R. W. SCOTT.

WEB HOLDER FOR RIB KNITTING MACHINES.

APPLICATION FILED JUNE 30, 1906.

925,036.

Patented June 15, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

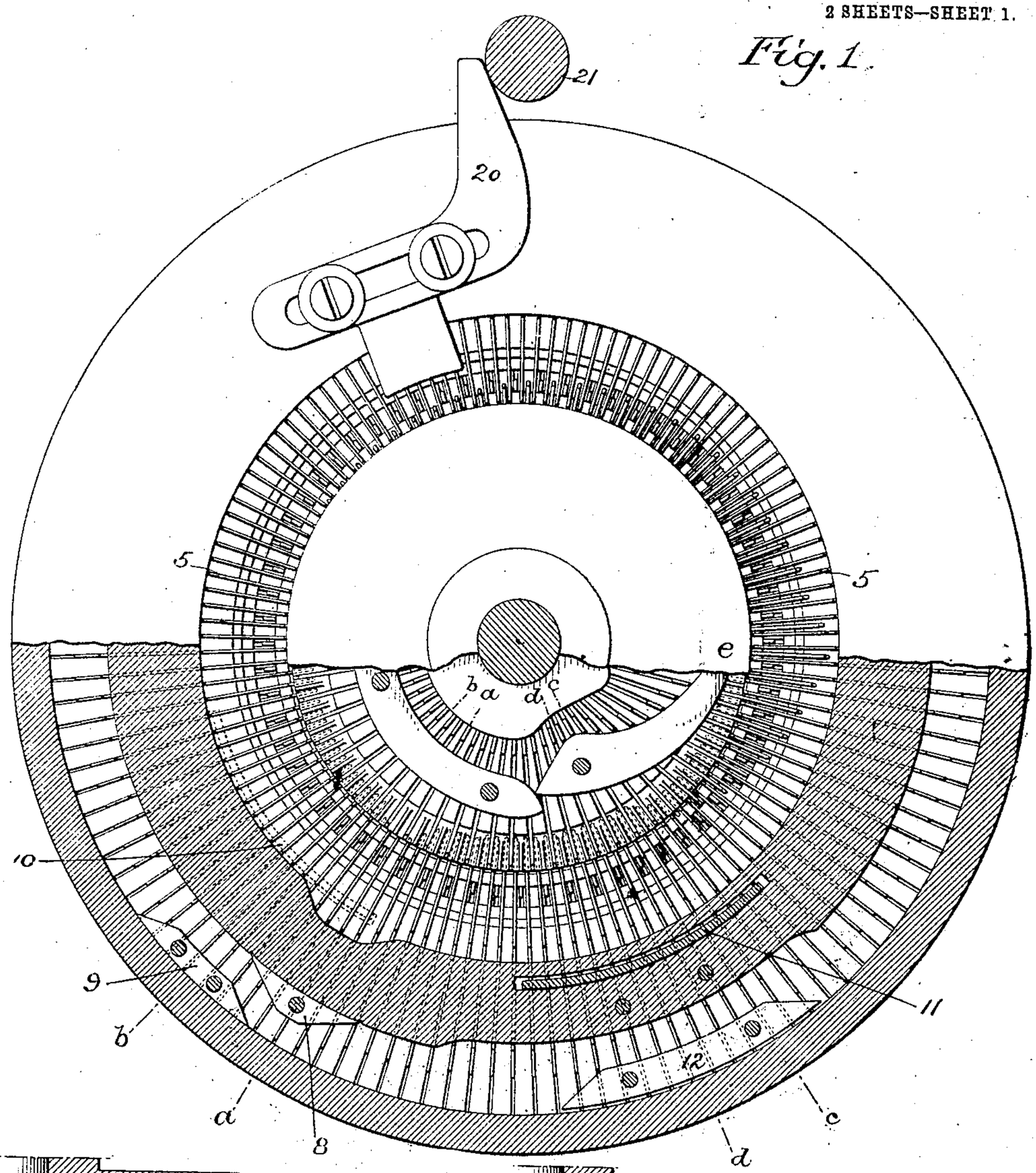


Fig. 2.

