

No. 676,585.

Patented June 18, 1901.

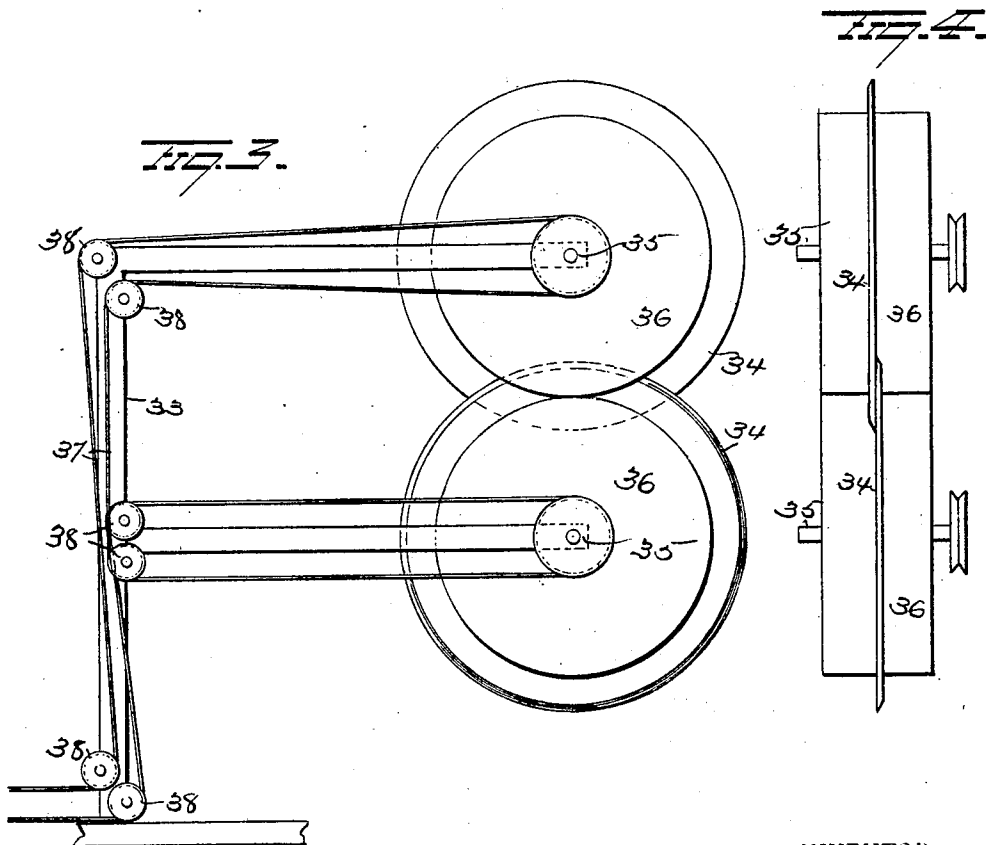
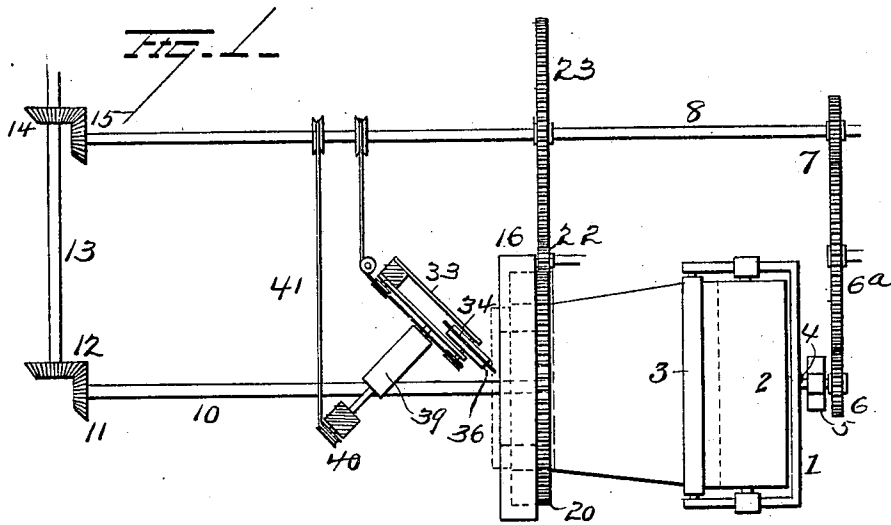
F. NEWELL.

