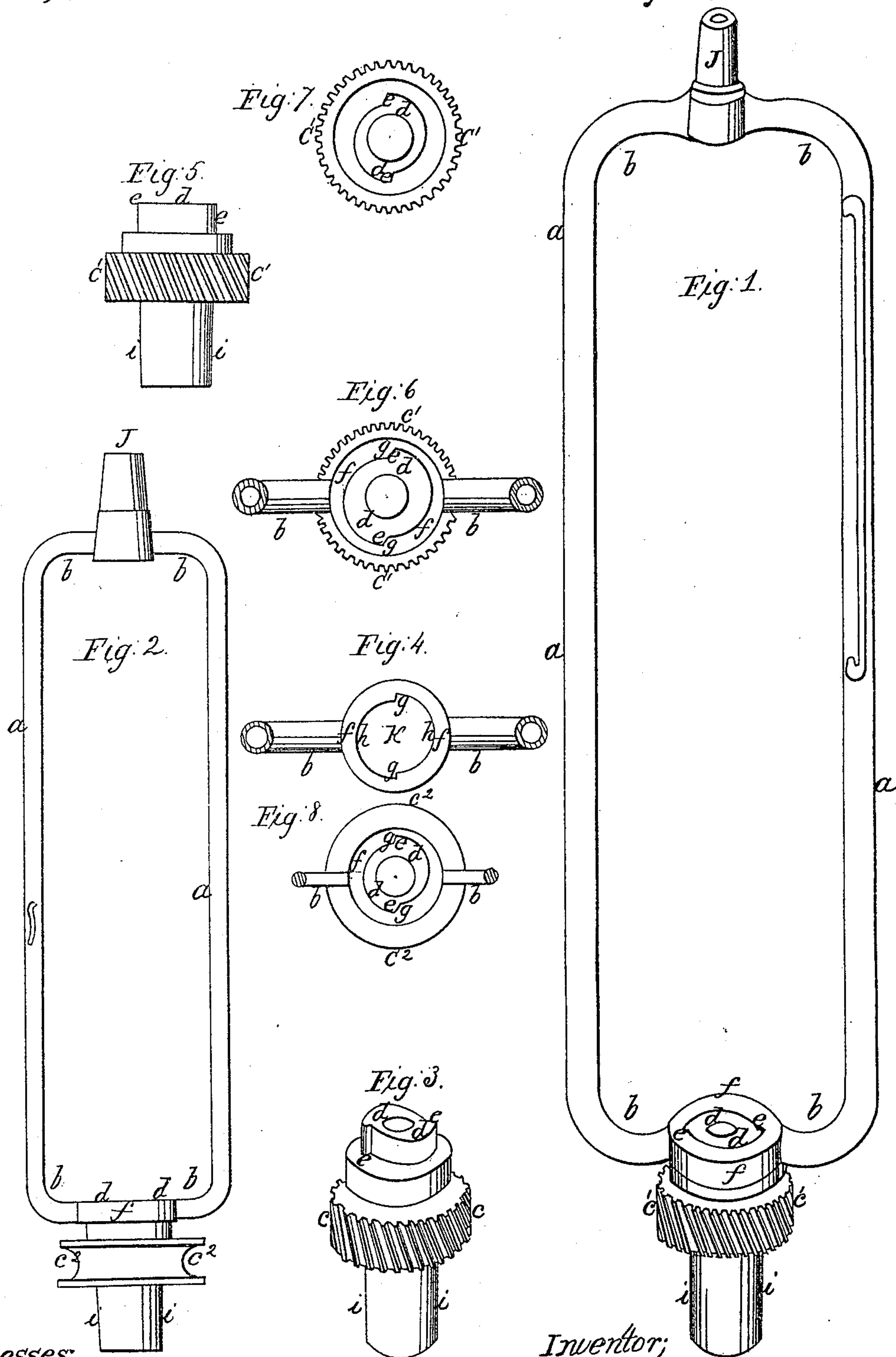


I. F. Maynard.
Flyer.

N^o 36,418.

Patented Sept. 9, 1862.



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UNITED STATES PATENT OFFICE.

I. F. MAYNARD, OF NASHUA, NEW HAMPSHIRE.

IMPROVEMENT IN SPINNING-FLIERS.

Specification forming part of Letters Patent No. 36,418, dated September 9, 1862.

To all whom it may concern:

Be it known that I, I. F. MAYNARD, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented and made a certain Improvement in Cotton-Machinery Fliers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

Figure 1 represents a "roving" flier with a gear or cog wheel. Fig. 2 represents a small flier with grooved pulley or whirl. Fig. 3 shows the cog gear-wheel detached from the roving-flier and the form of the "interlocking tenon." Fig. 4 is a top view of the base or pedestal part of the roving-flier and sections or portions of the arms attached thereto. Fig. 5 is a vertical view of the cog-gearing and tube, detached. Fig. 6 is a top view of the cog-gearing and the pedestal part of the roving-flier combined or united by the interlocking-tenon. Fig. 7 is a similar view without the arms of the flier or pedestal. Fig. 8 represents a top view of the grooved pulley or whirl interlocked with the base of the flier.

My improvements relate more particularly to the manner or mode of attaching the flier to the whirl or cog-gearing, and to enable others to be skilled in the construction and operation thereof the following is a description of the same.

