No. 879,681. PATENTED FEB. 18, 1908.

R. W. SCOTT.

KNITTING MACHINE.

APPLICATION FILED MAR. 3, 1902.

3 SHEETS—SHEET 1.

Fig. 1.

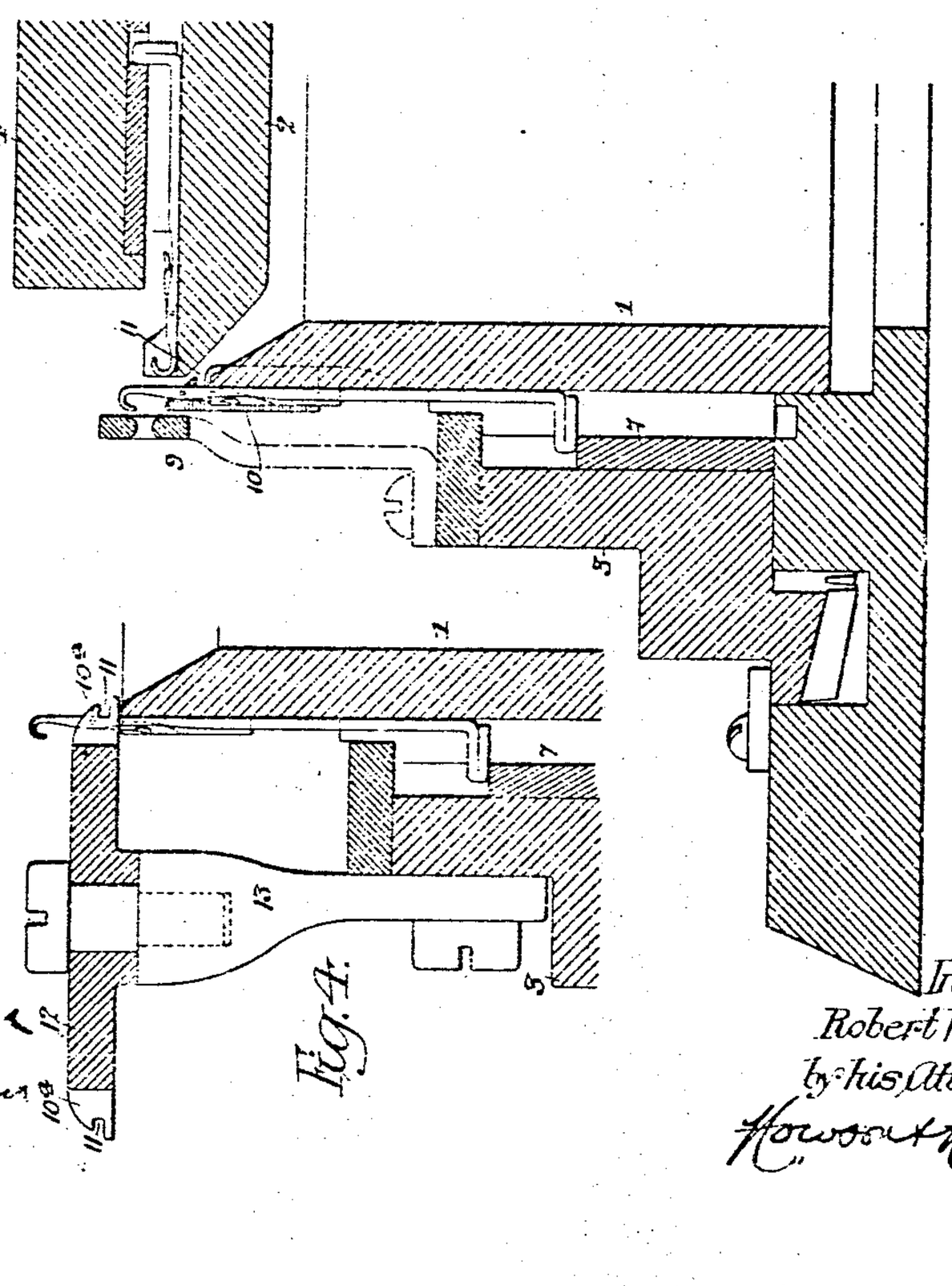

Fig. 2.

