Jan. 8, 1952 S. R. WALSH 2,582,213

DRAWING MECHANISM FOR TEXTILE FIBERS

Filed April 25, 1950 2 SHEETS—SHEET 1

Fig.1

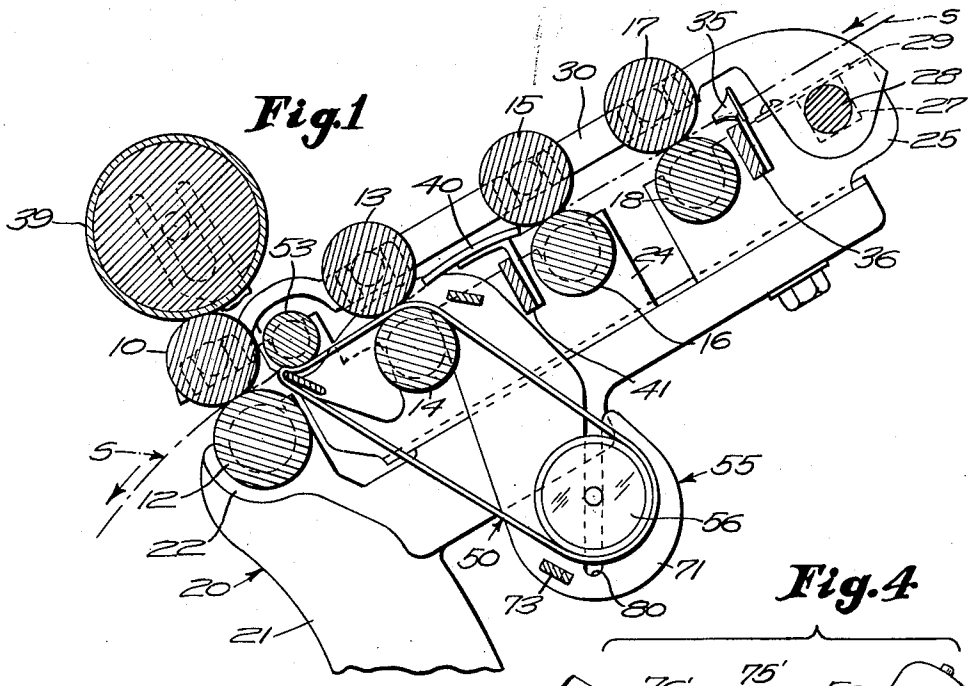


Fig.4

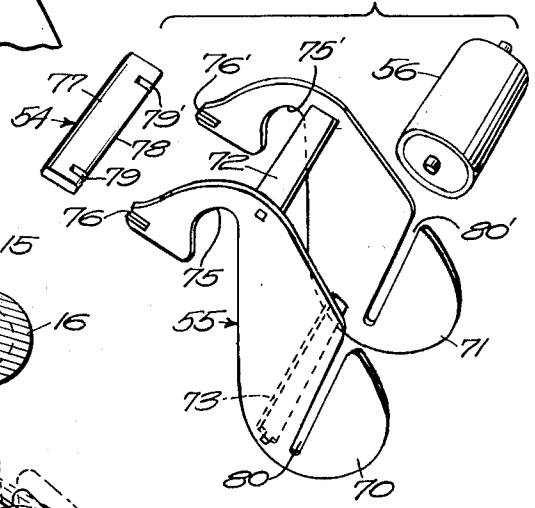
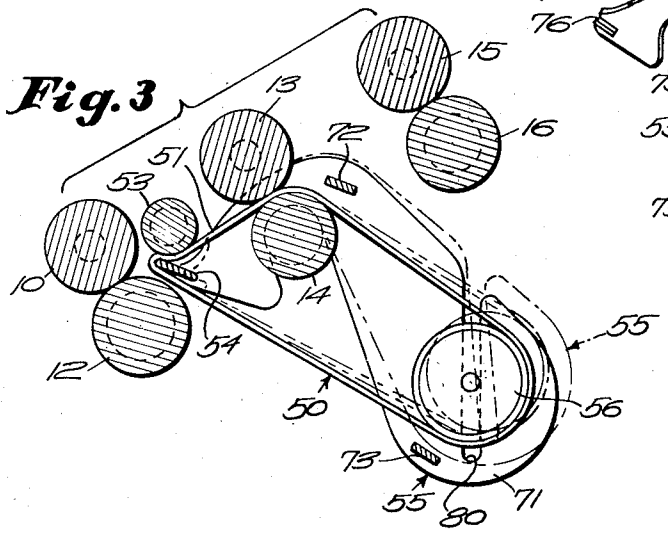


