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G. H. GILLIGAN

1,880,084

SPINNING OR TWISTING DEVICE

Filed Dec. 10, 1931

Fig. 1.

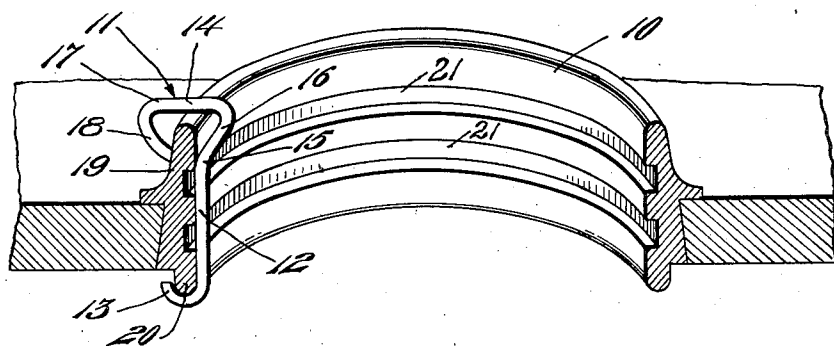


Fig. 2.

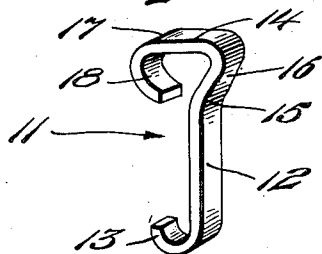


Fig. 3.

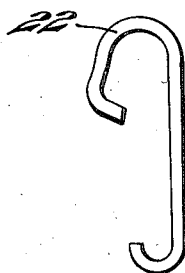


Fig. 4.

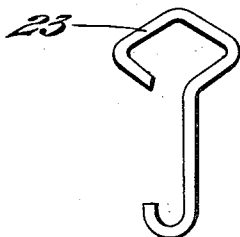
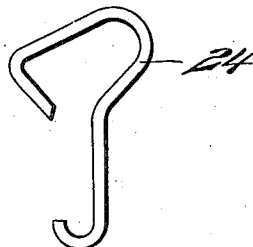


Fig. 5.



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UNITED STATES PATENT OFFICE

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SPINNING OR TWISTING DEVICE

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My present invention relates to rings and ring travelers for spinning and twisting machines, and has particular reference to lubricating rings and ring travelers of the vertical type.

The present types of spinning and twisting machines are constructed with different types of builder motions, which produce a different build or shape of the bobbin or spool, known as "winds." The most common winds are the filling, warp and spool winds, and each exerts a different tension or pull on the traveler as the traverse changes from top to bottom of the bobbin or spool, in filling the same to capacity. The increasing diameter of the bobbin or spool has a like effect on the tension or traveler pull.

The everchanging angle assumed by the thread while passing through the traveler in the process of winding the thread on the bobbin or spool thus causes a traveler of the vertical type to tilt toward or from the bobbin, or to overbalance or pivot at the bend in the shank of the traveler in an inward direction, and thus prevents the shank from following or hugging the vertical inner face of the ring in continuous contact from the bend to the foot of the traveler.

This tilting of the traveler shank has been particularly disadvantageous in constructions utilizing lubricating rings of the vertical type. These lubricating rings have peripheral grooves, slots, recesses and the like on their inner faces, which may be provided with wicks or other means for conveying lubricant to the inner face of the ring for distribution by the traveler over the surface where frictional contact is greatest.

Experiments and study have shown the air pressure generated by the rapidly rotating spindle tends to hold the lubricant within the grooves, slots, and recesses, and that the forces acting on the traveler tilt it away from the inner face or surface of the ring, thus preventing the delivery of the lubricant from the ring to the traveler as intended by the construction of the ring. It is the principal object of my invention to provide a traveler construction that will cooperate with a lubricating ring to hug the inner face of the

ring during rotation and thus produce a pumping and a suction effect on the lubricant flow and distribution, and to direct the lubricant to the advancing traveler.

To this end, the traveler is formed to provide a maximum length of shank for engagement with the inner face of the ring, and the traveler head is turned inwardly to engage the outer ring surface, preferably at right angles thereto, and thus prevent swinging or pivoting of the traveler on its bend. While centrifugal force assists in retaining the traveler shank against the inner ring face, it is also desirable to shape the traveler foot so as to slidably fit the lower portion of the ring and thus resist inward movement of the traveler shank.

