supporting means, external bearings therefor, the bobbin supporting means being mounted within the said external bearings and co-axially with but independently of the spindle, and means for rotating the bobbin supporting means.

6. In a cap spinning frame the combination with a cap and a spindle supporting same the lower end of the spindle being supported in a non-rigid manner, of bobbin supporting means mounted co-axially with but independently of the spindle, and means for rotating the bobbin supporting means.

7. In a cap spinning frame the combination with a cap, a spindle supporting same, and a footstep loosely supporting the spindle, of a bobbin tube through which the spindle passes the internal diameter of the tube being appreciably larger than the external diameter of the spindle; a bobbin-supporting flange mounted upon the tube; and a whorl movable with the said tube.

8. In a cap spinning frame the combination of a spindle rail, a spindle mounted thereon, and a cap supported by the spindle; with a lifting rail, a bolster mounted upon the lifting rail and comprising upper and lower members, a bobbin tube through which the cap spindle passes the internal diameter of the tube being appreciably larger than the diameter of the spindle, bearings for the bobbin tube the said bearings being mounted in the upper and lower members of the bolster, a bobbin-supporting flange mounted upon the tube, and a whorl adapted to rotate with the said tube and situated between the said members of the bolster.

9. In a cap spinning frame the combination of a spindle rail, a spindle with its lower end loosely mounted in the spindle rail, and a cap supported by the spindle; with a lifting rail, a bolster mounted upon the lifting rail and comprising upper and lower members, a bobbin-tube through which the cap spindle passes the internal diameter of the tube being appreciably larger than the diameter of the spindle, bearings for the said bobbin tube the said bearings being

mounted in the upper and lower members of the bolster, a bobbin-supporting flange mounted upon the tube, and a whorl adapted to rotate with the said tube and situated between the said members of the bolster.

10. In a cap spinning frame the combination of a cap, a spindle supporting same, an enlargement at the lower end of the spindle the said enlargement fitting loosely within a recess in the spindle rail, a support for the lower end of the spindle within the said recess, means adapted to restrain movement of the spindle in an upward direction, bobbin-supporting means mounted co-axially with but independently of the spindle, and means for rotating the bobbin supporting means.

11. In a cap spinning frame the combination of a cap, a spindle supporting same, an enlargement at the lower end of the spindle the said enlargement fitting loosely within a recess in the spindle rail, a vertically adjustable support for the lower end of the spindle within the said recess, means adapted to restrain movement of the spindle in an upward direction, bobbin-supporting means mounted co-axially with but independently of the spindle, and means for rotating the bobbin supporting means.

12. In a cap spinning frame the combination of a spindle rail, a cap, a spindle supporting the cap the lower end of the spindle being loosely arranged within a recess in the spindle rail, means adapted to restrain the lower end of the spindle from being moved upward out of its recess, bobbin-supporting means mounted co-axially with but independently of the spindle, and means for rotating the bobbin supporting means.

13. In a cap spinning frame the combination of a spindle rail, a cap, a spindle supporting the cap the lower end of the spindle being mounted loosely within a recess in the spindle rail, means adapted to restrain the movement of the spindle in an upward direction relatively to the spindle rail, an adjustable support for the lower end of the spindle in the said recess, bobbin-supporting means mounted co-axially with but independently of the spindle, and means for rotating the bobbin supporting means.

14. In a cap spinning frame the combination of a spindle rail, a cap, a spindle supporting the same, an enlargement upon the lower end of the spindle said enlargement fitting loosely within a recess in the spindle rail, an adjustable support for the lower end of the spindle within the said recess, and means adapted to restrain the movement of the spindle vertically in the said recess, bobbin-supporting means mounted co-axially with but independently of the spindle, and means for rotating the bobbin supporting means.

15. In a cap spinning frame the combination of a spindle rail, a spindle having its lower end loosely mounted therein, and a cap supported by the spindle; with a lifting rail, a bolster mounted upon the lifting rail and comprising upper and lower members, a bobbin tube through which the cap spindle passes the internal diameter of the tube being appreciably larger than the diameter of the spindle, ball bearings interposed between the upper and lower members of the bolster and the bobbin tube, a bobbin-supporting flange mounted upon the tube, and a whorl secured upon the said tube and situated between the said upper and lower bearings.

In witness whereof we have signed this specification.

JOSEPH SHAW GAUNT.
HARRY DYSON.