Sept. 13, 1966 H. P. JACKSON 3,271,826

TEXTILE COILER TUBE GEAR MOUNTING

Filed Feb. 27, 1964 2 Sheets-Sheet 1

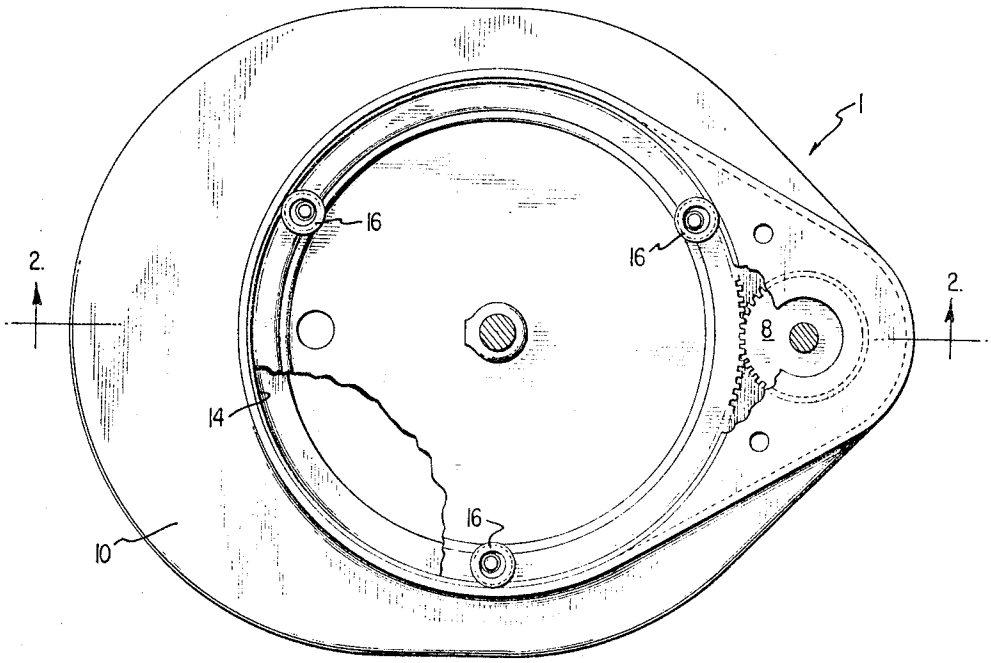


FIG. 1

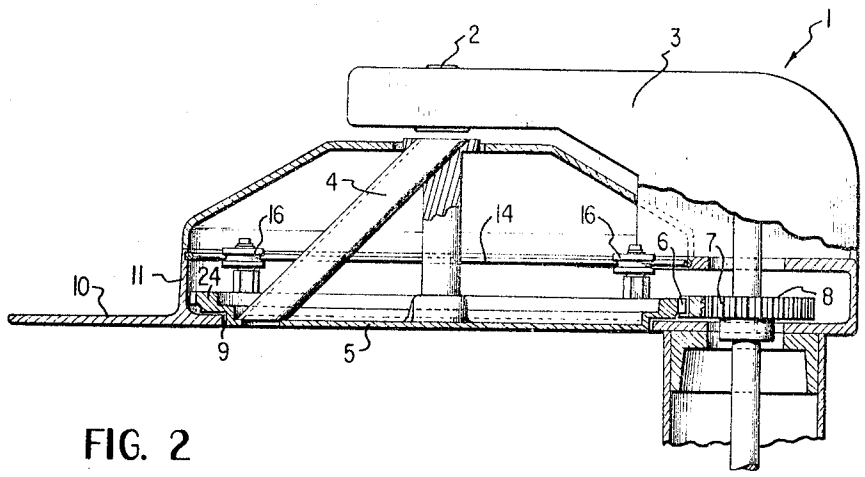


FIG. 2

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FIG. 3

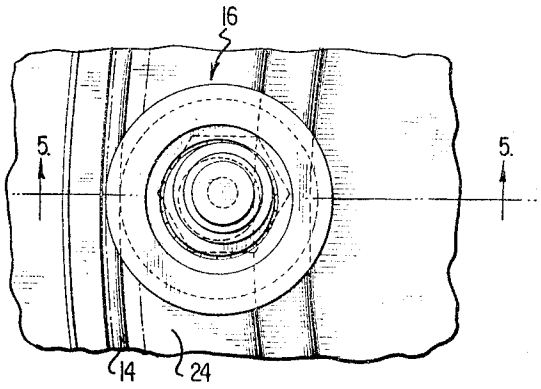


FIG. 4

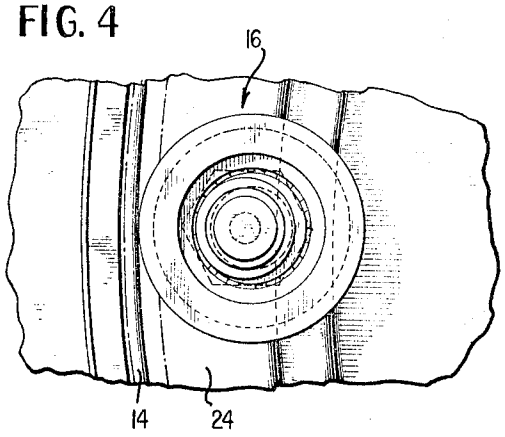


FIG. 5

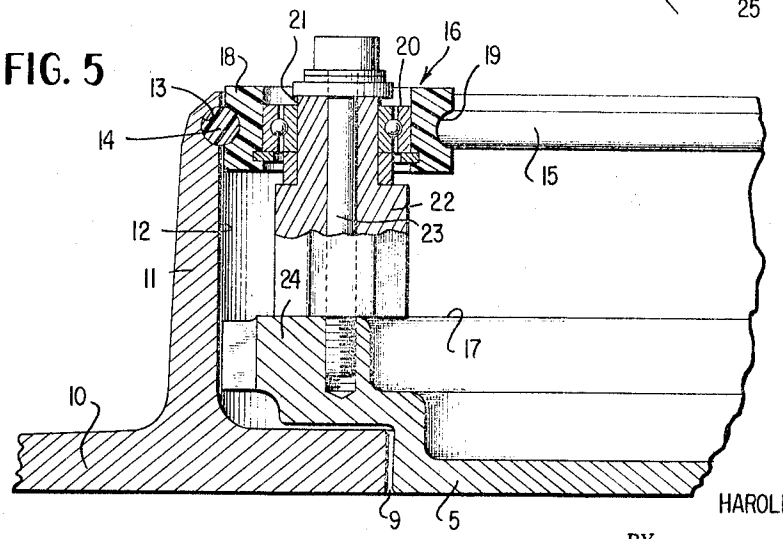
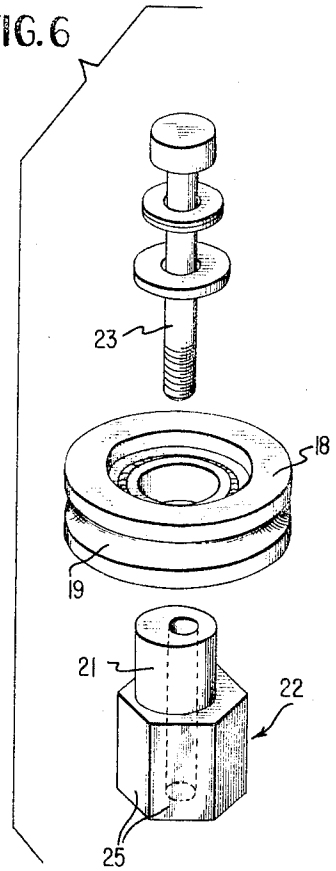


FIG. 6



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TEXTILE COILER TUBE GEAR MOUNTING

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3 Claims. (Cl. 19—159)

This invention relates to textile coilers and more particularly to textile coilers having an improved low-friction means mounting the tube gear.

Textile or sliver coilers, which are used to coil sliver from textile machines, such as drawing frames or combers, into cans, conventionally include a tube gear supported for rotation about a vertical axis within a circular opening in a stationary spectacle, with the under surfaces of the tube gear and spectacle lying in a common plane. The tube gear is driven from its outer periphery and carries an inclined hollow tube having its inlet spaced above the tube gear near the center of rotation thereof and its outlet adjacent an opening in the web of the tube gear near its outer periphery. As the gear rotates, sliver is fed through the inclined tube and discharged in a spiral pattern into a coiler can positioned beneath the tube gear.

Heretofore, the tube gear has usually been supported for rotation by a surface-to-surface bearing in which an annular surface of the gear rides on a lubricated annular shelf surface of the spectacle. While this type of support has been generally satisfactory for smaller coilers, it has presented problems in regard to more modern larger size coilers, particularly where such coilers are driven at higher speeds than heretofore. Thus, it has been found that such a support produces relatively high friction necessitating excessive driving force, and the open surface-to-surface bearing is difficult to lubricate properly. I am aware that attempts have been made to overcome such problems by providing various types of lower friction supports for the tube gear, but, to my knowledge, such attempts have not resulted in a fully satisfactory tube gear mounting.

