

April 21, 1953

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2,635,299

SPINNING OR ROVING FRAME

Filed June 21, 1948

4 Sheets-Sheet 1

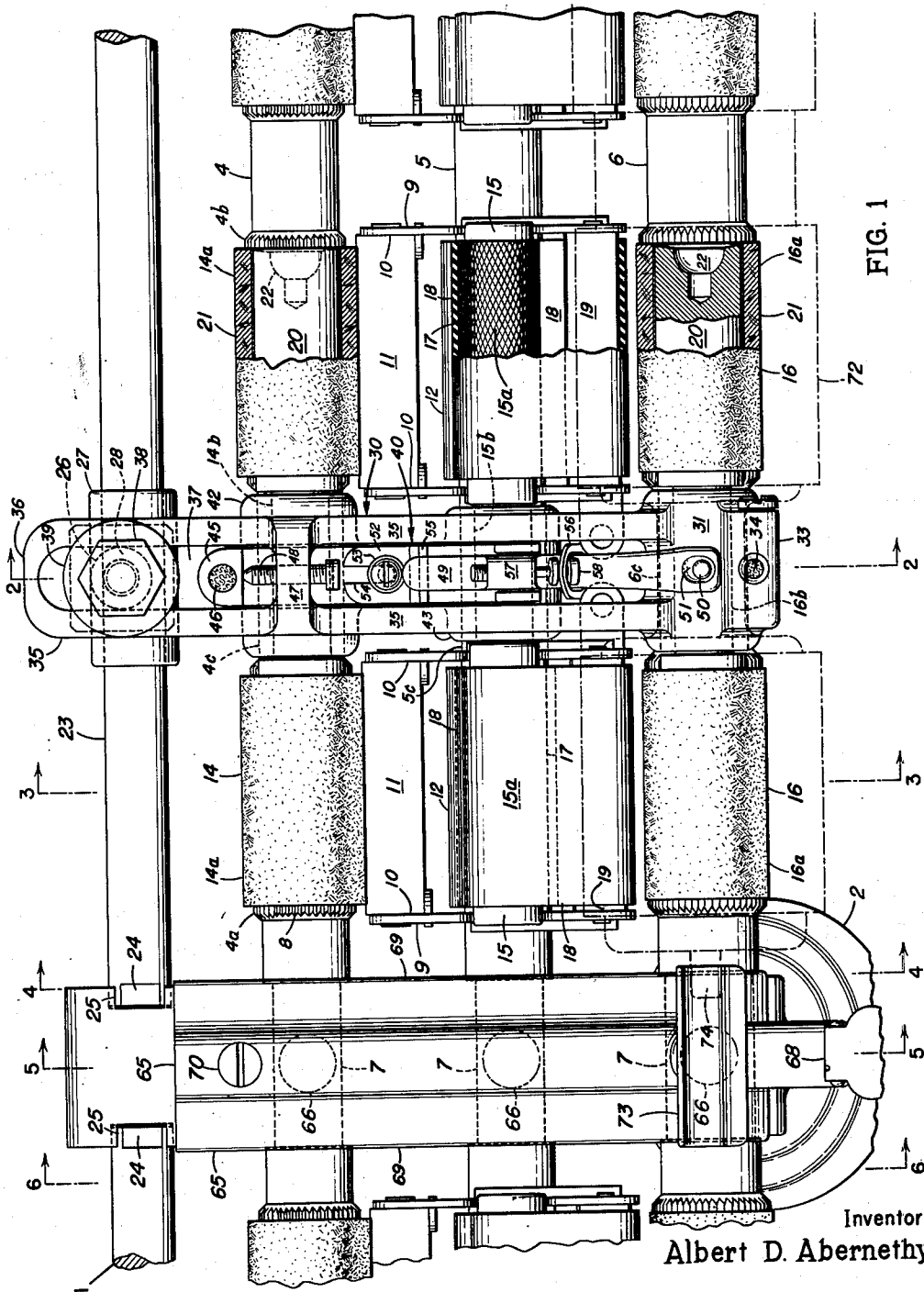


