

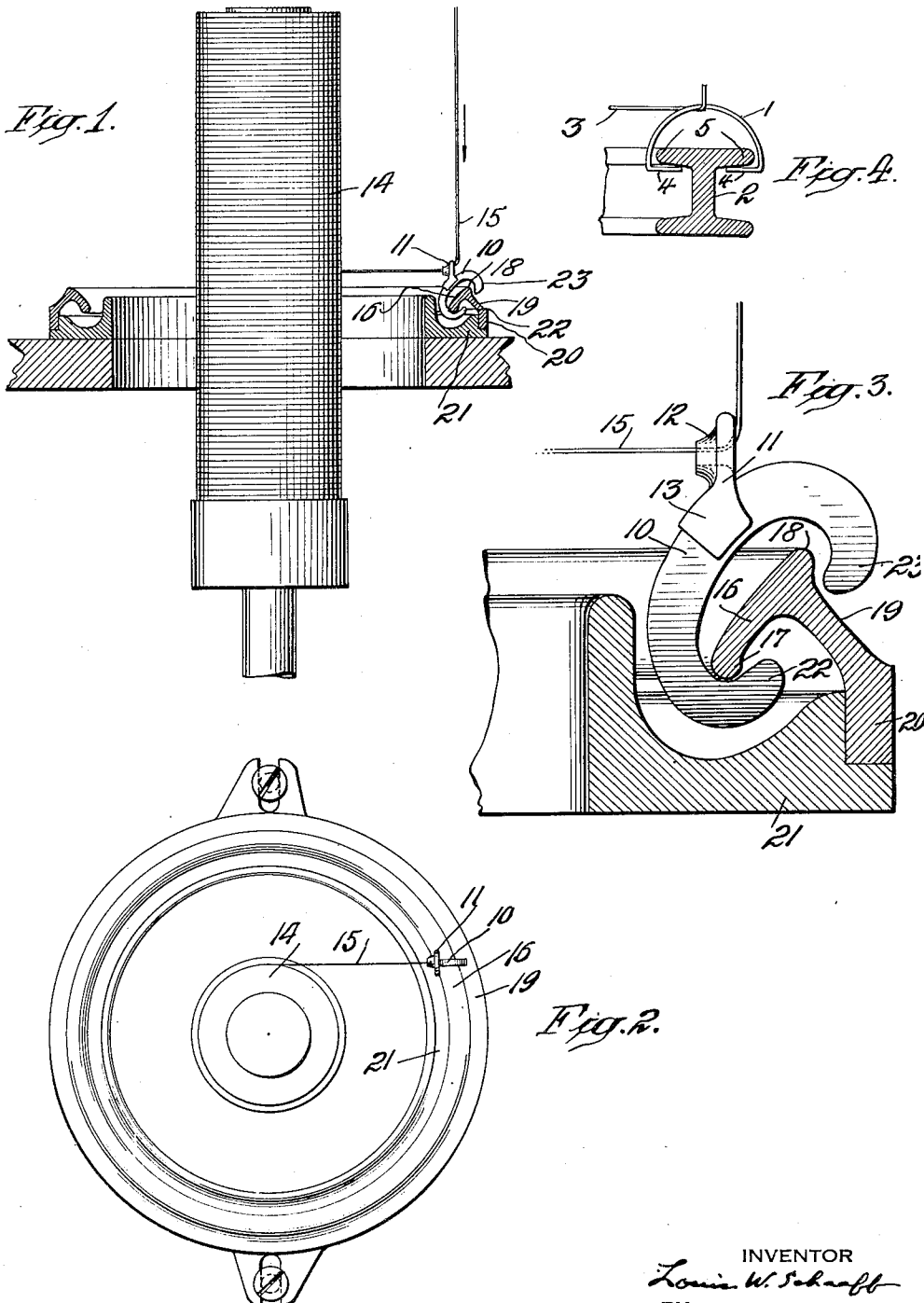
April 30, 1940.

