

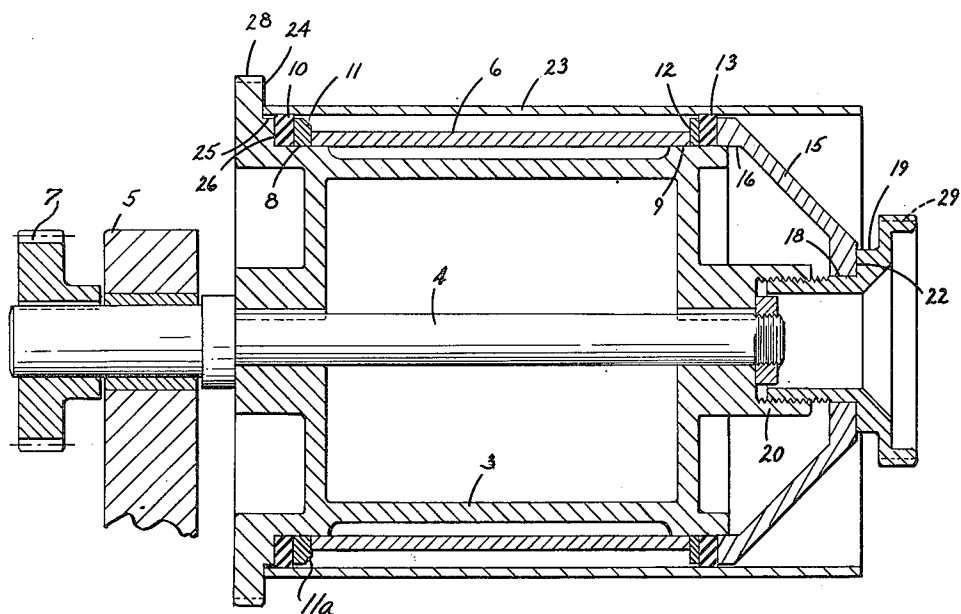
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EXPANSIBLE PACKAGE SUPPORT

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EXPANSIBLE PACKAGE SUPPORT

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1 Claim. (Cl. 242—120)

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The present invention relates to an expansible holder or supporting device adapted to engage and grip various objects fitting thereon, such as a winding machine spindle for supporting a yarn package stationarily or for rotation.

On winding machine such as used prevalently in the textile industry, strand materials are ordinarily collected on sleeve-type cores, supported removably on a driven spindle. The core is turned by the spindle to provide the draft necessary for winding the strand onto the core. When sufficient strand has been collected, the package is removed and another core is placed on the spindle. In a single winding department of a modern textile factory there are hundreds and often thousands of machines requiring frequent removal of strand packages and replacement with empty cores. It is desirable, therefore, to be able to quickly disengage the fully wound package and replace it with an empty core. Various arrangements heretofore used, including keys, set screws, and so forth for holding the core on the spindle roll or shaft, have disadvantages, such as the wear they produce on the core and spindle, and the inconvenience and loss of time entailed in changing cores.

It is an object of this invention, therefore, to provide a quickly disengageable supporting device for articles fitting therearound. Specifically, it is an object to provide a spindle assembly for a strand-winding or unwinding machine which permits rapid replacement of strand package cores thereon. It is also an object to provide a winding-machine spindle assembly which maintains a package core in accurate axial alignment and free from vibration. Other objects, features and advantages of the invention will be apparent from the drawing and the following description thereof.

The single figure of the drawing is illustrative of a preferred embodiment of the invention and is an axial section therethrough. The spindle assembly shown comprises a drum shaped main support member 3 keyed on a shaft 4 rotatable within a bearing 5. The assembly may be rotated by driving the gear 7 fixed to the shaft 4. The member 3 supports the rigid sleeve 6 with a sliding fit on cylindrical surfaces 8 and 9. Radially expansible and contractable rings 10 and 13 of a compressible material, such as rubber, are supported on surfaces 8 and 9, respectively. Optionally, rigid rings 11 and 12 may be provided between the rings 10 and 13 and the intervening sleeve 6. The outward surface of ring 11 may be

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beveled as at 11a for a purpose explained hereinafter.