FIG. 1

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4 Sheets-Sheet 2

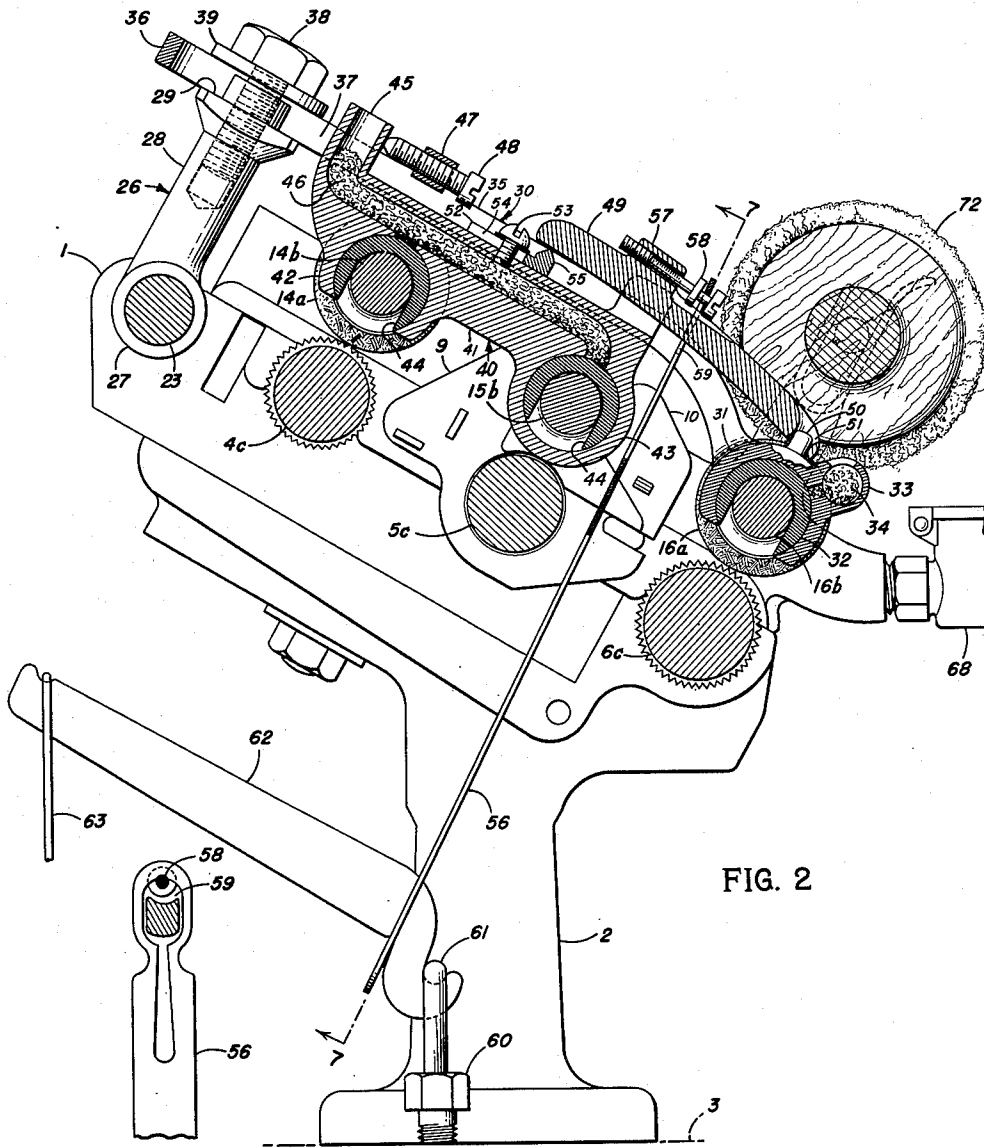


FIG. 2

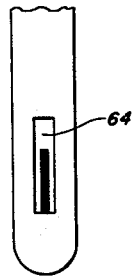


FIG. 7