Fig.3



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Fig. 2

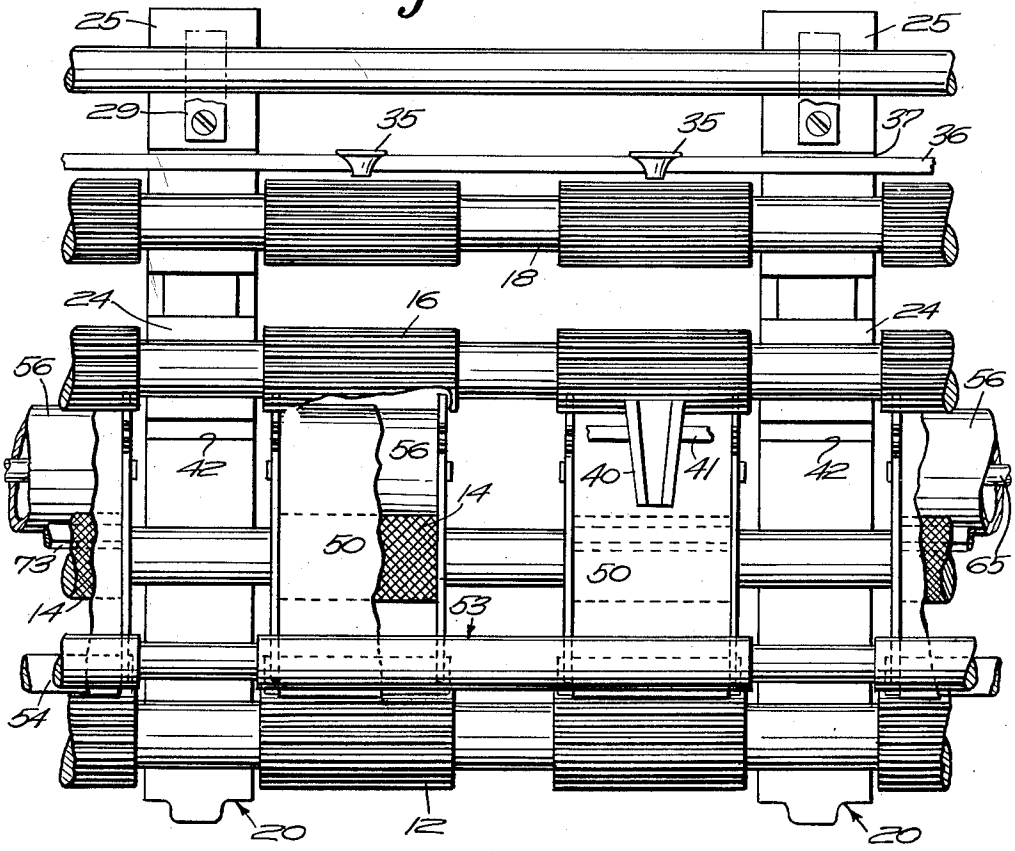


Fig. 5

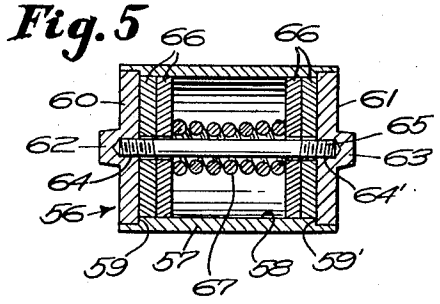
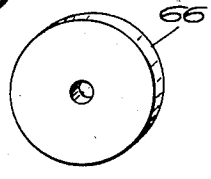


Fig. 6



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UNITED STATES PATENT OFFICE

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DRAWING MECHANISM FOR TEXTILE FIBERS

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Application April 25, 1950, Serial No. 158,029

10 Claims. (Cl. 19—131)

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This invention relates to mechanisms for drawing fibrous materials, such as textile slivers or rovings, and is more especially concerned with certain improvements in drawing mechanisms of the single belt type used in "long draft" spinning frames, roving frames, and the like.

In the long draft spinning and roving systems of the single belt type presently in use in the drafting mechanisms of the aforesaid class of machines each of the individual endless draft belts or aprons has a top flight or upper run which passes between an intermediate pair of coacting upper and lower rolls, runs forward over a stationary bar and is guided around the forward edge of this bar, then runs downwardly and rearwardly around an idler tensioning roll or pulley, and thence extends upwardly over the lower intermediate roll of said pair which constitutes the drive roll for the belt or apron, after which it runs forwardly as the aforesaid top flight to the stationary bar to repeat this sequence. The tension roll is solid and provided with end flanges to limit the lateral movement of the belt or apron relative to the roll.

