

Dec. 16, 1941.

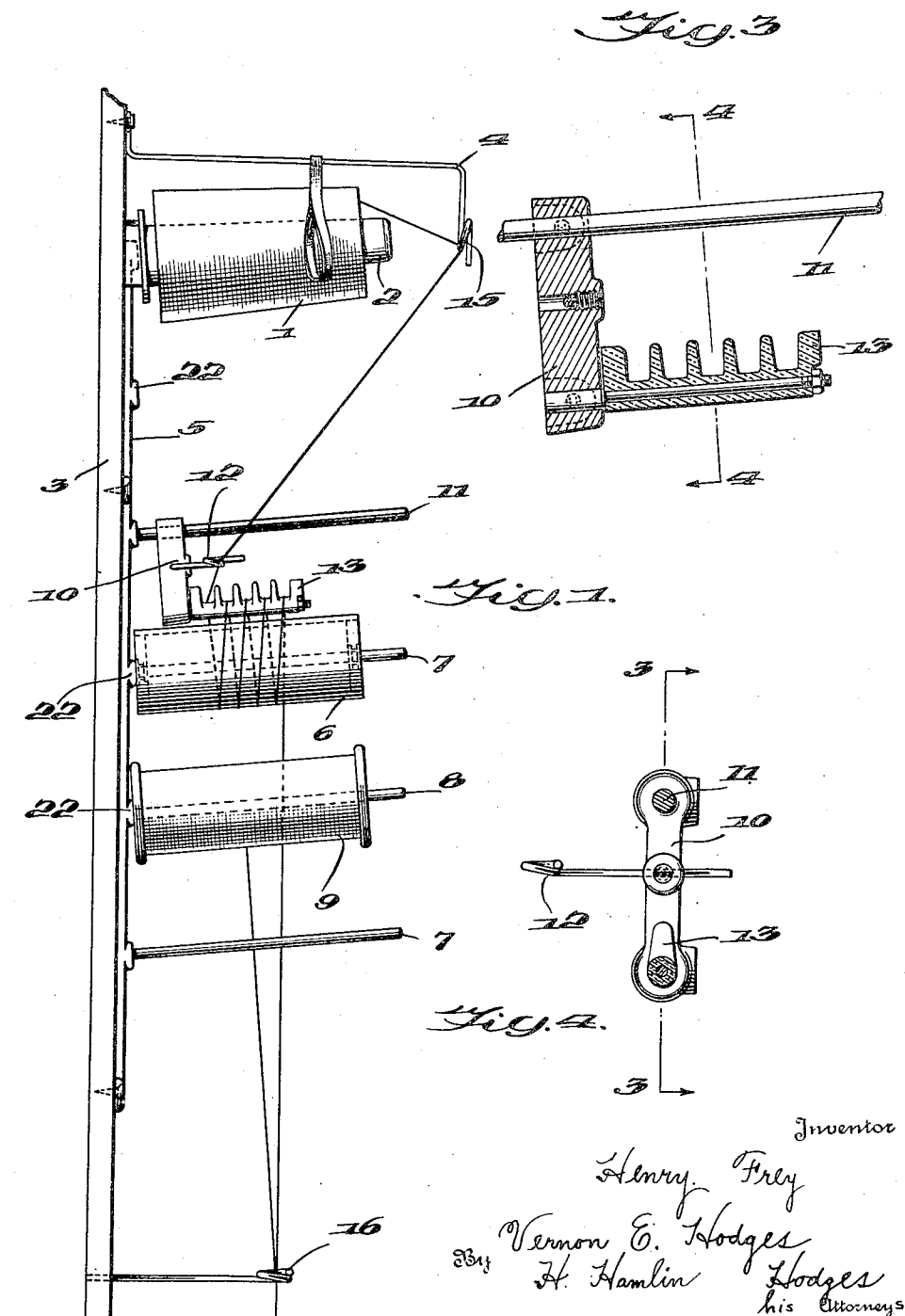
H. FREY

2,266,632

TENSIONING DEVICE

Filed Nov. 23, 1938

2 Sheets-Sheet 1



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Fig. 2.