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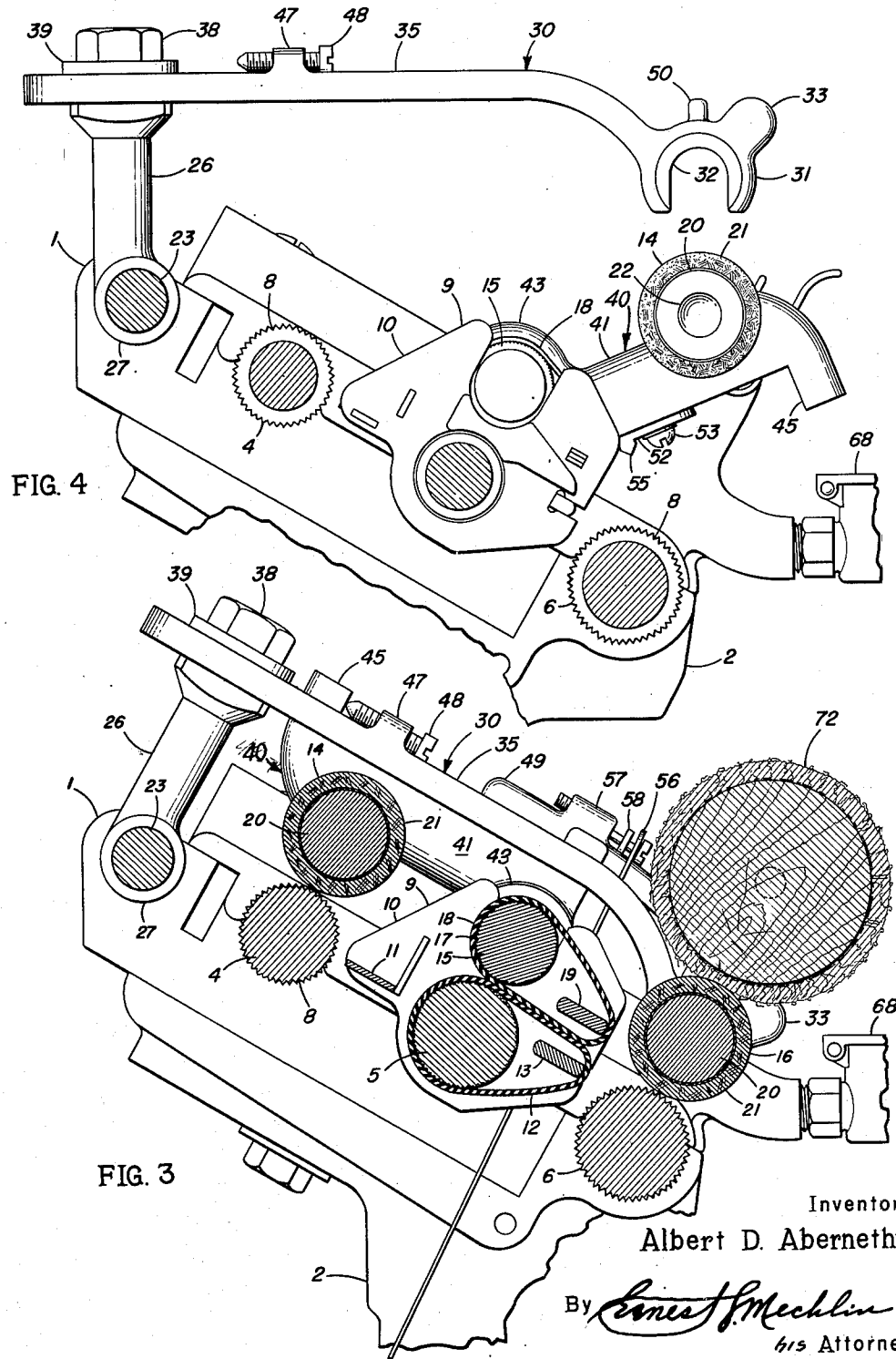
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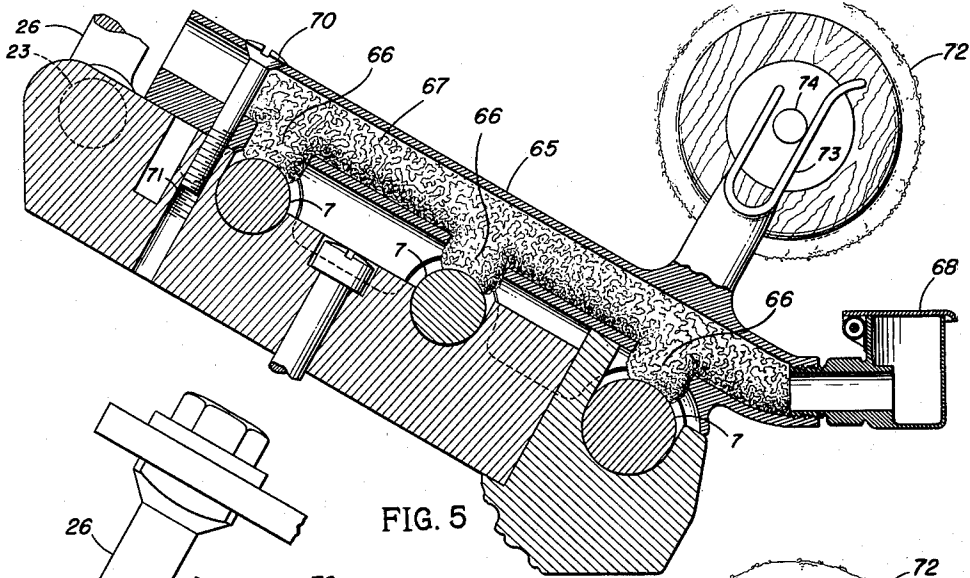


