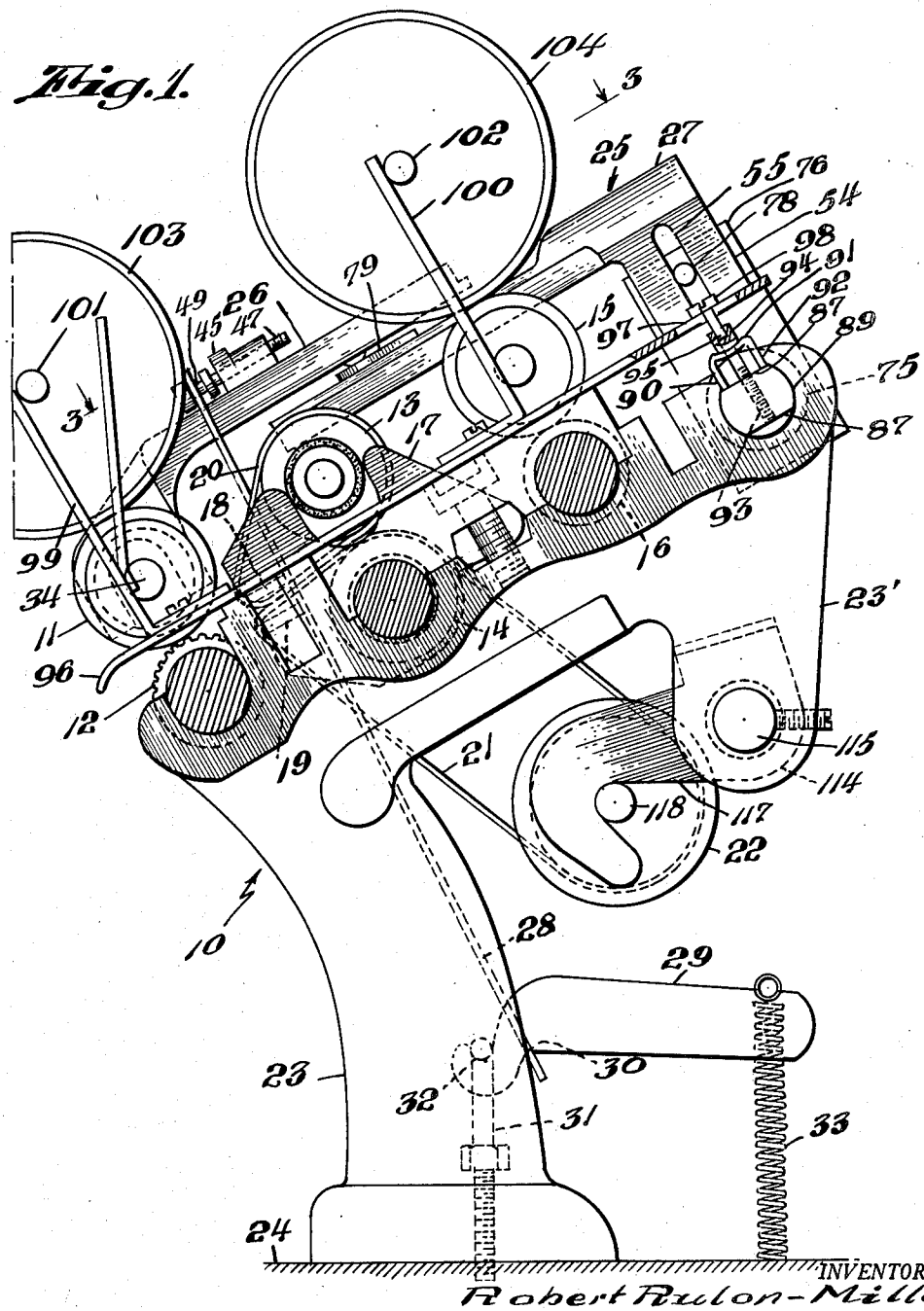
Aug. 2, 1960 R. RULON-MILLER ET AL 2,947,039

ROLLER MOUNTING FOR SPINNING MACHINES

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Fig. 1.



