

Sept. 29, 1964

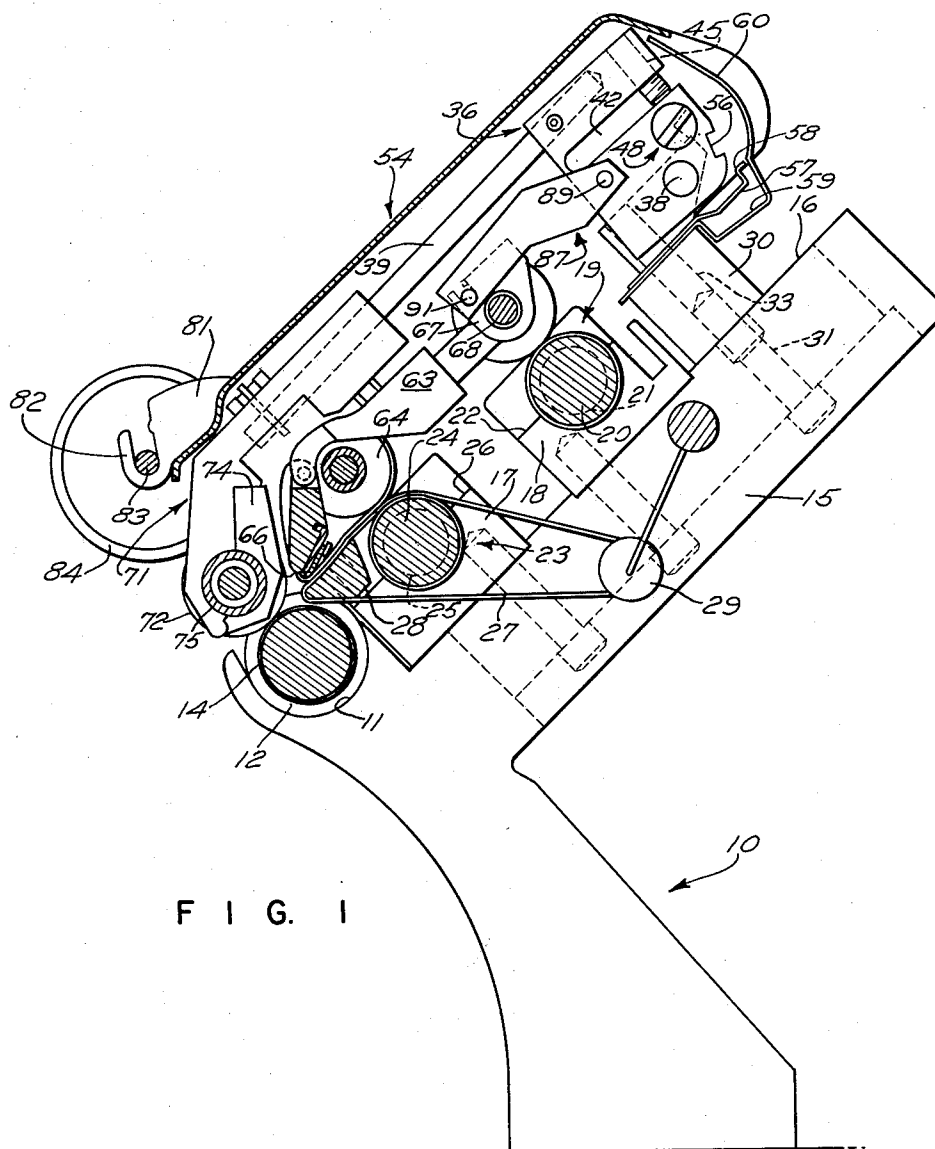
R. RULON-MILLER ET AL

3,150,418

STRAND HANDLING APPARATUS

Filed May 22, 1961

2 Sheets-Sheet 1



INVENTORS  
ROBERT RULON-MILLER  
WARNER H. TABOR

BY

*Barlow & Barlow*

ATTORNEYS

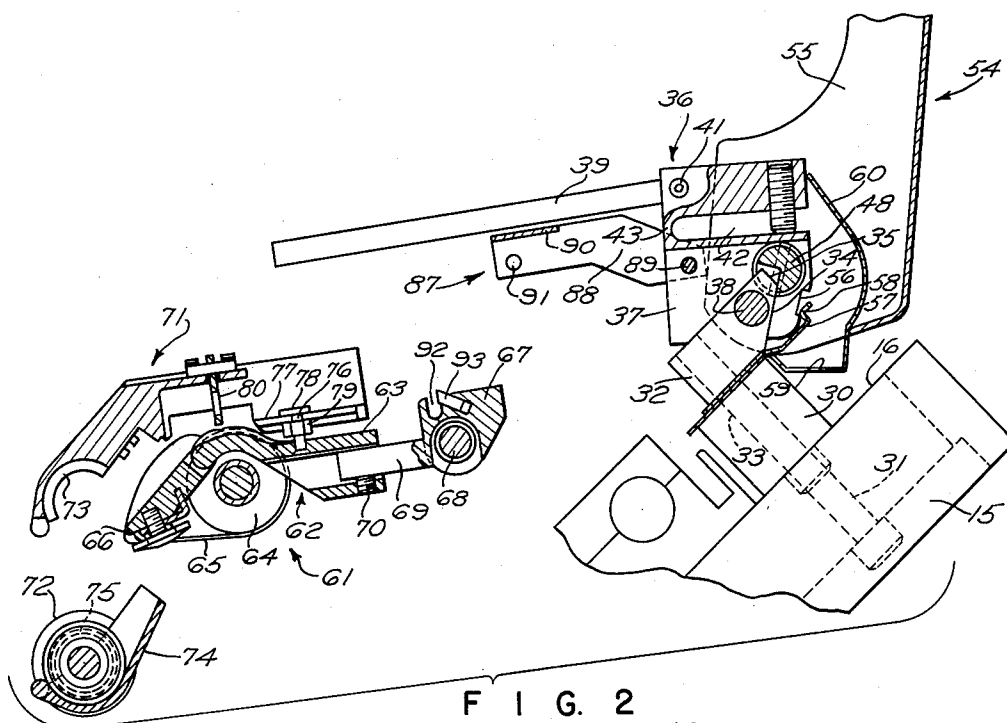
Sept. 29, 1964

R. RULON-MILLER ETAL  
STRAND HANDLING APPARATUS

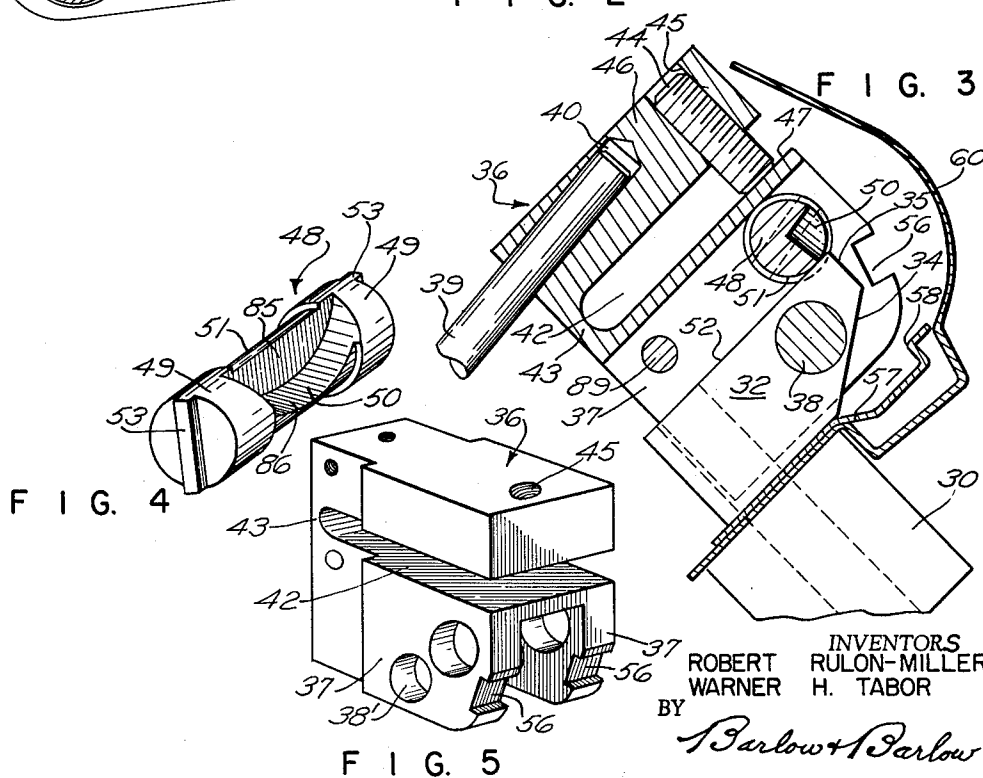
3,150,418

Filed May 22, 1961

2 Sheets-Sheet 2



F I G. 2



F I G. 4

F I G. 3

F I G. 5

INVENTORS  
ROBERT RULON-MILLER  
WARNER H. TABOR  
BY  
*Barlow & Barlow*  
ATTORNEYS

1

3,150,418

## STRAND HANDLING APPARATUS

Robert Rulon-Miller and Warner H. Tabor, both of  
Bristol, R.I., assignors, by mesne assignments, to  
Dixie Machine & Tool Company, Greensboro,  
N.C., a corporation of North Carolina  
Filed May 22, 1961, Ser. No. 111,512  
4 Claims. (Cl. 19-262)

This invention relates to a stand handling apparatus and more particularly to a drafting apparatus for spinning frames.

