(No Model.)

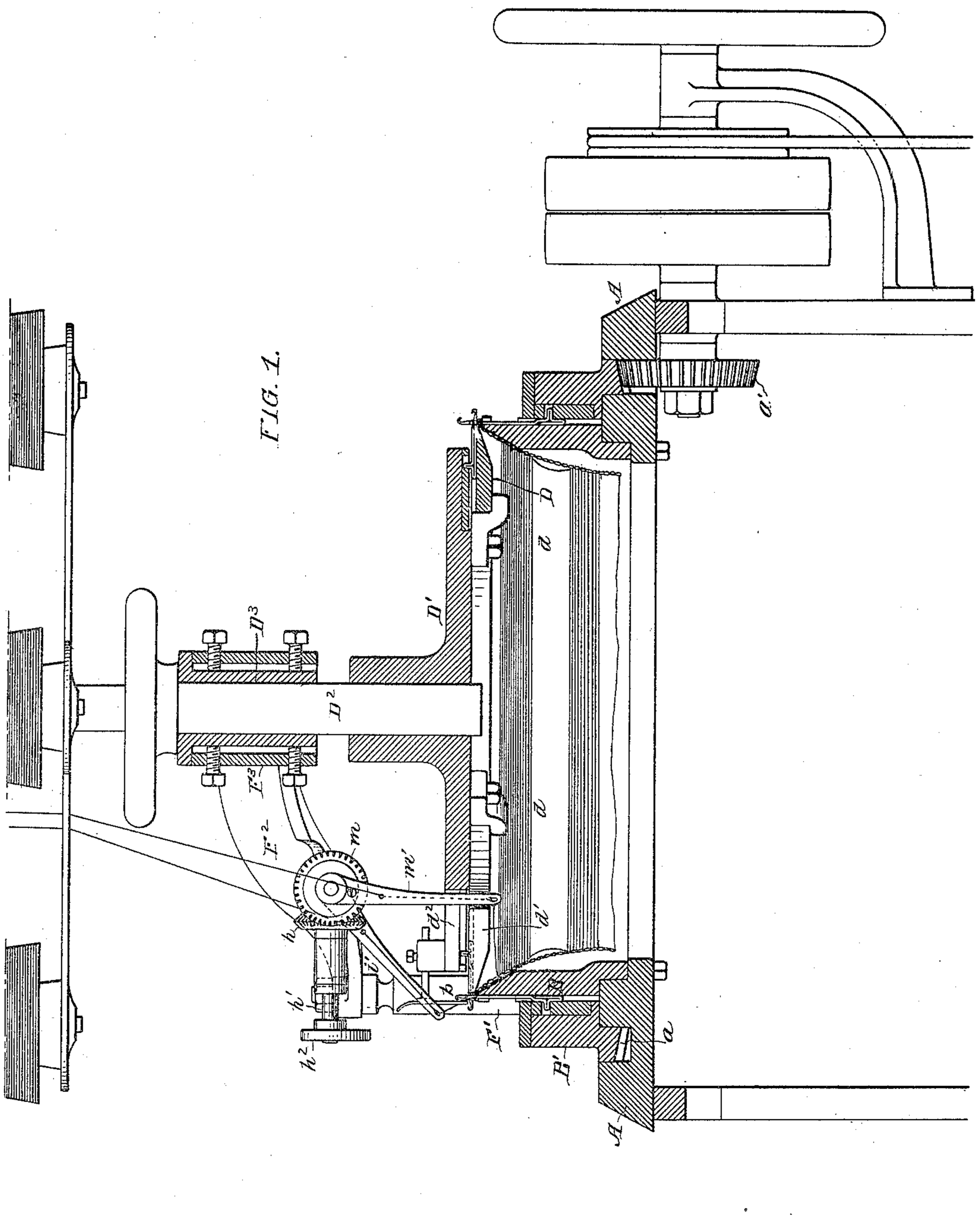
2 Sheets—Sheet 1.

R. W. SCOTT.

YARN CHANGING DEVICE FOR RIB KNITTING MACHINES.

No. 604,640. Patented May 24, 1898.

FIG. 1.



Witnesses:
Hamilton D. Turner
Frank E. Beckbold

Inventor:
Robert W. Scott
by his Attorneys
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(No Model.) 2 Sheets—Sheet 2.

R. W. SCOTT.

YARN CHANGING DEVICE FOR RIB KNITTING MACHINES.

No. 604,640. Patented May 24, 1898.

FIG. 2.

