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PERFORATED BOBBIN, TUBE, OR THE LIKE FOR USE IN TEXTILE INDUSTRIES.

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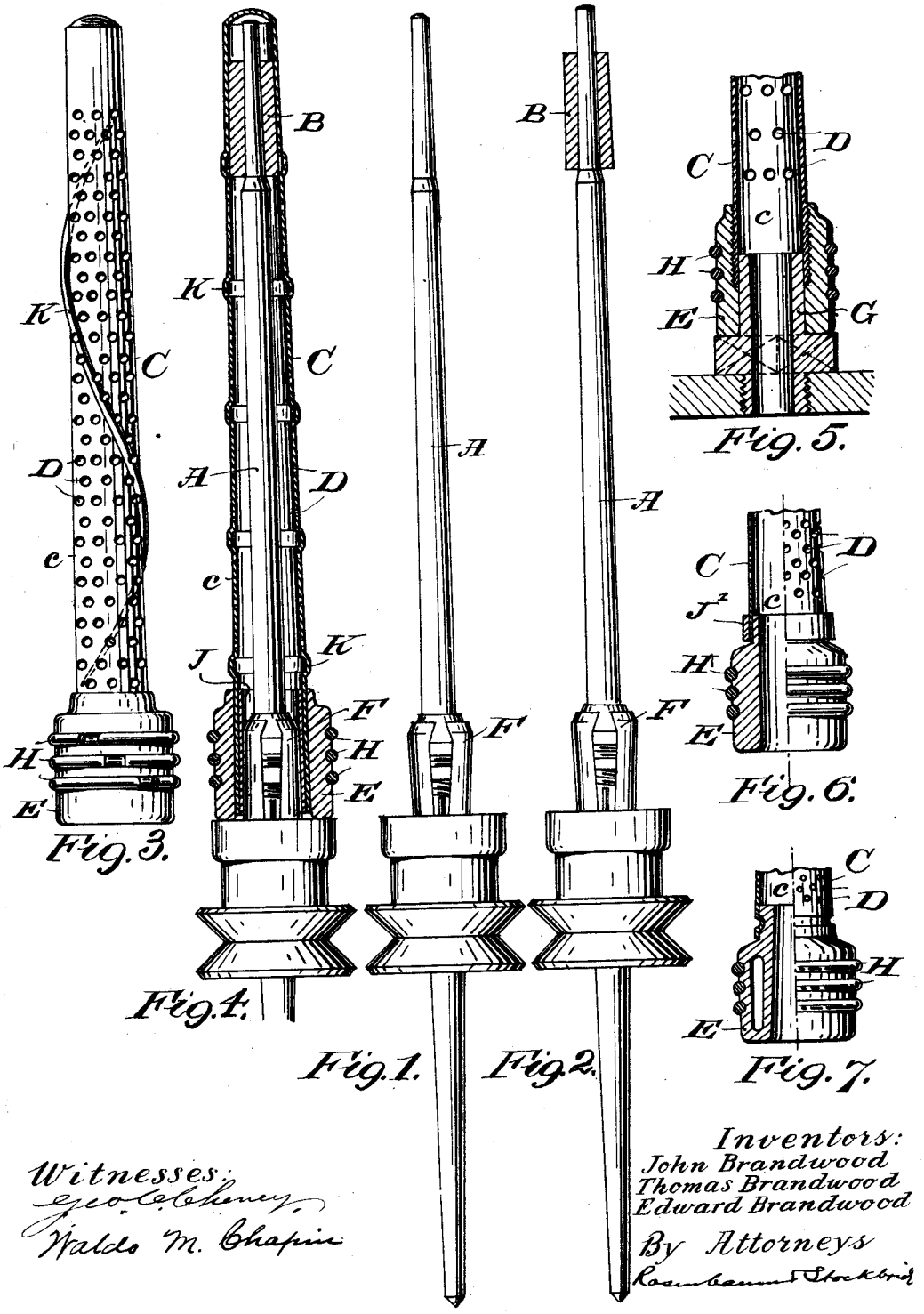


Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5. Fig. 6. Fig. 7.

