

(No Model.)

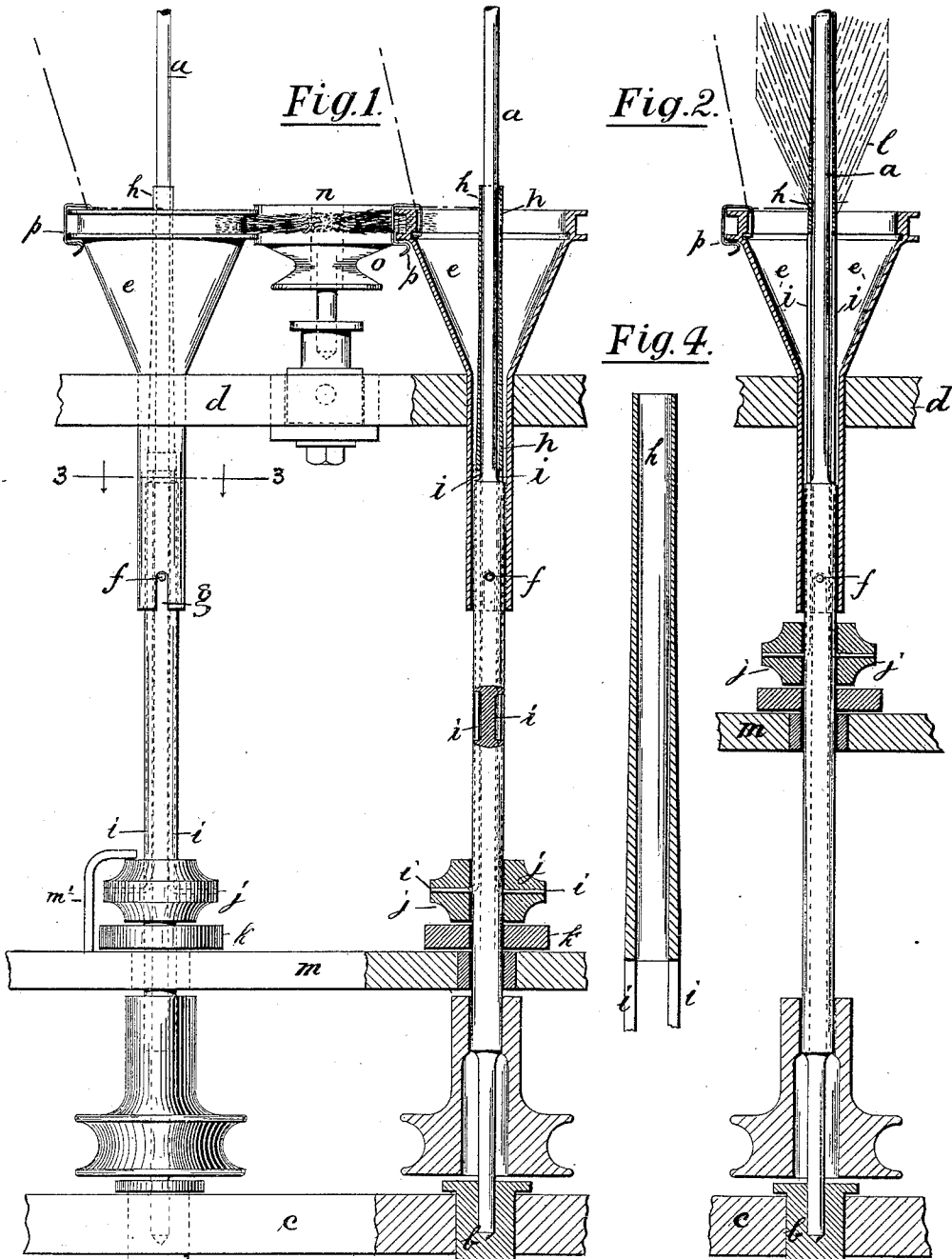
2 Sheets—Sheet 1.

P. WALLACE.

SPINNING MACHINE, &c.

No. 398,676.

Patented Feb. 26, 1889.



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Fig. 3.

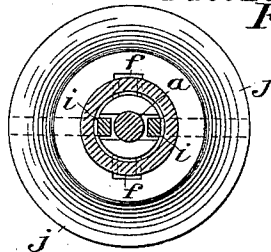


Fig. 5.

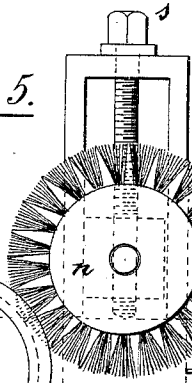


Fig. 6.

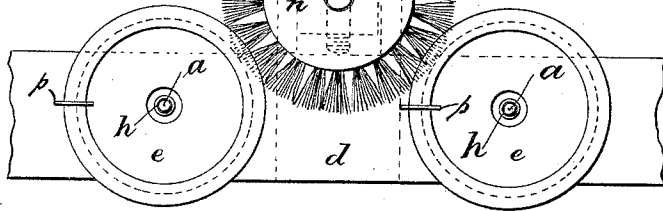
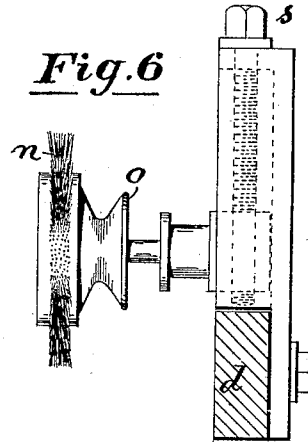


Fig. 7.

