

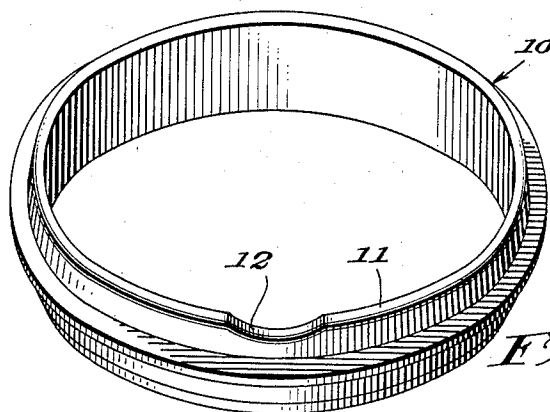
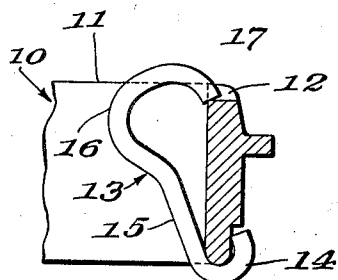
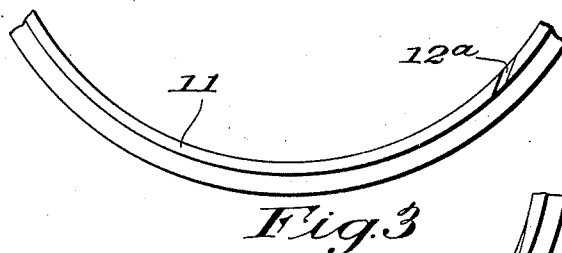
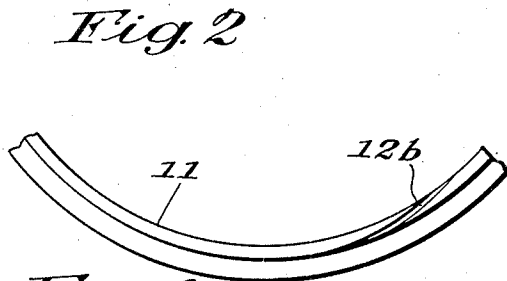
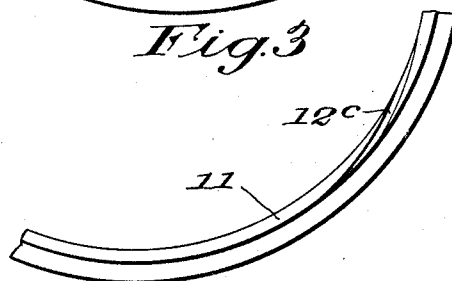
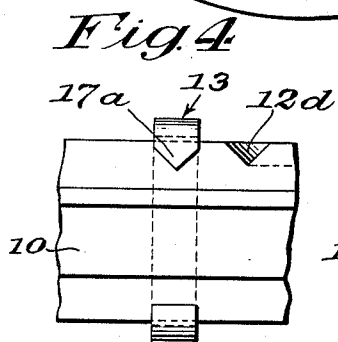
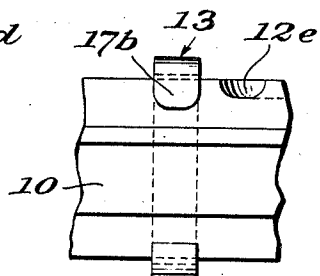
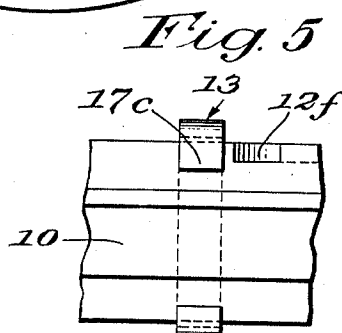
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J. M. WOOD ET AL

2,223,774

RING TRAVELER AND RING

Filed June 13, 1940



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2,223,774

RING TRAVELER AND RING

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3 Claims. (Cl. 57—119)

In the spinning and twisting of worsted and woolen yarns, or rayon, Nylon, celanese, Vignon and like synthetic yarns, on a vertical ring with a twister type of traveler, many difficulties occur because of the varying frictional drag of the traveler on the ring.