APPARATUS FOR CUTTING FABRIC INTO BIAS WOVEN LENGTHS.

(Application filed Sept. 11, 1900.)

(No Model.)

2 Sheets--Sheet 1.



WITNESSES

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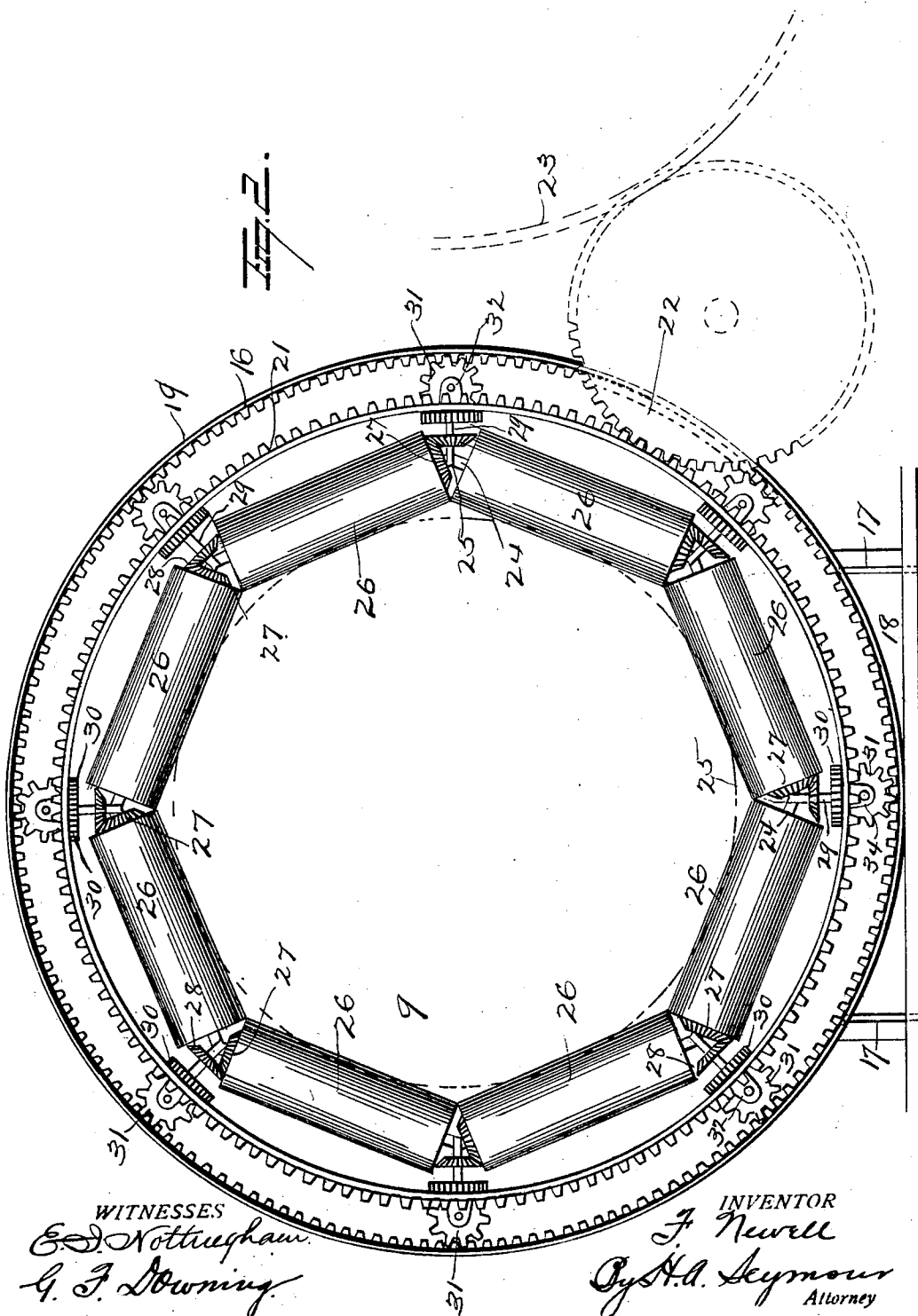
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2 Sheets—Sheet 2.