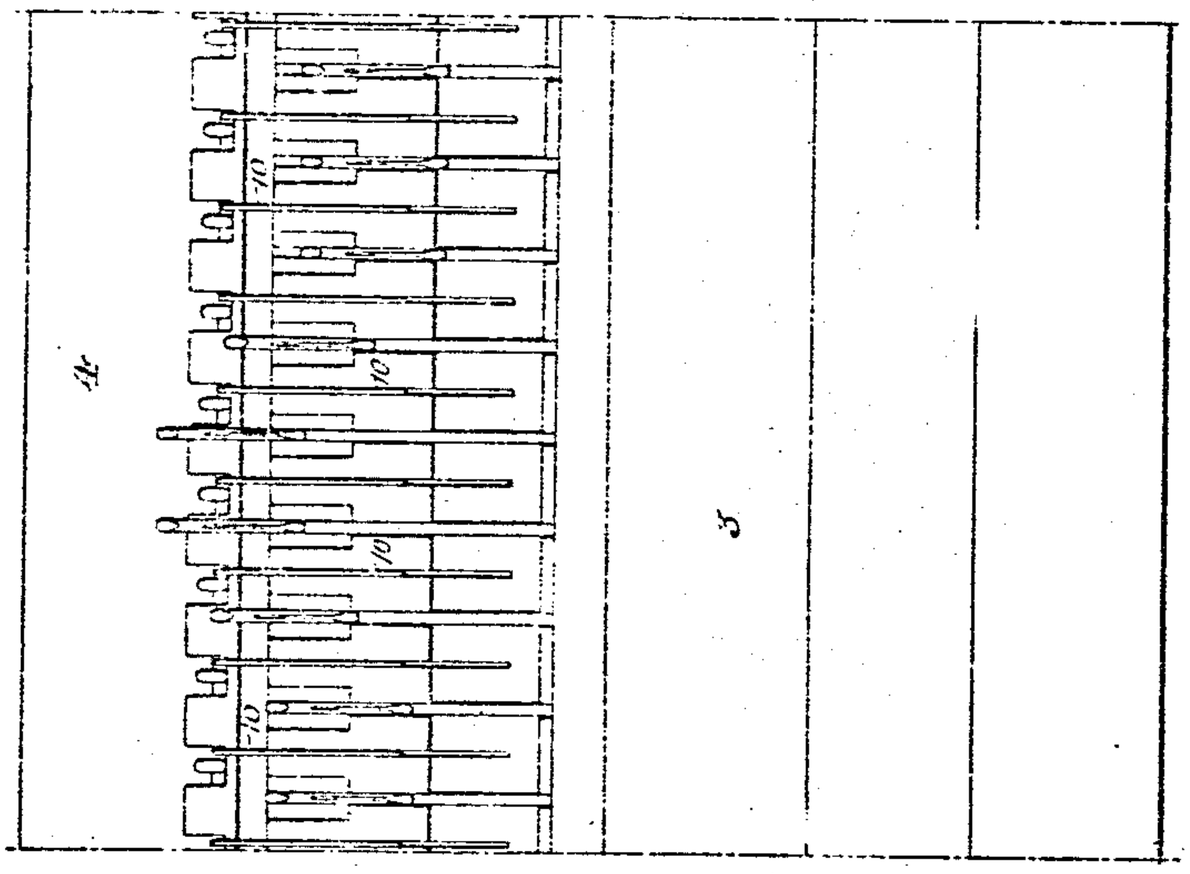

Fig. 4.

Witnesses:-

H. B. Turner

Titus H. Brown

Inventor:-

Robert W. Scott,

by his Attorneys:

Howson & Howson

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3 SHEETS—SHEET 2.