Fig. 8.

Fig. 10.

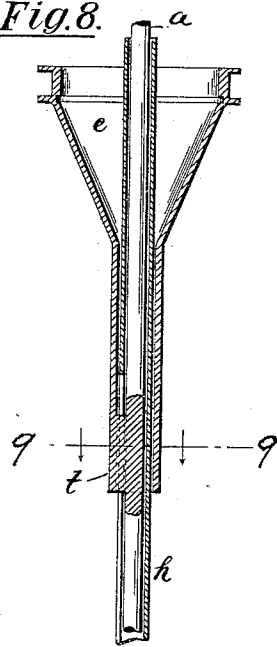
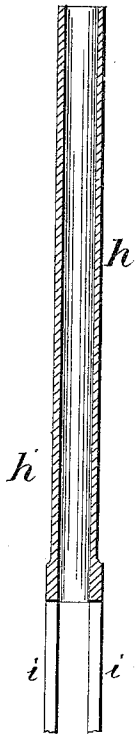


Fig. 9.

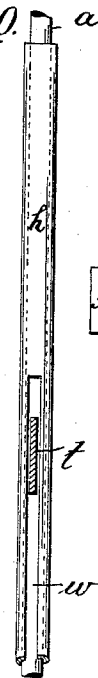
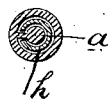
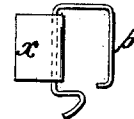


Fig. 11.



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UNITED STATES PATENT OFFICE.

PAUL WALLACE, OF MILNSBRIDGE, COUNTY OF YORK, ENGLAND.

SPINNING-MACHINE, &c.

SPECIFICATION forming part of Letters Patent No. 398,676, dated February 26, 1889.

Application filed October 15, 1888. Serial No. 288,173. (No model.) Patented in England June 28, 1884, No. 9,515, and July 20, 1887, No. 10,141.

To all whom it may concern:

Be it known that I, PAUL WALLACE, a subject of the Queen of Great Britain, residing at Milnsbridge, Yorkshire, England, have invented certain new and useful Improvements in Spinning - Machines, &c., for Spinning, Doubling, and Roving Wool, Cotton, Silk, and other Fibers, (for which patents have been granted in Great Britain as follows: on June 28, 1884, No. 9,515, and on July 20, 1887, No. 10,141,) of which the following is a specification.

My invention relates to apparatuses or machines for spinning, doubling, and roving cotton and other fibrous materials; and the object of my invention is to enable bobbins or cops of various sizes to be produced by the same apparatus in either hard or soft yarn.

In carrying out my invention I employ a spindle of two diameters, upon which spindle is secured a flanged conical cup, in which the cop is formed nose or point downward. Between the conical cup and the spindle I introduce a taper sleeve, the internal diameter corresponding to the outer diameter of the spindle. The bottom of the sleeve is made with two forks, or with two long thin pieces of metal, which fit into corresponding key beds or grooves formed in the periphery of the spindle, so that the forks do not project beyond the diameter of the said spindle. A traveler is placed on the flange of the conical cup, and is made to rotate for the purpose of building the cop upon the sleeve placed on the spindle. The twist is put into the yarn by means of the traveler, as is done in ordinary ring-spinning; but in order to vary the speed of the traveler I employ a revolving brush composed of either bristles or wire. This brush is so placed that as the traveler revolves it comes into contact with the brush once in every revolution, and if the brush is revolving at a lower rate than the flanged cup the traveler will be retarded. If, on the contrary, the brush revolves at a higher speed than the cup, the traveler will receive an impulse at each revolution and have its motion accelerated.

In order that my invention may be the bet-

ter understood, I will proceed to describe it more fully, reference being had to the accompanying drawings, wherein—

Figure 1 represents two spindles and associated parts constructed according to my invention, one of said spindles being in elevation and the other in axial section. Fig. 2 represents in sectional elevation certain of the parts as they appear when the lifting-rail is at its greatest elevation and the nose of the cop completed. Fig. 3 is an enlarged transverse section of the spindle, taken in the plane indicated by line 3 3 in Fig. 1. Fig. 4 is an enlarged sectional view of the sleeve *h*. Figs. 3 and 4 are on a scale about twice that of the principal figures. Fig. 5 is a plan view of the spindles and revolving brush, showing their relations. Fig. 6 is a side view of the brush and its appurtenances as seen from arrow 6 in Fig. 5. Fig. 7 is a view of the sleeve *h* similar to Fig. 4, but showing it straight or untapered. Fig. 8 illustrates another means of coupling the stem of the cup to the spindle, and Fig. 9 is a cross-section on line 9 9 in Fig. 8. Fig. 10 illustrates a variation in the form of the sleeve on the spindle. Fig. 11 illustrates a substitute for the retarding-brush wheel.

