Jan. 25, 1949. F. G. WEISBECKER 2,460,050

KNITTING MACHINE ATTACHMENT

Filed Jan. 14, 1948

Fig. 1.

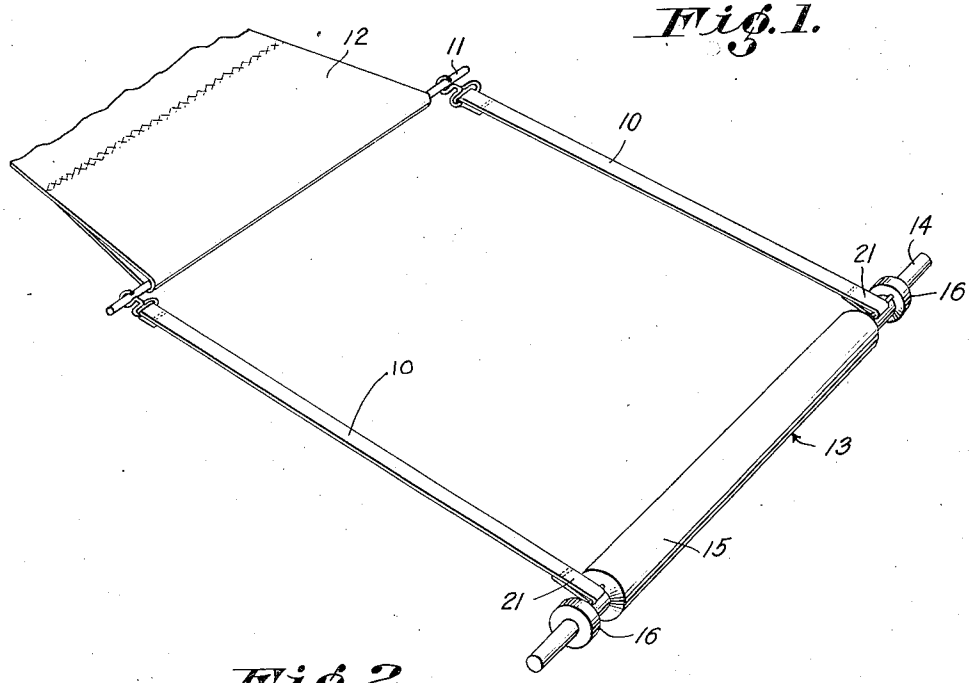
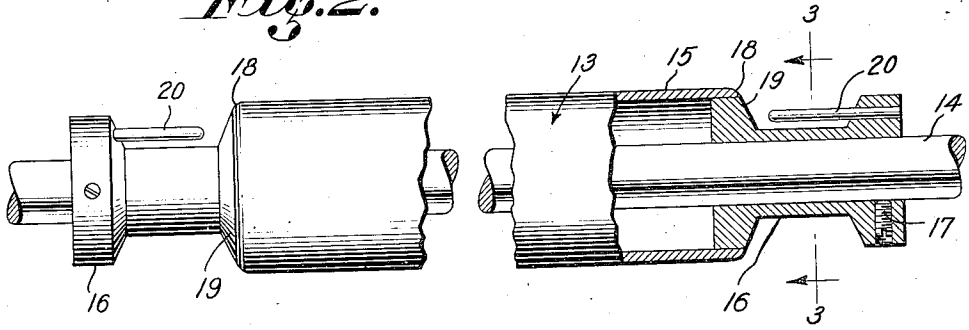


Fig. 2.



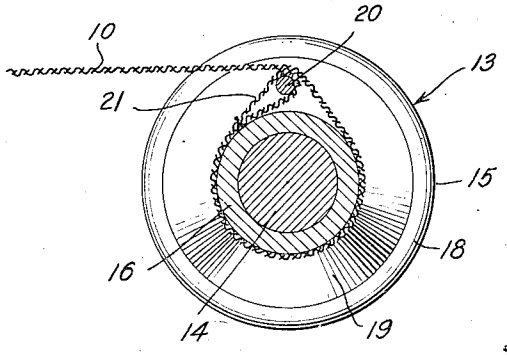


Fig. 3.

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Patented Jan. 25, 1949 2,460,050

UNITED STATES PATENT OFFICE

2,460,050

KNITTING MACHINE ATTACHMENT

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Application January 14, 1948, Serial No. 2,297

6 Claims. (Cl. 66—149)

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This invention relates to the "draw-off" or "take-up" mechanism of conventional straight, full-fashioned hosiery knitting machines. More particularly this invention pertains to an improved work take-up reel, or roll, which forms a part of such mechanism.