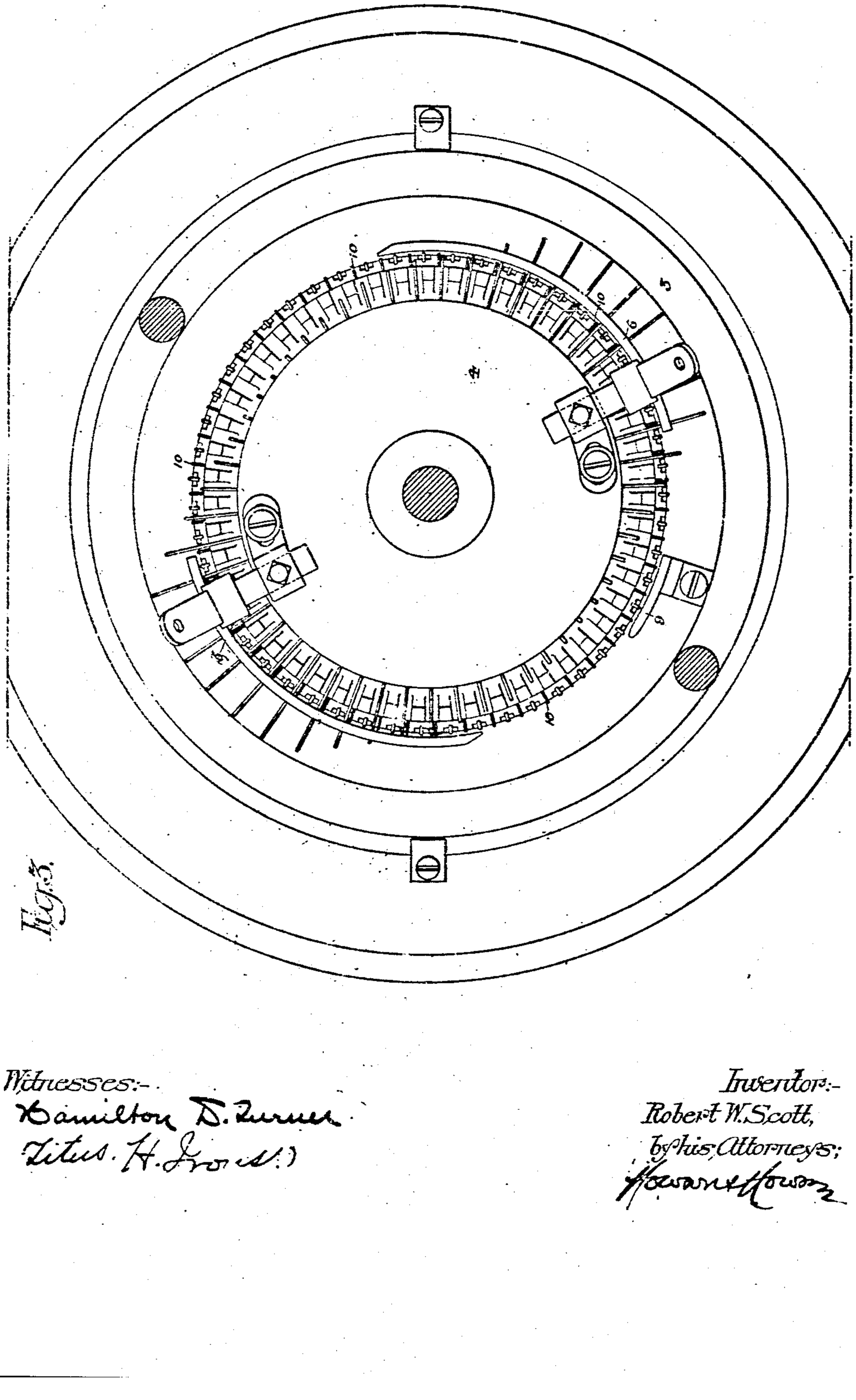

Fig. 3.

Witnesses:-
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Titus H. Lord

Inventor:-
Robert W. Scott,
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Howard & Howson

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3 SHEETS—SHEET 3.

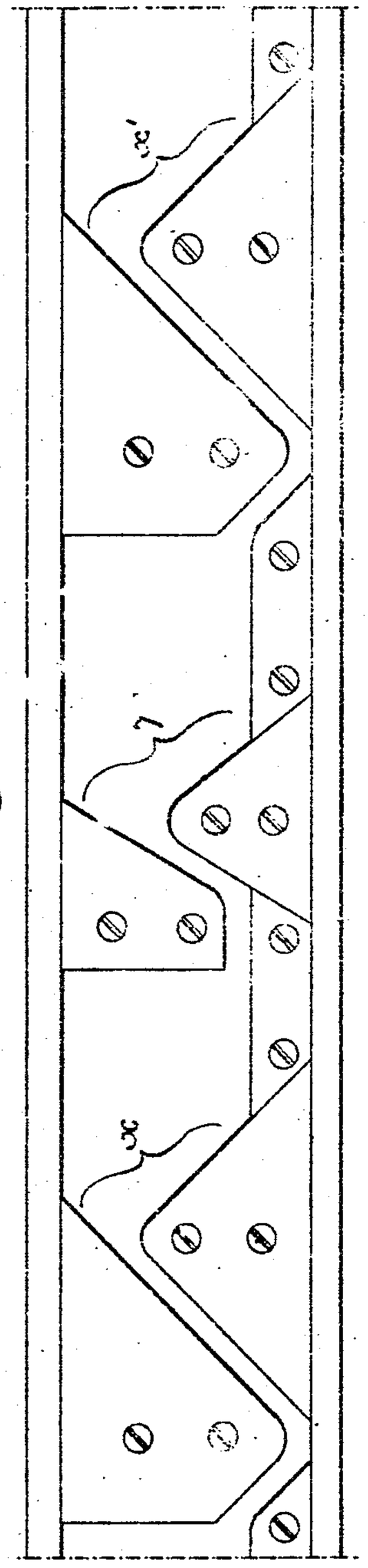

Fig. 5.

