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FABRIC TAKE-UP MECHANISM FOR KNITTING MACHINES

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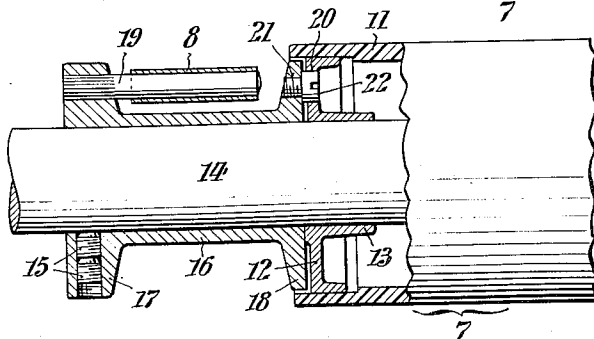
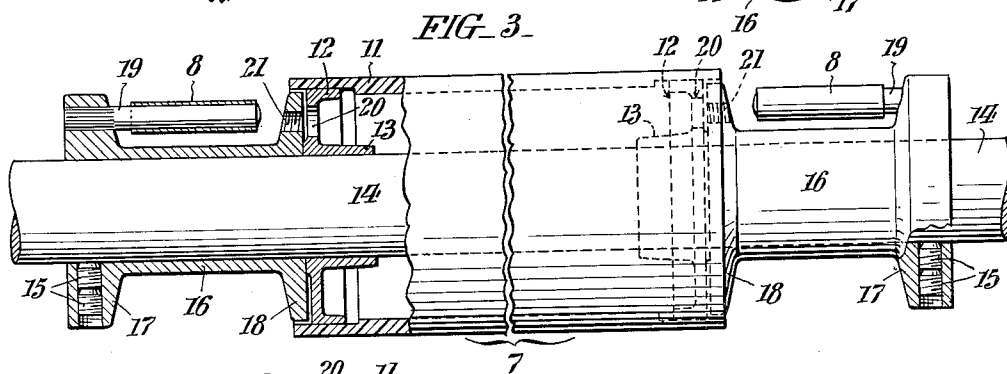
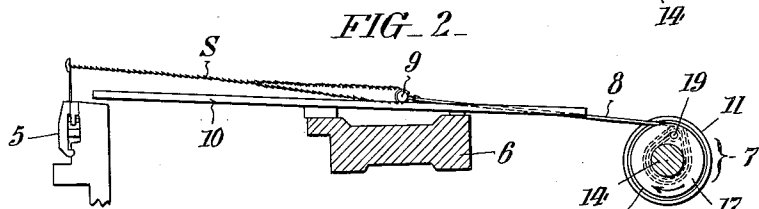
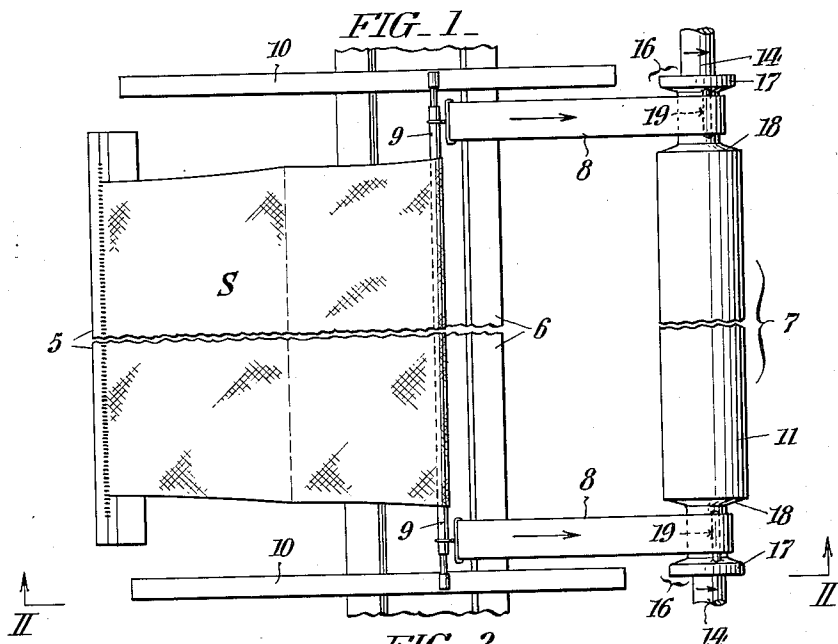


FIG. 4

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## UNITED STATES PATENT OFFICE

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FABRIC TAKE-UP MECHANISM FOR  
KNITTING MACHINES

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This invention relates to fabric take-up mechanisms for knitting machines. More specifically, it is concerned with take-up mechanisms useful in connection with straight multi-section knitting machines such as are ordinarily employed in the commercial production of fashioned flat stocking blanks and the like. Incident to their formation in the machines, the blanks are drawn from the needles of the individual knitting sections by straps attached to fabric receiving rolls, the free ends of said straps being first connected to welt bars engaged with the starting courses of the respective fabrics, and later, after the welts are closed, to rods inserted into the folds of the welts. With take-up mechanisms as ordinarily constructed, all of the finished blanks must be removed from the rolls at the completion of each knitting cycle before the mechanisms can be re-set in preparation for the knitting of a succeeding group of blanks. Due to the great number of blanks concurrently produced at each operation, a considerable amount of time is consumed in this procedure during which the machines are idled, with consequent loss of production from them.

My invention is directed, in the main, toward overcoming the foregoing drawbacks. This objective is attained in practice, as hereinafter more fully disclosed, through provision of an improved take-up mechanism which does not require immediate removal of the stocking blanks from the collecting rolls, so that the knitting machines can be re-started immediately upon completion of each knitting cycle, and the blanks later removed at the convenience of the machine attendants when they are not otherwise occupied, as for example, while the welt portions of the new blanks are being knitted.

