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F. H. GROVE

CORD BAND BUILDING MACHINE

Filed Oct. 9, 1922

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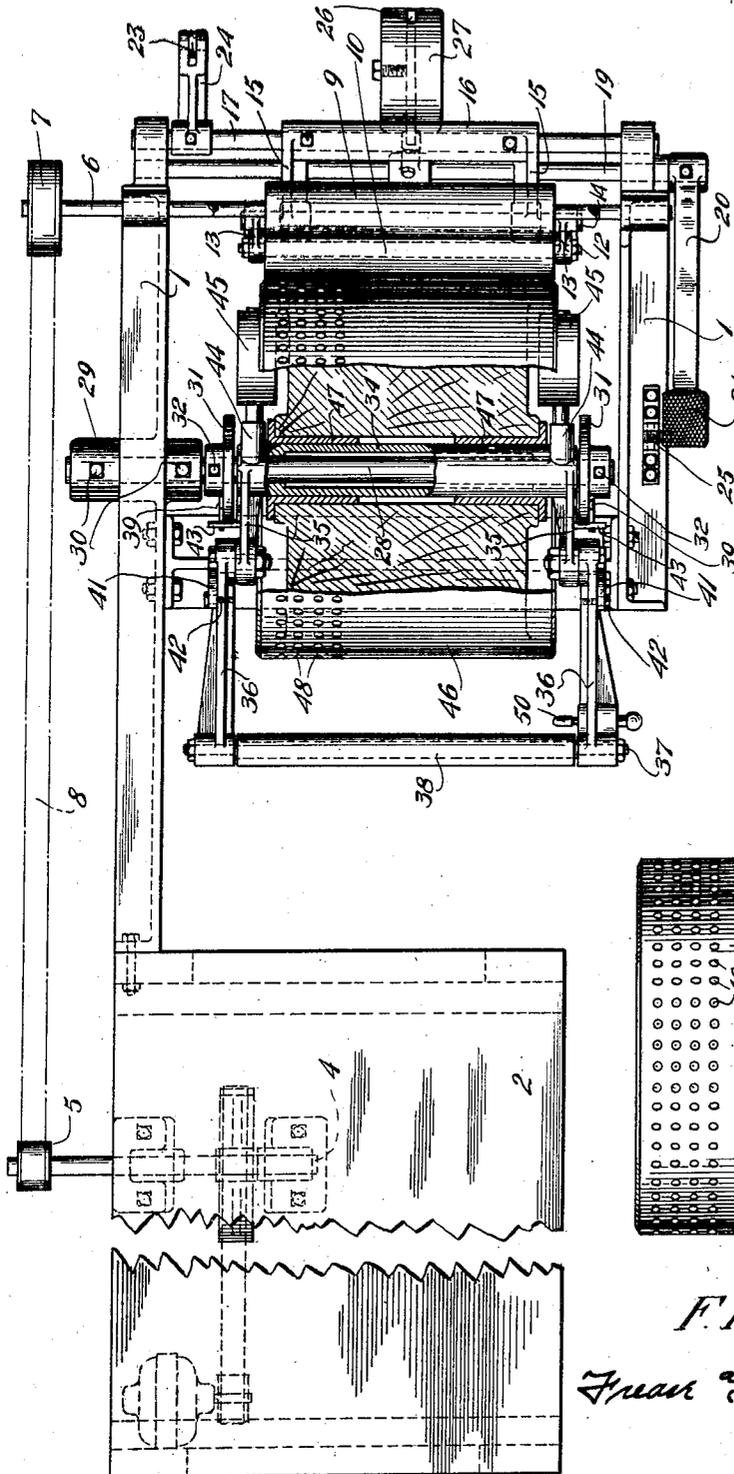
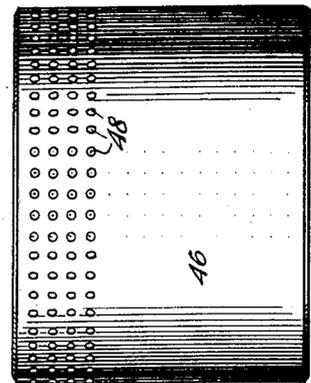