A slip roll in the form of a relatively short light weight top roll of small diameter rests in a floating manner on the top flight or upper run of the belt immediately above the stationary bar guiding the forward loop of the belt or apron and operates to control the fibers prior to their reaching the nip of the pair of draft rolls immediately following the belt or apron. Whereas this arrangement has gone into extensive commercial use and has been very successful, certain difficulties have been encountered in practice among which is that the gudgeons or teats of this slip roll tend to build up or load with accumulations of lint and fly which retard the free running of this roll and eventually become heavy enough to cause it to bind in its bearings, the rotation of the slip roll in consequence of this action becoming irregular during continued operation of the machine thereby resulting in the production of defective yarn. Furthermore, attempts to clean the slip roll while running when thus loaded with lint and fly prove ineffective and serve only to worsen the situation by disturbing the action of this roll and causing the formation of abnormally thin or weak spots in the yarn during the drafting operation.

It is accordingly one object of the invention to provide an improved construction for supporting and tensioning each draft belt or apron individually and also to provide an improved arrangement of control roll which cooperates with said

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belt or apron whereby the foregoing difficulties will be eliminated.

Another object of the invention is the supporting and tensioning of each lower endless draft belt or apron in a manner whereby individual control and selective regulation of the nip and pressure of the fiber engaging portion of the belt or apron against the cooperating control roll can be effected and adjusted within predetermined limits.

According to the present invention a plurality of pairs of upper and lower drawing rolls are provided which are rotated at different peripheral speeds to draw out the sliver or the roving, as the case may be. The lower drawing rolls of the mechanism ars positively driven as is also an upper control roll which cooperates with the front upper portion of the top flight or run of the draft belt or apron. The sliver or roving is pressed yieldingly by the traveling top flight or upper run of the belt or apron against the lower portion of the periphery of the control roll by upward pressure of a guide bar encircled by the front loop of the belt or apron and mounted on a guide frame or cradle hung on the belt driving roll for pivotal movement thereon, viz. the bottom roll member of the pair of intermediate drawing rolls between which the belt and the stock pass prior to the fibers reaching the nip of the adjoining pair of draft rolls, incident to swinging movement of the guide frame on the belt driving roll due to weight of a variable weighted tensioning roll guiding the lower rear loop of the belt. The positively-driven control roll is of small diameter and formed of a series of cylindrical lengths joined together end to end to form a roll which extends for substantially the entire length of the frame. With this improved arrangement, the control roll can be cleaned while running without retarding its rotation or causing thin effects in the yarn.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a view, partly in side elevation and partly in vertical section, illustrating a portion of a drawing mechanism embodying the present invention and applied to a long draft spinning frame, the weighting mechanism for the intermediate and back top rolls being omitted for purposes of clarity;

Fig. 2 is a top plan view of the drawing mech-

anism illustrated in Fig. 1 with the top rolls and their cap bar mountings removed;

Fig. 3 is a diagrammatic view illustrating certain features of the drawing mechanism shown in Figs. 1 and 2;

Fig. 4 is an exploded view, in perspective, illustrating the essential parts of one of the guide frames or cradles for a single draft belt or apron embodied in the drawing mechanism of Figs. 1 and 2, and also showing the novel tensioning roll which cooperates therewith;

Fig. 5 is a vertical longitudinal sectional view, on enlarged scale, of my improved tension roll showing the removable weight members whereby to change the weight of the tensioning roll for regulating the tension of the belt and also to secure a desired arc of contact and pressure of the upper fiber conducting portion of the draft belt or apron with the lower portion of the periphery of the coacting control roll; and

Fig. 6 illustrates, in perspective, one of the removable annular weights which are situated within the belt tensioning roll construction shown in Fig. 5.

Referring to the drawings, and more particularly to Figs. 1 and 2, the invention is there shown, for the purposes of illustration only, as embodied in a four-line drawing mechanism of a long draft spinning frame, and includes spaced pairs of cooperating top and bottom rolls **10**, **12**; **13**, **14**; **15**, **16**; and **17**, **18** respectively. A roll stand **20** is shown having the usual pedestal member **21** and the usual fixed front bearing **22** for the front bottom roll **12**. On the roll stand **20** are adjustably secured the bearing blocks **24** and **25** respectively, the block **24** having journaled thereon the bottom intermediate rolls **14** and **16** while on the block **25** is journaled the bottom back roll **18**. The blocks **24** and **25** each are suitably arranged to have independent limited adjustment on the roll stand **20**. Mounted rearwardly of the roll stand **20** in the notch **27** is the usual cap bar rod **28** which is retained in place by the detent **29**. The rod **28** extends longitudinally of the machine and provides a pivotal support for the usual cap bar arms **30**, one being here shown, on which are carried the usual nebs which loosely support and guide the adjoining end gudgeons of the top rolls **10**, **13**, **15** and **17** respectively.

It should be understood that the bottom rolls **12**, **14**, **16** and **18** are all positively driven in the usual manner by gearing located at one end of the frame, that these rolls are customarily made of steel and built up of a series of sections joined together end-to-end to form a long roll length which extends lengthwise of the frame for substantially its entire length, and that these rolls are provided at spaced intervals therealong with a series of fluted enlargements to afford a better grip on the sliver, or in the case of the roll **14** with a roughened or knurled enlargement to provide a good driving grip on the belt or apron. The top rolls **10**, **13**, **15** and **17** usually are provided with a covering of cork, leather or other yielding material, and they are driven by the lower rolls, as is common commercial construction.