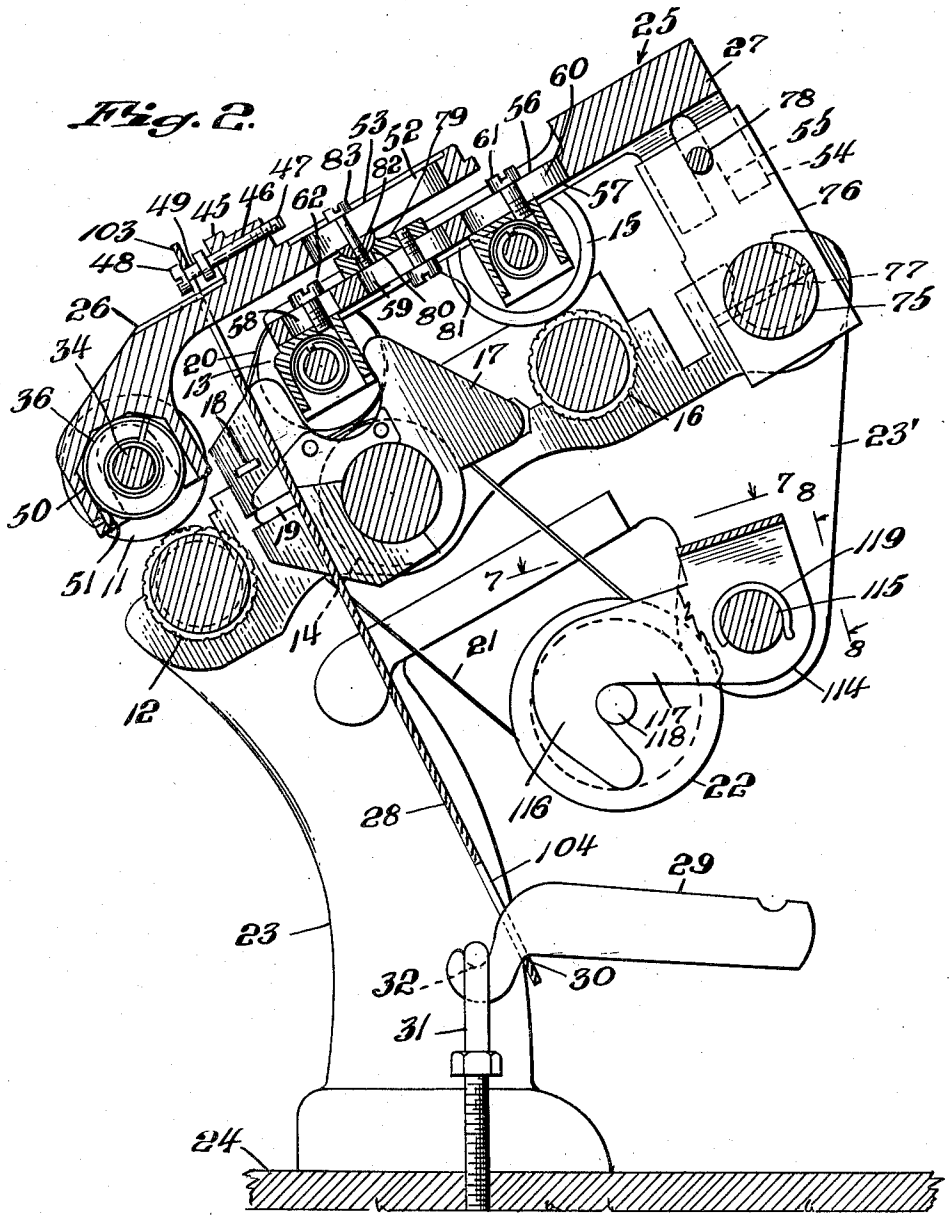
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ROLLER MOUNTING FOR SPINNING MACHINES

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Fig. 2.



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Fig. 3.

