Aug. 13, 1963 A. E. BACKUS 3,100,374

TRAVELER RING ASSEMBLIES

Filed July 11, 1962 2 Sheets-Sheet 1

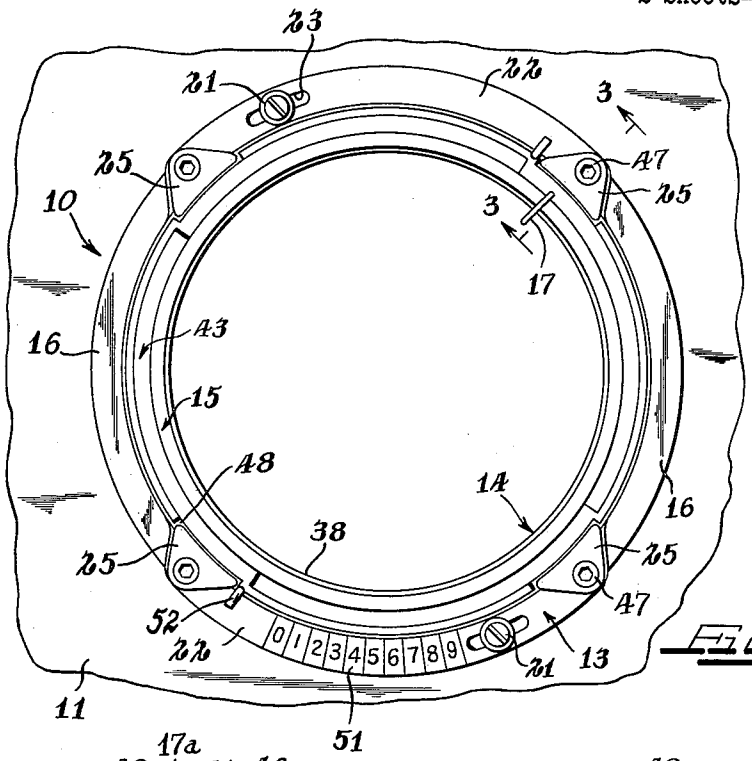


Fig. 1.

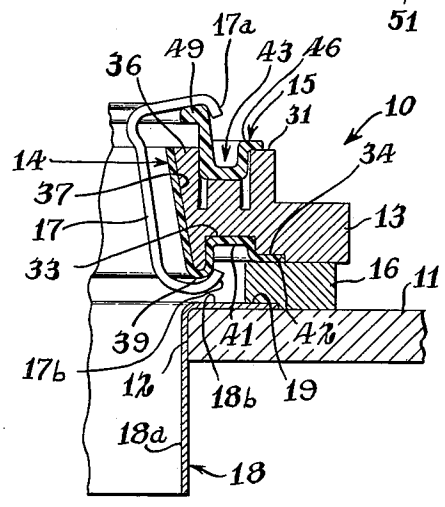


Fig. 4.

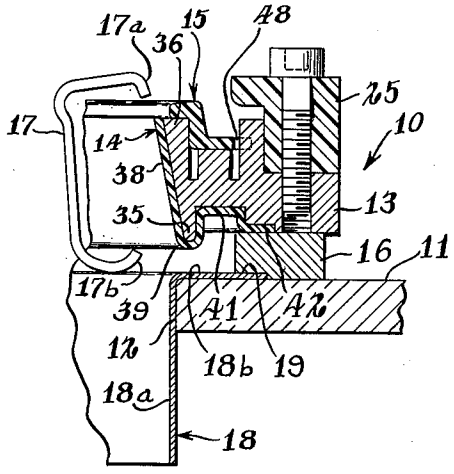


Fig. 3.

Inventor

ARTHUR E. BACKUS

by Fidler, Beardsley & Bradley

Attys.

