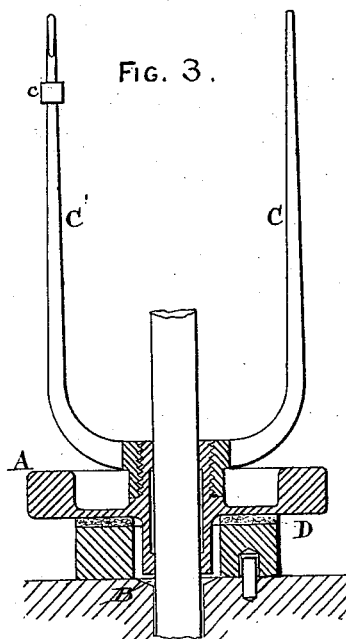
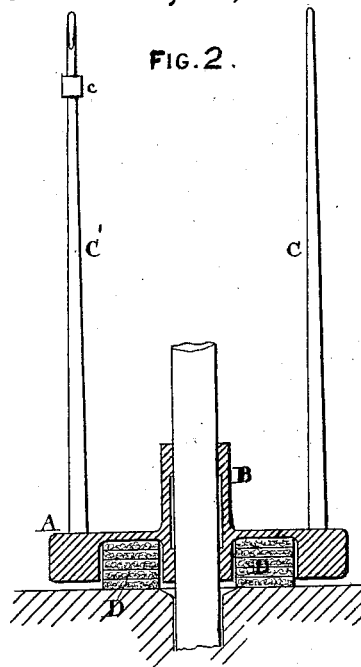
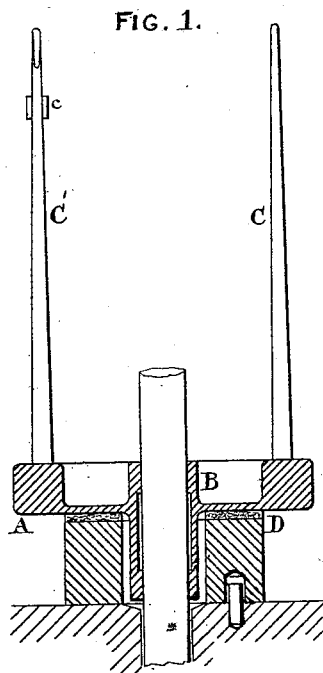


E. A. COWPER.  
Flier for Spinning-Machines.

No. 217,587.

Patented July 15, 1879.



WITNESSES:

*J. H. Kaiser.*  
*J. A. Rutherford.*

INVENTOR.

Edward A. Cowper,

By

*James L. Norris.*  
Attorney.

# UNITED STATES PATENT OFFICE.

EDWARD A. COWPER, OF WESTMINSTER, COUNTY OF MIDDLESEX, ENGLAND.

## IMPROVEMENT IN FLIERS FOR SPINNING-MACHINES.

Specification forming part of Letters Patent No. **217,587**, dated July 15, 1879; application filed January 16, 1878; patented in England, August 25, 1877.

*To all whom it may concern:*

Be it known that I, EDWARD ALFRED COWPER, of No. 6 Great George Street, Westminster, in the county of Middlesex, England, consulting engineer, have invented an Improvement in Fliers for Spinning-Machines; and do hereby declare that the following description, taken in connection with the accompanying sheet of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from others of a similar class, together with such parts as I claim, and desire to secure by Letters Patent—that is to say:

My invention consists in an inverted flier having an additional weight near the top of its thread-arm in excess of the weight of its other arm, so that the drag of the thread upon the one leg is counteracted, and its centrifugal force, when the flier is rotating at ordinary working speed, will very nearly equal the inward pull of the thread as it passes onto the bobbin.

The drawings show a view, partly in section, of a flier provided with an additional weight according to my improvement.

The letter A indicates the base of the flier; B, its spindle-bearing, and C C' the legs. An additional weight, in the shape of a surrounding

band or ring, *c*, is placed upon the leg C', through the eye of which the thread passes to the bobbin, so that the centrifugal force of such weight, pulling outward when the flier is revolving at its proper speed, shall nearly equal the drag of the thread, tending to pull that leg of the flier inward, which force commonly tends to throw the flier out of a vertical position and cause it to bind against the spindle rotating in its center, and thus to produce unsteadiness of motion and more friction than is necessary. This mode of balancing the pull of the thread is applicable to all kinds of inverted fliers, those which are geared as well as those which are pulled round by the thread.

Having thus described the nature of my said invention, I claim—

The inverted flier, constructed substantially as described, and having an additional weight near the top of its thread-arm in excess of the weight of its other arm, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 17th day of December, 1877.

EDWARD ALFRED COWPER.

Witnesses:

CHAS. D. ABEL,  
FRED. K. TAYLOR.