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BEATER MECHANISM FOR BRAIDING MACHINES

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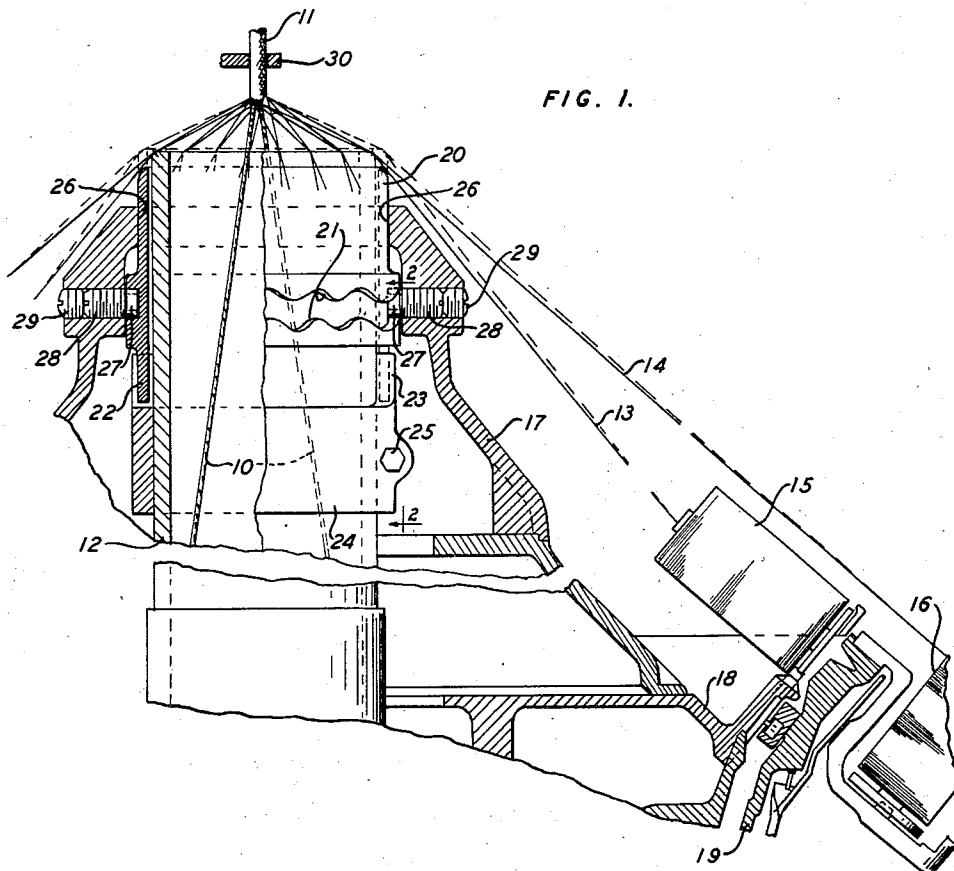
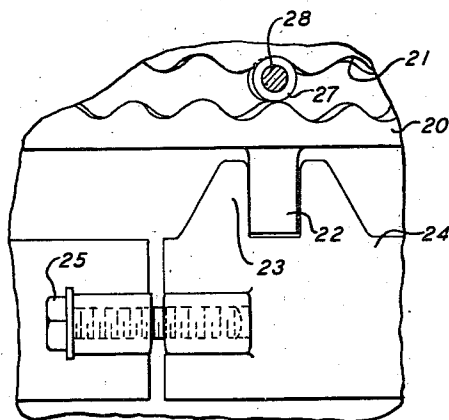


FIG. 2.



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BEATER MECHANISM FOR BRAIDING
MACHINES

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3 Claims. (Cl. 96—17)

This invention relates to an improved beating device, and more particularly to an improved thread beating device for use in braiding machines.

5 An object of the present invention is to provide a simplified and improved positively actuated quiet operating thread beater.

In order to attain these objects a non-rotatable and reciprocable sleeve for intermittently engaging the threads is mounted on a common 10 type of braiding machine intermediate a central column and a braider head rotatable therearound. A plurality of rollers spaced on the braider head project into an endless peripheral slot formed in the sleeve and cooperate therewith to move the sleeve axially of the central 15 column for continuously engaging the sleeve with the converging threads and retracting it therefrom.

20 Other features of the invention will become more apparent from the following detailed description, reference being had to the accompanying drawing, wherein

Fig. 1 is a fragmentary elevational view of a 25 braiding machine of a well known type embodying the features of the invention, and

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1.

Referring to the drawing wherein similar characters of reference are utilized to indicate corresponding parts throughout the several views, it will be observed in a familiar type of braiding machine that the strands 10 to be en- 30 veloped within a cord 11 are projected through the bore of a central column 12. The threads 13 and 14 forming the braided fabric are furnished from the supplies 15 and 16 respectively, which are arranged on a braider head 17 of a 35 usual type with the axes of the supplies 15 normal to the axes of the supplies 16, and the axes of all inclined with respect to the axis of the central column. The braider head comprises a circular driver plate 18 supporting the supplies 15 and revolving around the central column, and 40 a circular track plate 19 supporting the supplies 16 and revolving around the driver plate in a direction opposite to the rotation thereof. The actuation of the plates and the guiding of the threads are accomplished in the conventional 45 manner and are not shown. The threads, in passing between the supplies and the point where they converge to form the fabric cross before and after bearing upon the top edge of the central column. It is obvious, then, that the occurrence 50 of a knot in one of the threads would somewhat

retard its movement over the edge of the column and across the other threads thereby deflecting them from a predetermined path of travel resulting in a lack of uniformity in the braided fabric. In order to facilitate the travel of the 60 knotted threads and to eliminate the drag occasioned by the crossing threads, a vibrating beater is employed for continuously shaking loose the dragging threads and the knots from engagement with the other threads and the edge 65 of the column.