a is the spindle, made with two diameters on the upper part, as the drawings illustrate, the bottom of such spindle resting in a step, *b*, made secure in the lower stationary rail, *c*.

d is the upper stationary rail, which is employed for steadying the spindle and parts connected therewith. The spindle is provided with a whirl for rotating it in the usual manner, said whirl being placed near the foot of the spindle and just above the rail *c*, as seen in Figs. 1 and 2.

e is a flanged conical cup placed outside the spindle, and driven by said spindle by means of a pin, *f*, which enters into slots *g*, formed at the bottom of the tubular stem of the said flanged cup. The stem of cup *e* fits tightly on the thicker part of the spindle *a*; but above the thicker part of the spindle sufficient annular space is left to permit of the introduction of a tapered sleeve, *h*, and in order that said sleeve may be carried around with the

spindle and yet rise and fall independently of the same I form at the bottom of said sleeve two needles or long metal strips, *i*, which enter grooves or key-beds formed in the thicker part of said spindle, the extremities of such forks being bent and secured by entering holes formed horizontally in a boss or collar, *j*. The bent extremities of these forks are inserted into the horizontal holes from within the boss or collar, which holds the forks firmly in position and prevents them from opening out by the centrifugal force acting on the spindle. The collar *j* rests upon a loose washer, *k*, which rests upon the lifting-rail *m* of the machine, so that as the said rail is raised or lowered upon the spindle the cop is formed, as will be well understood.

For retarding or accelerating the speed of the traveler *p*, revolving around the flange of the conical cup, I employ a brush, *n*, caused to revolve by a belt from the whirl *o*, mounted upon a stud projecting up from the fixed rail *d*. This brush can be made to revolve at any suitable speed in the opposite direction to the spindle, and its position is such that the travelers *p* of the two cups *e* will strike the said brush, and if the brush is revolving faster than the traveler such traveler will be driven at a greater speed; but if the brush is revolving slower than the traveler such traveler will be retarded thereby. Consequently the twist of the yarn can be varied as required.

The stud carrying the brush *n* is mounted adjustably in guides in the rail *d*, and said brush may be adjusted to the cups by a screw, *s*, as clearly seen in Figs. 5 and 6.

When twisting strong yarns, the brush need not be driven by a belt or other extraneous means, but it would be caused to revolve slowly by means of the yarns passing in contact with it, and in some cases the brush may be driven in the same direction as that in which the yarn is traveling.

It will be seen from the accompanying drawings that the spindle and cup, while capable of revolving, have no upward and downward motion given to them, but the sleeve *h*, with its extended forks attached to the boss *j* and resting upon a washer placed upon the lifting-rail *m*, has a rising and falling motion, which is effected by the motion of the lifting-rail independently of the spindle and cup. The sleeve will be raised by the lifting-rail, but will be made to descend by means of a bent finger, *m'*, projecting from rail *m*, and as the forks *i* are made a trifle less in size than the grooves or key-beds in the spindle

the said forks are free to slide up and down therein; and in order that the cop may be easily removed from the sleeve *h* the upper portion thereof is made parallel or straight, and the lower portion tapered, and according to this arrangement of building up a cop the bottom of the cop is built upon the top part of the sleeve, which will be made parallel so as to render it firm, but the lower portion of the sleeve is made taper, and upon this taper part the nose of the cop is built. If necessary, I employ a parallel sleeve, as shown in Fig. 7, and instead of the conical cup being taken around with the spindle by means of the pin *f*, as shown in Fig. 1, the spindle may be made with a projection or wing, *t*, (see Figs. 8 and 9,) and to this wing or projection the cup is fastened by solder or otherwise. Instead of the sleeve being made with forks *i*, as already explained, it may be made with a slot, *w*, to receive the wing *t*, as shown in Fig. 10.

Instead of employing a brush, as shown in Fig. 5, for retarding the speed of the traveler, such traveler may be made with a loose flap, *x*, as shown in Fig. 11, so that as the traveler revolves the flap or wing will be retarded by the resistance of the atmosphere.

Having thus described my invention, I claim—

1. The combination, with the spindle *i*, of the flanged cup thereon, the sleeve *h* thereon, inside of said cup, and means, substantially as described, for reciprocating said sleeve.

2. The combination, with two adjacent spindles, the flanged cups thereon, and the travelers carried by said cups, of the revolving brush-wheel arranged to contact peripherally with both travelers, substantially as and for the purposes set forth.

3. The combination, with the grooved spindle, of two diameters, and the flanged cup, detachably mounted on the larger part of said spindle, of the longitudinally-sliding sleeve *h*, mounted on the smaller upper part of said spindle, and provided with the forks *i*, and means, substantially as described, for reciprocating said sleeve.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PAUL WALLACE.

Witnesses:

C. W. WHITMAN,
U. S. Consular Agent at Huddersfield.
THOMAS H. BARRON,
Market Place, Huddersfield.