

No. 687,847.

Patented Dec. 3, 1901.

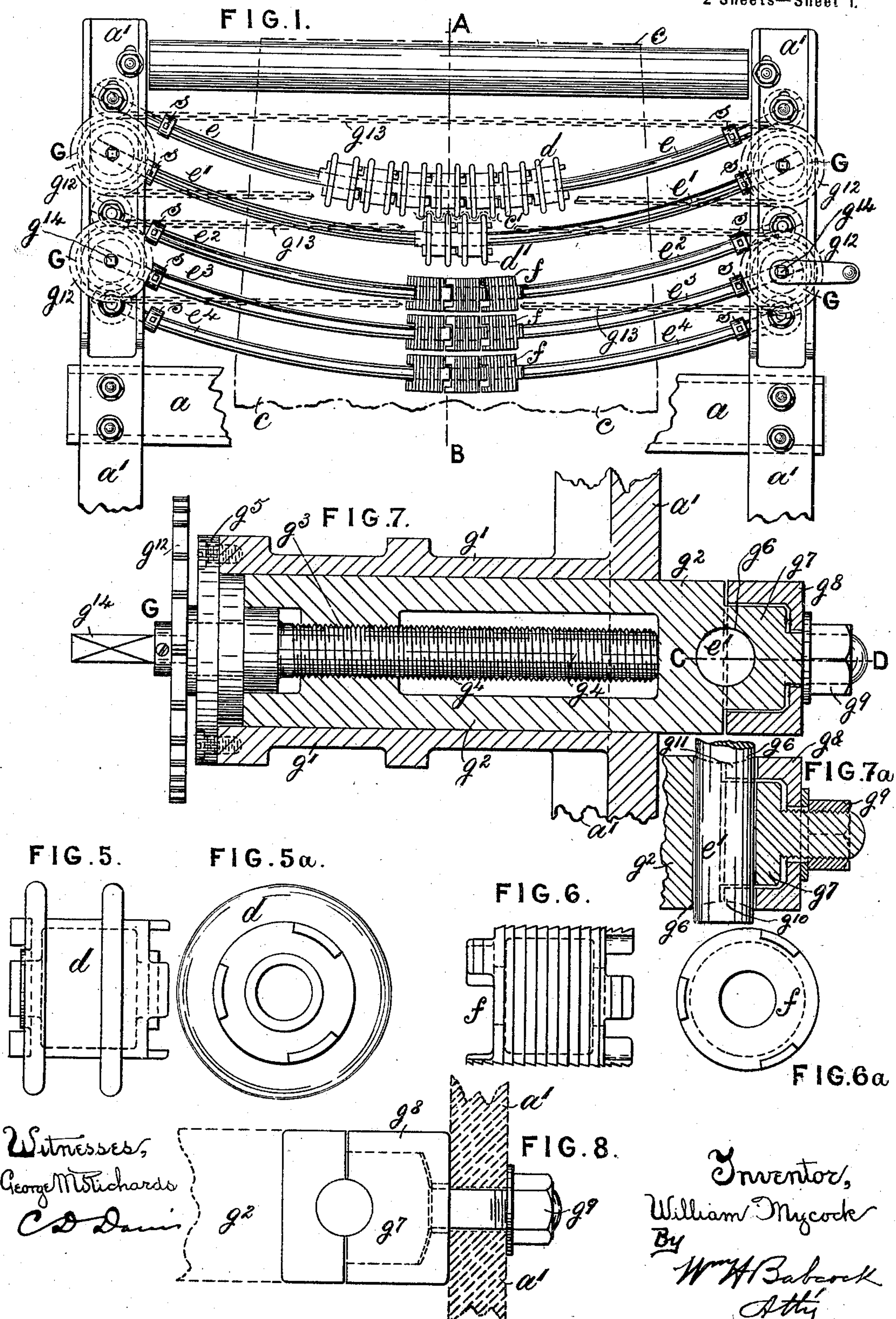
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APPARATUS FOR DISTENDING TEXTILE FABRICS.