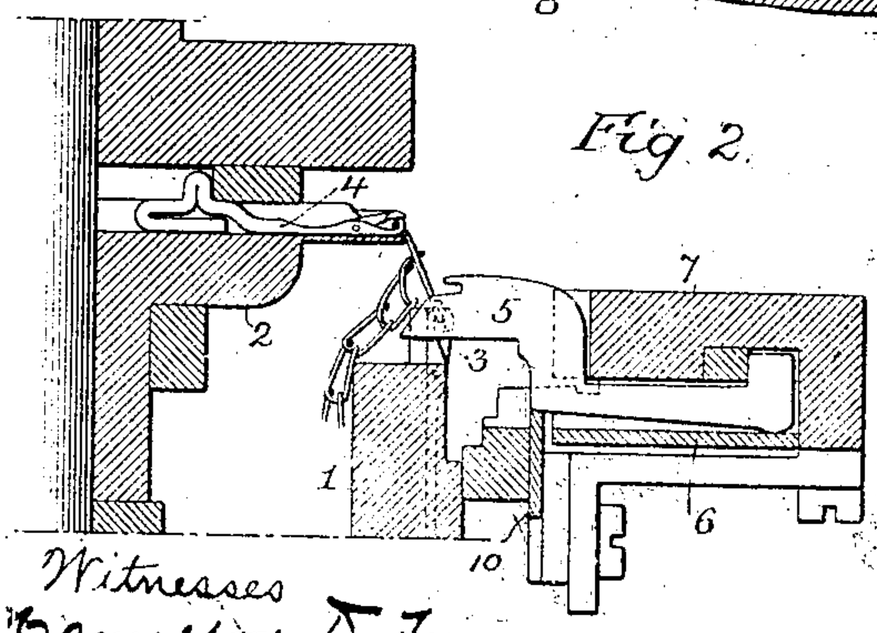
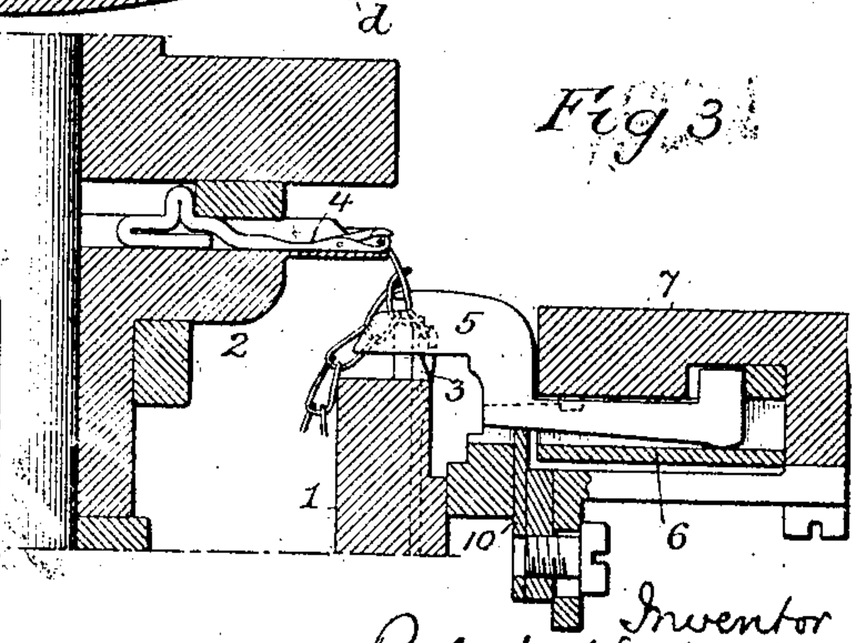


