

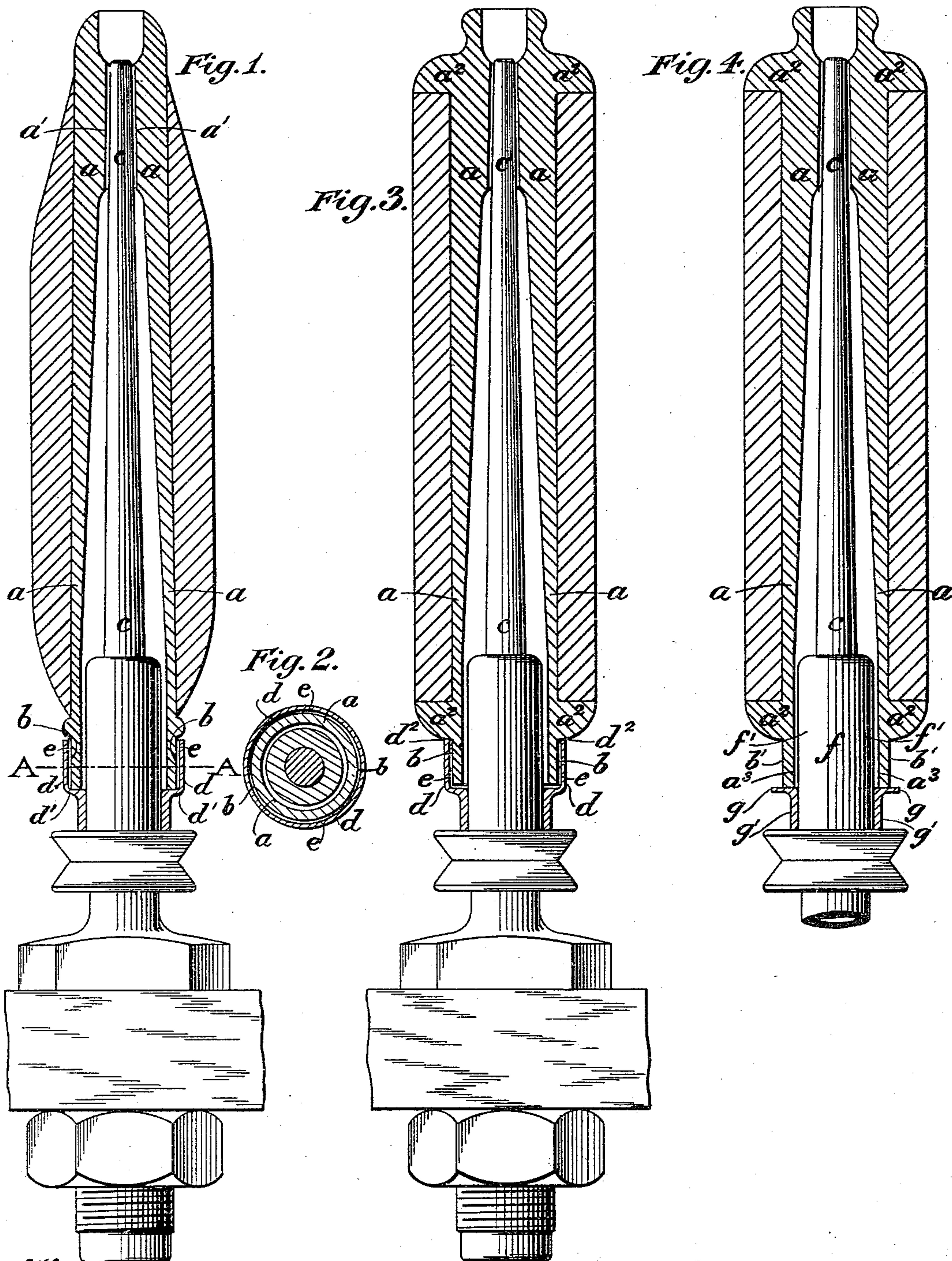
(No Model.)

W. R. SIDEBOTTOM.

SPINDLE AND BOBBIN FOR SPINNING AND DOUBLING MACHINES.

No. 458,431.

Patented Aug. 25, 1891.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM ROBY SIDEBOTTOM, OF STOCKPORT, ENGLAND.

SPINDLE AND BOBBIN FOR SPINNING AND DOUBLING MACHINES.

SPECIFICATION forming part of Letters Patent No. 458,431, dated August 25, 1891.

Application filed March 25, 1890. Serial No. 345,204. (No model.) Patented in England February 6, 1889, No. 2,112; in France December 16, 1889, No. 202,615; in Switzerland December 24, 1889, No. 1,782, and in Austria-Hungary April 27, 1890, No. 3,153.

To all whom it may concern:

Be it known that I, WILLIAM ROBY SIDEBOTTOM, cotton-spinner, of Heaton Norris, Stockport, in the county of Lancaster, England, have invented certain new and useful Improvements in Spindles and Bobbins for Spinning and Doubling Machines, (for which I have obtained patents numbered and dated as follows: in Great Britain, No. 2,112, dated February 6, 1889; in France, No. 202,615, dated December 16, 1889; in Switzerland, No. 1,782, dated December 24, 1889, and in Austria-Hungary, No. 3,153, dated April 27, 1890,) of which the following is a specification.

My invention relates to means for imparting rotary motion to the bobbins or tubes used in certain machinery used for spinning and doubling cotton and other fibrous materials.

In the accompanying drawings, Figure 1 is a longitudinal section, and Fig. 2 a cross-section, taken on the plane indicated by the line A A of Fig. 1, showing one arrangement of my invention. Fig. 3 is a view, partly in longitudinal section, showing my invention as employed in conjunction with bobbins formed with "heads" or flanges; and Fig. 4 is a longitudinal section illustrating another arrangement of my invention.