Although the operating conditions of the spinning or twisting frame are the same for all bobbins in respect to such matters as spindle speed, weight of travelers, size of rings, and supposedly uniform lubrication, this varying frictional drag results in the bobbins not being uniformly filled with yarn at the time of doff, the bobbins when doffed actually being of many varying diameters. This is particularly true where worsted or woolen yarns are being spun. Consequently where one bobbin is at full diameter and others are of varying diameters at the time of doff, the yarn spun on the bobbins of smaller diameters is not of the same "number," quality and "loft" as that of the full bobbin. This lack of uniformity of the yarn seriously interferes with the after processes to which the yarn is subjected, and detracts from the quality of goods woven, knitted or otherwise fabricated from such yarns.

Inasmuch as the yarns referred to act in an abrasive manner, it is necessary to use steel travelers for spinning and twisting such yarns, because the steel traveler affords greater stability in dealing with the abrasive action of said yarns.

In the manufacture of steel travelers of the vertical twister type it is general practice to so shape them that they are applied to the ring under pressure and under considerable distortion in order that they will not come off the ring when responding to the many different strains put upon them in the processes of spinning and twisting. This being so, the steel structure of the traveler can be only as hard as a spring temper, while the ring is glass hard.

The powder-like abrasive which escapes from the yarn during the run of the traveler, however, has a great tendency to mix with the lubricant, and as the traveler is the smaller body and its steel structure is only as hard as a temper condition, it necessarily yields to the abrasive element with the accompanying "grinding process," spending itself much more rapidly than it would if the abrasive element were not present. Moreover, as the strongly abrasive yarn passes through the top horn of the traveler at very high speed, it cuts the traveler and causes chaffing of the yarn at the expense of its smoothness and appearance in general.

To overcome the aforesaid difficulties we mill or cut a depression in the top edge of the ring, and heat-treat the steel traveler to render it glass hard so that it can be applied to the ring at said depression without distortion. The depression may take a variety of forms and the top horn or nose of the traveler is preferably so shaped as to accommodate itself to the particular form of depression in the ring.

Inasmuch as our traveler is made glass hard as to its steel structure, it is practically on an equality with the steel structure of the ring and consequently is much better fitted to combat the abrasive action of the yarns, as above described. It also has much greater resistance to yarn cuts and at the same time eliminates to a great extent the chaffing of the yarn which detracts from its general appearance and quality.

Being of harder steel structure, our traveler has greater endurance and better wearing stability than the softer spring temper traveler now commonly used. By reducing wear and tear on the traveler, due to its contact with the ring, the life of the ring is enhanced in relative proportion. Moreover our traveler effects a worthwhile saving in lubricant because being glass hard, it does not give off fine particles of metal, as does the softer traveler now in use, and which particles become mixed with the lubricant and destroy its lubricating value.

By using a traveler which is substantially as hard as the ring, we avoid varying frictional drag between ring and traveler and hence unevenness of filling of the several bobbins of the spinning or twisting frame with resultant unevenness in the "number," quality and "loft" of the yarn spun or twisted on such bobbins.

And inasmuch as our traveler may be applied to and removed from the ring without distortion, we avoid the necessity for using the applying tool now commonly employed for springing the spring tempered traveler on and off the ring.

We are aware of the Booth Patent No. 483,297 of 1892 and the Crane Patent No. 814,189, of 1906, each showing a spinning ring of the horizontally flanged type having a notch in its horizontal flange to receive a flanged traveler.

