

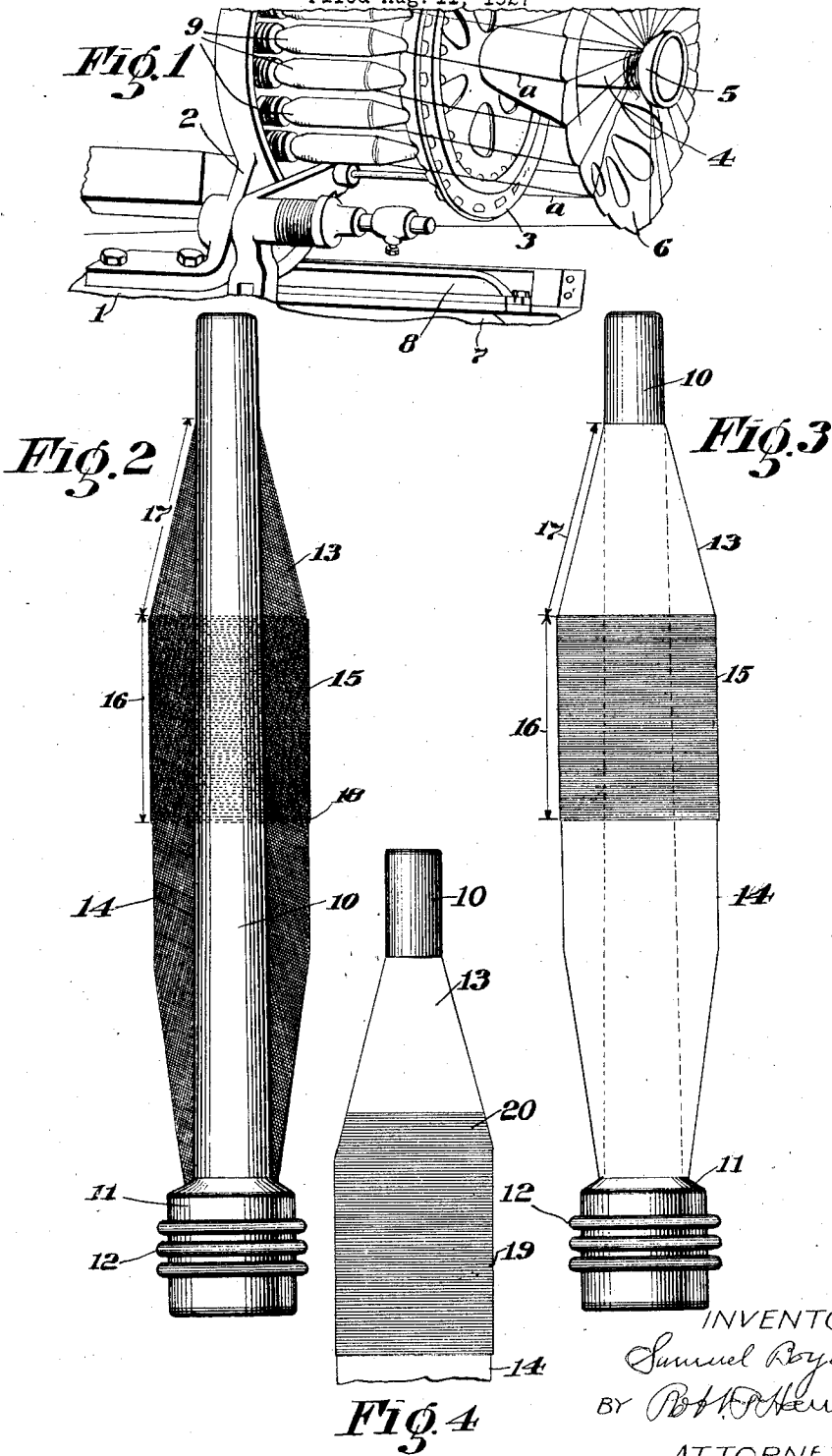
June 5, 1928.

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1,672,844

FILLING WOUND YARN CARRIER

Filed Aug. 11, 1927



UNITED STATES PATENT OFFICE.

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FILLING WOUND-YARN CARRIER.

Application filed August 11, 1927. Serial No. 212,181.

This invention relates to yarn carriers having yarn wound thereon for subsequent use.