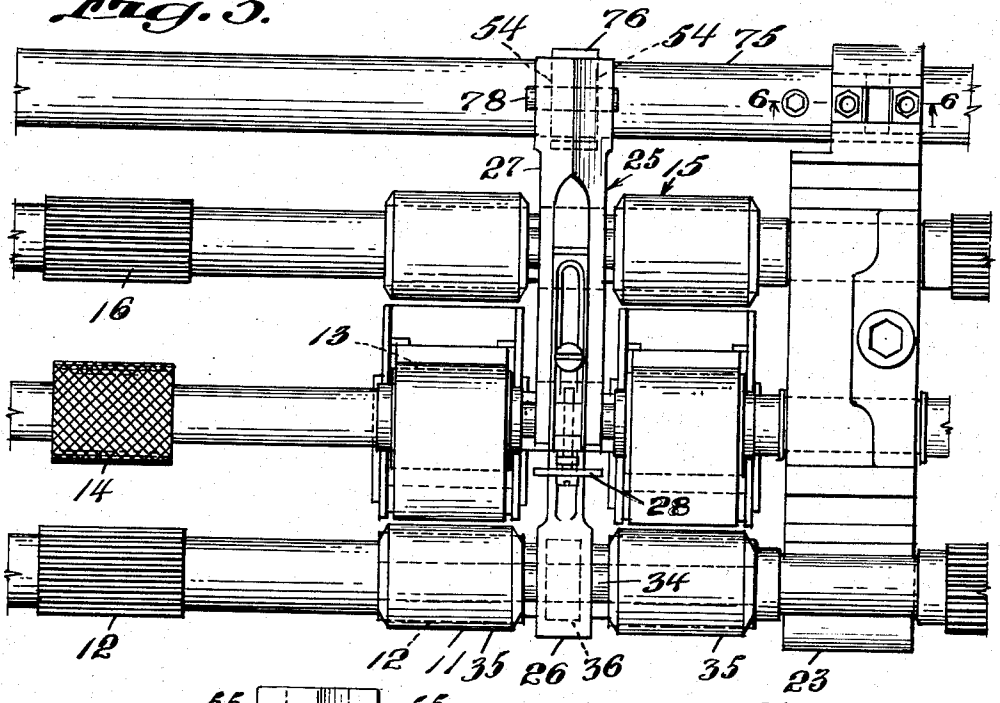


Fig. 4.

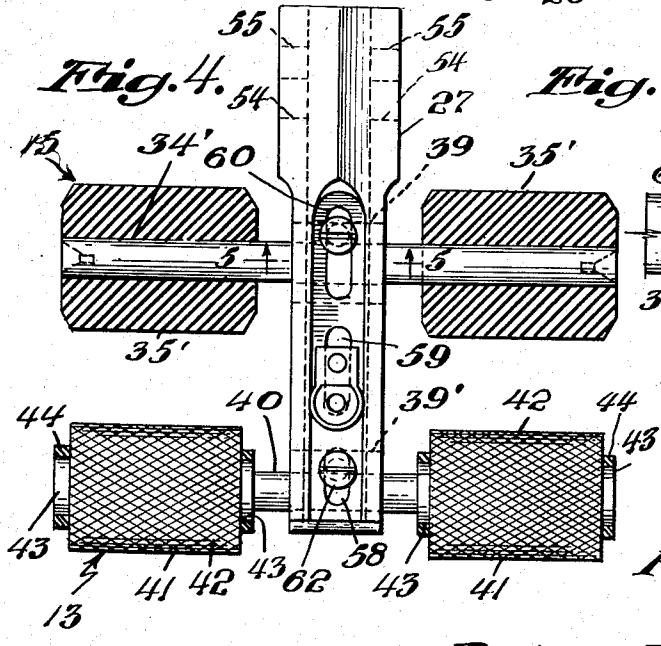


Fig. 5.

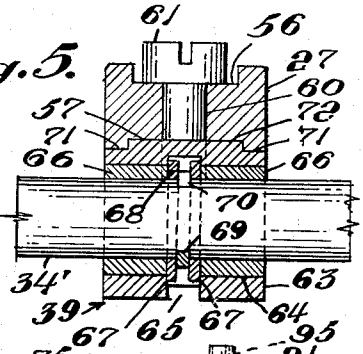
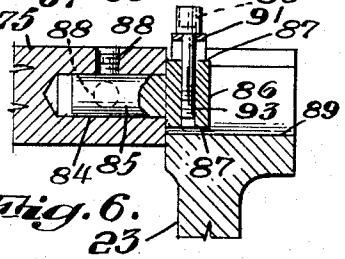


Fig. 6.



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ROLLER MOUNTING FOR SPINNING MACHINES

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Fig. 7.

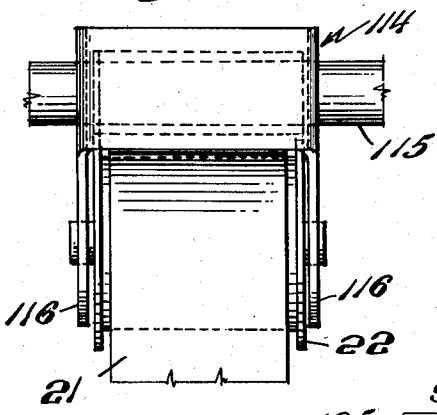


Fig. 8.

