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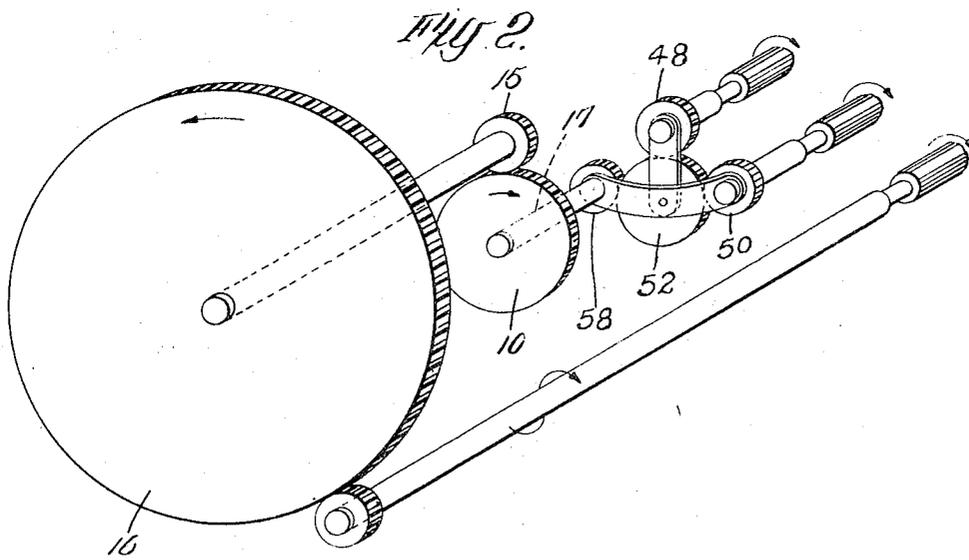
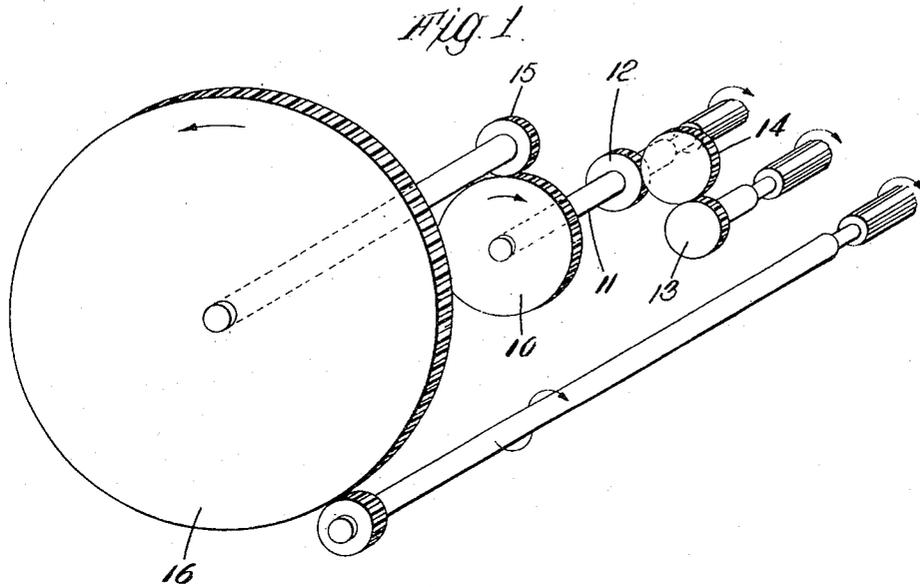
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ROLLER GEARING FOR DRAFTING MECHANISMS FOR TEXTILE FIBERS