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

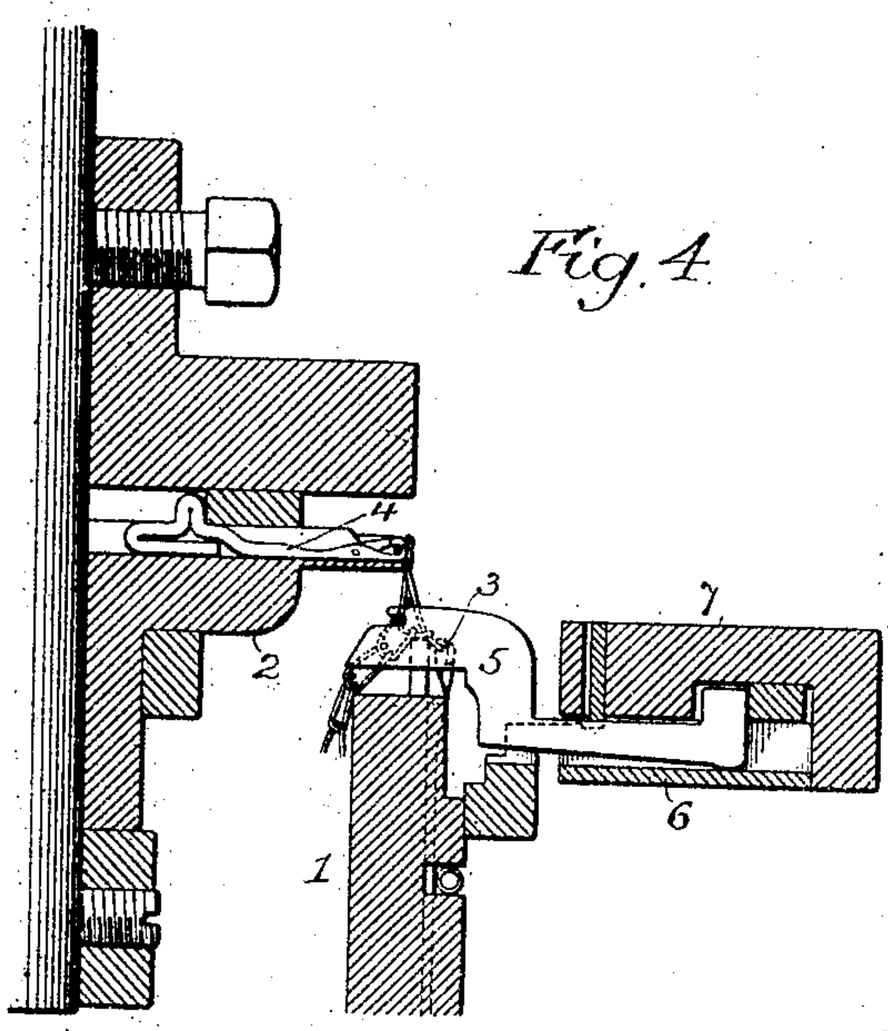


Fig. 5.