L. W. SCHAAFF

2,198,636

RING TRAVELER

Original Filed Oct. 9, 1935



INVENTOR
Louis W. Schaff
BY *Henry H. Hessel*
his ATTORNEY

UNITED STATES PATENT OFFICE

2,198,636

RING TRAVELER

Louis W. Schaaff, White Plains, N. Y., assignor of
fifty-two per cent to Wilhelmina M. Kuhn, New
York, N. Y.

Application October 9, 1935, Serial No. 44,172
Renewed May 13, 1939

18 Claims. (Cl. 57—119)

This invention relates to ring travelers, and more particularly to ring travelers adapted for use with spinner rings having laterally extending traveler track flanges. In certain of its broader aspects the invention includes the combination of my improved ring traveler with any type of spinner or twister ring having laterally extending track flanges. My improved ring traveler is particularly adapted for use with and is more specifically claimed in combination with a spinner ring of the type shown and claimed per se in my copending application filed October 9, 1935, Serial No. 44,173.

A principal object of the present invention is to provide ring travelers which do not require frequent replacement and which are capable of long use without diminishing in efficiency or effectiveness, which travel smoothly and evenly, and without vibration or jerkiness, which maintain the tension on the thread even and smooth and at the proper and desirable degree, and cause no variations, waviness or unevenness in the twist of the yarn, and which eliminate objectionable stress or tension which might tend to cause the thread to break.

Another object of this invention is to provide ring travelers so constructed that the coefficient of friction between the traveler and a spinner ring with which the traveler is associated is reduced to a minimum, and is not increased as the traveler wears and to provide ring travelers adapted to travel at a higher speed without requiring increase in the power load.

A further object of this invention is to provide ring travelers which are extremely durable and efficient, and at the same time inexpensive, and which may be engaged with and disengaged from a spinner ring easily and quickly, and when engaged with a spinner ring, are not apt to become disengaged from the ring when in use or at inopportune times.

Another object of this invention is to provide a ring traveler having a thread guide which does not tend to fray or cut the thread passing through the guide, which presents to the thread a surface which is smooth non-abrasive and easily traveled, and which at the turn maintains the thread in an easy curve and in the same vertical plane, and prevents the thread from turning at a sharp angle or forming a kink.

Other objects of this invention will be in part obvious and in part pointed out hereinafter.

In order that a clearer understanding of this invention may be had, attention is hereby directed to the accompanying drawing, forming a

part of this application and illustrating certain possible embodiments of this invention, and in which:

Fig. 1 is an elevation, partly in section, of certain portions of a spinning device, including a spinner ring and its support, a ring traveler in running position on the ring and embodying this invention, and a bobbin with its thread engaged with the traveler;

Fig. 2 is a plan view of the construction shown in Fig. 1, and

Fig. 3 is an enlarged sectional view of a detail including the ring traveler and a fragment of the spinner ring and of the thread.

Ring travelers commonly used heretofore have embodied a member in the form of a ball having inturned ends and engaging beneath the edges of a flange on the upper edge of a spinner ring of substantially I-cross section. The thread passes under the ball and serves to support the ring traveler during operation. However, such constructions have been found unsatisfactory due to the fact that the thread continuously presses the inturned ends of the ball against the under surfaces of the track flange with a force corresponding to the force of the pull of the thread, and that this engagement and the force of the contacts create friction, wear, and correspondingly resist movement of the traveler on the spinner ring. Further, when the traveler is at rest it falls down on the ring, so that, when starting, it must first be lifted up bodily by the thread, and the traveler is snapped with considerable force against the traveler flange tracks, and by reason of the initial inertia and the severe frictional initial contact there is great resistance to starting the traveler to run, with the result that there is a tendency for the thread to be broken by the strain and tension incident to the starting. The likelihood of the thread breaking is further enhanced by the fact that the thread is forced to assume a very sharp angle where it passes under the traveler, and by the fact that the thread leaves the traveler in a vertical plane which is oblique to the vertical plane of the thread as it approaches the traveler, which tends to cause the thread to kink at the turn. Furthermore, the traveler is allowed no swing or play.