Fig. 1

Fig. 2



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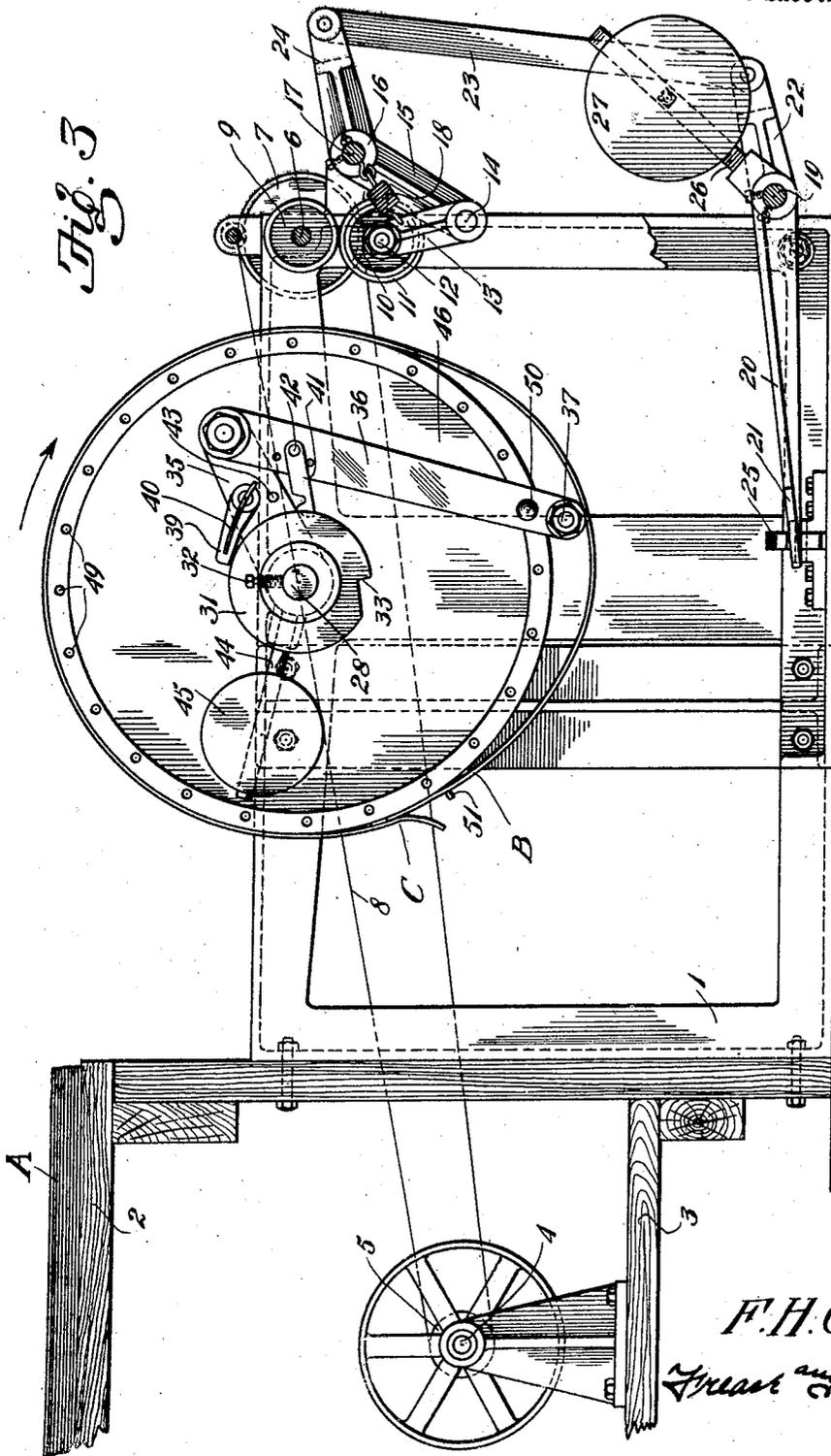