FIG. 5

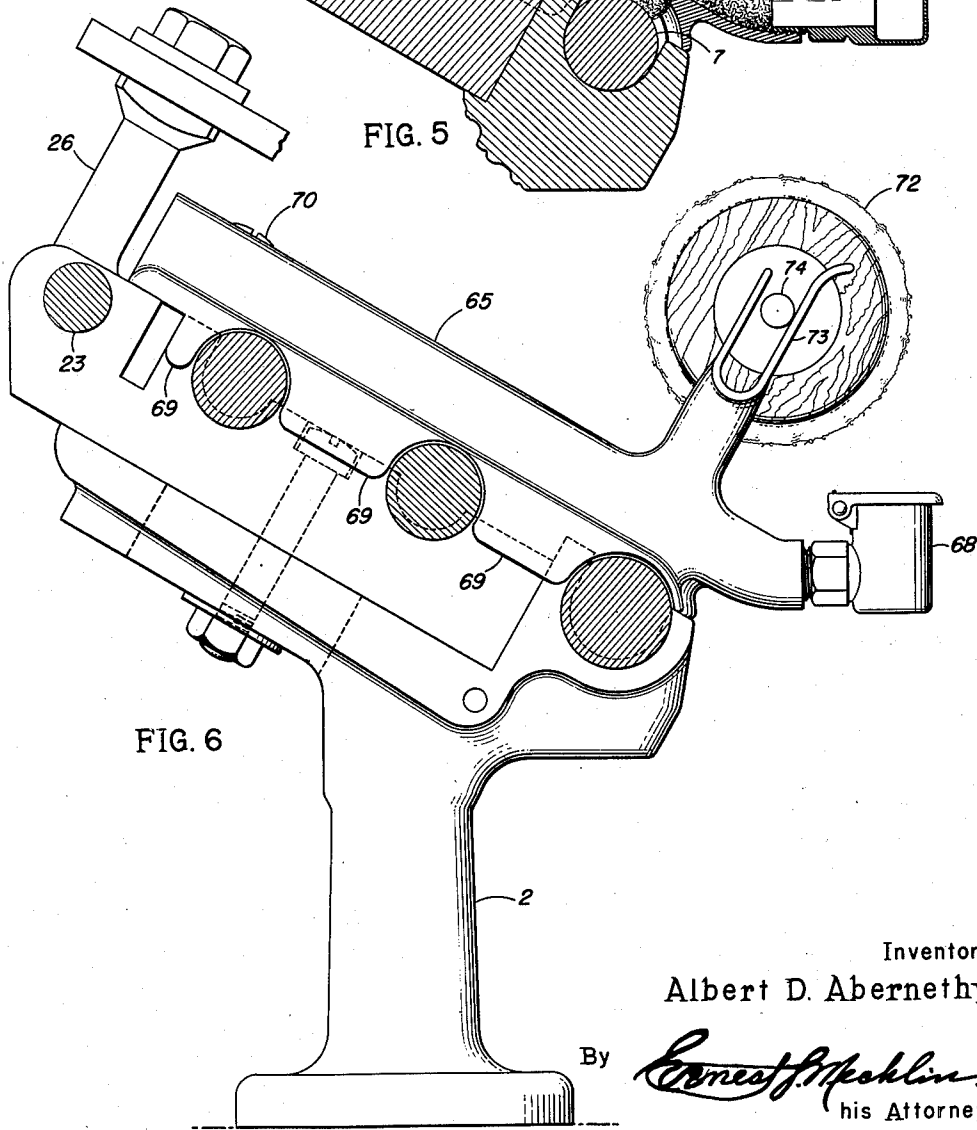


FIG. 6

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# UNITED STATES PATENT OFFICE

2,635,299

## SPINNING OR ROVING FRAME

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6 Claims. (Cl. 19—134)

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This invention pertains to spinning or roving frames with particular reference to the construction and arrangement of the drawing rolls thereof and their mountings.

An object of the invention is to provide, in a spinning or roving frame, an improvement in bearing mountings for the drawing rolls so as to not only eliminate many bearings heretofore employed but to properly shield the bearings against dirt, lint or any other impurities.

Another object of the invention is to provide, in a spinning or roving frame, an improvement in aligning, weighting and lubricating the top draft rolls in roving or spinning machines employed in the processing of cotton, wool, rayon, nylon or other fibers.