It is now the ordinary practice to provide yarn carriers with yarn by winding the yarn upon the carrier, either by warp winds or filling winds. In warp wound yarn carriers the yarn is wound upon the carrier in cylindrical layers, while in filling wound carriers the yarn is laid upon the carriers in conical layers so that it may be withdrawn from the carrier lengthwise thereof. Filling wound yarn carriers are now generally employed in the spooler and as weft in filling replenishing looms. When employed in the spooler, a length of yarn is withdrawn from the yarn carrier and tied or connected to rotating bobbins in the spooler. When employed as weft in a filling replenishing loom, a length of yarn is similarly withdrawn from the end of the yarn carrier and attached to a fixed point, while the wound carrier itself is mounted in a hopper for transfer to the shuttle on filling replenishment. In either of these cases, slack is liable to occur in the yarn withdrawn from the carrier and cause snarls and kinks to be formed, which, in the case of the spooler, may eventually appear in the warp of the woven cloth, and, in the case of the filling replenishing loom, may be carried into the shed and appear as a defect in the cloth. Furthermore, when used as weft in a filling replenishing loom, the withdrawal of the yarn from the end conical layer of the carrier is liable to disturb the conical winds and such winds may become displaced or slough, causing entanglement and breakage of yarn either at the time of transfer or during the passage of the shuttle through the shed.

One of the objects of the present invention, therefore, is to provide a yarn carrier so wound with yarn that no slack will occur in the yarn in tying up in the spooler or tying the end to a fixed part in replenishing looms, to the end that kinks and snarls will be prevented, and in case of use in a filling replenishing loom, sloughing or displacement of yarn in the conical layer at the tip end portion of the carrier cannot occur.

In accordance with the present invention, the yarn carrier is wound with yarn in conical layers of filling wind, so that the yarn may be readily withdrawn endwise of the

yarn carrier during subsequent use, and to provide a length of yarn for tying, either in the spooler or a filling replenishing loom, without using the filling wound portion of the carrier, the filling wound yarn on the carrier is overlaid by an additional wind of the same yarn, either of filling or warp graduations, and preferably of the same traverse as the conical layers. The length of yarn in the overlying additional or special wind should be sufficient to enable the yarn end to be tied up in the spooler or secured to a fixed point in the loom without withdrawing yarn from the end conical layer of filling wind, and owing to the greater tension in withdrawing yarn from the overlying winds, the yarn is maintained under sufficient stretch to prevent slack between the carrier and the secured end of the yarn. Under these conditions snarls and kinks in the yarn will be prevented, sloughing or displacement of the end conical winds cannot occur, and perfect cloth will be woven, both in warp and weft.

As illustrative of the advantages of the present invention, it will be hereinafter described as employed in a filling replenishing loom, although it is to be understood that the invention may be used in the spooler or other machine wherein yarn is withdrawn from the end of the yarn carrier.

In the drawings:

Fig. 1 is a perspective view showing portions of a filling replenishing loom wherein the hopper is supplied with filling carriers wound in accordance with the present invention;

Fig. 2 is a sectional elevation of a yarn carrier having the yarn wound thereon in the conical layers of filling wind and additional windings of the same yarn overlying a portion of the cylindrical part of the filling wind;

Fig. 3 is a side elevation of the yarn carrier wound in accordance with the present invention; and

Fig. 4 is a sectional detail of a portion of a yarn carrier having the yarn wound thereon in accordance with the present invention and showing the additional winding extending over the step or base of the tip end cone.

Filling replenishing looms are now generally provided with a hopper for containing filling carriers to be transferred to the shut-

tle, and, as shown by Fig. 1, the loom frame 1 has mounted thereon the hopper stand 2, supporting a rotary hopper 3 in which are mounted a series of filling carriers to be transferred to the shuttle, as usual. Extending laterally of the hopper is the stud or shaft 4 having an end securing member 5, and on the stud or shaft 4 is mounted the disk 6. The lay 7 has the usual shuttle box 8 in which the shuttle to be replenished is positioned prior to transfer. These parts and the transferring mechanism may be all as now common in filling replenishing looms and need no further description.

When the filling carriers 9 are to be placed in the hopper, a length of filling *a* is withdrawn from the filling carrier and attached to the securing member 5, and should the length of filling *a* be withdrawn from the end conical wind of the filling wound carrier, it is liable to produce a sloughing or displacement of the yarn at the end of the filling carrier and cause slack, with the production of snarls and kinks in the filling, so that when a filling carrier is transferred to the shuttle, such snarls and kinks are liable to be drawn into the shed and produce imperfect cloth, or breakage of yarn may occur.

In accordance with the present invention, these objectionable defects are avoided by furnishing a length of yarn wound on the exterior portion of the filling winds, sufficient to permit the end of the yarn to be attached to the holder 5 without the disturbance of the conical end layer of the filling wind or production of slack in the yarn between the filling carrier in the hopper and the holder 5.

The filling carrier 10 is herein shown as a bobbin, although any usual character of filling carrier may be employed, and such filling carrier is provided with a head portion 11 on which are the usual rings 12 for engagement with the bobbin holding jaws in the shuttle.

The filling carrier 10 has filling wound thereon in conical layers 13 substantially throughout the entire length of the yarn carrier, so that during weaving the yarn may be withdrawn endwise from the carrier as the shuttle is picked.

