

June 22, 1937.

G. F. ALBRECHT

2,084,756

SPINNING RING

Filed July 9, 1936

2 Sheets-Sheet 1

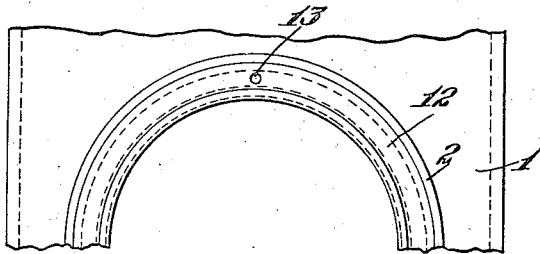


Fig. 3

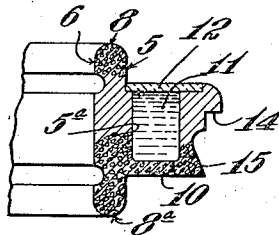


Fig. 4

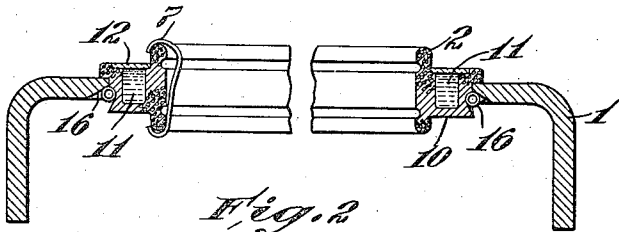


Fig. 2

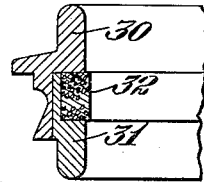


Fig. 16

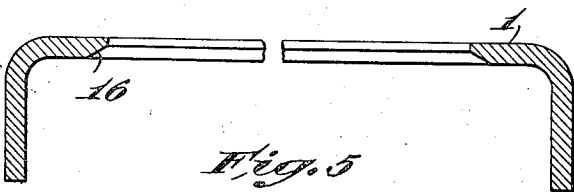


Fig. 5

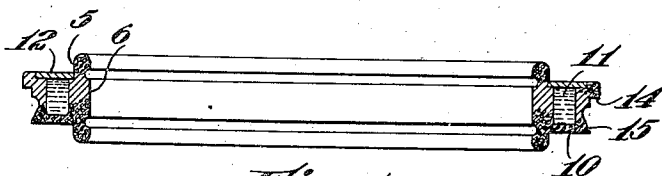


Fig. 1

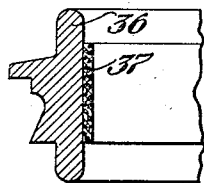


Fig. 18

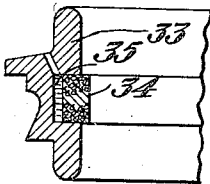


Fig. 17

Inventor
George F. Albrecht
by Roberts Cushman Woodberry
Att'ys.

