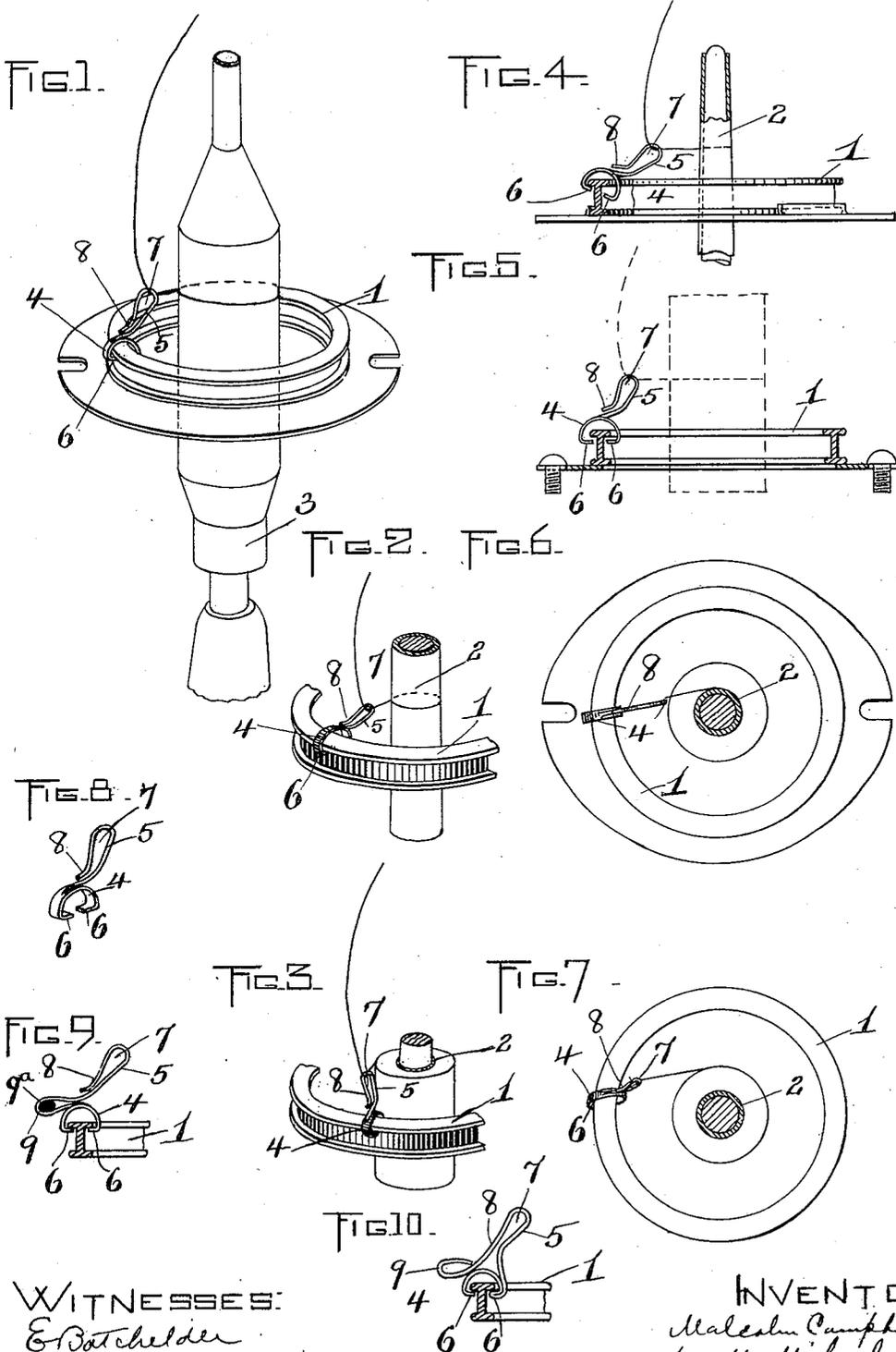


M. CAMPBELL & W. McMICHAEL.
RING TRAVELER.

(Application filed July 5, 1899.)