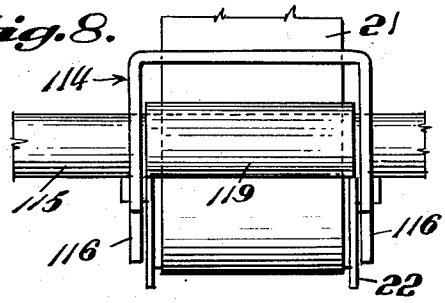
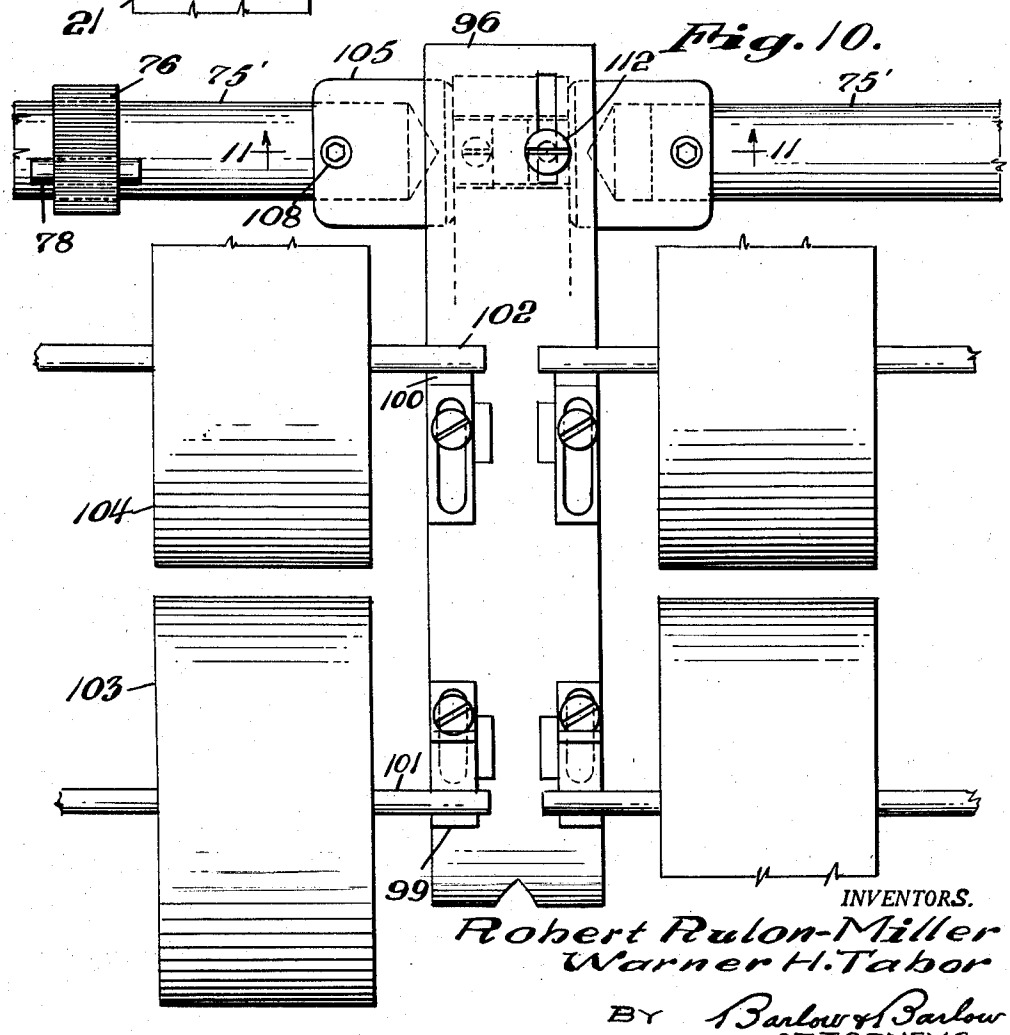


Fig. 10.



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ROLLER MOUNTING FOR SPINNING MACHINES

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Fig. 11.

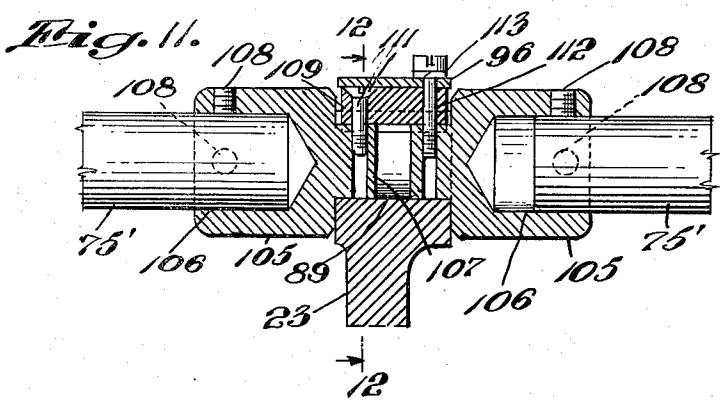


Fig. 12.

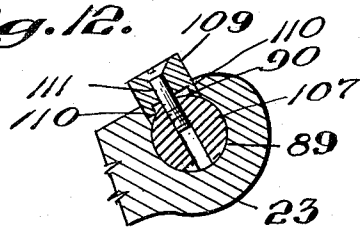
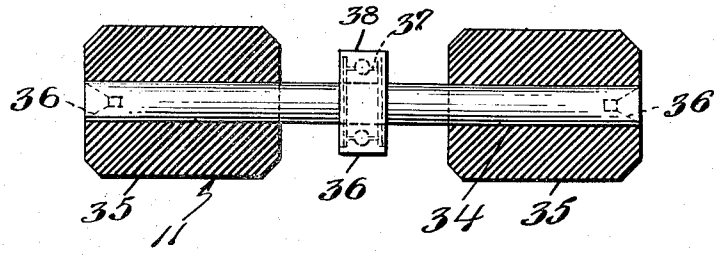


Fig. 9.