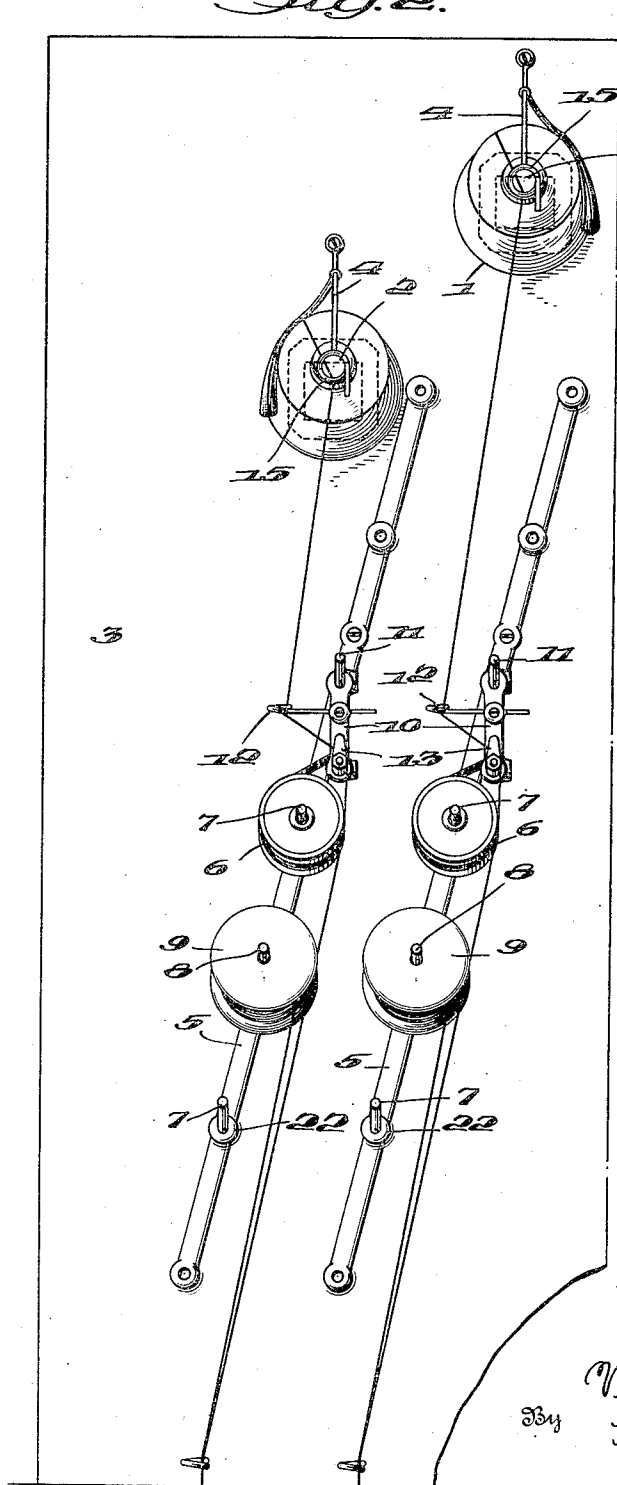


Fig. 5.

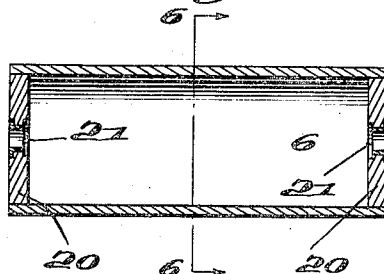


Fig. 6.

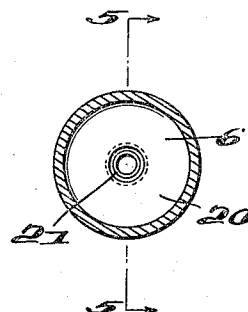


Fig. 7.

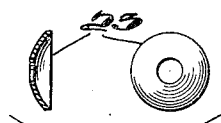
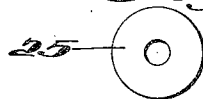


Fig. 8.



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UNITED STATES PATENT OFFICE

2,266,632

TENSIONING DEVICE

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3 Claims. (Cl. 242—155)

This invention relates to an improvement in tensioning devices.

The object is to provide a simple, easily removable tension device which gives degrees of tension from very light to moderately heavy by controlling the wraps of the ends to be doubled around a friction roller, and by controlling the weight of the roller, or by applying a certain amount of friction whenever desired.

The invention consists in an arrangement or system whereby it will be possible to draw directly from cones, or it might be spools or cakes, the objective being to make the change quickly, economically and efficiently.

More specifically, in its present state of development, my invention provides for drawing acetate for instance from a cone or the like at the top, thence a predetermined number of wraps around a friction means according to the tension desired.

The invention further consists in a means for supplying such other yarn, as for instance viscose crepe yarn, to a doubling machine.

In the accompanying drawings:

Fig. 1 is a view in side elevation of one tensioning device;

Fig. 2 is a view in front elevation showing two of these devices side by side secured on a suitable support;

Fig. 3 is a fragmentary view in section on line 3—3 of Fig. 4, showing the porcelain comb;

Fig. 4 is a cross-section on line 4—4 of Fig. 3;

Fig. 5 is a longitudinal section on line 5—5 of Fig. 6, through one of the rollers;

Fig. 6 is a section on line 6—6 of Fig. 5;

Fig. 7 shows a pointed disk; and

Fig. 8 shows a disk or washer.

The numeral 1 represents the cones, from which the material, as acetate, to be doubled with other yarn, is drawn. These cones are mounted on cores 2 secured in any approved manner to any suitable back support 3.

The guide wires 4 are secured to the back support 3, and the remaining parts on the rails 5, which in turn are preferably screwed to the back support 3. Fibre rollers 6 are rotatable on pins 7, which pins are secured to the rails 5. Spindles 8 also project from the rails 5, and on them the spools 9 are mounted to turn.

Brackets 10 are secured on rods 11, and they carry pigtaails 12 and porcelain combs 13. The combs 13 preferably have five openings through which the acetate end is successively passed, as shown in Fig. 2, and thence around the friction rollers 6.

