

Feb. 13, 1968

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EAR-SHAPED TRAVELER FOR RING SPINNING
AND RING TWISTING MACHINES
Filed Jan. 17, 1967

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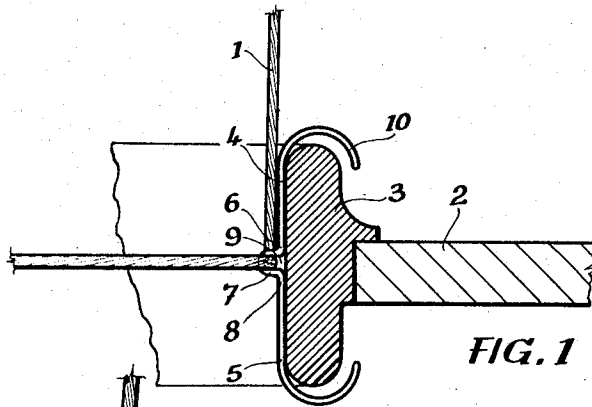


FIG. 1

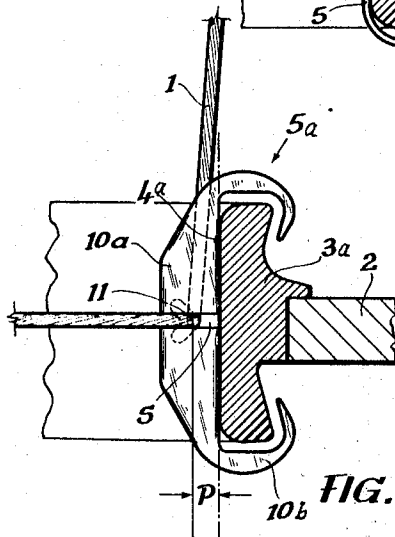


FIG. 2

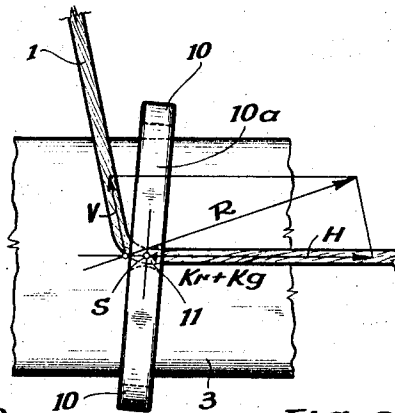


FIG. 3

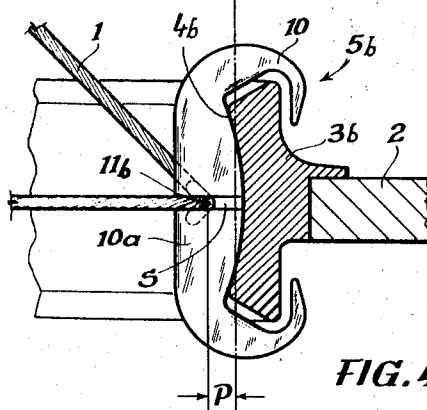


FIG. 4

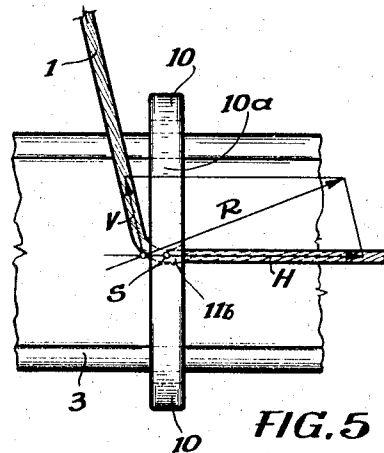


FIG. 5

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EAR-SHAPED TRAVELER FOR RING SPINNING AND RING TWISTING MACHINES

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Filed Jan. 17, 1967, Ser. No. 609,797

Claims priority, application Germany, Jan. 19, 1966, M 68,057

3 Claims. (Cl. 57—125)

ABSTRACT OF THE DISCLOSURE

The present invention relates to an ear-shaped traveler for ring spinning and twisting machines, which includes an upwardly and downwardly directed leg respectively extending over and below the upper and lower edge of said ring while that surface of the traveler which is mounted condition thereof is intended to face the ring is provided with a groove at least approximately halfway between the upper and lower ends of the legs for guiding a thread. The said traveler may consist of wire or synthetic material. When the traveler consists of wire the groove is formed by a bend in the wire. According to another important feature the inner surface of the ring is concave and the outer surface of the traveler which faces and engages the ring is arched accordingly.

The present invention relates to an ear-shaped traveler for ring spinning and ring twisting machines. For purposes of twisting and winding up the thread, it is known in connection with ring spinning and ring twisting machines to employ travelers into which the thread is threaded and suspended and which are dragged on the ring along a circular path by the rotating bobbin.