(No Model.)



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RING-TRAVELER.

SPECIFICATION forming part of Letters Patent No. 651,650, dated June 12, 1900.

Application filed July 5, 1899, Serial No. 722,794. (No model.)

To all whom it may concern:

Be it known that we, MALCOLM CAMPBELL, of Boston, in the county of Suffolk and State of Massachusetts, and WILLIAM McMICHAEL, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Ring-Travelers, of which the following is a specification.

10 This invention has relation to spinning-machines of the class employing a ring and a traveler revoluble therearound.

A large part of the spinning is accomplished at the present time by mules by reason of the fact that light yarns cannot be spun with rings and travelers, owing to the difference in the strain experienced thereby. Where the ordinary ring and traveler are employed, the yarn passes downward from the top rolls through the traveler and then at an angle to the cop or bobbin. The traveler is usually constructed of a thin metallic strip which is rectangular in section, and the yarn passes through it in the direction of its rotation to the bobbin, so that the angle of the yarn which lies between the traveler and the bobbin and the inner face of the traveler varies as the build of the bobbin increases. Where a small paper cop is used, the angle is substantially ninety degrees, and as the layers of yarn are built upon it the angle increases. The strain on the yarn correspondingly decreases as the angle increases, so that the tension of the thread is constantly varying. This is especially marked where the machine is laying on the yarn in what is known as a "cone" or a "cop" build, when the diameter of the coils increases and decreases between minimum and maximum for each layer of yarn.

40 By reason of this constant variation in tension lower grades of yarns, such as shoddy, made up short fiber, and light fine yarns cannot be spun on ring-machines, as they constantly break.

45 The object of the present invention is to remedy the evil described by constructing the traveler in such a way that the tension on the yarn is substantially constant or unvarying, irrespective of the thickness of the bobbin and the yarn thereon or the character of the build on the bobbin.

To these ends the invention consists of a traveler which bears yieldingly upon the yarn out of contact with the bobbin or the yarn thereon, as illustrated upon the drawings, described in the following specification, and particularized in the claims. 55

Referring to the drawings, Figure 1 represents in perspective view a ring, a spindle, and bobbin, together with a traveler, embodying our invention. Figs. 2 and 3 represent perspective views of the traveler in two of the positions it assumes in its operation. Figs. 4 and 5 represent vertical sections of the ring and show the traveler in its positions in winding yarn upon an empty and a filled cop. 60 Figs. 6 and 7 represent plan views of the parts in Figs. 4 and 5, respectively. Fig. 8 represents the traveler detached. Fig. 9 represents a counterbalanced traveler. Fig. 10 represents the eye and ring-engaging member constructed of a single length of wire. 65 70

It will be apparent from the detailed description which we will now give of the invention that it may be embodied in many different forms and that those which we have elected to illustrate are several of a large number which we have found to operate with the best results. 75

The pith of the invention lies in the capability of the thread-engaging portion of the traveler to swing away from the bobbin or cop under centrifugal action as the traveler revolves around the ring, so that the tension on the yarn is constant and unvarying. It is not intended that the traveler should rest against the bobbin similarly to a presser on a flier, but that it should be some little distance therefrom in order that it can swing in the direction of its movement when the bobbin is empty as well as away from the axis of the latter. Thus when the bobbin is empty or a small cop is used the end of the thread-engaging portion or eye of the traveler lies near its inner extreme of movement in a line substantially tangential to the bobbin or cop, and as the latter fills and the tension decreases the eye swings upward and outward by centrifugal action. 80 85 90 95

Referring to the drawings, the ring is indicated at 1, the spindle at 2, and the cop at 3. They are all formed in the usual way and 100

need be no different from those commonly used.

The traveler consists of two parts—to wit, the ring-engaging member 4 and the eye or thread-engaging member 5. The member 4 is preferably formed of wire, being bent into a semicircle, with the ends 6 6 bent inward to take under the flanges of the ring 1. Said ends are separated far enough to permit the member to have considerable loose movement relatively to the ring, as shown in Figs. 4 and 5. The eye 5 we have shown as being formed of relatively-light fine wire secured to the top of the member 4 midway between its ends 6 6 and bent upward to form a loop 7 to receive the yarn. The free end of the wire is bent backward until it lies just above the fastened end to form a contracted throat 8, through which the yarn may be passed into the loop.