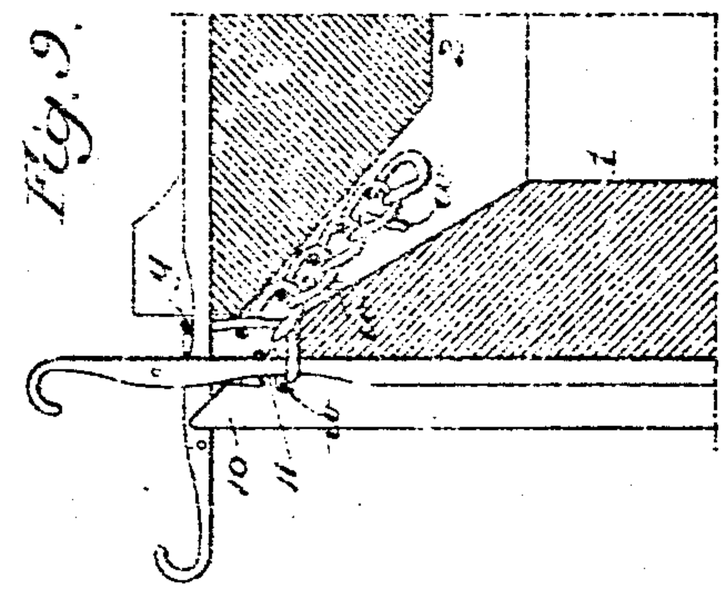

Fig. 9.

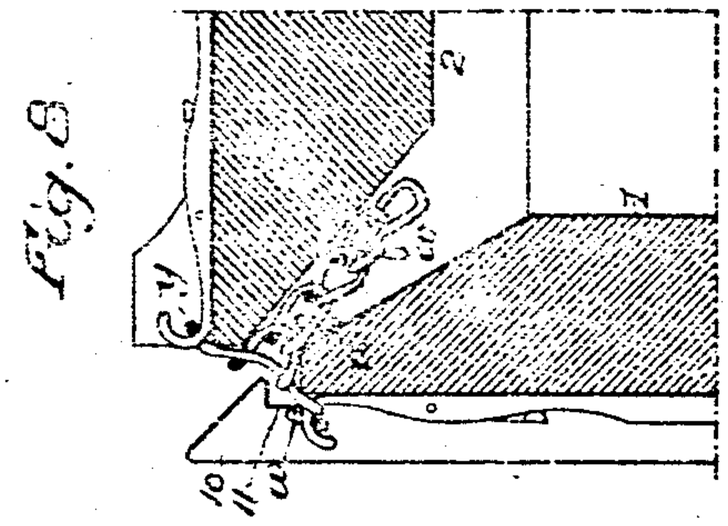

Fig. 8.

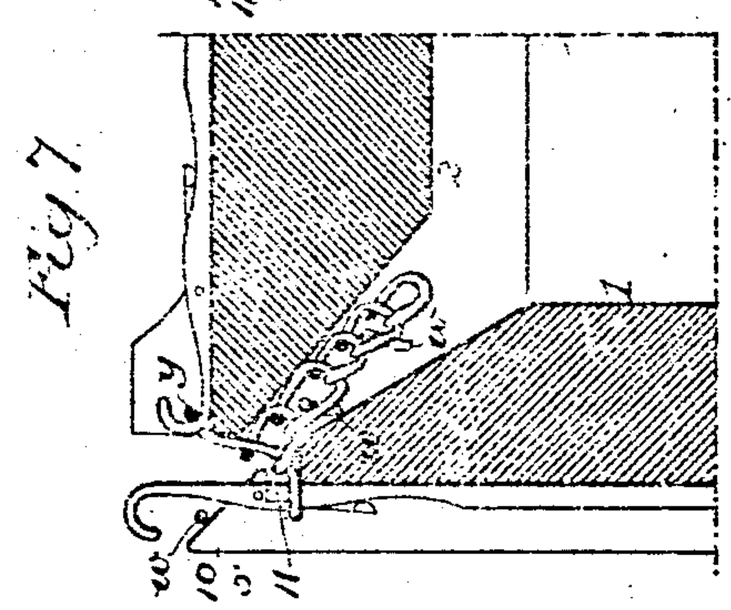

Fig. 7.

