

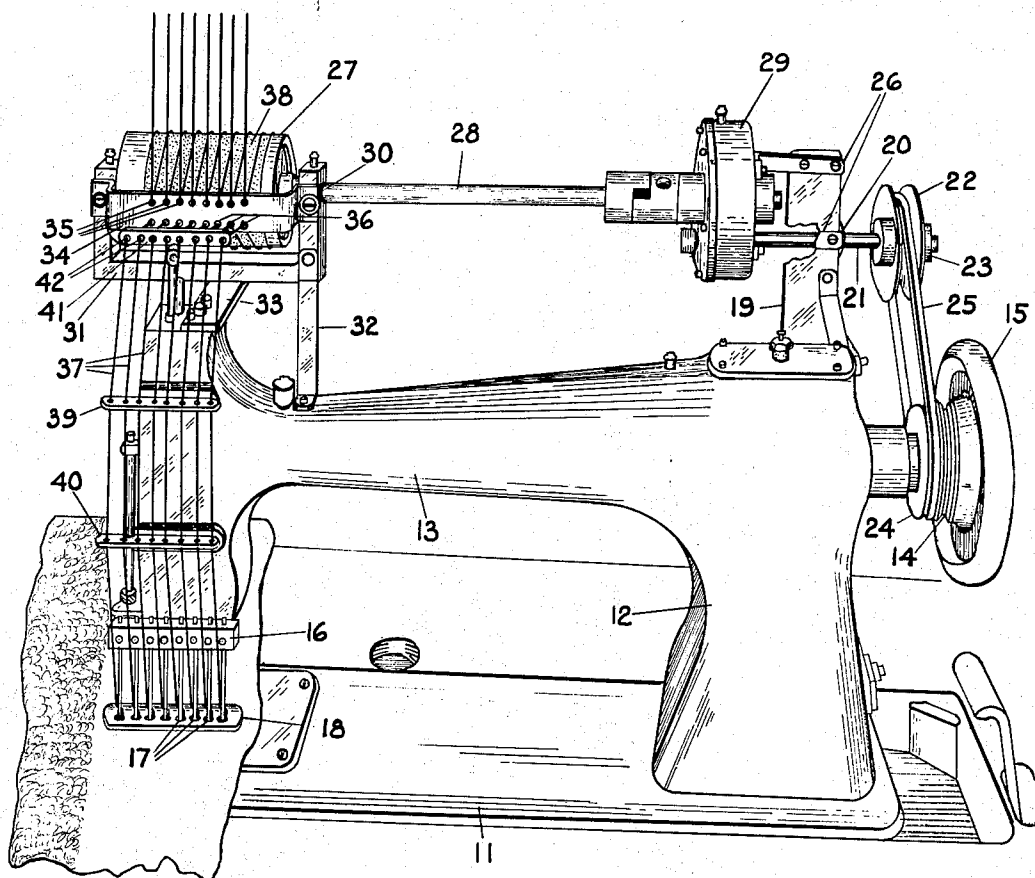
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UNIFORM TENSION FEEDING MECHANISM

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UNIFORM TENSION FEEDING MECHANISM

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This invention relates to multiple thread sewing machines and more specifically to a uniform tension feeding mechanism for chenille sewing machines.

In the manufacture of chenille material, a plurality of separate strands of yarn are fed for sewing thereof simultaneously to a base web of material. In order to obtain the most satisfactory results, it is necessary that the tension on each of these strands of yarn be uniform with the other strands at all times during the sewing operation. Previously, attempts have been made to solve this problem by the use of individually adjustable spring tension discs through each of which passes a separate strand. Obviously, it is very difficult, if not impossible, to get all of these tension discs adjusted alike, with the consequent result of much loss in time in adjustment and irregularity in the finished sewn product.

It is therefore an object of this invention to provide a mechanism for uniformly tensioning all of the strands of yarn in a multiple strand sewing machine.

A further object is to provide a simple and effective feeding and tensioning device for use on multiple strand sewing machines which will maintain a uniform tension on all of the threads.

Still a further object is the provision of a multiple strand feeding and tensioning device which is simple, and requires very little time to adjust.

Still other objects and advantages of the invention will be apparent to those skilled in the art from the following detailed description in conjunction with the accompanying drawing, in which,

The single figure illustrates a view in perspective of a preferred embodiment of my invention in use on a small chenille sewing machine.