The beater consists of a sleeve 20 formed with an endless peripheral cam slot 21 and having a rounded upper edge and a bore of sufficient diameter to fit over the central column without 70 bearing thereupon. The sleeve is rendered non-rotatable by oppositely extending portions 22 formed on a lower edge thereof and projecting into similarly disposed recessed extensions 23 on the edge of a collar 24 rigidly fastened to the 75 column by a bolt 25 connecting the ends thereof. The sleeve is positioned intermediate the column and the braider head so that it is movable axially of the column under the guidance of a bearing contact 26 between the sleeve and the 80 upper portion of the braider head.

A plurality of cam rollers 27 adjustably and rotatably mounted upon screws 28 project radially from an internal circumference of the braider head to engage the cam slot in the sleeve whereby 85 a rotation of the braider head causes the rollers, in cooperation with the cam slot, to reciprocate the sleeve continuously while the engagement of the collar and the sleeve prevents the rotation of the latter. The rollers are arranged on the 90 braider head so that each roller simultaneously engages a similar portion of the curvature of the cam slot in order to transmit a uniform movement to the sleeve and to insure an even wear of the contacting members. The number of im- 95 pulses of the sleeve for each revolution of the braider head can be readily determined by selecting the curvature of the cam slot—in this case there are twelve impulses for each revolution of the braider head. The rollers are main- 100 tained in position by lock screws 29 bearing upon the screws 28.

In operation, as the plates carrying the thread supplies rotate in opposite directions around the central column, the threads from both sets of 105 supplies are drawn across the edge of the central column to converge for interlacing into the braided fabric approximately halfway between the top of the column and the support 30 through which the cord projects. As the upper 110

set of threads 14 from the supplies 16 pass over and bear upon the lower set of threads 13 from the supplies 15, the cam rollers of the rotating braider head cooperate with the cam slot of the sleeve to cause an upward movement of the sleeve whereby the rounded upper edge thereof engages the threads adjacent to their crossing point on the edge of the column and lifts them from contact therewith. A further rotation of the braider head then causes a downward movement of the sleeve thereby retracting it from engagement with the threads and replacing the threads again in contact with the edge of the column. It will be observed that the threads 13, of which there are twelve, will cross the threads 14, also twelve in number, twenty four times during one revolution of the machine since the sets of threads are revolving in opposite directions at the same time and each thread 14 passes over and under each pair of threads 13 during the single revolution of the machine. Therefore, in order to engage every other crossing of the threads on the edge of the column, it will be necessary to cause twelve upward movements of the sleeve during each revolution of the machine. As the thread 14 passes under and over each pair of threads 13 on the edge of the column there may be a tendency for the threads 14 to drag upon the threads 13, thereby deflecting the latter from a predetermined path. In addition, if one thread were knotted, it is obvious that the edge of the column and the other threads might retard the passage of the knot, thusly causing a deflection of all the threads engaged therewith. To obviate entanglements and to facilitate the travel of the threads, the sleeve is reciprocated so as to lift the threads upon the occasion of every other crossing on the edge of the column, and it will be understood, of course, such threads not lifted when crossing on the edge of the column will be raised and stirred immediately before and after contact with the column thereby insuring a thorough beating of all threads to obtain their proper relation for interlacing into the braided fabric.

In Fig. 1 the full lines show the beater in its lower position with the threads crossing and bearing upon the edge of the column, and the dotted lines indicate the beater in its uppermost position with the threads raised above the column.

It will be observed, further, that the continuous raising and lowering of the threads reduces

the possibility of breakages, entanglements, and practically eliminates the tendency of the crossing threads to drag upon each other, thusly maintaining a predetermined path of travel in order to effect a uniform incorporation thereof into the fabric of the braid.

It has been found that the adaptation of this device is equally effective for various speeds of braiding machines and, further, that a substantial increase in the efficiency of the braider is obtained since the breakage and wear of the beater parts are negligible.

While details of the construction have been disclosed for the purpose of fully explaining the invention, it will be understood that these are capable of other modifications within the scope of the appended claims.

What is claimed is:

1. A braiding machine having a rotatable braider head, a non-rotatable sleeve positioned within and concentric with the head and formed with an endless peripheral cam slot, and a roller affixed to the braider head projecting into the cam slot to cooperate therewith for positively moving the sleeve into engagement with the threads and positively retracting it therefrom.

2. In a beater device for a braiding machine having a central column with a braider head rotatable therearound comprising a sleeve formed with an endless peripheral cam slot and oppositely projecting extensions, a collar rigidly secured to the column and formed with oppositely projecting recessed extensions for receiving the extensions of the sleeve to prevent the rotation thereof, and a plurality of rollers projecting radially of the braider head engaging the cam slot for cooperation therewith to reciprocate the sleeve intermittently.

3. In a beater device for a braiding machine having a central column with a braider head rotatable therearound comprising an annular member mounted intermediate the column and the braider head and formed with an endless external recess and oppositely projecting extensions, a recessed means rigidly secured to the column for receiving the extensions of the member to retard the rotation thereof, and means affixed to the braider head for engaging the the recess of the member and cooperating therewith to reciprocate the member continuously.

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