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TRAVELER RING ASSEMBLIES

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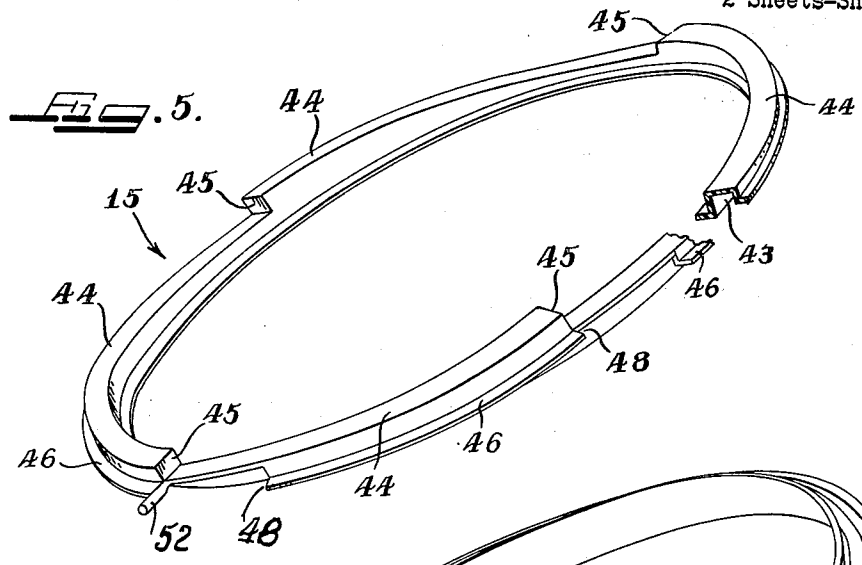


Fig. 5.

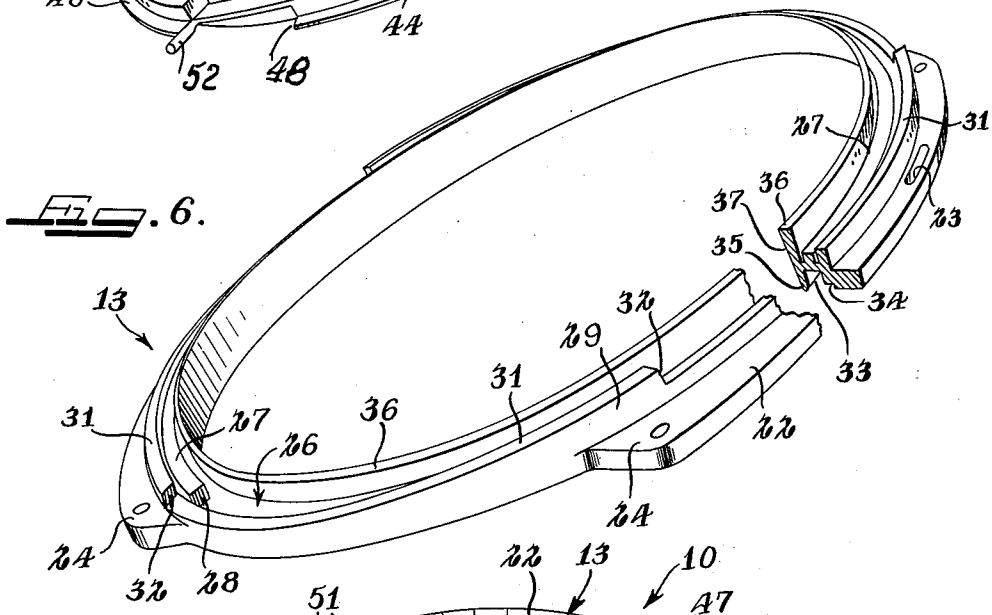


Fig. 6.

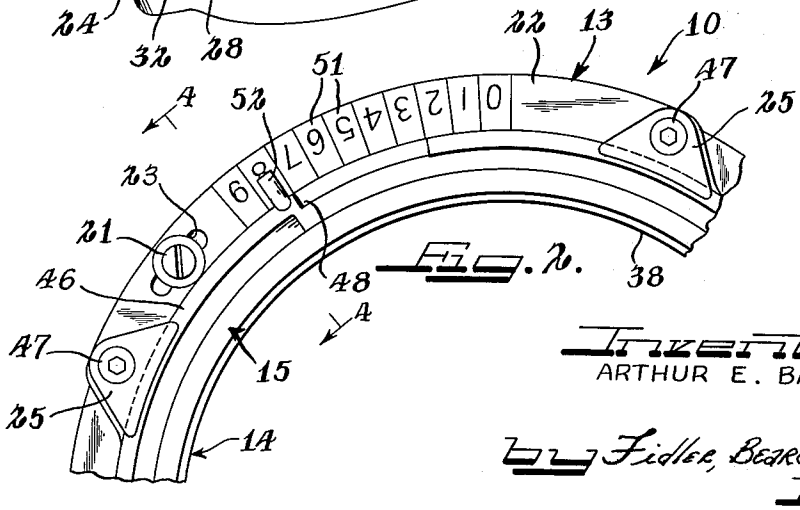


Fig. 7.