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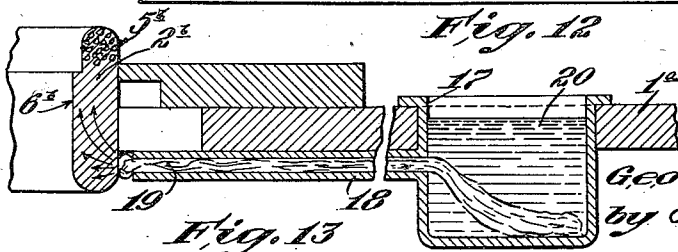
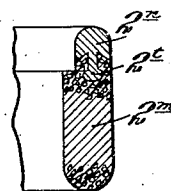
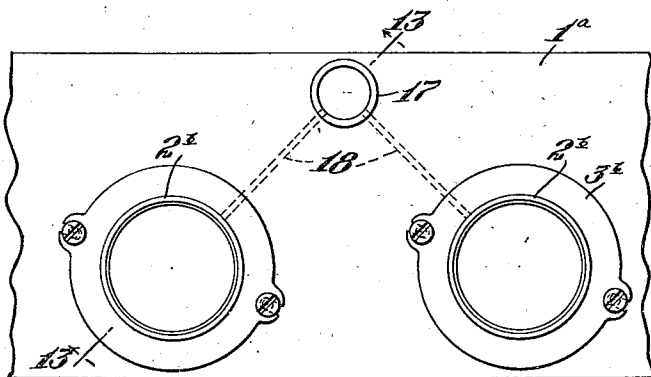
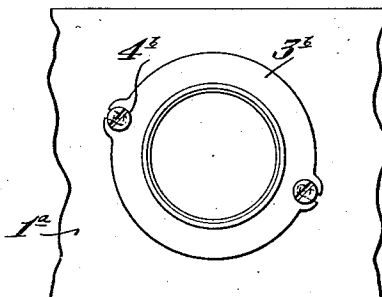
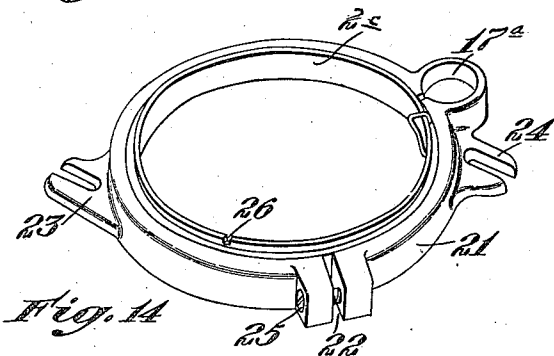
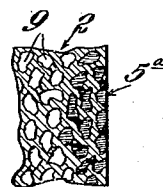
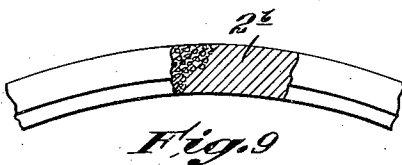
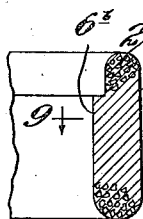
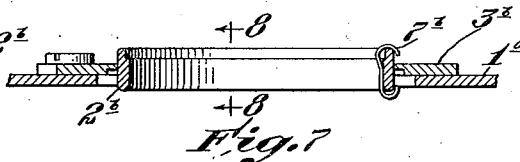
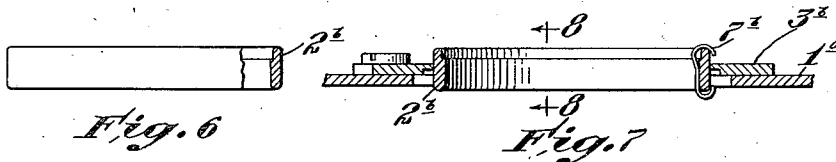
G. F. ALBRECHT

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2 Sheets-Sheet 2



Inventor
Ge. F. Albrecht
Shurtz, Cushman & Woodbury
Att'ys.

UNITED STATES PATENT OFFICE

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SPINNING RING

George F. Albrecht, Saco, Maine

Application July 9, 1936, Serial No. 89,761

21 Claims. (Cl. 113—59.5)

This invention relates to ring spinning or twisting frames such as are employed in the textile industry in the preparation of yarns and threads and relates more particularly to an improved ring for use in such a frame and to a method of lubricating such rings,—the present application being a continuation-in-part of my copending application for Letters Patent, Serial No. 47,090, filed October 28, 1935.

Under modern mill conditions, spinning and twisting spindles are driven at exceedingly high velocities and as a result the traveler moves around the ring at a linear speed of the order of a mile a minute. Unless the contacting surfaces of the ring and traveler are properly lubricated, the friction developed between the moving parts will burn or wear out the traveler very rapidly and under ordinary conditions of mill practice it is necessary to replace the traveler several times each day. This is an item of substantial importance in a large mill, not only from the standpoint of the actual cost of replacement of parts, but more particularly from loss of production and impairment of the quality of the yarn or thread.

While it is requisite that the contact surface of the ring and traveler be properly lubricated, excess lubricant must be avoided, since any lubricant coming in contact with the yarn or thread may seriously impair the value of the latter, but the problem of properly lubricating the ring and rapidly moving traveler is not easy of solution, as evidenced by the many and not wholly successful prior attempts at attaining the desired result.

In some respects hand lubrication, that is, the application of lubricant to the ring by the fingers of the operator, is advantageous over most prior attempts at automatic application of lubricant, since the lubricant is distributed by hand more or less uniformly over a substantial area of the ring surface, whereas most automatic lubricating arrangements deliver the lubricant at one, or at most two or three, restricted areas of the ring. However, hand lubrication is not reliable, since the operator frequently forgets to apply the lubricant at sufficiently frequent intervals, and even if the lubricant be applied as often as requisite, hand lubrication does not ensure uniformity throughout the working period.

The principal object of the present invention is to provide an improved ring and method of lubricating the same such as to ensure substantially uniform and adequate lubrication at all points of the ring throughout the entire work-

ing period without danger of damage to the yarn by the application of excess lubricant or danger of rapid wear of the traveler due to insufficient lubrication.

To this end, and in accordance with the present invention and in a preferred embodiment thereof, the ring is of homogeneous, one-piece construction consisting throughout of a material which, while hard and durable enough to withstand the wear of the moving traveler, and which is capable of taking and maintaining a visually smooth and even polished exterior finish so as to reduce the friction between it and the traveler to a minimum, is of a porous nature comprising throughout its entire substance a multitude of minute capillary canals or cavities so small as to be visible only with the assistance of a microscope and which are distributed throughout the material with substantial uniformity.