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PERFORATED BOBBIN, TUBE, OR THE LIKE FOR USE IN TEXTILE INDUSTRIES.

1,132,240. Specification of Letters Patent. Patented Mar. 16, 1915.

Application filed July 25, 1913. Serial No. 781,063.

To all whom it may concern:

Be it known that we, JOHN BRANDWOOD, THOMAS BRANDWOOD, and EDWARD BRANDWOOD, all subjects of the King of Great Britain and Ireland, and all residents of Bury, in the county of Lancaster, England, have invented certain new and useful Improvements in Perforated Bobbins, Tubes, or the like for Use in Textile Industries, of which the following is a specification.

This invention relates to improvements in the perforated bobbins or the like upon which dyeing or similar treatment of the yarn wound thereon can take place. Its object is to provide in a cheap simple and efficient form a perforated bobbin or the like (hereinafter generally referred to as a bobbin) upon which the yarn can be wound in a ring spinning or like machine, which when so wound can be dyed or similarly treated without any necessity for re-winding, and which after being dyed can be woven off in an automatic loom while still wound as it came from the ring frame.

In carrying this invention into effect the perforated bobbin is so formed or provided with an accessory or with accessories at one end that such end can not only be placed upon and directly combined with the spindle of a ring frame and with the nipple of a dyeing or like machine, but can also be placed in and directly combined with the spindle or tongue holder of the shuttle of an automatic loom, so that the perforated bobbin upon which the winding or spinning or dyeing or like treatment has taken place is also the spindle or tongue of the shuttle during weaving. Preferably the improved perforated bobbin is closed at its upper end and does not permanently contain a lining bush to enable it to fit properly upon the upper end of the spindle of a ring frame. Instead, and as has before been known in supporting ordinary bobbins in place on ring frame spindles, bushes are slipped on to the upper ends of the frame spindles, such bushes being properly formed to fill and support the upper ends of the perforated bobbins when these latter are placed the ring frame spindles.

In using our improved bobbins the yarn which has ultimately to be woven in an automatic loom is spun and wound on to the bobbins, is dyed while wound, and when so dyed is put in place in the shuttle of the loom. By their use the winding of the yarn into hanks or chains for dyeing, and the subsequent winding on to bobbins or the like for utilization in an automatic loom are dispensed with.

The accompanying drawings illustrate a perforated bobbin formed according to our invention and the manner of its use, and also show the ring frame spindle and its accessory bush.

Figure 1 is an elevation of a spindle of a ring frame which may be used with the improved bobbin. Fig. 2 shows the same spindle with a removable bush slipped on to its upper end. Fig. 3 is an elevation of a perforated bobbin. Fig. 4 is a sectional view of such perforated bobbin in place on its ring frame spindle for spinning. Fig. 5 is a like sectional view to Fig. 4 of a perforated bobbin but in this case it shows the bobbin in place upon the nipple of a dyeing machine, and illustrates a modification in the manner of attaching the shell of the bobbin to the base member, by which it is supported and held during the different operations. Figs. 6 and 7 illustrate still further modifications in the mode of connecting the shell and base together.

A is a spindle of a ring frame. When it is to be used with our improved perforated bobbin a bush B is preferably slipped on to its upper end as shown in Fig. 2.

C is the improved perforated bobbin. It consists of a slightly conical or tapered shell *c* closed at its upper end and perforated closely over its surface as indicated at D as is well known in connection with perforated bobbins or the like which are used for dyeing or similar treatment of yarns wound upon them. The lower end of the conical shell is secured to a base E. This base or some member contained within it is internally formed to fit upon the shoulder F or equivalent part of the spindle A as shown in Fig. 4, and to fit upon the nipple G of the dyeing machine as shown in Fig. 5. The base member E is externally provided with beads H to be held by the tongue holder of a shuttle in an automatic loom.