(No Model.)



UNITED STATES PATENT OFFICE.

FRANK NEWELL, OF LEONIA, NEW JERSEY, ASSIGNOR OF THREE-
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APPARATUS FOR CUTTING FABRIC INTO BIAS-WOVEN LENGTHS.

SPECIFICATION forming part of Letters Patent No. 676,585, dated June 18, 1901.

Application filed September 11, 1900. Serial No. 29,718. (No model.)

To all whom it may concern:

Be it known that I, FRANK NEWELL, a resident of Leonia, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Cutting Fabric into Bias-Woven Lengths; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved apparatus for cutting cloth into bias-woven lengths, the object of the invention being to provide an improved apparatus of this character which will automatically feed and cut cylindrically-woven knit or braided cloth or fabric in such manner as to produce a continuous or unpieced strip or length of cloth or fabric having bias weave, the length of which is only limited by the length of the cylindrical cloth or fabric.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view illustrating my improvements. Fig. 2 is an enlarged view illustrating the cloth spreading and feeding mechanism, and Figs. 3 and 4 are enlarged detail views of the cutters and their supporting mechanism.

1 represents a frame in which a spool 2 is mounted to rotate and on which cylindrically-woven cloth or fabric is wound, which latter when unwound from the spool is passed beneath a roller 3 in frame 1, so as to cause the cloth to feed always in the plane of the axis of spool 2. The frame 1 is provided with a rearwardly-extending shaft 4, revolubly mounted in a standard 5, and a gear-wheel 6 is secured on said shaft and connected by a gear-wheel 6^a with a gear-wheel 7 on the drive-shaft 8, so as to revolve the frame 1 and spool carried thereby at a predetermined rate of speed for a purpose hereinafter described.

A spreader 9 is disposed in front of spool 2 and is secured on a shaft 10, which latter is connected by gears 11 12, shaft 13, and gear 14, with gear 15 on the drive-shaft 8 to revolve the spreader at the same rate of speed as the frame 1, carrying the spool 2. The spreader 9 is a hollow metallic octagonal prism tapering to a cylinder with the same perimeter as the prism. The size of the prism is determined by the diameter of the cylindrical fabric to be cut. A ring 16 of considerably larger diameter than the spreader at its widest part surrounds the same and is supported and secured against rotation by rods 17, securing the same to the base-plate 18 of the apparatus, and said ring 16 is provided internally with gear-teeth 19, as shown. A second ring 20 of less diameter than ring 16 and of greater diameter than the spreader 9 surrounds the latter and is partially inclosed in the former, the forward end of ring 20, however, projecting beyond the ring 16 and made with external gear-teeth 21, connected by idle gear 22 with a gear 23 on drive-shaft 8 of same size as the diameter of ring 20, so as to revolve the ring 20 at the proper rate of speed. An octagonal frame 24 surrounds the octagonal face of the spreader and is connected at the angles of the octagonal frame to the ring 20 by rods 25, said frame 24 comprising a series of shafts on which are mounted rollers 26, adapted to hold the cloth against the spreader and feed it forward, as will now be explained. A beveled gear 27 is secured on one end of each roller 26 and meshes with bevel-gears 28 on sleeves 29, revolubly supported on rods 25. Gears 30 are also secured on sleeves 29 and mesh with gears 31, supported in brackets 32 on ring 20 and in mesh with the internal gear-teeth on ring 16. Hence it will be seen that when ring 20 is revolved it will, owing to the fact that ring 16 is stationary and the teeth thereon in mesh with gears 31, rotate the latter and through gears 30, sleeves 29, and gears 28 and 27 revolve rollers 26 and force the cloth forward on the spreader at the same time as

the latter is revolved by the mechanism heretofore explained. A frame 33, mounted at an angle to the line of movement of the cloth, is disposed in front of the spreader and has mounted thereon disk cutters 34, secured on shafts 35, located one above the other and held between rollers 36. The disk cutters 34 are sharpened on their periphery and overlap each other, so that when said cutters are revolved by belts 37, passed over idle pulleys 38 and connecting pulleys on shafts 35 with a pulley on main drive-shaft 8, they will cut the cloth or fabric diagonally, or, in other words, spirally, and a reel 39 is located at one side of the cutters 34 and operated by pulley 40 and belt 41 to wind the strip of bias fabric thereon as it is cut by the cutters.

