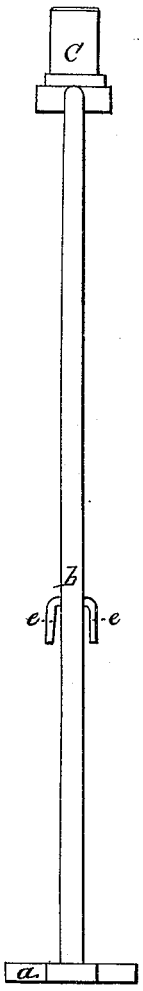
G. Richardson.

Flyer for Spinning.

No. 53,874. Patented Apr. 10, 1866.

Fig. 3.



Section at A.

Section at B.

Section at C.

Fig. 2.

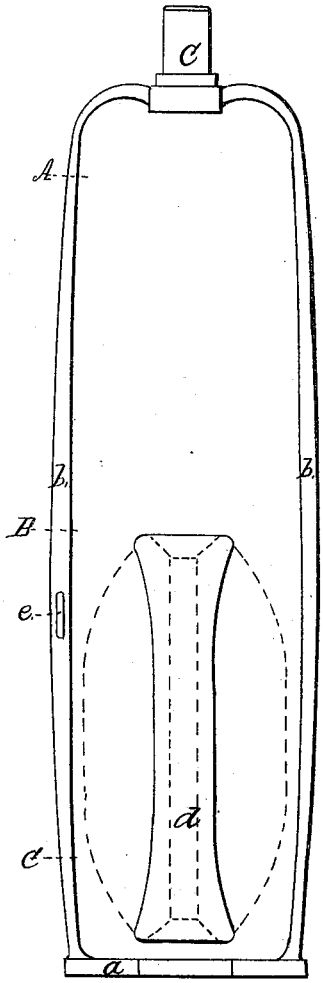
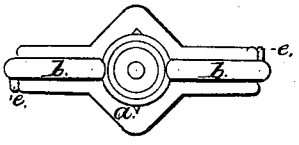


Fig. 1.



Witnesses.

Abiel Pevey.

Geo. C. Pevey.

Inventor.

Geo Richardson.

UNITED STATES PATENT OFFICE.

GEORGE RICHARDSON, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN FLIERS FOR SPINNING.

Specification forming part of Letters Patent No. **53,874**, dated April 10, 1866.

To all whom it may concern:

Be it known that I, GEORGE RICHARDSON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Fliers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the arrangement and construction of the arms of a flier in connection with the headless bobbin.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 represents a plan of my improved flier. Fig. 2 represents a front elevation of the same with the headless bobbin. Fig. 3 represents a side elevation of my improved flier.

a represents the flier-bottom; *b*, the arms; *c*, the nose; *d*, the headless bobbin, and *e* the thread-guides.

Hitherto the manufacturer has been unable to run a flier at a speed exceeding four thousand five hundred turns per minute, for if the above speed is exceeded the arms are thrown out of their natural, true, and proper position by the centrifugal force, which shortens the flier and renders the arms very liable to break at the point where the thread-guides are inserted, besides throwing it out of balance. Besides, ordinarily in fliers, the arms being of the same size from the nose to the bottom and straight, at the above speed the resistance of the arms to the air causes extra power to run them. Also, in the use of its attendant bobbin with heads, which are used in the ordinary or common way of spinning yarn in the first stages of spinning, when the yarn begins to wind on the barrel of the bobbin, the yarn being so near its axis, it requires nearly all, and oftentimes more than, the entire strength of the yarn to drive or revolve the bobbin, owing to the superfluous weight of its heads. When this occurs the yarn invariably breaks, causing loss of time and stock to the manufacturer.

In my improved flier, in connection with the headless bobbin *a*, all these defects are remedied. In the construction and curved form of the arms *b* of the flier of my invention the advantages are such that the greatest strength is retained in the center of the arms *b*, as seen at section B, as at this point the greatest danger exists in breaking and springing outward, and from this point to the bottom *a* and nose *c*, as seen at section A and C, the arms *b* are reduced one-half size, lessening its weight. Further, the arms *b*, being flat on the inside and semicircular on the outside, as seen at section A and C, and three-quarters of a circle, as seen at section B, when the flier is at high speed the resistance to the air actually counteracts the centrifugal force at the center of the arms *b*, which causes or keeps the arms *b* in their original and natural curved shape. This form and shape of the arms of the flier produces much less resistance to the air when at speed the same as that of the common flier. Besides, the headless bobbin *d* running in connection with a flier, the weight being much less than the common bobbin with heads, the yarn is kept at a proper tension when the flier is at high speed, which prevents, by its lightness, the yarn from breaking, and when the flier is stopped to doff, or for any other purpose, the same cause has a tendency to stop the bobbin *d* instantly, thereby preventing kinks or entanglements, and thereby avoids great waste of the yarn and effects great saving to the manufacturer.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The elliptical form and semicircular shape of the arms *b*, as herein specified, and for the purpose set forth.

2. The headless bobbin *d*, in combination with a flier constructed as herein described.

GEORGE RICHARDSON.

Witnesses:

ABIEL PEVEY,

GEO. E. PEVEY.