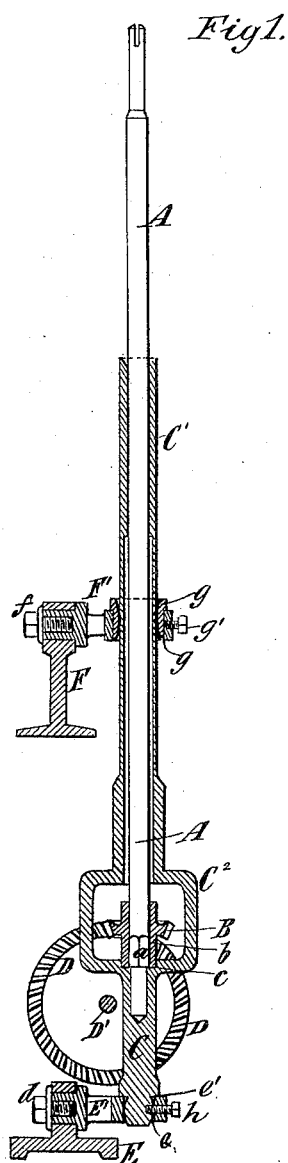# J. HIGGINS & T. S. WHITWORTH.

A. HIGGINS, executor of said J. HIGGINS, deceased.

ROVING AND SLUBBING FRAME.

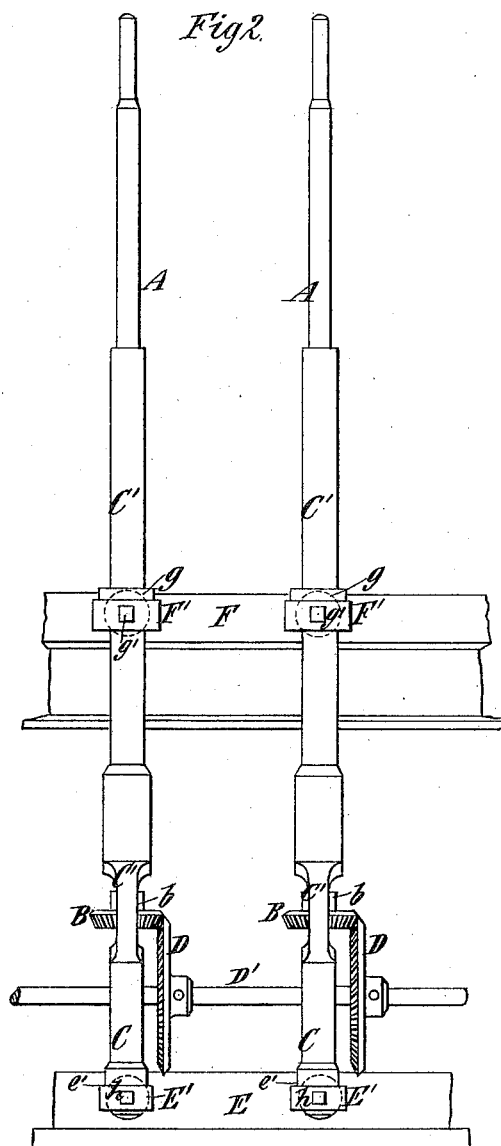No. 302,631.   Patented July 29, 1884.

Fig.1.

Fig.2.

Witnesses

Jno Haynes

Ed. L. Moran

Inventor

Alfred Higgins

Executor of the last Will and Testament of
James Higgins deceased

Thomas S Whitworth

by their Attorneys

Brown & Brown

UNITED STATES PATENT OFFICE.

ALFRED HIGGINS (EXECUTOR OF JAMES HIGGINS, DECEASED) AND THOMAS S. WHITWORTH, OF SALFORD, COUNTY OF LANCASTER, ENGLAND.

ROVING AND SLUBBING FRAME.

To all whom it may concern:

Be it known that JAMES HIGGINS, deceased, late of Salford, in the county of Lancaster, Great Britain, and THOMAS SCHOFIELD WHIT-
5 WORTH, of the same place, jointly invented certain Improvements relating to Roving and Slubbing Frames, of which the following is a specification.

This invention is applicable to roving-frames
10 in which the spindles are provided with bevel-wheels, and which are driven by wheels having oblique teeth upon a driving-shaft arranged adjacent to the line or row of spindles.