A further object of the invention is to provide, in a spinning or roving frame, an improvement in arranging and constructing the roll bearings in such a manner that the lubricating medium thereof will not find its way to the rolls to thereby damage or render useless the work or yarn.

A still further object of the invention is to provide, in a spinning or roving frame, an improvement in the weight distribution on the top rolls thereof.

An added object of the invention is to provide, in a roving or spinning frame, an improvement in adjustment of the top rolls.

The above and many other objects will become apparent from the succeeding description considered with the disclosures of the accompanying drawings, wherein:

Figure 1 is a plan view of a portion of a roving or spinning frame embodying a form of the present invention.

Figure 2 is a sectional view taken along the lines 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a vertical sectional view taken along the lines 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a partially exploded view of the invention; being shown thus to more clearly illustrate the arrangement of parts. This can be considered as looking in the direction of the arrows along the lines 4—4.

Figure 5 is a vertical sectional view taken along the lines 5—5 of Figure 1, looking in the direction of the arrows.

Figure 6 is a vertical sectional view taken along the lines 6—6 of Figure 1, looking in the direction of the arrows.

Figure 7 is a view taken along the lines 7—7 of Figure 2, looking in the direction of the arrows.

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Referring now to the drawings in detail, wherein like reference characters indicate like parts, the numeral 1 is employed, in a somewhat general manner, to designate a portion of a spinning or roving frame embodying a combination of components characteristic of the present invention. As will be clearly understood, a complete spinning or roving frame is made up of aligned multiples of the portion illustrated in the drawings and accordingly only one section will be hereinafter described. Forming a part of the spinning or roving frame is a roll stand 2 which is anchored to a suitable support 3 (indicated diagrammatically) by any desired means so long as the roll stand is made fast to the support. The roll stand carries a bottom set of rolls which for the sake of clarity is designated as a bottom back roll 4, a bottom intermediate roll 5 and a bottom front roll 6. Further, it is to be noted that all the bottom rolls are necked with certain necks 7 anchored or suitably journaled in bearings forming a part of the roll stand and all the bottom rolls are driven positively by a gearing mechanism located at one end of the frame as is customary in machines of this type. More specifically the bottom back and front rolls have their exposed surfaces fluted or grooved as at 8 so as to more firmly grip the staple to be handled as well as for the purpose of advancing the staple in the process of spinning or roving from the back roll to and beyond the front roll. The intermediate roll 5 has associated therewith a frame member 9 which has side walls 10 straddling or adjacent each individual knurled portion of the bottom intermediate roll and these side walls are journaled on or carried by the necked portions of the bottom intermediate roll. The related or two side walls of each frame member are joined adjacent their rear extremities by a ledge 11 which also functions as a guide or rest in directing the staple from the rear bottom roll to the intermediate bottom roll. Also more specifically the bottom intermediate roll is of the apron type in that a continuous or uninterrupted flexible or preferably a rubber or rubber compound bottom apron or belt 12 is sleeved over the intermediate bottom roll. Joining the frame members at a location which may be considered in advance of the intermediate bottom roll or between the bottom intermediate and front rolls is a bottom bar 13 firmly secured to the side walls and threaded through the bottom belt or apron. Since the bottom intermediate roll is knurled between necks thereof and this roll is, as previously stated, positively driven, the belt or apron is

also driven with the staple engaging flight thereof directed tangentially of the upper reaches of the bottom front roll. Since the bottom apron 12 spans the intermediate bottom roll and bottom bar an appreciable area is presented for not only directing the staple in a predetermined flight but also this area assists in holding the staple firmly as the latter moves from the intermediate roll to the front bottom roll. This structure above described makes up the bottom rolls which is somewhat common or previously developed in the art to which this invention appertains.

The advancement of the art contemplated by this present invention revolves about an arrangement and weighting of a top set of rolls which will now be considered in detail. The bottom rolls may, for the sake of further clarity, be considered as paired or in other words with two fluted portions of each roll making or constituting a set or pair; as for example fluted portions 4a and 4b may be considered as forming a set of fluted portions of the back roll with a necked portion 4c therebetween. Likewise a necked portion 5c is present in a set in the bottom intermediate roll and a necked portion 6c is present in a set in the bottom front roll. Each set of the bottom rolls has associated therewith a companion set of top rolls and more specifically top back roll 14 bears upon bottom back roll 4; top intermediate roll 15 bears upon bottom intermediate roll 5; and top front roll 16 bears upon bottom front roll 6. The top intermediate set or roll comprises a pair of knurled portions 17 arranged at a location above the bottom intermediate roll 5 and each knurled portion extends into a top apron or belt 18 which is a companion to the lower apron or belt. Extending between the side walls 10 of the frame member is a top bar 19 over which the top continuous apron trails so that the top apron spans the top bar and top intermediate roll as clearly illustrated in Figure 3 of the drawings. The top and bottom belts or aprons are contiguous for a predetermined extent to receive and direct the staple to the front roll. The front and back top rolls are of a different character than the intermediate roll and accordingly each comprises a metallic core 20 having bonded thereto or otherwise fixed with respect thereto a sleeve of resilient or yieldable material 21; cork being illustrated in the drawing merely for the purpose of illustration.

