

Oct. 7, 1930.

S. R. SHELMIRE

1,777,681

SPOOL SUPPORT FOR KNITTING MACHINES

Filed Dec. 21, 1929

2 Sheets-Sheet 1

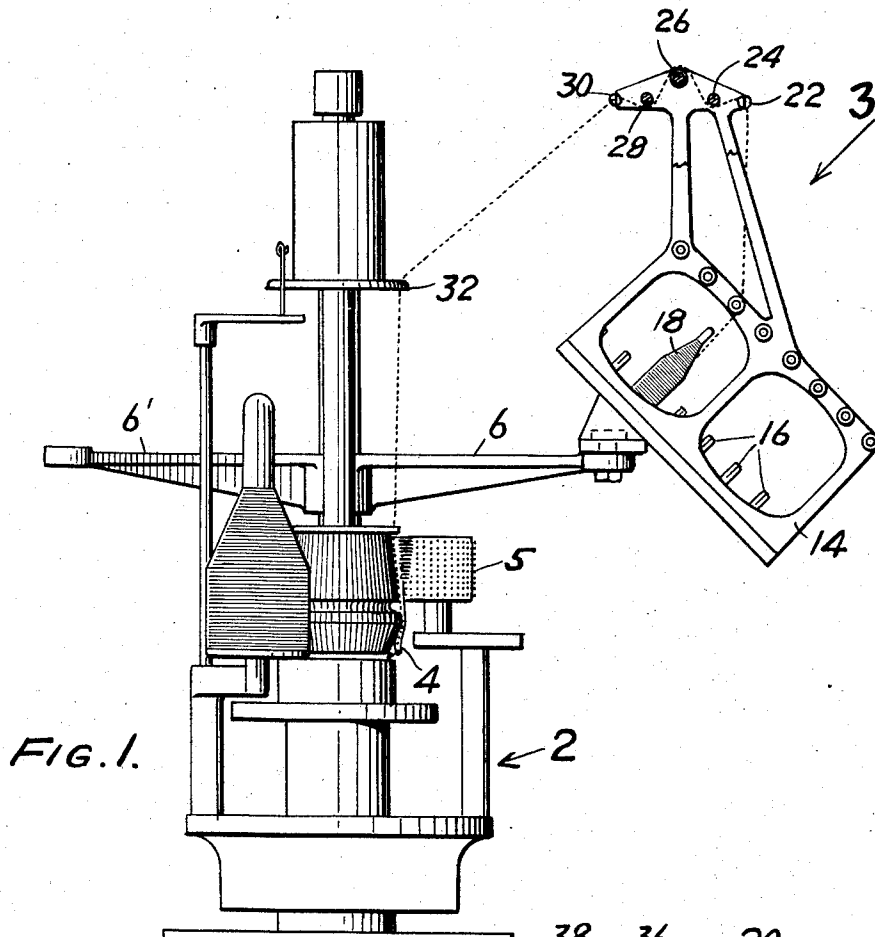


FIG. 1.

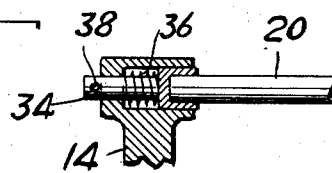


FIG. 5.

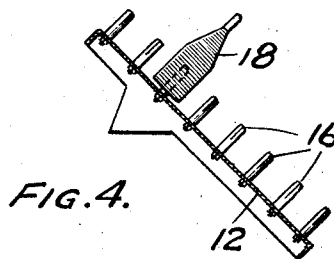


FIG. 4.

WITNESS:

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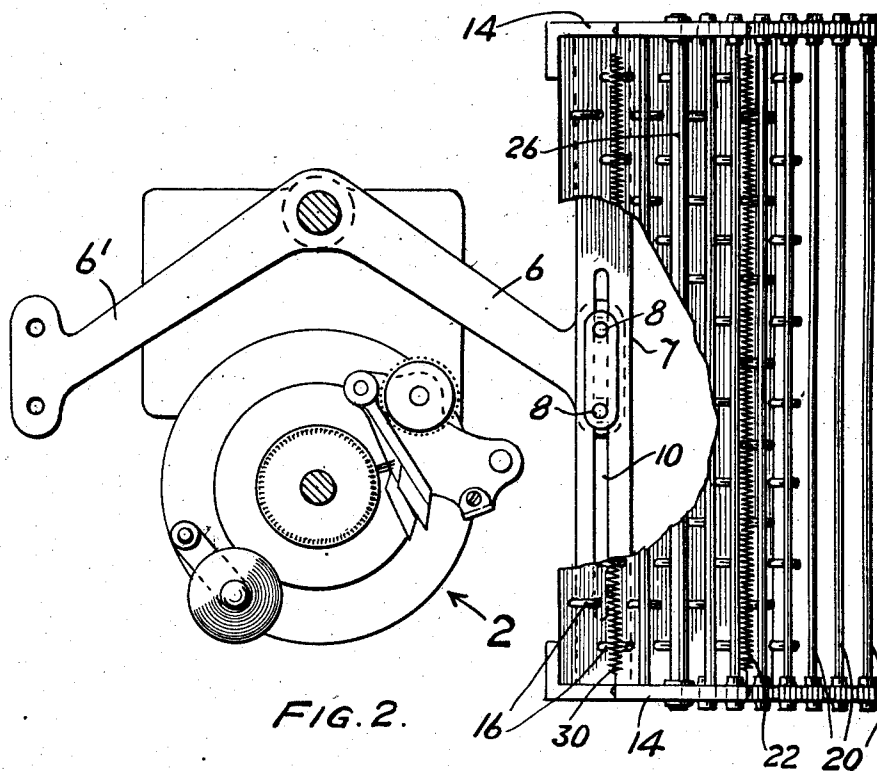


FIG. 2.

