

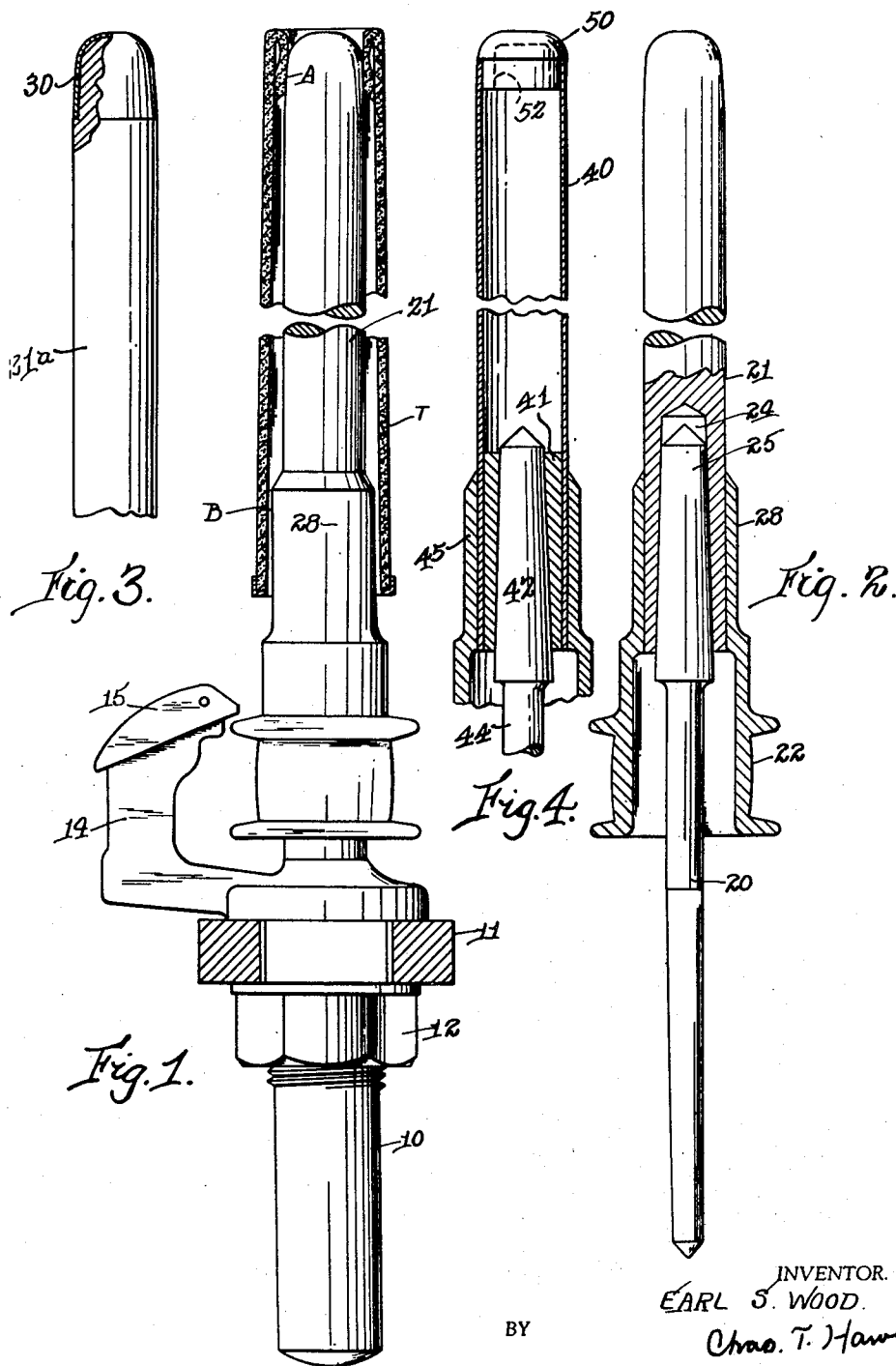
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SPINDLE FOR USE IN TEXTILE MACHINES

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SPINDLE FOR USE IN TEXTILE MACHINES

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4 Claims. (Cl. 57—130)

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This invention relates to spindles as used in textile machines such as spinning frames and twist-ers, and is a continuation-in-part of my prior application Serial No. 56,599 filed October 26, 1948, now abandoned.

In recent practice, the spindles in such machines have been substantially increased in length, and the length and weight of the yarn packages produced thereon have been correspondingly increased.

It is the general object of my present invention to provide an improved spindle construction which is well adapted for use with these longer and heavier yarn packages, and which is strongly resistant to accidental deformation, particularly during the doffing operation.

A further object of the invention is to provide an improved spindle which may be manufactured at a substantially reduced cost.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

Preferred forms of the invention are shown in the drawings, in which

Fig. 1 is a side elevation of one form of my improved spindle, with the spindle rail and yarn tube shown in section;

Fig. 2 is a sectional side elevation of certain parts shown in Fig. 1;

Fig. 3 is a partial sectional elevation showing a modification; and

Fig. 4 is a similar view of a further modification.