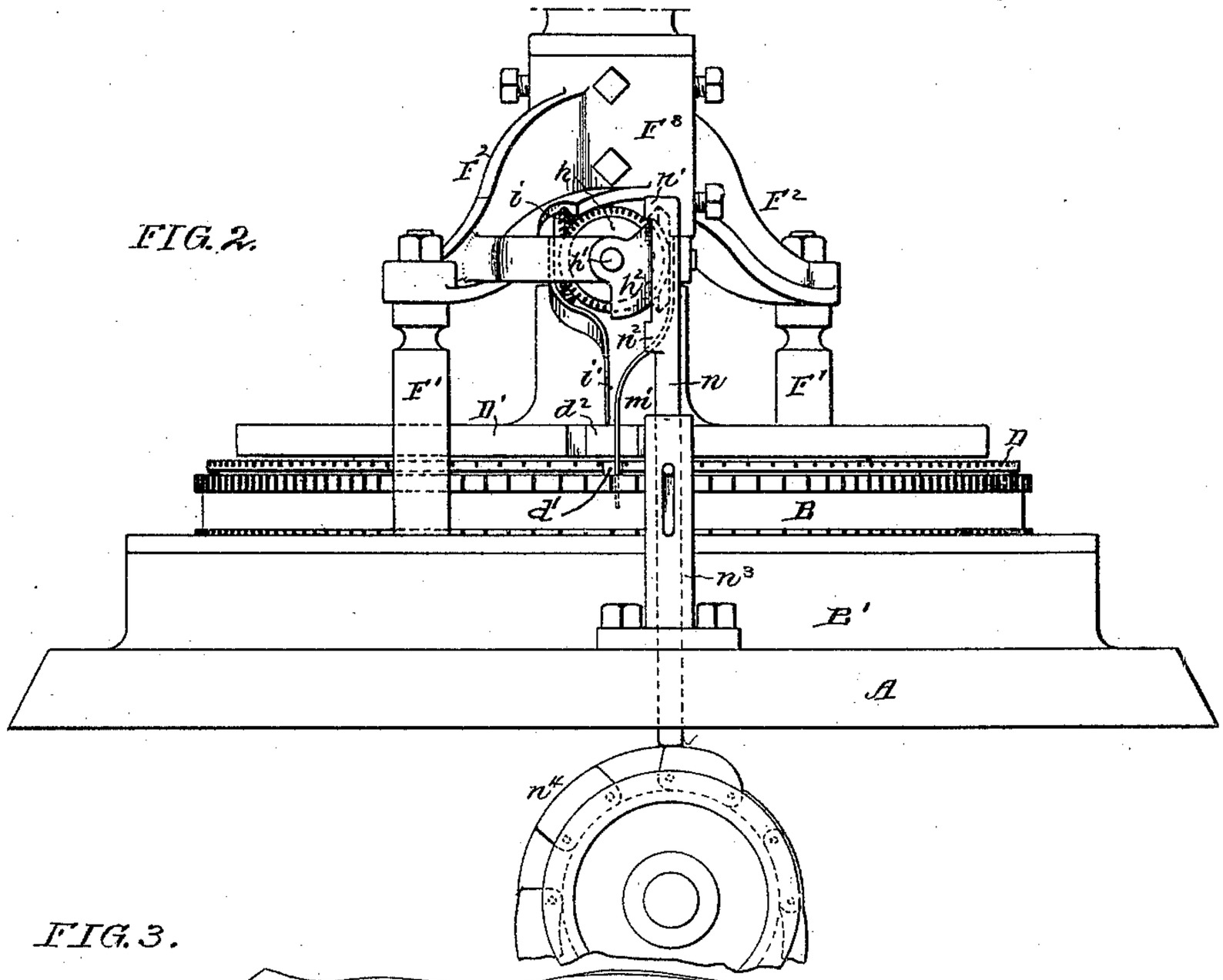
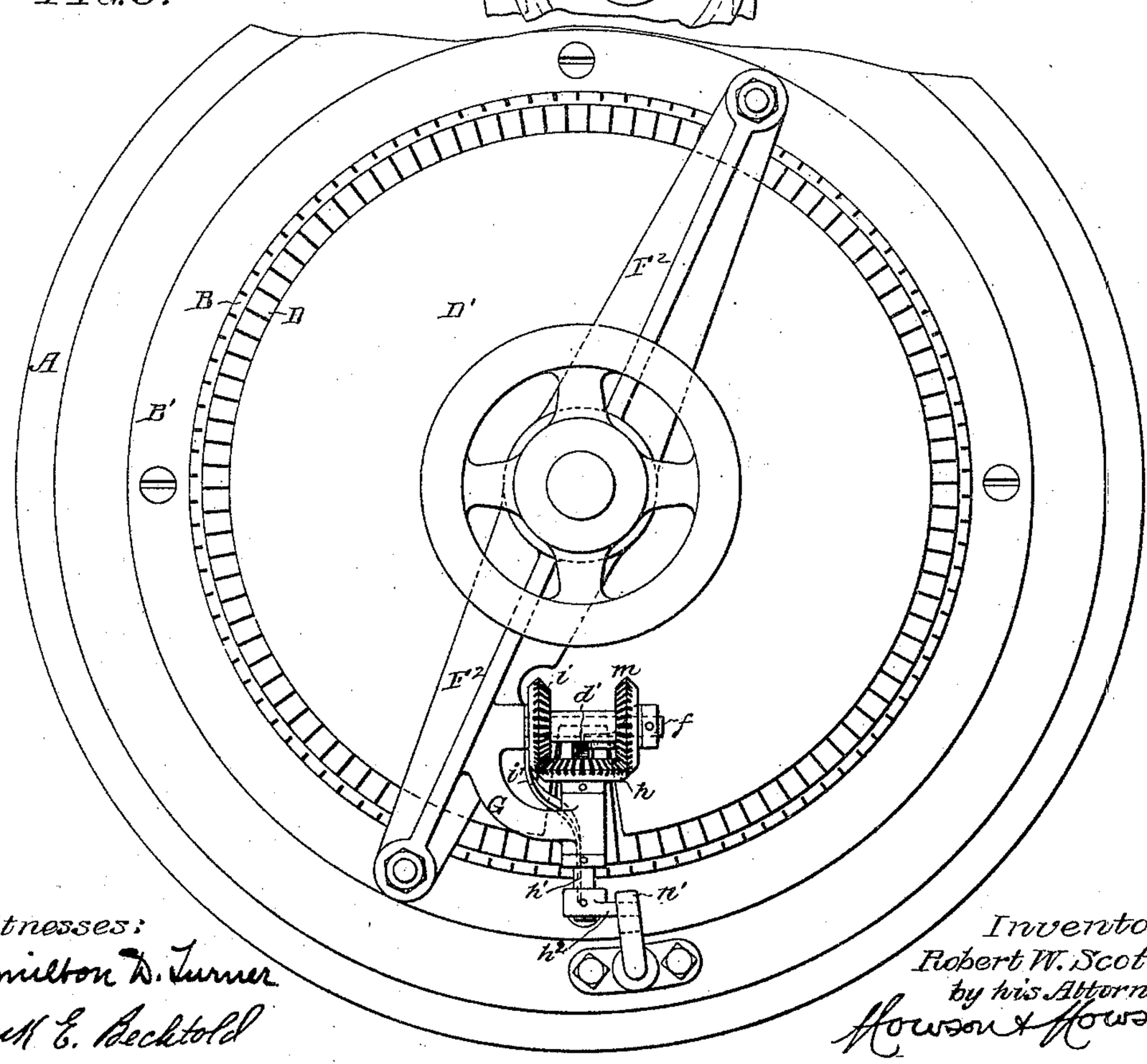