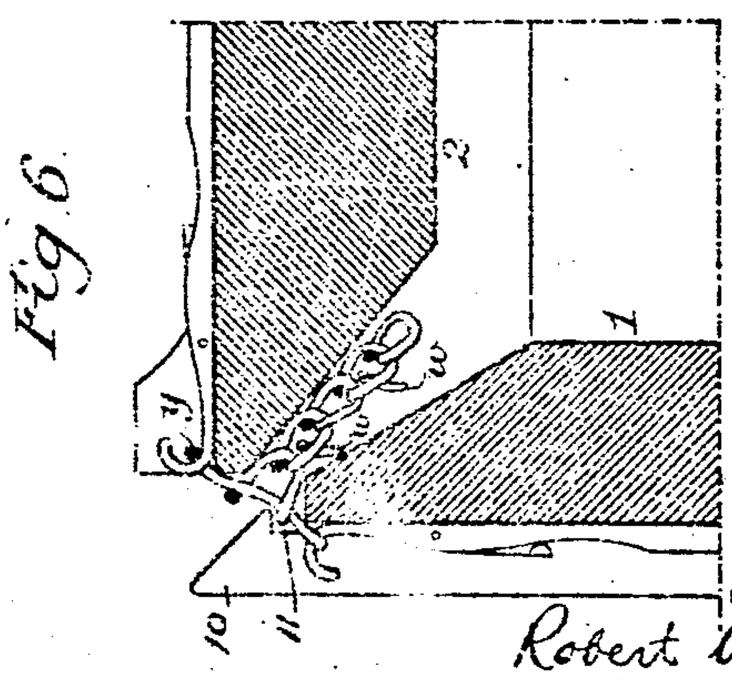

Fig. 6.

Witnesses
Hamilton T. Turner
Kate A. Beadle

Inventor
Robert W. Scott
by his Attorneys
Smith & Frazier

UNITED STATES PATENT OFFICE.

ROBERT W. SCOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO LOUIS N. D. WILLIAMS, OF ASHBOURNE, PENNSYLVANIA.

KNITTING-MACHINE.

No. 879,681. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed March 3, 1902. Serial No. 96,456.

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 Knitting-Machines, of which the following is a specification.

My invention relates to that class of knitting machines which are intended for the production of ribbed fabric having combined therewith a fleecing yarn or yarns in such manner that said fleecing yarn will project beyond the wales of the knitted fabric so that it can be brushed to form a fleece without injury to the knitting yarn of which the fabric is composed.

The object of my invention is to so construct such a machine as to render unnecessary the usual reciprocating hooks or sinkers for the purpose of forming the desired projecting loops of fleecing yarn, an object which I attain by the use of relatively fixed sinkers in coöperation with needles of the machine so actuated as to receive the fleecing yarn and draw loops of the same over or around said sinkers.

In the accompanying drawings:—Figure 1, is a vertical sectional view of sufficient of an ordinary type of rib knitting machine to illustrate my invention; Fig. 2, is a front view of part of the same: Fig. 3, is a sectional plan view; Fig. 4, is a sectional view of part of the machine, illustrating another embodiment of my invention. Fig. 5 is an elevation of the inner face of the cam cylinder of the machine developed on a flat plane, and Figs. 6, 7, 8 and 9, are enlarged views illustrative of the operation of the machine.

