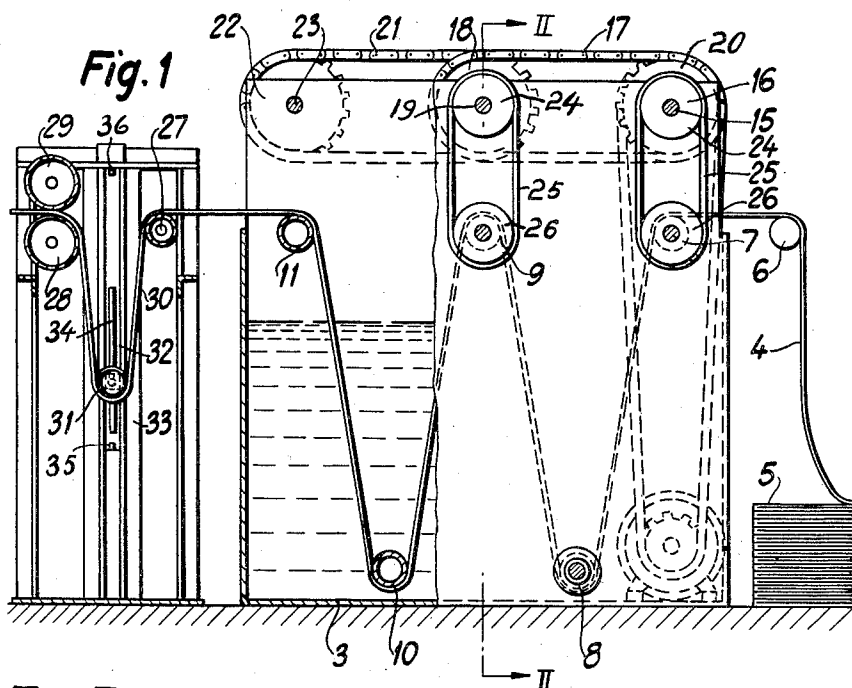
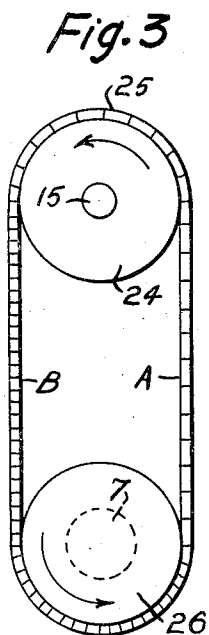
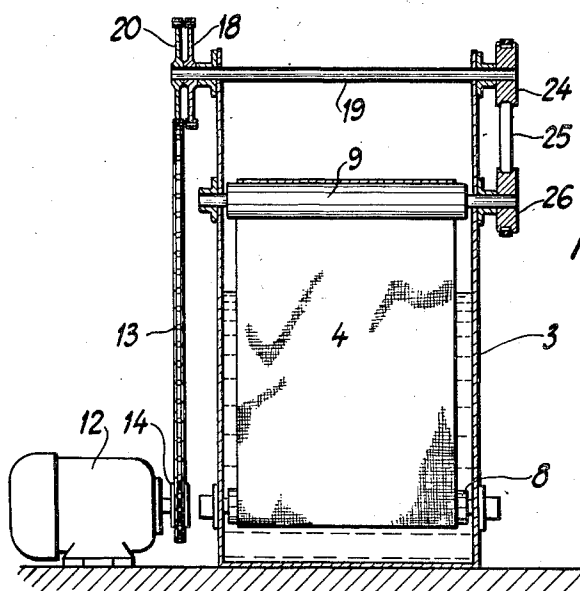


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N. D. LANDQVIST
 DEVICE FOR ADVANCING SHRINKABLE AND STRETCHABLE
 MATERIALS SUCH AS TEXTILE FABRICS
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INVENTOR
 Nils Daniel Landqvist
 BY *Richard J. Geier*
 ATTORNEYS

1

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DEVICE FOR ADVANCING SHRINKABLE AND STRETCHABLE MATERIALS SUCH AS TEXTILE FABRICS

Nils D. Landqvist, Rydboholm, Sweden, assignor to Rydboholms Aktiebolag, Rydboholm, Sweden, a corporation of Sweden

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1 Claim. (Cl. 271-2.2)

The present invention relates to a device for advancing textile fabrics and other materials subjected to a shrinking or stretching during treatment. Devices of this kind comprise a system of rollers, arranged in zigzag, some of said rollers being positively driven. In the manufacture of textiles such systems of rollers are generally used to advance the fabric through dyeing baths, washing baths and the like. When the fabric shrinks in the bath it is subjected to an undesirable drawing if all driven rollers are rotated at the same speed. Thus, in this case it would be desirable that the rollers be driven at gradually decreasing speed. The reverse will occur if the fabric is slackened or stretched during the treatment. On account of the small variations of speed here in question and due to different properties of different fabrics it is difficult to compensate for such variations by means of ordinary gears and therefore the rollers have hitherto generally been driven at the same speed in spite of the inconveniences arising therefrom.

