Nov. 24, 1964 A. J. WAYSON 3,157,981

TRAVELER FOR USE WITH SPINNING RINGS

Filed Nov. 1, 1962

Fig. 1.



Fig. 2.

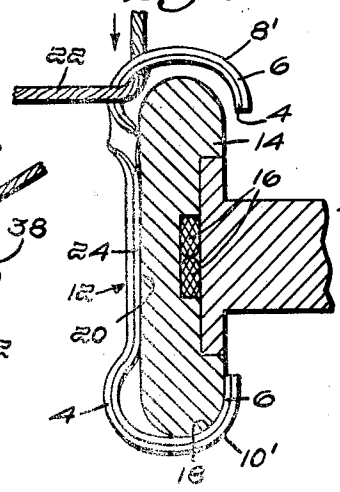


Fig. 5.

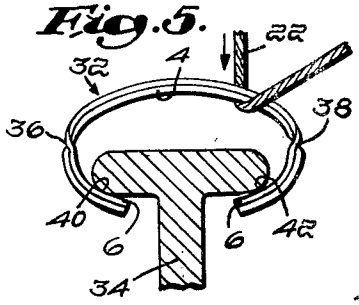


Fig. 6.

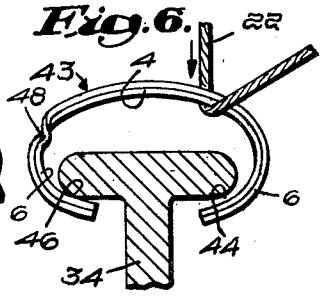


Fig. 4.

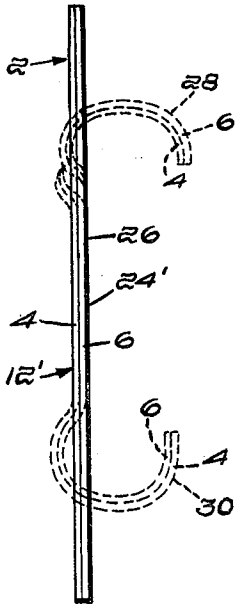
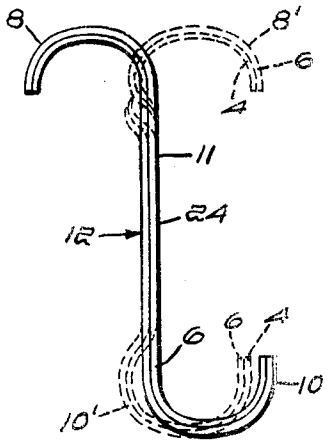


Fig. 3.



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TRAVELER FOR USE WITH SPINNING RINGS

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This invention relates to the textile industry and is particularly concerned with the provision of a new construction of a traveler for use with spinning rings. The traveler, as disclosed and claimed herein, may be used with either the vertical type ring or the horizontal type ring.

In the spinning of yarn, improvements have gradually been made which permit the spindles to rotate at very high speeds, in many instances from 5,000 to 12,000 revolutions per minute. At such spindle speeds, the traveler is moving around the spinning ring at velocities over a mile a minute. Obviously wear due to friction between the ring and traveler is great even under the best types of lubrication, with the result that travelers wear out rapidly and must be frequently replaced. Likewise, there is a corresponding increase in the rate of wear of the rings, so it is important that travelers be made of material which will slide on the rings with minimum wear and maximum ease of movement.

The traveler is subjected to two types of wear, one being the wear occasioned by its engagement with the ring as it travels thereabout, and the other being the wear caused by the twisted yarn as it travels under the traveler on its way to the bobbin on the rotating spindle.

Travelers heretofore have been made not only of steel but also of synthetic materials, such as plastics, nylon, Fiberglas and the like. This latter type of traveler wears well with respect to the ring but has short life with respect to the area of engagement with the yarn. To improve the wear at the yarn engaging area, steel inserts have been placed in plastic travelers. This has improved the wearing qualities but has resulted in a cumbersome, difficult to make and expensive traveler.

Other experiments have shown that a traveler made of bronze gives excellent wearing qualities at those areas that engage the ring due to the lower coefficient of friction, but bronze does not stand up well at the yarn engaging areas. On the other hand, steel travelers, which thus far are those which are most commonly in use, wear well at the yarn engaging areas but are relatively short-lived at the areas that engage the ring.