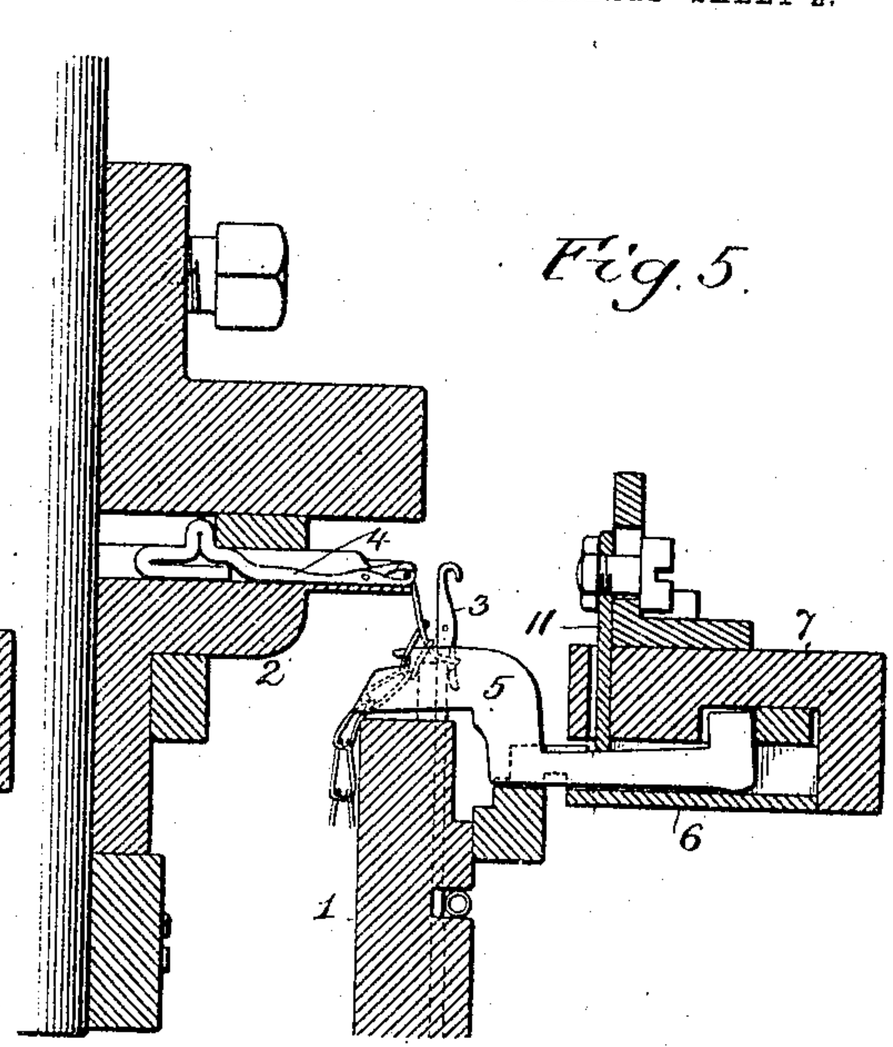


Fig 6

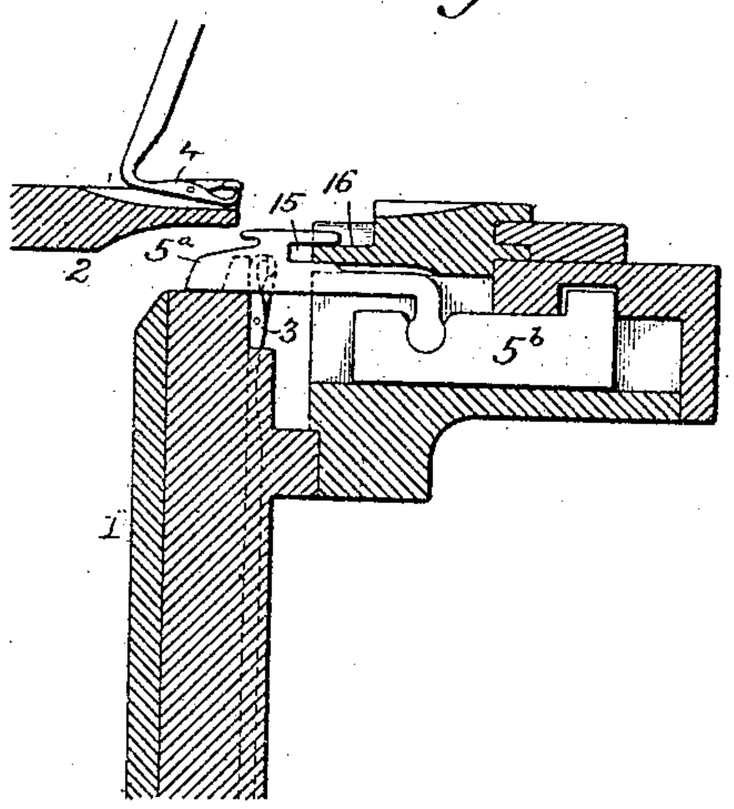
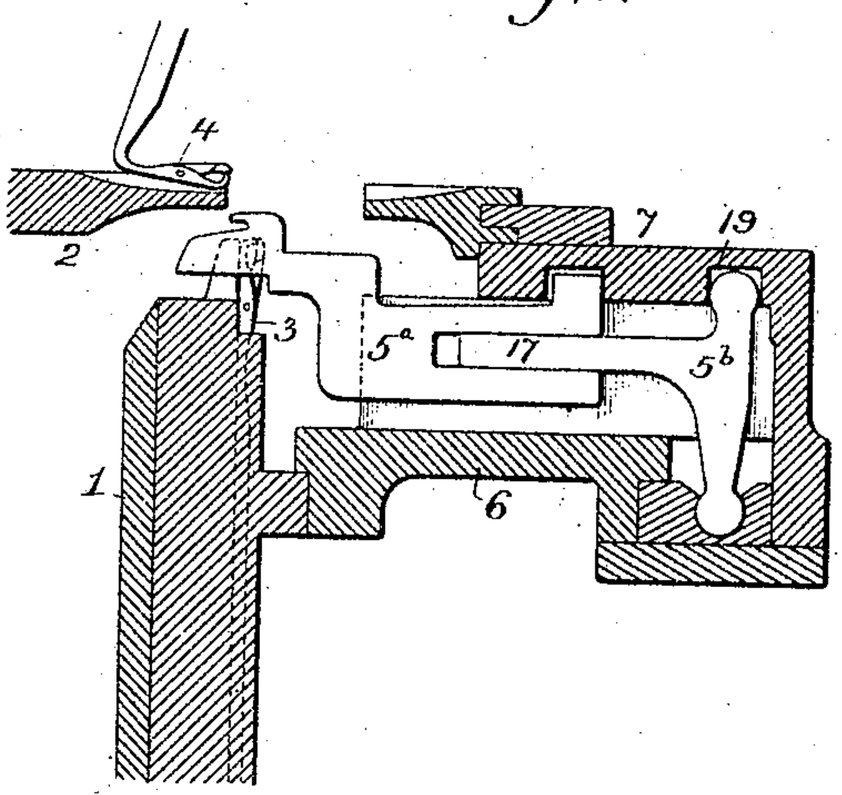


Fig. 7.