The invention centers about the application of pressure to one roll of a pair of rolls to move it toward the other roll, frequently referred to as "weighting of the rolls."

In a drafting apparatus for textile strands, in order that there may be a grip on the strand provided at the nip of a pair of rolls, pressure is applied upon one of the rolls, usually the top roll, to move it toward the bottom roll so that this nip or grip on the strand may be had. Weights with some leverage mechanism frequently have been applied for accomplishing this pressure which is desired between the pair of rolls. The leverage mechanism is usually located below the roll stand with a stirrup extending from below the roll stand through the rolls to a saddle above the rolls, and the pressure is applied through this stirrup and saddle to the rolls. Such weighting is clumsy and provides much mechanism to collect lint and other fly from the work or strand, and it is usually rather inaccessible beneath the roll stand, and much trouble has been heretofore gone to in order to collect the fly and prevent it from lodging on different parts of the apparatus.

One of the objects of this invention is to apply pressure on the rolls by a more compact means than heretofore used.

Another object of this invention is to apply pressure on the rolls from above the rolls leaving the entire space beneath the roll stand clear, free and uncluttered by mechanism.

Another object of the invention is to apply pressure directly on the saddles and eliminate the need for a stirrup which passes through the rolls from above to below.

Another object of the invention is to provide a resilient bar through which pressure is applied with an arrangement for detachably mounting the upper rolls on this bar, making them easily removable.

Another object of the invention is to provide an arrangement for mounting the upper rolls of the pairs of rolls so that the same may be swung upwardly together as a unit for threading the mechanism or for clearing the mechanism should one of the strands get wound about one of the rolls.

Another object of the invention is to provide a detachable unit of upper rolls which may be easily removed and replaced with a minimum stopping of the machine, that is, the unit may have a fresh one substituted therefor.

Another object of the invention is to provide a cover for the saddle which may act as a releasing handle for releasing pressure on the top roll unit and at the same time serve to swing it up from its working position out of contact with the lower rolls.

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:

FIGURE 1 is a sectional view showing the roll stand and a plurality of rolls in section and illustrating our new means of weighting the upper of the rolls of the pairs of rolls;

FIGURE 2 is a sectional view showing the various assembled parts of the apparatus in exploded relation and

2

separated with the cover swung to its upper or inoperative position;

FIGURE 3 is a fragmental sectional view of the bracket for mounting the tension bar as it is in working position and on a somewhat larger scale than the showing in FIGURE 2 of this same bracket;

FIGURE 4 is a perspective view of the cam which is utilized for swinging the bracket that mounts the tension bar; and

FIGURE 5 is a perspective view of the bracket looking somewhat from the rear thereof.

In proceeding with this invention, we have mounted on a stringer extending between two roll stands a bracket having a fixed part on the stringer and a movable part pivoted thereto, which bracket supports a tension bar which may directly engage and apply pressure upon saddles which engage the upper rolls. The saddles are assembled as a unit carrying all of the upper rolls and may be detachably mounted on this tension bar. A cam in the bracket serves to apply pressure or flex the tension bar so that the required amount of pressure may be applied between the rolls of each of the pair. The tension mechanism is thus all mounted above the rolls, leaving the area below the roll stands clear.

With reference to the drawings, 10 designates one of several roll stands along the frame which provide a support for the rolls. This roll stand has a recess 11 in which is located the ball bearing 12 of the lower front roll 14 which roll is connected to other rolls along the length of the frame so as to be driven from one end of the frame. The integral branch 15 of the roll stand 10 has a face 16 in substantially a single plane for mounting the blocks 17 and 18 which form bearings for the rolls back of the front rolls. The back roll 19 has a reduced portion 20 mounted in the split bearing 21 formed between the two halves of the block 18 with the meeting part of these halves at 22 as shown in FIGURE 1. The intermediate roll 23 has a reduced portion 24 mounted in the split bearing 25 of the block 17 with the meeting parts of these two halves at 26. These bearings may be provided with an anti-friction insert if desired. For adjustment of these blocks relative to the front roll to change the spacing between the rolls, each of the blocks may be slid along the face 16 and there secured in position by a screw as shown in dotted lines extending through the branch 15 of the roll stand. A belt 27 extends about intermediate roll 23, nose bar 28 and tension roll 29.