(Application filed Aug. 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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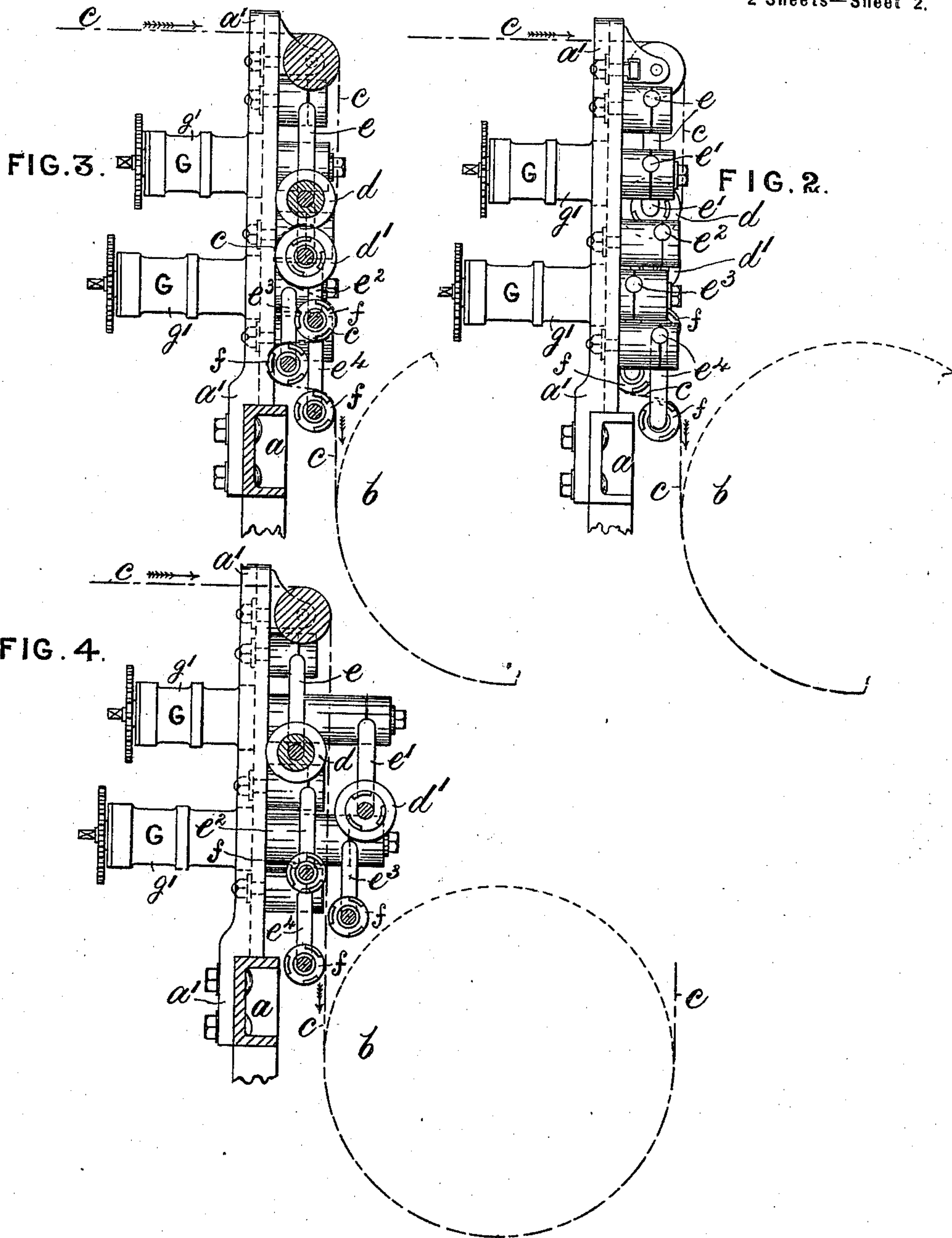
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(Application filed Aug. 6, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

WILLIAM MYCOCK, OF WHITWORTH, ENGLAND.

APPARATUS FOR DISTENDING TEXTILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 687,847, dated December 3, 1901.

Application filed August 6, 1901. Serial No. 71,070. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MYCOCK, a subject of the King of Great Britain and Ireland, and a resident of Spring Mill, Whitworth, near Rochdale, county of Lancaster, England, have invented certain new and useful Improvements in Apparatus for Distending Textile Fabrics, (for which I have filed application for British Patent No. 10,593, dated May 22, 1901;) 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.

