July 2, 1963 J. J. KEYSER 3,095,689

LUBRICATING HOLDER FOR SPINNING AND TWISTING RINGS

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FIG. 1

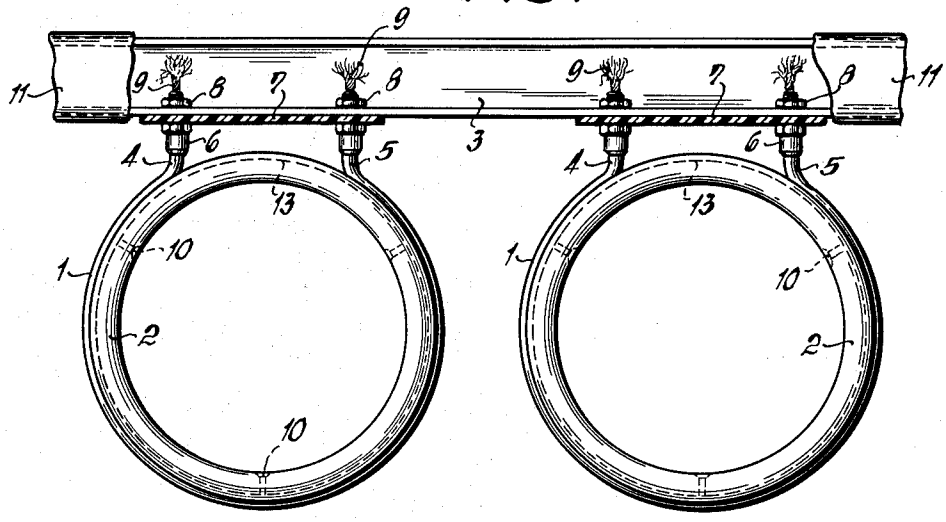


FIG. 2

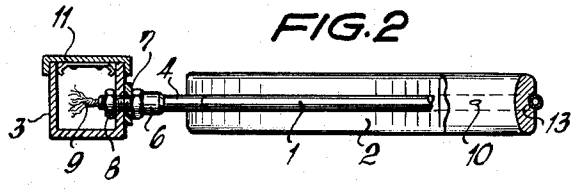


FIG. 3

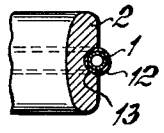


FIG. 5

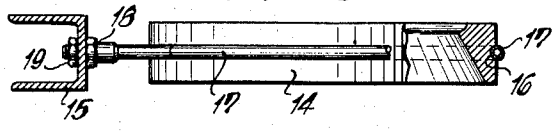


FIG. 4

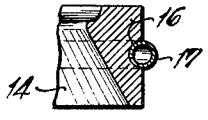


FIG. 6

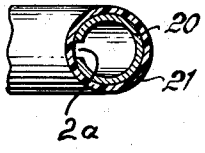


FIG. 7

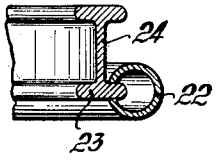
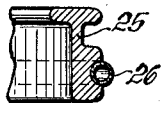