My invention therefore comprises use of a novel construction of traveler in conjunction with a ring of the lubricating type, as more fully disclosed in the detailed description following, in conjunction with the accompanying drawing, and more specifically defined in the claims appended thereto.

In the drawing,

Fig. 1 is a transverse section of a spinning or twisting ring equipped with one form of my novel traveler, the latter being shown in running position thereon,

Fig. 2, a perspective view of the traveler, and

Figs. 3 to 5 are side elevations of modified forms of travelers embodying my invention.

Referring to Fig. 1, the reference character 10 represents a spinning or twisting ring of standard vertical construction, designed for insertion in the ring rail of the spinning or twister frame. The novel traveler 11 is of the vertical type, and is preferably formed from wire or the like by cutting and bending to provide a long shank 12, a lower foot 13, and an upper head 14 adapted to receive the fibre end or threads and connected to the shank by a bend 15, the head having a back portion 16 extending rearwardly and upwardly from the bend, then a top portion 17 extending forwardly, and then a nose portion 18 extending downwardly and rearwardly. The nose portion 18 is formed to be at right angles to the outer surface of the

upper ring shoulder 19 and in contact with the latter in running position, and substantially in alignment with the bend 15 and spaced therefrom by substantially the width of the upper ring shoulder, and the foot 13 is shaped to slidably fit the lower ring shoulder 20, without, however, excessive frictional engagement. The ring 10 is provided with one or more annular lubricating grooves or recesses 21, and may be provided with wicks or the like if desired. Any suitable lubricating openings, slots or the like, disposed in any desired manner on the inner surface of the ring, may be provided instead.

The form of the head may be changed to accommodate the different diameters of fibres to be twisted, as indicated at 22 in Fig. 3, 23 in Fig. 4, and 24 in Fig. 5.

Actual tests have determined that the above described construction of traveler hugs the inner face of the ring and produces a combined pumping and suction action that drains lubricant from the grooves and any wicks therein, and directs the lubricant to the advancing edge of the traveler, thus enabling downward lubricant flow to the traveler foot, where the frictional contact is at a maximum. The traveler is thus thoroughly lubricated, an even thread tension is obtained, and the lubricant is directed away from the traveler head and the thread.

While the foregoing description has been directed to travelers having bends at the upper portion of the shanks, it is obvious that the same principle applies to travelers having the shank and the rear portion of the head in alignment, thus eliminating the bend, the nose portion of the head being designed to engage the outer surface of the ring and maintain the shank against the inner surface, whereby tilting of the shank from the inner surface under the influence of the forces exerted by the end or fibre passing through the head is prevented.

While I have described the specific traveler and ring construction, it is obvious that changes in the arrangement and relative proportions of the traveler parts may be made to suit the requirements of different spinning and twisting machines, within the spirit and scope of the invention as defined in the appended claims.

I claim:—

1. In combination, a ring having lubricating recesses on the inner face thereof, and a traveler having a shank portion engageable with said inner face and a nose portion directed towards the shank portion and contacting the outer ring face to maintain said shank portion in continuously contacting engagement with said inner face.

2. In combination, a ring having lubricating recesses on the inner face thereof, and a traveler having a shank engageable with said inner face and a head connected to the shank

by a bend, the head having a back portion extending rearwardly and upwardly from the bend, a top portion extending forwardly, and a nose portion extending downwardly and rearwardly.

3. In combination, a ring having lubricating recesses on the inner face thereof, and a traveler having a shank engageable with said inner face and a head connected to the shank by a bend, the head having a back portion extending rearwardly and upwardly from the bend, a top portion extending forwardly, and a nose portion extending downwardly and rearwardly substantially in alignment with the bend and spaced therefrom by substantially the width of the contiguous ring portion.

4. A traveler for spinning and twisting rings, having a shank, a foot at one end thereof, and a head at the other end thereof, said head having a nose directed towards said shank.

5. A traveler for spinning and twisting rings, having a shank, a foot at one end thereof, and a head at the other end thereof, said head being connected to the shank by a bend, and having a back portion extending rearwardly and upwardly from the bend, a top portion extending forwardly, and a nose portion extending downwardly and rearwardly.

6. A traveler for spinning and twisting rings, having a shank, a foot at one end thereof, and a head at the other end thereof, said head being connected to the shank by a bend, and having a back portion extending rearwardly and upwardly from the bend, a top portion extending forwardly, and a nose portion extending downwardly and rearwardly substantially in alignment with the bend and spaced therefrom by substantially the width of the contiguous ring portion.

In testimony whereof I have affixed my signature.

GEORGE H. GILLIGAN.