It is the purpose of the traveler on one hand to deviate the thread which comes from above in a radially inward direction and on the other hand to impart upon the thread a certain tension which is determined above all by the friction encountered by the traveler on the ring. The friction of the traveler on the ring and the friction of the thread on the traveler is subjected to variations when the condition of engagement of the traveler with the ring changes due to wear and when the traveler edges or assumes an inclined position with regard to the ring.

Industry, therefore, has endeavored so to shape the traveler that as far as possible the conditions of friction remain constant and that too great an edging or inclination of the traveler will be prevented. Edging of the traveler is to be expected in particular when the thread within the upper range of the upper edge of the ring engages the traveler which also results in an increased wear within the range of the upper edge of the ring.

In an effort to remedy this situation, travelers have been created which cause the thread to engage the traveler in the center or nearly in the center, which means approximately in the central plane of the ring. In this way a unilateral edging is avoided or at least greatly reduced. With these known travelers, the guiding of the thread is effected on that side of the traveler which faces the center of the ring, as a rule in the form of a hook in which the thread is suspended. This, however, has the drawback that the point of attack of the thread on the traveler is located relatively far from the center of gravity of the traveler so that the pulling force of the thread on the traveler, which thread moves radially inwardly, acts upon the latter with a relatively long lever arm. This may cause a unilateral displacement of the traveler in upward direction and may also place the traveler at too great an inclination so that the traveler,

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at least within the range of the upper edge of the ring, will, as has been the case, be subjected to a considerable wear.

In addition thereto, there is encountered the drawback that the forming of the hook makes the manufacturing process for the traveler more difficult. The shaping of the hook and the guiding of the travelers of this type has led to the suggestion to compose the traveler of a plurality of parts, namely an element for mounting purposes and a sliding member which for purposes of preventing edging is guided in a specific guiding groove on the inner surface of the ring.

Starting from an O-shaped traveler for ring spinning and ring twisting machines which with its free ends facing each other extends above the upper and lower edge of the ring and which is provided with a thread guide in the center or nearly in the center, it is an object of the present invention to place the thread guiding means close to the center of gravity of the traveler.

It is another object of this invention to provide a traveler of the above mentioned type for ring spinning and ring twisting machines, which will facilitate the insertion of the thread.

It is still another object of this invention so to design a traveler for ring spinning and twisting machines that the manufacture of the traveler will be greatly simplified.

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

FIG. 1 diagrammatically illustrates on an enlarged scale a traveler formed of a wire and mounted on a ring a portion of which is shown in section.

FIG. 2 illustrates a flat traveler of synthetic material on a ring a portion of which is shown in section.

FIG. 3 is a view of the ring according to FIG. 2 as seen from the center of the ring.

FIG. 4 shows an embodiment of the invention similar to that of FIG. 2.

FIG. 5 shows the ring of FIG. 4 as seen from the center of the ring.

The traveler according to the present invention is characterized primarily in the the thread guide on the traveler is formed by a depression provided in the edge facing the ring. This brings about that the thread engages the traveler in the immediate vicinity of the inner surface of the ring which means at an area which is particularly close to the center of gravity of the traveler or may even coincide therewith. Thus, the provision of a special hook becomes superfluous which hook, in conformity with the invention, is replaced by the depression in that edge which faces the ring, said depression being located in the center plane of the ring. In this way, the pulling forces of the thread attack the traveler in the central plane of the ring so that an edging of the traveler will be impossible. Consequently, a tilting moment about the vertical axis of the legs of the traveler is practically impossible.

It is of particular advantage that the thread, in contrast to the mode of threading with heretofore known travelers, is introduced into the traveler from the outside from the upper traveler end. To this end, the thread is merely passed between the traveler and the upper edge of the ring and is further passed between the traveler and the leg portions defining the depression for receiving the thread, and the thread will automatically place itself into the said depression. Thus, the introduction of the thread into the traveler is greatly simplified.

According to a further development of the invention, the traveler may consist of a bent ear-shaped wire which is angled approximately in the central portion thereof so as to form a depression or open eye open toward the ring. This embodiment is particularly simple because the

same material can be used as is customary with travelers made of wire, without the necessity of providing a special hook. The thread guide is formed automatically by the bending of the traveler.

According to another embodiment of the invention, which is particularly suitable when synthetic material, such as nylon, is used for the traveler, the central section of the traveler is broadened and has a groove therein which is open toward the ring. Particularly with this embodiment, by broadening the traveler within the range of its base legs, it will be assured that the center of gravity of the traveler practically coincides with the point of attack of the thread pulling forces, whereby an edging or inclining of the traveler will be prevented.