It is known that if a capillary barrier is interposed in the path of a fluid, it cuts down the velocity of flow to a rate which, within wide limits, is substantially independent of the fluid pressure head, so that so long as fluid is supplied at one side of the porous barrier, the rate of delivery from the other side will be substantially uniform, regardless of fluctuations in the supply head. The present invention takes advantage of the above principle, utilizing the material of the ring itself as a capillary barrier between its outer and inner surfaces, so that it is only requisite to supply lubricant, for example oil, to the outer surface of the ring, to ensure a substantially constant exudation of an oily film at the inner surface of the ring at a rate which is dependent upon the fineness of the capillary structure of the ring and substantially independent of the rate at which the oil is supplied to the outer surface of the ring. Moreover, by reason of the capillarity of the material of the ring, substantially uniform distribution over the entire inner peripheral surface is assured, even though the supply be delivered to the outer periphery at a few points or even a single point. In fact, even if the exterior supply be intermitted for a time, the body of lubricant already contained within the substance of the ring continues to function as a reservoir for a considerable period, maintaining the film lubricant upon the inner peripheral surface against which the traveler bears while in operation.

In a preferred construction, the ring is so designed as to provide for the maintenance of a free body of lubricant, preferably annular and extending about the entire circumference of the

ring, from which the liquid moves radially inward at the rate determined by the apertured barrier formed by the interposed substance of the ring, so as to exude as a film at its inner surface. The reservoir for this body of lubricant may conveniently take the form of an annular groove concentric with the axis of the ring and of such dimensions as to provide the desired thickness of material between the inner wall of the groove and the inner surface of the ring. This groove may be open at its top to facilitate filling or may, if desired, be provided with a removable cover, preferably transparent, to exclude dust and permit inspection.

While in the preferred form this reservoir provides for a free body of oil and is located within the ring itself, it is contemplated, as within the purview of the invention, to provide such a reservoir either in the ring-supporting holder, if such be used, or in the ring rail or at some more remote point, the oil then being conducted to the outer surface of the ring by appropriate means, for example, passages through the substance of the holder or through tubes, preferably flexible, leading from the source.

By the use of the improved ring, hereinafter more specifically described, the lubrication has been so improved that travelers running on such a ring outlast those operating under prior conditions as much as 30:1, while at the same time all danger of damage to yarn through contact with excess lubricant is avoided and a more uniform product assured by reason of the smooth running of the ring and the less frequent interruption of the spinning operation.

In the accompanying drawings in which certain desirable embodiments of the invention are illustrated by way of example,

Fig. 1 is a diametrical section of a preferred embodiment of the ring, removed from the ring rail and shown as provided with a removable cover for the oil reservoir;

Fig. 2 is a view similar to Fig. 1, but showing the ring mounted in an opening in the ring rail;

Fig. 3 is a fragmentary plan view of the parts shown in Fig. 2;

Fig. 4 is a fragmentary radial section, to larger scale, through the ring of Fig. 1;

Fig. 5 is a transverse section through a ring rail designed to receive the ring of Fig. 1;

Fig. 6 is a side elevation, partly in vertical section, illustrating a spinning or twisting ring of slightly different shape but also embodying the present invention;

Fig. 7 is a diametrical section of a ring such as that of Fig. 6 mounted in a holder and showing a traveler applied to the ring;

Fig. 8 is a section, to larger scale, substantially on the line 8-8 of Fig. 7, diagrammatically illustrating the interior construction of the improved ring;

Fig. 9 is a fragmentary plan view of the ring of Fig. 8, a portion being shown in horizontal section on line 9-9 of Fig. 8;

Fig. 10 is a fragmentary section substantially in the same plane as that of Fig. 4, but to greatly magnified scale, showing the internal construction of the material employed in making the ring of the present invention;

Fig. 11 is a fragmentary plan view of a ring rail, having a ring such as that of Fig. 6 mounted therein;

Fig. 12 is a view similar to Fig. 11, but show-

ing a plurality of rings and with provision for continuous supply of lubricant to the exterior surfaces of the rings from an outside source;

Fig. 13 is a vertical section, to larger scale, substantially on the line 13-13 of Fig. 12;

Fig. 14 is a perspective view, illustrating another form of ring holder, having a ring therein of modified type;

Fig. 15 is a section similar to Fig. 8, but showing a further modification;

Fig. 16 is a fragmentary radial section illustrating another form of ring embodying certain features of the present invention;

Fig. 17 is a view similar to Fig. 16, but illustrating a further modification; and

Fig. 18 is another view similar to Fig. 16, but showing a still further modification.

