Nov. 10, 1942. F. K. HENDRICKSON 2,301,701

SPRING TENSION UNIT FOR DRAWING MECHANISM

Filed Jan. 21, 1941

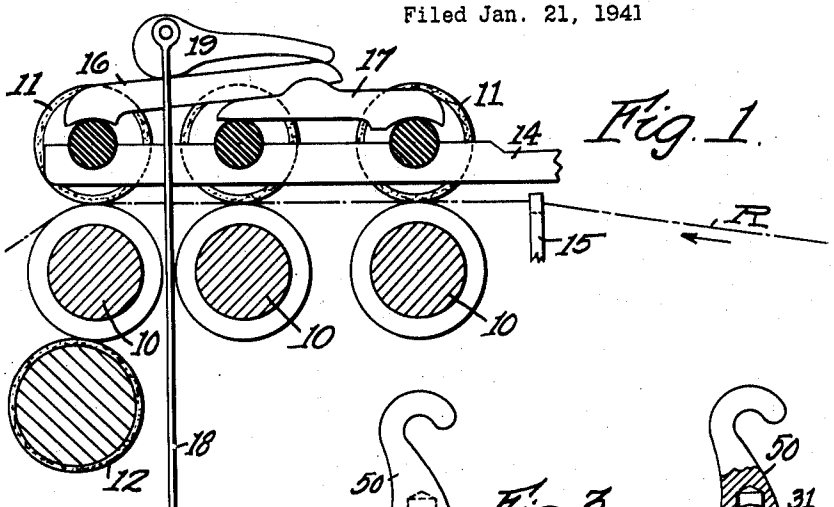
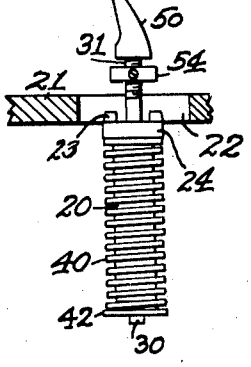


Fig. 1.



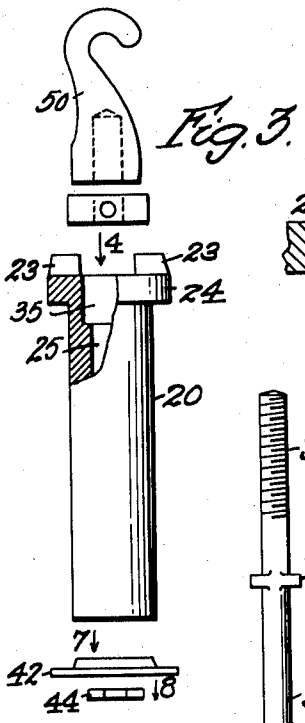


Fig. 3.

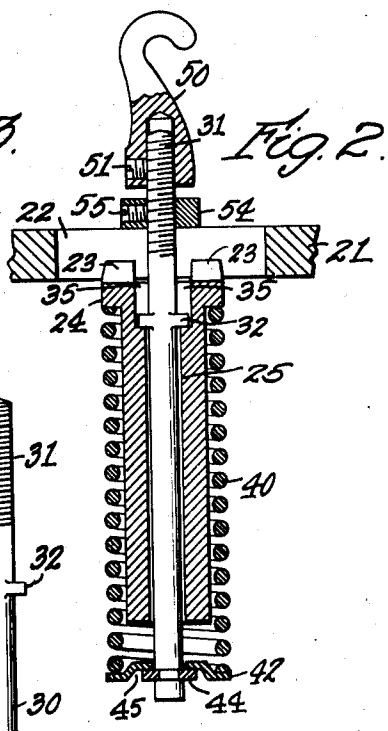


Fig. 2.

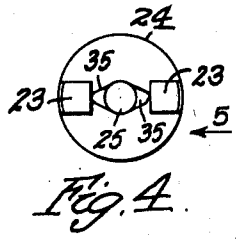


Fig. 4.

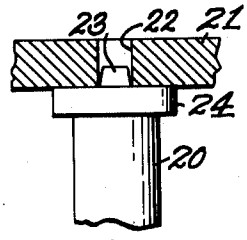


Fig. 5.

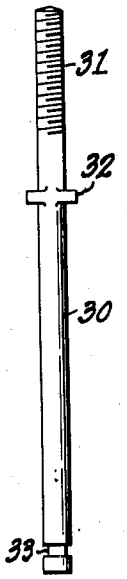


Fig. 6.



Fig. 7.

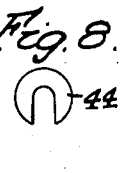


Fig. 8.

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UNITED STATES PATENT OFFICE

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SPRING TENSION UNIT FOR DRAWING MECHANISM

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Application January 21, 1941, Serial No. 375,141

5 Claims. (Cl. 19—135)

This invention relates to drawing mechanism, such as drawing, spinning or roving frames, in which slivers or rovings are drafted between successive pairs of drafting and top rolls. Drafting pressure is commonly applied to the top rolls through saddles or hooks mounted thereon or connected thereto, and is provided by weights or springs operatively connected to said saddles or hooks.

It is the general object of my invention to provide improved spring tension units to furnish pressure for such top rolls.

Further objects of the invention are to provide a spring tension unit which is self-contained, which may be easily adapted to different operating conditions, and in which the spring is maintained under predetermined initial tension.