FIG. 8



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FIG. 9

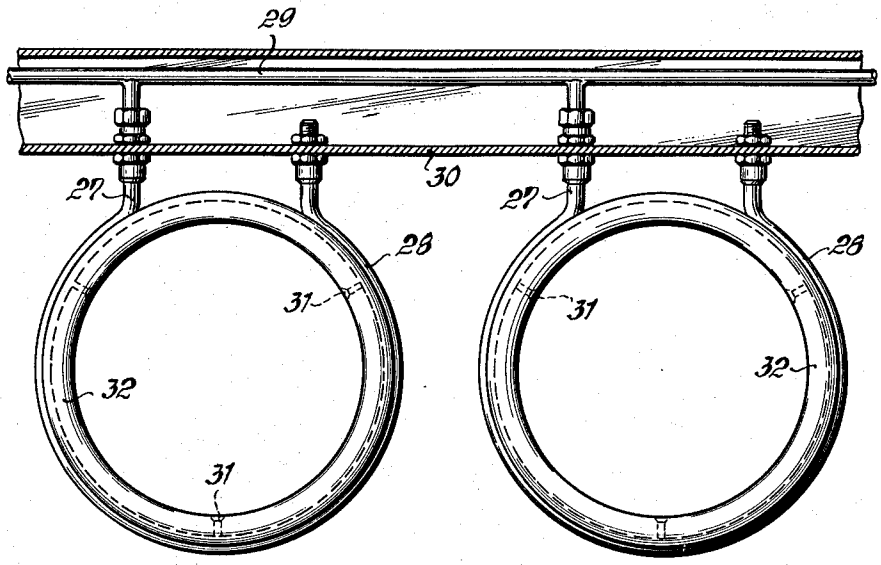


FIG. 11

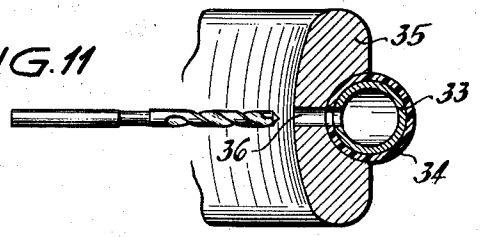
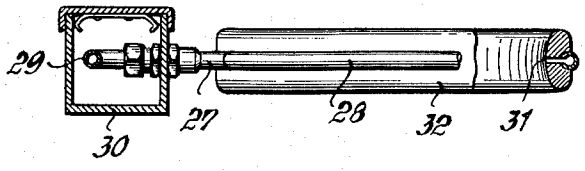


FIG. 10



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FIG. 12

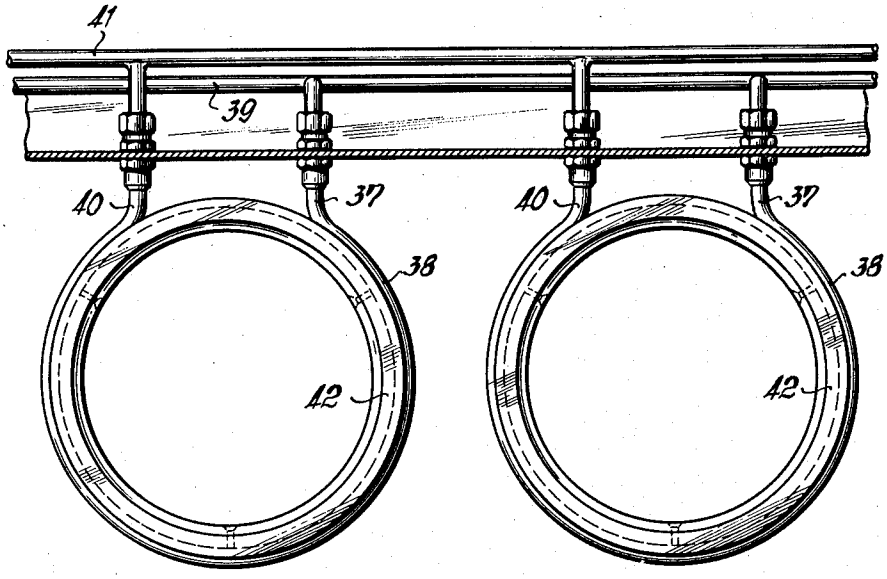
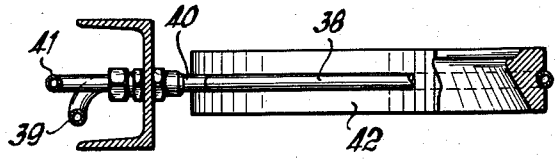


FIG. 13



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LUBRICATING HOLDER FOR SPINNING AND TWISTING RINGS

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Claims priority, application Germany Sept. 12, 1959
6 Claims. (Cl. 57—120)

The present invention relates to a holder for an individual spinning and twisting ring adapted to engage such ring at the circumference thereof and having two bent-off ends for connection with a holding member extending in longitudinal direction of the spinning or twisting machine to which the spinning and twisting ring is to be connected.