Referring to the drawings, the numeral designates the ring rail of a spinning or twisting frame, such rail being provided as usual with a series of openings for the reception of the rings 2. For convenience these rings are hereinafter referred to as "spinning" rings, although it is to be understood that the invention is applicable to rings for twisting frames as well, and the description and appended claims are to be construed with this understanding. The improved ring 2 may be mounted directly in the opening in the ring rail, as illustrated in Figs. 2 and 3 for example, or if preferred, it may be mounted in a separate holder which, in turn, is secured to the ring rail by means of bolts or screws.

The improved ring has the outer and inner peripheral surfaces 5 and 6 (Fig. 2) which are smoothly finished and, if desired, polished to provide appropriate surfaces for contact with a traveler 7 (Fig. 2) of the usual substantially C-shape or hook-type which moves along the ring,—the upper and lower edges 8, 8' of the ring being rounded and merging smoothly with the inner and outer peripheral surfaces 5 and 6. The ring here illustrated is of the usual type designed for use with a light, thin traveler of the hook type which is snapped over the upper and lower edges of the ring, the latter constituting the sole support and guide for the traveler. In devices of this kind, the effect of centrifugal force, when the traveler is in operation, is to force it outwardly so that it bears almost exclusively against the inner periphery of the ring. Thus proper lubrication of such inner surface is most important.

In accordance with the present invention the ring 2 is so formed that its interior structure comprises a multitude of communicating cells or canals of capillary size but capable of holding a lubricating medium.

I contemplate that the ring may be made of any suitable non-metallic substance capable of being shaped and of withstanding the wear imposed by the movement of the traveler. Thus the ring may be made, for example, of one of the synthetic resins rendered suitably porous in the final moulding operation by procedures known to those skilled in the synthetic resin art. However, I believe that certain metallic alloys are preferable for the purpose by reason of their greater strength and resistance to wear.

Such an alloy may, for example, be prepared by incorporating 90 parts by weight of copper and 10 parts of tin with 6 parts of graphite and 2 parts of salicylic acid, all in a very finely divided state, the ingredients being thoroughly mixed and

then briquetted under high pressure to produce a ring of substantially the desired dimensions. The briquetting pressure is desirably of the order of 75,000 pounds per square inch. After briquetting, the rings are sintered in a non-oxidizing atmosphere for approximately three hours at a temperature of the order of 1425° F. After removal from the sintering boxes, the rings are surfaced and sized, for example, by the use of concentric arbor and die members which squeeze and reduce the material of the ring to substantially the final desired dimensions.

The result of this procedure is to provide a ring which in its entirety is porous and capable of slowly transmitting a lubricating medium such as oil from one point to another. The microscopic structure of the ring may be likened to that of a fine sponge, and as diagrammatically indicated in Fig. 10, comprises a multitude of minute cells or canals generally communicating with one another and having walls of a bronze-like alloy. The cells which are exposed at the outer surface of the ring are in most instances open at such outer surface although the ring is superficially solid and, except under the microscope, its surface shows no indication of these open cells or pores.

In accordance with the preferred embodiment of the invention, as illustrated in Figs. 1 to 5 inclusive, the ring is provided with an integral flange 10 projecting radially from its outer peripheral surface 5 and preferably about midway between its upper and lower edges 3 and 3^a. This flange is hollowed out to provide one or more reservoirs for the reception of a free body of oil. Preferably this reservoir takes the form of an annular groove or moat 11 coaxial with the ring and of sufficient width and depth to hold a substantial quantity of lubricant while leaving sufficient material between the inner wall of the reservoir and the inner peripheral surface of the ring proper to provide the desired barrier for determining the rate at which the oil shall exude at the inner surface of the ring. If desired, the upper part of the flange may be shaped to accommodate an annular cover 12 (Fig. 5), preferably transparent, for example of transparent celluloid adapted to protect the oil from dust and to prevent rapid evaporation or oxidization. This cover is readily removable and forms no essential part of the ring, but if desired may be provided with a small opening 13 (Fig. 3) through which oil may be delivered into the reservoir chamber 11 without removing the cover. The inner wall 3^a of the reservoir chamber constitutes in effect the outer surface of the ring proper at this point and as the body of lubricant in the reservoir constantly contacts this wall, the oil is caused both by gravity and by capillary action to move radially inward through the substance of the ring, as indicated in Fig. 10, for example, until eventually it exudes as a tenuous film upon the inner peripheral surface of the ring. By the provision of an annular reservoir, uniform peripheral distribution of oil is fully assured, while the porous barrier afforded by the material of the ring, interposed between the free body of oil and the inner surface 6, effectively prevents fluctuation in the rate of delivery of oil to the inner surface. Moreover, the substance of the ring itself absorbs a substantial quantity of oil and this absorbed oil constitutes a secondary reservoir from which oil flows by capillary action to the inner peripheral surface even after the supply of free oil in the reservoir chamber 11 is

exhausted. Thus the proper operation of the traveler for long periods of time is assured although the attendant may be negligent in supplying oil to the chamber 11 as frequently as it should be done.