A straight knitting machine, of the type with which this invention is concerned, comprises a number of separate knitting heads, or sections, each including a bank of needles, and associated stitch forming mechanism. An individual take-up reel or roll usually is provided for each section to draw the knitted fabric, or work, away from the knitting mechanism, as the latter produces the fabric, course by course. The rotation of the take-up reels, which usually are mounted on a common take-up shaft, normally is produced by means of weight and pulley tackle, connected to the shaft. Resilient work take-up straps connect each take-up reel to a draw bar, which latter is attached to the work of the corresponding knitting section. Rotation of the take-up shaft winds the take-up straps on the reels both to draw the work from the knitting mechanism of the several sections and to maintain the desired tension on the work. Such take-up mechanism, including take-up reels, is well known in the art and shown, for example, in the following United States Latters Patents, to which reference is made for a more detailed explanation of the mechanism. No. 2,014,114 to E. M. Muller, dated September 10, 1935; No. 2,042,834 to W. D. Eaches, dated June 2, 1936; No. 2,333,074 to H. Printz, dated October 26, 1943.

Take-up reels commonly in use on knitting machines are provided with a longitudinal slot, having an enlarged portion, for receiving and anchoring a flanged metallic clip which is clamped to one end of a work take-up strap, as shown in the heretofore mentioned Muller patent. Take-up reels which require clip-equipped straps are objectionable for several reasons. The clip not only requires additional material to manufacture the completed strap, but also requires a seperate pressing operation for its attachment to the fabric of the strap. Furthermore, such clips usually have sharp edges which are apt to tear and thus ruin finished work.

Another objection to take-up reels now in use is that they commonly are made of wood or metal. Wood has the disadvantage of frequently chipping or splintering and so form sharp projections which may snag and pull threads, thus spoiling delicate work. The metal most commonly used for take-up reels is brass which

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rapidly tarnishes and turns green. Fabric in contact with such reels becomes soiled with the tarnish film, and cannot be cleaned without damage to the fabric.

Accordingly, an object of this invention is to provide a take-up reel for a straight knitting machine to which or from which a fabric end loop of a work take-up strap readily may be attached or detached, thus eliminating the need for a special attaching clip on one end of the strap.

Another object of this invention is to provide a take-up reel which will not damage or soil finished work.

A further object of this invention is to provide a take-up reel which is simple and sturdy in construction and which will not deteriorate on contact with the oils and acids which usually are present on and/or around a knitting machine.

Other objects and advantages of the invention will be evident from the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a portion of the take-up mechanism of a straight full-fashioned knitting machine, including a take-up reel embodying this invention.

Figure 2 is an elevational view, partly in section, of the take-up reel shown in Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 2 showing a take-up strap partially wound on the reel.

Referring now to Figure 1, there is shown a portion of the take-up mechanism of a conventional full-fashioned knitting machine of the "legger" type. The mechanism includes resilient work take-up straps 10 connected to a welt rod 11 which latter is attached to the work 12 to draw the knitted fabric from the knitting mechanism (not shown). The take-up straps 10 are detachably connected to a take-up reel, generally indicated at 13, which is mounted on the usual take-up shaft 14. Although the invention is illustrated by its application to a "legger" type of knitting machine, it will be understood that the take-up reel of this invention also is adapted to be used on a "footer" type of knitting machine, in which case a single strap 10 usually is employed for connection to a "footer" bar.

The take-up reel 13 comprises a tubular main body or shell 15 preferably of a relatively strong material which not only is non-tarnishing and oil and acid resistant, but also is non-chipping and can be provided with a smooth snag-proof surface. Materials which possess these charac-

teristics may be found among present day plastic compositions, such as thermosetting resins. A particular material which has been found to be very satisfactory in use is a fibrous phenolic condensation composition comprising, for example, a plurality of layers of woven fabric or paper impregnated and bonded together by a phenolic condensation product.