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2,947,039

ROLLER MOUNTING FOR SPINNING MACHINES

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Filed Aug. 20, 1957, Ser. No. 679,271

4 Claims. (Cl. 19—134)

This invention relates to improvements in spinning and roving machines, particularly the drawing mechanism therefor employing the so-called Roth, Duo-Roth and Casablanca type spinning.

The top rolls of the usual drawing mechanism of the above type have end trunnions and are mounted for rotation in cap bar blocks or bearings which are adjustably secured on cap bars which in turn are mounted on a stationary held back bar. The said top rolls require lubrication at the bearing portions thereof which is a major source of wear and a location for dirt to accumulate. The top rolls are adjusted and aligned to the desired relation by moving the cap bar blocks along the cap bars. This involves considerable labor. The lower apron of each drawing unit is trained over the lower middle roll of the unit and extends therefrom to pass over a front guide bar which is common to the lower aprons of a plurality of the drawing units.

An object of the invention is to provide for supporting the top rolls of the drawing mechanism in a way so as to eliminate the cap bars and cap bar blocks.

Another object of the invention is to provide for supporting the top rolls of a section of a plurality of drawing mechanisms in a way to simultaneously adjust all the top rolls of said section.

Another object of the invention is to mount the top rolls of a drawing mechanism to eliminate lubrication thereof.

Another object of the invention is to provide for individually guiding the leading end of each lower apron of a drawing mechanism.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is a fragmentary vertical sectional view taken between roll stands of the drawing mechanism of a construction embodying the invention;

Fig. 2 is a similar view taken between roll stands at a location through the mid point between rolls of a drawing mechanism;

Fig. 3 is a top plan view looking in the direction of the arrows on line 3—3 of Fig. 1, drawn on a reduced scale and with certain parts omitted for showing the parts beneath;

Fig. 4 is a plan view partially in section of the back saddle of the unit and the top rolls carried thereby;

Fig. 5 is a sectional view taken substantially along line 5—5 of Fig. 4;

Fig. 6 is a sectional view taken substantially along line 6—6 of Fig. 3 but omitting certain elements appearing along this line in Fig. 3;

Fig. 7 is a plan view looking in the direction of the arrows on line 7—7 of Fig. 2 of a lower guide and weighted cylinder for a lower apron of the drawing mechanism;

Fig. 8 is an end elevational view of the parts shown

in Fig. 7 looking thereat in the direction of the arrows on line 8—8 of Fig. 2;

Fig. 9 is a longitudinal sectional view of a top roll;

Fig. 10 is a plan view of a modified construction of back bar and showing the cleaner roll supports attached thereto;

Fig. 11 is a sectional view taken substantially along line 11—11 of Fig. 10; and

Fig. 12 is a sectional view taken substantially along line 12—12 of Fig. 11.

The drawing mechanism of a spinning frame of the type shown is well known in the art, and only so much thereof has been illustrated and described as is necessary for a clear understanding of the present invention.

Referring to Figs. 1 and 2, 10 designates generally a textile spinning machine arranged for an operation utilizing a long draft system, as by way of example, the Casablanca type comprising three pairs of drawing rolls which are arranged to collectively operate on a strand or strands of sliver. These rolls are respectively top and bottom, front rolls 11 and 12, middle rolls 13 and 14, and back rolls 15 and 16. There is mounted and supported on the bottom middle roll 14 a cradle 17 which carries upper and lower nose pieces 18 and 19. An apron 20 is trained over the roll 13 and nose piece 18. An apron 21 is trained over roll 14, nose piece 19 and a weighted cylinder 22 for the purpose of tensioning the apron 21. The lower rolls 12, 14 and 16 extend the entire length of the machine and are rotatably supported in roll stands 23 which are mounted on a roller beam indicated 24. The lower rolls are fluted steel rolls and are driven by suitable mechanism (not shown). The upper or top rolls 11, 13 and 15 merely rest on their respective lower rolls and are rotated by surface contact therewith. Pressure is applied on the top rolls 11, 13 and 15 by a saddle 25 which is made in two parts to be hereinafter referred to as the front saddle 26 and back saddle 27. A stirrup 28 depends from the front saddle with an opening near its lower end through which extends a lever 29 so as to engage the stirrup as at 30. The lever 29 is fulcrumed to an adjustable eye bolt 31 as at 32 and extends therefrom to be engaged by a weight of looped pull spring 33 which exerts a pulling force on the lever 29 in a direction to apply a downwardly force on the stirrup, which force is transmitted through the saddles onto the said top rolls.