In the preferred construction illustrated in Figs. 1 to 5 inclusive, the ring 2 is mounted directly in the ring rail 1. To facilitate such mounting of the ring in the ring rail, the flange 10 may be provided with a lip 14 (Fig. 4) designed to rest upon the upper surface of the rail, and with a downwardly flaring skirt 15 which projects below the under surface of the rail and which receives a contractile spring band 16 (Fig. 2) which bears against the lower, preferably beveled under surface 16 (Fig. 5) of the ring rail bordering the opening in which the ring is fitted, the spring band by its radial tension tending to force the ring downwardly and to hold it snugly against the ring rail, although permitting it readily to be removed when desired.

While a one-piece ring having a reservoir for a free body of oil within its substance, so that the material of the ring itself constitutes the wall of the reservoir is desirable, I contemplate that certain at least of the advantages of the invention may be secured in other specifically different embodiments. For example, the ring 2^b (Figs. 6 to 9 inclusive) may be made as a simple annulus having the outer and inner peripheral surfaces 5^b and 6^b (Fig. 8) and the rounded upper and lower edges, but without any external flanging such as the flange 10 of Fig. 1. However, the substance of this ring is the same as that above described, and while the ring is hard and wear resistant enough to constitute an acceptable guide and support for the traveler, it is of a microscopically porous nature capable of taking up and transmitting oil at a predetermined very low velocity, as above described. Such a ring may, if desired, be mounted directly in an opening in the ring rail, or, if preferred, may be mounted in a holder 3^b (Figs. 11 and 12) which in turn is secured to the ring rail 1^a by means of bolts or screws 4^b.

When using such a simple ring as that of Figs. 6 to 9, inclusive, it may, after completion, be immersed in a bath of fluid lubricant such as oil when, by reason of capillary action, the oil enters the surface cells and is then transmitted in all directions throughout the interior until the entire ring is completely impregnated with the lubricant. The lubricant thus held within the interstices of the ring may be considered as constituting an annular reservoir or body of lubricant. After the ring has thus been thoroughly impregnated, it may be removed from the receptacle and the surplus lubricant wiped off or otherwise removed. The ring thus treated may be stored away for a long period if desired prior to use, but when placed in the opening in the ring rail of the spinning frame and supplied with a traveler, it is found that the lubricant slowly seeps out from the interior of the ring and forms a thin and uniform surface film over the entire outer surface of the ring. The lubricant thus stored up in the ring will last for a very long period of use, providing almost ideal lubrication for the traveler since the surface film is uniform throughout the entire circumference of the ring and is maintained without substantial variation in effectiveness, not only through a single working day but throughout weeks and possibly months of use. The effectiveness of this mode of lubrication is indicated by the fact

that, as compared with a normal life of about five hours' operation for a traveler on a ring lubricated in the usual manner, the life of a traveler working on a ring of the improved type herein disclosed has been observed to be of the order of one hundred and seventy hours.

However, it is preferred to provide for automatically supplying lubricant to the ring during use, and for this purpose I contemplate the use of such an arrangement as that illustrated, for example, in Figs. 12 and 13. Thus, as illustrated, the ring rail 1^a is provided at suitable intervals with openings for the reception of containers or pots 17 (Fig. 12) preferably provided with lateral spouts or conductor pipes 18 leading from the container to a point or points closely adjacent to the outer periphery of one or more of the rings. As illustrated in Fig. 12, one container thus serves to supply two rings with lubricant, but it is to be understood that any number of rings may be thus supplied from one container, as desired. Preferably the spout or conductor pipe 18 contains an absorbent wick 19, preferably of inorganic material, such as asbestos, spun glass, etc., whose outer end is in close contact with the outer periphery of the ring, while its inner end dips down into the bottom of the receptacle 17 and into the body 20 of lubricant contained therein.

In the use of this arrangement, the ring 2^b may, in the first instance, if desired, be thoroughly soaked in a body of lubricant as above described, but after mounting in the ring rail the ring is continuously supplied by means of the wick 19 with lubricant from the container 17, such lubricant being soaked up into the open pores or cells at the exterior surface of the ring and, traveling radially inward by capillary action, eventually exudes at a very low, substantially uniform velocity to form a film of lubricant upon the inner surface of the ring.