FIG. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

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

YARN-CHANGING DEVICE FOR RIB-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 604,640, dated May 24, 1898.

Application filed April 16, 1895. Renewed May 8, 1896. Serial No. 590,782. (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 Yarn-Changing Devices for Rib-Knitting Machines, of which the following is a specification.

The object of my invention is to produce by continuous operation and with unbroken threads tubular-ribbed knitted fabrics having stripes extending around the same, and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of sufficient of a rib-knitting machine to illustrate the means which I have devised for carrying out my invention. Fig. 2 is a front view of part of the machine, and Fig. 3 is a plan view with part of the fixed structure broken away.

In Fig. 1, A represents part of the fixed table or bed of the machine; B, the usual fixed needle-cylinder, grooved for the reception of the vertically-reciprocating needles, and B′ the rotating cylinder or cam-box, having cams for effecting the reciprocation of the needles, so as to cause them to engage with the thread and form stitches, said cam-cylinder having at the bottom a bevel-wheel a, which meshes with a bevel-pinion a' on the driving-shaft.

D is the fixed dial, having radial grooves for the guidance of the dial-needles, which alternate with and play in the spaces between the cylinder-needles, and D′ is the rotating dial cam-plate, which is secured to a central spindle D^2, carried by a hub D^3, the latter in turn being carried by the hub F^3 of an arch F^2, which is mounted upon posts F′, projecting upward from the cam-cylinder B′ in the usual manner.

The dial D is of annular form and is mounted upon brackets d, secured to the under side of the dial cam-plate D′, as shown in Fig. 1, and in said dial is formed at one point a radial slot d', a radial slot d^2 being also formed in the dial cam-plate D′.