Secured in each end of the shell 15, by any suitable fastening means, such as cement or the like, is a generally spool-shaped member 16 having end flanges separated by an intermediate groove somewhat wider than the width of the straps 10. The side walls of the groove diverge outwardly for a purpose later described. The members 16 are bored axially to receive the take-up shaft 14, and are secured thereon by any suitable means, such as a set screw 17, the head of which is sunk below the surface of an end flange (as shown) to avoid fabric or work snagging projections. The spool-shaped members 16 are also made of an acid and oil resistant material which can be manufactured with a smooth snag-proof outer surface. Accordingly, these members 16 may be formed of the same material as the shell 15. Since these members 16, however, are not normally in contact with the work 12, and since strength is needed for securing the reel 13 to the shaft 14, it is desirable to form the members of metal. A preferred metal is aluminum because of its lightness and tarnish-resisting qualities. It will be noted that the end edges of the sleeve 15 are rounded, as at 18, to merge smoothly into the inner side wall 19 of the groove in the members 16. This smooth mergence eliminates sharp corners or edges which might damage delicate work. It also is pointed out that the sleeve 15 is longer than the width of the work 12, so that the work contacts only the sleeve, when the former reaches and is wound on the reel 13.

Projecting from one end flange of each member 16 and extending across and above the bottom of the groove therein into proximity to the other end flange is a pin 20 which is slightly longer than the width of the straps 10. The spacing between the free end of the pin 20 and the corresponding side wall 19 of the groove, and between the pin 20 and the bottom of the groove, is sufficient to permit a fabric loop 21 of a take-up strap 10 to be slipped over the free end of the pin for detachable engagement therewith. Thus, it will be seen that one end of each strap 10 need only be provided with a loop 21 in order to be attached to the reel 13. Such a loop easily may be formed by doubling back on itself one end of the strap fabric and stitching it into place as shown. The clearance between the free end of the pin 20 and the corresponding side wall 19 is small enough so that the loop 21 normally can be disengaged from the pin only by manual manipulation, thus avoiding the possibility of accidental detachment of a strap in use with consequent damaging results. The outward inclination of the groove side wall 19, which corresponds to the free end of the pin 20, facilitates the attachment and detachment of the loop 21. When the reel is in use, the grooves receive the convolutions of the take-up straps as they are wound thereon.

It will be seen that a simple, yet sturdy take-up reel has been provided by this invention. The reel will not damage delicate hosiery fabric and also results in simplified work take-up straps which not only are easy to attach to the reel, but also are less apt to damage the work. Various

structural changes in the embodiment illustrated readily will be apparent to one skilled in the art as, for example, the provision of a spool-shaped member 16 intermediate the sleeve length to adapt the reel for use on a "footer" machine. Accordingly, the invention embodies all modifications which come within the spirit and scope of the following claims.

I claim:

1. A work take-up reel for a straight knitting machine comprising; a cylindrical structure having an annular groove intermediate the ends thereof, the width of said groove being somewhat greater than the width of a work take-up strap to be wound therein, and a pin secured to one side wall of said groove and extending transversely thereof into proximity to the other side wall, said pin being spaced from the bottom of said groove, whereby an end loop of the work take-up strap may be detachably connected to said pin, over the free end thereof.

2. The structure defined by claim 1 in which there is an annular groove adjacent each end of the cylindrical structure.

3. The structure defined by claim 1 in which the other side wall of said groove is outwardly inclined whereby the connecting of the strap to the pin is facilitated.

4. The structure defined by claim 1 in which the side walls of the groove diverge outwardly.

5. A work take-up reel for a straight knitting machine comprising: an elongated structure adapted to be secured on the take-up shaft of a knitting machine for rotation thereby, said structure having an annular groove adjacent each end thereof, each of said grooves being adapted to receive the convolutions of a work take-up strap secured to the reel, and a pin extending transversely of said each groove intermediate the depth thereof, one end of said pin being secured to one side wall of said groove and the other end of said pin terminating short of the other side wall of said groove, whereby an end loop of the work take-up strap may be detachably connected over said pin between the free end thereof and the corresponding side wall of said groove.

6. A work take-up reel for a straight knitting machine comprising: a tubular member of phenolic condensation composition; a pair of spool-shaped end elements having an end flange of each element secured in one end of said tubular member, said elements being adapted to be secured on a take-up shaft; and a pin secured to one end flange of each of said elements and extending axially thereof to within proximity of the other end flange, whereby a work take-up strap may be detachably connected to each of said elements to be wound thereon by having an end loop of the strap slipped over the free end of said pin.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,014,114	Muller	Sept. 10, 1935
2,042,834	Eaches	June 2, 1936
2,078,265	Miller	Apr. 27, 1937
2,333,074	Printz	Oct. 26, 1943