According to the present invention the transmissions between the driving means and the driven rollers consist of pulleys and elastic belts which latter have such an elasticity that the speeds of rotation of the driven rollers will be dependent on the change in length of the material passing over said rollers. Hereby all undesirable tension in the material is avoided.

An embodiment of the device will be described in the following with reference to the accompanying drawing, in which Fig. 1 is a side view partly in section, while Fig. 2 shows a section along the line II-II of Fig. 1.

Figure 3 is a diagram illustrating the stretch of the belt.

3 designates a vessel containing a bath. Two opposite side walls of this vessel (the side plates in parallel to the plane of Fig. 1) extend upwardly to form supports for the roller shafts and the driving shafts. However, a separate stand may also be provided for that purpose. From a pile 5 the fabric 4 is led over a roller 6 outside the vessel and is then passed through the bath in the vessel over rollers 7, 8, 9, 10, 11 placed in zigzag. The three upper rollers 7, 9 and 11 are positively driven to feed the fabric. A motor 12 is arranged for that purpose. A chain 13 connects a chain wheel 14 on the motor shaft to a chain wheel on a shaft 15 placed above the roller 7. Another chain wheel 16 on the shaft 15 is by means of a chain 17 connected to a chain wheel 18 on a shaft 19 placed above the roller 9. Said shaft 19 has another chain wheel 20 (Fig. 2) which by means of a chain 21 is in driving connection with a chain wheel 22 on a shaft 23 mounted above the roller 11. Except for the chain wheel 14 on the motor shaft all chain wheels mentioned above are equal in size so that the shafts 15, 19 and 23 will be driven at the same speed. Of course, said shafts may also be coupled to the motor shaft in another way than that described above, and it is also possible to mount all the driving pulleys described in the following on a single shaft.

Pulleys 24 (Fig. 2) are mounted on the shafts 15, 19, 23 to positively drive pulleys 26 on the shafts of the rollers 7, 9 and 11 by means of thin and elastic belts 25 of rubber or similar material. The elastic belts are nor-

2

mally somewhat in tension between the pulleys. The device functions in such a manner that the rollers 7, 9 and 11 automatically adapt their speeds of rotation to the resistance offered by the fabric passing over them. If, for instance, the fabric shrinks somewhat between the rollers 9 and 11, the roller 11 will rotate at a correspondingly lower speed, which is made possible in that the one part of the elastic belt is stretched somewhat while the other belt part is to the same degree contracted.

Let it be assumed, by way of example, that the roller 7 is subjected to a braking force, for instance caused by a fabric 4 passing over the roller 7. In this case the driving part of the belt 25 will be more or less stretched depending upon the size of said braking force. Simultaneously, the other belt part will be correspondingly contracted and the result will be that the pulley 26 rotates at a lower speed than the pulley 24. The extension of the driving belt part begins where said belt part leaves the pulley 26 and the contraction of the belt occurs where the other belt part leaves the pulley 24. No slippage occurs around the pulleys.

From the roller 11 the fabric passes over a roller 27 outside the vessel 3 and is then pressed between two co-operating rollers 28, 29 driven at the same speed of rotation. The two rollers 28, 29 may be driven discontinuously or at varying speed, so that the fabric will always hang down in a loop 30 after the roller 27, whereby the driven rollers 28, 29 do not cause stretching of the fabric. The length of the loop is controlled by a device including a roller 31 freely resting in the loop. This device is essentially prior art and constitutes no part of the invention. The two shaft pivots of said roller 31 are journaled in blocks guided in vertical slots 32 in a stand 33. A rod element 34 is fixed to one of the blocks to extend vertically in the surrounding slot. When the roller 31 is lowered to a certain point the rod will contact a limit switch 35 placed at the bottom of the slot, so that a relay (not shown) will increase the speed of the motor driving the rollers 28, 29. On the other hand, when said rod contacts an upper limit switch 36 the speed of this driving motor will decrease.

The device according to the invention may also be used for other purposes than those described above, as for instance in the production and further treatment of webs of paper or plastics.

I claim:

A device for advancing shrinkable and stretchable fabrics subject to a treatment causing a change in length of said fabrics, said device comprising supports, a plurality of upper and lower rollers rotatably mounted in said supports for feeding a fabric during its treatment, driven pulleys firmly connected with at least some of said rollers, driving pulleys, means driving said driving pulleys at a constant speed, and thin endless elastic belts extending under tension between the driving pulleys and the driven pulleys for driving the driven pulleys at a speed depending upon the load of the fabric upon said driven pulleys, said belts being non-slippable and stretchable said load being dependent upon the change of length of said fabric while being fed by said rollers.

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