In contrast with the above, my construction is such that, when at rest, the ring traveler remains approximately in its vertical running position and, due to the position of the thread guide, when started, is not snapped severely into contact with the spinner ring, thus presenting very slight inertia and frictional resistance at

the pick up and start, and, when running, the ring traveler at only one fine point of an edge thereof toward its inner end contacts a single edge of the spinner ring and is free to rock radially of the ring with this point of contact as the fulcrum, the outer end of the traveler riding free of contact with the ring. My construction also maintains the thread in an easy curve at the turn, with an extended and smooth running surface therefor, and places the lines of the thread approaching and leaving the traveler in the same vertical plane. By such construction, friction, strain and tension is reduced considerably, and forces and movements tending to put severe strain or uneven tension on the thread are avoided, and the thread is prevented from bending too abruptly or kinking at the turn.

As shown in the drawing, for the purpose of illustration, in one form of my invention the ring traveler has a flat body 10 of C-shape and a thread guide 11 having an eye portion 12, from which extend two spaced attachment portions 13 which are clamped tightly against opposite sides of the traveler body, and whereby the guide is firmly secured thereto. Eye portion 12 preferably is extended inwardly toward the bobbin 14, that is, toward the center of the spinner ring with which the traveler is associated, and has a smooth, curved inner surface, so that the eye portion presents an extended, smooth and curved wear surface to the thread 15, and avoids any tendency of the thread being cut or frayed as it passes through the thread guide, and maintains the thread in an easy curve at the turn.

The spinner ring illustrated includes an annular downwardly and inwardly inclined flange or wall 16 having a lip 17 at its lower end, and a ridge 18 at its upper end. This flange 16 may be integral with an inclined wall 19 which terminates in a base portion 20, adapted to be engaged with an attachment ring 21 so as to be supported thereon.

The lower end 22 of the traveler is adapted to hook under the lip 17 of the spinner ring flange 16, and the upper end 23 of the traveler is adapted to hook over the ridge 18 of the spinner ring.

When the traveler is in use the lower end 22 of the traveler contacts upwardly against the under surface of the curved lip 17 of the ring, and the upper end 23 of the traveler is spaced from and does not contact any part of the spinner ring. The point of contact of the traveler with the lip 17 is a fulcrum point on which the traveler may rock inwardly until its upper end 23 strikes the ridge 18, and may rock outwardly until its body strikes against flange 16. When in operation the upper end 23 of the traveler cannot strike the wall 19 as its body would strike the flange 16 first.

The thread guide is secured to the traveler in such location thereon that when the traveler is in use the outer face of the eye 12 is approximately in vertical line with the fulcrum contact point between the ring and the traveler, so that the resultant action of the centrifugal force and the pull of the thread maintains the traveler out of contact with the ring except at this fulcrum point of contact, and the contact at this point will be extremely slight and approximately frictionless. The fact that the traveler has edgewise engagement with the ring also reduces the friction, and the extent of such contact does not increase as the traveler becomes worn. There is also an air-cushioning effect, reducing friction, due to the fact that the body of the ring traveler

is thin and flat, and therefor has the effect of floating in the air, when running.

When the traveler is at rest its upper end 23 engages the ridge 18 and prevents the traveler from falling off the spinner ring flange 16 and maintains the traveler upright, and its lower end in contact with, or very close to lip 17, thus facilitating easy and quick pick-up and starting with a minimum of friction and strain.

Preferably, and in order to reduce friction and to avoid the necessity of lubrication, the traveler is made of some suitable non-metallic, wear-resisting material, such as fibre or any other non-metallic and wear-resisting material having sufficient hardness and a low co-efficient of friction. However, if desired, the traveler may be made of other suitable material.

From the above it will be readily apparent that a ring traveler constructed in accordance with this invention has an improved and more efficient contact with a spinner ring in that, when in use, there is only one point of contact between the traveler and the spinner ring, and such contact is a rocking contact and is extremely slight and substantially frictionless, especially if the traveler contact surface is non-metallic and has a low co-efficient of friction and requires no lubrication. The rocking contact, in conjunction with the placement of the thread guide eye outside the outer periphery of the body 10, gives the traveler freedom to adjust itself to the easiest positions under the various forces, thus tending to reduce vibration and to permit higher speeds without increase of power load.