Various designs for so-called individual ring holders have been known. Most of these known ring holders consist of massive parts which have to be very precisely machined in order to assure that the rings to be mounted therein will properly fit in such holders while the position of the ring has to be adjustable by means of the ring holder in different directions in order to avoid difficulties which otherwise might occur in view of a faulty adjustment of the ring with regard to the spindle. Such individual ring holders are employed for ordinary rings without lubrication as well as for the well known self-lubricating rings. These heretofore known individual ring holders have, however, not been adopted in practice to the extent which would normally be warranted by the importance of such rings because the drawbacks of the heretofore known individual ring holders are too numerous. These drawbacks are due first of all to the rather complicated and difficult way of manufacturing such ring holders in view of the required fitting precision, especially for self-lubricating rings, because with the last mentioned type of rings it is not only necessary that such rings are oil-tight in their fit but they must also be oil-tight if it is intended to connect each individual ring holder to a common lubricant distributor. Also the easy adjustability of the ring is of great importance, particularly if the alignment of the ring center in the longitudinal axis of the spindle has to be effected solely by adjustment of the ring as it is the case with positively driven spindles. In this connection it is a matter of course that also the horizontal position of the ring must be maintained which is all the more difficult the greater the size of the ring and the greater the weight of the holder.

Furthermore, the heretofore known individual ring holders, due to their relatively large dimensions, have the tendency that dirt and lint easily collect thereon, a fact which is definitely not desired because the danger of spinning-in such dirt accumulations or the like is all the higher the more dirt or lint has collected in the neighborhood of the running surface of the ring. Also an automatic removal of the usually collecting fiber tuft or "eyebrow" on the runners will, due to the unfavorable dimensions of the heretofore known individual ring holders, be prevented along the height and width of such ring holders so that special "eyebrow catchers" will additionally have to be mounted on the holders.

In an effort to avoid the above mentioned drawbacks encountered in connection with heretofore known individual ring holders, it has been suggested to insert a wire-like holder in a circumferential groove of a spinning ring and to fasten to a ring rail the two bent-off ends of the holders closely adjacent to each other by means of a single connecting screw. In this connection a solid wire cross-section was employed which, while permitting the connection of an ordinary ring to a ring rail as long as the ring had a formerly customary diameter, does not assure a proper maintaining of the position of the spinning

ring with regard to the longitudinal axis of the spindle and in the respective adjusted horizontal plane. This is due to the fact that the holder made of solid wire can by a push hitting the ring easily be moved out of its correct position and be displaced into an undesired position. Moreover, this heretofore known wire holder is not suitable for the holding of self-lubricating rings which rings are being employed more and more in view of the desired increase in the delivery speed and thereby the desired increase in the runner speed.

It is, therefore, an object of the present invention to provide a holder for an individual spinning and twisting ring which will overcome the above mentioned drawbacks.

It is another object of this invention to provide a holder for an individual spinning and twisting ring which may be employed for all types of spinning and twisting rings regardless of whether ordinary rings without lubrication or self-lubricating rings of any known shape and size are to be employed.

These and other objects and advantages of the invenvention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

FIG. 1 illustrates a top view of two self-lubricating rings which are connected by means of a holder according to the invention to a holding member extending in longitudinal direction of the respective spinning or twisting machine.

FIG. 2 is an end view of FIG. 1.

FIG. 3 is a small section of a ring according to FIG. 2 on a larger scale than that of FIG. 2.

FIG. 4 is a section similar to that of FIG. 3 but of a modified ring form.

FIG. 5 is an end view of a holder according to the invention for connecting a ring without lubrication.

FIG. 6 is a cross section through a holder of a modified form.

FIG. 7 is a section of a I-shaped flange ring with a holder according to the invention.

FIG. 8 is a part of a T-flange ring with a holder according to the invention.

FIG. 9 is a top view of two spinning rings with a holder according to the invention.

FIG. 10 is an end view of FIG. 9.

FIG. 11 shows on a larger scale than that of FIG. 10 a section through a portion of a self-lubricating ring with a holder according to the invention.

FIG. 12 is a top view of two spinning rings connected to a holding member by two holders according to the invention.