Means is provided for compressing the rings 10 and 13 in a direction parallel to the axis of the shaft 4. Such means may comprise a conical thrust member 15 having a cylindrical surface 16 at its larger diameter end and there slidably overlap the cylindrical surface 9 of the support member 3, and an inner cylindrical bearing surface 18 at its smaller diameter end, fitting rotatably upon a screw knob 19. Screw knob 19 is threadably engaged with a thread hub 20 of the member 3. Turning of the screw knob 19 within the hub 20 results in its axial movement relative to the member 3. Such axial movement is imparted also to the thrust member 15 at the bearing surface 22. Movement of the member 15 tends to produce axial movement of the resilient rings 10 and 13, the rigid rings 11 and 12 and the sleeve 6. Such axial movement, however, is limited by the radially extending surface 26 of the flange 28. Consequently as thrust member 15 undergoes axial movement, rings 10 and 13 are compressed and forced radially outwardly as a result of the compressive forces being distributed approximately equally between the two resilient rings 10 and 13 by intermediate slidable spacing members 11, 12 and 13.

Before placing a yarn carrier 23 such as a cylindrical core used in collecting rayon yarn, over the spindle into the position shown, the screw knob 19 must be adjusted so that the resilient bushings 10 and 13 are relaxed. Then sleeve 23 may be slid axially over the entire spindle assembly until its end engages the shoulder 24 of the flange 28. The diameter of the cylindrical surface 25 of the member 3 and the outer cylindrical surfaces of the washers 11 and 12 are preferably within a few thousandths of an inch of the inside diameter of the sleeve 23 so the sleeve 23 may be readily installed or removed, but is held by these surfaces in accurate axial alignment during engagement by the resilient bushings 10 and 13. Washer 11 is preferably beveled on the surface 11a so that the yarn carrier 23 is more readily guided into place as it is installed on the spindle assembly. The outer cylindrical surfaces of the bushings 10 and 13 bear against the inner surface of sleeve 23 when the screw cap is rotated inwardly of the threaded hub 20. The outer peripheries of flange 28 of the member 3 and flange 29 of the cap knob 19 are knurled or serrated for better manual grip during adjustment of the cap screw.

This improved package support can be at-

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tached to any creel bobbin support or winding machine and axially disposed at any angle thereto. Large packages such as spools, cones, tubes, and the like can be utilized with this type of spindle for unwinding yarns. Cones of varying sizes may be employed for winding yarns and the like at high speeds.

The invention is most readily utilized in providing support for articles having an interior cylindrical surface; obviously, it may be adapted for non-circular surfaces by reshaping the spindle assembly parts to conform to non-circular or non-cylindrical apertures. It is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claim.

I claim:

A package holder for a removable winding core on a winding machine comprising a rotatable main support member having outer cylindrical surfaces and a threaded hub, an annular shoulder at one end of the member projecting outwardly from one of the cylindrical surfaces, a screw knob in threaded relationship with the hub and having an inwardly facing annular bearing surface, a thrust element having an outwardly facing annular surface engaging the bearing surface of the knob and having an inwardly facing annular surface which may overlap an-

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other outer cylindrical surface of the member during axial movement of the thrust element relative to the member, a ring of compressible resiliency supported on the surface of the member adjacent the inwardly facing surface of the thrust member, a non-compressible washer on the opposite side of the ring, a second non-resilient washer, a thrust-transmitting sleeve disposed between the two non-resilient washers, and a second resilient ring disposed between the second non-resilient washer and the annular shoulder, the outer surfaces of the rings, the washers and the sleeve having diameters which permit the core to fit slidably but snugly over the rings when they are in an uncompressed state.

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