Inventor
ARTHUR E. BACKUS

by Fidler, Beardsley & Bradley
Attys.

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TRAVELER RING ASSEMBLIES

Arthur E. Backus, 1023 Thorndale Ave., Chicago, Ill.

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16 Claims. (Cl. 57—122)

The invention relates to improvements in traveler ring assemblies of the character used in the production of thread or yarn and is concerned primarily with the novel construction and assembly of its component parts which requires no lubrication and which permits selective heighth adjustment of the upper traveler guiding ring thereof to facilitate mounting and removal of the traveler and control the clearance between the traveler and guiding rings to suit varying conditions.

Present known types of traveler guiding rings made of one piece are substantially rigid and non-deformable and require that the traveler be snapped over the ring and, when replacement is required, the traveler must be broken or deformed. This mode of mounting or removal often results in the working surface of the traveler ring becoming chipped, notched or otherwise marred to such extent that there is a tendency for the traveler, which advances around the traveler ring at a high rate of speed during machine operation, to flutter or chatter. As a result, the thread or yarn is fed to the bobbin or quill in such manner as to wind non-uniformly and increase the tension on the thread or yarn to a point where it breaks.

Known traveler guide assemblies made of a plurality of relatively adjustable parts intended to adapt them for ease in mounting or removing the traveler, embody various structural characteristics that render them excessively costly to manufacture, or they are incapable of heighth adjustment to intermediate positions so as to control clearance between the guiding ring and traveler to suit varying conditions of use.

The structure herein disclosed embodies structural characteristics that result in an assembly that overcomes the foregoing and other disadvantages resulting from the use of prior known types of traveler ring assemblies. More particularly, the present assembly involves the use of a pair of concentrically arranged traveler guiding rings, one of which is clamped firmly to the ring rail and the other of which is rotatable adjustable to vary the setting or effective heighth of the working surface of said ring and may then be locked in place firmly. Further, the assembly is adapted to receive and hold a yarn shield in place and includes accessory means to facilitate mounting of the assembly on a ring rail having an opening that is smaller than the size necessary to insure sufficient clearance for the traveler.

It is therefore an object of the invention to provide a novel traveler ring assembly of the character described.

Another object is to provide novel means to facilitate heighth adjustment of the upper traveler guiding ring and to lock it in an adjusted position.

Another object is to provide a traveler ring assembly with novel means for mounting a yarn shield in place.

Another object is to provide a traveler ring assembly that is not expensive or difficult to manufacture; may be easily and quickly assembled and readily adjusted in effective heighth to facilitate mounting and removal of the traveler; may be locked firmly in any predetermined heighth adjustment even while in use, and which has long serviceable life.

The structure by means of which the above noted and other advantages of the invention are attained will be described in the following specification, taken in conjunction with the accompanying drawings, showing a preferred illustrative embodiment of the invention, in which:

FIG. 1 is a top plan view of the traveler ring assembly showing it mounted on a rail frame and with the upper traveler guiding ring in a position assumed at the time of assembly.

FIG. 2 is an enlarged fragmentary plan view of the assembly, showing the upper traveler guiding ring adjusted circumferentially in a direction to increase its effective heighth.

FIG. 3 is an enlarged detail sectional view taken substantially on line 3—3 of FIG. 1.

FIG. 4 is an enlarged detail sectional view taken substantially on line 4—4 of FIG. 2.

FIG. 5 is an inverted perspective view of the upper traveler guiding ring, partially broken away.

FIG. 6 is a perspective view of the base ring, showing a portion broken away.

Referring to the exemplary disclosure of the present invention as shown in the accompanying drawings, the traveler ring assembly **10** is shown mounted on a rail frame **11**. In practice the rail frame is of a length commensurate with the size of the spinning or twisting machine of which it is a part and it is formed with a series of circular openings **12** (one best shown in FIGS. 3 and 4) and over each of which is mounted one traveler ring assembly.