In order further to improve the thread movement into and out of the traveler, and in order to further improve the conditions of friction, it may be provided according to the present invention that the bottom of the groove is curved in conformity with the thread loop.

According to a still further development of the invention, the guiding of the traveler on the ring can be further improved by shaping that surface of the traveler which engages the ring so that the contact surface of the traveler with the ring is curved correspondingly radially outwardly.

Referring now more specifically to the drawing, the thread is throughout the drawing designated with the reference numeral 1 while the ring holder is designated with the reference numeral 2. According to FIG. 1, the ring 3 has a vertical plane inner surface 4 against which the traveler 5 may rest. The traveler is made of wire and has the shape of an ear, the base legs of said traveler 5 resting on said ring 3. Approximately in the central horizontal plane of ring 3, the wire of the traveler 5 is at 6 bent inwardly and then at 7 bent back outwardly and at 8 is angled off into the contact plane with ring 3. In this way a groove or eye 9 is formed which is engaged by the thread 1. In order to introduce thread 1 into said groove 9, it is passed between the upper leg 10 and the upper surface of ring 3. This introduction of the thread is considerably simpler than the introduction of the thread into a hook on that side of the traveler which faces the center of the ring as is the case with heretofore known travelers with which the thread can easily leave the hook.

According to the embodiments of FIGS. 2 and 3, the traveler is made of synthetic material and has its base legs 10a considerably wider than the corresponding legs 4 and 5 of the traveler of FIG. 1. The legs 10a are widened in such a way that the center of gravity S of the traveler 5a is located within the range of groove 11 which extends radially toward the center of the ring. The thread 1 is introduced into the depression or groove 11 in a manner similar to that described in connection with FIG. 1. The bottom of groove 11 is curved in conformity with the thread loop as is clearly shown in FIG. 2. FIG. 2 also indicates in which direction the thread 1 will move in the bottom of the groove in wide base leg 10a. A wear will thus occur only within the range of the greatest accumulation of the material. Thus, the danger present with heretofore known travelers, namely that the traveler 5a will be practically sawed through, will be eliminated with the traveler according to the present invention. The cross section of ring 3a is somewhat different from that of ring 3 of FIG. 1. Consequently, also the shape of leg 10b differs somewhat from that of leg 10 of FIG. 1.

The letter P designates the distance between the point of attack of thread 1 on traveler 5a from the contacting surface 4a of ring 3a. It will be evident from FIG. 2 that the center of gravity S is located about half way of this

distance, which means very close to the contacting surface 4a of ring 3a.

FIG. 3 shows how the thread pulling forces become effective. The effective forces are the pulling force V which is upwardly directed at an angle and the radially inwardly directed pulling force H, and from these two forces the resultant R is obtained. Since the resultant force R attacks at the center S of the traveler, only a very slight inclination of the traveler 5a can occur. This inclination is even less when the traveler is designed in conformity with FIGS. 4 and 5. With the traveler 5b of FIGS. 4 and 5, the contacting surface 4b of ring 3b is curved inwardly, and accordingly the contacting surface of ring 3b is curved outwardly so that the traveler 5b and the ring 3b positively engage each other.

In this way, the location of the center of gravity of traveler 5b is still further improved and an edging or inclination with regard to the ring 3b is made practically impossible. The traveler 5b thus will approximately maintain its vertical position. An engagement of the upper or lower ring edge by the traveler 5b will thus be practically impossible.

As will be evident from the embodiments referred to above, the traveler can due to its symmetric shape be inverted which means can be used either way which greatly increases the life of the traveler if local wear on one leg 10, 10a, 10b or at the bottom of the groove 11, 11b should have occurred.

It may also be mentioned that the illustrated traveler shapes may be employed for lubricated and non-lubricated as well as for self-lubricating rings. Similarly, the runner shape may be used for runners of different materials, as for instance with runners of wire, i.e., runners made of metals, as well as with runners made of synthetic materials, such as nylon.

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

What I claim is:

1. For use in connection with a ring having an approximately cylindrical inner surface for ring spinning and ring twisting machines, an ear-shaped traveler with a ring contacting surface for sliding engagement with the inner surface of said ring, said traveler having said ring contacting surface provided with a groove having a width of approximately the diameter of the thread to be slidingly received therein, said groove being located at least approximately halfway between the upper and lower ends of said traveler in upright position thereof and extending in a direction transverse to the longitudinal extension of said traveler for guiding a thread received in said groove.

2. A traveler according to claim 1, which consists of a wire with a central bend therein forming said groove.

3. A traveler according to claim 1, in which the central portion of said traveler is wider than its upper and lower ends, and in which said groove is located in said wider central portion.

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70 JOHN PETRAKES, *Primary Examiner*,