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UNITED STATES PATENT OFFICE.

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WEB-HOLDER FOR RIB-KNITTING MACHINES.

No. 925,036. Specification of Letters Patent. Patented June 15, 1909.

Application filed June 30, 1906. Serial No. 324,164.

To all whom it may concern:

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, residing in Leeds Point, Atlantic county, New Jersey, have invented certain Improvements in Web-Holders for Rib-Knitting Machines, of which the following is a specification.

The object of my invention is to provide a rib knitting machine with web holders of such character that the "knocking over" of the stitches on the ribbing needles can be effected without the use of weights, draft rolls, or the like, for imparting tension to the knitted web. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a view, partly in plan and partly in sectional plan, of part of a circular knitting machine provided with web holders and operating devices therefor, in accordance with my invention; Figs. 2, 3, 4 and 5 are transverse sections, respectively, on the lines *a*—*a*, *b*—*b*, *c*—*c*, and *d*—*d*, Fig. 1, and Figs. 6 and 7 are sectional views illustrating modifications of my invention.

In Figs. 1 to 5 of the drawing, 1 and 2 represent parts of two needle carriers, and 3 and 4 needles guided therein. The needle carriers may be the cylinder and dial of an ordinary circular rib-knitting machine, the needles may, for knitting purposes, be projected and retracted in said cylinder and dial by means of cams of the usual character, in the cylinder cam ring and dial cam plate, and the machine may have a rotating needle cylinder and dial and a stationary cylinder cam ring and dial cam plate, or a rotating cylinder cam ring and dial cam plate and a stationary cylinder and dial, a machine of the latter type being in the present instance adopted for illustrating my invention. The object of my present invention is to provide such a knitting machine with web holders capable of "knocking over" the stitches upon the dial or ribbing needles, and thereby dispensing with the use of weights, draft rolls, or like devices for imparting tension to the knitted web.

The combined sinkers and web holders 5 are of the usual character, and are guided in radial grooves in an annular bed 6, surrounding the upper portion of the needle cylinder 1, being radially reciprocated in said grooves by means of cams in a ring 7 which is rotatably mounted upon the bed 6 and is rotated by engagement with any other available rotating member of the machine. In the present instance, a dog 20, secured to the ring 7 is engaged by a post 21, which forms an element of the rotating structure.

The cam ring 7 has the usual cam 8 for retracting the web holders 5 and permitting the sinking of the cylinder stitches below the tops of those portions of the said web holders which project beyond the hooks, and said cam ring also has the usual projecting cam 9 for advancing the web holders in order that said hooks may engage with the stitches and prevent the rising of the web with the cylinder needles when the latter are again projected, but as such movement of the web holders does not impart any tension to the rib stitches it is customary in ordinary rib knitting machines, to use weights or draft mechanism for imparting tension to the knitted web in order to effect the knocking over of the rib stitches. I render such weights or draft mechanism unnecessary by imparting to the web holders 5 rising-and-falling movement in addition to their radial movement, such rising-and-falling movement being effected by means of cams 10 and 11, and in addition to these cams I also prefer to use a supplemental projecting cam 12 cooperating with the depressing cam 11 and serving to project the web holders and retain them in the projected position during the time that they are being acted upon by said depressing cam, so as to insure their hold upon the sinker wales of the web while such depression is taking place.

In Fig. 1, the line *a*—*a* represents the point at which the web holders 5, after having been retracted by the cam 8 are raised by the cam 10, as shown in Fig. 2, and the line *b*—*b* represents the point at which, after having been thus raised the web holders have been projected, as shown in Fig. 3, so that they will engage the sinker wales of the ribbed web. At the line *c*—*c*, the web holders are projected to a still further extent by the action of the cam 12, as shown in Fig. 4, and at the line *d*—*d* the web holders, while thus projected and in engagement with the sinker wales of the web, are depressed by the cam

11, so as to impart the desired tension to said sinker wales, and cause knocking over of the stitches upon the dial needles, the latter having previously been projected to receive, at the clearing point *e*, the fresh yarn, preparatory to being retracted at the knocking over point *d*, so as to draw the stitches of the new course through the stitches hanging from the needles and which now constitute the preceding course of the knitting.

