Sept. 1, 1936. P. C. WENTWORTH 2,052,735

RING TRAVELER

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Fig. 1

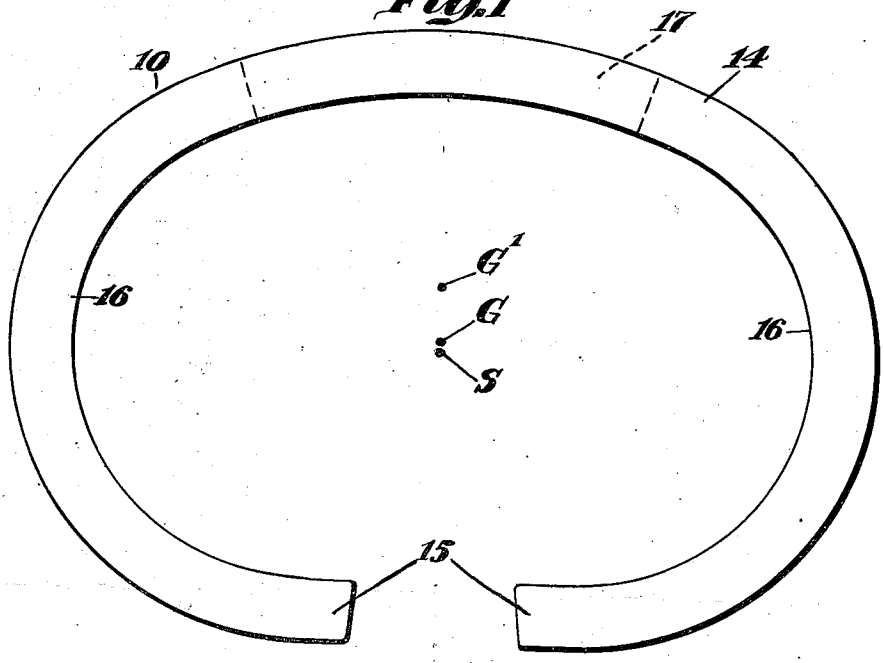
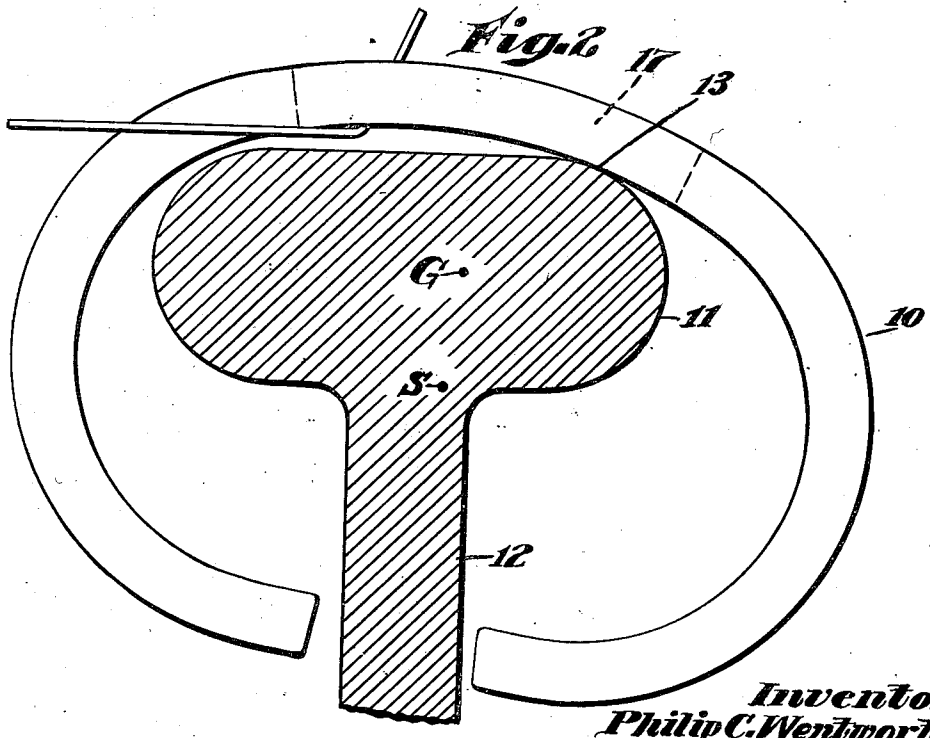


Fig. 2



Inventor
Philip C. Wentworth
By Ellis Spear Jr.
Attorney

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Fig. 3

Fig. 4

Fig. 5

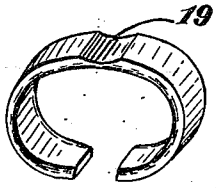


Fig. 6

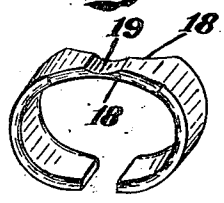


Fig. 7

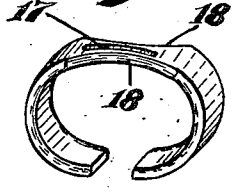
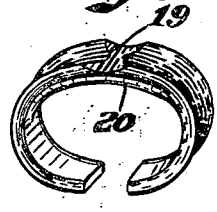


Fig. 8



Inventor
Philip C. Wentworth

Ellis Spear Jr.