It is therefore an object of the present invention to provide a new and improved textile coiler tube gear mounting which may be utilized in modern large size coilers without requiring excessive driving forces.

It is another object of the present invention to provide such a mounting which is a low friction mounting not requiring lubrication.

It is a further object of the present invention to provide such a mounting whereby the tube gear is maintained against axial or radial movement with respect to the spectacle while permitting relative rotation between the tube gear and spectacle.

It is still another object of the present invention to provide such a mounting which is adjustable with respect to the tube gear in order to locate and position the tube gear accurately for rotation with respect to the spectacle.

Briefly described, a preferred embodiment of a tube gear mounting according to the present invention includes a spectacle having a vertically extending ring with a cylindrical inner surface having an annular groove therein. An annular bead or track member is seated in the groove and projects radially inward from the cylindrical inner surface. A plurality of rollers are mounted on the upper surface of the tube gear adjacent its outer periphery, and each roller has an annular groove in its outer rim portion which engages the bead or track member to support the tube gear for rotation within the spectacle while preventing axial or radial movement of the tube gear with respect to the spectacle. Preferably, both the bead or track member and the roller rim portions which include the grooves are made of a low-friction self lubricating plastic material such as nylon or Teflon.

Each roller is supported for rotation about its own vertical axis by means of an antifriction bearing which, in turn, is supported on an eccentric portion of a mounting shaft. The configuration of the eccentric portion is such that, as it is turned about the mounting shaft, the antifriction bearing and roller carried thereby are shifted radially with respect to the tube gear. This enables each roller to be adjusted so that its groove correctly engages the projecting bead or track surface to center the tube gear properly with respect to the spectacle and support the tube gear for proper rotation with respect to the spectacle. Preferably, there are three rollers and they are spaced 120° apart on a circle adjacent the outer periphery of the tube gear.

Other objects and advantages of the present invention will become more apparent from the following detailed description taken in conjunction with the attached drawings in which:

FIG. 1 is a top plan view, broken away in part, showing a tube gear mounting in accordance with a preferred embodiment of the present invention;

FIG. 2 is a view, partly in section, taken on line 2—2 of FIG. 1;

FIG. 3 is an enlarged detail view showing one of the rollers mounted on the tube gear and engaging the track means;

FIG. 4 is a view similar to FIG. 3 with the roller shown in an alternate position;

FIG. 5 is a view in partial section taken on line 5—5 of FIG. 3; and

FIG. 6 is an exploded view of the roller mounting means.

Referring now to the drawings, and to FIGS. 1 and 2 in particular, the head portion of a textile coiler, designated generally by the reference numeral **1**, is shown as having an opening **2** in the calender roll cover **3** through which sliver may be fed downwardly into an inclined tube **4** of tube gear **5** in a manner well known to those skilled in the art. The tube gear has teeth **6** around its outer periphery which engage mating gear teeth **7** of drive gear **8** to rotate the tube gear about its vertical axis and within opening **9** of spectacle **10**. The spectacle includes an upstanding vertically extending ring member **11** (see FIG. 5) which has a generally cylindrical inner surface **12**, and the latter surface includes an annular groove **13** in which a bead or track member **14** is seated and projects radially inward with respect to surface **12** as shown in FIG. 5. Bead or track member **14** is preferably circular in cross section as shown in FIG. 5 wherefore the projecting bead surface **15** is a convex surface. Furthermore, bead or track member **14** is preferably made of a low friction, self-lubricating plastic material such as nylon or Teflon.

A plurality of rollers **16**, preferably three rollers spaced 120° apart, are mounted on the upper surface **17** of tube gear **5** adjacent the outer periphery of the tube gear as shown in the drawings. Each roller has a rim portion **18** which has an annular groove **19** therein which is preferably a concave groove complementary in shape to the convex surface **15** of bead or track member **14** whereby each groove can engage the bead or track member to support tube gear **5** for rotation as shown in the drawings, see FIG. 5 in particular. Like bead **14**, roller rim portion **18** is preferably made of low friction, self-lubricating plastic material such as nylon or Teflon.