It is also apparent that when such traveler is associated with a spinner ring having a flange inclined at a steep angle, as shown, the longitudinal axis of the traveler assumes approximately the same angle as the track flange of the spinner ring, when the traveler is in use, and when at rest, the traveler remains in substantially upright position so that when started there is practically no shock or resistance or strain associated with the pick-up and starting. It is obvious, of course, that the precise positioning of the thread guide on the traveler may require slight adjustment in accordance with the particular angular aspect of the track flange of the spinner ring with which the traveler is used in order to have the thread guide in a substantially straight line with the point of contact between the traveler and the spinner ring track while keeping the upper end of the traveler from having any other than occasional contact with the spinner ring when the traveler is in use.

Also the position of the thread guide is such that the thread passes through it in a straight line horizontally and not with a kink. This free and unimpeded passage of the thread or yarn through the eye portion 12 permits perfect twisting action, resulting in greatly improved twist, in either throwing, spinning or twisting, the twist in any case being more regular and even than with travelers which turn the thread at a sharp angle and diagonally, as is the case of the ball-like construction of the conventional steel ring traveller.

It is obvious that in assembly, the thread guides are attachable to traveler bodies of different thicknesses and weights, and that the thread guides may be of various weights. This gives opportunity to have available travelers of different weights, since the thread guides of any weight may be used with the travelers of any weight.

It is to be understood that the term "spinner

ring" as used herein is intended to include not only rings used in spinning but also throwing or twister rings, and that the traveler is intended for use in throwing and twisting as well as in spinning.

As many changes could be made in the above construction, and as many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is understood that all matter contained in the foregoing description or shown in the accompanying drawing be interpreted as illustrative and not in a limiting sense.

What I claim is:

1. In combination with a spinner or twister ring having an inwardly and downwardly inclined flange the lower edge of which constitutes a traveler track, a ring traveler movable over said track comprising a body having upper and lower hook shaped portions adapted to embrace the flange of said spinner or twister ring with the lower portion of the traveler presenting an inner edge having a relatively large radius of curvature, and thread-engaging means secured to said body at a point thereon spaced from said hook shaped portions and located radially inward from the upper hook shaped portion of the body, whereby during operation the tension of thread engaging said thread-engaging means serves to raise said body and to maintain it in a tilted position with the inner edge of the lower hook-shaped portion in pivotal engagement with the traveler track of the spinner ring and with the upper hook-shaped portion of said body extending radially outward beyond the lower hook shaped portion thereof.

2. In combination with a spinner or twister ring having an inwardly and downwardly inclined flange the lower edge of which constitutes a traveler track, a ring traveler movable over said track comprising a substantially flat C-shaped body presenting an extended lateral face and a narrow inner edge and having upper and lower hook-shaped portions adapted to embrace the flange of said spinner or twister ring with the lower portion of the traveler presenting an inner edge having a relatively large radius of curvature, and thread-engaging means secured to said body at a point thereon spaced from said hook-shaped portions and located above the lower hook-shaped portion and radially inward from the upper hook-shaped portion of the traveler body, whereby during operation the tension of thread engaging said thread-engaging means serves to raise said body and to maintain it in a tilted position with the inner edge of the lower hook-shaped portion in pivotal engagement with the spinner ring and with the upper hook-shaped portion of said body extending radially outward beyond the lower hook-shaped portion thereof.

3. In combination with a spinner or twister ring having an inwardly and downwardly inclined flange the lower edge of which constitutes a traveler track, a ring traveler having a body presenting an extended lateral surface, the lower portion of said body being hook-shaped and presenting a narrow, upwardly facing edge with a relatively large radius of curvature for pivotal engagement during operation with the traveler track of said spinner or twister ring, the upper portion of said body being formed to embrace the upper edge of said flange and to engage the same when the traveler is at rest, and a thread guiding eye secured to said body with the axis of said eye lying approximately in a plane passing through the body of the traveler parallel to said

lateral surface, said eye being secured to the traveler body at a point thereon which is spaced from the upper and lower portions thereof and located when the traveler is in operation radially inward from the upper portion of said body, whereby tension applied to thread passing through said eye tends to raise said body and to maintain it in a tilted position with the narrow upwardly facing edge of the lower portion of said body in pivotal engagement with the track and with the upper portion of said body extending radially outward beyond the lower portion of the body.