A stringer 30 extends lengthwise of the frame between the spaced roll stands 15 and is held in adjusted position along the face 16 of the roll stand by a screw 31. Thus this may be adjusted toward and from the front roll as occasion may require. A block 32 of the shape shown in FIGURE 2 is held in position on this stringer by a screw 33. The block is cut away on its back lower face as at 34 (see FIGURE 3) to provide an overhanging portion with a working end 35 for purposes that will hereinafter appear. This block has pivoted thereto a bracket 36 (see FIGURE 5) which has two legs 37 to straddle the block 32 while a pivot pin 38 extends through the block and through openings 38' in these two legs to pivotally mount the bracket 37 on the block.

An elastically resilient tension bar 39 is held in a socket 40 (see FIGURE 3) by a set screw 41 (see FIGURE 2) so as to fix this tension bar in the bracket at the upper portion thereof or in a portion above and remote from the pivot 38. A slot 42 is formed in this bracket between the socket 40 and the pivot 38 leaving a small portion of stock 43 to act as a hinge so that the position of the tension bar 39 may be adjusted by swinging the upper portion 46 of the bracket about this hinged portion by means of a screw 44 threaded in opening 45 in the upper portion 46 of this bracket and bearing against surface 47

3

as an abutment so as to swing the portion 46 relative to the lower pivoted part of the bracket for varying the relative position of the tension bar 39 in a plane substantially perpendicular to the plane of the upper rolls to be hereinafter referred to. A cam 48 shown by itself in FIGURE 4 has spaced cylindrical portions 49 which have bearings in the spaced legs 37. The portion of the cam 48 which extends between these legs is reduced in diameter as at 51 and is cut away as at 50 as seen in FIGURE 4. This cut away portion 50 will fit about the end 35 of the block 32 so that when the cam is in a position with the end 35 reaching into the cut away part 50, it will be substantially free of the block 32. However, when this cam is rotated so that its surface 51 engages the upper surface 52 of the block 32, then the bracket 36 will be swung around its pivot 38 to the block 32 and will swing the tension bar 39 downwardly until the rolls carried thereby engage the lower rolls after which the bar 39 will be sprung to place it under tension so as to apply pressure on the rolls. This cam is provided with key-like projections 53 at opposite ends thereof for its manipulation, the manipulation being by means of a cover 54 which has side walls 55 slotted to receive these key-like projections and thus swing the cam as it is moved from the lower position shown in FIGURE 1 to the raised position shown in FIGURE 2.

The bracket 36 is notched as at 56 and a spring 57 having a knee 58 will move into this notch when the bracket is at a certain elevated position such as shown in FIGURE 2 so as to hold the bracket in this position. A second spring 59 has an arm 60 that fits up inside the back of the cover to act as a guard to prevent lint from accumulating under the cover. Both of these springs are held beneath the block 32 by means of the screw 33 which holds this block in place.

An assembly designated generally 61 and shown in FIGURE 2 comprises the three upper rolls for pairing with the three lower rolls which have been previously pointed out. These upper rolls are mounted in saddles, there being the lower saddle 62 having the front part 63 and back part 67. The front part 63 carries the upper middle roll 64, belt 65 and nose bar 66 while the back part 67 carries the reduced bearing portion 68 of the upper back roll. The back part 67 of the lower saddle is held adjustably with the front part of the lower saddle through a squared rod 69 of the back part entering a square hole in the front part and set screw 70. The upper saddle designated generally 71 carries the front upper roll 72 in the bearing 73 which is split, there being a removable separate part 74. This bearing receives a reduced portion 75 between the pair of front rolls. This upper saddle is connected to the lower saddle by a single pin 76 rockable in the lower saddle and extending through a slot 77 in the upper saddle and provided with a head 78 and an adjustable nut 79 below, affording an adjustable connection along this slot. This upper saddle portion 71 is generally channel shape at its rear portion and is provided with an eye set 80 into which the end of the tension bar 39 may extend and have a fairly close fit so that pressure may be applied through this bar and eye on to the upper saddle and transmitted therefrom to the lower saddle and to the rolls.

A hanger designated generally 87 has a pair of arms 88 which straddle the pivoted bracket 36 and is pivoted thereto by a pin 89. Beneath the bridge 90 of this hanger a pin 91 extends between the arms 88 and it is of a size to fit into the groove 92 in the part 67 of the lower saddle, and this pin will snap by a nylon stud 93 which protrudes partly across the mouth of the groove 92 so as to retain this saddle in position on this hanger, it being a simple matter for detachment to force the part 67 of the saddle from this hanger by pressure and then slide the assembly 61 from the tension bar 39. When in position the assembly thus is supported primarily upon the tension bar 39 but prevented from sliding forwardly on

4

the bar by this groove 92 and pin 91 although detachment may easily occur by releasing the pin 91 from the notch 92.