The top rolls usually comprise a pair of bosses, usually referred to as cots, which are joined by a reduced neck portion against which the saddle bears. The top rolls of each drawing unit of three rolls comprise three pairs of cots and in each section there may be two or more units extending axially in line between roll stands. A feature of novelty of the present invention is in mounting the top rolls of each unit on the saddle of the unit so that the top rolls of each unit may be removed with the saddle as a unit; and in mounting the saddle on the back bar of the machine in a way wherein all the top rolls of the units between roll stands may be simultaneously adjusted and aligned in proper relation. Accordingly, the front top roll 11 (see Fig. 9) comprises an arbor on which are mounted a pair of spaced cots 35 which are made of a non-metallic material, as for example, natural or synthetic rubber, and are press fitted or otherwise arranged to be fixed to arbor 34 so as to rotate therewith. The cots extend to the ends of the arbors and the ends of the arbors are provided with axial center conical openings 36 which provide centers for mounting the roll on the usual roll buffing apparatus. A ball bearing 36 is mounted on the arbor 34 midway between the cots. The ball bearing 36 is of any approvide manufacture having inner and outer raceways

37, 38 respectively. The inner raceway 37 is secured to the arbor 34 as by means of a press fit so as to be rotatable therewith. The back top roll is similarly constructed (see Figs. 4 and 5) with the exception that the arbor is journalled in an oiless bearing 39 to be hereinafter described.

The arbor of the back top roll 15 is indicated by numeral 34' and the cots thereon by numeral 35', both arbor and cots being of the same diameter as the arbor 34 and cots 35 of the front roll. The middle top roll 13 (see particularly Fig. 4) is steel and has a neck portion 40 of a diameter substantially equal to the diameter of arbor 34 and provides a pair of bosses 41 having a knurled surface 42 and each end is reduced as at 43 to receive an oiless annular bearing 44. Each boss 41 may be made separate and provided with a bore to receive an arbor similar to arbor 34. The top roll 13 is likewise provided with a bearing 39' which is identical to bearing 39.

The front saddle 26 has an upstanding boss 45 (best seen in Fig. 2) which is provided with a screw threaded opening 46 therethrough for receiving a stirrup adjusting screw 47 having a slotted head 48 and provided with a reduced neck portion 49. The front end portion of the saddle has a recess 50 into which projects a resilient button 51 secured to a wall of the recess. The button is semi-spherical, or nearly so, and is made of any suitable material having the necessary resiliency to be compressed and to recover. The ball bearing 36 is inserted into the recess 50 by pushing the same into the recess past the button 51 which will be compressed thereby. The button projects into the recess at a location to be outwardly of the bearing 36 when seated in the recess so that upon the bearing being pushed past the button at the diameter of the bearing, the button will recover to detachably lock the outer raceway of the bearing into frictional engagement with the walls of the recess. The other end portion of saddle 26 is provided with an elongated slot 52 therethrough, the upper edge of which is surrounded by a ledge 53.

The back saddle 27 is provided at the rear end portion thereof with a yoke formed by lugs 54 which depend at opposite sides of the saddle and are provided with aligned slots 55 therethrough. The saddle has a guide groove 56 at the upper side and an opposite guide groove 57 at the lower side thereof. Three spaced elongated slots 58, 59, and 60 extend through the saddle from the guide groove 56 to the guide groove 57. The bearings 39 and 39' are received in the guide groove 57 and are adjustably secured in position by headed screws 61 and 62, respectively.

The bearing 39 (see Fig. 5) comprises a metal block 63 having a bore 64 therethrough which is intersected by a lateral recess 65. Bearing sleeves 66 are frictionally received in said bore 64 at each side of recess 65 and extend into the bore to be flush with the side walls 67 of recess 65. The arbor 34' is journalled for rotation in said bearing sleeves 66 and locked against axial movement by thrust washers 68 interposed between the said walls 67 and a snap ring 69 engaging in a circumferential groove 70 in the arbor 34'. The sleeves 66 may be made of any suitable material requiring non-lubrication, as for example, a "Teflon" material in which there has been incorporated ground glass particles as described in patent application of Robert Rulon-Miller, Ser. No. 306,345, now abandoned. The upper marginal opposite edge portion of block 63 is recessed as at 71 which provides a tongue portion 72 which slidably engages in the guide groove 57 of back saddle 27. Thus, the relation of the back roll 15 may be adjusted by merely loosening screw 61 to allow sliding the bearing 39 to the required location and then retightening the said screw. As previously mentioned, the bearing 39' for the middle top roll is identical to bearing 39 and is similarly adjustably secured in the guide groove 57 at the proper distance from the back roll 15.