Heretofore in the majority of cases, particularly the top front and back rolls had, extending beyond the limits of the yieldable material, a continuation of the metallic core to function as an axle which is seated loosely in, what is known in the art as cap bar blocks, some types of which were made as integral units and others as adjustable units. It has been found in actual practice that while these arrangements of axle and cap bar blocks functioned as intended, the axles were exposed and thus were in position to pick up fibers from the spinings or rowings or staple. These windings of fibers on the axles could and usually did attain such proportions that they interfered with the proper functioning of the machine, thus necessitating a shut-down to strip the windings. This invention eliminates the possibility of such windings and toward the accomplishment of this feature each set of top back and front rolls has their terminals indented, recessed or cup-shaped as at 22. (see Figure 1). Thus no fiber gathering projections are present in these top rolls and accordingly the possibility

of shut-down has been completely eliminated from the present structure.

As previously indicated, the top rolls are also arranged in sets or connected pairs; thus the top back roll comprises a set of resiliently coated portions 14a joined by a journal neck or reduced portion 14b, the top front roll comprises a set of resiliently coated portions 16a joined by a journal neck or reduced portion 16b and the top intermediate roll comprises end knurled portions 15a joined by a journal neck 15b. Since the usual end axles and cap bar blocks have been eliminated in the present structure a combined top roll retaining and weighting means has been incorporated therein. Toward the accomplishment of the latter a rod 23 is removably secured to the roll stand and this rod extends horizontally in spaced parallel relation to the back rolls. This rod 23 may, if desired, be formed in short sections to extend only between related or adjacent roll stands and as such may be removably secured to the roll stands by having their ends reduced in section as at 24 to be housed properly in a slot 25 in the roll stand as clearly illustrated in Figure 1 of the drawings.

Mounted upon the rod 23 is a front roll carrier stand or post 26 which is provided with a hub 27 freely movable or rotatable on the rod. Upstanding from the hub of each front roll carrier stand is a column 28 which terminates in a flattened seat 29. Associated with the flattened seat in a manner to be hereinafter explained in detail is a top front roll carrier 30 shown in an abnormal position in Figure 4 and in a normal position in Figure 1 and Figure 2, particularly of the drawings. The top front roll carrier has one of its forward end thereof provided with an open or downwardly opening boss, hub or bearing 31 which houses or accommodates a circular brass 32 formed of a porous metallic substance and which neatly accommodates the journal neck 16b of the top front roll. The opening into the brass 32 is preferably slightly smaller than the diameter of the journal neck so that the latter may be snapped into place but this feature is not absolutely essential. The extreme forward extremity of the top front roll carrier is cored at 33 for the accommodation of a wick-type material 34 and as the material is saturated with a lubricating medium the journal neck and brass of the top front roll are adequately and constantly lubricated. It is also to be noted by referring to Figure 1 that the boss or hub is of a width substantially equal to the distance between resiliently coated end portions of the top front roll and thus because of this structure, taken into consideration with the lubricating system employed, no oil, as a result of a rotary motion of the top front roll, will be splashed or find its way to the face of the front rolls and accordingly the staple will not become damaged. The remainder of the top front roll carrier is yoke-shaped in nature in that it comprises spaced rails 35 joined at their front ends to the boss 31 and at their rear ends by an end connecting rib 36 to thereby present an opening 37 therebetween. The top front roll carrier rails bear at or adjacent their rear extremities upon the flattened stand seat 29 and extending through the opening into the post 26 is a cap screw 38 which locks the top front roll carrier to the carrier stand. A washer 39 is interposed between the cap screw and roll carrier to present a broader bearing area therebetween. If for any reason it becomes necessary to alter the relationship be-