4. In combination with a spinner or twister ring having an inwardly and downwardly inclined flange the lower edge of which constitutes a traveler track, a ring traveler having a body presenting an extended lateral face, the lower portion of said body being hook-shaped and presenting a narrow, upwardly facing edge with a relatively large radius of curvature for pivotal engagement with the traveler track of said spinner or twister ring, the upper portion of said body being formed to embrace the upper edge of said flange and prevent unrestricted inward movement of the upper portion of said body and a thread guiding eye secured to said body with the axis of said eye lying approximately in a plane passing through the body of the traveler parallel to said lateral surface, said eye being secured to the traveler body at a point thereon which is spaced from the upper and lower portions of said body and located substantially vertically above the point of contact between the traveler and the traveler track when the traveler is in operation and radially inward from the upper portion of said body, whereby tension applied to thread passing through said eye tends to raise said body and to maintain it in a tilted position with the narrow upwardly facing edge of the lower portion of said body in pivotal engagement with the track and with the upper portion of said body extending radially outward beyond the lower portion thereof.

5. In combination with a spinner or twister ring having an inwardly and downwardly inclined flange the lower edge of which constitutes a traveler track, a ring traveler movable over said track comprising a C-shaped body formed of non-metallic material and having upper and lower hook-shaped portions adapted to embrace the flange of said spinner or twister ring with the lower portion presenting an inner edge having a relatively large radius of curvature, and metallic thread-engaging means secured to said body at a point thereon spaced from said hook-shaped portions and located above said lower hook-shaped portion and radially inward from the upper hook-shaped portion of the traveler body, whereby during operation the tension of thread engaging said metallic thread-engaging means serves to raise said body and to maintain it in a tilted position with the inner edge of the lower hook-shaped portion in pivotal engagement with the track of said spinner ring and with the upper hook-shaped portion of said body extending radially outward beyond the lower hook-shaped portion thereof.

6. In combination with a spinner or twister ring having an inwardly and downwardly inclined flange the lower edge of which constitutes a traveler track, a ring traveler movable over said track comprising a C-shaped body presenting an extended lateral face and formed of non-metallic material, said body having upper and lower hook-shaped portions adapted to embrace

the flange of said spinner or twister ring with the lower portion presenting a narrow inner edge having a relatively large radius of curvature, and a metallic thread guiding eye presenting an extended, smooth, curving surface for engagement with the thread with the axis of said thread guiding eye lying substantially in a plane passing through the body of said traveler parallel to the said lateral face, said eye being secured to said body at a point thereon spaced from said hook-shaped portions and located above said lower hook-shaped portion and radially inward from said upper hook-shaped portion, whereby during operation the tension of thread engaging said metallic thread guiding eye serves to raise said body and maintain it in a tilted position with the inner edge of the lower hook-shaped extremity in pivotal engagement with the track of said spinner ring and with the upper hook-shaped extremity of said body extending radially outward beyond the lower hook-shaped portion thereof.

7. In combination with a spinner or twister ring having an inwardly and downwardly inclined flange the lower edge of which constitutes a traveler track, a ring traveler formed with a thin, flat C-shaped non-metallic body having a lower hook-shaped portion presenting a narrow inner edge for engagement with the traveler track of said spinner or twister ring, and an upper hook-shaped portion formed to extend over the upper portion of said ring, said body presenting a relatively large lateral surface adapted on rotation of said traveler to offer substantial wind resistance and to maintain the traveler in substantially a vertical position against the pull of the thread in moving the traveler about said spinning ring, and a metallic thread guiding eye presenting an extended curved thread engaging surface with the axis of the eye lying substantially in a plane passing through the traveler body parallel to the lateral face thereof, said thread guiding eye being secured to said traveler body at a point thereon spaced from the upper and lower hook-shaped portions of the body and located radially inward from the upper hook-shaped portion thereof, whereby the tension of thread passing through said eye during operation serves to raise said body and to maintain it in a tilted position with the narrow inner edge of the lower hook-shaped portion of the body engaging the traveler track of the spinner or twister ring and with the upper portion of said body extending radially outward beyond the lower portion of the traveler body.