This invention relates to improvements in apparatus for stretching or distending fabrics in the direction of their width. Its essential feature consists in the employment of a series of interlocking flanged or beaded rolls or bobbins rotating in a certain relation or engagement with another parallel series on bent supporting-shafts, in conjunction with other series of interlocking serrated rolls also rotating on parallel shafts.

Minor details of the invention relate to the means for setting and securing the parts in proper working relation to each other.

In the drawings, Figure 1 is a front elevation. Fig. 2 is an end elevation. Fig. 3 is a section on line A B of Fig. 1 when the parts are set so as to produce the maximum distention of the cloth. Fig. 4 is a corresponding view to Fig. 3, but with the parts set so that no stretching takes place. Figs. 5 and 5^a are respectively front and end elevations of the beaded rolls or bobbins. Figs. 6 and 6^a are respectively front and end elevations of the serrated rolls. Fig. 7 is a sectional elevation of the device by which the shafts carrying the rolls or bobbins are carried and adjusted. Fig. 7^a is a sectional plan of part of Fig. 7 on the line C D. Fig. 8 represents a modification of the shaft-carrier.

Referring first to Figs. 1, 2, and 3, these represent the stretching apparatus mounted on a transverse beam *a* at the front of a drying-machine. The cloth *c* passes through the stretching apparatus on its way to the first cylinder *b* of the drying-machine, which may be of the ordinary construction, consisting of a series of steam-heated cylinders suitable for drying the cloth and rendering perma-

nent the distention produced by the stretching apparatus. Mounted in carriers (to be hereinafter described) on uprights *a'* are a number of bent shafts *e e' e² e³ e⁴*. On each of the two upper shafts *e e'* are rotatably mounted a series of beaded or flanged rolls or bobbins *d d'*. (Shown to a larger scale in Figs. 5 and 5^a.) Each roll is provided with interlocking projections, so that the adjacent bobbins engage with and rotate together. The rolls extend from one end to the other of the working part of the bar; but in the drawings only a few are shown in the center of each shaft. The rolls are kept in engagement by collars *s* and set-screws. Each series of rolls, whether beaded or flanged, as on the two upper bent shafts, or serrated, as on the lower shafts, thus constitutes a sectional roller, each section of which rotates in a plane normal or radial to the part of the bent bar on which it is mounted.

The rolls *d* are so set that their beads or flanges alternate with those of *d'*, so that when over each other, as in Fig. 3, the cloth is pressed into an undulatory line, as shown at *c'* in Fig. 1, in the direction of its width. As the cloth is pulled through by the drag of the drying-machine the rolls *d* and *d'* are caused to rotate by the rolling contact or friction of the cloth. The combined effect of these oppositely-set beads and the outward motion produced by the radial action of the beads or flanges produces a considerable amount of stretching in the direction of the width. The amount will depend on the distance measured horizontally of the roll *d'* from the roll *d*. When set as in Fig. 4, for example, there will be no stretch. When set as in Fig. 3, the stretching effect will be at its maximum. Owing, however, to the comparatively small area of and the distance or pitch of the points of contact between the flanges or beads and the cloth the stretching is not quite uniform or evenly distributed, and the edges of the cloth having nothing to keep them flat curl over, and if thus passed to the drying-machine this curl would be converted into a flat fold. To still further stretch the cloth and at the same time to equalize the stretch already put in and to straighten out the curled edges, the cloth is next passed through over and between other series of

bobbins $f f f$. These are rotatably mounted on the bars $e^2 e^3 e^4$ and engage or interlock endwise with each other, as in the case of the upper rolls $d d'$; but instead of having flanges or beads alternating with each other each roll or section is formed with serrations, as shown in Fig. 6, the edges of which bearing or biting against the cloth press it outward toward the sides, equalizing the tension already put in by the beaded rolls $d d'$, and while straightening out the curl at the edges present the piece in a fully-distended and flat state to the drying-cylinder b . The rolls f are pulled around by the friction of the cloth, as in the case of the upper beaded rolls $d d'$. The stretching action of the serrated rolls depends on the amount of surface in contact and is increased or decreased by sliding the middle bar in or out in a horizontal direction. When in the position shown in Fig. 4, there is no stretching action. When the middle bar e^3 occupies the position shown in Fig. 3 with reference to the other two bars, the stretching action will be greatest.

