

J. D. WHYTE.

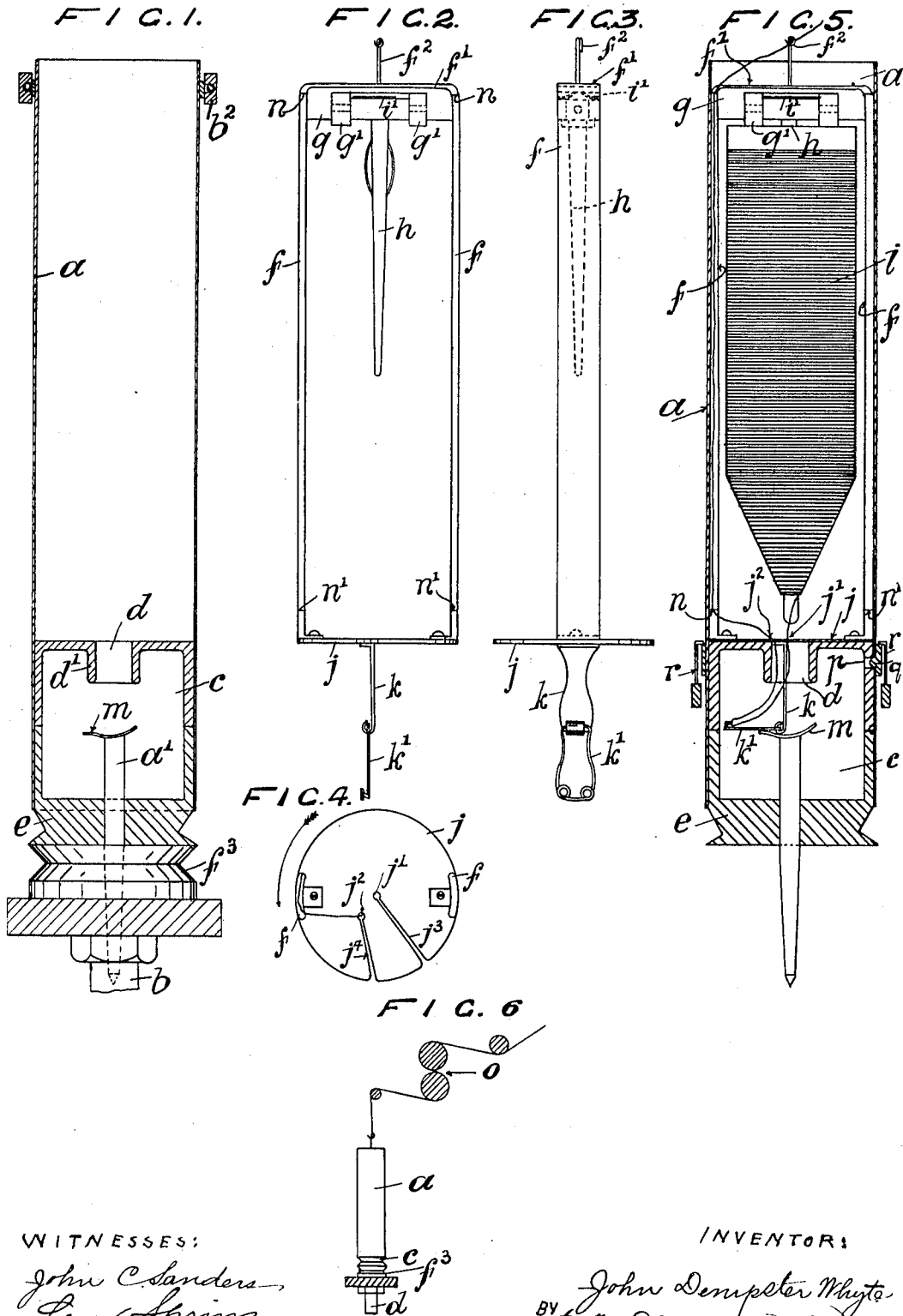
MEANS FOR WETTING YARNS FOR USE IN DOUBLING AND TWISTING MACHINERY.