In Fig. 14 the ring 2^c, which is of the same character as the ring 2^b above described, is shown as mounted in a ring holder 21 of somewhat different type from that previously described. This ring holder 21 is an annulus, split at 22 and provided with outstanding ears 23 and 24 and with a clamping screw 25 by means of which the holder may be contracted so as securely to clamp the ring in place. This is advantageous in mounting a ring of the present improved type which is not as strong and resilient as a solid steel ring, since there is less danger of damaging the ring than when the ring is forced into a holder of unvariable dimensions. As illustrated in Fig. 14, the holder 21 has a well or reservoir 17^a designed to contain lubricant which is free to flow through a suitable duct or channel to the inner peripheral surface of the holder and so into contact with the outer surface of the ring mounted in the holder.

Since the material of the ring in accordance with the present invention is not as hard as the usual hardened steel rings, it is possible for a careless workman to damage the ring in applying the traveler, and in order to avoid the possibility of such damage it is preferred to provide the ring with a notch 26 (Fig. 14) in its upper edge through which the hooked upper end of the traveler may be freely passed in mounting the traveler on the ring. Since during the spinning operation the traveler does not bear against the upper edge of the ring, the presence of the notch does not interfere with the free

revolution of the traveler about the axis of the spindle.

An alternative construction for preventing damage to the ring when applying the traveler is illustrated in Fig. 15. In this arrangement the main body 2^a of the ring is of porous oil-absorbent character as in the arrangement previously described, but the upper part 2^a of the ring is an annulus coaxial with the main body of the ring and consisting of a harder material, for example, steel or bronze. This hard upper part 2^a has the same external contour as the upper part of the usual ring,—its outer surfaces smoothly merging with the outer surfaces of the main body of the ring, but this part 2^a preferably is provided with an anchoring tongue 2ⁱ which is embedded in the material of the main body of the ring during the moulding of the latter so as firmly to unite the two parts of the ring. However, while this method of joining the two parts is convenient and desirable, it is to be understood that they may be united in any other practical way within the scope of the invention.

Since the upper part or insert is hard and not easily scratched or dented, it will withstand any harsh treatment to which it may be subjected in applying travelers to the ring, and since its outer surface forms a continuation of that of the main body of the ring, the lubricant which constantly exudes to the surface of the latter quickly spreads to the surface of the hard insert, thus keeping the latter properly lubricated.

It will be noted that whether one method or the other be employed, there is no possibility that the ring will at any time have such a surplus of lubricant on its surface as to cause damage to the yarn. On the other hand, there is substantially no danger, under reasonable supervision, that the ring will become so dry as to cause burning or rapid wear of the traveler. It may further be noted that with this arrangement it is not necessary to provide any opening of appreciable size through the thickness of the ring, such as is common in many previous systems of lubrication, such openings at best providing a non-uniform distribution of oil at varying velocities of discharge, and sometimes causing difficulty from the fact that they form dust-collecting chambers, or otherwise interfere with the free movement of the traveler. In the present instance the outer and inner surfaces of the ring are uninterrupted, except by the microscopic pores, and present smooth and polished surfaces over which the traveler can move without interruption and with a minimum of friction.

Referring to Fig. 16, a further modification is illustrated wherein the ring proper comprises upper and lower parts 30 and 31, respectively, which may be of any desired material, for example cast iron or steel, the part 30 being provided with an external supporting flange. The upper part of the member 31 of the ring is provided with a peripheral groove or rabbet in which is seated a ring 32 of a porous metal containing capillary passages designed to retain and form a reservoir for a body of oil. This ring 32 projects inward to a slight extent, for example to the order of .002 or .003 inch, beyond the surface of the ring proper as defined by the parts 30 and 31 and is designed to form the contact element with which the traveler engages during use. This annular member 32 containing a body of oil within its capillary passages thus provides for a substantially

constant and uniform lubrication of the traveler as the latter moves about the ring.

In Fig. 17 a still further modification is illustrated wherein the ring 33, which may be of steel or other suitable material, is provided with an annular groove for the reception of a ring 34 of porous material similar to the ring 32 of Fig. 16. However, in this instance a space 35 is left behind the member 34 constituting an annular reservoir for free lubricant to which access may be had through a small filling opening leading to the upper surface of the ring supporting flange.

In Fig. 18 a slightly different arrangement is shown wherein the ring 36 is of a single piece of metal and having an external flange for supporting it of the general shape of the flange 10 of Fig. 4 but without the reservoir for oil. In the arrangement shown in Fig. 18 a thin annular member 37 of porous oil-absorbent metal is fitted within the ring proper and provides the constantly lubricated surface for contact with the traveler during use.

I have above made mention of one specific material of a porous and oil-absorbent character useful in making the improved ring, but it is to be understood that other metallic compounds are useful for the purpose, for example, compounds in which comminuted cast-iron or mixtures of cast-iron with steel are substituted for the copper.