FIG. 13 is an end view of a holder with ring according to FIG. 12.

General Arrangement

The above outlined objects have been realized according to the invention by making the holder of a tube both ends of which are connected to the holding member in spaced relationship to each other in such a way that the tube is looped around the ring by an angle exceeding 180° but not exceeding 330°. The said tube may have a cross section closed in itself or may have a cross section which opens toward the outer surface of the ring in a slit-like manner. In both instances, the tube may be provided with a closed coating of elastic synthetic material, as for instance polyvinylchloride.

The mounting of a spinning and twisting ring by means of a holder according to the present invention may be effected in various ways. Thus, the tube may be placed in a circular groove at the outer periphery of rings with a smooth outer surface. When a tube is employed which has a slit-like opening along the length thereof, the tube

may catch over a flange of an I-shaped flange ring at the outwardly directed portion thereof.

For purposes of universal use, the holder according to the present invention may be so designed that one or more lubricating wicks are arranged in the tube. However, if desired, one connecting end of the tube may communicate with a lubricant supply conduit extending in longitudinal direction of the spinning or twisting machine. According to another modification, each connecting end of the tube may communicate with a conduit extending in longitudinal direction of the spinning and twisting machine and serving for supplying and discharging a lubricant, cooling medium, or the like. According to a still further development of the invention, prior to installing the tube, the latter may be provided with passages for a lubricant, or such passages may be provided after installation of the ring. Furthermore, the holder may be so designed that the tube may be connected to the holding member by placing therebetween a plate or disc of deformable material which will maintain the desired spacing between the tube ends.

Structural Arrangement

Referring now to the drawings, the holder designed as individual ring holder consists in each instance of a tube both ends of which are connected to a holding member forming part of a spinning or twisting machine and extending in longitudinal direction thereof. The said two ends are connected to said holding member in spaced relationship to each other in such a way that the tube is looped around the ring by an angle exceeding 180° but not exceeding 330°. This looping angle, defined by the just mentioned upper and lower limits, is indispensable for a proper connection and permanent assurance of the position of the ring. If the looping angle is too small, the ring will have the tendency to tilt or deviate toward the holding member, whereas if the looping angle gets to close to 360°, a tilting of the entire holder with ring from the horizontal plane may occur. Moreover, with self-lubricating rings it is important that the distribution of the lubricant film on the running surface of the ring will be as uniform as possible over the entire circumference of the ring. Also in this respect the looping angle may be an important factor.

Specifically referring to FIGS. 1 and 2, the holder shown therein and formed by a tube **1** for holding self-lubricating rings **2** to the holding member or ring rail **3** extending in longitudinal direction of a spinning or twisting machine has the tube **1** looped around ring **2** by an angle of approximately 300°. The two bent-off ends or leg portions **4** and **5** of tube **1** are provided with an outer thread on which is screwed toward ring **2** a box nut **6**. The said nuts **6** are engaged by an intermediate plate **7** of deformable material, as for instance cellular polyurethanes, which simultaneously determines the spacing between the ends of the tube **1**. The side wall of the ring rail **3** which in the specific construction shown in FIGS. 1 and 2 forms a U-shaped passage, is provided with correspondingly spaced bores through which the ends or leg portions **4** and **5** of tube **1** are passed through so that the intermediate plate **7** engages the said side wall. At the inner side of the ring rail **3** adjusting nuts **8** are screwed to the threaded ends **4** and **5** of tube **1**. It is by means of said adjusting nuts **8** that the ring **2** can finally be fastened by means of tube **1** to the holder **3** as soon as ring **2** has been precisely aligned. The bores in the side wall of the ring rail **3** may have a larger diameter than the outer diameter of tube **1** in order to assure that ring **2** may be aligned precisely with regard to the spindle in all three directions. Inasmuch as ring **2** is a self-lubricating ring, the interior of tube **1** is provided with a lubricating wick **9** the ends of which protrude from the connecting ends or leg portions **4** and **5** of the tube into the U-shaped passage of ring rail **3**. Said U-shaped passage is adapted to receive a suitable lubricant so that the running surface of the ring may be supplied with lubricant through the aid of wick **9** when the ring itself is provided with lubricating passages **10**. It is a matter of course that also tube **1** will in this instance have to be provided at the corresponding points with passages for the lubricant.