As thus arranged, the bottom rolls **18**, **16**, **14** and **12** are positively rotated at successively greater speeds whereby the several pairs of rolls in the series from back to front will rotate with the proper surface velocities to effect the required total draft of the stock, which will be roving in the case of a spinning frame and sliver when

the invention is applied to a roving frame, said stock being herein designated "S" and indicated by the dot and dash lines and passing between the series of rolls during its travel forwardly through the successive draft zones of the mechanism. Thus, in this particular embodiment, the pair of back rolls or feed rolls **17** and **18**, respectively, draw the stock "S," either from a can (not shown) or from a bobbin in a creel (not shown), as the case may be, and feed it forward to the next or first pair of intermediate drawing rolls **15** and **16**. In front of these are the second pair of intermediate drawing rolls **13** and **14** which are followed by the front pair of drawing rolls **10** and **12**. Preferably the stock "S" is drawn through a back trumpet **35** before entering the bite of the back rolls **17** and **18**. The trumpet **35** may have a circular aperture and is of well known construction and conventional with such textile machines. Traverse of the trumpet **35** is provided by the usual traverse bar **36** which supports the trumpet and is arranged for longitudinal reciprocatory movement in the notch **37** provided in the slide **25** between the bottom back roll **18** and the notch **27** when actuated by suitable traversing mechanism (not shown) as is a common practice in the art.

The top rolls of each pair are pressed against their associated bottom rolls by means of a suitable weighting mechanism of which one representative and practical arrangement comprises weight roller **39** and suitable top roll saddle weighting mechanism, whereby the fibers of the stock passing between the pairs of drafting rolls will be firmly gripped thereby and carried forward in succession between each pair of drawing rolls and the desired drafting effected if the settings of the pairs of drafting rolls are properly adjusted and the relative surface velocities and speeds of the roll are provided. The top roll saddle weighting mechanism for the intermediate and back top rolls **13**, **15** and **17** forms no feature of the present invention and has been omitted for purposes of clarity.

The four pairs of rolls shown in Fig. 1 of the drawings provide three drafting stages, the first being between the back pair of drawing rolls **17**, **18** and the first pair of intermediate drawing rolls **15** and **16** and forms the break-draft zone in which the draft may be of the order of 1.25 to 3.00. The second drafting stage is between the first pair of intermediate drawing rolls **15**, **16** and the second pair of intermediate drawing rolls **13**, **14**, the draft in this zone being of the order of from 1.25 to 3.00.

A condensing device **40** is disposed in the second drafting zone between the pairs of rolls **15**, **16** and **13**, **14**, this device having an arched floor and convexedly curved side walls which converge in the direction of travel of the stock and act to condense the stock "S" laterally as it passes through this zone in being drafted. The condensing device **40** and its mounting are not "per se" a part of the present invention, but are more fully described and claimed in Patent No. 2,203,423, granted June 4, 1940. The draft in this condensing zone may be of the order of from 1.25 to 3.00. Traverse of the condenser **40** is provided by the traverse bar **41** which supports the condenser and is arranged for longitudinal reciprocatory movement in the notches **42** in the blocks **24** of adjoining roll stands **20** when actuated by suitable traverse mechanism (not shown) in synchronism with the traverse of the back trumpet **35**.

The third drafting stage is between the pair of rolls 13, 14 and the front rolls 10, 12 which zone is the main or final draft zone of the mechanism wherein the stock, viz., sliver or roving, receives its greatest drafting effect, and it is in this higher drafting zone that the problem of controlling the fibers during drafting is presented and with which this invention is especially concerned.

In the construction illustrated in Figs. 1 and 2 the invention is shown applied to the third drafting stage of the drawing mechanism, that is the draft zone where the fibers of the stock are subjected to the main and final drafting action while passing to the nip of the front or delivery draft rolls 10 and 12 from the nip of the intermediate top roll 13 and the underlying endless belt or apron 50 which passes over and is driven by the intermediate lower roll 14.

The belt or apron 50 passes between the intermediate upper and lower rolls 13 and 14, then runs forward with its upper forward portion 51 passing under and depressed to form a curved bight by the lower periphery of the cylindrical portion of the upper control roll 53 which is suitably journaled in the bearing block 24 and positively driven in a suitable manner. The control roll 53 is mounted above the fibers of roving or sliver and comprises a solid metallic roll of slender proportions having a series of cylindrical portions which bridge a plurality of guide frames 55 mounted between two adjoining roll stands 20 (see Fig. 2).