Accordingly, the present invention contemplates making a traveler in such manner and of such material that those parts which come into engagement with the ring will be of bronze and those parts which are engaged by the yarn will be of steel. This result is achieved most readily by forming the traveler from a strip of metal, or other rigid but bendable material, in which one side of the strip is of bronze, or other material that will wear well when engaging the ring, and the other side of steel, or other material that will wear well with respect to the yarn. The strip, if of bronze and steel, is formed into traveler configuration with the bronze side of the strip on the interior face of the traveler where the traveler comes into engagement with the spinning ring and with the steel side on the interior face of the traveler where it is engaged by the yarn. The reversal of the inner face material is accomplished, in the preferred construction, by

twisting the two-metal strip at an appropriate position through an angle sufficient to insure the steel face engaging the yarn and the bronze face engaging the ring. Ordinarily the twist put in the strip will be 180°, more or less, so that the hook ends when formed will be in substantial alignment, but the hooks could be misaligned to some extent so long as they engage the ring properly and slide freely thereon.

The invention also contemplates novel methods of making a traveler. In one instance, the two-material strip is first formed in a generally S-shaped configuration, after which the upper hook, is rotated through the required angle to provide the correct finished shape. According to another method, the two-material strip is first twisted through the required angle and then the hooks are formed above and below the point of twisting. The travelers may be readily made by existing automatic machines to which means for accomplishing the extra twisting step has been added.

When a traveler made according to the present invention is to be used with a horizontal type spinning ring, then it may be desirable to incorporate a double twist in the traveler so that both of the hook-like ends will have bronze inner surfaces for engagement with the two sides of the ring and the central portion of the traveler will have its inner surface of steel for engagement by the yarn.

The travelers may also be made from two separate strips of material, one steel and the other bronze, for example, secured together in any desired manner either before or after twisting.

These and other objects of the invention will become more apparent as the description proceeds with the aid of the accompanying drawings in which:

FIG. 1 represents a continuous two-material strip from which the traveler may be formed;

FIG. 2 is an enlarged fragmentary vertical cross-section taken through a vertical type spinning ring and holder therefor showing a traveler made according to the present invention in operative position thereon;

FIG. 3 illustrates one method of making the traveler shown in FIG. 2;

FIG. 4 illustrates a second method of making the traveler shown in FIG. 2;

FIG. 5 shows a traveler in use on a horizontal type spinning ring in which the traveler includes two 180° twists; and

FIG. 6 is a view similar to FIG. 5 showing a traveler of the type used on a horizontal type spinning ring in which only one twist has been included.

Referring first to FIG. 1, there is shown a two-material (preferably bimetallic) strip indicated generally at 2. The upper lever 4 is of steel and the lower layer 6 is of bronze. The cross-sectional dimensions of this bimetallic strip will be such as to meet the usual cross-sectional dimensions of a finished traveler. For example, the width of the strip might range from $\frac{1}{32}$ inch up to $\frac{3}{16}$ inch, and the thickness might run from $\frac{1}{32}$ inch or less up to $\frac{3}{32}$ inch. However, it is to be understood that the dimensions of the bimetallic strip may be varied at will to meet any required traveler dimensions.

FIGS. 3 and 4 illustrate methods of forming the strip into a usable traveler construction. In FIG. 3 is shown a length of the strip 2 of proper dimensions. One end is bent semi-circularly to the left and the other end bent semi-circularly to the right. In the form shown, the

bronze side of the strip is on the right at 6 and the steel side is on the left at 4. After completing this initial formation, the upper part of the strip is twisted at position 10 through a sufficient angle, preferably about 180°, to swing the hook 8 over to a new position 8' in which the exterior of the hook will be bronze as at 6 and the interior will be steel as at 4. The lower hook 10 is then reformed somewhat to the position 10' with the bronze remaining on the interior 6 and the steel remaining on the exterior 4.

This traveler, now generally referred to at 12, when placed on a spinning ring 14, has exceptionally long life. The spinning ring 14, which is preferably of the powdered metal type in which the ring is porous so that oil supplied by wick 16 will travel through the ring and cover the entire surface, will make contact with the bronze part 6 of the traveler along its lower outer curved edge 18 and along the circular inner surface 20. These are the areas of engagement induced by the upward inward pull of the yarn 22 on the traveler, which pull brings the hook portion 10' into engagement with surface 18. On the other hand, the centrifugal force induced by the high rotational speeds at which the traveler is moved forces the intermediate vertical part of the traveler at 24 into engagement with ring surface 20.

The upper hook 8' of the traveler has its outer surface 6 of bronze and its inner surface 4 of steel. Thus it is the steel surface which is in engagement with the yarn 22 which is moving in the direction of the arrow from the feed rolls above (not shown) to the bobbin on the spindle (not shown).

Another method of forming the traveler 12 shown in FIG. 2 is illustrated in FIG. 4. Here the bimetallic strip 2 is shown with the bronze side 6 on the right and the steel side 4 on the left. At the position 26, the upper portion of the bimetallic element is twisted through the required angle, preferably about 180°, and then formed into the upper hook 28 in which the outer side is of bronze 6 and the inner side is of steel 4.