APPLICATION FILED JULY 1, 1911.

1,035,929.

Patented Aug. 20, 1912.

3 SHEETS—SHEET 1.



WITNESSES:

John C. Sanders,  
Leon Spring

INVENTOR:

John Dempster Whyte,  
BY *W. H. Hallan* *W. H. Hallan*  
ATTY.

FIG. 7.

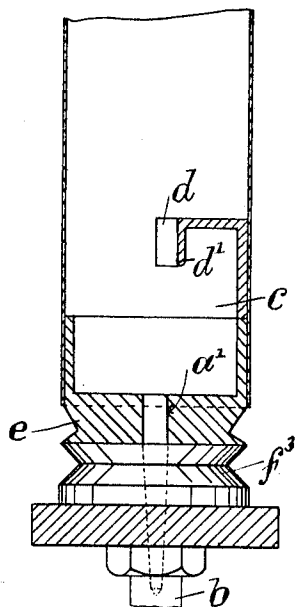


FIG. 8.

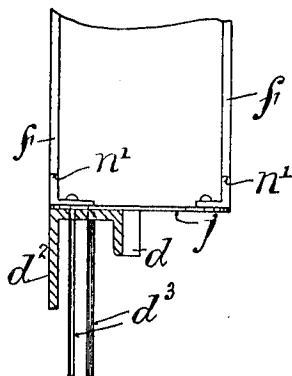


FIG. 9.

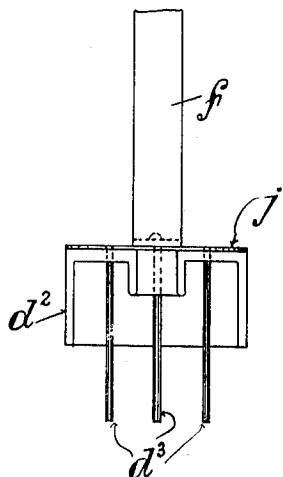
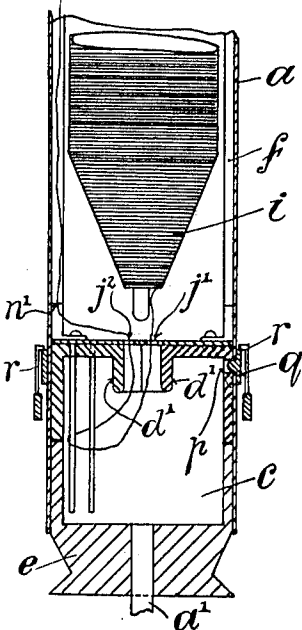


FIG. 10.



WITNESSES:

*John C. Sanders*  
*Leon Spring*

INVENTOR:

*John Dempster Whyte*  
 BY *(M. M. Allen)*  
 ATT'Y.