The front loop of the belt or apron 50 is guided over and is supported by a removable guide bar 54 which is inserted through the front loop of the belt or apron and is removably mounted on a yielding guide frame 55 which is suspended from the belt-driving roll 14 for free pivotal movement bodily thereon, the belt or apron 50 being tensioned by an idler roll or pulley 56 which is freely suspended by the rear depending loop of the belt or apron 50 so as to maintain a constant tension on it due to its own weight.

The idler roll or pulley 56 is of a design which will permit its weight to be selectively changed so as to be given one of several different predetermined weights for applying a desired tension to the belt or apron as well as for effecting the proper adjustment of the arc of contact of the front nose portion of the belt or apron 50 and also its pressure with respect to the lower portion of the periphery of the control roll 53 to obtain the desired control of the fibers. As shown in Fig. 5, this idler roll or pulley construction comprises a metallic tubular shell member 57 the opposite ends of the axial bore 58 of which are suitably counterbored to form the recessed annular shoulder portions 59 and 59' at the ends of the tubular shell 57 into which are received the cylindrical end plugs 60 and 61. Formed integral with the plugs 60 and 61 are the stub shafts 62 and 63 respectively which project axially from opposite ends of the tension roll or pulley 56 when the plugs 60 and 61 are assembled with the tubular shell 57. The end plugs 60 and 61 are securely held in firm abutting relation with the shoulder portions 59 and 59' respectively by having threading connection with the screw-threaded end portions 64 and 64' of a cylindrical rod or shaft 65 which is located interiorly of the tubular shell 57 and axially disposed lengthwise of the axial bore of the shell so as to be substantially coaxial therewith.

In order that the weight of the tension roll 56 may be varied to adjust the length of the

nose portion of the belt or apron 50 with respect to the control roll 53 to obtain the desired pressure between the belt and this roll as well as the proper control of the fibers to suit the particular drafting conditions which prevail while maintaining a constant tension of the belt or apron 50 the tension roll 56 includes a plurality of removable annular weight members or disks 66 which are similar in size and weight and disposed in two groups within the bore of the tubular shell 57 at opposite ends thereof and mounted on the rod of shaft 65. A coiled spring 67 encircles the rod of shaft 65 and is disposed between the opposed end weight disks of the two groups so as to exert endwise pressure against these disks to maintain them in firm contact with their associated weight disks and firmly pressed against the inner end face of their associated end plug 60 or 61, as the case may be, whereby no shifting of the weight disks 66 axially along the rod or shaft 65 can occur to produce an unequal weight distribution on the respective stub shafts.

The guide frame 55 is shown in Fig. 4 and comprises side members or plates 70 and 71 and cross frame members 72 and 73. The side members are recessed on their bottom edges as indicated at 75 and 75' to fit over the reduced cylindrical neck portions of the lower belt driving roll 14.

The side plates 70 and 71 also are provided with notches 76 and 76' on their front edges respectively to receive the removable guide bar 54, these notches being oblique to the path of the fibers and holding the guide bar 54 with its front edge inclined to said path. The guide bar 54 is formed of flat stock of substantial width with rounded front and rear edges 77 and 78, the latter being provided with notches 79 and 79' to receive the edges forming the inner end walls of the notches 76 and 76' respectively in the side members 70 and 71. The guide bars 54 thus are seated and securely held in an interlocked fashion in their associated guide frames or cradles 55 from lateral or endwise displacement, and are prevented from being dislodged from their respective guide frames by the belts or aprons 50 whose front loops encircle and are guided over the bars 54 and are maintained in a tensioned state by the tension rolls or idler pulleys 56.

The guide bars 54 are so located with reference to the control roll 53 that the forward leading portion of the upper run of the belts or aprons 50 are depressed to a substantial degree and caused to travel about the peripheral surface of the control roll 53 around the lower portion thereof imparting a curved depressed portion to said section of the belts or aprons in which the forward tip thereof terminates at a releasing point closely adjacent to and substantially opposite the bite at the rearward side of the front or delivery rolls 10 and 12 of the mechanism.

The guide frame 55 also is deeply notched or slotted on the upper rear edge of each side member or plate 70 and 71 as indicated at 80 and 80' to provide guiding abutments thereon having upwardly extending opposed faces for engaging and guiding the stub shafts 62 and 63 respectively at opposite ends of the belt tensioning roll 56. The notches 80 and 80' are so situated on the side plates as to enable the belt tensioning roll 56 to be free to move and partake of automatic rising and falling rolling movements therein due to gravity, i. e. due to the weight of the roll 56. Thus, the belt tensioning roll 56 will be guided in a self adjusting fashion for effecting automatic

adjustment of the guide frame on the belt driving roll 14 and acts to maintain automatically a desired extended and adjustable relationship of the forward tip or front nose portion of the upper rim of the belt 50 with respect to the nip of the adjacent front rolls 10 and 12 as well as to press the roving or sliver gently between the forward leading portion of the belt and the control roll 53 incident to upward pressure and tilting movement of the guide bar 54 by the swinging action of the guide frame 55 on the belt driving roll 14 due to the influence of the weight of the tension roll 56.