Referring to the drawing, the chenille machine includes a base 11 which has mounted thereon a frame comprising an upright portion 12 and an arm 13 extending as a continuation thereof. Through the arm 13 extends the main shaft (not shown) which may be driven by suitable means, as by a motor (not shown), through pulley 14 adjacent hand wheel 15. Suitably supported in the outer end of arm 13 for vertical reciprocal movement upon the rotation of the main shaft, in a manner commonly known and used in the art, is a transverse bar 16 in which are mounted a plurality of needles 17. Any suitable presser bar mechanism 18 and material feeding mechanism (not shown) may be provided as desired, such being common in the art and forming no part of this invention. All of the foregoing described construction is commonly known in the art, and will thus not be further described in detail, my invention being hereinafter described in detail in conjunction therewith.

Secured to the top of frame upright 12 is a bracket support 19 having secured thereon a bearing 20 in which is rotatably mounted a horizontally disposed shaft 21. Mounted on the end of shaft 21 is a variable diameter pulley 22, having an adjustment collar 23 associated therewith. The diameter of the pulley 22 may be varied by adjustment of the collar 23, so that the pulley flanges

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can be moved together or apart. A second pulley 24 on the main shaft is connected through a belt 25 to pulley 22 for driving of shaft 21. With pulley 22, variable speed drive of shaft 21 relative to the speed of the main shaft may be obtained.

A yarn feed roller 27 is suitably secured to a shaft 28 which is driven by pulley 22 through shaft 21 and reduction gearing in box 29. Gear box 29 may be mounted as shown through the use of angle brackets 26 suitably secured onto bracket support 19. Shaft 28 is supported at each end of roller 27 in bearings 30 mounted in the legs of U-shaped bracket 31, which is secured to the arm 13 by angle brackets 32 and 33.

Fixedly mounted on U-shaped bracket 31 is a thread guide plate 34 having two parallel sets of guide holes 35 and 36 formed therein for the guiding of strands of yarn 37 around the feed roller 27. It will be apparent that, if desired, in lieu of the single plate 34, two separate spaced apart plates 34 and 41, each having one set of guide holes 35 and 42 therein, might conveniently be used, or the two plates 34 and 41 can be used with three sets of guide holes 35, 36 and 42. In order to assure substantially no slippage between the yarn and the roller 27, the roller has a covering of emery cloth 38 or other suitable friction material secured therearound.

In operation, the desired number of strands of yarn 37 are fed from supply spools (not shown) suitably mounted above or to the side of the feed roller 27. From the spools, each strand 37 passes through its associated guide hole 35 in the plate 34, around roller 27 a distance of approximately two-thirds of the circumference thereof, through associated guide hole 36, through associated guide hole 42 in the plate 41 if provided, and thence through associated guide holes in a pair of guides 39 and 40, and finally to its associated needle 17. Guides 39 and 40 may be mounted in fixed stationary relation in any suitable manner on the arm 13, as shown.

The reduction gearing 29 provides approximately the correct feed of the strands of yarn 37 and, by the correct adjustment of adjustable pulley 22, the desired tension on the strands may be attained and the proper rate of feed maintained in order to keep this tension. For large variations in rates of feed, different sized rollers 27 may be used, with pulley 22 again being used for fine adjustment of feed and tension as described above. It will readily be apparent to those skilled in the art that the simultaneous feed of all of the separate strands 37 over friction feed rollers 27 provides a uniform feed and tension in each of the strands.

It will thus be seen that the present invention greatly reduces the amount of labor previously required in setting and maintaining the tension on chenille and similar type machines. Further, with the present invention, the yarn is uniformly fed with uniform tension on each strand of yarn, the result being a much more satisfactory product therefrom than with previous machines.

Many modifications will be apparent to those skilled in the art without departing from the spirit of this invention, and it is understood that the invention is not to be limited to the structure shown herein, except as defined in the appended claims.

What is claimed is:

1. In a multiple thread sewing machine having a frame and a plurality of sewing needles and drive means for reciprocating said needles, a thread feeding and tensioning mechanism comprising a feed roller rotatably mounted on said frame in spaced relation to said needles, means for driving said roller, guide means mounted adjacent said roller for guiding multiple threads substantially parallel to each other and in contact with the surface of the roller for a distance greater than one-half the circumference of the roller, said guide means

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having a first row of apertures formed therein parallel to the axis of the roller for guiding separate threads approaching the roller, and a second row of apertures formed in said guide means parallel to the axis of the roller for guiding separate threads leaving the roller, the apertures in the first row lying substantially in planes with apertures in the second row, said planes being normal to the axis of the roller, and the first row of apertures being spaced apart from the second row a distance less than the diameter of the roller.

2. The invention according to claim 1 in which each row of apertures is equidistant from the axis of the roller.

3. The invention according to claim 1 in which second guide means are supported on the opposite side of the first guide means from the roller for changing the direction of the threads passing through the second row of apertures in the first guide means.

4. The invention according to claim 3 in which the

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second guide means comprises a row of apertures parallel to the axis of the roller.

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