J. D. WHYTE.

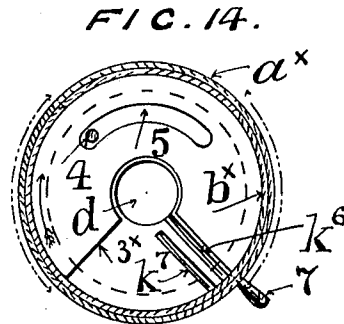
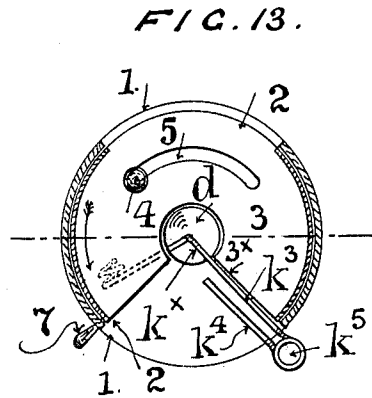
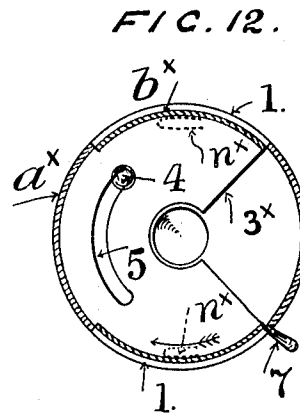
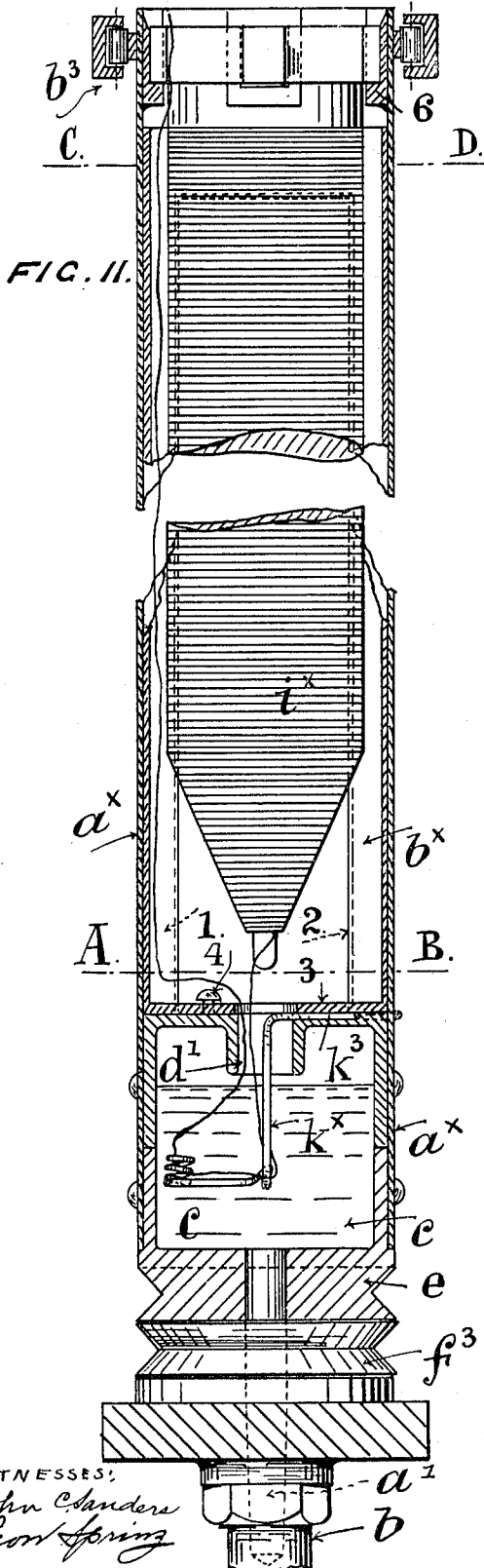
MEANS FOR WETTING YARNS FOR USE IN DOUBLING AND TWISTING MACHINERY.

APPLICATION FILED JULY 1, 1911.

1,035,929.

Patented Aug. 20, 1912.

3 SHEETS—SHEET 3.



WITNESSES:  
John Sanders  
Leon Foring

INVENTOR:  
John Dempster Whyte  
BY *Wm. H. Allen* ATTORNEY

# UNITED STATES PATENT OFFICE.

JOHN DEMPSTER WHYTE, OF MANCHESTER, ENGLAND.

MEANS FOR WETTING YARNS FOR USE IN DOUBLING AND TWISTING MACHINERY.

1,035,929.

Specification of Letters Patent.

Patented Aug. 20, 1912.

Application filed July 1, 1911. Serial No. 636,408.

*To all whom it may concern:*

Be it known that I, JOHN DEMPSTER WHYTE, a subject of the King of Great Britain and Ireland, residing at 54 Langdale road, Victoria Park, Manchester, in the county of Lancaster, England, textile engineer, have invented new and useful Improvements in Means for Wetting Yarns for Use in Doubling and Twisting Machinery, of which the following is a specification.