The differences in the belt tensioning movement produced with the present arrangement as compared with two typical weightings of the idler belt tensioning roll or pulley 56 is illustrated by the full and broken line positions of the guide frame 55 in Fig. 3, it being understood, of course, that the range of movement of the roll 56, belt 50 and cradle or guide frame 55 are in proper relation to each other but are shown somewhat exaggerated in proportion to actual practice. It will be seen that the belt-tensioning roll 56 as it tends to roll downward under the influence of gravity exerts a turning moment of the cradle or guide frame 55 about the belt-driving roll 14 to elevate the guide bar 54 and correspondingly extend the front nose of the belt or apron 50 forwardly in the direction of the bite of the front or delivery rolls 10 and 12 while simultaneously regulating the pressure between the depressed curved bight of the belt or apron with the control roll 52.

It will be understood that a plurality of guide frames or cradle units 55, lower endless belts or aprons 50, and idler belt tensioning pulleys or rolls 56 are hung on the lower roll 14 between each pair of adjacent roll stands 20 and embrace the roughened or knurled belt-driving enlargements of the roll 14.

While a preferred embodiment of the invention is illustrated and described herein, it is to be understood that modifications may be made in the form and construction of its parts without departing from the spirit or scope of the invention, hence the claims are to be interpreted accordingly.

What is claimed is:

1. In a textile fiber drawing mechanism of the type in which a single endless belt or apron cooperates with additional devices to support and grip a sliver or a roving during a drafting operation, the combination of a driving roll for said belt or apron, cradle means adapted to laterally guide said belt or apron and suspended from the belt driving roll for free pivotal movement thereon, guide means extending through the front loop of said belt or apron over which it is guided when in motion and mounted on said cradle, positively driven roll means in cooperating relation with the forward leading portion of the upper run of said belt or apron, and idler roll means freely suspended by the rear loop of said belt or apron for tensioning the belt or apron due to the weight of said idler roll means, said idler roll means being guided in a self-adjusting fashion on said cradle means and exerting a force in a direction tending to swing said cradle means on the belt driving roll sufficient to adjust the elevation of said guide means and the tip of said front belt loop encircled thereby to control the arc of contact and pressure of the leading forward portion of the upper run of said belt or apron with the coacting lower periphery of said positively driven roll means to desired predetermined limits as determined by selective weighting of said belt tensioning roll means.

2. In a textile fiber drawing mechanism of the type in which a single endless belt or apron cooperates with additional devices to support and grip a sliver or a roving during a drafting operation, the combination of a driving roll for said belt or apron, a positively driven control roll disposed above the line of travel of the roving or the sliver against which the belt or apron is to be pressed, a pivotal guide frame adapted to laterally guide said belt or apron and suspended from the belt driving roll, a guide bar mounted on said guide frame supporting the front loop of said belt or apron and over which it is guided when in motion, and an idler roll or pulley freely suspended by the rear loop of said belt or apron for tensioning the same, said guide frame being notched to provide abutments for engaging and guiding opposite ends of said belt tensioning roll and having self-adjusting movement in said guide frame due to its own weight, said belt tensioning roll or pulley due to its weight being in a pressure transmitting relationship with said guide frame through said abutments whereby said guide frame will pivot about the belt driving roll in a direction and to such extent as to adjust the elevation of said guide bar and the tip portion of said front belt loop to control the extent of arcuate relationship and pressure of the leading forward portion of the upper run of said belt or apron with the coacting lower periphery of said control roll to desired predetermined limits as determined by the selective weighting of said belt tensioning roll or pulley.

3. In a textile fiber drawing mechanism of the type in which a single endless belt or apron cooperates with additional devices to support and grip a sliver or a roving during a drafting operation, the combination of a driving roll for said belt or apron, a positively driven upper control roll against which the belt or apron presses the sliver or roving, a pivotal guide frame adapted to laterally guide said belt or apron and suspended from the belt driving roll, a guide bar mounted on said guide frame supporting the front loop of said belt or apron and over which it is guided when in motion, and a roll freely suspended by the rear depending loop of said belt or apron for tensioning the same, said guide frame being deeply notched on the upper rear edge of each side member to provide guiding abutments thereon having upwardly extending opposed faces for engaging and guiding opposite ends of said belt tensioning roll, said notches and associated abutments being so situated as to enable the belt tensioning roll to be free to move in said notches and partake of automatic rising and falling rolling movements in a self-adjusting fashion along said abutments due to gravity and in a plane oblique from perpendicularity in applying tension to the belt or apron, said belt tensioning roll or pulley due to its weight being in a pressure transmitting relationship with said guide frame through said abutments whereby said guide frame will pivot about the belt driving roll in a direction and to such extent as to adjust the elevation of said guide bar and the tip portion of said front belt loop to control the extent of arcuate relationship and pressure of the leading forward portion of the upper run of said belt or apron with the coacting lower periphery of said control roll to desired predetermined limits as determined by the selective

weighting of said belt tensioning roll or pulley.