When the perforated bobbin is to be wound and covered with yarn it is placed on the spindle A and bush B as shown in Fig. 4 and the winding and spinning proceeds in the usual manner. The wound bobbin is then taken to the dyeing or like treat-

ing machine and is placed upon one of the dyeing or like nipples G. See Fig. 5. It is there subjected to the passage of liquid or air or gas as is usual in dyeing and analogous operations. When properly treated the wound bobbin is taken to an automatic loom and is pushed in place in a shuttle in the same manner as and in lieu of the ordinary tongue or spindle of such a shuttle, the outer surface of the base member E being formed with beads H to be engaged by the holding jaws of the shuttle in the same manner as is the end of one of the ordinary shuttle tongues or spindles for engagement with the tongue holder of the shuttle.

The base member illustrated in the drawings is externally in the form usually given to the ends of shuttle tongues or spindles for automatic looms. It is approximately cylindrical with three projecting beads H, H. These beads may be turned in it from the solid, or they may consist of three divided spring rings disposed within three grooves formed in the surface of the base member. The base member E has a central bore to give access to the interior of the perforated bobbin and this bore is of a size and form to fit upon the shoulder or like part of a spindle and the like sized nipple of a dyeing machine. To reduce its weight the base member E may be hollowed out where convenient.

In the form shown by Fig. 4 the shell of the bobbin is secured to its base member by having its lower end placed inside it and then by having a hollow plug J tightly driven into it. The bore of the base member E and the exterior of the hollow plug J may taper slightly toward their upper ends. The hollow plug is of the proper internal shape and dimensions to fit the spindle shoulder and the dyeing nipple.

In the form shown in Fig. 5 the lower end of the shell of the bobbin is screwed into the base member. Other methods of securing the shell and base together may be adopted. For example the lower end of the shell may be placed in the base and then be expanded inside it in the same manner as boiler tubes are expanded in their tube plates. Or, as shown in Fig. 6, the lower end of the sleeve may be slipped upon a slightly tapered neck formed on the upper part of the base and be firmly secured by having a tightly fitting ring J^1 driven over it. In the modification shown in Fig. 7 the lower end of the shell is compressed in place upon the neck of the base.

In order to keep the yarn properly in place on the perforated bobbin and prevent parts of it improperly unwinding during weaving, the exterior of the shell is preferably formed with projecting ribs or beads such as are already known in perforated spindles. Such ribs or beads may be of any suitable disposition. In the form of bobbin illustrated by Fig. 3 a single rib K is shown which is pressed in the sheet from which the shell is afterward made and is disposed in a helical direction upon the complete shell. In the form shown by Fig. 4 several circumferential ribs K are shown.

The bobbins are illustrated without the yarn wound upon them, but the disposition of yarn upon a perforated bobbin is well known and does not need depicting.

What we claim is:—

1. A perforated spindle for use in spinning or winding dyeing and weaving operations, comprising a slightly conical or tapered shell of sheet metal closely perforated over the surface upon which yarn is wound but closed at its outer end which projects beyond such winding, and a substantial metallic base member attached to such conical shell, such base member being interiorly formed to engage with a spindle and with the nozzle of a dyeing machine and exteriorly formed with circular beads, substantially as set forth.

2. A perforated spindle for use in spinning or winding dyeing and weaving operations, comprising a corrugated and slightly conical or tapered shell of sheet metal closely perforated over the surface upon which yarn is wound but closed at its outer end which projects beyond such winding, and a substantial base member attached to such conical shell, such base member being interiorly formed to engage with a spindle and with the nozzle of a dyeing machine and exteriorly formed with circular beads, substantially as set forth.

In witness whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JOHN BRANDWOOD.
THOMAS BRANDWOOD.
EDWARD BRANDWOOD.

Witnesses:
WILLIAM GEO. HEYS,
FRANK A. HEYS.