My invention has reference to improved means for wetting yarns for use with doubling and twisting machinery in which the yarns have been wound on pirns, such pirns being carried on delivery spindles surrounded by a tube, such for instance as described in my prior United States Patent No. 968723, and is designed to dispense with the usual water trough.

The present practice of using water troughs in which brass rollers rotate for the purpose of wetting the yarns, or in which glass rods are laid to guide the yarn through the water to the rollers, is considered most objectionable but unavoidable.

My invention consists, in dispensing with such water troughs, entirely, as at present used, and providing means for wetting the yarn as it is being drawn off a delivery spindle and before the doubled yarns are twisted.

My invention is illustrated in the accompanying drawings, the various figures of which I will refer to specifically in the following description.

Briefly described, Figure 1 shows a cross-sectional elevation of the pirl tube. Fig. 2 shows a front elevation and Fig. 3 a side elevation of the pirl holder. Fig. 4 is a view in plan of the bottom of the pirl tube, as shown in Fig. 5. Fig. 5 is a cross sectional view of the tube with the holder and pirl in position. Fig. 6 shows the yarn passing to the pirl holder. Figs. 7 to 10 comprise views of a modified form of the invention. Figs. 11 to 14 are views of a further modification.

Fig. 1 shows in sectional elevation a tube *a* which carries a spindle foot *a'* supported by a foot step bearing *b* of any suitable type, and steadied by a ball bearing *b<sup>2</sup>*, or other bearing, at the top of the tube. At the bottom of each tube *a* I provide a reservoir *c* for water, the roof or top of such reservoir having a central hole *d* with a

pendent flange or ledge *d'* below the roof. This reservoir *c* is made of aluminium, brass, or other suitable metal or material, and for convenience of manufacture is made in two parts, the roof portion and a lower portion formed in one with the fixed whirl *e*, and the bottom end of the tube *a* is secured around the reservoir. The tube is driven by a suitable band passing around the whirl *e*, and, the rotation can be stopped by slipping the band on to a loose whirl *f<sup>3</sup>*, all in known manner. When rotating, centrifugal force causes the water to rise up the inner walls of the reservoir *c* and spread over the roof, the pendent flange *d'* however preventing the water from being ejected out of the reservoir.

Fig. 2 shows in front elevation the pirl holder, the pirl or bobbin carrying the doubled yarns being held nose downward in the tube *a*. This pirl holder consists of two hollow side arms *f*, the bent over top *f'* of which carries an eye *f<sup>2</sup>*, and a stiffening piece *g* to which are secured blocks *g'* which provide bearings for a spring skewer *h*. This skewer, can be turned outward, so that, one can impale upon it the pirl *i* of doubled yarns, the springs *i'* holding the skewer straight and steady when the skewer has been turned back in a vertical position. The side arms *f* are secured at their lower ends to a disk *j*, of about the same internal diameter as the tube *a*, the disk being provided with a central hole *j'* and another hole *j<sup>2</sup>* and slots *j<sup>3</sup>* and *j<sup>4</sup>*. To the underside of the disk *j*, is secured, a pillar *k* carrying a loose hinged thread guide *k'*. The doubled yarn on the pirl *i* is threaded, first through the slot *j<sup>3</sup>* into the center hole *j'* in the disk *j*, then between the curls of the thread guide *k'*, along the slit *j<sup>4</sup>*, and, out of the disk *j* through the hole *j<sup>2</sup>*. The pirl carrier is then inserted in the tube *a*, the disk *j* resting upon the roof of the water reservoir *c*, as shown in Fig. 5. The pillar *k* passes through the hole *d* and rests upon a stop *m* on the top of the spindle foot *a'*, this stop also serving to deflect the thread guide *k'* toward the side of the water reservoir *c*, as shown in Fig. 5. As the water in the reservoir, under the influence of centrifugal force, clings to the walls of the reservoir, the thread guide *k'*, disposed as shown in Fig. 5, will insure the yarn being wetted by the water. The side arms *f* of

