No. 709,829. Patented Sept. 23, 1902.

R. W. SCOTT.

RIB KNITTING MACHINE.

(Application filed Apr. 3, 1902.)

(No Model.) 2 Sheets—Sheet 1.

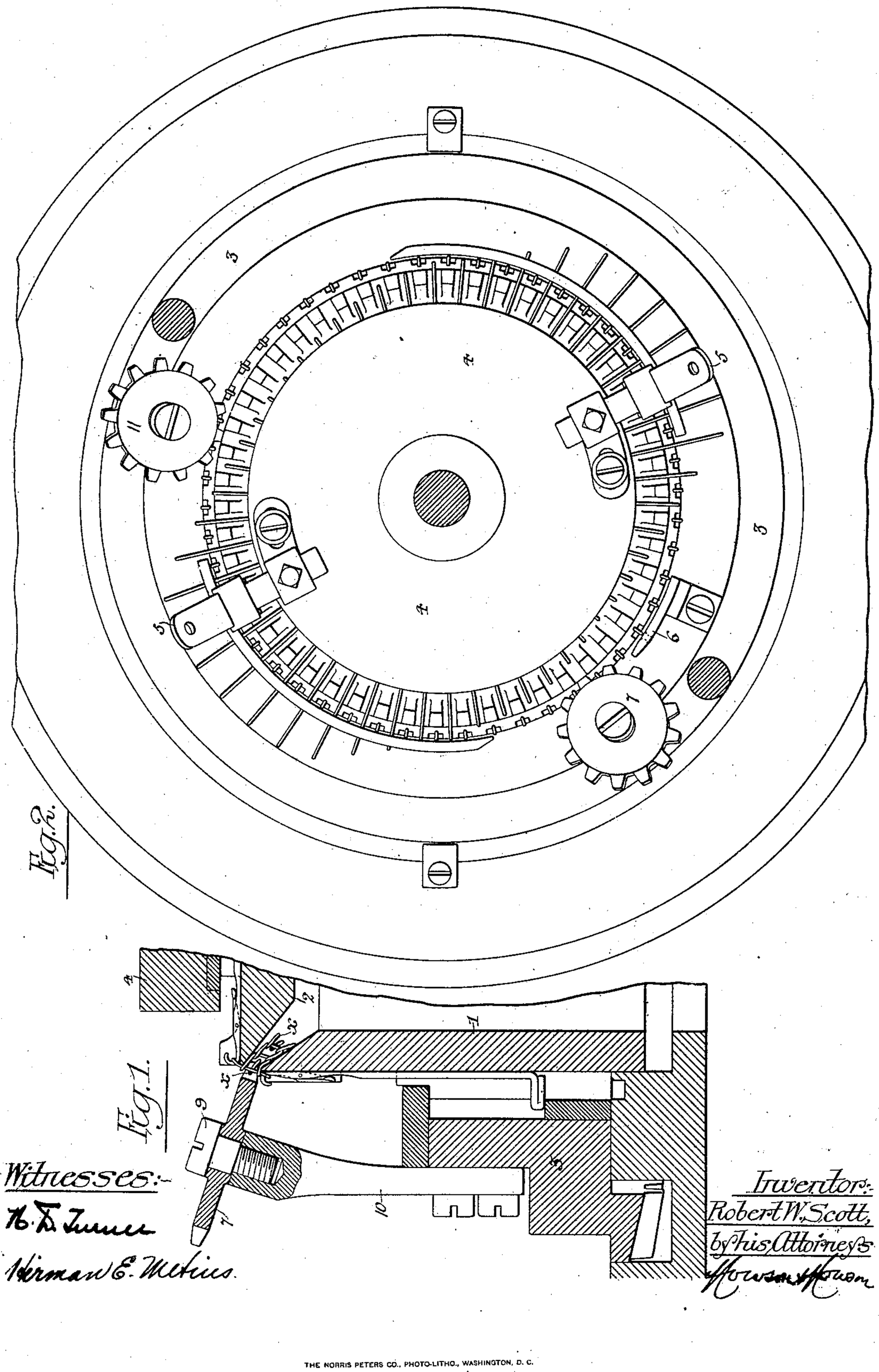

Fig. 2.

Fig. 1.

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Fig. 4.