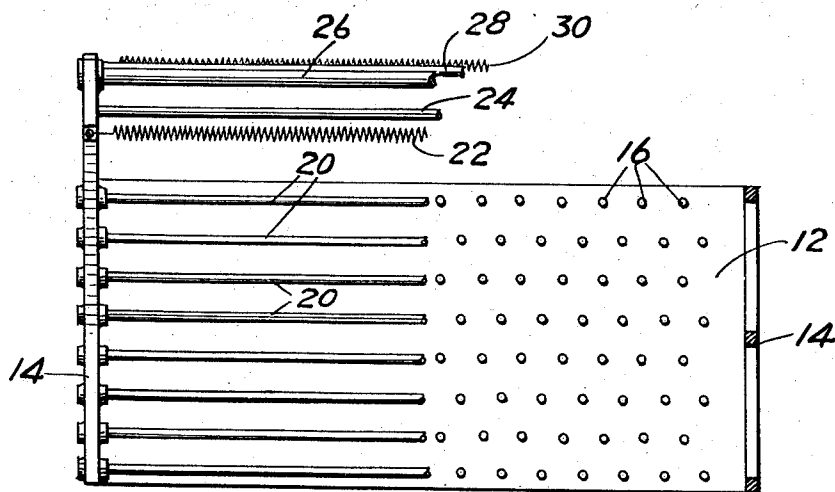


FIG. 3.

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UNITED STATES PATENT OFFICE

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SPOOL SUPPORT FOR KNITTING MACHINES

Application filed December 21, 1929. Serial No. 415,660.

This invention relates to a knitting mechanism and has particular reference to a rack for supporting spools of yarn to be used by the machine. The invention is advantageously applied to the mounting of spools of yarn from which the wrapping fingers of a knitting mechanism are fed.

In using a number of wrapping fingers in a knitting mechanism, it is necessary to provide individual yarns therefor. Accordingly, any elaborate design requires the provision of a larger number of spools to carry the various yarns. The racks heretofore used for this purpose are provided with pins pointing inwardly toward the knitting mechanism so as to obtain a rather direct feed of the yarns from the spools to the fingers. While this latter object is accomplished, the arrangement of the pins makes it very difficult to replace the spools and thread the yarns through the guides to the fingers.

It is the primary object of the present invention to provide a rack on which the spools may be mounted with a minimum inconvenience and furthermore from which the yarns may be readily threaded through suitable guides to the fingers. More specific objects of the invention relate to the provision of guiding means whereby the yarns take a relatively direct path to the yarn fingers and through or about which the yarns may be very readily threaded. Another advantage of the invention resides in the increased visibility of the spools whereby an operator can readily detect a spool which is nearly exhausted and must be replaced.

The specific objects of the invention and their accomplishment will be apparent from the following description read in connection with the accompanying drawings in which:

Fig. 1 is a front elevation of a knitting mechanism with one of the improved spool racks mounted thereon, the same being partially in section to illustrate the paths of the yarns;

Fig. 2 is a plan view of the same partly broken away;

Fig. 3 is a side view looking in the direction of the arrow 3 in Fig. 1;

Fig. 4 is a transverse section of the pin-supporting plate of the rack; and

Fig. 5 is a sectional detail view showing the mounting of one of the removable guiding rods.

The knitting mechanism to which the rack is shown as applied is indicated generally by the numeral 2, the mechanism being, in the present instance, of the stationary cylinder type. Wrapping fingers 4 are located above the needles and are actuated in the usual fashion by means of a lug-carrying cylinder 5. These fingers are arranged on a carrier which is designed to have a shogging movement to bring each finger into position to cooperate with various needles.

Secured to a portion of the frame of the knitting machine is a bracket having two sidewardly extending arms 6 and 6', on each of which may be mounted a spool rack. In the drawings, for the sake of clearness, only one of these racks is illustrated. Each rack comprises a horizontal bar 7 which is secured to one of the arms 6 or 6' by means of bolts 8 passing upwardly through an elongated slot 10 therein. The provision of this elongated slot makes it possible to move the rack forwardly or rearwardly of the knitting machine so that it will be out of the way of an operator as much as possible. For example, if no yarn fingers are being used, the rack is moved to its extreme rearward position. If only a few yarn fingers are used, the spools are mounted on the forward pins of the rack, which may be moved slightly forwardly to bring the spools that are being used opposite the fingers which they feed. On the other hand, if a large number of spools are being used, the rack may be moved forwardly so as to bring the center of the aggregate number of spools carried thereby opposite the knitting instrumentalities whereby the various yarns are arranged so as to have paths of minimum length.

