June 17, 1930. B. A. PETERSON 1,763,861

YARN CARRIER

Filed May 26, 1927

Fig. 1.

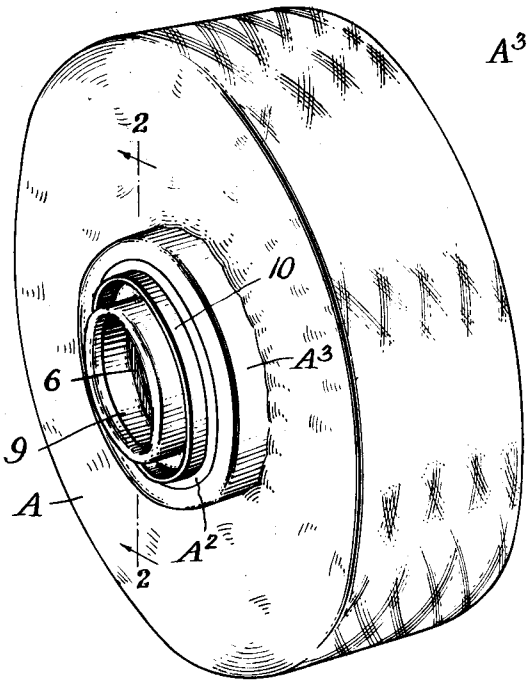



Fig. 4.

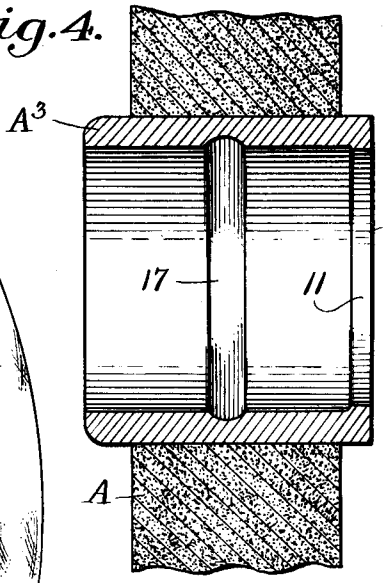



Fig. 2.

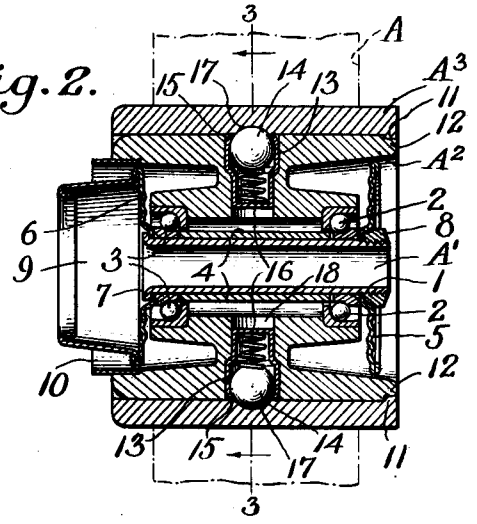



Fig. 3.

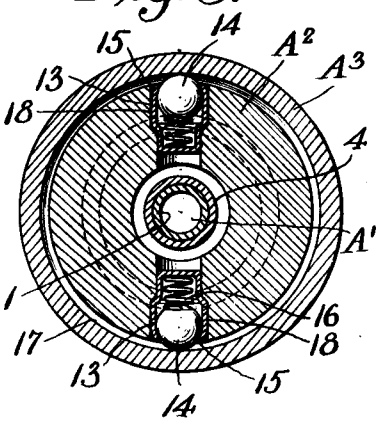
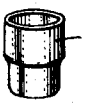



Fig. 5.




INVENTOR
Burt A. Peterson
BY
Churchill Parker & Carlson
ATTORNEYS

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# UNITED STATES PATENT OFFICE

BURT A. PETERSON, OF ROCKFORD, ILLINOIS, ASSIGNOR TO BARBER-COLMAN COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS

## YARN CARRIER

Application filed May 26, 1927. Serial No. 194,253.

This invention relates more particularly to yarn carriers of the general type disclosed in the Colman Patent No. 1,236,822, dated August 14, 1917, and in the Colman application Serial No. 500,512, filed September 14, 1921 (which has since matured into Patent No. 1,641,661). Such yarn carriers are especially designed for use upon automatic winders of the general type shown in the Colman Patent No. 1,267,977, dated May 28, 1918, the yarn being cross-wound to form yarn masses commonly termed "cheeses." The cheeses are not intended to be wholly unwound in the warper creel, the cores being returned to the winder with a small amount of yarn remaining thereon. The yarn thus remaining is usually referred to as "starter yarn," as it forms the beginning of another cheese.

When a change is to be made in the number of the yarn to be wound on the winder, it has been necessary in the past to use either a different set of cheese cores bearing starter yarn of the proper number, or to remove the previous starter yarn from the cheese cores and substitute starter yarn of the desired thread number. This has caused, in the first case, the investment of considerable additional capital in cheese cores and starter yarn, or, in the second case, it has brought about considerable loss of time.

The object of the present invention is to reduce to a minimum the capital invested in yarn carriers. This object has been attained by providing each cheese core with a plurality of interchangeable, relatively inexpensive sleeves which may be kept on hand supplied with the necessary starter yarn for each of the thread numbers customarily handled.

