Feb. 4, 1936. W. REINERS ET AL 2,029,943

YARN AND THREAD TENSIONING MECHANISM FOR COP WINDING AND LIKE TEXTILE MACHINES

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Fig. 4.

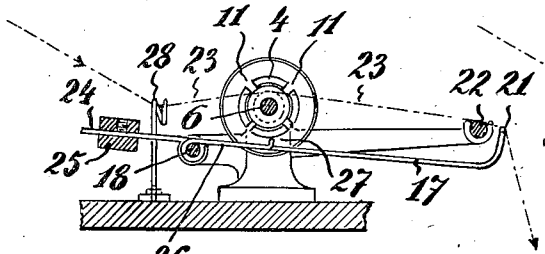


Fig. 5.

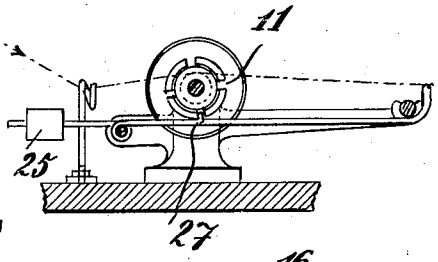


Fig. 3

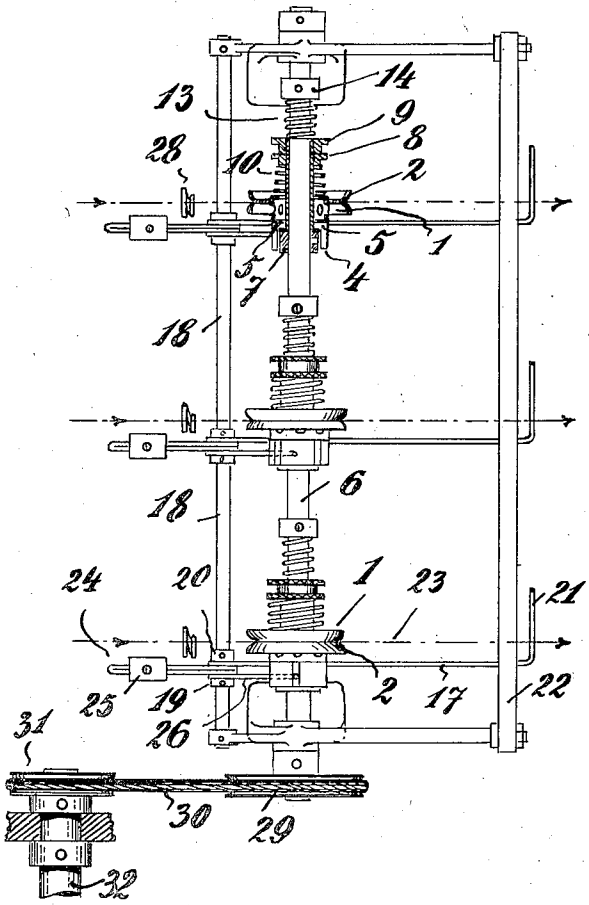


Fig. 2.

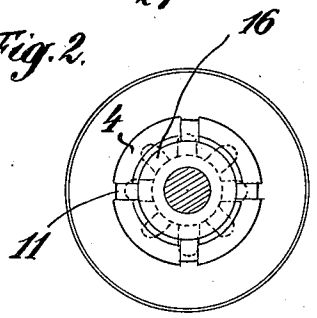
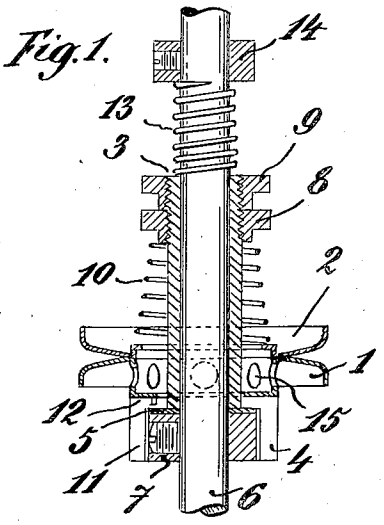


Fig. 1.



Inventors
Wilhelm Reiners
Gustav Kahlisch
by Knight Bros.
their attorneys

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Fig. 7.

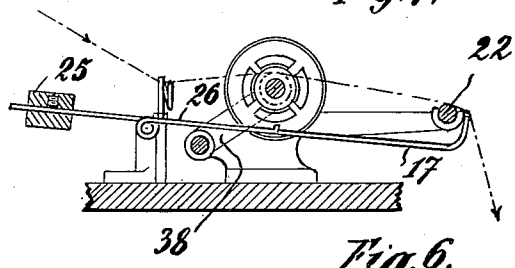


Fig. 6.