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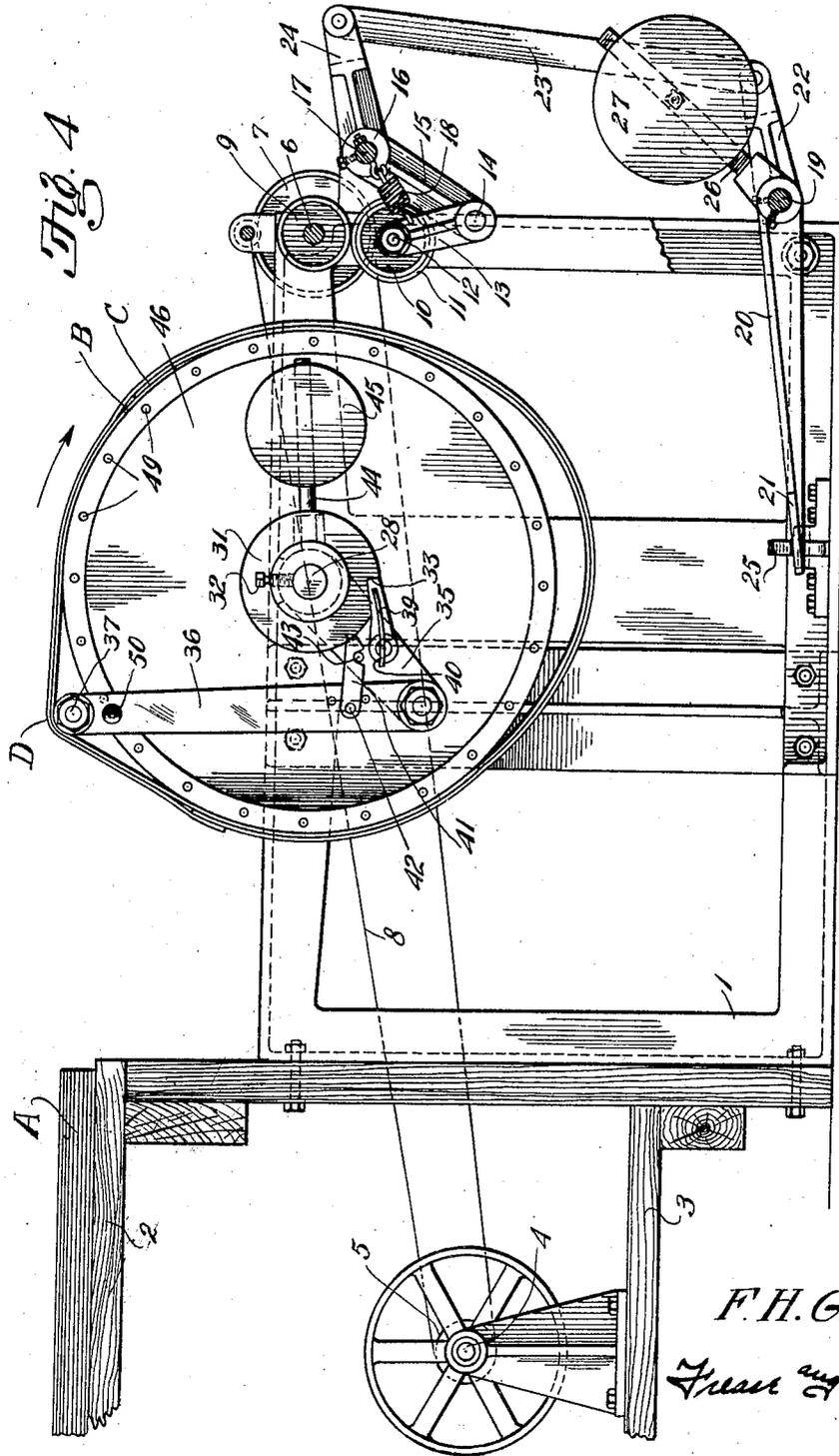
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