Referring to the drawings, I have shown a spindle adapted for use in a spinning or twisting machine and comprising a base 10 which may be secured in a ring rail or other supporting structure 11 by a clamping nut 12. The base may be provided with the usual oil tube 14 and doffer guard 15.

The rotating element of my improved spindle comprises a blade 20, a barrel 21 and a driving whirl 22. The yarn package is formed on a tube T which frictionally engages the upper end portion of the barrel 21, as indicated at A in Fig. 1. The tube T is preferably of some fibrous or plastic material and has a metal reenforcement at its lower end.

The barrel 21 is preferably formed of a light metal such as aluminum or magnesium and is recessed at 24 to receive the tapered upper end portion 25 of the blade 20. The blade has the usual bearing support in the base 10 and is commonly formed of hardened steel. The barrel is of full size to its extreme lower end.

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The whirl 22 has an upwardly extending sleeve portion 28 which is firmly fitted about the full-size lower end of the barrel 21. The whirl 22 and sleeve 28 are preferably integral and formed of steel. The sleeve reenforces and strengthens the recessed lower end portion of the barrel and loosely centers the lower end of the tube T. The upper edge of the sleeve 28 is outwardly and downwardly beveled to facilitate the placing of yarn tubes thereon.

In the preferred manner of assembling the parts, the sleeve 28 is pressed on to the recessed lower end of the barrel 21 before the recess is finished and reamed. These latter operations are then performed after the parts 28 and 21 are assembled. The upper end portion of the blade 20 is then pressed firmly into the recess 24, completing the assembly.

When the tube T is mounted on the spindle, the lower end of the tube preferably has a slight clearance relative to the sleeve 28, as indicated at B in Fig. 1.

As the sleeve 28 is of greater outside diameter than the lower end of the barrel 21, the sleeve 28 holds the lower end of the tube T out of contact with the barrel 21.

In the form of the invention shown in Fig. 3, the construction is as previously described with reference to Figs. 1 and 2, except that the upper end of the barrel 21a is provided with a wear-resistant cap or shell 30. This cap protects the relatively soft and light metal which forms the barrel 21a from wear and from injury during the doffing operation. Such protection is of substantial importance, due to the large size and relatively heavy weight of the yarn packages.

A further modification of my invention is shown in Fig. 4, in which the solid light-weight barrel 21 is replaced by a thin steel tube 40 which is closely fitted outside of a filler piece or bushing 41 which in turn is seated on the tapered upper end 42 of the blade 44. An upwardly extending sleeve 45 firmly encloses the lower end of the tube 40 and is associated with the driving whirl, as in Fig. 2.

A plug 50 is inserted in the open upper end of the tube 40 to close the opening and to prevent the accumulation of lint and dirt therein. The plug 50 is smoothly rounded and has its outer surface aligned with the outer surface of the sleeve 40. The plug may be of any suitable material and is preferably recessed as indicated in dotted lines at 52 to reduce weight.

The construction shown in Fig. 4 has many of the advantages of the constructions shown in

Figs. 1 to 3, and the use of steel tubing provides increased strength and stiffness.

The modified construction shown in Fig. 4 is not claimed specifically herein but forms the subject matter of divisional application Serial No. 165,910, filed June 3, 1950.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a spindle for supporting and rotating a yarn carrier, a one-piece steel blade having an enlarged upper end portion, a barrel of a lightweight material which carries its full diameter to its extreme lower end and which has a recess in its lower end portion in which the enlarged upper end portion of said blade is received and firmly engaged and which engages and centers said yarn carrier at its upper end only, and a driving whirl of a strong metal which has an upwardly-extended sleeve which encircles and firmly engages the lower end portion of said barrel on its full-size outer surface, and which is of greater outside diameter than said barrel, whereby said upwardly-extended sleeve reinforces said barrel and loosely centers the lower end portion of said yarn carrier and holds said lower end portion spaced outwardly from said barrel.

2. The combination in a spindle for supporting and rotating a yarn carrier as set forth in claim 1, in which the barrel is of relatively soft metal, and in which a wear-resistant metal en-

circling member protects the upper end of said barrel.

3. The combination in a spindle for supporting and rotating a yarn carrier as set forth in claim 1, in which the barrel is of relatively soft metal, and in which an inverted hollow cap of wear-resistant metal is mounted on and protects the upper end of said barrel.

4. The combination in a spindle for supporting and rotating a yarn carrier as set forth in claim 1, in which the barrel is of relatively soft metal, and in which an inverted hollow cap of wear-resistant metal is mounted on and protects the upper end of said barrel, and in which the outer side surface of said cap is continuously aligned with the outer cylindrical surface of said barrel.

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