Projecting from a bracket G on the arch F^2 is a spindle f, and upon the latter are mounted, so as to be free to turn, two bevel-wheels i and m, both of these bevel-wheels meshing with a bevel-wheel h, secured to a shaft h', which is free to turn in a bearing on the bracket G, and has at the outer end a tappet h^2, adapted to be actuated by upper and lower projections n' n^2 upon a rod or post n, vertically guided in a bearing n^3 on the bed A and acted upon by a pattern-chain n^4 beneath said bed.

To the back of the bevel-wheel i is secured a thread-carrying arm i', and to the back of the bevel-wheel m is secured a similar thread-carrying arm m', each of these arms having guides for the passage of a knitting-thread and each arm when at its innermost limit occupying a position within the limits of the annular dial D, as shown by the arm m' in Fig. 1, and when at its outermost limit occupying such position as to lay its thread into the notch of the thread-guide b, as represented by the arm i' in Fig. 1. When in the outermost position, therefore, the thread carried by the arm is fed to the needles and forms the stitches; but when the arm is in the innermost position the thread carried thereby is drawn inwardly beyond the needles and simply floats on the inner side of the knitted tube which is being produced. When it is desired, therefore, to change the thread which is being knitted to form the fabric, it is only necessary to effect a quick reversal in the position of the arms i' m' when the latter are in line with the radial slot d' in the dial, and such reversal is effected by the action of the lugs n' n^2 of the post n upon the tappet h^2 of the shaft h'. For instance, supposing that the parts are in the position shown in Fig. 2 and that the thread from the arm i' is being fed to the guide b, by lifting the post n until its lug n^2 is in the path of the tappet h^2 the latter will, as it is carried around with the rotating parts of the machine, strike said lug n^2 and will be partially turned thereby, this movement being transmitted to the shaft h' and bevel-wheel h, and thence to the bevel-wheels i and m and guide-arms i' and m', thereby effecting a reversal in the position of said arms, the tappet h^2 being so adjusted with relation to the radial slot d' of the dial D that the movement of the arms i' m' will always take place when said arms are in line with said slot.

In order to restore the arms to the position

shown in Fig. 1, the post n is lowered, so that its upper lug n' acts upon the tappet and restores the same to its former position.

By my invention I am enabled to produce a tubular-ribbed fabric knitted continuously and with unbroken threads. Hence by varying the color or shade of the different threads I am enabled to produce stripes running around the fabric, a result which, so far as I am aware, has never heretofore been accomplished with unbroken threads in tubular-ribbed work.

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

1. The combination, in a knitting-machine, of a needle-cylinder and its needles, an annular dial also provided with needles, and having a slot extending through the same from the inner to the outer edge, and means for actuating the needles of the cylinder and dial whereby one or more threads may be passed down on the inner side of the dial, substantially as specified.

2. The combination, in a knitting-machine, of a needle-cylinder and its needles, an annular dial also provided with needles, and having a slot extending through the same from the inner to the outer edge, means for actuating the needles of the cylinder and dial, and a movable thread-guide adapted to carry a thread through the slot of the dial from a position outwardly beyond the same to a position inwardly beyond it, substantially as specified.

3. The combination, in a knitting-machine, of a needle-cylinder and its needles, an annular dial also provided with needles, and having a radial slot, cam-cylinder having cams for actuating the cylinder-needles, a cam-plate having cams for actuating the dial-needles, and brackets on said cam-plate for supporting said dial, substantially as specified.

4. The combination, in a knitting-machine, of a needle-cylinder and its needles, an annular dial also provided with needles and having a radial slot, means for actuating the needles of the cylinder and dial, a series of thread-guides mounted so as to be movable inwardly through the slot of the dial to a position within the limits of said dial and so as to be moved outwardly through said slot to a position for feeding thread to the needles of the cylinder and dial, and means for so moving said thread-guides.

5. The combination in a knitting-machine, of the needle-cylinder and its needles, the cam-cylinder, an annular and radially-slotted dial and its needles, a radially-slotted cam-plate and its spindle, a structure connecting the cam-cylinder and the spindle of the dial cam-plate, and swinging thread-guides mounted upon said connecting structure and adapted to move through the slot of the dial either to an inoperative position within the dial or to an operative position beyond the same.

6. The combination of the swinging thread-guides, the bevel-wheels carrying the same, a bevel-wheel meshing with the wheels which carry the thread-guides, a shaft carrying said meshing bevel-wheel, a tappet on said shaft, and means for actuating said tappet so as to partially turn the shaft first in one direction and then in the opposite direction, 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:
JOS. H. KLEIN,
FRANK E. BECHTOLD.