Filed Oct. 17, 1945

3 Sheets-Sheet 1



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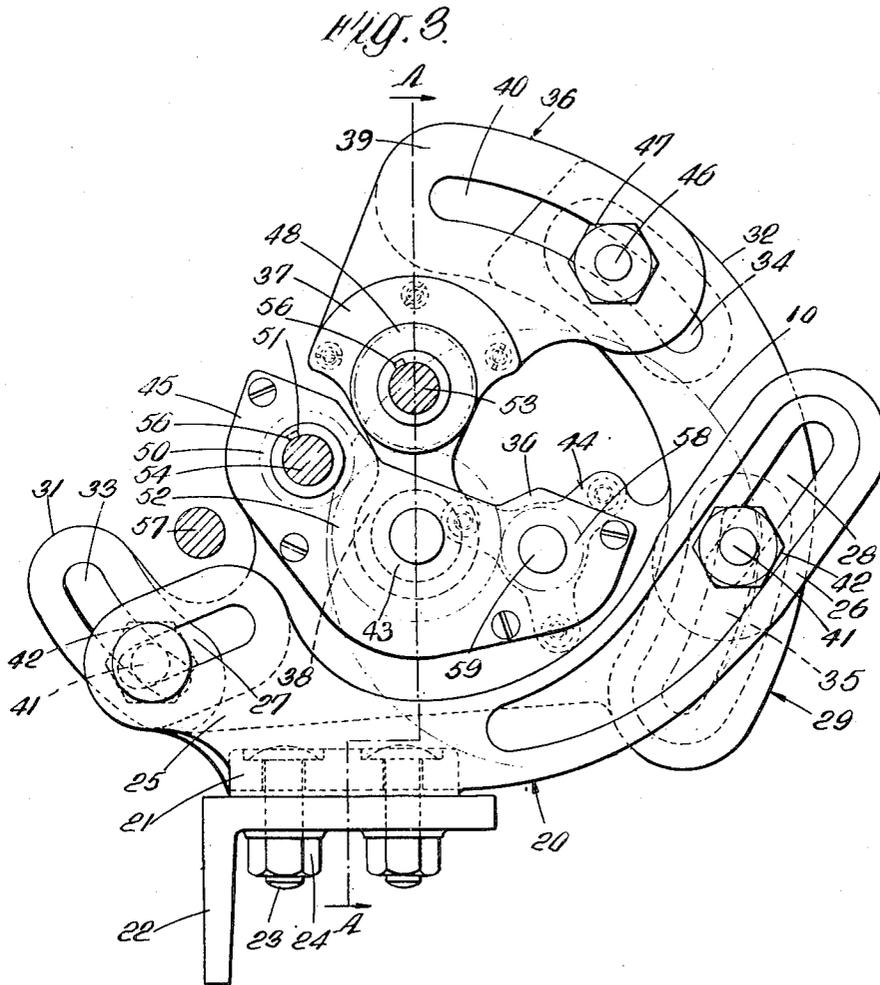
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ROLLER GEARING FOR DRAFTING MECHANISMS FOR TEXTILE FIBERS

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3 Sheets-Sheet 2



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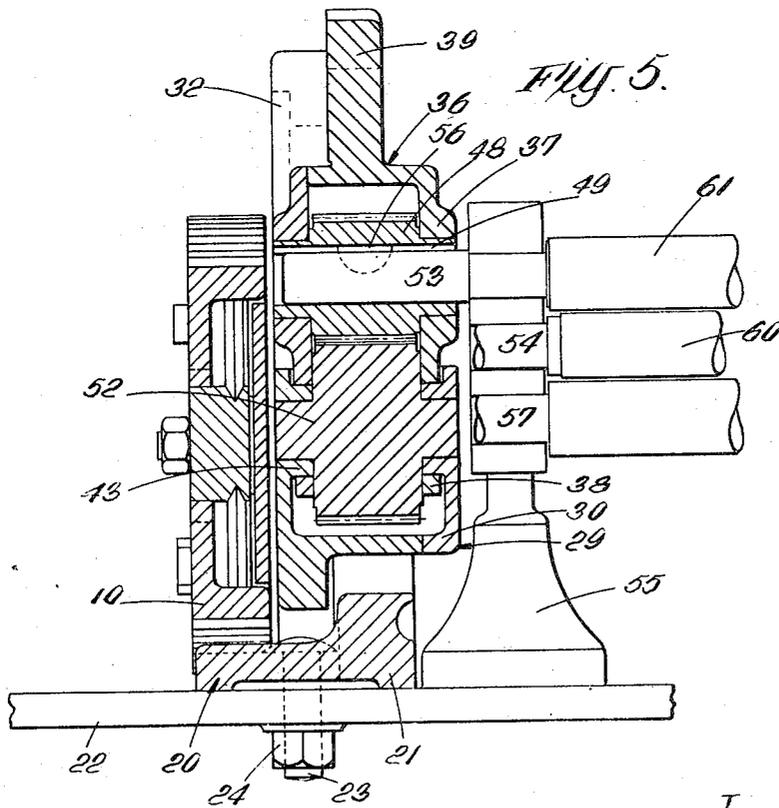
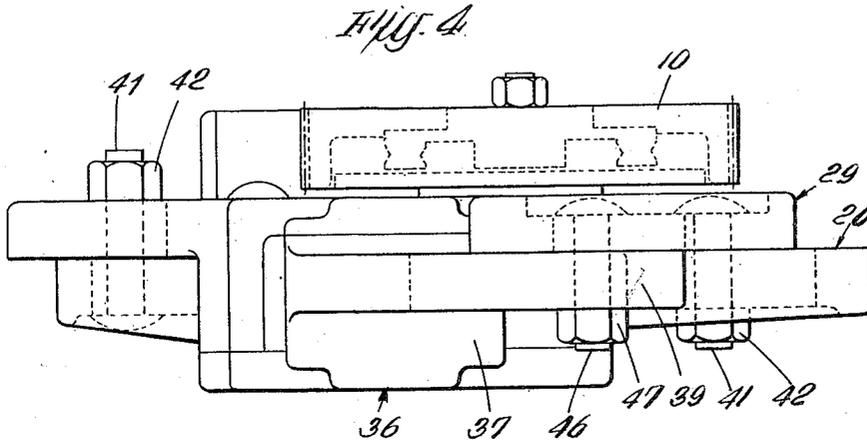
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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ROLLER GEARING FOR DRAFTING MECHANISMS FOR TEXTILE FIBERS

