

Dec. 1, 1925.

1,564,162

O. C. WIESE

BEAM TENSION DEVICE FOR KNITTING MACHINES

Filed April 10, 1925

2 Sheets-Sheet 1

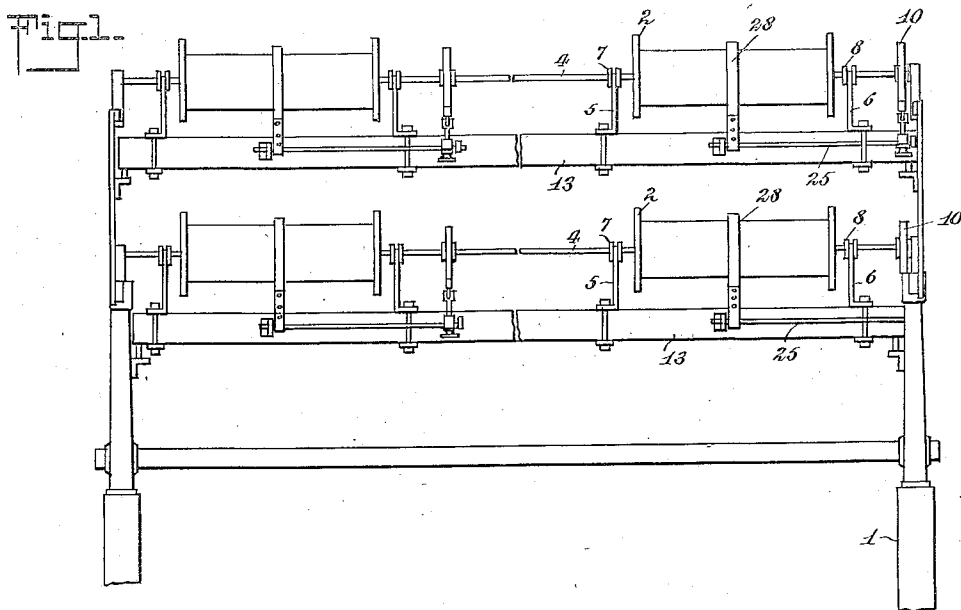
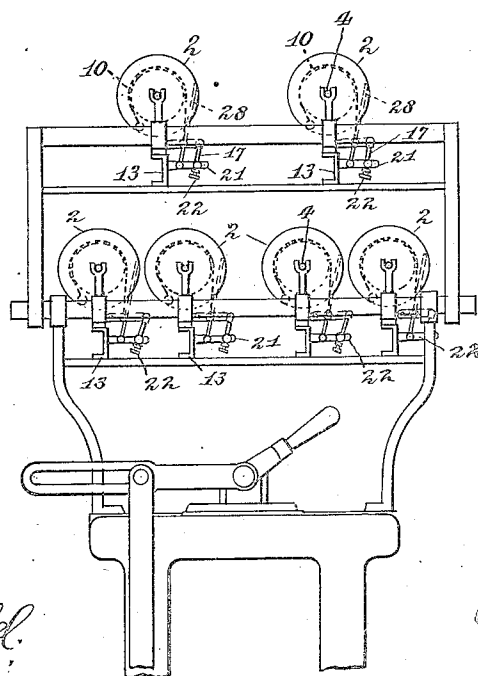


Fig. 2.



