(No Model.)

J. GOOD.

SPINDLE AND FLIER.

No. 433,122. Patented July 29, 1890.

Fig. 1.

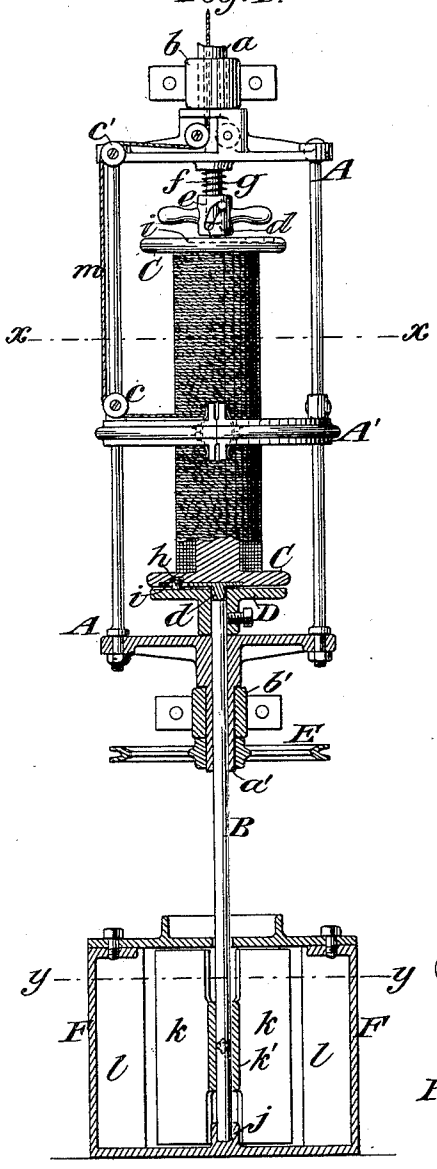


Fig. 3.

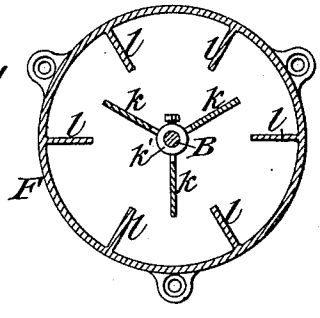
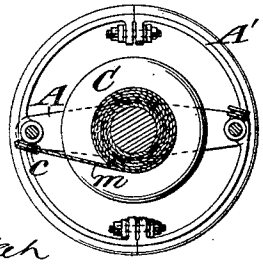


Fig. 2.



Witnesses:
C. L. Sundgren
Edwin Bickar

Inventor:
John Good
by his Attorneys
Brown & Griswold

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN GOOD, OF BROOKLYN, NEW YORK.

SPINDLE AND FLIER.

SPECIFICATION forming part of Letters Patent No. 433,122, dated July 29, 1890.

Application filed June 7, 1889. Serial No. 313,419. (No model.)

To all whom it may concern:

Be it known that I, JOHN GOOD, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Spindles and Fliers, of which the following is a specification, reference being had to the accompanying drawings.

This improvement relates more especially to spindles and fliers for spinning rope, yarn, and twine and for the manufacture of cordage, but is, or may be, also applicable to spindles and fliers for other spinning and twisting operations.

My invention consists of certain means, hereinafter described and claimed, for producing and maintaining the proper tension of the yarn, twine, or cordage as it is wound upon a bobbin within the flier by the rotation of the latter.

Figure 1 in the drawings represents an elevation, partly in section, of an upright flier and spindle to which my invention is applied. Fig. 2 represents a horizontal section in the line *x x*, Fig. 1. Fig. 3 represents a horizontal section in the line *y y*, Fig. 1.

Similar letters of reference designate corresponding parts in the several figures.

A designates a flier of ordinary construction having hollow journals *a a'* at its top and bottom fitted to rotate in journal boxes or bearings *b b'*, which are to be mounted in any suitable manner upon the framing of the machine upon which the flier is used. The side bars of this flier are represented as having fitted to slide upon them a ring A', which carries the traverse-guide *c*. On the lower journal of the flier below the bearing *b'* is represented a pulley E, to receive a belt for imparting rotary motion to the flier.

B designates an upright spindle passing through the lower hollow journal of the flier and fitted to turn therein. C designates a bobbin arranged within the flier and attached to the said spindle.