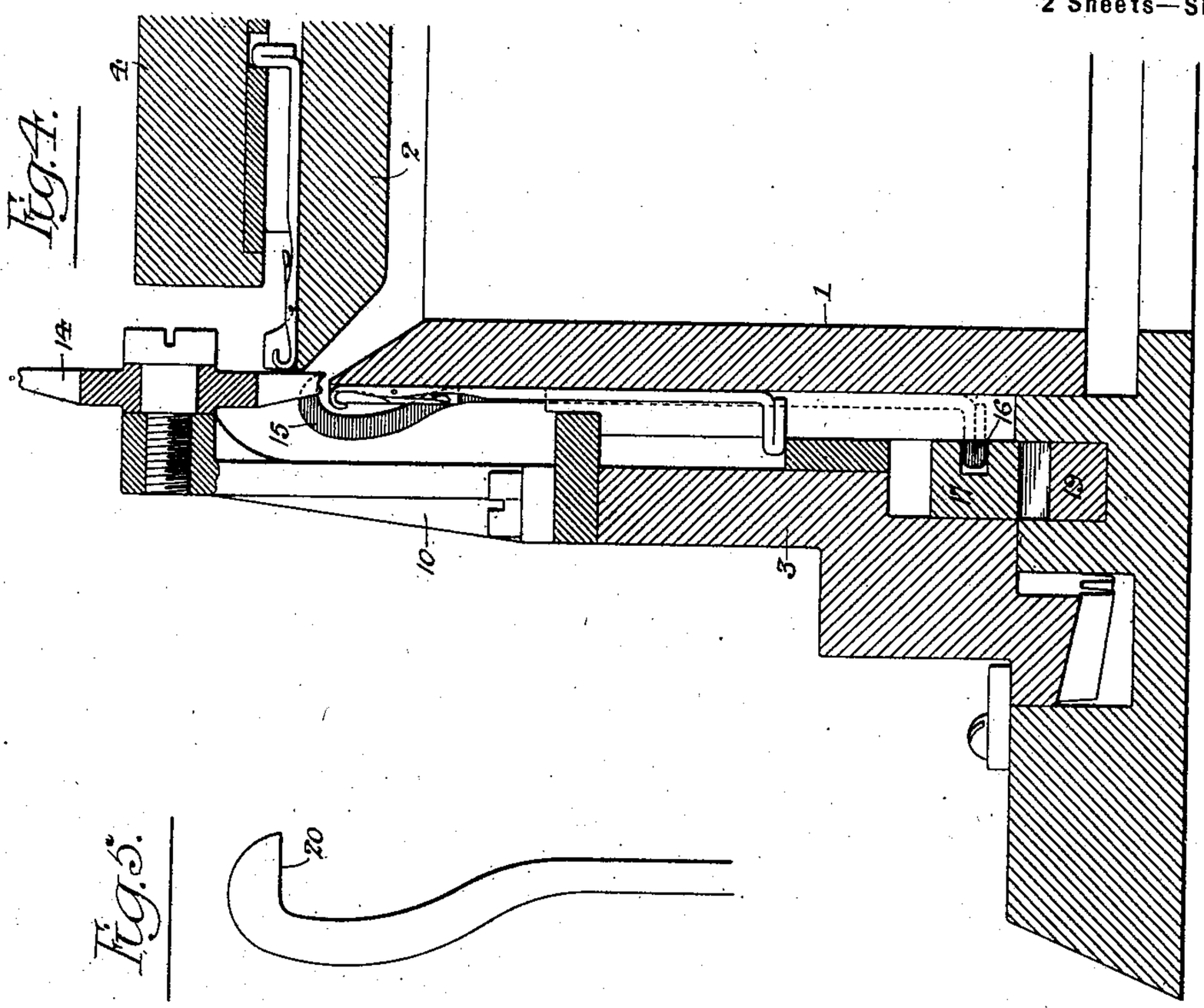


Fig. 5.

Fig. 6.