While I have herein disclosed certain desirable modes of procedure in providing a substantially constant and uniform lubrication of the ring surface and have suggested certain desirable substances for use in making the ring, I wish it to be understood that the invention is not to be limited in these particulars but is broadly inclusive of any construction, method, and material within the terms of the appended claims.

I claim:

1. A one-piece spinning ring of the kind which constitutes the sole guide for the traveler, said ring being of a metallic substance which is hard enough to form an acceptable guide for a traveler of the usual hook-type, the ring having an external supporting flange and being provided with an annular cavity concentric with the axis of the ring for the reception of a free body of oil, the material which separates such cavity from the surface with which the revolving traveler contacts, when in use, being of a porous nature having a multitude of capillary passages which collectively constitute the only substantial outlet from the oil cavity.

2. A one-piece spinning ring of the kind which constitutes the sole guide for the traveler, said ring being of a metallic nature hard enough to form an acceptable guide for a traveler of the usual C-shape, the ring having a reservoir for a free body of oil, the reservoir extending about the entire circumference of the ring, the ring being porous and comprising multitudinous capillary passages which collectively constitute the only outlet from the reservoir.

3. A one-piece spinning ring of the kind which constitutes the sole guide for the traveler, said ring being of a metallic substance hard enough to form an acceptable guide for a traveler of the usual C-shape, the ring having an inner peripheral surface against which the traveler bears when in operation, said ring having a reservoir for a free body of oil extending around its entire circumference at its outer side, the material between the inner wall of the recess and the inner surface of the ring containing a multitude of cap-

illary passages which collectively constitute the only outlet from the reservoir.

4. A one-piece spinning ring of the kind which constitutes the sole guide for the traveler, said ring consisting of a metalliferous material of so hard and wear-resistant a nature as to form an acceptable guide for a traveler of the hook-type, said ring including an annular exterior flange for supporting the ring in a ring rail, said flange having therein a reservoir for a free body of oil, the ring being porous so that oil from the reservoir may pass by capillary action to the inner surface of the ring, the pores of the material constituting the only direct passage for oil from the reservoir to such inner surface of the ring.

5. A spinning ring consisting of a single unitary piece of material of a metallic nature hard enough to form an acceptable guide for a traveler of the hook-type, the ring comprising an external supporting flange and inner and outer surfaces for guiding a traveler, the supporting flange having therein a cavity constituting a reservoir for lubricant, the material which separates the reservoir cavity from the inner surface of the ring being porous and having a multitude of capillary passages which collectively constitute the only outlet from the reservoir.

6. A spinning ring consisting of a single unitary piece of metallic material of so hard and wear-resistant a nature as to form an acceptable guide for a traveler of the usual hook-type, the ring comprising inner and outer surfaces for guiding a traveler, the ring including an external supporting flange having therein a cavity concentric with the axis of the ring and adapted to contain a free body of oil and a removable cover for the cavity, the material of the ring which separates the inner wall of the cavity and the inner surface of the ring containing a multitude of minute capillary passages which collectively constitute the only direct passage between the reservoir and the inner surface of the ring.

7. A spinning ring of the kind which constitutes the sole guide for the traveler, said ring comprising an inner surface with which the traveler contacts as it revolves, said surface constituting the exposed contact face of a body of material of metallic nature hard enough to form an acceptable guide for the traveler but which is porous and contains a multitude of microscopic capillary passages operative to permit oil to move radially to said contact face at a uniform and very low velocity.

8. A one-piece spinning ring of the kind which constitutes the sole guide for the traveler, said ring being of a metallic substance hard enough to form an acceptable guide for a traveler and having therein a cavity for the reception of a free body of oil, the ring having a multitude of capillary passages of visually inappreciable size constituting the only outlet from said oil cavity.

9. A one-piece spinning ring of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring being of a material of a metallic nature hard enough to form an acceptable guide for a traveler of the hook-type and which comprises a multitude of microscopic capillary canals throughout its substance, and lubricant supplying means operative to deliver lubricant continuously to the outer surface of the ring, the capillary canals collectively providing the only passage for the flow of lubricant from the outer to the inner surface of the ring.

10. The combination with a ring rail of a spinning or twisting frame and a plurality of rings mounted on the rail, each ring being of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, each ring consisting of a single piece of metallic material hard enough to form an acceptable guide for a C-shaped traveler, said material being of a porous nature containing a multitude of minute capillary canals, of a container for oil mounted on the rail, and conducting means operative to conduct oil from the container to the exterior surfaces of the several rings, the minute capillary canals in each ring constituting the only direct passage for the flow of oil from the exterior to the interior of the ring.