The intermediate plate **7** of deformable material simultaneously will act as seal for the bores in the side wall of the holding member or ring rail **3**. If in certain instances it should be desirable, it will, of course, also be possible to mount a similar intermediate plate on the inner side of the ring rail **3**. Advantageously, the ring rail **3** is covered by a lid **11** which will protect the lubricant in the channel-shaped ring rail **3** against soiling.

FIG. 2 clearly shows that tube **1** has a closed cross section. According to the showing of FIG. 3, the tube **1** likewise has a closed cross section but in addition thereto is provided with an elastic synthetic coating or cover for instance of polyvinylchloride. In both instances, i.e. according to FIG. 2 and to FIG. 3, tube **1** is placed in a circular groove **13** in the peripheral surface of ring **2**. Ordinarily, it is sufficient if tube **1** without the cover **12** is employed as holder, however, the coat or cover **12** on the outer surface of tube **1** will yield an even more reliable holding because any possible disuniformity or unevenness in the circular groove **13** or in the outer surface of tube **1** will easily be compensated so that at all points a proper and close contact will be assured between the bottom of groove **13** and the outer surface of the coated tube **1**.

FIGS. 4 and 5 illustrate in a manner similar to that described in connection with FIGS. 1 to 3, the mounting of a spinning ring **14** which differs from spinning ring **2** by a different cross section. The connection itself is effected by means of a holder according to the invention to a holding member or ring rail **15** extending in the longitudinal direction of the spinning or twisting machine. In this instance, the spinning ring **14** is designed as ordinary ring without lubrication and has its outer surface likewise provided with a circular groove **16** for receiving the tube **17**. According to this particular embodiment, tube **17** does not contain in the interior thereof a lubricating wick but, similar to the embodiment of FIGS. 1 and 2, is connected by means of a screw cap or box nut **18** and arresting nuts **19** to the holding member or ring rail **15**. Also in this instance the ring rail **15** has a U-shaped cross section which, however, with this embodiment does not form a passage for a lubricant. If desired, tube **17** may be provided with a coating of an elastic material similar to tube **1** of FIG. 3 in order to compensate for any unevenness or surface faults as referred to above.

It is furthermore possible to design the tube so that it will have a cross section which confines a slit or gap toward the outer surface of the ring. Such cross section will, over a tube with closed cross section, assure a better deformability of the holder and, due to its elasticity obtained by the provision of said slit or gap, will also assure a higher snugness for compensating differences in tolerance. FIG. 6 illustrates a correspondingly designed tube **20** split open along its length so that the longitudinal edges along the split of the tube form a gap **2***a*, said tube **20** being covered by a coat or layer **21** of elastic synthetic material of the type above referred to. Due to the advantages inherent to the provision of the gap **2***a* as mentioned above, the tube is also able to serve as holder for a customary I-shaped flange ring in a proper manner.

According to FIG. 7, the split-open tube **22** extends over the outwardly directed portion of the lower flange **23** of a customary I-shaped flange ring **24**. The connection of the tube ends for instance to a similar holding member could be effected in conformity with the showing of FIG. 5 and holding member **15**. Also in this instance, tube **22** may be covered with an elastic coat or layer by means of which the already good properties of the holder would be further improved. Also a simple flange ring **25** as illustrated in FIG. 8 could be held by a looping tube **26** and

could be connected to a holding member or ring rail similar to the ring rail **15** of FIG. 5. Of course, also in this instance the tube **26** may be covered with a coat or layer of elastic synthetic material.