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5 Claims. (Cl. 19—130)

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This invention relates to the gearing associated with the drafting rollers of drafting mechanism for textile fibres.

Such gearing normally consists of a back roller pinion, a middle roller pinion, a double carrier wheel between the back and middle roller pinions and engaging both, and a back roller wheel which is driven by the change draft pinion. The back and middle roller pinions and the back roller wheel are mounted on the rollers themselves and are keyed thereto, so that any play between the rollers and the gears results in eccentricity. The rollers are supported on one side of the back and middle roller pinions by the usually open bearings of the slide of the first roller stand, and on the other side by an open or closed bearing bolted on the roller beam. The pressure on the gears is considerable and is taken by the rollers, which is most undesirable since the drafting rollers have an important function to perform in the drafting mechanism. As a result of this pressure, it often happens that there is considerable deflection of the bottom rollers between the first and second roller stands, and the rollers do not revolve uniformly as they should for correct drafting. Breakages are not uncommon through the constant bending stresses, mostly occurring at a point between the pinions and the slide. The rollers are not usually interchangeable and in the event of breakage or other damage, a new gearing-end roller must be made to fit the roller next to it in the line. It is also difficult to bring the gears into correct mesh whenever the gearing has been dismantled since observation is difficult and it is almost impossible to move any of the rollers round to allow the double carrier wheel to drop into gear with the back and middle roller pinions without taking down the roller weighting right along the machine.

It is the principal object of the present invention to overcome these disadvantages and to provide an arrangement in which the pinions drive the rollers correctly without imparting any undesirable stresses thereto.

According to the invention, the back and middle rollers are merely in driving engagement with the associated pinions which are entirely supported by independent means. Said independent support means is also advantageously adapted to support the back roller wheel, double carrier wheel and compound pinion (where the latter is employed as described hereinafter).

According to the invention furthermore, there is provided means for supporting the gearing

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associated with the drafting rollers of drafting mechanism for textile fibres, said gearing comprising a back roller pinion, a middle roller pinion, a double carrier wheel meshing with both said back and middle roller pinions, and with a compound pinion rotatably associated with the back roller wheel, consisting of unitary means for supporting said middle roller and compound pinions and said double carrier wheel so that they are constantly in mesh, and separate means for supporting said back roller pinion so that it is constantly in mesh with said double carrier wheel.

The invention will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 illustrates diagrammatically the usual arrangement of the roller gearing.

Figure 2 illustrates diagrammatically the arrangement of the roller gearing according to the invention.

Figure 3 is a side elevation of the supporting means provided according to the invention.

Figure 4 is a plan view corresponding to Figure 3, and

Figure 5 is a section on the line A—A of Figure 3.

The gearing illustrated in Figures 2-5 differs from the normal arrangement as will be understood from consideration of Figure 1. Figure 1 represents the normal arrangement, in which the back roller wheel 10 is mounted on the shaft 11 carrying the back roller pinion 12 from which the drive is communicated to the middle roller pinion 13 by means of the double carrier wheel 14. The back roller wheel 10 is driven by the change draft pinion 15 driven in turn by the crown wheel 16. The arrangement of gearing to which the present invention is applied is diagrammatically illustrated in Figure 2, from which it will be seen that the back roller wheel 10 is mounted on an independent shaft 17 which carries a compound pinion 58 which drives the double carrier wheel 52 which is disposed beneath the back and middle roller pinions 48 and 50 respectively with which it meshes. This arrangement has advantages which it is unnecessary to discuss in connection with the present invention.