According to my invention I provide the bobbin or tube with a foot having a surface or surfaces parallel with a surface or surfaces formed on or fixed to the spindle, the said bobbin or tube being so formed that it will pass freely onto the spindle, with the parallel surfaces in position to come into engagement with one another when the bobbin or tube shifts its position laterally during its revolution with the spindle. I further provide for maintaining the bobbins or tubes at a uniform height by fixing seats or supports to the spindle, upon which seats or supports the bobbins or tubes, when passed freely onto the spindle, are allowed to rest. By the above means I am enabled to employ successfully in ring-spinning and ring-doubling machinery bobbins or tubes provided with heads or flanges, since their uniform height or uniform vertical position upon the spindles is insured by allowing them to rest freely upon their seats.

In the arrangement shown in Figs. 1 and 2 of the accompanying drawings the tube or bobbin *a* is provided with a surface *b* at its foot, in the present instance represented as a cylindrical surface.

The spindle is represented by *c*, and upon this I mount a cup *d*, the wall *e* of which is provided with an internal surface parallel with the surface *b*. The foot of the bobbin upon which the surface *b* is formed is allowed to pass freely within the wall *e* of the cup *d*. The tube or bobbin *a*, both at its upper portion *a'* and at its foot, is intended to pass freely over the spindle and to rest at its lower end upon the shoulder or part *d'* of the cup *d*.

In the form shown in Fig. 3 the bobbin or tube *a* is distinguished from that shown in Fig. 1 by being provided with a pronounced head or flange *a²*, and differs in its arrangement from that shown in Fig. 1, in that while in Fig. 1 the tube which passes freely over the spindle rests upon the bottom or shoulder *d'* of the cup in Fig. 3 the said tube rests upon the upper edge *d²* of the cup, the outwardly-projected portion of the head *a²* engaging therewith. In other respects the structure shown in Fig. 3 is quite similar to that shown in Fig. 1.

In the form shown in Fig. 4 the bobbin or tube *a* is provided with a pronounced head or flange *a²*, quite similar to that shown in Fig. 3, the form here shown differing from that shown in Figs. 1 and 3, in that the surrounding wall *e* of the cup *d*, as shown in Figs. 1 and 3, is omitted and the bobbin or tube is allowed to rest upon the outwardly-projected flange *g* of a collar or sleeve *g'*. Furthermore, in Fig. 4 the surface, in connection with the spindle, which is parallel with the surface *a³* upon the foot of the bobbin, is formed upon a boss, collar, or enlarged portion *f* on the spindle, and the corresponding surface with which the surface *f'* on the spindle engages when the bobbin shifts laterally is on the inner side of the foot *b'*.

In each of the forms herein shown the tube or bobbin *a* is intended to pass freely over the spindle and to rest upon a support without any wedging or binding between the bobbin and any part of the spindle. From the

fact that the tube or bobbin is freely passed over the spindle it follows that the said tube or bobbin must have to some extent a lateral movement bodily with respect to the spindle.

5 In the form shown in Figs. 1 and 3 such lateral movement of the bobbin with respect to the spindle will throw the surfaces *b* at the foot into engagement with the walls *e* of the cups, while in the form shown in Fig. 4 such
10 movement will throw the surface *a*³ at the foot of the bobbin into engagement with the surface *f*' on the spindle.

In operation, when the spindles are caused to commence rotating, the weight of the bobbins or tubes resting upon the cups or other
15 seats will produce sufficient friction to rotate the bobbins or tubes with the spindles. As the speed of the spindles increases, the bobbins or tubes, in consequence of not being fitted tightly to the spindles, cups, or parts provided with surfaces to be engaged by the bobbins, will be thrown aside by centrifugal force, thereby bringing the parallel surfaces upon
20 the bobbins or tubes and the spindles into contact, and the said bobbins or tubes will be thereby effectually driven. The movement of the bobbin or tube laterally under centrifugal force will take place because of the said bobbin or tube being more or less unbalanced
25 upon its center, and also because of the drag caused by the travelers, which, as the motion begins, will draw slightly upon one side of the said bobbins or tubes. After the high speed is once attained and the centrifugal
30 force brought in full action the bobbin will be carried at the same speed as the spindle, for the reason that more friction would be caused by the bobbin slipping than would be required to drive it at the same speed.

40 Fig. 1 shows a simple means of adapting the invention to ordinary ring-spindles already

at work, all that is required being to make the internal surface of the cup parallel with the axis of the spindle and to provide the bobbin, spool, or tube with a foot the external
45 surface of which is parallel with its own axis and the interior of which will pass freely over that portion of the spindle which it surrounds.

By the herein-described structure and arrangement a loose bobbin or tube can be kept
50 in position and effectively driven in spinning and doubling cotton and other fibrous materials on "ring-frames" with the following advantages—namely, that the spindles are not liable to be strained in doffing owing to bobbins or spools binding too tightly; that flanged
55 bobbins can be used holding a much greater length of yarn, reducing the frequency of doffing and reducing the cost of winding, and that by substituting the uniform "lift" of the full length between the flanges of the bobbin instead of the "copping-motion lift" the rapid variation or fluctuation in the speed of the traveler is avoided.

What I claim is—

In combination, a rotary spindle having a frictional driving or contact surface and a bobbin seat or support affixed thereto and a bobbin having a corresponding surface fitted
65 to come in engagement with the said driving or contact surface on the spindle when the bobbin changes position laterally during its revolution with the spindle, the said bobbin having a loose engagement with the spindle without binding thereon at any point, substantially as set forth.

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