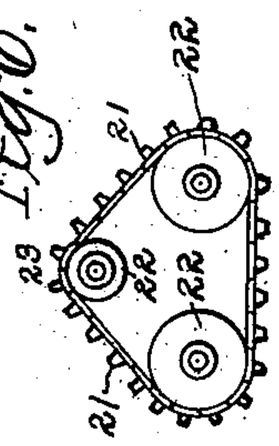
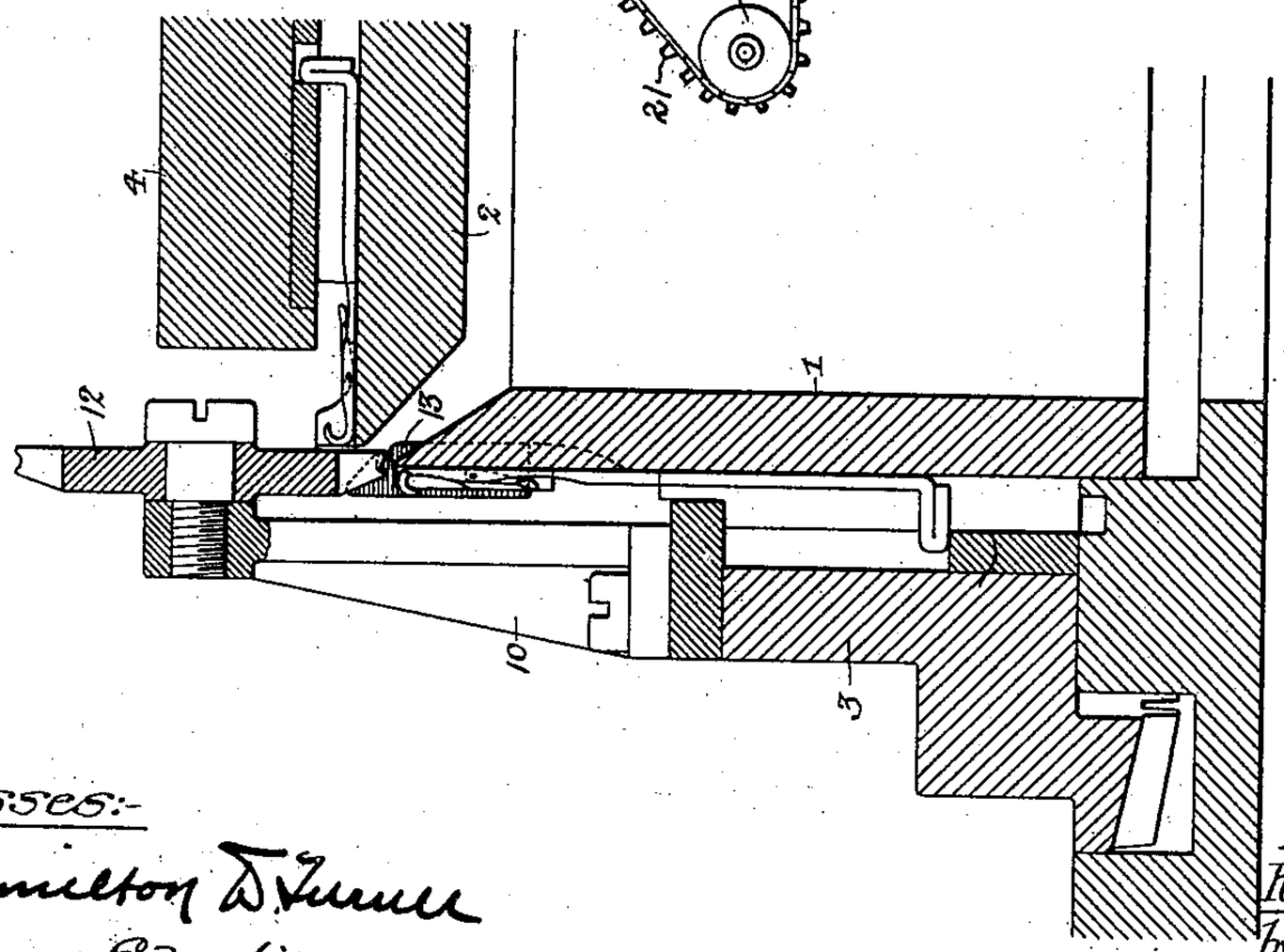


Fig. 3.



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RIB-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 709,829, dated September 23, 1902.

Application filed April 3, 1902. Serial No. 101,257. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Rib-Knitting Machines, of which the following is a specification.

My invention relates to machines for producing ribbed knitted fabrics having fleecing-yarns combined therewith, the object of my invention being to provide novel and effective means for insuring the projection of loops of the fleecing-yarn beyond the wales of the knitted web, so that said projecting loops can be brushed to form the fleece without liability of injury to the knitting-yarn.

In the accompanying drawings, Figure 1 is a transverse section of sufficient of an ordinary form of rib-knitting machine to illustrate my invention. Fig. 2 is a sectional plan view of the same. Figs. 3 and 4 are views similar to Fig. 1, but illustrating other embodiments of my invention. Fig. 5 is a detached view, on an enlarged scale, of a special form of retaining-hook designed for use in the machine; and Fig. 6 is a view illustrating a modification of the invention.

My invention is applicable either to machines having a rotating needle cylinder and dial and fixed cam-carriers or to machines having fixed needle cylinder and dial and rotating cam-carriers, the latter class of machine having been selected for illustration, 1 representing the fixed needle-cylinder of the machine, 2 the fixed needle-dial, 3 the rotating cam-cylinder, and 4 the rotating dial cam-plate, all of these parts being constructed and operated in a manner common to ordinary knitting-machines of this type. The machine has, however, in addition to the knitting-yarn guide or guides 5 a fleecing-yarn guide 6, which in the machine shown in Figs. 1 and 2 is adapted to lay a fleecing-yarn x onto the sinker-wales of the fabric which is being produced—that is to say, onto the wales formed by the knitting-yarn where the same extends across from the wales formed by the cylinder-needles to those formed by the dial-needles of the machine.