WITNESSES

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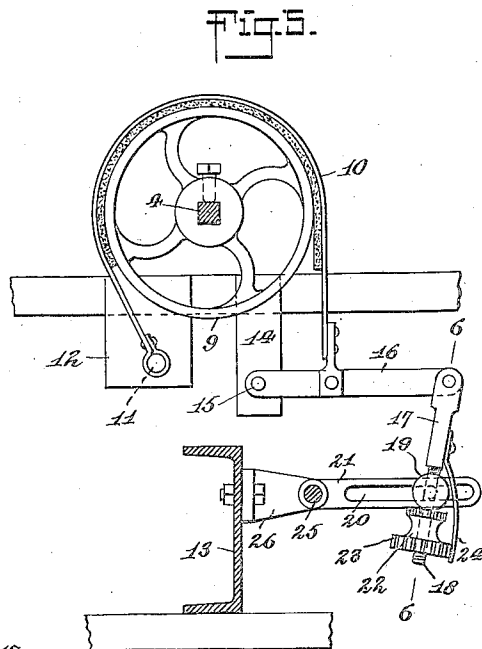
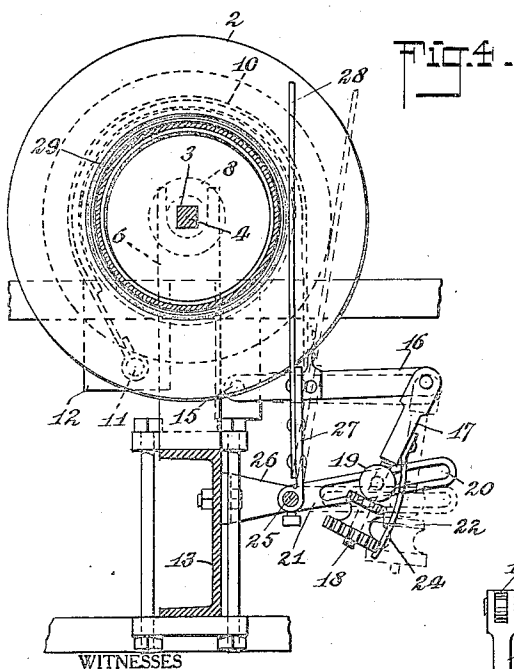
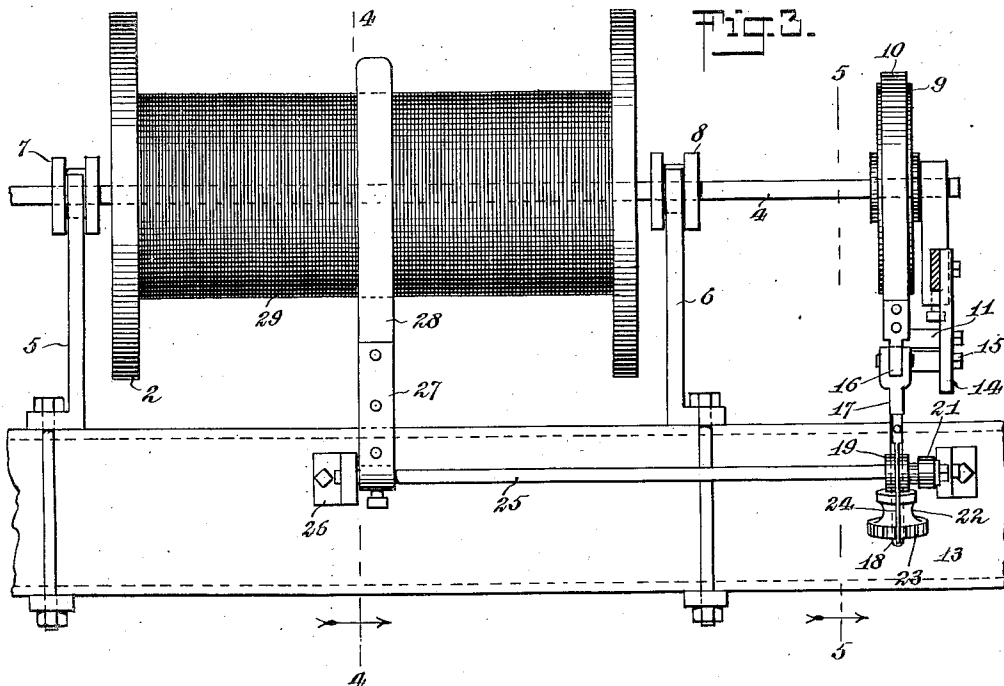
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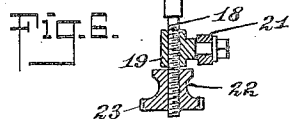
BEAM TENSION DEVICE FOR KNITTING MACHINES

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2 Sheets-Sheet 2



WITNESSES
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UNITED STATES PATENT OFFICE.

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BEAM TENSION DEVICE FOR KNITTING MACHINES.

Application filed April 10, 1925. Serial No. 22,227.

To all whom it may concern:

Be it known that I, OTTO C. WIESE, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Beam Tension Device for Knitting Machines, of which the following is a full, clear, and exact description.

10 This invention relates to knitting machine attachments and particularly to an improved tension device which has for an object to present a structure adapted to give the desired tension at all times automatically.

15 Another object of the invention is to provide a tension device for knitting machines wherein a structure is presented capable of adjustment to any desired tension and then capable of automatically maintaining that tension as long as the machine is in operation.

20 Another object of the invention, more specifically, is to provide a tension device in which a feeler is utilized to shift the tension mechanism automatically as the thread or yarn is used.

In the accompanying drawings—

30 Figure 1 is an elevation of the upper part of a knitting machine of a well known type, the same being provided with a tension device embodying the invention.

Figure 2 is an end view of the machine shown in Figure 1.

35 Figure 3 is an enlarged fragmentary elevation of one of the beams and its associated tension device.

Figure 4 is a sectional view through Figure 3 on line 4—4.

40 Figure 5 is a sectional view through Figure 3 on line 5—5.

Figure 6 is a sectional view through Figure 5 on line 6—6.

Referring to the accompanying drawings by numerals, 1 indicates part of a knitting machine which is of a well known type imported from Germany and known on the market as the "Raschel flat knitting machine." The invention might be used on any type of knitting machine wherein beams are used for pulling the thread or yarn to be knit. As indicated in Figure 1, instead of having a plurality of long beams extending for the full width of the machine as heretofore commonly used, a number of short beams 2 are provided, though if desired, the invention might be used with the long beams.

By providing a number of short beams 2, the yarn could be wound directly on these beams and thereby save one winding. In order to provide a number of beams 2, it is necessary to mount them so that they will rotate in unison and with the same tension on each of the beams which are in alignment.