In Figs. 1 and 2, *a a a a b b b b* indicate the vertical arms and the elbows of a spinning and roving flier attached to the driving-gear and the whirl *c c c c*, formed with an interlocking male tenon, *d d*. This interlocking device is formed by turning a true circular tenon on the end of the whirl, (or on the gear-wheel,) and then at equal intervals around the circumference of said tenon, fling down said circumference about one-sixteenth of an inch in a similar manner to the forming of a ratchet-tooth, whereby two equidistant small shoulders, *e e*, are produced, and making, moreover, something of a semicircular wedge or a double-keying dovetail, as shown more clearly in Fig. 3. The collar or pedestal part *f f* of the flier being formed with the required circular opening, said opening is shaped in a similar manner, forming a female interlocking wedge, as indicated at *g*, Fig. 4. The ratchet formations

or shoulders *e e g g* and their tapering keying semicircles *h h*, Figs. 1 and 4, must be made perfectly true, so as to fit one within the other neatly with respect to their vertical surfaces; but the diameter from outside to outside of the edge of shoulders *e e* must be slightly less than the diameter from *g* to *g* of the interior formation of the pedestal or collar in Fig. 4, so as to admit of the wedging or keying up of the tenon *d d e e*, Figs. 1, 3, 5, 6, 8. The difference in said diameters should not be more than the thirty-second part of an inch.

It is maintained that this mode of interlocking the whirl and flier together possesses one or more advantages that are not possessed by the square-tenon connection nor by the rigidly-fixed screw-connection.

In the use of fliers with the square-fitting tenon and the grooved "whirl" the draft of the cord passing around the whirl is generally in an opposite direction from the draft of the yarn or roving; and no matter how snugly and true the collar or tube *i i* may fit onto the vertically-arranged spindle, or the nose *j j* of the flier may work in the plate of the spinning-frame, in a short period of the running of the spindles and fliers the unequal abrasion or friction caused by the irregular strain or lateral draft in opposite directions of the whirl-cord and the yarn or roving will induce considerable torsion or twisting out of perpendicular, and consequently cause an undue and irregular vibratory motion of the flier, or, as is technically termed, a "shaking," which shakes down the yarn greatly, and thereby producing imperfect roving and yarn or inequality of texture, and so great is the wear of the arms and the winding or twisting thereof from their required perpendicularity that great trouble and inconvenience to the operator ensues, together with the rendering useless in a short time of numbers of fliers.

Owing to this undue strain of the whirl-cord and the yarn the angular corners of the square-formed tenons of fliers become in due course of a very short time worn off, (more or less,) and therefore the tenon and socket of the same do not fit snugly, but become loose and admit of lateral vibration in spinning. Again, in the employment of a rigid screw-socket connection in the twisting or lateral deflection of the flier no adjustability of the screw in posi-

tion is admitted of, so as to compensate for or equalize the vibratory motion of a twisted flier.

The foregoing defects, however, are entirely obviated, as experience has shown, in the employment of my improved "interlocking" whirl and flier. By reference to Fig. 1 the interlocking of the flier and gear will be seen in perspective, while in Figs. 6 and 8 a top view is exhibited of the said connection, and a thick gradually-diminishing circular black line indicating the keying or wedging space *e g e g*.

In Fig. 4 the base of the shoulders *g g* commences from the greater diameter of the semi-circular curve of the female socket *k*, said shoulder extending inwardly, while in Fig. 7 the base of the shoulders *e e* commences inwardly from the lesser diameter of the semi-circular curve of the male tenon *d d*, said shoulders *e e* terminating outwardly toward the greater diameter of the tenon; or, in other words, the interlocking curves of the female socket commence at the base of the shoulders *g g*, while the interlocking or keying curves of the male tenon, Fig. 7, commence at the apex or edge of the shoulders *e e*, depressing inwardly toward the base of the shoulder, thus forming a tenon, which keys up tight by being turned from left to right, and a socket which keys or tightens up by being turned from right to left. Thus it will be perceived that no matter how much the friction and consequent wearing away of the circular surfaces of the tenon and socket of the flier may be the draft of the cord around the whirl *c² c²* or the lateral pressure of the driving-gear *c c*, which is in an opposite direction to the draft of the yarn,

will always press the interlocking tenon and socket together and cause the position of the flier to be vertical and true, and thus most effectually prevent any vibratory motion or twisting thereof, and whereby the "shaking down" of the yarn on the bobbin is also entirely prevented, as the tension of the yarn in spinning will be regular, thus producing a texture of great equality and uniformity of twist, none of which important results are attainable when the smooth, true, and uniform revolution of fliers is the least deranged by undue wear and such other causes as vibration and irregular deflection of the flier.

In the employment of my interlocking flier it can be most readily attached to and detached from the whirl, thus rendering it very convenient in use and application.

Having described the nature, construction, and adaptation of my improvements and set forth the material advantages thereof over all other fliers, what I claim as new, and desire to have secured by Letters Patent of the United States, is as follows, viz:

The construction of a roving or spinning flier formed with an interlocking base or pedestal-collar, *f f g g*, and provided with a keying or interlocking tenon, *d e d e*, and whirl *c² c²*, or a gear-connection, *c c*, substantially as herein described, and as fully exhibited in the accompanying Figs. 1, 2, 3, 4, 5, 6, 7, 8.

I. F. MAYNARD. [L. S.]

Witnesses:

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