The traveler ring assembly **10** illustrated, is comprised essentially of a base ring **13** upon which is mounted a lower traveler guiding ring **14** and an upper traveler guiding ring **15**. In the embodiment illustrated, the base ring **13** is seated upon a clamp ring **16** (FIGS. 3 and 4) which constitutes an adapter that is used in installations where the circular opening **12** in rail frame **11** is of insufficient size to accommodate a traveler **17** that is engaged over the guiding rings **14—15** in the usual manner. The assembly also includes a yarn shield **18** having a depending annular skirt **18***a* that extends downwardly through circular opening **12** and has an external circumferential flange **18***b* that is seated in an annular recess **19** on the bottom face of clamp ring **16** so as to be clamped firmly between said clamp ring and rail frame **11**. This shield protects the yarn or thread, in the event of breakage, against coming into contact with lubricated parts of the machine on the under side of the rail frame. The base ring **13** and clamp ring **16**, if used, are securely held in place on the rail frame as by bolts or screws **21**.

The base ring **13**, best shown in FIG. 6, comprises a circular body cast or otherwise formed from suitable metal, such as aluminum, and having a pair of diametrically opposed external mounting flange segments **22** formed with apertures **23** to receive the mounting bolts **21** therethrough. The extremities of flange segments **22** have bearing seats **24** thereon upon each of which is mounted a clamp **25** to be described in detail presently.

The body portion of the base ring **13** has an upwardly opening circumferential channel **26** on its top surface, the bottom wall of which is formed with a plurality of upwardly circumferentially inclined surfaces **27**, preferably four as shown, each terminating at its juncture with the other in a stop shoulder **28**. The outside circumferential wall **29** of said upwardly opening channel has corresponding upwardly circumferentially inclined top surfaces **31** each terminating in a stop shoulder **32** in radial alignment with one of the shoulders **28**. The shoulders **28—32** are disposed in the region of each bearing seat **24**.

The bottom face of base ring **13** is formed with an inverted circumferential channel **33** that terminates on its outside edge in an annular marginal recess **34**. The provision of this channel **33** defines an inner depending circumferential flange **35** whereas channel **26** on the upper surface of said base ring defines an inner upstanding circumferential flange **36**. As perhaps best shown in FIGS. 3 and 4, these opposed flanges **35, 36** are con-

tiguous one with the other with the upstanding flange **36** offset inwardly radially from depending flange **35** so that the connecting wall surface or inside peripheral surface **37** of the base ring is inclined inwardly radially upwardly as shown.

As noted hereinabove, the base ring **13** mounts the lower and upper traveler guiding rings **14** and **15** respectively. The lower traveler guiding ring **14** is of thin wall construction and is made preferably of suitable shape-retaining plastic material and it is shaped in section, as shown in FIGS. 3 and 4, to fit snugly in and conform to opposed surfaces of base ring **13**. More specifically, said lower traveler guiding ring **14** includes an inner upwardly inclined cylindrical wall **38** which lies flat against the inside peripheral surface **37** of the base ring. The lower edge of said wall **38** merges with a circumferential nose portion **39** that embraces the depending circumferential flange **35**, and terminates in an annular rib **41** that fits snugly in channel **33** and has its outer margin defining an external peripheral flange **42** that seats in annular marginal recess **34**. When the base ring **13** is secured to the rail frame, or to clamp ring **16**, the flange **42** is clamped firmly in place so as to hold the lower traveler guiding ring **14** against movement in any direction.

The upper traveler guiding ring **15**, best shown in FIG. 5, also is fabricated as by molding plastic material and is comprised preferably of a rigid thin wall structure substantially channel-shaped in section and is adapted to be assembled, right side up, on the base ring with its channel portion seated in the base ring channel **26**. The bottom wall of the channel **43** of said upper traveler guiding ring is divided into segments each inclined upwardly, as at **44**, from a substantially vertical shoulder **45** so as to define a plurality of cam surfaces complemental to the four circumferentially inclined surfaces **27** on the base ring. The upper traveler guiding ring also has outwardly extending flange segments **46** integral with the upper margin of the outside wall of each cam segment **44** that extends parallel to the bottom wall of the respective cam segment and which is adapted to rest upon the respective inclined surfaces **31** on the base ring. When assembled on the base ring the upper traveler guiding ring is held in place rotatably by means of the clamp members **25** which are secured to bearing seats **24** as by means of screws **47**.