By Attorney

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UNITED STATES PATENT OFFICE

2,052,735

RING TRAVELER

Philip C. Wentworth, Providence, R. I.

Application October 22, 1935, Serial No. 46,138

6 Claims. (Cl. 118—61)

This invention relates to ring spinning or twisting travelers. Such travelers are used on a spinning or twisting ring having a horizontal flange.

For generations and up to the recent past the textile industry, so far as yarns were concerned, has run more or less along staple lines. Such changes as were made were in the nature of seasonal changes. Consequently the machinery and equipment, including the traveler, became more or less standardized.

Recently, however, drastic changes have taken place in the industry. Fashions began to dominate the situation and these fashions, although in no way seasonal, nevertheless are continuously under constant change. As a result the spinning of cotton yarns in a great multiplicity of styles, weights and twists has become the order of the day. Moreover, the development of synthetic fibres such as artificial silk and rayon and the increasing use of the same has created new problems.

The revolutionary character of these changes has brought about a complete revolution in mill practices, especially in the traveler itself, which still remains the important or key factor in the entire set up.

In meeting these new demands and problems, the industry has sought to adapt or utilize the ring principle in the spinning of worsteds, silks and rayons. These yarns however, have a different action on the traveler than does cotton yarn. Rayon and silk are highly abrasive and have a pronounced abrasive action on the traveler. Worsted is also somewhat abrasive and moreover is quite bulky. Consequently, the traveler rides the ring differently according to the kind of yarn being spun. Moreover, with bulky yarn such as worsted and some of the coarser cottons, the clearance between the traveler and the ring is greatly reduced.

Another factor in the operation of the traveler is the constant demand of the industry for higher spindle speeds. With higher spindle speeds the surface speed of the traveler is correspondingly increased and unless the traveler rides the ring in true balance at these increased speeds, imperfect spinning and twisting results. Ideally, the traveler should float on the ring, being so supported by the yarn as substantially to eliminate friction between the ring and traveler.

Likewise in meeting these new demands and problems the industry has turned to the elliptic shape of traveler as being a shape particularly suiting the conditions imposed, and the elliptic traveler which has been more or less dormant for some years, has now come into favor as a traveler shape which meets many of the changed conditions better than a traveler of conventional shape.

The elliptic traveler as manufactured in this country for many years, however, did not completely and satisfactorily solve the problems presented. Essentially, this was because the elliptic traveler as commonly made still had its center of gravity so high as to cause the traveler to drag the ring rather than float thereon and consequently not to ride the rail in true balance.

Moreover, there seemed to be no satisfactory way of meeting or eliminating the abrasive action of the more abrasive yarns, such as rayon or silk, on the traveler and which action considerably shortened the useful life of the traveler.

With these conditions in mind, my present invention contemplates a traveler of conventional elliptic shape but having its center of gravity of the elliptic traveler lowered to a point where the traveler will ride the ring in true balance.

In accomplishing this, without sacrifice of any other feature necessary to adequate traveler performance, I reduce the cross sectional area of the material of the bow in any suitable manner, as by slotting, milling or grooving the bow. This lowers the center of gravity of the traveler to a point considerably below that of the elliptic traveler as heretofore manufactured and imparts to to the traveler a stability of equilibrium which enables it to assume a more truly floating position on the ring and to traverse the ring with the minimum of frictional contact.

With my traveler the center of gravity is low- to a point well within the ring flange instead of above it as with the conventional elliptic traveler, and hence the principal zone of wearing contact between the traveler and the ring is no longer between the innermost traveler horn and the adjacent edge of the ring flange or ring web but is a zone of momentary contact between the underface of the traveler bow and the top face of the ring flange.

As a result of reducing the cross sectional area of the material of the traveler bow, the traveler shows a definite superiority over the convential elliptic traveler in respect to its useful life, due to the fact that in the heat treatment step of producing such traveler, it is possible to give the traveler a greater hardness and a better temper than where the amount of metal in the bow is unaltered.

As suggestive of the many methods of reducing

the cross sectional area of the traveler bow and thereby both lower the center of gravity of the traveler and giving to the traveler greater durability and longer wearing life so as to enable it to meet the increased demands made on it as a result of increased spindle speeds and changes in the character of the yarns being spun, I show in the accompanying drawings several embodiments of my invention which I have found satisfactory under actual service conditions and well adapted to the requirements of modern manufacturing methods. In such drawings:

Fig. 1 is an enlarged elevation of a convention elliptic traveler in which the cross-sectional area of the material of the bow has been reduced by slotting the same.