The connection between the bobbin and the spindle and the means of supporting the bobbin and spindle in the flier may be of any well-known kind. In the example represented the spindle terminates at a short distance above the lower cross-bar of the flier and has firmly secured to it a flanged head D, and the bobbin is provided with journals *d* at its top and bottom. The lower journal *d* is received in a bearing in the flanged head D of the spindle, and the upper journal *d* is received within a removable socket *e*, which is capable of sliding up and down upon a pin *f*, which is secured in the upper cross-bar of the flier and occupies a central position therein in line with the spindle. The said socket *e* has applied to it a spiral spring *g*, which holds it down over the journal *d* until the said socket is raised by hand for the purpose of liberating the journal *d* when it is desired to remove the bobbin from the flier.

The bobbin and spindle are represented as connected so as to be compelled to rotate together by means of a pin *h* on the spindle-head D, entering a hole in a plate *i*, which is secured to the bobbin and which is represented as having one of the journals *d* formed upon it. There may be a similar plate *i* at each end of the bobbin carrying its respective journal *d*, so that the bobbin may be placed in the machine with either end downward. The spindle B is prolonged beyond the lower journal of the flier and enters a vessel F, which contains water or other liquid, and its lower end is represented as received in a step-bearing *j* in the bottom of said vessel. On that part of the spindle within the said vessel F are provided vanes or blades *k*, which are firmly secured to the spindle by suitable means—as, for instance, the said vanes or blades being cast upon a hub *k'*, which is secured by a set-screw to the spindle. On the interior of the sides of the said vessel are provided stationary wings *l*, which project inward just so far that the vanes or blades *k* will just clear them in their rotation with the spindle.

The only means provided for the rotation of the bobbin is the pull produced upon it by the yarn, twine, or cord *m* as the latter, acting through the upper head of the flier, is wound upon it by the rotation of the flier. The rotation of the bobbin thus produced produces the rotation of the spindle and of the attached vanes or blades *k*. The rotation (passing through the guides *c c'*) of the latter is resisted by the liquid in the vessel F, in which they are immersed, and this resistance produces a proper tension of the yarn, twine, or cord which is being wound upon the bob-

bin. As the quantity of yarn, twine, or cord upon the bobbin increases, the bobbin is caused to rotate faster relatively to the flier, the velocity of rotation of which is uniform. At the same time the increased quantity of yarn, twine, or cord upon the bobbin brings the pull or draft upon the latter at a greater distance from its center, and from this there would result a diminution of the tension of the yarn, twine, or cord but for the increased velocity of the rotation of the bobbin and spindle, which is met by such necessary resistance in the liquid in the vessel F to the rotation of the vanes or blades *k* that an approximately-uniform tension is produced on the yarn, twine, or cord during the filling of the bobbin.

The purpose of the wings *l l* on the interior of the vessel F is to prevent the water in the vessel from being swirled around by the rotation of the vanes or blades *k* and to increase the resistance offered by the water to the rotation of the vanes or blades.

This improvement has the advantage of greatly simplifying the class of spinning machinery for which my invention is more especially designed—namely, that used in the manufacture of rope and cordage—in which the spindle, as well as the flier, are commonly separately driven with a friction device between them and means for varying the said friction in proportion to the quantity of material upon the bobbin, as it enables the driving mechanism for the spindle and the variable friction device between the bobbin and the spindle, or their two mechanisms, to be dispensed with.

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

1. The combination, with a flier and a spindle therein for a bobbin and means of imparting rotary motion to the flier, of one or more rotary vanes or blades driven by said spindle, and a liquid-containing vessel, in which said blades or vanes work, substantially as and for the purpose herein set forth.

2. The combination, with a flier and a spindle therein for a bobbin and means for imparting rotary motion to the flier, of one or more rotary blades or vanes driven by said spindle, and a liquid-containing vessel, in which said vanes or blades work and which is furnished with inwardly-projecting ribs, substantially as and for the purpose herein set forth.

3. The combination, with an upright flier having a hollow journal at its bottom, and a spindle for a bobbin passing through said journal, of vanes or blades attached to said spindle below the flier, and a liquid-containing vessel, in which said vanes work, substantially as and for the purpose herein described.

JOHN GOOD.

Witnesses:
FREDK. HAYNES,
JOHN BICKET.