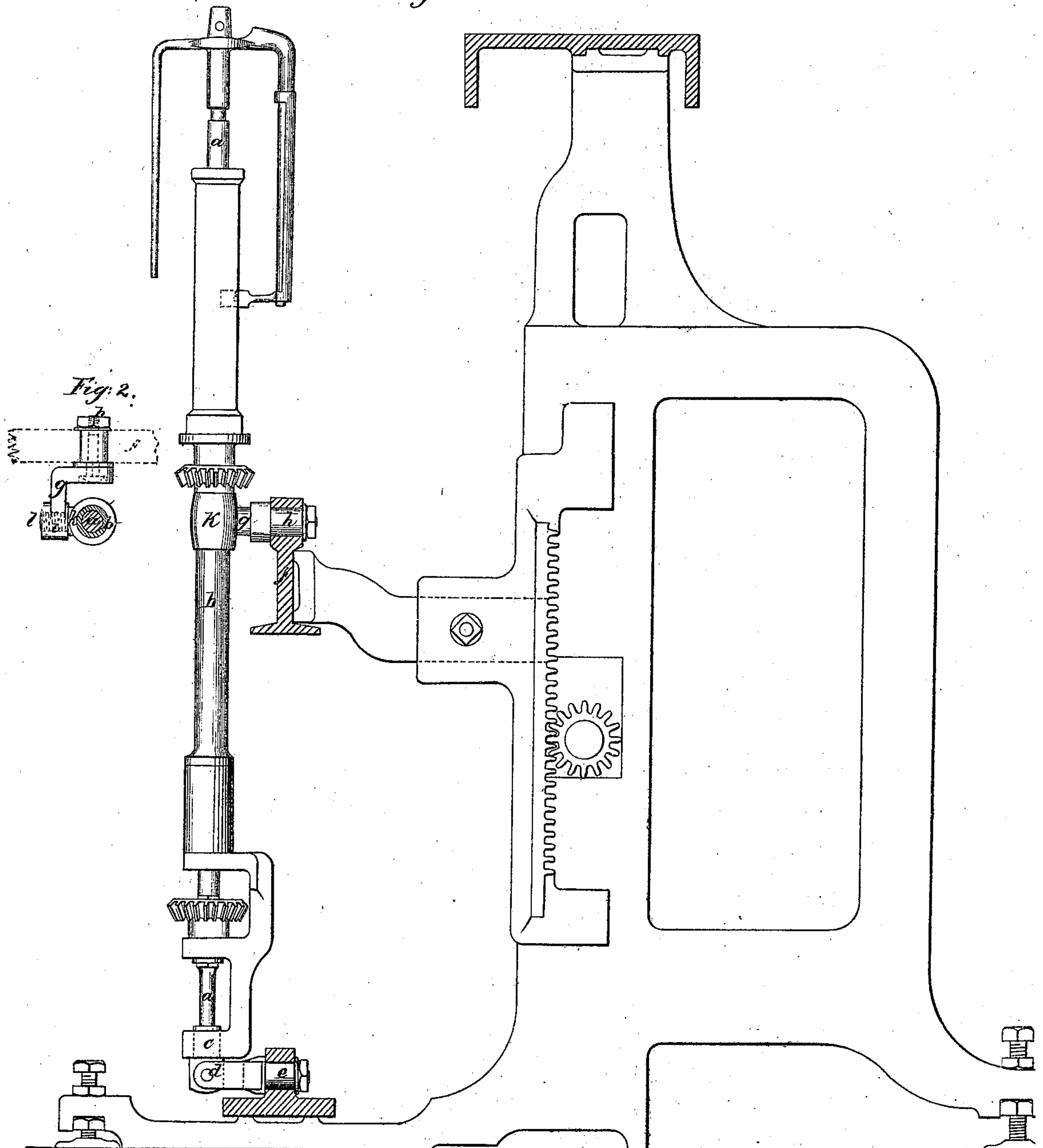


*Higgins & Whitworth* <sup>Sheet, 2, Sheets</sup>  
*Throstle.*

*N<sup>o</sup> 34,753.*

*Patented Mar. 25, 1862*

*Fig. 1.*



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*Thomas Schofield Whitworth*