Adjacent to the fleecing-yarn guide 6 is a toothed wheel 7, preferably disposed at an angle to the vertical, as indicated in Fig. 1, so that its teeth can enter the space formed between the upper edge of the needle-cylinder and the outer edge of the needle-dial and can therefore pass between the sinker-wales formed by the knitting-yarn and crossing this space or throat.

The toothed wheel 7 is mounted so as to be free to rotate upon a stud 9, carried by a bracket 10, which projects upwardly from the cam-cylinder 3, so that as the wheel is carried around by said cam-cylinder it will be caused to rotate upon the stud 9 by reason of the engagement of its teeth with the sinker-wales of the fabric. The wheel 7 is so disposed in respect to the fleecing-yarn guide 6 that it will act upon the fleecing-yarn delivered thereby so as to press loops of the same down between the sinker-wales, and thus cause the desired projection of said loops beyond the face of the finished fabric. After the fleecing-yarn has thus been laid in place upon the sinker-wales the needles operate to produce fresh courses of stitches, the sinker-wales of which engage with and hold the fleecing-yarn. As, however, the loops may have been disarranged by the action of the knitting-yarn thereupon, I prefer to employ a supplementary toothed wheel 11 similar to the wheel 7 and similarly mounted, but acting upon the fleecing-yarn after the formation of the new course of stitches in the same manner that the wheel 7 acted upon said yarn before the formation of said course of stitches, or, in other words, looping the fleecing-yarn after its confinement by the sinker-wales as it was looped by the wheel 7 before such confinement.

In that embodiment of my invention shown in Fig. 3 a toothed wheel 12 is employed in connection with fixed sinkers 13 on the top of the needle-cylinder, these sinkers being similar to those set forth in my application for patent filed March 3, 1902, Serial No. 96,456, and the toothed wheel serving to push the fleecing-yarn down over the sinkers, and thus serve as a substitute for the needles, whereby in the machine of said previous application

the fleecing-yarn was pulled down over the sinkers. In this machine the wheel 12 can occupy the position of the wheel 7 in the machine shown in Figs. 1 and 2, the wheel 11 being dispensed with.

In the machine shown in Fig. 4 a toothed wheel 14 operates in conjunction with hooks 15, which perform substantially the same function as the fixed sinkers 13, but are capable of being raised and lowered *en masse* for the purpose of holding longer or shorter loops of the fleecing-yarn. For the purpose of thus controlling the hooks 15 they may be provided with butts 16, engaged by a ring 17, which can be adjusted vertically by a crown-cam 19 beneath the same. The hooks may, if desired, be resilient, so as to spring outward when the fleecing-yarn is pushed down onto the same, the recoil of the hooks causing them to engage the yarn and retain the same vertically, and in order to prevent the slackening of the fleecing-loops, which might result when the under sides of the hooks are concaved, as shown in Fig. 4, said hooks may have straight under faces, as shown, for instance at 20 in Fig. 5.

Although I prefer in carrying out my invention to use in all cases a rotating toothed wheel for acting upon the fleecing-yarn, a toothed endless chain is considered to be the equivalent of such toothed wheel and to be within the scope of my invention. Such toothed endless chain is shown at 21 in Fig. 6, said chain being carried by wheels 22, which are intended to be mounted upon a structure carried by the cam-box 3, the teeth of the chain engaging with the machine or with the sinker-wales of the fabric at the point 23.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the needle-carriers, needles, cam-carriers, cams, and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, and a toothed wheel acting upon said fleecing-yarn to loop the same and cause it to project beyond the face of the fabric, substantially as specified.

2. The combination of the needle-carriers, needles, cam-carriers, cams, and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide and a pair of toothed wheels acting on said fleecing-yarn to loop the same said wheels being so disposed that one looping action precedes the formation of the knitting-stitches and the other follows the same, substantially as specified.

3. The combination of the needle-carriers, needles, cam-carriers, cams, and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide and a rotating toothed wheel engaging the fleecing-yarn and mounted so that its teeth project between the sinker-wales of the fabric, substantially as specified.

4. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

5. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, longitudinally-adjustable hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

6. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, laterally-resilient hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

7. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, longitudinally-adjustable and laterally-resilient hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT W. SCOTT.

Witnesses:
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JOS. H. KLEIN.