The present invention relates to spinning and twisting machines for spinning and twisting textile yarns, for example.

More particularly, the present invention relates to a spindle mounting for a spindle base of a spinning and twisting machine.

In machines of the above type the spindles themselves are carried respectively by spindle bases, and where the spindles are fixed to the spindle bases, it is necessary to provide means for damping the movements of the spindle base as well as adjusting the resilience with which it is mounted, and these results are very difficult to produce effectively with known constructions.

One of the objects of the present invention is to provide a mounting capable of resiliently holding a spindle base for a limited radial movement.

Another object of the present invention is to provide a resilient mounting for a spindle base which can be adjusted so as to adjust the damping provided by the mounting of the spindle base.

An additional object of the present invention is to provide a spindle base mounting which is characterized by great simplicity and reliability of operation as well as by a long life and small maintenance requirements.

With the above objects in view the present invention mainly consists of a spinning and twisting machine which includes a spindle rail formed with an opening passing therethrough. A spindle base passes with clearance through this opening, and on at least one side of the spindle rail a resilient sleeve surrounds the elongated spindle base and has an end of a larger diameter than the latter engaging the spindle rail and maintained by the latter against radial displacement. The end of the sleeve distant from the rail is of a smaller diameter and surrounds the spindle base and is engaged by a means carried by the spindle base for adjusting the stress of the sleeve.

The novel features which are claimed as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 shows a fragmentary sectional elevational view one possible embodiment of a spindle base mounting structure according to the present invention;

Fig. 2 is a fragmentary sectional elevational view of another embodiment of the structure according to the present invention;

Fig. 3 is a fragmentary sectional elevational view of a third embodiment of a construction according to the present invention; and

Fig. 4 is a fragmentary sectional elevational view of a fourth embodiment according to the present invention.

Referring now to the drawings and to Fig. 1 in particular, it will be seen that the structure of the invention includes a spindle rail 1 formed with an opening 2 passing therethrough. An elongated spindle base 3, which is adapted to carry the spindle itself, passes with clearance through the opening 2, so that the base 3 has a limited freedom of radial movement in the opening 2. The base 3 is provided with an outwardly extending annular flange 4, which, if desired, may be in the form of a collar fixed by a set screw or the like to the elongated spindle rail 1. This flange or collar 4 may directly engage the spindle rail 1, but it is preferred to place a washer 5 between and in engagement with the rail 1 and the flange 4, and this washer 5 may be made of resilient material such as rubber or it may be made of a hard plastic such as a polyamide.

In accordance with the present invention a resilient sleeve 6 made of rubber or the like surrounds the elongated spindle base 3 on one side of the rail 1, which is the lower side thereof, as viewed in Fig. 1. This resilient sleeve 6 has a substantially frusto-conical shape, as is evident from Fig. 1. The upper, larger end 8 of the resilient sleeve 6 engages the spindle rail 1 and is maintained by suitable means against a radial displacement. In the embodiment of Fig. 1 this means for retaining the larger end of the sleeve 6 against radial displacement takes the form of an annular wall portion of the rail 1 which is formed with a groove 9 into which the end 8 of the sleeve 6 extends. The opposite end 7 of the sleeve 6 surrounds the spindle base 3 and directly engages the same, although it is possible to place another sleeve between the end 7 of the sleeve 6 and the base 3, if desired. A nut 10 is threadedly carried by the spindle base 3 and engages the end 7 of the resilient sleeve 6, so that by turning the nut 10 it is possible to adjust the stress in the resilient sleeve 6, and in this way adjust the damping produced by the resilient sleeve 6. A lock nut 14 is provided with an end wall 15 formed with a central opening 16 of the same diameter as the base 3 in the same way as the sleeve 6 of Fig. 1. The embodiment of Fig. 2 differs additionally over that of Fig. 1 in that a second frusto-conical sleeve 11 is located on the opposite side of the spindle rail 1 from the sleeve 6, this resilient sleeve 11 having its larger end engaging the spindle rail 1 and located in another recess 13 so as to be retained against radial displacement, as is evident from Fig. 2. The base 3 of Fig. 2 fixedly carries an outwardly extending annular flange 12 which engages the upper end of the sleeve 11, this upper end of the sleeve 11 extending about and directly engaging the base 3. Thus, by adjusting the nut 10 of Fig. 2 it is also possible to adjust the stress in the sleeves 6′ and 11′.

The embodiment of the invention which is illustrated in Fig. 3 is identical with that of Fig. 1 except that instead of a frusto-conical sleeve 6, the embodiment of Fig. 3 includes a cylindrical sleeve 14 also made of a resilient material such as rubber or the like. The upper, open end of the sleeve 14 extends into the groove 9 so as to be retained in this way against radial displacement, and the bottom end of the cylindrical sleeve 14 is provided with an end wall 15 formed with a central opening 16 of the same diameter as the base 3 and through which
the base 3 passes, so that the end wall 15 engages the base 3. The nut 10 of Fig. 3 acts through a washer 19 shown in Fig. 3 against the end wall 15 of the cylindrical sleeve 14 so as to adjust the stress of the latter. Otherwise the embodiment of Fig. 3 is the same as that of Fig. 1.

The embodiment of Fig. 4 also is the same as that of Fig. 1 except that instead of a frusto-conical sleeve 6, the embodiment of Fig. 4 includes a double walled sleeve 17 having an outer wall provided with an upper free end which extends into the groove 9 so as to be maintained in this way against radial displacement. The inner wall of the double walled sleeve has an end located adjacent the rail 1 and closely surrounding the spindle base 3, as shown in Fig. 4. The double walled sleeve 17 has the portion where its inner and outer walls join each other, located distant from the spindle rail 1 and engaged by a washer 19 which is acted on by the nut 10. Thus, with this arrangement turning of the nut 10 will adjust the stress in the outer wall of the sleeve 17, the inner wall having its stress substantially unaffected by turning of the nut 10 because this inner wall is capable of sliding axially along the spindle base 3. However, if the inner wall also engages the spindle rail 1, then the stress of both the inner and outer walls of the sleeve 17 may be adjusted by turning the nut 10.

In the embodiments of Figs. 1 and 2 the nut 10 constitutes a nut means for adjusting the stress of the resilient sleeve, while in the embodiments of Figs. 3 and 4 the nut means for adjusting the stress of the resilient sleeve is constituted by the nut 10 and the washer interposed between the same and the resilient sleeve.

It will be understood that each of the elements described above, or two or more together, may also find a useful embodiment in other types of spinning and twisting machines differing from the types described above.

While the invention has been illustrated and described as embodied in spindle base mounting structures of spinning and twisting machines, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claim.

What is claimed as new and desired to be secured by Letters Patent is:

In a spinning and twisting machine, in combination, a spindle rail formed with an opening passing therethrough; an elongated spindle base extending with clearance through said opening to opposite sides of said rail; a double walled resilient sleeve surrounding said base on one side of said rail and having an outer wall engaging said rail and maintained by the same against axial displacement; and an inner wall having a free end adjacent said rail and surrounding said base, said inner and outer walls of said double walled sleeve joining each other at a portion of said sleeve distant from said rail; and nut means threadedly carried by said base and engaging said portion of said sleeve for adjusting the stress of at least said outer wall of said sleeve.

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