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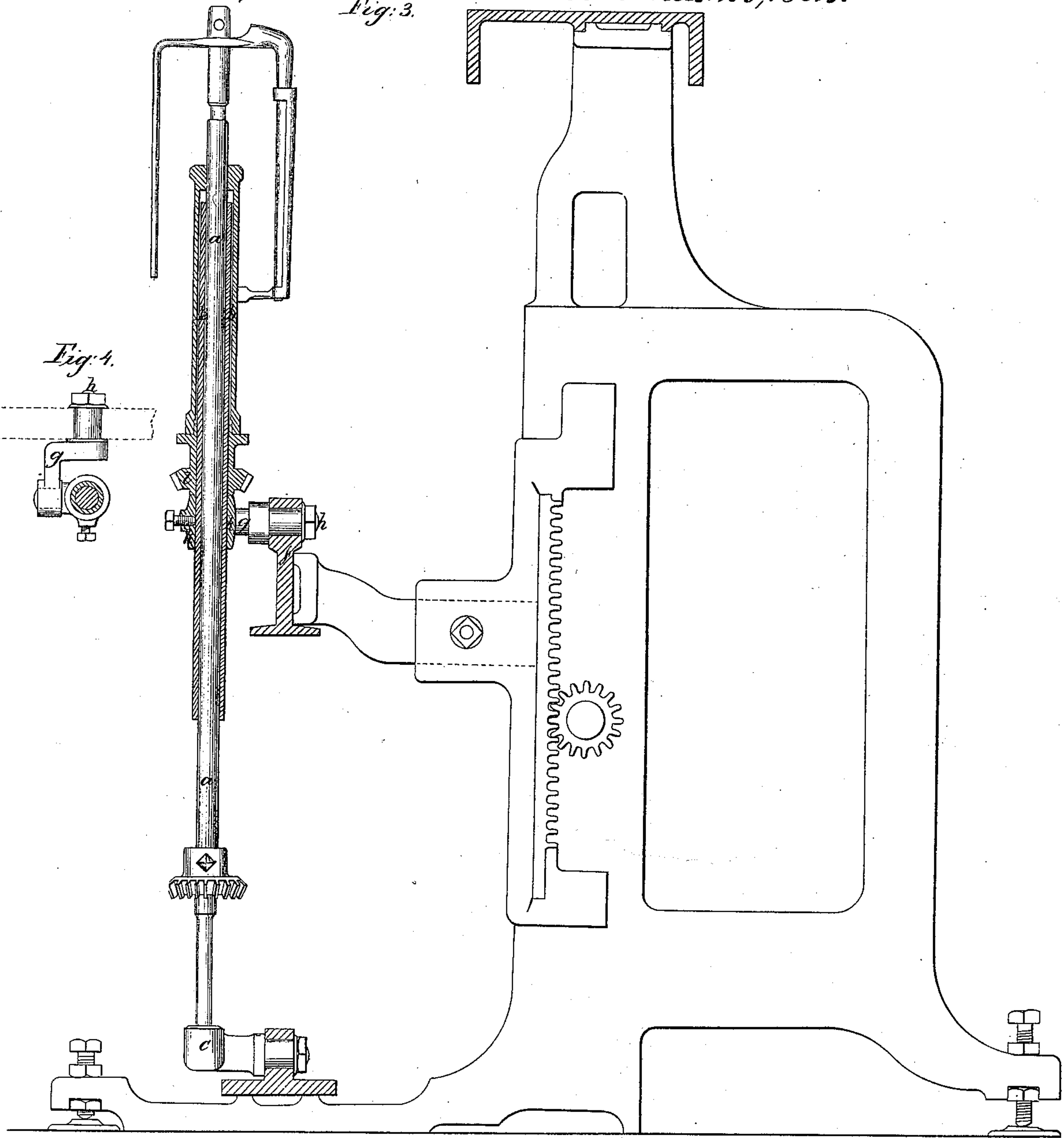
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*Throstle.*

*N<sup>o</sup> 34,753.*

*Fig. 3.*

*Patented Mar. 25, 1862.*



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# UNITED STATES PATENT OFFICE.