tween the top front roll and any of the other rolls the cap screw may then be loosened and a proper manipulation or adjusted disposition of the top front roll may be effected. The carrier for the top back and intermediate rolls is combined in a single component 40 shown in an abnormal position in Figure 4 and in normal position particularly in Figures 1 and 2 of the drawings. The top back and intermediate roll carrier has a central shank 41 arranged to fit between the spaced rails 35 and carries spaced hubs 42 and 43. The hub 42 is an open or C-shaped hub while the hub 43 is completely enclosed or circular in formation. In each of these hubs there is an open or C-shaped brass 44 of a porous bearing material to neatly accommodate the journal necks 14b and 15b of the top back and intermediate rolls. These hubs are also of a width to substantially space the distance between the end portions 14a and 15a and thus a lubricating medium will not be thrown upon the roll portions 14a or the aprons or belts. The upper end of the central shank has, upstanding therefrom, an abutment 45 with the abutment and central shank cored to form a canal for the reception of a wick-type material 46 with openings communicating between the canal and brasses 44. A deposit of oil or any desired lubricating medium in the canal will be therein reservoired and function as a lubricating supply for the journal necks 14b and 15b.

In order to change the relationship between the top back and intermediate rolls and the top front roll the front roll carrier rails are joined by a barrier 47 intermediate the ends thereof and this barrier is provided with a threaded opening for the accommodation of a set screw 48, the free end of which abuts the abutment 45 (see particularly Figures 1 and 2). A manipulation of the set screw will cause the top back and intermediate roll carrier to be moved in a direction toward or away from the top front roll and thus the relationship between these rolls may be easily and quickly altered even while the machine is in operation.

As previously indicated the top rolls are adequately weighted so that a proper pressure may be maintained on the staple. Toward the accomplishment of this feature there is provided a saddle or weight distributing bar 49 being somewhat arched as viewed in Figure 2 for the purpose of rigidity and strength. The front roll carrier hub 31 has upstanding therefrom a pin 50 formed integral therewith. The front end of the saddle or weight distributing bar has an aperture 51 to loosely accommodate the pin 50 and thus the former and top front roll carrier are interlocked or the weight distributing bar is maintained in a positive and fixed position relative to the top front roll carrier. The top rear and intermediate roll carrier has an anvil or weight distributing block 52 mounted on the central shank thereof through the medium of a screw 53 or any other tightening means. The weight distributing block is bifurcated as at 54 to accommodate the screw and thereby render it adjustable forwardly and rearwardly of the machine. Extending from a front extremity of the weight distributing block is a knife edge or fulcrum block 55 which functions as a bearing line or area for the rear extremity of the weight distributing bar. Since a load is to be applied to the weight distributing bar, as more fully explained hereinafter, it will be observed that if it is found in service that the load is not

properly distributed between the top back and intermediate rolls the screw 53 may be turned back and the weight distributing block shifted either forwardly or rearwardly as desired and the screw tightened once more to hold the associated parts in a fixed relationship.

Applying a load to the weight distributing bar is accomplished through the medium of a stirrup 56 which is an elongated, plate-like member as clearly shown in elevation in Figure 7 of the drawings. The weight distributing bar has intermediate its ends, a shoulder 57 into which is screwed an adjustable member or weight distributing screw 58. The stirrup is provided with an opening or slot 59 at its upper end and the weight distributing bar is threaded through this opening so that the stirrup can be hung on or interlocked with the adjustable member. If, during service it is found that the applied load is not properly distributed between the forward end of the top front roll carrier and the combined top back and intermediate roll carrier, a manipulation of the adjustable member 58 will correct this situation.

The stirrup extends downwardly from the weight distributing screw through the machine between the intermediate and front rolls to terminate at a location adjacent the support 2. In the proximity of the support there is provided an anchor bolt 60 having an eyelet head 61. While any suitable weighting means or mechanism may be employed the preferred arrangement for weighting all three top rolls is a lever 62 having suspended from one or a rear end thereof a load or weight 63 only a part of which is illustrated. The front end of the lever is hook-shaped in configuration and thus it extends through a suitable opening 64 in the lower area of the stirrup and the eye 61 of the adjustable anchor bolt.

