The present invention relates to a friction-band calender with an endless band embracing one main cylinder and one drying cylinder, which band, when in use, presses against the main cylinder the fabric to be treated. Such calenders are known for the purpose of giving the fabric a pleasing, dull finish and a soft, full feel. In such known calenders the endless band, which may be made of felt, rubber or metal, is held back by the smaller auxiliary or drying cylinder. The result of this arrangement, however, is a lack of uniformity in operation, because the retention is not positive and the band tends to slip on the smaller cylinder.

In order to eliminate this drawback, the band, preferably made of felt, which embraces the main and the drying cylinder, is, in accordance with the invention, actuated by a second, likewise endless band, preferably made of felt, which embraces the drying cylinder and presses the first band against said drying cylinder.

It is now proposed to describe the invention in relation to the accompanying drawings in which a typical embodiment of the invention is illustrated.

Figure 1 is a side elevation of the device showing the fabric and endless band entrained over the main cylinder and the drying cylinder.

Fig. 2 is a side elevation showing two of the devices of this invention used in series; and

Fig. 3 is an elevation partly in section of a guide roller and an automatic controller thereon.

In the drawing, 1 designates the main cylinder and 2 the drying cylinder. The actuation of the main cylinder 1 is effected via a belt or chain 30 by a variable-speed drive unit 35. Said belt or chain 30 is taken round a sprocket wheel 31 which is fixed, with the drum 1, on the shaft 32 which is journaled for rotation in the frame G. An endless felt band 4 embraces the main cylinder 1 and is guided by means of the rollers 5 to the drying cylinder 2, which is likewise embraced by the felt band 4. The rollers 5 are likewise mounted in the frame G. From the drive shaft 6 of the drying cylinder 2 the drive is transmitted by means of a chain arrangement 7 to drawrollers 8 journaled in the frame G. A second felt band, indicated by the reference numeral 10, runs over the said draw rollers 8 and over the guide rollers 9, from the drawrollers onwards it embraces 1/2 to 3/4 of the circumference of the drying cylinder 2. The purpose of this second felt band is to press the first felt band against the drying cylinder 2. Through the design fact that both felt bands have a rough surface, faultless frictional drive of the first felt band 4 is ensured at all degrees of friction. Through the fact that the drive of the draw rollers 8 is derived from the drive arrangement for the drying cylinder 2, the speed of travel of the band 10 and the peripheral speed of the cylinder 2 are identical, notwithstanding the fact that peripheral speed of the drum 1 is greater than the speed of the band 4.

The frictional band calender described functions in the following manner:

The fabric 11, which is wound on a supply roller 12, passes via a guide-roller 13 and a steamer 24 to the intake station 15, whence it is drawn along by the felt band 4 and pressed against the surface of the main cylinder 1. According to the peripheral speeds of the main cylinder 1, more or less pronounced frictional drive is produced. The fabric is thereby given a dull finish and a soft, full feel. The fabric leaves the main cylinder 1 at 16 and passes via guide-rollers 17 to a trough 18 or to a take-up device.

If it is desired to apply friction equally to both sides of the fabric, the device illustrated and described in Fig. 1 is followed by a second device designed identically to the first but out through which the fabric passes in the reverse direction. These two devices are shown in Fig. 2, but not further described hereunder. Equivalent parts are provided with corresponding reference numerals. Finally the fabric is either taken up by the take-up device 19 or conducted to a forming machine 20.

One of the guide rollers 9 is, as shown in Fig. 3, journalled for rotation not in the frame G but in a bracket 22 at each end. Each of said brackets 22 is designed as a nut mounted on a screw spindle 23. Each of the roller is mounted for rotation, but not for axial displacement, on the frame G and is connected by a coupling 24 to a drive unit 25. The drive unit 25 comprises a motor included in an electrical circuit 26 controlled by a control. Such feelers 27 are arranged on opposite sides of the driving band 10. Each feeler 27 is disposed in close proximity to one of the lateral edges of the driving band 10. As soon as the band 10 for any reason shifts to some extent on the drum 2 or the rollers 8 and 9, it touches one of the feelers 27, which immediately closes the circuit 26. The corresponding drive unit 25 consequently begins to rotate the spindle 23 to which it is connected. As a result, the roller 9 is slightly lifted at one end. The band 10 immediately returns to its normal position, in which it no longer touches either of the two feelers 27. As a consequence, however, the circuit 26 recently closed is interrupted again and the drive unit 25 stops.

The drive units 25 arranged on both sides can also be set in operation simultaneously, thereby lifting or lowering the roller 9 to a position parallel to its normal position. In this way the band 10 can be slackened or tightened.

One of the rollers 5 is preferably vertically displaceable in fixed guides. The axle 26 of this roller is actuated upon at each end by a spring 37, said springs 37 keeping the felt band 4 under uniform tension (Fig. 1). It is also observable from the same figure that band 10 can be tightened in a similar manner. Instead of providing the tensioning device shown in Fig. 3, it is also possible for one of the rollers 9 to be actuated upon by spring 40, which case the axle 41 of said roller 9 is guided in a fixed guide 42.

The driving felt band may be actuated by a dependent or independent gearbox. It is also possible to drive one or more of the rollers 5.

What we claim is:

1. A fabric finishing device of the class described, comprising: a main cylinder; means for driving said main cylinder; a driving cylinder; means for driving said driving cylinder at a peripheral speed appreciably different from the peripheral speed of said main cylinder; a first endless band embracing a peripheral portion of said cylinders; and engaging said driving cylinder, the fabric to be finished being introduced between said first endless band and the periphery of said main cylinder; a second endless band engaging said driving cylinder; said first endless band exteriorly of said first endless band; means for driving said second endless band at a linear speed which is the same as the peripheral speed of said driving cylinder; and pressure means urging said second endless band into engagement with said first endless band and said first endless band into engagement with the periphery of said driving cylinder.

2. A device according to claim 1, in which said means for driving said second endless band comprises at least one power driven roller and a tension roller over which said second band passes, the peripheral speed of said power driven roller being the same as the peripheral speed of said driving cylinder, and resilient thrust means for imparting a lateral thrust to said tension roller.

3. A device according to claim 2 further comprising a sprocket wheel driven with said driving cylinder, a sprocket wheel fixed for rotation with said power driven roller and an endless chain interconnecting said sprocket wheels, whereby power for driving said power driven roller is supplied through said chain by said means for driving said driving cylinder.

4. A device according to claim 1, further comprising an
electric control for controlling the tension in at least one side of said second band, said electric control comprising: a roller having a laterally displaceable end portion over which a lateral portion of said second band passes; an electric motor; means connecting said motor to one end portion of said roller for causing lateral displacement of said end portion; an energizing circuit for said motor; switch means included in said energizing circuit; and feeler means controlling actuation of said switch means, said feeler means being adapted for engagement with said second band for actuation of said switch means in response to a change in tension in the portion of said second band which passes over said displaceable end portion of said roller for controlling operation of said motor.

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