JAMES HIGGINS AND THOMAS SCHOFIELD WHITWORTH, OF SALFORD,  
COUNTY OF LANCASTER, ENGLAND.

## IMPROVEMENT IN ROVING-FRAMES.

Specification forming part of Letters Patent No. 34,753, dated March 25, 1861.

*To all whom it may concern:*

Be it known that we, JAMES HIGGINS, of Salford, in the county of Lancaster, Great Britain, machine-maker, and THOMAS SCHOFIELD WHITWORTH, of the same place, manager, have invented certain Improvements in Machinery or Apparatus for Preparing Cotton and other Fibrous Materials for Spinning; and we do hereby declare that the following is a true and exact description thereof.

Our invention relates to the slubbing or roving frame, and has reference either to machines in which a fixed tube is employed traversed by the coping-rail or to those arrangements in which a tube moving with the coping-rail is used and whereby an accommodation to any irregularity of motion is attained.

The first of these arrangements is shown at Figure 1, which represents the tube and its spindle in elevation; and Fig. 2 is a partial plan view of the same in section.

The spindle is shown at *a*, mounted in a fixed tube *b*—that is to say, a tube which does not move upward or downward with the coping-rail. This tube carries at the lower end the footstep *c*, which is mounted upon joints *d e*, so as to swivel in directions at right angles to each other; but this part of the arrangement is not included in our present invention, it having been already made known by us. The coping-rail is at *f*, to which a bracket *g* is jointed by means of a pin *h*, so that the said bracket is free to turn upon or with the said pin as an axis. The outward end *i* of the bracket carries a boss *k*, which extends around the tube *b* and supports it at its upper part, and as it is carried by the coping-rail it necessarily traverses the tube during the coping motion. The boss *k* is connected to the bracket *g* by means of a pin *l*, which in this instance is a screw; but, as the shoulder thereof does not bear against it, it is free to turn or swivel thereon. As, therefore, the coping-rail runs and falls,

it is at liberty to vibrate in two directions, the one being allowed by the swiveling of the bracket in or upon the pin *h*, and the other by the turning or swiveling of the pin *l*, and thus a tendency to binding is avoided.

The application of our invention to those machines in which a tube moves with the coping-rail is shown in sectional elevation at Fig. 3, and also in partial plan view at Fig. 4. The spindle is shown at *a*, turning at bottom in a footstep *c*, capable of swiveling, or it may be a simple fixed footstep, if desired. The tube or bolster is at *b*, which in this instance is attached to the coping-rail *f*, and remains within the bobbin in the same position, and consequently moves bodily therewith during the coping motion. The boss referred to in Figs. 1 and 2 is shown by the same letter of reference *k*, but in this case is attached to the tube. It is, however, provided with the bracket *g*, which is connected to the coping-rail by means of a pin *h*, as above described in reference to Figs. 1 and 2, so that the tube is capable of swiveling, as before mentioned.

The tube *b* is provided with a shoulder upon which the bobbin-braid *l* rests, and this braid supports the bobbin, as usual.

We claim as our invention and as applied to machines in which a fixed tube is traversed to the coping-rail, causing the part which so traverses to be capable of swiveling also in reference to machines in which a tube passes into the bobbin after the manner illustrated at Fig. 3.

We claim—

So connecting the said tube to the coping-rail that it shall be capable of swiveling.

JAMES HIGGINS.

THOMAS SCHOFIELD WHITWORTH.

Witnesses:

WM. TUDOR MANLEY,

W. T. CHEETHAM,

*Both of Manchester.*