In connection with a take-up mechanism having the above attributes, I further aim to make it possible to compensate from time to time for differential stretch as between the draw straps of the individual pairs used for the respective stocking blanks and thereby insure even winding of the latter upon the take-up rolls.

Other objects and attendant advantages will appear from the following detailed description of the attached drawings, wherein Fig. 1 is a broken out fragmentary view in top plan, of one section of a straight stocking knitting machine with fabric take-up mechanism conveniently embodying my invention.

Fig. 2 is a transverse section taken as indicated by the angled arrows II—II in Fig. 1.

Fig. 3 is a fragmentary view, partly in ele-

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vation and partly in axial section, of the fabric receiving roll of the take-up mechanism, with the roll arranged for free rotation on its supporting shaft; and

Fig. 4 is a view like Fig. 3 with the fabric receiving roll arranged to rotate with the shaft. With more detailed reference first to Figs. 1 and 2 of these illustrations, one of the usual needle bars of the machine with its complement of spring beard needles is indicated at 5, the top center bed at 6, the fabric receiving roll at 7, the draw straps at 8, the welt rod at 9, the guide and supporting bars for said welt rod at 10, and the welt top stocking blank being knitted at S.

In accordance with my invention, the fabric receiving roll 7 comprises a cylindric shell 11, preferably of non-corrosive non-metallic material such as Bakelite, into the ends of which are force fitted metallic heads 12. As shown, these heads 12 have axially bored hub bosses 13 in free engagement with the roll shaft 14 which is suitably supported in the framework (not shown) of the machine and adapted to be slowly rotated in the direction indicated by the arrow in Fig. 2 in a well known manner. Individually secured to the shaft 14 beyond opposite ends of the roll 7 by set screws 15, are collars or spools 16 with end flanges 17 and 18, the latter of which are overlapped by the shell 11. Anchored in the flanges 17 of the collars 16 and extending inwardly therefrom in parallel relation to the shaft axis, are pins 19 whereeto the outer ends of the draw straps 8 are attached.

For a purpose later explained, one of the end heads 12 of the roll 7 is provided, as shown in Fig. 3, with a reamed aperture 20, and the flange 18 of the adjacent collar 16 with a smaller tapped hole 21 at the same radial distance from the roll axis.

As the stocking blank S is knitted, it is gradually drawn from the needles as the straps 8 are wrapped upon the spools 16 which are positively rotated due to being fixedly secured to the rotating shaft 14 by the set screws 15, with the result that the fabric is evenly wound on the shell 11 of the roll 7. Upon completion of the stocking blank, it is pressed off the needles, but it need not be immediately removed from the roll 7 when the latter is rotatively free on the shaft 14 as in Fig. 3. Since the draw straps 8 are independent of the roll 7, they can be hooked up for the starting of another stocking blank in the machine without disturbing the finished blank which may be removed later at the convenience of the machine attendant simply by pulling it

off the freely revolvable roll 7. Through my invention, therefore, a great deal of time is saved between successive knitting cycles of the machine, with consequent increase in production.

If it is desired to have the roll 7 turn with the shaft 14, this can be effected by bringing the aperture 20 in the left hand end head 12 into registry with the tapped hole 21 in the contiguous end flange 18 of the adjacent collar 16, and engaging the threaded shank of a screw 22 in said hole as in Fig. 4 so that the head thereof occupies said aperture. In such case, the take-up mechanism will function after the usual or heretofore conventional manner. However, irrespective of the use of the roll as in Fig. 3 or as in Fig. 4, it is possible, by reason of separate securing of the spool collars 16 to the shaft 14, to rotatively adjust said collars and thereby compensate for variations in the length of the draw straps 8 as may be required initially, or from time to time in the event of unequal stretching thereof after protracted periods of service.

The last described feature of my invention is also of great advantage from the standpoint of time saving as will also be readily understood by those familiar with the operation of straight stocking knitting machines.

Having thus described my invention, I claim:

1. In take-up mechanism for flat knitting machines having straps whereby the fabric is drawn from the needles during the knitting, a receiving roll of a length in excess of the width of the fabric; a driven shaft whereon the roll is freely mounted; flanged spool-shaped collars disposed adjacent opposite ends of the roll and secured to the shaft with capacity for independent rotative adjustment; and pins extending crosswise between the end flanges of the collars in parallel relation to the shaft for attachment of corresponding ends of the draw straps.

2. In take-up mechanism for flat knitting machines having straps whereby the fabric is drawn from the needles during the knitting, a driven shaft; a receiving roll of a length in excess of the width of the fabric, said roll comprising a

cylindric shell of non-metallic material, and metallic heads fitted into opposite ends of the shell and axially bored for free engagement about the shaft; and collars disposed adjacent opposite ends of the roll and secured to the shaft with capacity for independent rotative adjustment, whereto the draw straps are individually attached so as to be wound upon the roll as the shaft rotates.

3. In take-up mechanism for flat knitting machines having straps whereby the fabric is drawn from the needles during the knitting; a driven shaft; a receiving roll of a length in excess of the width of the fabric, comprising a cylindric shell of non-metallic material, and metallic heads fitted into opposite ends of the shell and axially bored for free engagement about the shaft; collars disposed adjacent opposite ends of the roll and secured to the shaft with capacity for independent rotative adjustment, whereto the draw straps are individually attached so as to be wound thereupon as the shaft rotates, one of said collars having a tapped hole at a radial distance from the shaft axis for registry with a similarly located aperture in the adjacent end head of the roll; and a headed screw with its threaded shank engageable into the tapped hole so that the screw head occupies the aperture in the end head of the roll, whereby the latter may be made to rotate with the shaft.

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