In accordance with the present invention, a part of the cylindrical portion 14 of the filling wound carrier is overlaid with a series of winds 15 of the same yarn which forms the filling winds, and as it is expedient to complete the winding of the carrier in one operation, or in the same machine, the traverse of the winds 15 on the exterior portion of the filling wound carrier may be of substantially the same traverse as the conical winds of filling. That is to say, the distance traversed by the winds, as indicated at 16, is substantially the same as an element of the

conical winds, as indicated at 17, with the result that sufficient yarn is laid upon the completed filling wound carrier to provide for withdrawal of the end of yarn, as indicated at 18, for its attachment or tying up, either in the spooler or filling replenishing loom, without at the same time disturbing any of the filling winds.

The additional yarn 15 upon the exterior cylindrical portion of the filling wind may be laid upon the filling wind in one or more layers, dependent upon the length of yarn necessary to properly effect tying or securing the end without drawing upon the filling wound portion of the yarn, and, as shown by Figs. 2 and 3, these winds may extend from the base or step portion of the conical wind at the tip of the bobbin towards the head of the bobbin, although such position of the additional winds of yarn may be varied.

This possible variation in the position of the tying or additional winds, which in the present instance are shown as of warp wind graduation, is indicated by Fig. 4, wherein a part of such additional winds extends along the cylindrical barrel portion of the filling winds, as at 19, and laps over a portion of the base or step of the tip and filling wind, as at 20, to lock the filling wound yarn from sloughing or disturbance and, at the same time, provide a length of yarn for securing the end thereof without withdrawing yarn from the conical filling winds. In the present illustration of the invention, the filling wound carrier is shown as having the additional length of yarn wound upon the filling in the close spirals of warp wind as affording an efficient binding influence upon the filling wind to prevent sloughing or displacement of the end conical winds either during handling or while in the loom hopper and to insure sufficient tension in the withdrawal end, but the invention is not necessarily restricted in this respect because the purpose thereof is to provide additional windings of yarn about the completely filled wound carrier of a length sufficient to enable the end of the yarn to be withdrawn under tension for attachment to a fixed part of the loom or tying up in the spooler without the production of slack, snarls, kinks, or disturbing the conical filling winds.

Thus the present invention provides a yarn carrier having the yarn wound thereon in the conical layers of filling wind and the same yarn wound upon a part of the body or cylindrical portion of the filling wind to provide an additional or supplemental length of wound yarn for securing the end in a filling replenishing loom and permit the shuttle to be picked after transfer without the production of slack and liability of kinks and snarls that might be carried into the shed.

The amount or length of the additional or supplemental yarn overlying the filling wind preferably should be sufficient not only to permit the end to be secured to the fixed point in the loom, but also to insure that the yarn will remain sufficiently taut to prevent the formation of kinks or snarls in the shed, at least during the first pick of the shuttle following replenishment. This end may be secured by one or more layers of the additional wind, dependent upon the width of the loom.

What is claimed is:

1. A yarn carrier having yarn wound thereon in conical layers of filling wind, and additional winds of the same yarn wound upon the exterior of and binding the filling wind, said additional winds being of sufficient length to permit the end thereof to be withdrawn from the yarn carrier and secured while the conical filling winds at the end of the carrier remain undisturbed.

2. A yarn carrier for filling replenishing looms having yarn wound thereon by conical layers of filling wind and additional winds of the same yarn wound upon the cylindrical portion of the filling wind to provide a length of additionally wound yarn for securing the end to a fixed part in the loom while maintaining the conical filling wind at the end of the carrier undisturbed.

3. A yarn carrier for filling replenishing looms having yarn wound thereon by conical layers of filling wind and additional winds of the same yarn wound by the same length of traverse upon a portion of the cylindrical part of and binding the filling

wind to provide a length of additionally wound yarn for attachment to a fixed part in the loom.

4. A yarn carrier for filling replenishing looms having yarn wound thereon in conical layers of filling wind, and warp winds of the same yarn and of the same traverse wound upon and binding the filling wind and providing a length of warp wound yarn for attachment to a fixed part of a filling replenishing loom when the carrier is in the hopper.

5. A yarn carrier for filling replenishing looms having conical layers of filling wind thereon, and additional windings of the same yarn wound upon the cylindrical portion of the filling winds and extending over the base of the tip end filling cone to lock the filling wind of the tip end cone and provide a length of yarn to be secured to a fixed part of the loom without withdrawing yarn from the filling wind.

6. A yarn carrier for filling replenishing looms having yarn wound thereon by conical layers of filling wind, and additional winds of the same yarn wound upon the cylindrical portion and of a length greater than the distance between the filling carrier in the hopper and the fixed point to which the filling end is secured that the yarn may be secured to the fixed point, the filling carrier be transferred and the shuttle picked without withdrawing yarn from the conical filling winds.

In testimony whereof, I have signed my name to this specification.

SAMUEL BOYD.