8. In a spinning device of the character described, in combination, a spinner and twister ring having an annular track flange extending downwardly and inwardly at a steep angle to the horizontal and terminating in a rounded traveler track, a ring traveler loosely embracing said flange and having a lower hook-shaped end hooking under said track and having an upper hook-shaped end hooking over the upper edge of said flange and a thread-engaging member carried by said traveler and located at a point thereon such that the traveler during operation is maintained in a tilted position with the inner edge of the lower hook shaped end in pivotal engagement with the traveler track and with the upper hook-shaped end of the traveler urged outwardly out of engagement with the upper edge of the track flange.

9. In a spinning device of the character described, in combination, a spinner and twister

ring having an annular track flange extending downwardly and inwardly at a steep angle to the horizontal and terminating in a rounded traveler track, a supporting wall extending from said flange adjacent its upper edge, an annular ridge along the upper edge of said flange protruding beyond said supporting wall, a ring traveler having a lower hook-shaped end hooked under said track and having an upper hook-shaped end loosely hooking over said ridge, said traveler being movable to a position in which the upper hook-shaped end is spaced from said ridge and said lower hook-shaped end is in engagement with said track, and a thread-guiding member secured to said traveler at a point thereon between said hook-shaped ends which causes said traveler to be retained in said position during operation.

10. In a spinning device of the character described, in combination, a spinner and twister ring having an annular track flange extending downwardly and inwardly at a steep angle to the horizontal and terminating in a rounded traveler track, a ring traveler loosely embracing said flange and having a lower hook-shaped end hooking under said track and having an upper hook-shaped end hooking over the upper edge of said flange, and a thread guide positioned on the traveler at a point thereon which causes the pull of the thread in passing through the thread guide during operation to draw the hook-shaped lower end of the traveler upward into edgewise contact with said traveler track and to maintain the body in a tilted position with the upper end of the traveler out of contact with the ring.

11. In a spinning device of the character described, in combination, a spinner and twister ring having an annular track flange extending downwardly and inwardly at a steep angle to the horizontal and terminating in a rounded traveler track, a ring traveler loosely embracing said flange and having a lower hook-shaped end hooking under said track and having an upper hook-shaped end hooking over the upper edge of said flange, and a thread guide fixedly positioned on the traveler at a point thereon between the hook-shaped ends of the traveler which causes the pull of the thread in passing through the thread guide during operation to draw the hook-shaped lower end of the traveler upward into light rocking contact with said traveler track and to maintain the body in a tilted position with the upper end of the traveler out of contact with the spinner ring.

12. In a spinning device of the character described, in combination, a spinner and twister ring having an annular track flange extending downwardly and inwardly at a steep angle to the horizontal and terminating in a rounded traveler track, a ring traveler loosely embracing said flange and having a lower hook-shaped end hooking under said track and having an upper hook-shaped end hooking over the upper edge of said flange, and a thread guide having an eye carried by the traveler at a point thereon which causes the pull of the thread in passing through the thread guide eye during operation to draw the hook-shaped lower end of the traveler upward into contact with said traveler track and to maintain the body in a tilted position with the upper end of the traveler out of contact with the ring, said point during operation being in approximate vertical line with the traveler track of the ring.

13. In a spinning device of the character described, the combination of a spinner and twister

ring having an annular track flange extending downwardly and inwardly at a steep angle to the horizontal and terminating in a rounded lower edge constituting a traveler track, and a ring traveler loosely embracing said flange with the lower hook-shaped end thereof hooking under said track and the upper hook-shaped end thereof hooking over the upper edge of said flange, said traveler presenting an extended lateral surface and a narrow interior edge for engagement with the traveler track whereby said traveler during operation is held in a vertical position by the wind resistance of the lateral face thereof and tends to assume a position lying substantially in a vertical plane extending radially of said ring, and a thread guide secured to said body and positioned at a point thereon which serves to support the traveler during operation in a tilted position with only a single part thereof adjacent the lower hook-shaped portion of the traveler and on said narrow interior edge in engagement with the traveler track and with the upper hook-shaped end of the traveler urged outwardly and held out of engagement with said ring.