the pirn holder fit tightly in the tube  $a$  and, are carried around therewith, the inverted pirn of thread  $i$  being thus revolved. The hollow side arms  $f$  are made open at one side between the points  $n, n'$ , and, when the tube is revolved in the direction of the arrow Fig. 4, the doubled threads are disposed within the hollow arm to the left of the drawing (Fig. 5), the direction of motion keeping the thread in the hollow arm, out of which, it emerges at the top and is threaded through the eye  $f^2$ , and, from thence, to the drawing rollers  $o$  of the machine, as indicated in Fig. 6. The wetted doubled yarn, as it passes from the eye  $f^2$  to the rollers  $o$ , receives the necessary twist, owing to the rotation of the pirn  $i$ , and, after leaving the rollers  $o$  is wound upon a bobbin, or spindle, or is dealt with in any suitable or known manner not forming part of my invention. To fill the reservoir  $c$  with water, the pirn holder is removed, and water is poured in through the opening  $d$ , or in any other convenient manner. To prevent overfilling, a hole is provided at  $p$ , as shown in Fig. 5, out of which the water can run. This hole can be closed during working by a cap on a split ring  $q$  held in position by the bent spring fingers  $r$ .

Figs. 7 to 10 illustrate a modification of the invention. In this arrangement the pillar  $k$  and the pivoted yarn guide  $k'$  are dispensed with. A portion of the roof and side of the water trough  $c$  is cut away leaving a gap as shown in Fig. 7. This portion  $d^2$  is secured to the underside of the disk  $j$  which is carried by the side arms  $f$  as shown in the side sectional view Fig. 8, and, in the face view Fig. 9. To this loose piece  $d^2$  are secured pendent fingers  $d^3$ . The thread is drawn off the cop  $i$ , threaded through the slot  $j^3$  in the disk  $j$  to dispose it in the central hole  $j'$ , guided around the back of the pendent fingers, and, out through the hole  $j^2$  via the slot  $j^4$ . When this has been effected, the parts are disposed within the tube  $a$ , the loose piece  $d'$  neatly filling up the gap in the roof and side of the reservoir  $c$ , as clearly shown in Fig. 10. The function of the pendent fingers  $d^3$ , is, to direct the yarn to the side wall of the reservoir to insure its passing through the water, which water will naturally cling to the side wall, when the parts are rotating. The thread as it issues out of the hole  $j^2$  in the disk  $j$  is, as before stated, with reference to Fig. 5, disposed within the hollow side arm  $f$ .

Figs. 11 to 14 show a further modification of my invention, Fig. 11 being a sectional elevation, Figs. 12 and 13 are cross sections on the line A—B with the movable part of the encircling tube closed and open respectively. Fig. 14 shows a section on the line C—D. In this modification, the surrounding tube devices consist of two sleeves