The operation of my improvements is as follows: Cloth or fabric which is previously woven into cylindrical or tubular form is wound on the spool 2 and the end of the tubular fabric passed beneath roller 3 and onto spreader 9. The frame 1 and spreader are then revolved by the mechanism heretofore described, and the rollers 26 will engage the fabric and feed it forward simultaneously with its revolution to the cutters 34 to cut the same diagonally or spirally, the rollers 36 serving to hold the fabric taut while being cut and feeding the cut strip to the reel 39, on which it winds. It will thus be seen that as the threads comprising the weave of the tubular or cylindrical fabric run longitudinally and transversely when the tubular cloth is cut spirally a single length will be cut having the threads at an angle or diagonally, or, in other words, the weave will be bias.

Various slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In apparatus for producing fabric having bias weave, the combination of means for feeding a tube of fabric forwardly and simultaneously rotating it and means for reducing said tube to a single sheet of fabric having bias weave.

2. In an apparatus for producing fabric having bias weave, the combination of a diagonally-disposed cutter, and means for feeding the end of a tube of fabric to said cutter and simultaneously rotating said tube.

3. In an apparatus for producing fabric having bias weave, the combination of diagonally-disposed cutters, means for presenting the end of a tube of fabric between said cut-

ters, means for rotating the tube and means for feeding the tube, whereby the tube will be reduced to a single sheet having bias weave.

4. In apparatus for producing fabric having bias weave, the combination with diagonally-disposed cutters, of means for continuously feeding a fabric tube of indefinite length to said cutters and means for rotating said tube while it is being fed forward and cut, to reduce said tube to a sheet of fabric having bias weave.

5. In an apparatus for producing bias fabric, the combination of diagonally-disposed cutters, means for feeding a tube of fabric to said cutters and simultaneously rotating it, and means for receiving and rolling the single sheet of bias fabric thus produced.

6. In an apparatus for cutting a strip of bias fabric, the combination of a spreader adapted to hold a cylinder of cloth extended, rollers adapted to feed the cloth lengthwise, means adapted to revolve the spreader, rollers and cloth and a cutter adapted to cut the cylindrical cloth spirally.

7. In an apparatus for cutting a strip of bias fabric, the combination of a revolvable-mounted frame, a spool in said frame adapted to have cylindrical or tubular fabric wound thereon, a spreader adapted to receive the fabric from the spool and hold it in cylindrical form, rollers adapted to feed the cloth over the spreader, means for revolving said spreader and cloth thereon, a cutter adapted to cut the cylindrical cloth or fabric at an angle and a reel adapted to wind thereon the strip cut from the cylindrical cloth or fabric.

8. In an apparatus for cutting a strip of bias cloth or fabric, the combination of a revolvable frame, a spool carried thereby and on which tubular or cylindrical cloth or fabric is wound, a spreader adapted to receive the cloth from the spool and hold it in cylindrical form, rollers adapted to feed the cloth over the spreader, means for revolving the rollers, means for revolving the spreader and cloth thereon, and a cutter adapted to cut the cloth or fabric at an angle as it leaves the spreader.

9. In an apparatus for cutting a strip of bias cloth or fabric, the combination of a spreader tapering from an octagonal prism into a cylinder of the same perimeter, rollers adapted to force a cylinder of cloth or fabric over the spreader and move the cloth lengthwise, means for revolving the spreader, rollers and cloth and a cutter adapted to cut the cloth at an angle as it leaves the spreader.

10. In an apparatus for cutting a strip of bias cloth or fabric, the combination of a spreader, a ring surrounding the spreader and having internal gear-teeth, an inner ring surrounded by the first-mentioned ring and having external gear-teeth, a frame carried by the inner ring and revolvably supporting rollers bearing against the spreader, a gear-wheel

in mesh with the external gear-teeth on the
inner ring to rotate the latter, a chain of gear
operated by the internal gear-teeth on the
outer ring to rotate the rollers and feed the
5 cloth forward on the spreader, and means for
cutting the cylindrical cloth or fabric spirally.

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

FRANK NEWELL.

Witnesses:

C. L. NEWELL,
W. J. BOGERT.