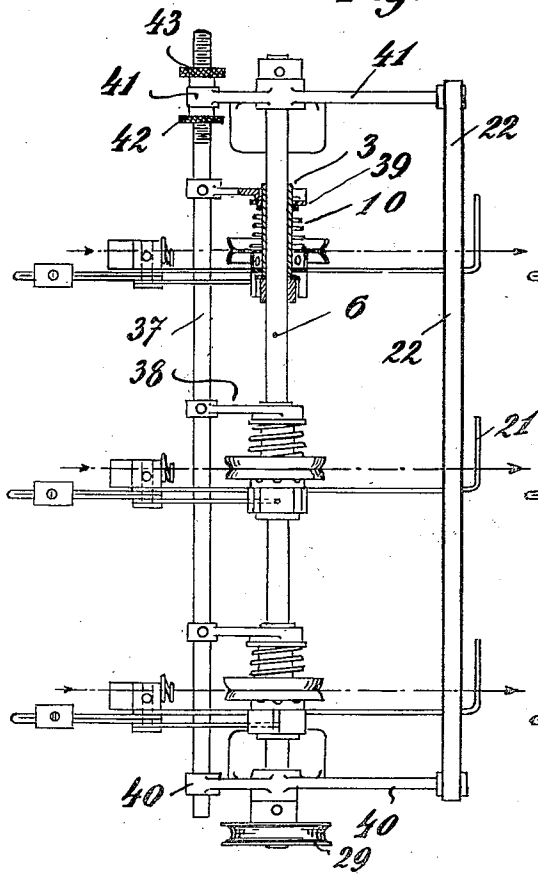
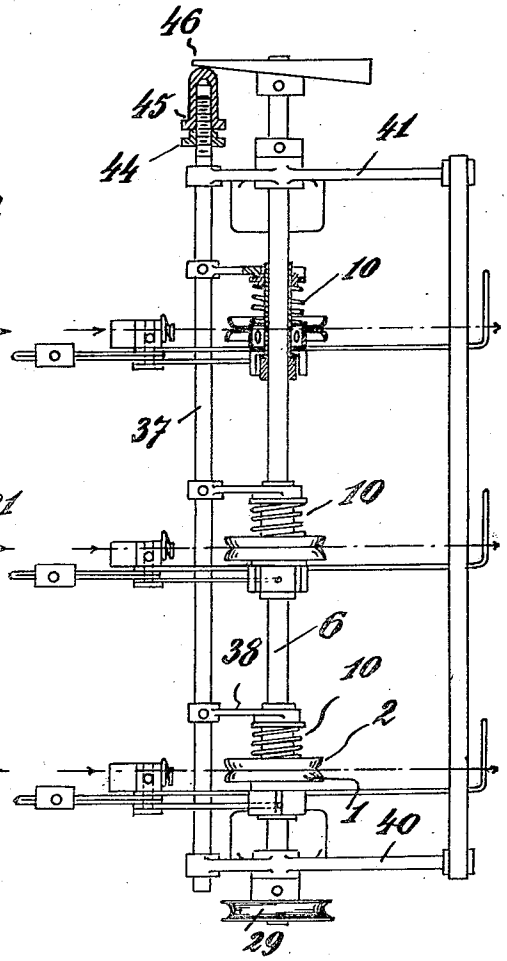


Fig. 8.



Inventors
Wilhelm Reiners &
Gustav Kahlisch
by Knight Bros.
their attorneys.

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UNITED STATES PATENT OFFICE

2,029,943

YARN AND THREAD TENSIONING MECHANISM FOR COP WINDING AND LIKE TEXTILE MACHINES

Wilhelm Reiners and Gustav Kahlisch, Gladbach-Rheydt, Germany, assignors to W. Schlafhorst & Co., Gladbach-Rheydt, Germany, a German corporation

Application July 18, 1934, Serial No. 735,888
In Germany April 4, 1934

2 Claims. (Cl. 242—150)

The invention relates to yarn and thread tensioners for cop winding and like machines, of the kind in which the yarn passes between rotating brake disks pressed towards each other by weights or springs.

According to our invention several such tensioning units are driven by a shaft common to them all with a separate clutch for transmitting the drive to each tensioning unit, adapted to be disengaged automatically by a stop motion device on breakage of the yarn, so that stoppage of any one tensioning unit does not interfere with the drive of the other.

Several embodiments of the invention are shown in the accompanying drawings.

Fig. 1 is a vertical section of one of the tensioning units, and Fig. 2 is a sectional plan view thereof.

Fig. 3 is a plan view of several such units, with their stop motion devices, and Fig. 4 is an elevation showing one of them, Fig. 5 being a similar view, but showing the stop motion position after breakage of thread.

Figs. 6 and 7 are respectively a plan view and side view showing another form of construction, and

Fig. 8 is a plan view showing a further modification.