The invention consists in a novel combina-
15 tion, with a spindle, a spindle-step rail, and a copping-rail, of means for supporting and driving the spindle, all as hereinafter described, and set forth in the claim.

In the accompanying drawings, Figure 1 is
20 an elevation of a spindle and a vertical section of its appurtenances which embody the invention, and Fig. 2 is a side elevation of two spindles and the means employed to operate them.

25 Similar letters of reference designate corresponding parts in both figures.

A designates the spindle, which is of the usual form, save at one part near the lower end, where it has a square or polygonal por-
30 tion, *a*.

B designates the bevel-wheel by which the spindle is driven. The lower part of its boss or hub *b* is formed square or polygonal, so as to fit upon the square or polygonal portion
35 *a* of the spindle; but the upper part of the boss or hub *b* is cylindric, so as to fit upon the cylindric portion of the spindle surmounting the square or polygonal portion *a*. The lower end of the boss or hub *b* of the bevel-
40 wheel B rests upon the foot-step C, which is recessed at *c*, so as to form an annular cavity for the purpose of retaining any suitable lubricant. The bevel-wheels B upon the several spindles gear into and are driven by bev-
45 el-wheels D, with oblique teeth, secured upon the ordinary spindle-driving shaft, D'. The bevel-wheel B is kept in a position for being driven by the cylindric portion of the spindle fitting the cylindric portion of the hub *b*,

and by the lower end of said hub bearing 50 against the foot-step C, and the wheel is locked to the spindle by the square or polygonal portion of its hub *b*, fitting the corresponding portion, *a*, of the spindle.

C' is a tube in which the spindle is capable 55 of revolving freely, and at the lower end of the tube is a bridge or yoke, C², which embraces the wheel B. The step C, tube C', and yoke C² are all formed integral with each other, either by casting or forging. By this construc- 60 tion the exact alignment of the tube C' and foot-step C is easily secured and maintained, and there is no binding action between the tube and the spindle, as there would be if they were not in exact alignment.

65 E designates the spindle step rail of a slubbing or roving frame, to which is attached a bracket, E', which is secured to the rail by a screw, *d*, so that it can turn therein. In the bracket is formed a cylindric aperture, *e*, with- 70 in which the end of the foot-step C fits, and wherein it is supported by a shoulder, *e'*, on said foot-step. The portion of the step C which enters the aperture *e* is formed barrel-shaped or convex in a vertical direction, for a pur- 75 pose hereinafter stated.

F designates the copping-rail, to which a bracket, F', is secured by a screw, *f*, so that it may turn therein. The bracket F' has a cylindric aperture, in which a bush, *g*, is secured 80 by a set-screw, *g'*. The tube C' passes freely through the bush *g*, and the bush slides on said tube as the copping-rail F rises and falls. The aperture in the bush *g* is not truly cylindric, but flares slightly from the middle toward each 85 end. If from any cause the copping-rail F should not rise and fall in a perfectly perpendicular direction in relation to the bracket E', the tube C' will be carried out of its perpendicular. The barrel-shaped or convexed por- 90 tion of the foot-step C and the flaring portions of the bush *g*, previously described, will permit the copping-rail to rise and fall without a binding action being produced upon the bush *g*. The set screw *h*, which serves to secure the foot- 95 step C in the bracket E', extends at right angles to or transversely to the length of the step-rail E, and enters a hole formed in the

lower part of the foot-step, and while it holds the foot-step properly against vertical displacement allows it to move or swing slightly in a plane transverse to the screw h.

5   What is claimed, and desired to be secured by Letters Patent, is—

The combination of the spindle A and the bevel-wheel B thereon, the foot-step bearing C, tube C′, and yoke C², all formed integral 10 with each other, the spindle-step rail E, and bracket E′, receiving the foot-step bearing C, a pivot extending transverse to the length of said rail and securing the foot-step bearing in said bracket, the copping-rail and its bracket F F′, and the bush g, made flaring from the 15 middle toward each end, and receiving the tube C′, all substantially as herein described.

<div style="text-align:center">

ALFRED HIGGINS.

THOMAS SCHOFIELD WHITWORTH.
</div>

Witnesses:

    ARTHUR C. HALL,

9 *Mount Street, Manchester.*

    W. T. CHEETHAM,

Patent Agent, 18 *St. Ann's Street, Manchester.*