As seen in Figs. 1, 2 and 3, the back saddle is supported on a back bar 75 which carries brackets 76 which are pinned thereto as at 77 (see Fig. 2). There is a back bar 75 for each section of drafting units between each roll stand 23 and each back bar carries a bracket 76 for each saddle of said drafting units. Thus, a section of three draft units will have three spaced brackets 76; and if the section has more than three draft units, the back bar will carry a like number of brackets. The lugs 54 of the back saddle straddle a bracket 76 with slot 55 and is detachably receiving a pin 78 which projects from either side of the bracket.

A fulcrum seat 79 (see Fig. 2) having an arcuate or ball socket 80 is adjustably secured in guide groove 56 by a screw 81 which extends through slot 59 into screw threaded engagement with the fulcrum seat 79. Thus, the position of the seat 79 may be adjusted along the guide groove 56. The front saddle 26 has a semi-spherical bearing 82 which is complemental to socket 80 and which is secured in position by a headed screw 83 extending through slot 52 into screw threaded engagement with said bearing 82, the slot allowing for an additional adjustment for the fulcrum between the back and front saddle portions. The bearing 82 fulcrums in socket 80 which allows self-alignment of the front top roll 11 with the front bottom roll 12.

It will be apparent from the above that the saddles of each section of drafting units are secured to the brackets 76 by the pins 78 carried thereby. Since the brackets are in turn fixed to the back bar 75 by pins 77, the rotation of the bar in one or the other direction will through pins 78 adjustably move all the saddles in one section along a rectilinear line parallel to the line of travel of the strands over the bottom rolls 12, 14, 16. Thus, rotating the bar 75 counterclockwise, as seen in Fig. 2, will advance the top rolls as a unit toward the front of the machine, and rotating the bar in the other or clockwise direction will move the top rolls as a unit toward the back of the machine, thus providing for simultaneously adjusting the position of the top rolls of each drawing action. Accordingly, the back bar 75 is provided with an axial bore 84 (see Fig. 6) in the ends thereof in which is received a short bearing stud 85 having an enlarged generally cylindrical head 86 having opposite flat sides 87 (see also Fig. 1). The stud is detachably held secured to the back bar by set screw 88. Each stand 23 has a bearing opening 89 extending axially of the rolls at the upper rear portion thereof and has a restricted opening 90 (Fig. 1) thereto extending inwardly from the upper side of the stand. The opening 90 is made of a size slightly larger than the dimension of the head 86 between the flats 87. The back bar 75 is attached at each end thereof to adjacent stands by passing the heads of the trunnions flatwise through opening 90 and then rotating the bar to position the flats 87 generally at right angles to the walls of opening 90. A resilient generally U-clip 91 has the arms 92 thereof spaced a distance slightly less than the width of opening 90 so as to allow said arms to be inserted into said opening to engage against the adjacent flat 87. A headed clamp screw 93 extends through the bight of the U-clip and into screw threaded engagement with the head 86 (see particularly Fig. 6). Tightening screw 93 will draw the clip toward the flat 87 and cause the arms 92 to spread into tight engagement with the walls of opening 90 so as to firmly secure the trunnion to said stands 23. To adjust the top rolls as above described, the screws 88 are loosened so as to allow the bar to be rotated on bearings 85 and thereafter the screws may be tightened in a usual way to secure the bar in adjusted position. It will be obvious the back bar may be readily removed from the stands by first removing the clamp clips 91 and thereafter rotating the back bar to

align the flats with opening **90** to allow passage of the head **86** through said opening **90**.

The head **94** of screw **93** (see Fig. 1) is provided with an axial screw threaded opening **95**. A bearing stand cover **96** extends over the upper side of stand **23** and has an opening **97** through which a cap screw **98** extends to engage in opening **95** to secure the cover **96** in position. Cleaner roll brackets **99** and **100** are mounted on the cover and rise therefrom for bearing engagement by the arbors **101** and **102** of the cleaner rolls **103**, **104**, respectively.