To accomplish this result each of the beams 2 is provided with a square aperture or bore 3 for receiving the square shaft 4, said shaft being supported at the ends in suitable bearings and also on each side of each of the beams 2 by brackets 5 and 6 carrying journal bearings 7 and 8. The bearings 7 and 8 are merely spool-shaped structures having square holes for fitting the shaft 4 and grooves having rounded peripheries for engaging the forked-shaped upper ends of the brackets 5 and 6. By distributing the weight over these various brackets, the various beams 2 may be properly supported and yet the shaft 4 may be comparatively small. Connected to the shaft 4 preferably near one end is a pulley or friction wheel 9 that acts as a brake or tension wheel. A tension or friction belt 10 is mounted so as to partly surround wheel 9 as shown in Figure 5. As indicated in this figure one end of the brake or tension band 10 is pivotally mounted on a pin 11 carried by a bracket 12 secured in any suitable manner to the frame of the knitting machine 1 or to the supporting beam 13 which is also bolted or otherwise secured to the frame of the knitting machine 1. A bracket 14 carries a pivotal pin 15 on which the tension arm 16 is pivotally mounted, said arm being riveted or otherwise rigidly secured to one end of the brake or tension belt 10. A tension rod 17 is pivotally connected to the outer end of arm 16 and is provided with a reduced threaded extension 18 loosely fitted into a sleeve 19, which sleeve extends through the slot 20 in a pivotally mounted link 21. A nut 22 is threaded onto the extension 18, said nut being provided with notches 23 receiving the spring 24 which acts as a lock or catch for preventing accidental rotation of the nut 22. The link 21 is rigidly secured to a rod or shaft 25 rotatably mounted in suitable brackets 26 carried by the beam 13. A feeler arm 27 is rigidly secured to the shaft 25 preferably opposite the center of the first beam 2 from the wheel 9. If desired, an arm 27 may be provided with a resilient extension 28 in the form of a comparatively stiff flat

spring which is adapted to bear continually against the thread or yarn 29 wound on the beam 2. When the beam 2 is first placed in position, it is filled with thread or yarn and carries the same amount as the other beams on shaft 4. The tension band 10 is then adjusted to give the desired tension so that the machine will knit the desired number of loops per inch. This is brought about by adjusting the nut 22 until the desired tension is secured, the feeler arm 27 or its extension 28 being in contact with the thread 29. As the thread is used, the diameter of the supply of thread will be reduced and if the same tension was left on the beam it would cause the knitting machine to produce more loops per inch, and thereby prevent a uniform knitting operation. However, by the action of the feeler arm 27 moving toward the center of the beam as the thread is removed therefrom, an automatic changing of tension is provided as this movement rocks the shaft 25 slightly and thereby raises the rod 17 and associated parts slightly for reducing the tension on the band 10. It is understood that the movements of these parts are very slight but such movements are in proportion to the reduction of thread on the beam and, consequently, the same tension is provided on the beam until all of the thread has been removed therefrom. It is, of course, evident that the tension may be great or may be little and the action of the feeler arm 27 and associated parts will be the same.

As indicated in Figure 2, there are shown six shafts 4 and for each shaft there is provided a wheel 9, tension band 10 and associated parts as just described and shown particularly in Figures 3 to 5 inclusive. The action of the arm 27 and associated parts causes an automatic change of variation in tension during the operation of the knitting machine. However, if it should be desired to manually change the tension, the same may be done readily by shifting the nut 22.

What I claim is:

1. In a tension device for knitting machines, a friction device, a pivotally mounted arm connected with said friction device, a rod pivotally connected to said arm, a sleeve slidably mounted on said rod and a manually actuated threaded member acting against said sleeve and rod for causing a tension on said friction device, a link carrying said sleeve, said sleeve being slidable along said link, a rock shaft rigidly secured to said link and adapted to swing the same so as to move said friction device in such a direction as to reduce the tension thereof, and a feeler arm rigidly secured to said rock shaft and adapted to cause the same to move in proportion to the movement of the knitting machine.

2. In a tension device for knitting machines provided with a beam adapted to carry spools on which thread is positioned, a wheel secured to said beam, a friction band partly surrounding said wheel and engaging the same, means for anchoring one end of said band, a lever pivotally mounted at one end, means for connecting the opposite end of said band to said lever intermediate its ends, a threaded rod pivotally mounted on the free end of said lever, a link having a longitudinally arranged slot, a sleeve surrounding said threaded rod extending into said slot, members screwed onto said threaded rod for locking said sleeve in different adjusted positions along said slot, a rock shaft rigidly secured to one end of the lever in which the slot is positioned, said rock shaft extending parallel to said beam but spaced therefrom, and a feeler arm rigidly secured to said rock shaft opposite said spool, said arm being positioned so as to press against the threads on the spool and thereby move toward the beam as the threads are removed, such movement rocking said rock shaft in such a direction as to release said brake band in proportion to the movement of the rock shaft.

OTTO C. WIESE.