Fig. 2 shows the same in operative position upon a ring.

Fig. 3 is a perspective view of Fig. 1.

Fig. 4 shows a variant in which the cross sectional area of the material of the bow has been reduced by milling off equal amounts at opposite edges of the bow.

Fig. 5 shows a variant in which such reduction has been accomplished by milling transversely across the bow.

Fig. 6 shows a variant combining the disclosures of Figs. 4 and 5.

Fig. 7 shows a variant combining the disclosures of Figs. 3 and 4 and

Fig. 8 shows a still further variant wherein the cross sectional area of the material of the bow is reduced in any of the foregoing manners and wherein additionally the bow is given a concavo convex configuration with the convexity disposed towards the ring flange so as to present a smooth rounded under surface to the yarn.

Referring to Figs. 1 and 2 I have indicated generally at 10 a traveler of conventional elliptic shape and at 11 the ring flange of a ring 12 of standard type. The elliptic bow of the traveler is indicated at 14, the traveler terminals at 15, and the arched lateral portions which connect the bow and terminals at 16.

In all embodiments of my invention the cross sectional area of the material of the bow is reduced so as to accomplish a definite lowering of the center of gravity G of the traveler. With my traveler the center of gravity G is a point which substantially coincides with the center of symmetry S of the traveler, (see Fig. 1) being in fact only slightly above the same. For purposes of comparison I have indicated at G' the center of gravity of the conventional elliptic traveler or expressed differently the point G' represents the center of gravity of the conventional elliptic traveler before the bow area of such traveler has been reduced by the removal of an amount of metal sufficient to lower the same to the point G, as in my new traveler. The distance between the points G and G' may therefore be said to represent substantially the extent to which I have succeeded in lowering the center of gravity of the standard elliptic traveler.

Referring to Fig. 2 it will be noted that the center of gravity G of my new traveler lies well within the ring flange instead of near the top or above it as heretofore. Hence the new traveler rides the ring with a truly floating action and with the minimum of friction. Such friction as does occur comes essentially between the underface of the traveler bow and the upper face of the ring flange, substantially to the exclusion of any wearing contact between the innermost terminal of the traveler and the inner edge of the ring flange. For convenience of reference this zone of momentary contact has been designated in these drawings at 13.

In Figs. 1, 2, and 3 the reduction of the cross sectional area of the material of the bow is accomplished by slotting the same as indicated at 17. It will be understood that there may be more than one slot although I prefer to use a single slot and disposed symmetrically of the bow from top to bottom thereof.

In Fig. 4 equal portions at the opposite edges of the bow are removed as by longitudinally milling the same at 18.

In Fig. 5 the traveler bow is milled transversely as indicated at 19.

In Fig. 6 the traveler bow is both milled along its edges at 18 and transversely as at 19.

In Fig. 7 the traveler bow is both milled along its edges at 18 and slotted as at 17.

In Fig. 8 the traveler bow is given a concavo-convex formation as indicated at 20, the convexity being disposed toward the ring flange, and such bow is also reduced in cross sectional area in any desired manner, as by slotting, longitudinally milling or transversely milling the same, or by any combination of these features.

In all embodiments I not only obtain a definite lowering of the center of gravity but by reason of the reduction in the cross sectional area of the bow as compared with the remaining areas of the traveler the traveler in the heat treating step takes on additional hardness or durability and better temper and hence has a longer life in use.

What I therefore claim and desire to secure by Letters Patent is:—

1. A symmetrical traveler for use on a ring having a horizontal flange, consisting of an elliptical member having a bow portion which is curved to provide sufficient clearance between the ring flange and itself to permit use with bulky yarns, relatively straight terminal portions disposed in substantially a single plane for a part of their length and adapted to be positioned beneath the ring flange, and curved connecting portions joining said curved bow and terminal portions, some of the material in the curved bow being removed to reduce the cross-sectional area of the material of the bow and thereby increase the hardness of the terminal portions and improve the springiness of the bow portion resulting from heat treatment thereof and to lower the center of gravity of the traveler to a point within the ring flange.

2. A traveler of claim 1, said traveler having a slot in its bow.

3. The traveler of claim 1, said traveler having equal opposite edge portions of the metal of the bow removed.

4. The traveler of claim 1, said traveler having a portion of the metal removed transversely of the bow.

5. The traveler of claim 1, said traveler having equal opposite edge portions of the metal of the bow removed and also having a portion of the metal of the bow removed transversely of the bow.

6. The traveler of claim 1, said traveler having a slot in its bow and also having equal opposite edge portions of the metal of the bow removed.

PHILIP C. WENTWORTH.