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H. W. METTLER

2,158,632

TEXTILE STRETCHING APPARATUS

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Fig. 1,

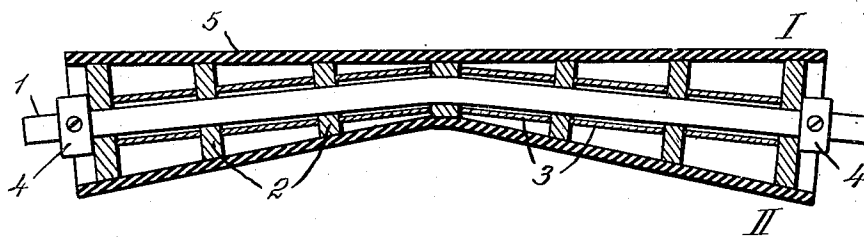


Fig. 2,

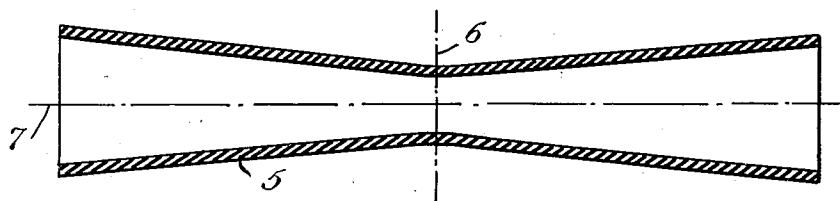


Fig. 3,

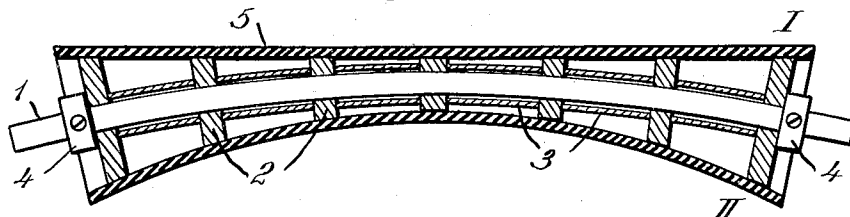
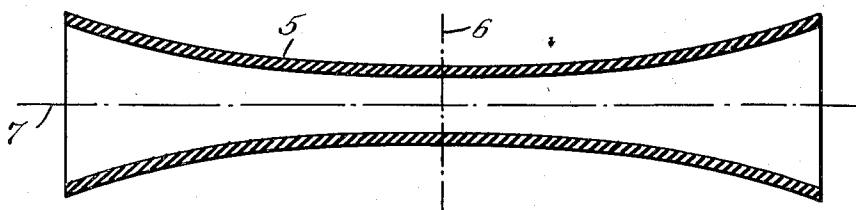


Fig. 4,



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TEXTILE STRETCHING APPARATUS

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5 Claims. (Cl. 26—63)

This invention relates to apparatus for the stretching of strips of textile material or the like, and particularly to dry or wet finishing machines having elastic roller casings.

5 The apparatus of the invention comprises in combination an elastic roller casing which has a relatively small diameter adjacent its center and increases in diameter toward each end, and roller means for supporting the roller casing rotatably mounted upon a fixed and bent or curved shaft. The roller casing is tubular in form and made of any suitable elastic material such, for example, as rubber, and the enlargement from the center in the direction of its ends may give it either a conical, or trumpet, or flared form. The roller means for supporting the casing preferably comprises a plurality of disks which are spaced along the shaft as by means of sleeves and are of such diameters as to fit snugly the inner surface of the casing.

15 The improved apparatus in accordance with the invention is of relatively small weight and is particularly suitable for use in wet stretching operations where the apparatus is placed in a bath.

In the accompanying drawing:

Fig. 1 is a view, partly in section, of one form of apparatus in accordance with the invention;

Fig. 2 is a longitudinal sectional view of a roller casing as constructed and adapted to be used on apparatus such as that shown in Fig. 1;

Fig. 3 is a view, partly in section, of another form of apparatus in accordance with the invention; and

Fig. 4 is a longitudinal sectional view of a roller casing as constructed and adapted to be used on apparatus such as that shown in Fig. 3.

As shown in the drawing, the shaft 1 may be bent in the form of a smooth curve or angularly bent and is fixedly mounted or supported at its ends in suitable members (not shown). The roller means comprises a plurality of disks 2 made of resinous, plastic or corrosion-resisting material, rotatably mounted upon the shaft 1 and held in spaced relation with respect to each other by means of the spacing sleeves 3. An adjusting ring 4 is fitted over the shaft at each end and fixed to the shaft for the purpose of maintaining the disks and spacing sleeves in proper assembled position.