The lower part of the bimetallic strip 2 is not twisted, but instead is formed directly into a lower hook 30 in which the outer side is steel 4 and the inner side is bronze 6. This results in a traveler 12' of the same construction as the traveler 12 shown in FIG. 3. In either case, the best of the known materials heretofore used in travelers with regard to wearing properties, namely, bronze and steel, are used so that the bronze is brought into engagement with the ring while the steel, which is considered to have the longest life with regard to the moving yarn, is positioned at the proper location for engagement by the yarn.

However, as previously noted, it is to be understood that the invention is not to be considered as limited to a bimetallic strip made of steel and bronze, as some users may consider that other materials have preferable qualities when formed into travelers and put to this use. Accordingly, the invention broadly contemplates a two-material strip that may be made of any suitable metals, or of a suitable metal bonded to a suitable type of plastic, such as nylon, or synthetic material. For example, a synthetic material might be substituted for the bronze side of the strip so that in the completed traveler the synthetic face thereof would engage the ring while the steel face would engage the yarn.

Another traveler construction is shown in FIG. 5. Here the traveler is generally referred to at 32 and is formed for use with a typical horizontal type ring 34. Two twists have been made at 36 and 38 in a bimetallic strip whereby that part of the traveler that engages the under sides of the ring at 40 and 42 is of bronze 6 and the inner part of the traveler that engages the yarn 22 is of steel 4.

Under some conditions of operation, the forces are such that there is little or no wear, as shown in FIG. 6, at the position 44 on the inner periphery of the horizontal type ring 34. All of the wear occurs at the under side of the outer periphery of the ring as at 46. In such case, it is unnecessary to incorporate the two twists shown in FIG. 5 in the bimetallic strip. A single twist, as indicated in FIG. 6 at 48, is sufficient, in which case the inner face of the traveler that engages area 46 will be of bronze 6 and the inner face of the traveler that is engaged by the yarn 22 will be of steel 4.

The travelers shown in FIGS. 5 and 6 may be made according to the methods disclosed in either FIG. 3 or FIG. 4, and further explanation of the process of producing the traveler 32 or the traveler 43 is thought unnecessary.

It is my intention to cover all changes and modifications of the examples of the invention herein chosen for purposes of the disclosure which do not constitute departures from the spirit and scope of the invention.

I claim:

1. A traveler for use with a spinning ring, said traveler being made of a strip comprising two different materials extending longitudinally back-to-back and having at least one twist intermediate its ends, the ends bent toward each other to form hook portions and an interior face, whereby there will be different materials at different portions of the said interior face of the traveler.

2. A traveler for use with a vertical type spinning ring, said traveler being made of a strip comprising two different materials extending longitudinally back-to-back in which one material has good wearing properties with respect to its sliding engagement with the spinning ring and the other material has good wearing properties with respect to yarn passing thereagainst, said traveler twisted intermediate its ends and having upper and lower hook portions, the interior of the upper hook portion being of material having the good wearing properties with respect to yarn passing thereagainst and the interior of the lower hook portion having the good wearing properties with respect to engagement with the spinning ring.

2. A traveler for use with a spinning ring as set forth in claim 2, in which the material that will engage the spinning ring is bronze and the material that will engage the yarn is steel.

4. A traveler for use with a horizontal type spinning ring, said traveler made of a strip comprising two different materials extending longitudinally back-to-back, said strip being twisted 180° more or less at two spaced positions intermediate the ends of the traveler and bent to provide hook ends, whereby the material at the interior of the hook ends of said traveler will be the same and the material facing the ring between the twisted positions will be of different characteristics.

5. A traveler for use with a spinning ring as set forth in claim 4, the material on the interior of the hook ends being bronze and the material facing the ring between the twisted positions being steel.

6. A traveler for use with a spinning ring, said traveler being of conventional configuration having an upper hook and a lower hook and an intermediate vertical shank connecting said hooks, the upper hook having its inner face of one material and the lower hook and the inner face of the intermediate shank being of a second material, said upper hook and intermediate shank being connected by a section which has been twisted through 180° more or less.

7. A traveler for use with a spinning ring, said traveler being of conventional configuration having oppositely disposed hooks at its end and an intermediate shank connecting said hooks, said hooks and shank being made of a strip comprising two different materials extending longitudinally back to back and of substantially the same cross-section throughout its length, the inner face of one of said hooks being of one material and the inner face of the other hook and the adjacent inner portion of the intermediate shank being of a second material.

8. A traveler for use with a spinning ring, said traveler being made of a strip comprising two different materials

extending longitudinally back-to-back in which one material has good wearing properties with respect to its sliding engagement with a spinning ring and the other material has good wearing properties with respect to yarn passing thereagainst, the materials of said strip reversing at an intermediate position in the length of the strip, the strip terminating in hook portions, the interior of one hook portion being of the material having the good wearing properties with respect to yarn passing thereagainst

and the interior of the other hook portion being of the material having the good wearing properties with respect to engagement with the spinning ring.

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