4. In a textile fiber drawing mechanism of the type in which a single endless belt or apron cooperates with additional devices to support and grip a sliver or a roving during a drafting operation, the combination of a driving roll for said belt or apron, cradle means adapted to laterally guide said belt or apron and suspended from the belt driving roll for free pivotal movement thereon, guide means extending through the front loop of said belt or apron over which it is guided when in motion and mounted on said crade, positively driven roll means in cooperating relation with the forward leading portion of the upper run of said belt or apron, and idler roll means freely suspended by the rear loop of said belt or apron for tensioning the belt or apron due to the weight of said idler roll means, said idler roll means being guided in a self-adjusting fashion on said cradle means and exerting a force in a direction tending to swing said cradle means on the belt driving roll sufficient to adjust the elevation of said guide means and the tip of said front belt encircled thereby to control the arc of contact and pressure of the leading forward portion of the upper run of said belt or apron with the coacting lower periphery of said positively driven roll means to desired predetermined limits as determined by selective weighting of said belt tensioning roll means, said belt tensioning roll means being capable of having its weight changed to one of several predetermined weights through addition or subtraction of removable weight members housed within the interior of said roll.

5. In a mechanism for drafting textile fibers, the combination of a pair of upper and lower rolls arranged to grip and feed a sliver or a roving between them, a second pair of upper and lower rolls behind the first pair and between which the fibers are fed on their way to the front pair of said rolls, a positively driven control roll disposed above the line of travel of the roving or sliver against which the belt or apron is to be pressed, a pivotal guide frame mounted on the lower of said rear rolls for free swinging movement thereon, an endless bottom belt or apron interposed between said rear rolls, a removable guide bar mounted on said guide frame supporting the front loop of said apron and over which it is guided, said guide bar being formed of flat stock of substantial width with rounded front and rear edges, said guide frame having notches on the front edge of each side member to receive said guide bar, said guide bar having notches on its rear edge to receive the edge of each side member of said frame forming the inner end wall of the notches therein and idler roll means with removable weight members for enabling its weight to be changed at will to provide a definite predetermined weight and freely suspended by the rear loop of said belt or apron for tensioning the belt or apron and guided in a self-adjusting fashion on said guide frame and exerting a force in a direction tending to swing said guide frame on the belt driving roll sufficient to move said guide bar and the tip of said front belt loop encircled thereby into an extended position to adjust the arcuate relationship and pressure of the leading forward portion of the upper run of said belt or apron with the coacting lower periphery of the said control roll to desired predetermined limits as determined by the selective weighting of said belt tensioning idler roll means.

6. In a textile fiber drawing mechanism, the combination of positively driven bottom draft rolls of successively greater surface velocity, top rolls coacting with said bottom rolls, an endless belt or apron on a positively driven bottom roll of less velocity for driving said belt and for controlling the fibrous material as it is conducted to a pair of top and bottom rolls of higher velocity, a removable bar within the front loop of said belt or apron for guiding the same, a positively driven small roll disposed above said bar and positioned above the line of travel of the belt or apron, a swingable guide frame adapted to laterally guide said belt or apron and suspended from said belt driving lower roll, said guide frame having notches on the front edge of each side member to receive said guide bar, said guide bar being notched to receive the edge of each side member of said frame forming the inner end wall of the notches therein, and an idler roll or pulley with removable annular weight members for enabling the weight of said roll to be changed at will to provide a definite weight thereto, said idler roll or pulley being freely suspended from the rear loop of said belt or apron for tensioning the belt or apron and guided in a self-adjusting fashion for automatic adjustment of said guide frame on said belt driving roll and to maintain automatically a predetermined arcuate relationship of the leading forward portion of the upper run of said belt or apron with the lower periphery of said control roll as well as controlling the pressure on the fibrous material passing therebetween and the position of the releasing point thereof with respect to the nip of the adjoining top and bottom rolls of higher velocity.