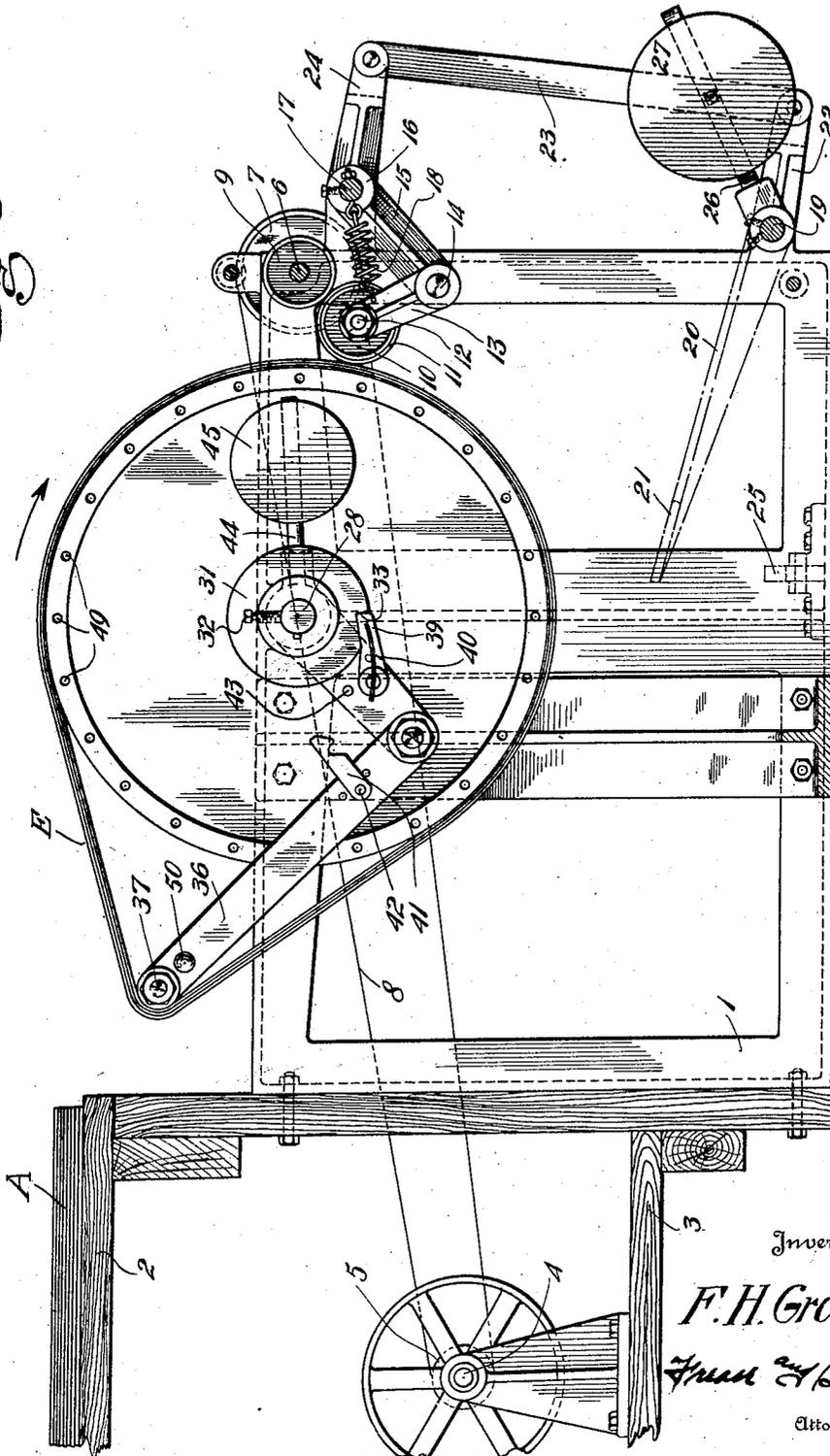
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CORD BAND BUILDING MACHINE