14. In a spinning device of the character described, in combination, a spinner or twister ring having a laterally extending flange presenting a traveler track having a rounded bearing surface adjacent the lower edge thereof, a ring traveler having inturned hook-shaped end portions adapted to fit over said flange of said ring and to be guided thereby, one of said inturned end portions having an inner edge presenting a bearing surface of a substantially larger radius of curvature than the radius of curvature of the bearing surface of said track, said bearing surface being adapted to bear against said rounded bearing surface of said track substantially in one-point contact therewith, said traveler having a thread guide mounted thereon at such a point between said hook-shaped ends that the traveler body during operation and under the tension of thread passing through the thread guide is raised and the bearing surface of said one inturned end portion is brought into contact with and travels along the rounded bearing surface of said traveler track, and the other inturned end portion of said ring traveler is guided when in motion by but is normally out of contact with the ring, whereby the traveler maintains substantially a single point of contact with the ring during operation of said device.

15. In a spinning device of the character described, in combination, a spinner or twister ring having a web portion and oppositely extending flanges supported thereby, a ring traveler having inturned hook-shaped end portions adapted to fit over said flanges and to be guided thereby, one of said end portions having an inner edge presenting a bearing surface adapted to bear against one of said flanges substantially in one-point contact therewith, said traveler having a thread guide mounted thereon at such a point between said hook-shaped ends that the traveler body during operation and under the tension of thread passing through the thread guide is raised and the bearing surface of said one inturned end portion of the traveler is brought into contact with and travels along the edge of one of said flanges and the other inturned end portion of said traveler is guided when in motion by but is normally out of contact with the opposed flange, whereby the traveler and the ring main-

tain substantially a single point of contact during operation of said device.

16. In a spinning device of the character described, in combination, a spinner and twister ring having an annular track flange extending downwardly and inwardly at a steep angle to the horizontal and terminating in a rounded edge constituting a traveler track, an attachment ring presenting a concave upper surface substantially parallel to the rounded edge of the traveler track, a supporting wall extending from said flange adjacent its upper edge, an annular ridge along the upper edge of said flange protruding beyond said supporting wall, and a ring traveler having a lower hook-shaped end hooked under said track and having an upper hook-shaped end loosely hooking over said ridge, said ends of the traveler being so spaced that when the traveler is at rest the upper end engages said ridge and maintains the traveler in a position approximately the position of the traveler when operating and so spaced that when the lower hook-shaped end is in engagement with the track the upper hook-shaped end is spaced from the upper edge of said flange, and a thread engaging member carried by said traveler and positioned at a point thereon between said hook-shaped ends such that the traveler during operation is maintained in a tilted position with a single point on the inner surface thereof and adjacent said lower hook-shaped end in contact with said ring.

17. In a spinning device of the character described, in combination, a spinner and twister ring including an attachment ring having an annular concavity on its upper surface and a traveler track flange inclined downwardly and inwardly over said attachment ring surface and having its lower edge disposed over and spaced above said concavity, said lower edge of the traveler track flange constituting a traveler track for a traveler, and a ring traveler having a hook-shaped lower end extending beneath said traveler track, said track and annular concavity being spaced apart a distance which permits the hook-shaped lower end of the traveler to move into engagement with the upper surface of said concavity when the traveler is at rest, and a thread guide positioned on the traveler at a point thereon which causes the pull of the thread during operation to raise the lower end of the traveler out of said concavity and to draw said end into contact with the traveler track of the traveler track flange and to hold the traveler in a tilted position with the upper portion of the traveler out of contact with said flange so that the traveler engages the track only at one point on the inner edge thereof.

18. In a spinning device of the character described, the combination of a spinner and twister ring having an annular flange inclined downwardly with the lower edge of the flange constituting a traveler track, the upper edge of said flange constituting a projecting ridge, a member having a concave upwardly facing annular surface located beneath said track and a ring traveler having an upper hook-shaped end extending over the upper edge of said flange and a lower hook-shaped end extending beneath said track, said traveler being movable to a rest position in which said upper hook-shaped end engages said ridge and said lower hook-shaped end engages said annular member.

LOUIS W. SCHAAFF.