The structures disclosed in these patents were not practical, however, and were never adopted by the industry for reasons as follows: (1) the tendency of the yarn is constantly to pull the traveler up against the ring flange, thereby tending to cause the traveler to catch in the notch and jump off the ring, this tendency increasing as the traveler becomes worn; (2) the

notch in the ring flange tends to impede the smooth flight of the traveler; and (3) the traveler can only be run in one direction on the ring.

Throughout the specification and drawing like reference characters are employed to indicate corresponding parts, and in the drawing:

Fig. 1 is a perspective view of a conventional vertical twister ring, but provided with a depression in its top edge (such depression being greatly exaggerated as to its extent and depth for clarity of illustration) by means of which the traveler may be applied to and removed from the ring without distortion, thus enabling use of a traveler which is substantially as hard as the ring and thereby practically eliminating varying frictional drag between traveler and ring.

Fig. 2 is a fragmentary vertical section through the ring at the depression and showing the glass hard traveler being applied thereto without distortion.

Figs. 3, 4 and 5 are fragmentary top plan views of rings showing several of the many forms which the depression may take, and

Figs. 6, 7 and 8 are fragmentary elevations showing several different types of standard travelers applied to the rings, the rings being correspondingly notched to accommodate the specifically differently shaped noses of such travelers.

We have indicated generally at 10 a conventional vertical twister ring having in its top edge 11 a depression 12 and generally at 13 a traveler for use on said ring, such traveler being of conventional design but being glass hard or at least substantially as hard as the ring, and comprising the usual foot 14, back 15, head 16 and nose 17.

The depression 12 may be of any desired shape, length and depth. After it is formed in the top edge of the ring, as by milling, grinding, slotting or otherwise, its edges are preferably smoothed off in any desired manner.

The depth of the depression is so slight as to be substantially unobservable to the eye. It merges smoothly into the top edge of the ring. In general, it is sufficient that the over-all distance between the foot and horn of the traveler shall be very slightly less than the over-all distance between the lower edge of the ring and the bottom of the depression so that the traveler may be entered in the depression and easily applied to or removed from the ring without the use of tools and so that when the traveler is applied to the ring and running thereon it will not tend to jump off the ring.

The shape and length of the depression are not critical, except as such depression must be

of a shape and length such that it will permit the traveler nose to be entered and withdrawn therethrough.

In Figs. 1 and 2 we show a concaved depression of sufficient depth and length to accommodate any of the several different types of traveler nose which have become standard in the industry, some of which are illustrated in Figs. 6, 7 and 8.

In Fig. 3 we show the depression cut as a groove 12^a diagonally across the top edge of the ring within limits. The width, depth and angularity of such groove may be varied as desired.

In Fig. 4 we show the depression cut as a curving groove 12^b of certain radius and in Fig. 5 as a curving groove 12^c of different radius. Within limits, the width, depth and radius of such grooves may be varied as desired.

In Fig. 6, we show the depression as a V-notch 12^d to accommodate a V-nose traveler 17^a; in Fig. 7 as a round notch 12^e to accommodate a round nose traveler 17^b; and in Fig. 8 as a square notch 12^f to accommodate a square nose traveler 17^c.

By subjecting the traveler nose to a hammer blow, it can be given an increased hardness in the region of its nose.

Various other modifications in structure and design may obviously be resorted to within the spirit and scope of our invention as defined by the appended claims.

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

1. A vertical spinning or twister ring for guiding the run of a vertical traveler in either circumferential direction thereon, comprising a ring member having spaced vertical top and bottom edges and having in its top edge a very shallow depression substantially unobservable to the eye and merging smoothly into the top edge of the ring, the over-all distance between the bottom of said depression and the bottom ring edge being only slightly greater than the over-all distance between the foot and top horn of the traveler and the depression being of such length and shape as to permit the nose of a vertical traveler which is of such hardness as not to tolerate flexing to be entered therethrough and to be applied to the ring with only slight pressure and without fracture.

2. The ring of claim 1, said depression extending obliquely across the top edge of the ring.

3. For use with the ring of claim 1, a traveler of a hardness such that it cannot be flexed without fracture.

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