Referring first to the construction shown in Figs. 1 and 2, the two brake disks 1 and 2 are rotatably mounted on a sleeve 3 enlarged at one end to form a cup 4 having therein a pad 5 of felt, rubber or the like. The sleeve 3 is one of a series of similar sleeves, all mounted on a shaft 6. For each sleeve 3 this shaft has fixed thereto an adjustable collar 7, against which the pad 5 is pressed for frictionally coupling the sleeve with the shaft. A portion of the sleeve 3 is externally screw-threaded and has nuts 8 and 9 thereon, and a coiled spring 10 between these nuts and the disks 1 and 2 presses the disks against the cup 4. Instead of the spring 10 some other elastic device may be used, for example a ring of felt, rubber or the like. The pressure is regulated by adjusting the nuts 8, 9. The cup 4 has external grooves 11, and a stud 12 on the disk 1 engages into one or other of these grooves, so that the disks rotate with the sleeve 3.

The sleeve 3 is urged towards the collar 7 by a spring 13 coiled on the shaft 6 between the sleeve and an adjustable collar 14.

The disk 1 has a hollow hub with holes 15 in its circumference for the discharge of foreign matter which may be stripped off the yarn and find its way into the hub. The hub of the disk 2 has radial slots 16 (Fig. 2), which serve the same purpose of discharging foreign matter rubbed off the yarn.

For each of the tensioning units there is a double armed stop motion lever 17, shown in Figs. 3, 4 and 5. The levers 17 are carried by a horizontal rod 18, on which each of them is pivoted between two adjustable collars 19 and 20. Each lever 17 has at one end thereof a lateral arm 21 extending alongside a rod 22, and the yarn 23 coming from between the disks 1 and 2 passes over the rod 22 and arm 21, depressing the latter. Near the opposite end 24 of the lever there is an adjustable weight 25, and fixed to the pivot of the lever is an arm 26 having a nose 27 directed towards the circumference of the cup 4.

If the yarn breaks and consequently releases the arm 21 the lever 17 and arm 26 are rocked by the weight 25, so that the nose 27 engages one or other of the grooves 11 in the cup 4, thus stopping rotation of the sleeve 3 and disks 1, 2. The driving collar 7 and shaft 6 continue to rotate, and the other tensioning units continue to function.

As shown in Fig. 3 the shaft 6 is driven by a pulley 29, belt 30, pulley 31 and shaft 32, but of course any other suitable means may be used for that purpose.

In the modification shown in Figs. 6 and 7 a non-rotatable rod 37 parallel with the shaft 6 has fixed thereto forked arms 38 and each of the arms engages one side of a ring 39 which is slidable on one of the sleeves 3 and serves as an abutment or seat for the spring 10. The rod 37 is axially movable on bearings 40, 41, and is axially adjustable by means of nuts 42, 43, for the purpose of regulating the pressure of the springs 10 on the brake disks.

In the modification shown in Fig. 8 provision is made for continuous change of the pressure exerted by the springs 10. This may be desirable or necessary in the case of winding tapered packages of yarn, where the rate of winding changes in accordance with change of diameter, and corresponding change of brake effect is required in order to keep the yarn tension substantially uniform. The arrangement may also be desirable in the case of cylindrical yarn packages, where reduction of brake effect is required as the diameter of the package increases.

As shown in Fig. 8 the rod 37 has thereon, near one end, a nut 44 acting as a guard nut to a cap 45 screwed on to the end of the rod. The cap abuts against a cam 46 fixed to the shaft 6, so that in the course of rotation of the shaft

the pressure exerted through the springs 10 is alternately increased and reduced. Alternatively the cam 46 may be fixed to a separate shaft, driven by means of transmission gear at any required speed differing from that of the shaft 6. It may then be arranged that instead of alternate increase and reduction of spring pressure there is a continuous increase or continuous decrease, at a uniform or at a varying rate.

What we claim as our invention and desire to secure by Letters Patent of the United States:—

1. Yarn tensioning mechanism comprising in combination a plurality of tensioning units, each consisting of two rotatable brake disks arranged for yarn to pass with friction between them, elastic means whereby one disk of each unit is urged towards the other disk, means common to all said units for regulating said elastic means, driving mechanism common to all said units, for each of said units a friction coupling connecting it to said driving mechanism, and for each of said units a stop motion device adapted on breakage of yarn to uncouple the unit from said driving mechanism.

2. Yarn tensioning mechanism comprising in combination a plurality of tensioning units, each consisting of two rotatable brake disks arranged for yarn to pass with friction between them, elastic means whereby one disk of each unit is urged towards the other disk, cam mechanism common to all said units for regulating said elastic means, driving mechanism common to all said units, for each of said units a friction coupling connecting it to said driving mechanism, and for each of said units a stop motion device adapted on breakage of yarn to uncouple the unit from said driving mechanism.

WILHELM REINERS.
GUSTAV KAHLISCH.