My invention is applicable either to machines having rotating needle cylinder and dial and fixed cam carrier, 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 with the exception that the cam cylinder 3 has in addition to the ordinary cams x and x' (Fig. 5) for operating the needles to receive and draw loops of the knitting yarn from the yarn guides 5 and 6, Fig. 3, another set of cams 7 (Figs. 1 and 5) for partially projecting the needles so that they may receive fleecing yarn from a guide 9 mounted upon the rotating cam cylinder 3 of the machine as shown in Fig. 1, the partial projection of said needles not being sufficient to clear the stitches upon them, so that the needles, on their descent after having received the fleecing yarn, will simply draw loops of said yarn which will be cast off upon the next operation of the needles necessary to form stitches of the knitting yarn in the production of the fabric. The length of the loops of fleecing yarn thus drawn by the knitting needles will be dependent upon the relation of the hooks of the retracted needles to the sinkers interposed between the needle grooves, and, in order to insure the desired extent of projection of the loop of fleecing yarn at each sinker wale of the fabric, at which it is desired to thus project the same I provide the needle cylinder 1 with sinker bits 10 preferably secured in place by being let into grooves in the cylinder as shown in Figs. 1 and 2, the tops of these bits being beveled on the inner side as shown in Fig. 1 so as to throw the loop of fleecing yarn inwardly as it is drawn down over the bits by the descending needles, the sinker bits extending inwardly beyond the needle grooves to the extent desired for the length of loop to be formed. The sinker bits are by preference, notched as shown at 11, in Fig. 1, for the purpose of engaging with the fleecing yarn and retaining the same when the cylinder needles rise to receive fresh knitting yarn, thereby maintaining the projecting loops on that side of the ribbed knitted web upon which it is desired that the loop shall be formed.

The notched sinker bits also act upon the stitches of the knitted web to prevent rise of the said web with the cylinder needles when the latter rise to receive the fresh knitting yarn, but otherwise do not affect the knitting operation. The fabric produced upon the machine is substantially the same as that shown in the patent of Baron & Ingalls No. 603,164 dated April 26th 1898.

The operation of the machine is indicated in Figs. 6 to 9, Fig. 6 showing the position of the parts after the cylinder and dial needles have drawn their loops of yarn, Fig. 7 showing the cylinder needle partially raised so as to engage with the fleecing yarn w, Fig. 8, showing said cylinder needle retracted so as to draw a loop of said fleecing yarn over the

sinker 10, and Fig. 9 showing the cylinder needle again raised through the loops of fleecing yarn *x* and knitting yarn *y*,—so as to engage a fresh supply of said knitting yarn *y*,—the dial needles being also projected so as to engage said yarn.

During the second rise of the cylinder needle the fleecing yarn loop, as well as the previously formed stitch of the knitted web, is engaged by the notched portion of the sinker, and the fleecing loop is retained behind both sets of needles so that when cast off by the cylinder needles on the descent of the latter after engaging the fresh knitting yarn, the loop will be delivered into the space between the cylinder and dial stitches, the surplus portion of the fleecing loop projecting on one side of the fabric between the wales of the same, as shown in the finished portion of the fabric represented in the different views.

I have shown the fleece loop forming sinkers on the cylinder of the machine but they may be applied to the dial if desired or to both cylinder and dial, and the sinkers may, in some cases, be formed as in integral part of the needle carrier in connection with which they are used instead of being in the form of inserted bits, the latter construction, however, being preferred. On the other hand, however, the sinkers may be carried by or form part of a wheel mounted so as to be free to rotate and caused to thus rotate by engagement with the needles or needle carrier of the machine, one embodiment of such idea being shown in Fig. 4 wherein 10^a represent sinkers forming part of a wheel 12, which is mounted so as to be free to rotate on a stud 13 carried by the cam cylinder 3, the sinkers resting on the top of the needle cylinder and projecting between the needles of the same, as shown, and the wheel being caused to rotate by engagement of said sinkers with the needles, after the manner of a spur wheel and pinion.

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

1. A rib knitting machine having two sets of needles, a knitting yarn guide, means for knitting upon the needles, a fleecing yarn guide, and means whereby needles of one set are caused to engage and draw stitches of said fleecing yarn, said means including fleecing yarn engaging devices occupying a fixed relation to the needles of the machine.

2. A rib knitting machine having two sets of needles, a knitting yarn guide, means for knitting upon the needles, a fleecing yarn guide, and means whereby needles of one set are caused to draw loops of said fleecing yarn, said means including fleecing yarn engaging devices disposed between the needles of one set and occupying a fixed relation to said needles.

3. A rib knitting machine having two sets of needles, a knitting yarn guide, means for knitting upon the needles, a fleecing yarn guide, means for drawing loops of said fleecing yarn by the needles of one set only, and fleecing yarn engaging devices notched to engage said fleecing yarn and prevent rise of the same with the needles at the knitting point.

4. A rib knitting machine having two sets of needles, a knitting yarn guide, means for knitting upon said needles, a fleecing yarn guide, means for drawing loops of said yarn by the needles of one set only, and fleecing yarn engaging devices occupying a fixed relation to said needles and notched to prevent rise of the fleecing yarn with the needles at the knitting point.

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

ROBERT W. SCOTT.

Witnesses:
ROY RAUDENBUSH,
JOS. H. KLEIN.