The above mentioned examples already illustrate the multiple modes of employment of a holder according to the invention, it being assumed that customary spinning rings of steel are employed. The above mentioned properties of the holder according to the invention make the same particularly suitable for connecting spinning and twisting rings of more sensitive materials such as ceramics, glass, synthetic material as for instance polyamides or the like because it is particularly indispensable for rings of this type to assure a proper snugness and a proper elastic clamping of the holder to allow a large employment of such rings in practice. This could not be obtained with heretofore known individual ring holders in view of the rigidity thereof. In particular, tubes with a coat or layer of elastic synthetic material or with a split cross section are particularly suitable for the above purpose so that also the drawbacks inherent to rings made of more sensitive materials will be compensated which drawbacks were caused by stresses in the material or by heat expansion.

It is also possible to produce a split tube holder by cutting open a full or solid cross section so that at least an improved elasticity could be obtained as is the case with split-up tubes. Also in such instance a cover layer or coating of elastic material could be applied.

A holder according to the present invention also has other modes of application.

FIGS. 9 and 10 illustrate a similar embodiment for the holding of self-lubricating spinning rings similar to FIGS. 1 and 2. However, in this instance, the connecting end or leg portion **27** of tube **28** communicates with a lubricant feeding conduit **29** which extends in the same longitudinal direction as the holding member or ring rail **30**. In this way, it will be possible from the lubricant feeding conduit **29** to introduce into tube **28** a liquid or paste-like lubricant which will then be able from tube **28** to pass through corresponding passages **31** to the running surface of ring **32**. With this design of the holder, the holding member **30** will advantageously have a channel of U-shaped cross section as it has been shown in FIG. 2. The embodiment according to FIGS. 9 and 10 employs a tube **28** with closed cross section. The passage **31** of ring **32** permits the passage of lubricant from tube **28** to the running surface of ring **32**.

If desired, tube **28** could also have a split cross section and could be provided with a coat or cover of elastic synthetic material similar to the showing of FIG. 6.

FIG. 11 shows a corresponding possibility with split tube **33** and coat **34** of elastic material, said split tube **33** with coat **34** serving as holder for self-lubricating ring **35**. If ring **35** during its manufacture was provided with a plurality of circumferential passages for the lubricant properly distributed over said circumference, there exists the possibility to provide lubricant passages from tube **33** or coat **34** to the passages **36** in ring **35** after the ring has been installed. In this way, the quantity of lubricant to be dispensed to the running surface of the ring may be varied in conformity with the requirements. For instance, only the lubricant passage **36** may be connected with the interior of tube **33** by boring a hole into the cover layer **34** of elastic material from the inside of ring **35** through the lubricant passage **36** so that at this point the lubricant may pass from the split tube **33** to the running surface of ring **35**. If a single passage communicating with tube **33** does not feed a sufficient quantity of lubricant to the running surface of ring **35**, it will be possible without difficulties to provide a second or third lubricant passage **36** communicating with tube **33** by drilling cover layer **34** accordingly until a sufficient lubricant film will be obtained on the running surface of ring **35**. If at a later time less lubricant or no lubricant at all should be desired on the running surface of ring **35** this can easily be effected. To this end, the connection of that end of the tube which is not in communication with the lubricant feeding line **29** is loosened somewhat and the ring will be turned by at least such a distance as corresponds to the diameter of the lubricant passages whereupon the loosened end of the tube is again firmly connected. In this position it would also be possible to provide one or two lubricant passages **36** to be connected with the interior of tube **33** so that lubricant will pass to the running surface of ring **35** through said new openings only, whereas the previously employed lubricant passages will now be sealed off by the cover **34** of tube **33** and therefore will be ineffective. In this way, an adaptation of the lubricant film to the respective occurring conditions of operation will be possible in contrast to the situation encountered with heretofore known individual ring holders.

A further embodiment of the invention is illustrated in FIGS. 12 and 13 which basically corresponds to the embodiment of FIGS. 9 and 10. However, in this instance also the other connecting end or leg portion **37** of tube **38** communicates with a discharge line **39**, whereas the first connecting end **40**, similar to the previously described embodiment communicates with a feed line **41**. In this way, it is possible to circulate the lubricant while small quantities from the circulating lubricant may pass through lubricant passages to the running surface of ring **42**. On the other hand, the feed line **41**, tube **38**, in this instance without passages, and the discharge line **39** may be passed through by a cooling fluid which may bring about such great cooling of ring **42** that a slight deposit of humidity will form which in many instances will on the surface of ring **42** act in a manner similar to the otherwise supplied lubricant. This yields a particular sliding effect for the runner when employing rings of ceramic or glass.