When the traveler revolves about an empty cop, it assumes the position shown in Figs. 2, 4, and 6, with its ends at or near the extreme of its inward movement and tangential to the cop; but, as the yarn is built upon the latter, the eye swings upward and outward, as shown in Figs. 3, 5, and 7.

We have found by experience after much experimentation that the highest grades of yarn heretofore spun only on mules may be spun with our traveler, two notable facts being that there is but little ballooning either when the cop is nearly empty or almost full and that the yarn is even and elastic, showing that the drag is light and the tension even. We have also found that a comparatively-heavy traveler may be employed for light yarns without danger of breakage, so that the number of sizes of travelers heretofore considered necessary for various grades of yarn may be reduced.

The yarn passes from the delivery-rolls directly to the loop in the eye and is consequently engaged at only one point, whereby it is not retarded as it is drawn through the eye and whereby the traveler is free to swing by centrifugal force.

In some cases we deem it desirable to balance the traveler and bend the wire into a counterbalancing-loop 9 (which we have contemplated weighting with lead) before it is bent to form the loop 7, as illustrated in Fig. 9. Again, it sometimes proves advantageous to form the ring-engaging member and the eye from a single length of wire, and consequently construct the traveler as shown in Fig. 10. In both these cases the counterbalancing-loop is at an angle to the thread-eye, and thereby performs an important function. When the traveler is at rest, it projects across the ring substantially horizontally, and as the traveler rotates and the eye swings upward by centrifugal action the loop moves correspondingly downward; but inasmuch as the loop is likewise affected by centrifugal force it has a tendency to resume its horizontal position, and thus acts as a balance for the thread-eye

and prevents it from exerting a too-great strain on the yarn.

In Fig. 9 we have indicated at 9^a the weight in the loop 9 above mentioned.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without having attempted to set forth all of the forms in which it may be made or all of the modes of its use, we declare that what we claim is—

1. The combination of a ring, a rotary spindle, and a traveler adapted to be drawn around the ring by the yarn and being loose upon the ring, said traveler having a single yarn-receiving eye extending inwardly toward the spindle, whereby when said spindle is rotated, the eye is adapted to swing outward under centrifugal force, and preserve an even tension on the yarn.

2. The combination of a ring, a rotary spindle, and a traveler adapted to be drawn around the ring by the yarn, said traveler having a member loosely engaging the ring, and a single yarn-receiving eye extending from said member inward and upward, the end of said eye being separated from the bobbin or cop, whereby when the spindle is rotated, the said eye is adapted to swing laterally into a line tangential of the bobbin or cop, and upward and outward by centrifugal action to engage the yarn at a single point between the rolls and the bobbin and thereby preserve an even tension on the yarn, irrespective of the thickness of the yarn on the bobbin.

3. The combination of a ring, a rotary spindle, and a traveler adapted to be drawn around the ring by the yarn, said traveler having a member loosely engaging the ring, and a single yarn-receiving eye extending from said member inward and upward, the end of said eye being separated from the bobbin or cop, whereby when the spindle is rotated, the said eye is adapted to swing laterally into a line tangential of the bobbin or cop, and upward and outward by centrifugal action to preserve an even tension on the yarn, irrespective of the thickness of the yarn on the bobbin, said traveler having a weight to counterbalance the said eye.

4. The combination of a ring, a spindle, and a traveler loose on the ring and having a single yarn-receiving eye projecting inward and upward, said traveler having a free counterbalancing member projecting at an angle to the said eye, whereby when said traveler is in operation the said member is caused by centrifugal force to control the movement of the said thread-eye.

In testimony whereof we have affixed our signatures in presence of two witnesses.

MALCOLM CAMPBELL.
WILLIAM McMICHAEL.

Witnesses:

C. F. BROWN,
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