I also provide a tension unit in which all parts are of strong and rigid but simple construction, so that they are well adapted to their intended purposes.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawing, in which

Fig. 1 is a sectional side elevation showing parts of a drawing frame having my improved spring tension unit applied thereto;

Fig. 2 is a sectional side elevation of the spring tension unit;

Fig. 3 is an exploded view showing separated parts of the tension unit;

Fig. 4 is a plan view of the unit base, looking in the direction of the arrow 4 in Fig. 3;

Fig. 5 is a partial side elevation, looking in the direction of the arrow 5 in Fig. 4;

Fig. 6 is a front elevation of a pull rod; and

Figs. 7 and 8 are detail plan views, looking in the directions of the arrows 7 and 8 in Fig. 3 respectively.

Referring to Fig. 1, I have shown parts of a spinning or roving frame having bottom rolls 10, top rolls 11, a clearer roll 12, a top roll positioning member 14, a trumpet or guide 15 for the sliver or roving R, a front saddle member 16, a back saddle member 17, a stirrup 18 and a cam lever 19, all of these parts being of usual commercial construction.

My improved spring tension unit comprises a base 20 adapted to engage the under side of a roller beam 21 provided with a slot 22. Lugs 23 at the upper end of the base 20 fit within the slot 22 as shown in Fig. 5, and a flange 24 at the upper end of the base 20 abuts the under side of the roller beam 21.

The main or body portion of the base 20 has an axial opening 25 (Fig. 2) which loosely receives a pull rod 30 (Fig. 6). The rod 30 has a threaded upper end portion 31, offset opposite lugs 32, and an annular groove 33 at its lower end. The base 20 is oppositely recessed as indicated at 35 (Figs. 2 and 4) to slidably receive the lugs 23, thus holding the pull rod 30 from angular movement in the base 20.

A coil spring 40 loosely encircles the cylindrical body portion of the base 20. The upper end of the spring engages the under surface of the flange 24 and the lower end of the spring engages a washer. The washer 42 is slidable on the pull rod 30 and is held in position by a U-washer 44, inserted in the groove 33. The washer 42 is upwardly dished to provide a cup or recess 45 to receive the U-washer 44 and to prevent transverse displacement thereof. When the spring, pull rod and washers are assembled with the base 20, these parts will then form a separate unit, with the spring loaded to the desired initial tension.

A hook 50 is threaded on the upper end 31 of the pull rod 30 and may be secured in adjusted position thereon by a set screw 51. A stop collar 54 is also threaded on the upper end 31 of the pull rod 30 and is held in adjusted position by a set screw 55.

The hook 50 is to be operatively connected with the lower end of the stirrup 18, as indicated in Fig. 1, and may be adjusted to effectively engage the stirrup by screwing the hook 50 lengthwise of the pull rod 30. The collar 54 will be adjusted to engage the top surface of the roller beam 21, when the cam lever 19 is moved to release the spring tension on the stirrup 18, and will then limit downward movement of the released spring tension unit. The lugs 32 on the pull rod 30 seat in the recesses 35 in the base 20 when the pull rod is not under external tension.

My improved spring tension unit has the advantage that the spring in each unit can be loaded to a predetermined tension before the units are inserted in the frame. Accurate and uniform tension on all of the rolls in the frame is thus conveniently accomplished.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:—

1. A spring tension unit for drawing mechanism having a roller beam, comprising a base

having a downwardly elongated body portion, means to prevent rotation of said base relative to said beam, a pull rod slidable axially in said base and normally extending substantially below said base, means to prevent rotation of said rod in said base, a coil spring loosely mounted on said body portion and extending below said base, said base having an abutment engaged by the upper end of said spring, means to support the lower end of said spring on the lower end of said pull rod and below said body portion and means on said pull rod engaging the upper surface of said beam, whereby said spring holds said base firmly against the lower surface of said beam.

2. In a drawing mechanism having a roller beam with a slot therein, a spring tension unit comprising a base having lugs at its upper end fitting said slot to hold said base from relative rotation, a pull rod slidable in said base, a spring acting to force said pull rod downward, and a collar threaded on the upper end of said pull rod and adjustably effective to engage the upper surface of said roller beam and to thereby limit downward movement of said pull rod and to hold said unit from displacement relative to said roller beam.

3. A spring tension unit for drawing mechanism comprising a base with an elongated body portion and with an annular flange at the upper end thereof and having an axial opening therein provided with offset upper end recesses, a pull rod slidable in said axial opening and having lateral enlargements seated in said offset recesses, a coil spring loosely mounted outside said body portion and engaging said flange at one end, a washer to support the other end of said spring, and means to secure said washer in fixed axial relation on said pull rod.

4. A spring tension unit for drawing mechanism having a roller beam, comprising a base having an elongated body portion, means to hold said base from rotation relative to said roller beam, a pull rod slidable in said base but non-rotatable therein, and a coil spring loosely mounted on said body portion and engaging an abutment on the upper end of said base and connected to the lower end of said pull rod, said latter connection comprising a cupped washer slidable on said rod and supporting the lower end of said spring, and a U-washer positioned in an annular groove in said pull rod and held from displacement by the lower annular edge of said cupped washer.

5. A spring tension unit for drawing mechanism having a roller beam, comprising a base having an elongated body portion, means to hold said base from rotation relative to said roller beam, a pull rod axially slidable in said base, a tensioned coil spring surrounding said body portion and interposed between an abutment on the upper end of said base and an abutment on the lower end of said pull rod, a stirrup-engaging hook mounted on the upper end of said pull rod, and a collar mounted on said pull rod below said hook and adjustable axially thereon, said collar being engageable with the top of said roller beam to limit downward movement of said tension unit relative to the roller beam when the hook is disengaged from the stirrup.

FRED K. HENDRICKSON.