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4 Sheets-Sheet 4

Fig. 5



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UNITED STATES PATENT OFFICE.

FRANK H. GROVE, OF COLUMBIANA, OHIO.

CORD-BAND-BUILDING MACHINE.

Application filed October 9, 1922. Serial No. 593,340.

To all whom it may concern:

Be it known that I, FRANK H. GROVE, a citizen of the United States, residing at Columbiana, in the county of Columbiana and State of Ohio, have invented a new and useful Cord-Band-Building Machine, of which the following is a specification.

This invention relates to improvements in a machine for building cord bands such as are used in the manufacture of cord tires for automobiles and the like, and has for its objects to provide a machine including a drum around which strips of cord fabric are placed in laminations or layers, means being provided to co-operate with the drum to press the laminations or layers together, forming a continuous band of cord fabric of the desired proportions necessary for building a cord tire.

The above and other objects may be attained by constructing the machine in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a cord band building machine embodying the invention, parts being shown in section;

Fig. 2, an elevation of the drum;

Fig. 3, a side elevation of the machine showing the positions of the parts in the first operation, parts being broken away for the purpose of illustration;

Fig. 4, a similar view showing the positions of the parts in the second operation of building a cord band; and

Fig. 5, a similar view showing the positions of the parts in the final operation.

Similar numerals of reference indicate corresponding parts throughout the drawings.

The machine includes a frame indicated generally at 1, preferably of metal, to one side of which is attached a table 2 for the purpose of supporting the strips of cord fabric, as indicated at A, a shelf 3 being mounted beneath the table for supporting a motor or line shaft, as shown at 4, provided with a pulley 5 for supplying power to the machine.

A shaft 6 is journaled in suitable bearings in the frame 1 upon the opposite side from the shaft 4, and provided with a pulley 7 connected as by the belt 8 with the pulley 5. A roll 9 is fixed upon the shaft 6 within the frame 1 and is arranged to be engaged by a friction roll 10 covered with any suitable friction material as at 11, said friction

roll being mounted upon a shaft 12 carried upon the arms 13 hinged at their opposite ends as at 14 to the spaced rocker arms 15.

Said rocker arms are fixed upon a tubular member 16 rigidly mounted upon the rocker shaft 17, a coil spring 18 being connected at opposite ends to the rocker shaft 17 and to each of the arms 13, normally holding the roll 10 in engagement with the roll 9.

A rocker shaft 19 is journaled in suitable bearings in the lower portion of the frame 1 and a lever 20 is fixed at its forward extremity upon said rocker shaft, the rear portion of said lever being provided with a treadle 21.

A forwardly extending rock arm 22 is fixed upon the shaft 19 and is connected as by the link 23 with a similar rocker arm 24 fixed upon the shaft 17. The lever 20 is normally held in lowered position by a catch 25 which engages the treadle 21, thus holding the friction roll 10 in the position shown in Figs. 3 and 4.

For the purpose of throwing the friction roll 10 into the position shown in Fig. 5, when the catch 25 is released, a rocker arm 26 is fixed upon the rocker shaft 19 and provided with a counterweight 27, arranged to rock the shaft 19 and through the arms 22 and 24 and link 23 to rock the shaft 17 in a direction to move the friction roll 10 around the roll 9, as shown in Fig. 5.

A shaft 28 is fixed at one end in an elongated bearing 29 supported in the frame 1, set screws or the like, as shown at 30, being provided for preventing rotation of the shaft within the bearing. A pair of disks 31 are spaced upon the shaft 28 and fixed thereto as by set screws 32 or the like, each of said disks having a notch 33 in its periphery.

A tubular shaft 34 is journaled upon the shaft 28 and provided at opposite ends with the fixed arms 35, to the extremities of which are pivoted the links 36 connected at their free ends by a shaft 37 upon which is journaled a roll 38. A pawl 39 is pivoted upon each of the arms 35 and provided with a spring 40 for normally urging the same into the notch 33 of the adjacent disk 31. A hook 41 is pivoted as at 42 upon each of the links 36 and arranged to engage a stud 43 upon the adjacent arm 35.

An arm 44 is fixed near each end of the tubular shaft 34 and carries a counterweight 45. A drum 46 is provided with a

separable bushing 47 journaled upon the tubular shaft 34, thus permitting rotation of the drum upon the tubular shaft and independent rotation of the tubular shaft upon the shaft 28.

As best illustrated in Fig. 2, the periphery of the drum 46 is provided with a plurality of openings 48 for a purpose which will be described in the operation of the machine. Apertures 49 are provided at spaced intervals upon one end of the drum for engagement with the pin 50, which is carried upon one of the arms 36.

The operation of the machine to form a cord band is as follows; the strips of cord fabric of the proper length being piled upon the table 2, as indicated at A, the upper strip is pulled forward over the drum 46 and the forward edge thereof connected to the drum as by a pin 51, which is passed through the strip and into one of the openings 48 in the drum.