The present invention also contemplates or embraces a mechanism to protect the necked portions 7 of the bottom rolls. Toward the accomplishment of the latter and with particular reference to Figures 1, 5 and 6 of the drawings there is provided a shield or cover plate 65 of hollow or skeletonized design. The cover plate is of somewhat tubular configuration and as such has properly arranged openings 66 in alignment with the bottom roll necked portions previously referred to. The shield or cover plate has a core of lubricating medium carrier or wick-type packing 67 which is arranged to extend through the openings 66 and bear upon the lower roll necked portions thereby maintaining these necked portions under constant and controlled lubrication. The forward end of the shield has fixed thereto an oil cup 68 properly capped and communicating with the core of the shield. Thus a reservoir or lubricant supply is arranged to saturate or load the wick-type packing and the oil cup is at the forward end of the shield and thus easily accessible. In order to keep the oil away from the rolls, the shield or cover plate has skirts 69 which overlap the roll stand between the various bottom rolls. Since the shield does not carry any loads from the bottom rolls a complex shield securing means is not believed necessary and accordingly a single set screw 70 is arranged to pierce the shield at its uppermost extremity and turn in a suitable screw hole 71 formed in the roll stand. As is customary in machines of this type a clearer 72 is arranged to bear upon the top front roll and as a support for the clearer the shield is utilized. Toward this end the cover plate has upstanding

therefrom a yoke or clevis type extension 73 which rather loosely accommodates a pin or axle 74 of the clearer.

While there is herein shown and described a characteristic embodiment of the invention it will however be clearly understood that the invention may be embodied in other forms and that various changes and alterations may be made to the illustrated and described construction without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. In a drawing mechanism for spinning or roving frames of the type having top and bottom front, intermediate and back pairs of rolls carried by a roll stand, the combination of, a rod associated with said roll stand, a top front roll carrier adjustably mounted on and supported by said rod, a combined top back and intermediate roll carrier beneath and having a portion upstanding into said first named carrier, a weight distributing bar bridging both of said carriers, and rotatable means carried by one of said carriers and abutting the other of said carriers to shift said top back and intermediate rolls relative to said top front roll.

2. In a drawing mechanism for spinning or roving frames of the type having top and bottom front, intermediate and back pairs of roll carried by a roll stand, the combination of, a horizontal rod, a top front roll carrier adjustably mounted on and supported solely by said rod, a combined top back and intermediate roll carrier having a portion thereof within the limits of said first named carrier, a weight distributing bar bridging said carriers, and shiftable means on said second named carrier supporting one end of said bar for adjusting the distribution of weight to said top back and intermediate rolls.

3. In a drawing mechanism for spinning or roving frames of the type having top and bottom front, intermediate and back pairs of rolls carried by a roll stand, the combination of, a rod, a top front roll carrier supported solely by said rod and being mounted on said rod so as to be adjustable perpendicular to an axis of said rod, a combined top back and intermediate roll carrier adjustably connected to said first named carrier, a weight distributing bar bridging said carriers, shiftable means on said second named carrier supporting one end of said bar for distributing weight between said top back and intermediate rolls, and variable means on said bar for distributing weight between said top front roll and said other top rolls.

4. In a drawing mechanism for spinning or roving frames of the type having top and bottom front, intermediate and back pairs of rolls carried by a roll stand, the combination of, a shield covering reduced portions of said bottom rolls and secured to said roll stand, a rod carried by

said roll stand, means slidable along said rod, a top front roll carrier mounted on said means for the sole support thereof and being adjustable perpendicular to an axis of said rod, a combined top back and intermediate roll carrier disposed between ends of said first named carrier and in alignment therewith, a bar bridging said carriers for applying weight thereto, and adjustable means on both carriers for distributing weight between said top rolls.

5. In a drawing mechanism for spinning or roving frames of the type having top and bottom front, intermediate and back pairs of rolls carried by a roll stand, the combination of, a hollow shield covering reduced portions of said bottom rolls and removably secured to said roll stand, a lubricant carrier in said shield for lubricating said reduced portions, a rod supported by said roll stand, means pivotally mounted on said rod, a top front roll carrier adjustably supported solely by said means and arranged to be shifted perpendicular to an axis of said rod, a combined top back and intermediate roll carrier adjustably associated with said first named carrier, bearings in all of said carriers, lubricant conveying openings in said carriers leading to said bearings, and a weight distribution bar mounted upon said carriers.

6. In a drawing mechanism for a spinning or roving frame of the type having top and bottom front, intermediate and back pairs of rolls, the combination of, a rod extending longitudinally of said frame, a post pivotally mounted on said rod, a top front roll carrier carried solely by said post and shiftable thereto at an angle to an axis of said rod, a combined top back and intermediate roll carrier having a portion thereof extending into said first named carrier, an abutment upstanding from said second named carrier, adjustable means carried by said first named carrier bearing against said abutment for shifting said top back and intermediate rolls toward and away from said top front roll, a fulcrum block shiftable mounted on said second named carrier intermediate ends thereof, and a weight distributing bar bridging said first named carrier and fulcrum block.

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