55 The elastic roller casing 5 is tubular, circular in cross-section, made of flexible or elastic material, such as rubber, and is adapted to fit snugly over the assembled disks 3 which comprise the roller and to rotate therewith. The roller

casing 5, as assembled in the apparatus of Fig. 1, is made in the form of a double cone and is best shown in Fig. 2. As thus shown, in its constructed or initial form (non-assembled), it is in the form of a double cone, the minimum diameter of which is at the plane 6, has a longitudinal axis 7 and a maximum diameter at each end. This conically formed casing is particularly suitable for a construction and association of elements in which an angularly bent shaft is used.

The roller casing 5, as assembled in the apparatus of Fig. 3, flares outwardly in the direction of its ends in the form of a trumpet and is best shown in Fig. 4. As thus shown, in its constructed or initial form (non-assembled), it has a minimum diameter adjacent the plane 6, a longitudinal axis 7, and a maximum diameter at each end. This trumpet-formed casing is particularly suitable for a construction and association of elements in which a curved shaft is used. When the casing is rotated around the shaft, a line on the periphery, extending in the longitudinal direction of the casing, will assume varying degrees of bending or curvature. The shaft and casing may be so constructed that during one rotation, the line will curve at a minimum on one side as at I, and then move to a maximum curvature on the opposite side as at II. Under certain circumstances it is desirable to so bend or curve the shaft and form the roller casing that, at a definite point of the rotation, a line on the body of the roller casing will be a straight line in the longitudinal direction of the casing. The bending of curvature of the shaft, however, may be more pronounced so that the casing line changes its form from a definite positive curve or bend to a negative curve or bend.

The apparatus of the invention, particularly by reason of the exterior form of the roller casing, makes possible diversified stretching effects or width-maintaining effects on the material treated. The apparatus is particularly suitable for the stretching of fabrics that must be stretched more at the ends than at the middle. Such stretching effects may be attained by the use of roller casings having the desired exterior form or curvature. The stretching effect may also be changed by changing the position of the shaft with respect to the course of the strip of fabric and to the curvature at which the strip or fabric runs over the roller casing. In instances where the fabric would be subjected to too great a strain by being passed over a single roller, then several rollers may be arranged one behind

the other, thereby effecting the stretching of the fabric in steps or increments. This may also be done following the passage of the fabric through various treatment baths.

5 The apparatus constructed in accordance with the invention makes possible a simple adaptation of a roller to the required stretching conditions. The frictional resistance is lessened as a result of the low weight of the apparatus. The stretching or width-maintaining effect is also attained in 10 the case of loose (that is, tension-less) strips of fabric. The apparatus rotates almost without resistance.

I claim:

15 1. Apparatus for the stretching of textile fabric or the like which comprises in combination a fixed bent shaft, a plurality of spaced disks rotatably mounted on the shaft, spacing sleeves loosely mounted on the shaft having play or clearance with respect thereto for holding the disks 20 in spaced position, and a unitary elastic roller casing the diameter of which increases from its center in the direction of its ends mounted over and supported by the disks, said shaft disks and casing being so formed that, upon rotation of the 25 roller casing, the exterior surface of the casing assumes a changing form and is free to expand and contract uniformly throughout its length.

2. Apparatus according to claim 1 in which the roller casing is made of rubber and the disks of plastic material.

3. Apparatus according to claim 1 in which the elastic roller casing is made of rubber and is in 5 the form of a double cone.

4. Apparatus according to claim 1 in which the elastic roller casing is made of rubber and the ends are flared outwardly in the form of a trumpet. 10

5. Apparatus for the stretching of textile fabric or the like which comprises in combination a fixed bent shaft, means for supporting a roller casing comprising a plurality of spaced disks rotatably 15 mounted at their centers on the shaft, said disks progressively increasing in diameter, the disk mounted near the center of the shaft having the smallest diameter and the disks mounted at the ends of the shaft the greatest diameter, and a unitary elastic roller casing the diameter of which 20 increases from its center in the direction of its ends mounted over and supported by the disks, said shaft, disks and casing being so formed and arranged that upon rotation of the roller casing the exterior surface of the casing assumes a 25 changing form and expands and contracts uniformly throughout its length.

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