In some instances, the back bar of each section of drafting units may be connected one to the other (as shown in Figs. 10, 11 and 12). A coupling **105** (see Fig. 11) has a blind bore **106** extending inwardly from one end thereof and a bearing stud **107** projecting from the other end thereof. A coupling **105** is mounted on each end of a back bar here indicated **75'** and secured thereto by a set screw or screws **108**. The studs **107** of adjacent bars are received in opening **89** of each stand **23** and are held therein by a block **109** (see Figs. 11, 12) which is snugly received between the parallel sides of opening **90** and extends to overlie the studs **107** on each stand **23**. The block has spaced lips **110** which rest on the studs **107** and a clamp screw **111** extends through one end portion of the block **109** into screw threaded engagement with the stud **107**. A headed screw **112** (see Fig. 11) extends through the other end of the block into screw threaded engagement with the stud of the adjacent coupling **105**. Thus, adjacent back bars **75'** are connected to each other and to a stand **23**. The cover **96** is positioned to rest on block **109** beneath the head of screw **112** and a lock washer **113** and is thereby held in position on the stand **23**. It will be seen that tightening screws **111** and **112** will draw the block **109** into engagement with the studs associated therewith and cause the lips **110** to spread outwardly into firm engagement with the sides **90** of opening **89**. Each bar **75'** carries a bracket **76** for each drafting unit of each section, as previously mentioned. The back bars **75'** may be rotated in the couplings **105** by loosening screws **108** whereby to turn the back bar to adjust all the top rolls of the drafting units of the sections as previously pointed out in the description of the back bar **75** of Figs. 1, 2 and 3.

Another feature of novelty of the present invention is in the arrangement of guiding each individual apron **21** by the nose piece **19** which is carried by each separate cradle **17**. This provides for a space between cradles adjacent to the front rolls of each unit through which a direct passageway is had from the stirrup adjusting screw **47** to the lever **29**, as shown in Fig. 2. The stirrup **28** is detachably held in the neck portion **49** of the stirrup screw head **48** and extends therefrom in a direct line without any bends therein to engage the lever **29**.

In the present disclosure, the apron **21** extends a substantial distance beneath the bottom rolls of the drawing unit and the weighted cylinder **22** is mounted on a bracket **114** which is mounted for free swinging on a rod **115** carried by a lug **23'** (Figs. 1 and 2) depending from the stand **23**. Each bracket **114** (see Fig. 8) is of general U-shape providing parallel arms **117** terminating in a hook formation **116** (see Fig. 2) which engages the trunnion **118** of the cylinder **22**. The brackets **114** are held in spaced relation on the rod **115** and against axial movement thereon by a clip **119** which frictionally engages the rod **115**. The clip **119** is positioned between the arms **117** of the bracket and is made of a length slightly

less than the spacing between said arms so as to allow a slight axial movement of the bracket. It may be here mentioned that the cradles are free to be axially moved along the lower roll **14** and are blocked against but a slight axial movement by the top roll **13** which from a manufacturing standpoint is of advantage in that no boss on the bottom roll needs to be provided for such holding and thus the expense of the provision of such boss is eliminated. The top roll **13** which is engaged is not changed from the form usually used.

From the foregoing description, it will be apparent that all the top rolls of each drafting unit are free of end trunnions and are mounted in oiless bearings at the mid portion thereof. Thus, there is eliminated all the usual cap bars, cap bar bearings, and supporting structure. Moreover, it will be apparent that in mounting the top rolls on the saddle, all top rolls may be moved in unison for such adjustment which is required for setting up the spinning machine. It will also be apparent among other features of novelty that all the top drafting members of a section may be removed bodily with the saddles and top rolls of each drafting unit may be removed bodily with the saddles. Further, each pair of top rolls of the drafting units are fixed to an arbor and thus turn in unison. That is, a pair of cots **11** turn together, a pair of cots **13** turn together, and a pair of cots **15** turn together, causing two adjacent strands to have uniformity which is different from that heretofore known to have been done.

We claim:

1. In a drawing mechanism for spinning and roving machines, a roll stand having a bearing with an opening thereto of a dimension less than the diameter of said bearing, a member having a portion to fit said bearing, said portion being slabbed off to provide a dimension in one direction to pass through said opening into said bearing, a back bar, means to rotatably mount said back bar on said member, a plurality of spaced saddles extending in generally parallel arrangement at right angles to said back bar, spaced arms one for each of said saddles fixed to said bar, and means rockably connecting a saddle to its corresponding arm so that upon rotating said bar a plurality of saddles will be simultaneously adjusted in the direction of their extent.

2. In a drawing mechanism as in claim 1 wherein there are means to lock the bar to said member in adjusted position.

3. In a drawing mechanism as in claim 1 wherein said rockable means comprises a slot and pin connection.

4. In a drawing mechanism as in claim 1 wherein said stand has a plurality of top rolls, a top roll being rotatably mounted at its mid portion by each of said saddles, whereby adjustment of said saddles also adjusts said top rolls.

References Cited in the file of this patent

UNITED STATES PATENTS

2,582,213	Walsh	Jan. 8, 1952
2,618,025	De Santis	Nov. 18, 1952
2,677,858	Kuehn et al.	May 11, 1954
2,703,440	Poovey	Mar. 8, 1955
2,758,340	Anderson	Aug. 14, 1956
2,834,995	Calvert et al.	May 20, 1958
2,865,057	Cotchett et al.	Dec. 23, 1958

FOREIGN PATENTS

869,155	France	Jan. 26, 1942