In order to adapt the upper traveler guiding ring **15** for assembly and disassembly without removing clamp members **25**, the outwardly extending flange segments **46** have their opposed ends spaced apart to provide a gap **48** of sufficient width to permit the upper ring to be mounted or removed by aligning the gap with the clamp member **25**, as shown in FIG. 1.

When mounted, the upper traveler guiding ring can be rotated manually relative to base ring **13** so as to cause the former to be carried into elevated or lowered positions through surface engagement of the cam surfaces **27—44** and **31—46** to permit the mounting or removal of traveler **17**. As shown in FIGS. 1 and 3, the upper traveler guiding ring **15** is in its extreme lowermost position which affords clearance for the terminals **17***a*—**17***b* of traveler **17** to pass freely over the wear surfaces of the traveler guiding rings. When rotated counterclockwise, the upper traveler guiding ring is carried into a raised position such as illustrated in FIGS. 2 and 4, and the traveler terminal ends are engaged over the upper peripheral edge or wear surface **49** of the upper traveler guiding ring and around the nose portion **39** of the lower traveler guiding ring so as to be held loosely in place.

In order to visually determine the relative position of the upper traveler guiding ring so as to facilitate its accurate repositioning after it has been rotated to permit replacement of a traveler, the upper face of the base ring flange segment **22** is provided with graduation markings **51** and the upper traveler guiding ring **15** has a radially extending arm **52** for selective positioning relative to said markings. Preferably there are two such arms **52** diametrically opposed to each other so as to additionally afford means for manually engaging the upper traveler guiding ring for rotating same. When the ring is adjusted, clamp members **25** are tightened to prevent ring displacement.

Although I have described a preferred embodiment of my invention in considerable detail, it will be understood that the description thereof is intended to be illustrative, rather than restrictive, as many details of the structure shown may be modified or changed without departing from the spirit or scope of the invention. Accordingly, I do not desire to be restricted to the exact construction described.

I claim:

1. A traveler ring assembly comprising a base ring, means securing said ring to a rail frame, a plurality of circumferentially disposed upwardly inclined cam surfaces on a top surface of said base ring, a lower traveler guiding ring clamped between the rail frame and the base ring and overlying the inner peripheral wall of said base ring, an upper traveler guiding ring seated on said base ring, a plurality of circumferentially disposed upwardly inclined cam surfaces on the bottom surface of the upper traveler guiding ring, said upper traveler guiding ring cam surfaces seating on the base ring cam surfaces and being rotatable relative to the base ring to vary the effective highth of the upper traveler guiding ring, and means to lock the upper traveler ring in positions of relative adjustment.

2. The traveler ring assembly recited in claim 1, in which means to lock the upper traveler guiding ring comprises clamps mounted on the base ring.

3. The traveler ring assembly recited in claim 1, in which manually engageable means is formed on the upper traveler guiding ring to facilitate its being rotated.

4. The traveler ring assembly recited in claim 1, in which the upper traveler guiding ring and base ring have complemental means indicating the relative positions of said rings circumferentially.

5. The traveler ring assembly recited in claim 1, in which the means to lock the upper traveler guiding ring adjusted comprises clamps mounted on the base ring and engageable over the peripheral margin of the upper traveler guiding ring and wherein the said margin has peripheral recesses to facilitate its removal without removal of the clamps.

6. The traveler ring assembly recited in claim 1, in which a yarn shield is clamped between the base ring and rail frame.

7. The traveler ring assembly recited in claim 1, in which a clamp ring is arranged between the base ring and rail frame and a yarn shield is clamped between said clamp ring and rail frame.