7. In a textile fiber drawing mechanism, the combination with upper and lower drawing rolls, lower endless draft belts or aprons actuated by a positively driven lower drawing roll, and a positively driven roll coacting with the upper runs of said belts or aprons for engaging the roving or the sliver and controlling it as it is conducted to the drawing rolls immediately following said belts or aprons of a separate guide frame for each of said belts or aprons and with spaced pairs of side plates for laterally guiding each belt or apron, said side plates being formed with notch portions for receiving the belt driving roll and hung thereon for free swinging movement, upper and lower cross members that rigidly connect said plates and maintain them separated at a distance corresponding to the width of the belt or apron, a guide bar removably mounted on said guide frame supporting the front loop of said belt or apron and over which it is guided when in motion to conduct the roving or sliver to the immediately following drawing rolls, and an idler roll or pulley with removable weight members for enabling the weight of said roll to be changed at will to provide a definite weight thereto and freely suspended by the rear departing loop of said belt or apron for tensioning the same, said guide frame being notched to provide abutments for engaging and guiding the opposite ends of said belt tensioning roll for self-adjusting movement in said guide frame due to its own weight and for pressing said leading forward portion of the upper run of said belt against said control roll to adjust the arcuate extent of the curved bight formed therebetween and the resulting pressure at such point.

8. In a drawing mechanism for textile fibers, two sets of upper and lower drawing rolls, a plurality of endless belts or aprons on the lower roll of the set forming the feed rolls for the other set of drawing rolls, said belts or aprons each having an upper part extending between the associated lower roll and its companion upper roll and thence running forwardly toward the other set of drawing rolls for conducting the roving or the sliver thereto, a positively driven control roll of smaller diameter than any of said drawing rolls, said small roll being of such length as to extend laterally over and engage the leading forward part of all the upper flights or runs of said belts or aprons, a seperate guide frame for each of said belts or aprons with spaced pairs of side plates connected by cross bars into a rigid integral structure, said side plates being notched and hung thereby on the lower belt driving roll for free swinging movement thereon, a plurality of guide bar members intermediate said drawing rolls beneath said small roll, each guide bar member mounted in a guide frame and extending through the front loop of a belt or apron to push the same upwardly upon appropriate pivotal movement of the guide frame, and a roll freely suspended by the rear loop of said belt or apron for tensioning the same, said guide frame being further notched to provide abutments for engaging and guiding the opposite ends of said belt tensioning roll for self-adjusting movement in said guide frame due to its own weight, said belt tensioning roll acting on said guide frame to swing it in a direction to urge the front run of said belt or apron upwardly to maintain it continuously pressed against the lower periphery of said positively driven control roll to adjust the arcuate extent of the curved bight formed therebetween as well as the pressure exerted by these parts at such point.

9. In a textile fiber drawing mechanism, the combination with front and intermediate pairs of upper and lower drawing rolls, a swinging guide frame the body of which is hung on the lower intermediate drawing roll, an endless draft belt or apron within the guide frame encircling the lower intermediate drawing roll which supports the guide frame and drives the belt for conducting the fibers close to the bite of the front rolls, a positively driven upper control roll in cooperating relation with the forward leading portion of the upper run of said belt or apron, a removable guide bar member of flat cross section encircled by the first loop of said belt and seated in notches formed in the front edge of the side members of said frame, the notches being oblique to the path of the fibers and holding said bar member with its front edge inclined to said path, said bar member being notched on its rear edge to receive the edges of both side members of said guide frame and being normally held in an interlocked fashion with the frame by the tension of the draft belt or apron which encircles said bar member, and idler roll means including a plurality of removable weight members therein to permit selective weighting thereof and freely

suspended by the rear loop of said belt or apron for tensioning the belt or apron and guided in a self-adjusting fashion on said guide frame due to its own weight and for pressing said leading forward portion of the upper run of said belt or apron against said control roll to adjust the arcuate extent of the curved bight formed therebetween by the depressed belt or apron portion as well as the resulting pressure at such point.

10. In a textile fiber drawing mechanism, in combination, pairs of upper and lower drawing rolls with said pairs arranged in spaced relation one in advance of the other for feeding a sliver or a roving to be drafted and providing a series of draft stages, the final draft stage of the mechanism including an endless belt or apron driven by the lower drawing roll immediately preceding the front pair of rolls, a guide bar supporting and guiding the front loop of said belt or apron while the latter is in motion, an upper control roll depressing the leading forward portion of said belt or apron in a curved bight behind said guide bar, a pivotal guide frame adapted to laterally guide said belt or apron and suspended from the belt driving roll for free swinging movement thereon, said guide bar being mounted on said guide frame, and idler roll means provided with removable weight members for tensioning said belt or apron whereby the sliver or the roving is pressed with a definite and controlled pressure between the belt or apron and the said control roll by upward pressure of said guide bar with the forward leading portion of said belt or apron incident to appropriate pivotal movement of said guide frame on the belt driving roll by said belt tensioning roll due to its own weight, said guide bar being so located with reference to said control roll that the belt or apron is depressed to a substantial degree and is caused to travel about the peripheral surface of said control roll around the lower portion thereof imparting a curved depressed portion to the leading forward portion of said belt or apron the forward tip of which is extendible and controlled by the pivotal movement of said guide frame so as to terminate at a releasing point closely adjacent to and substantially opposite the bite at the rearward side of the front or delivery rolls of the mechanism.

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