The fibre rollers 6 are of very light construction, preferably hollow, with short bushings 20 at each end, and they might have some type of anti-friction mounting, although the function is to create a certain degree of tension and friction in cooperation with the combs 13 upon the acetate ends. The pigtaails 12 and the combs 13, supported on the brackets 10 may be adjusted along the rods 11 to bring them to the right position with respect to the friction rollers 6. These rollers are hollow, and preferably have dogwood bushings 20, and in each of the bushings is an anti-friction bearing or ferrule 21. These ferrules are needed to have the rollers running free enough on the pins 7 and 8. The rails 5 are reinforced forming bosses 22 where the pins are inserted; these bosses are flat and have a diameter of about three-fourths inch. By running or placing the rollers directly against these bosses, there is a certain drag exerted on the rollers, which is a means to increase the tension. To avoid this drag pointed steel washers 23 are placed over the pins between the bosses and the fibre rollers. This reduces the drag to the minimum, and from this minimum the tension may be built up.

In actual operation, three and one-half ounce rollers are used practically all the time with the pointed steel washers 23 between the rollers and the bosses 22 on rails 5, or, in other words, with the smallest drag; the various degrees of tensions are obtained through the weight of the rollers and the wrappings of the yarn. In some instances where a stronger drag is required, the pointed steel washers are removed and the rollers allowed to run against the bosses 22 on the rails 5. Still more drag can be given by allowing the rollers to rest against a larger disk 25, such as fibre, leather, rubber or steel, which would go in between the rollers and the bosses, but such disks must be fastened on the pins so as not to rotate.

It is necessary to be able to apply the tension gradually as otherwise the twist would be pushed back. The acetate yarns are being delivered either with no twist at all or with a small number of turns which run from three turns on coarse yarns to four turns per inch on fine yarns. Reference has been made to cakes at times and the acetate which was coming in on cakes had no twist at all. When yarn is pulled off over the head of the package, the yarn receives one turn for every time the yarn goes around the cone or cake; if the yarn runs off clockwise, then one turn left twist is being put, and vice versa. When the tension is applied abruptly, then this slight

twist is pushed and becomes uneven, because when there has been built up enough resistance, then the passage with the high number of turns will slide through and the process is repeated again. With this arrangement, the yarn comes off the cones or cakes with practically no tension or drag; the first wrap around the roller is rather loose, but each additional wrap becomes increasingly tighter and this means that the tension is applied softly and gradually, and thus avoids any danger of pushing back the twist. With some tensions that are available and where the tension is applied sharply, the pushing back of the twist is actually taking place. It is believed the importance of this will be fully appreciated.

At different times it has been found desirable to take the acetate from cakes, spools or cones. In this instance, I have shown cones 1, and from these cones the ends are threaded through eyes 15 in the outer end of the guide-wires 4, thence down through the pigtails 12 to the combs 13, thence through the several openings in the combs, and around the fibre friction rollers 6 several times according to the tension required, and finally to the gathering guides 16 where they join the short ends from the spools 1 on their way to the doubling machine (not shown).

It is the acetate yarn which usually requires extra tension, and it is repeated that the exact and required amount of drag on this end is determined and regulated by the number of wrappings around the fibre rollers 6, the wrappings being a sufficient number of times so that the yarns will be pulled down steadily without slipping on the rollers through the spaces in the porcelain combs 13, and, if need be, slight friction created on the rollers themselves, as for example by the pointed steel washers 23 or friction washers 25. The spools of viscose rayon crepe 9 on the pins 8 should, as a rule, run very free, with the smallest possible drag, and, should it be necessary, some anti-friction means could be employed for reducing the drag on these spools to a minimum, such as the insertion of the pointed steel wash-

ers 23. If additional drag is desired a larger disk or washer 25 of leather, fibre, rubber or steel may be inserted between the spool and boss 22, or the spools might turn directly against the bosses 22. The insertion of the larger disk or washer 25 between the boss and the roller, would have the greatest effect of increasing the drag.

Over, and in contact with, the cones 1 is a drag, and for convenience and simplicity is in the form of double cords. This is for the purpose of holding back the acetate thread to some extent, and to prevent its unraveling when the device is not in operation.

It should be stated that my improved tension device is not necessarily confined to doublers, but could be used on other machines to equal advantage.

I claim:

1. The combination, including a source of supply of thread, of friction means including a rotatably supported freely turning idle roller and a comb around which the thread is wrapped, said comb mounted in proximity to the roller and having individual spaces therein to receive and guide each convolution of thread wrapped around the roller.

2. In a device of the character described, the combination of a spindle carrying a supply of thread, a free turning rotatably supported roller around which the thread is wound at least twice, guide means between said supply and the said roller, and a comb mounted in proximity to the roller and having individual spaces therein to receive and guide each convolution of thread wound around the roller.

3. In a tensioning device, a freely turning idle roller around which a thread to be tensioned is wrapped a plurality of times, guide means between a source of supply of the thread and the said roller, and a comb mounted in proximity to the roller, said comb having individual spaces through which the thread is passed in each convolution wrapped around the roller.

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