Mounted on the bar 7 are suitable supporting brackets which support a plate 12 and upright side bracket members 14. The plate 12 assumes a sloping position as indicated in the drawings and carries pins 16 arranged

to receive spools of yarn so that they extend upwardly and outwardly relatively to the knitting instrumentalities. These pins are split in the usual fashion so as to form spring prongs releasably engaging the yarn spools 18. The pins 16 are preferably arranged in rearwardly extending parallel rows, the pins in adjacent rows being staggered, as will be clear from Fig. 3.

The upright side members 14 releasably carry rearwardly extending rods 20, there being preferably one rod for each of the rows of pins, the rod corresponding to each row being outwardly of and over its row. Extending between the side members above the rods 20 is a spring 22 having the same number of convolutions as there are pins 16. Inwardly of this spring are rods 24, 26 and 28 arranged as illustrated and inwardly of these rods is a second spring 30 similar to spring 22. A number of thread guiding holes are provided in a circular disc 32 located directly above the wrapping fingers.

The rods 20 may be releasably held in the side members 14 in any suitable manner, for example, as illustrated in Fig. 5, in which pins 34, pressed inwardly by springs 36, are provided with sockets arranged to embrace the ends of the rods 20, the other ends of the rods being received in sockets in the opposite side member 14. Inward movement of the pins 34 is limited by transverse pins 38.

It will be obvious from the above that the replacement of spools of yarn upon the pins 16 may be very readily effected by removal of the rods 20 so as to open up the entire space outwardly and above the pins to an operator. In replacing the bobbins there is no interference by the operating parts of a machine. After the spools have been located on the pins, the rods 20 may be replaced individually, for example, the uppermost rod may be put in place and the yarn from each spool in the upper row drawn thereunder, then between convolutions of the spring 22, then alternately under and over the rods 24, 26 and 28 between convolutions of spring 30 and through a guide eye in the disc 32 to the proper wrapping finger. After all of the yarns in the top row have thus been threaded, the next lower rod may be put into place and the yarns from the second row of spools similarly threaded.

The provision of springs 22 and 30 permits a very simple threading of the yarns which are kept separate not only through the springs but also in their passage about the rods 24, 26 and 28, which are so arranged as to impart frictional tension upon the yarns sufficient to prevent their becoming too loose.

If any one of the spools becomes exhausted before the others in its row, it is only necessary to lift the rod 20 thereabove and replace it by a loaded spool. In this operation

there is relatively little displacement of the other yarns from spools in the same row. The replacement of the rod 20 brings all of these yarns into their proper positions.

What I claim and desire to protect by Letters Patent is:

1. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto, and means for guiding yarns from the spools on said pins upwardly and then laterally and downwardly to the knitting instrumentalities.

2. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto, and means for guiding yarns from the spools including at least one rod extending transversely over the pins and about which the yarns may be extended.

3. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto, and means for guiding yarns from the spools including at least one removable rod extending transversely over the pins and about which the yarns may be extended.

4. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto and means for guiding yarns from the spools including a plurality of rods extending transversely over the pins and about which the yarns may be extended.

5. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto and means for guiding yarns from the spools including a plurality of removable rods extending transversely over the pins and about which the yarns may be extended.

6. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto, said rack being adjustable in a direction from front to rear of the knitting instrumentalities, and means for guiding yarns from the spools on said pins upwardly and then laterally and downwardly to the knitting instrumentalities.

7. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one

side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto and means for guiding yarns from the spools including a spring between the convolutions of which the yarns may pass.

5 8. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto and means for guiding yarns from the spools including at least one rod extending transversely over the pins and a spring above the rod whereby a yarn may pass about the rod and thence between convolutions of the spring.

9. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto and means for guiding yarns from the spools including at least one rod extending transversely over the pins, a spring above the rod, and a plurality of rods associated with the spring, whereby a yarn may pass about the first rod, between convolutions of the spring and thence alternately under and over the rods.

10. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins at one side of the knitting instrumentalities and extending outwardly and upwardly relatively thereto and means for guiding yarns from the spools including at least one rod extending transversely over the pins, a spring above the rod, a plurality of rods associated with the spring, and a second spring, whereby a yarn may pass about the first rod, between convolutions of the first spring and thence alternately under and over the rods and between convolutions of the second spring.

11. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins, and a helical spring between the convolutions of which may be guided yarns from the spools on their way to the knitting instrumentalities.

12. In combination with a knitting mechanism having knitting instrumentalities, a rack including spool supporting pins, a rod, and a helical spring extending along and adjacent the rod whereby yarns may be guided between the convolutions of the spring and thence in contact with the rod on their way from the spools to the knitting instrumentalities.

In testimony of which invention, I have hereunto set my hand, at Wilmington, Del., on this 17th day of December, 1929.

STANLEY R. SHELMIRE.