Roller rim portion **18** is supported for rotation about its own vertical axis by a ball bearing support **20** which, in turn, is mounted on the eccentric cylindrical surface **21** of the roller mounting member **22**. Mount **22** is retained by an elongated bolt **23** which has its lower end

threaded into the upper rim portion 24 of tube gear 5 as shown in FIG. 5. Thus, by tightening bolt 23, roller mount 22 is clamped against the upper surface 17 of tube gear rim portion 24. However, the degree of tightening can be varied to permit mount 22 to be turned with respect to bolt 23, and this is facilitated by providing hexagonal surfaces 25 on the lower portion of mount 22, as shown in FIGS. 5 and 6, whereby a wrench may be employed readily to turn the roller mount. Since cylindrical surface 21 is eccentric with respect to bolt 23 as a vertical axis, it is apparent that turning mount 22 with respect to the bolt results in movement of roller rim portion 18 in a radial direction with respect to tube gear 5.

In order to install the tube gear initially, roller mounts 22 are turned about their respective bolts 23 until the roller rim portions 18 are moved radially inward a sufficient distance to permit the tube gear to be lowered into place. The respective roller mounts are then turned to move each roller rim portion 18 radially outward until the respective roller grooves 19 make proper contact with bead or track member 14. It is apparent that each roller mount 22 may be adjusted as required to assure proper initial positioning of tube gear 5 with respect to spectacle 10, and then the bolt members 23 can be tightened as required to maintain the desired position.

From the foregoing description, it is apparent that I have provided a tube gear mounting which is capable of ready adjustment to obtain accurate initial positioning of the tube gear with respect to the spectacle, and whereby the tube gear is not only supported for rotation relative to the spectacle but is also maintained against undue axial or radial movement with respect to the spectacle. By forming bead or track member 14 and roller rim portions 18 from a slightly resilient, self-lubricating plastic material such as nylon or Teflon and, if desired, by employing a lubrication-sealed bearing to mount the roller rim portions on roller mounts 22, an efficient low-friction support is provided for tube gear 5 which does not require further lubrication. This not only diminishes maintenance requirements, but it also effectively eliminates the hazard of contaminating sliver with lubricant. Further, the slight resilience of the plastic material will readily compensate for any slight misalignment of the tube gear relative to the spectacle, and for minor foreign objects such as lint or the like which might accumulate on the bead or track member 14. The tube gear may therefore be positioned and maintained against relative axial or radial movement with respect to the spectacle without the rollers sticking or binding on the bead or track member, or causing undue frictional load on the driving gear.

While I have described and illustrated a preferred embodiment of my invention, I wish it understood that I do not intend to be restricted solely thereto, but that I do intend to cover all embodiments thereof which would be apparent to one skilled in the art and which come within the spirit and scope of my invention.

I claim:

1. A textile coiler comprising a stationary spectacle having a vertically extending spectacle ring, a tube gear rotatable about a vertical axis, resilient annular track means on the inner surface of said spectacle ring projecting radially inward therefrom toward said vertical axis, a plurality of rollers mounted on the upper surface of said tube gear near the outer periphery thereof for rotation therewith and for rotation about their respective axes, each roller having a groove in the rim portion thereof engaging said track means to support said tube gear for rotation with respect to said spectacle and to maintain said tube gear against axial or radial movement with respect to said spectacle while accommodating slight misalignment therebetween, and each roller mount including eccentric means for adjusting the roller radially with respect to said tube gear to position said tube gear accurately with respect to said spectacle ring.

2. A textile coiler comprising a stationary spectacle including a vertically extending spectacle ring having a cylindrical inner surface including an annular groove therein, a resilient annular bead member seated in said groove and having a convex surface projecting radially inward from said cylindrical spectacle ring surface, a tube gear rotatable about a vertical axis, a plurality of rollers mounted on the upper surface of said tube gear near the outer periphery thereof for rotation therewith and for rotation about their respective axes, each roller having a groove in the rim portion thereof engaging the projecting portion of said bead to support said tube gear for rotation with respect to said spectacle and to resiliently maintain said tube gear against axial or radial movement with respect to said spectacle while accommodating slight misalignment therebetween, and each roller mount including eccentric means turnable about its own axis to shift the roller associated therewith radially with respect to said tube gear to position said tube gear accurately with respect to said spectacle ring.

3. A textile coiler according to claim 2 wherein said annular bead is made of low friction plastic material, there are three rollers spaced 120° apart with respect to the outer periphery of said tube gear, and at least the rim portion of each roller which defines the roller groove is also made of low friction plastic material.

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