In many instances it is advantageous to allow the tube and the ring to merge into each other as far as possible in order to reduce the possibility for the accumulation of dust and lint to a minimum. Thus, for instance, the circular groove for receiving the tube at the outer circumference of the ring may have a semi-circular cross-sectional shape whereby the tube will protrude beyond the outer surface of the ring not to a greater extent than the shoulders of rings with a fitted-in seat. In this way, the important advantage is obtained that the heretofore known "eyebrow catchers" will be superfluous because the lint or eyebrow accumulated on the runner will be thrown off without difficulty by the centrifugal force because there will not be present any parts which will prevent such throwing off.

The above described and illustrated embodiments show the various possibilities for obtaining a proper holding and securing of the position of spinning and twisting rings. It is, however, to be understood that the present invention is, by no means, limited to the particular embodiments shown by way of example only in the drawings but also comprises any modifications within the scope of the appended claims. Thus, the tube diameter may be adapted to the shape and dimensions of the ring or to the type thereof, particularly since the tube itself may be made of different materials depending on the respective stress to be encountered. Also cross-sectional shapes other than round ones may be employed for the tubes.

It is, of course, to be understood that the present invention is, by no means, limited to the particular constructions shown in the drawings but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. As an article of manufacture: a holder for individual spinning and twisting rings, said holder being formed by a tube having a loop-shaped portion with lubricant-conveying passage means leading from the interior of said tube to the inner periphery of said loop-

shaped portion, said holder also having leg portions angled off from each end of said loop-shaped portion for connection with a conduit confining rail member of a textile machine whereby a lubricant may be conveyed from such rail member to the inner periphery of said loop-shaped portion, said leg portions being spaced from each other by such a distance that said loop-shaped portion will extend around and engage the ring to be received thereby by an angle varying from a maximum of 330° to a minimum angle just in excess of 180°, and at least one wick arranged within said tube.

2. In combination with a rail member for connection with spinning and twisting machines: a holder for receiving individual spinning and twisting rings, said holder being formed by a tube having a loop-shaped portion and leg portions angled off from the ends of said loop-shaped portion and connected to said rail member, said rail member comprising lubricant conveying passage means communicating with the interior of at least one of said leg portions and thereby also with said loop-shaped portion, said leg portions being spaced from each other by such a distance that said loop-shaped portion will extend around and engage the ring to be received thereby by an angle varying from a maximum of 330° to a minimum angle just in excess of 180°.

3. An arrangement according to claim 2, in which said rail member comprises first conduit means for connection with a source of fluid medium and also comprises second conduit means having a discharge opening, one of said leg portions being connected to said first conduit means and the other one of said leg portions being connected to said second conduit means.

4. A holder according to claim 2, in which the inner wall portion of said loop-shaped portion is provided with passage means extending therethrough for allowing fluid

from the interior of said loop-shaped portion to pass therethrough onto a ring received by said holder.

5. In combination with a rail member for connection with spinning and twisting machines: a holder for receiving individual spinning and twisting rings, said holder being formed by a tube having a loop-shaped portion and leg portions angled off from the ends of said loop-shaped portions, plate means of deformable material interposed between said rail member and said leg portions, said leg portions extending through said plate means and being firmly connected thereto and to said rail member, said rail member comprising passage means adapted to convey a lubricant and communicating with the interior of at least one of said leg portions and thereby also with said loop-shaped portion, said leg portions being spaced from each other by such a distance that said loop-shaped portion will extend around and engage the ring to be received thereby by an angle varying from a maximum of 330° to a minimum angle just in excess of 180°.

6. An arrangement according to claim 2, in which said tube is provided with slit means extending along the inner periphery of said loop-shaped portion, and in which said loop-shaped portion is covered by cover means of elastic material, said cover means having passage means therethrough arranged in alignment with and leading into said slit means.

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