In the accompanying drawings,

Figure 1 is a perspective view of a cheese comprising a yarn carrier embodying the features of my invention.

Fig. 2 is a sectional view taken in the plane of line 2—2 of Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 2.

Fig. 4 is a view generally similar to that of Fig. 2, with the omission of certain elements of the yarn carrier.

Fig. 5 is a perspective view of a portion of the latch structure.

In the drawings, A indicates a cheese consisting of yarn spirally wound upon the periphery of a headless cylindrical yarn carrier. The yarn carrier may be said to consist of three sections, namely, a tubular or sleeve-like supporting member $A^1$, a roller $A^2$ mounted upon the member $A^1$, ball bearings being interposed between said members, and a sleeve $A^3$ encircling and detachably secured to the roller $A^2$. In the present embodiment of the invention, the tubular supporting member $A^1$ consists of a sleeve 1 having a smooth inner surface and adapted to fit upon a spindle carried by the cheese-supporting arm of the winder and also adapted to fit upon a spindle of a so-called trident forming part of a warper creel. 2 and 3 are ball bearings positioned upon the sleeve 1 near the ends of the latter. 4 is a spacer sleeve surrounding the sleeve 1 between the ball bearings 2 and 3.

At each end of the sleeve 1 is means for cushioning the fall of the cheese when dropped upon a trident spindle. The means herein shown for this purpose comprises diaphragms or disks 5 and 6 at opposite ends of the sleeve 1. The ball bearings 2 and 3, the spacer disk 4 and the diaphragms 5 and 6 are herein shown as clamped upon the sleeve 1 between an out-turned flange 7 on one end of said sleeve and a nut 8 on the opposite end thereof. Rigidly secured to the diaphragm 6 is a ring 9 forming part of the means for releasably securing the yarn carrier to the cheese arm of the winder. 10 is a spool or annular flange secured to one end of the roller $A^2$ to prevent or lessen the possibility of yarn being accidentally wound around the ring 9.

While the roller $A^2$ may be formed of any desired material, it is preferably molded of bakelite or the like. The periphery of the roller $A^2$ is generally cylindrical.

The ball bearings 2 and 3 connect the sections $A^1$ and $A^2$ so that they constitute a unit.

The section $A^3$ of the yarn carrier consists of a sleeve of bakelite or other suitable material, adapted to be slipped over the roller

$A^2$. In order to insure that the operative shall always slip the sleeve $A^3$ upon the roller $A^2$ with the proper end foremost, I adapt the roller and the sleeve for association in only one way. Herein the sleeve $A^3$ is shown as having at one end an internal rib or flange 11 which is adapted to fit into an annular recess 12 in one end of the roller $A^2$.

While the means for detachably securing the sleeve $A^3$ to the roller $A^2$ may partake of various forms, I have herein shown the roller as provided with two diametrically opposite ball latches adapted to engage within an annular groove in the inner periphery of the sleeve $A^3$. Each ball latch comprises a casing 13 (Fig. 5), a ball 14 fitting within one end of said casing and prevented from leaving the casing by reason of inturned portions 15 at the outer end of the casing, and an expansion spring 16 interposed between the inner end of the casing and the ball and normally holding the ball in such position that it projects beyond the periphery of the roller $A^2$ and into the groove 17 in the sleeve $A^3$. The casing 13 is rigidly secured within openings 18 in the roller $A^2$.

In use, the yarn carrier comprised of the three sections $A^1$, $A^2$ and $A^3$ is slipped onto and off the cheese arm of the winder and onto and off the spindle of the trident as a unit. When a cheese is dropped onto the spindle of a trident, the side at which the ring 9 projects is the lower side, and inasmuch as the flange 11 then overlies the shoulder 12 the sleeve $A^3$ cannot become disassociated from the roller $A^2$ in the fall of the cheese.

When yarn of a different number is to be wound, the previously-used sleeves $A^3$ are replaced with sleeves $A^3$ bearing starter yarn of the desired number. The sleeves $A^3$ being relatively cheap, it will be seen that the invention effects a substantial saving over the methods formerly used.

The unit comprised of the section $A^1$ and the roller $A^2$ may be used in connection with yarn-supporting sleeves especially adapted to permit of the dyeing of cheeses by the well-known Franklin process.

I claim as my invention:

1. A yarn-carrier comprising an inner sleeve-like member, a roller rotatably mounted on said inner member, a yarn-supporting sleeve adapted to be slipped over one end of said roller, means to prevent said sleeve from being slipped upon the roller with the wrong end foremost, and means to releasably secure the sleeve upon the roller.

2. A yarn-carrier comprising an inner sleeve-like member, a roller rotatably mounted on said inner member, and a yarn-supporting sleeve surrounding and detachably connected with said roller.

3. A yarn package comprising an inner sleeve-like carrying member, a roller rotatably mounted on said member, antifriction bearings between said member and roller, a yarn-supporting sleeve surrounding and detachably connected with said roller, and a cross-wound yarn mass on said sleeve.

In testimony whereof, I have hereunto affixed my signature.

BURT A. PETERSON.