While it is preferable to employ the unitary web holder shown in Figs. 1 to 5, my invention is also susceptible of embodiment in machines having two-part web holders, one part being acted upon by cams whereby reciprocating motion is imparted to the web holder, and the other part being acted upon by a cam or cams whereby the rising-and-falling movement is imparted to the same.

In the construction shown in Fig. 6 the web holder 5^a has a stem pivotally mounted within a recess in a sliding bit 5^b, the web holder having a slot 15 for the reception of a cam flange 16 on a member of the rotating cam ring, which flange is so formed as to impart the desired rising-and-falling movement to the web holders at the proper times.

In the construction shown in Fig. 7 the web holder 5^a is acted upon by the cams whereby reciprocating movement is imparted to it, and said web holder is slotted for the reception of a tongue 17 on a bit 5^b, which is pivotally mounted in a member of the ring 6 and is acted upon by a suitable cam groove 19 in the cam ring 7, whereby rocking movement is imparted to the bit and corresponding rising-and-falling movement to the web holder 5^a, these modifications being sufficient to indicate to those skilled in the art many other ways in which the details of construction can be varied without departing from the essential features of my invention.

When the machine is one designed for knitting either ribbed or plain webs, the web holders act in conjunction with the cylinder needles when the machine is knitting plain web, in the same way as is usual in ordinary plain web machines, and while, in such cases, the rising-and-falling movement of the web holders is not objectionable, it is also not necessary, and the rising and depressing cams may, if desired, be so mounted as to be thrown out of operation during the knitting of such plain web, as for instance by slotting the brackets to which said cams are secured, as shown in Figs. 3 and 5.

I have shown my invention as applied to a circular knitting machine, but, as will be evident, it can be applied to straight machines, if desired, and while the terms "rising and falling" or "raising and lowering" are strictly applicable only to the movements of the web holders in a vertical machine, these terms are simply intended to indicate certain movements of the web holders in respect to the needles of the machine, and hence are applicable to like movements of the web holders in machines other than vertical.

I claim:—

1. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with web holders and operating means therefor, bearing such relation to the retracting cams for the ribbing needles that said web holders are caused to engage and impart tension in a direction transverse to the direction of movement of the ribbing needles to sinker wales of a course preceding that whose stitches are being drawn by said ribbing needles, thereby "knocking over" the stitches of said preceding course.

2. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with web holders for engaging sinker wales of a course preceding that whose stitches are being drawn by the ribbing needles, and means for advancing, retracting raising and lowering said web holders.

3. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with web holders for engaging sinker wales of a course preceding that whose stitches are being drawn by the ribbing needles, and means for advancing and retracting, and other means for both raising and lowering, said web holders.

4. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with web holders for engaging sinker wales of a course preceding that whose stitches are being drawn by the ribbing needles, means for projecting said web holders so that their hooks will engage said sinker wales, for then effecting a further projection of the web holders while the hooks are in engagement with said sinker wales, and for then depressing the web holders.

5. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with web holders for engaging sinker wales of a course preceding that whose stitches are being drawn by the ribbing needles, and means for first lifting and then projecting said web holders so that their hooks will engage said sinker wales, for then effecting a further projection of the web holders while the hooks are in engagement with said sinker wales, and for then depressing the web holders.

6. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with unitary web holders and with cams for acting thereupon to effect projection, retraction, and raising and lowering of said web holders.

7. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with web holders, cams for effecting projection, retraction, and rising movements of said web holders, the cam which effects

such rising movement being adjustable to either operative or inoperative position.

8. The combination of the needle carriers, needles and knitting cams of a rib knitting machine, with web holders, cams for effecting projection, retraction, and falling movements of said web holders, the cam which effects such falling movement being adjustable to either operative or inoperative position.

9. The combination of the needle carriers, needles and knitting cams of a rib knitting m[illegible] holders, cams for effecting projection, retraction, and rising-and-falling movements of said web holders, the cams which effect such rising-and-falling movements being adjustable to either operative or inoperative position.

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

ROBERT W. SCOTT.

Witnesses:
HAMILTON D. TURNER,
KATE A. BEADLE.