11. The combination with a ring rail of a spinning or twisting frame and a ring mounted thereon, said ring being of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring consisting of a single piece of metal hard enough to form an acceptable guide for the traveler and having a multitude of microscopic capillary canals throughout its substance, of a container for oil and a conductor leading from the oil container and beneath the rail to the exterior surface of the ring, said conductor being operative to carry oil from the container to the outer surface of the ring, the capillary canals in the substance of the ring collectively constituting the only direct passage for oil from the outer to the inner surface of the ring.

12. The combination with a split annular clamping holder having therein a reservoir for lubricant and a duct leading from the reservoir to the inner peripheral surface of the holder, of a ring clamped within the holder, said ring being of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring consisting of a single piece of metal hard enough to constitute an acceptable guide for the traveler and comprising a multitude of capillary canals within its substance, said canals collectively constituting the only passage for oil from said duct to the inner surface of the ring and acting to distribute the oil uniformly about the inner surface of the ring.

13. A spinning ring having concentric surfaces for contact by a traveler, the ring consisting of a single piece of metalliferous material hard enough to form an acceptable guide for a traveler of the usual hook-type and having an annular groove coaxial with said traveler-contacting surfaces, said groove constituting a reservoir for a body of lubricant, the material interposed between the inner wall of said reservoir and the inner surface of the ring constituting a flow-limiting barrier having openings therein through which oil from the reservoir may pass to the inner surface of the ring.

14. A one-piece spinning ring having concentric surfaces for contact by a traveler, the ring being of a metallic substance hard enough to form an acceptable guide for a traveler of the usual hook-type and having an annular reservoir for oil within the substance of the ring itself, said reservoir being coaxial with said surfaces, the inner wall of the reservoir being provided with passages through which the oil may pass in a substantially radial direction to the inner surface of the ring.

15. A one-piece spinning ring of the kind which

constitutes the sole guide for a traveler, said ring having concentric surfaces for contact by the traveler and an external supporting flange, the inner traveler contacting surface at least being of a metallic substance hard enough to form an acceptable wear-resistant guide for a traveler of the usual C-shape, the ring having an annular chamber coaxial with said inner and outer surfaces constituting a reservoir for oil, the ring having passages leading from said reservoir to the inner surface of the ring.

16. A spinning ring of the kind which constitutes the sole guide for a traveler, said ring having concentric inner and outer surfaces, the inner at least of said surfaces comprising a metallic substance hard enough to form an acceptable guide for a traveler of the usual C-shape but containing a multitude of minute capillary passages through which oil may exude, that portion of the inner surface which is comprised of said porous material projecting to a slight extent inwardly of the main portion of the inner surface of the ring and being contacted by the traveler as the latter revolves about the ring.

17. A unitary spinning ring of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring consisting of a single piece of bronze composition having smoothly polished outer and inner peripheral surfaces for engagement by the traveler and having an interior structure of a porous nature capable of transmitting a lubricant, by capillary action, in a generally radial direction to its inner surface.

18. A unitary spinning ring of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring consisting of a single piece of metal having substantially cylindrical inner and outer walls, and a curved upper edge which merges smoothly with said inner and outer walls, said ring being of a substance hard enough to serve as an acceptable guide for the traveler, the substance of the ring comprising multitudinous capillary canals operative to permit oil to move radially inward at low velocity to the inner surface of the ring from a supply, said upper edge of the ring being provided with means operative to permit application or removal of travelers to the ring without damage to the material of the ring.

19. A one-piece spinning ring of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring being of a material of metallic nature which comprises a multitude of microscopic capillary canals throughout its substance, and lubricant supplying means operative to deliver lubricant continuously to the outer surface of the ring, the capillary canals collectively providing the only passage for the flow of lubricant from the outer to the inner surface of the ring.

20. The combination with a ring rail of a spinning or twisting frame and a ring mounted thereon, said ring being of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring consisting of a single piece of metal hard enough to form an acceptable guide for the traveler and having a multitude of microscopic capillary canals throughout its substance, of a container for oil and a conductor leading from the oil container

and beneath the rail to the exterior surface of the ring, said conductor being operative to carry oil from the container to the outer surface of the ring, the capillary canals in the substance of the ring collectively constituting the only direct passage for oil from the outer to the inner surface of the ring.

21. The combination with a split annular clamping holder having therein a reservoir for lubricant and a duct leading from the reservoir to the inner peripheral surface of the holder, of a ring clamped within the holder, said ring being

of the kind which constitutes the sole support and guide for a traveler which engages both the inner and outer peripheral surfaces of the ring, said ring consisting of a single piece of metal hard enough to constitute an acceptable guide for the traveler and comprising a multitude of capillary canals within its substance, said canals collectively constituting the only passage for oil from said duct to the inner surface of the ring and acting to distribute the oil uniformly about the inner surface of the ring.

GEORGE F. ALBRECHT.