The other parts of the machine are in the position shown in Fig. 3 of the drawings, the pin 50 on the arm 36 being engaged with one of the apertures 49 on the drum, and the drum is then rotated by hand in the direction of the arrow, shown in Fig. 3, the arm 36 and roller 38 being carried around with the drum as the drum rotates. The strip of cord fabric as indicated at B in Fig. 3, is passed over the roller 38 upon the arms 36, and on to the periphery of the drum. The rear end of the strip of fabric is then pressed down over the forward end portion thereof, as shown at C in Fig. 3, sticking both ends of the fabric strip together and forming a continuous band of the same.

The next strip of cord fabric is then pulled from the table as indicated at D in Fig. 4, the end thereof being stuck upon the strip B. The pin 50 upon the arm 36 is then released from the aperture 49 in the drum and as the drum is rotated by hand, the roller 38 is held in fixed position by means of the hook 41 and pawl 39, while at the same time, the strip D is carried around the periphery of the drum, over the strip B and the ends of the strip D are pressed together as above described, with relation to the strip B.

If desired, a third strip of fabric may be attached to the band in the same manner. When the desired number of strips of fabric have been placed around the drum as above described, the hook 41 is released and the pawl 39 engaged in the notch 33 of the disk 31, the weight of the arms 36 and roller 38 causing the arms to swing rearward into the position shown in Fig. 5, stretching the cord band, as shown at E in said figure.

The catch 25 is then released from the treadle 21, the weight 27, rocking the rocker shaft 19 and rocker arm 22 into the posi-

tion shown in Fig. 5 and through the link 23, rocking the arm 24 and shaft 17 into position to cause the friction roller 10 to be moved into engagement with the cord band upon the drum.

The drum will thus be driven at high speed, through the friction roll 10 in the direction of the arrow in Fig. 5, the friction roll pressing the layers or laminations of the cord band tightly together as the same are rotated upon the drum and against the friction roll. This operation is continued until the several strips forming the cord band are tightly stuck together, forming a continuous cord band of a plurality of fabric strips, the band being then removed from the drum ready for use in completing a cord tire.

From the above description and the accompanying drawings, it will be evident that a simple and efficient machine is provided for quickly and easily forming cord bands of strips or laminations of cord fabric, the several strips making up the cord band being firmly pressed together by the operation of the machine to form a continuous band of the desired proportions.

I claim:—

1. A cord band building machine including a rotatable drum around which successive layers of cord fabric are arranged to be placed and pressure means co-operating with the drum for pressing the several layers of cord fabric together, and means for stretching the cord fabric away from the drum as the layers are pressed together.

2. A cord band building machine including a rotatable drum around which successive layers of cord fabric are arranged to be placed, a pressure roller co-operating with the drum for pressing the several layers of cord fabric together, and means for stretching the cord fabric away from the drum as the layers are pressed together.

3. A cord band building machine including a rotatable drum around which successive layers of cord fabric are arranged to be placed, a pressure roller arranged to co-operate with the drum for pressing the several layers of cord fabric together, means for holding the pressure roller out of engagement with the drum while the fabric is being placed thereon, and means for stretching the cord fabric away from the drum as the layers are pressed together.

4. A cord band building machine including a rotatable drum around which successive layers of cord fabric are arranged to be placed, pressure means co-operating with the drum for pressing the several layers of cord fabric together, and a pivoted arm provided with a roller for stretching the cord fabric away from the drum as the layers are pressed together.

5. A cord band building machine includ-

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ing a rotatable drum around which successive layers of cord fabric are arranged to be placed, pressure means co-operating with the drum for pressing the several layers of
5 cord fabric together, a pivoted arm provided with a roller located adjacent to the periphery of the drum, over which the fabric is arranged to be passed, and means for locking said arm to the drum.
10 6. A cord band building machine including a rotatable drum around which successive layers of cord fabric are arranged to be placed, pressure means co-operating with the drum for pressing the several layers of
15 cord fabric together, and a pivoted arm provided with a roller located adjacent to the

periphery of the drum, over which the fabric is arranged to be passed, and means for throwing said arm outward to stretch
20 the fabric.

7. A cord band building machine including a rotatable drum around which successive layers of cord fabric are arranged to be placed, pressure means co-operating with the drum for pressing the several layers of
25 cord fabric together, a pivoted arm provided with a roller for stretching the fabric away from the drum as the layers are pressed together, and means for holding the arm stationary.

FRANK H. GROVE.