The best position of the bars for any particular kind of cloth will be determined by the user and will depend on the amount of stretch it is desired to obtain and the strength of the cloth.

The upper bar e and the two outer bars $e^2 e^4$ preferably occupy a fixed position with relation to the frame of the machine.

To enable the shafts of the movable bars to be readily set in position and to permit of their being easily attached and removed for cleaning or other purposes, I employ as carriers for the bars which require to be slid horizontally the devices G . (Shown to a larger scale in Fig. 7.) An external socket g' , which may be conveniently cast integrally with one of the uprights a' , as shown in the drawings, or bolted thereto, is bored to receive a ram g^2 . The latter has an internal screw-thread at g^3 engaging with a screw-pin g^4 . The screw-pin is mounted in a bearing-box g^5 , attached to the outer end of the socket. A groove and split collar or a pin are provided to prevent longitudinal movement of the screw-pin g^4 , so that when it is rotated the ram g^2 is pushed out or drawn in, according to the direction of the rotation. The ram g^2 is bored at g^6 to receive the end of one of the roll-bars—say e' . At g^7 the ram is turned down to form a shoulder and to receive a cap g^8 , which is secured to the screwed end of the ram by a nut g^9 . The rim of the cap is recessed at $g^{10} g^{11}$, Fig. 7^a, with half-circles to take onto the roll-bar. When the nut g^9 is tightened, the end of the bar will be clamped by the rim of the cap g^8 in the recesses $g^{10} g^{11}$ against the ram. By slackening the nut g^9 the ends of the bar e' can be easily slid in and out of the hole g^6 . To obtain even stretching, perfect parallelism in the horizontal setting of the ends of the roll-bars is necessary. To secure this, the heads of the screw-pins g^{14} are provided with chain-wheels g^{12} , and the

two chain-wheels of each roll-bar are connected by pitch-chains g^{13} , Fig. 1. If now one screw-pin is turned—say by a handle on the square end g^{14} —its fellow screw-pin will also be turned to a like extent and the roll-bar will preserve its parallelism to the fixed roll-bars.

Fig. 8 shows a modification of the device already described with reference to Figs. 7 and 7^a for the purpose of holding the fixed roll-bars. The dotted part g^2 represents the ram g^2 of Fig. 7, of which, however, only the end shouldered part g^7 is used. This and the cap g^8 are constructed to clamp the bar in the manner already described. The screwed end of the part g^7 is, however, made somewhat longer, so as to extend through the upright a' , and the nut g^9 is used not only to pinch the bar in its clamp, but also to secure the clamp itself to the upright a' .

Although in the drawings a particular number of bars with rolls of each construction are shown, the number may be varied to suit various requirements. It may, for example, be found expedient to use three or more bars carrying beaded or flanged rolls or a greater or less number of bars with serrated rolls, so that the stretching process may proceed more gradually and be produced by a greater number of rolls or more abruptly, according to the treatment any particular kind of cloth will endure or the effect it is desired to produce.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of interlocking flanged rolls and bent bars on which the said rolls are adapted to rotate radially to the curvature of the said bars with carriers for holding the said bars, some of said carriers being fixed and the others movable, and sliding holders adapted to be horizontally adjusted in pairs in relation to the fixed carriers and having the said movable carriers mounted in them substantially as set forth.

2. The combination of two or more stretching-bars consisting of a number of interlocking flanged rolls with bent shafts in which the said rolls are mounted to alternate the flanges of one roll with those of another, means for adjusting the distance of the two shafts from each other, two or more additional similarly-mounted and adjustable bent stretching-bars and a number of interlocking serrated rolls substantially as and for the purpose set forth.

3. The combination of bent bars having interlocking sectional stretching-rolls mounted thereon fixed clamp-carriers for some of the bars and sliding clamp-carriers operated by screw-pins connected in pairs for holding and setting others of the bars substantially as and for the purpose set forth and shown.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM MYCOCK.

Witnesses:

JOHN HALL,
ALFRED T. WHITELOW.