$a^* b^*$ , each with extended vertical gaps 1, 1, 2, 2, that is to say, the sleeves are cut away to present upright apertures of approximately the depth of the sleeves and of suitable width. The inner sleeve  $b^*$  has a cylindrical end or disk like base 3, and is partially rotatable within the sleeve  $a^*$ . It rotates on the roof of the reservoir  $c$ , and, a pin and slot 4, 5, limit the rotation, (see Figs. 12 and 13). I may make the upper end of each slotted sleeve completely annular, as represented in Figs. 11 and 14, and the outer sleeve  $a^*$  has notched or gapped bearing brackets 6, applied inside the upper extremity, with which projection on the pirn carrying the cop  $i$  can engage. Thus, it is only necessary to insert and drop the pirn with cop  $i$  into position, when the device is well supported inside the tube device. The inner slotted sleeve  $b^*$  has a handle 7 whereby the sleeve can be rotated. When the handle 7 is turned to the right, as in Fig. 12, it brings the vertical walls of the sleeve  $b^*$  across the slots or gaps in the fixed sleeve  $a^*$ , and, entirely masks the slots or gaps, and a complete inclosing tube is obtained. If the handle 7 be turned to the left, as in Fig. 13, then the slots or gaps 1 1 in the tube  $a^*$  are uncovered, and free access can be had to the pirn for piecing-up, &c. This arrangement entirely obviates any lifting out of the pirn and its supporting parts for piecing-up &c., and, represents a great simplification. As regards the yarn guiding means, this can, in the present modification, be greatly simplified, and may consist of a bent wire length  $k^*$  with one or more limbs  $k^3, k^4$ , and, if necessary, a handle  $k^5$ , the limbs  $k^3, k^4$ , being laid in depressions or channels  $k^6, k^7$  in the reservoir roof. When the sleeve  $b^*$  is rotated to the left, as in Fig. 13, and, due to the fact that a segmental portion  $3^*$  of the base disk 3 is cut away, the yarn guide limbs  $k^3$ , &c., are uncovered and freed. Thus the yarn guide can be easily lifted away or inserted. Likewise, when the yarn guide has been placed in position, the turning of the inner sleeve device  $b^*$  to the right, as in Fig. 12, causes the base disk 3 to slide over, to cover, and to retain the limbs  $k^3, k^4$  of the yarn guide in position. The form of yarn guide can be considerably modified. The mere moving to right or left masks, or unmasks, the extended vertical slots in the main sleeve  $a^*$ , and, provides for proper inclosing or ready access in the earliest possible manner. The marking  $b^3$  represents a bearing to support the upper end of the sleeve  $a^*$ . Loops  $n^* n^*$  are preferably provided on the inner sleeve  $b^*$  to guide the yarn as same passes upward after being wetted.

I declare, that what I claim, is:

1. Apparatus for use in doubling and twisting yarn comprising an inclosing tube, 130

means to support a pirn inverted in such tube, a water reservoir at the base of the tube and revolving therewith, a roof to such water reservoir having a yarn aperture, a 5 flange in the roof surrounding such yarn aperture, driving means for the tube, and yarn guiding means in said reservoir compelling the yarn from the delivery pirn to pass downward through the reservoir, and 10 yarn guiding means directing the yarn after passing through the reservoir and when leaving the tube, as set forth.

2. Apparatus for use in doubling and twisting yarn comprising an inclosing tube, 15 a reservoir at the foot of the tube and revolving therewith, an aperture in the roof of the reservoir surrounded by a flange, a fast and loose whirl for the tube and reservoir, supports on the tube for an inverted 20 pirn, a yarn guide on the revolving tube, and yarn guiding means in the reservoir, directing the yarn through said reservoir, and whereby the yarn leaving the delivery pirn is wetted as the tube and reservoir re- 25 volve, as set forth.

3. The apparatus for use in doubling and twisting yarn comprising a revoluble tube with a fixed section and an adjustable section, means to support an inverted pirn, a 30 reservoir at the base of the revoluble tube,

a roof to such reservoir, an outlet in the roof surrounded by a flange, a removable yarn guide to direct the yarn in the reservoir, a whirl to rotate the complete tube, a loose 35 whirl, means to support the tube at the upper end, and yarn guiding means directing the yarn through the water reservoir and out of the revolving tube, as set forth.

4. An apparatus for use in doubling and twisting yarn having in combination a revoluble tube, including a fixed tube section, 40 an adjustable tube section, means to guide the adjustable tube section when turned, a water reservoir at the base of the revoluble tube, a roof thereto, and an aperture in said 45 roof, surrounded by a flange, a yarn-guiding device directing the yarn through the reservoir, a driving whirl to rotate the complete tube, a loose whirl, brackets in the tube to support an inverted pirn, and yarn guides 50 for directing the wetted yarn leaving the tube, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN DEMPSTER WHYTE.

Witnesses:

RICHARD IBBERSON,  
NORMAN KIERNAN.