8. A traveler ring assembly comprising a base ring, means securing said ring to a rail frame, a plurality of circumferentially inclined cam surfaces on a top surface of said base ring, a lower traveler guiding ring clamped between the rail frame and base ring, an upper traveler ring seated on said base ring, and a plurality of circumferentially inclined cam surfaces on the bottom surface of the upper traveler guiding ring, said upper traveler guiding ring cam surfaces seating on the base ring cam surfaces, said upper traveler guiding ring being rotatable relative to the base ring to vary the effective highth of the upper traveler ring.

9. A traveler ring assembly comprising a base ring, means to secure said ring to a rail frame, a lower traveler guiding ring secured to the base ring and having an upwardly extending inner circumferential wall overlying the inside peripheral surface of the base ring, said lower traveler ring having an annular nose portion for engagement of one terminal of a traveler thereover, an upper traveler guiding ring arranged concentric with and seated on the base ring, matching cam surfaces on the opposed

surfaces of the upper traveler guiding ring and base ring, said upper traveler guiding ring being rotatable relative to the base ring for effective vertical adjustment of the upper traveler guiding ring to facilitate mounting and removal of the upper terminal of the traveler over said upper traveler guiding ring, and means to clamp said upper traveler guiding ring firmly in a position of circumferential adjustment.

10. A traveler ring assembly comprising a base ring, a lower traveler guiding ring secured to the base ring, said lower traveler guiding ring having an annular nose portion for engagement of one terminal of a traveler thereover, an upper traveler guiding ring arranged concentric with and seated on the base ring, and matching cam surfaces on the opposed surfaces of the upper traveler guiding ring and base ring, said upper traveler guiding ring being rotatable relative to the base ring for effective vertical adjustment of the upper traveler guiding ring to facilitate mounting and removal of the upper terminal of the traveler over said upper traveler guiding ring.

11. A traveler ring assembly comprising a base ring having cam surfaces on an upper surface thereof, a lower traveler guiding ring seated on the bottom face of said base ring and including a circumferential wall nested over the inside peripheral surface of the base ring, an upper traveler guiding ring seated on the base ring, said upper traveler guiding ring having cam surfaces on its bottom face in face to face engagement with the cam surfaces on said base ring, said upper traveler guiding ring being rotatable relative to the base ring so as to raise and lower the upper traveler guiding ring relative to the base ring and lower traveler guiding ring, and means to lock said upper traveler ring in a position of rotatable adjustment.

12. A traveler ring assembly comprising a base ring having cam surfaces on an upper surface thereof, a lower traveler guiding ring seated on the bottom face of said base ring and including a circumferential wall nested on the inside peripheral surface of the base ring and terminating at its lower edge in a nose portion, an upper traveler guiding ring seated on the base ring, said upper traveler guiding ring having cam surfaces on its bottom face in face to face engagement with the cam surfaces on said

base ring, said upper traveler ring being rotatable relative to the base ring so as to raise and lower the upper traveler guiding ring relative to the nose portion, and clamp on the base ring to lock said upper traveler guiding ring in a position of rotatable adjustment.

13. In a traveler ring assembly, a base ring comprising a circular body having an annular channel on its bottom surface and an inwardly upwardly inclined inside perimeter wall, an annular channel in the upper surface of said circular body defining inner and outer concentric upstanding flanges, a plurality of circumferentially disposed upwardly inclined cam surfaces on the inside bottom surface of said upper annular channel, and complemental cam surfaces on the free edge of the outer one of said concentric upstanding walls.

14. In a traveler ring assembly, a base ring comprising a circular body having an annular channel on its bottom surface and an inwardly upwardly inclined inside perimeter wall, an annular channel in the upper surface of said circular body defining inner and outer concentric upstanding flanges, and a plurality of upwardly inclined circumferentially extending cam surfaces on the inside bottom surface of said upper annular channel.

15. In a traveler ring assembly, an upper traveler guiding ring comprised of a molded thin wall annulus having upper and lower surfaces, a plurality of circumferentially extending cam segments on the lower surface thereof, and external perimeter flange segments on said ring, one substantially coextensive with and parallel to but offset upwardly from each of said first named cam segments.

16. In a traveler ring assembly, an upper traveler guiding ring comprising an annulus having upper and lower surfaces and a plurality of circumferentially extending cam segments on the lower surface thereof, and external perimeter flange segments on said ring, one substantially coextensive with and parallel to but offset upwardly from each of said first named cam segments.

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