The cover 54 above described and as seen in FIGURE 1 extends substantially over the saddles being of a general channel shape formation substantially hides the same from view. On the forward edge of this cover there is a bracket 81 which provides a hook of substantial width 82 for the reception of the arbor 83 of a clearer roll 84, the two parts of which will engage the upper roll of the front pair so as to pick up lint or dust which may accumulate thereon.

The working position of the parts as illustrated in FIGURE 1 may from time to time for threading, for removal of a wound strand on a roll or for some other reason require that the upper rolls be lifted clear of the lower rolls. In order to do this, it is merely necessary to take hold of the cover 54 adjacent its front end near the bracket 81 and swing this cover upwardly. This cover in being swung upwardly will rotate the cam 48 causing a release of tension on the bar 39 as this rotation occurs until the cam reaches a position where the cutout 50 will clear the cam surface completely from the block 32, whereupon the surface 85 of this cam then in engagement with the end 35 of the block will tend to slide along the end of this block swinging the bracket by this action around its pivot 38 and lifting the bracket from the position shown in FIGURE 1 to the position shown in FIGURE 2, at which point the surface 85 will be slid around the junction of surfaces 35, 34 to engage the inclined surface 34 and at this location the knee 58 of the spring will snap into the notch 56 (FIGURE 2) so as to hold the bracket in this raised position, and at the same time the spring 60 will engage the outer surface of the cover 54 so as to hold it in this raised position. For reverse operation the cover is first swung counter-clockwise from the position shown in FIGURE 2 which releases the bracket from the spring 57 as this spring will move out of the notch 56. Then the assembly is rotated through the bracket 36 until the rolls carried by the tension bar 39 engage the lower rolls of the apparatus. Then there is a slight lost motion as the cam is further rotated and its surface 85 to leave the surface 35. Then the surface at the edge between the surface 86 and the cylindrical part 51 comes in contact with the surface 52 of the block 32 and then the entire bracket starts to swing about its pivot 38 to spring or apply tension to the bar 39 as the cover moves in to closed position and the cam assumes substantially the position shown in FIGURE 3.

We claim:

1. In a strand handling apparatus, a plurality of pairs of rolls between which the strand travels a frame for supporting said rolls, a saddle above said rolls, a bracket pivotally mounted on said frame, an elastically resilient bar above said rolls and having one end mounted on said bracket, means engaging said saddle for receiving pressure from said bar to weight said saddle, and means comprising a cam rotatably mounted in said bracket and engaging a part fixed with relation to said frame for swinging said bracket about its pivot to apply tension on said bar to urge said bar toward said saddle.

2. In a strand handling apparatus, a plurality of pairs of rolls between which the strand travels a frame for supporting said rolls, a saddle above said rolls, a bracket pivotally mounted on said frame, an elastically resilient bar above said rolls and having one end mounted on said bracket, means engaging said saddle for receiving pressure from said bar to weight said saddle, and means comprising a cam rotatably mounted in said bracket for swinging said bracket about its pivot to apply tension on said bar to urge said bar toward said saddle and a cover for said saddle connected to said cam for actuating the cam.

3. In a strand handling apparatus as in claim 2, wherein there is a clearer roll and means carried by the cover for removably mounting said clearer roll.

5

4. In a strand handling apparatus, a plurality of pairs of rolls between which the strand travels, a frame for supporting said rolls, a saddle above said rolls, a bracket pivotally mounted on said frame, an elastically resilient bar above said rolls and having one end mounted on said bracket, means engaging said saddle for receiving pressure from said bar to weight said saddle, means comprising rotatably mounted cam for swinging said bracket about its pivot to apply tension on said bar to urge said bar toward said saddle, and an adjusting means within said bracket to raise or lower the rearward end of the elastically resilient bar in a plane substantially perpendicular to the plane of the axes of corresponding rolls of the plurality of pairs of rolls.

6

ular to the plane of the axes of corresponding rolls of the plurality of pairs of rolls.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

1,130,220	Vales	Mar. 2, 1915
1,396,122	Johnson	Nov. 8, 1921
2,657,434	Tarbox et al.	Nov. 3, 1953
2,815,538	Schussler et al.	Dec. 10, 1957

##### FOREIGN PATENTS

830,614	Great Britain	Mar. 16, 1960
527,446	Italy	May 31, 1955