Means are provided according to the invention for supporting the back roller wheel 10, the compound pinion 58, the double carrier wheel 52, and the back and middle roller pinions 48 and 50, on the roller beam or other part fixed to the machine, and said means are illustrated in Figures 3-5.

Said means consist essentially of three members, preferably cast, which are connected together as hereinafter described to form a rigid supporting structure. The first of said members is designated by reference numeral 20 and may be called a support bracket and comprises a base 21, by means of which the member is secured to the roller beam 22, as by bolts 23 and nuts 24. Upwardly extending from said base 21 are a short arm 25 and a long arm 26, said arms 25 and 26 being formed with elongated straight slots 27 and 28 respectively. The second of said members is designated by reference numeral 29 and may be called a carrier bracket and comprises a gear box 30, intermediate a foot 31 and a quadrant arm 32, said foot having an arcuate slot 33 therein and said quadrant arm having upper and lower arcuate slots 34 and 35 respectively therein. The third member is designated by reference numeral 36 and may be called a back roller support and comprises a bearing 37 for the back roller pinion, depending pivot arms 38 and an inclined arm 39 having an arcuate slot 40 therein.

The carrier bracket 29 is adjustably connected to the support bracket 20 by means of bolts 41 passed through overlapping portions of the lower arcuate slot 35 in the quadrant arm 32 of the carrier bracket 29 and the slot 28 in the support bracket 20, on the one hand, and of the arcuate slot 33 in the foot 31 of the carrier bracket 29 and the slot 27 in the support bracket 20, on the other hand, said bolts being secured by nuts 42. The gear box 30 associated with the carrier bracket 29 comprises a bearing 43 thereof additional bearings 44 and 45 for the compound pinion 58 and the middle roller pinion 50 respectively. The back roller support 36 is adjustably connected to the carrier bracket 29 by the engagement of said pivot arms 38 with the bearing 43 and by means of a bolt 46 passed through overlapping portions of the arcuate slot 40 in the inclined arm of the back roller support 36 and the upper arcuate slot 34 in the quadrant arm 32 of the carrier bracket 29, said bolt being secured by a nut 47.

The back roller pinion consists of a hollow pinion 48 which is supported in the bearing 37 and is formed with a keyway 49. The middle roller pinion 50 is supported in the bearing 45 and similarly formed with a keyway 51. The double carrier wheel 52 which meshes with pinions 48 and 50 is supported in bearing 43. The back and middle roller shafts 53 and 54 respectively are supported by the roll stand 55 and are simply slid into their respective pinions and are driven therefrom by the engagement of keys 56 on the shafts with the respective keyways. The front roller shaft 57 is also supported in the roll stand and is driven from the crown wheel in the usual way. The compound pinion 58 is supported in bearing 44 and is keyed to shaft 59 which also carries the back roller wheel 10.

It will be appreciated that the setting of the back roller support 36 and the carrier bracket 29 with respect to each other and to the support bracket 20 can be adjusted by adjusting the relative positions of the various overlapping slots referred to. Furthermore, as the bearings for the compound pinion 58, the double carrier wheel 52 and middle roller pinion 50 are fixed relatively to each other and as the bearing for the back roller pinion 48 can only move on an arc struck about the axis of the double

carrier wheel 52, the compound pinion 58, double carrier wheel 52 and back and middle roller pinions 48 and 50 will always be correctly in mesh.

In order to provide for the correct adjustment of the setting of the back roller support and the carrier bracket with respect to each other and with respect to the support bracket, the respective arcuate slots must be struck about the correct centres. Thus, the slot 33 in the foot of the carrier bracket and the lower slot 35 in the quadrant arm must be struck about the axis of the middle roller pinion 50, and the upper slot 34 in said quadrant arm about the axis of the double carrier wheel 52, while the slot 40 in the inclined arm of the back roller support must also be struck about the axis of the double carrier wheel 52.

From the foregoing, it will be seen that the middle and back rollers, 60 and 61 respectively, are relieved of all bending stresses due to the pressure on the gears and are driven thereby, which not only results in increased life of said rollers but also in improved efficiency thereof. Furthermore, the various pinions are assembled as a unit and the problem of putting them into correct mesh does not arise.

I claim:

1. Means for supporting gearing for the drafting rollers in drafting mechanism for textile fibres, said gearing including a back roller pinion, a middle roller pinion, a compound pinion and a double carrier wheel, said double carrier wheel being in mesh with both said back and middle rollers, said means comprising a double-armed member secured on a fixed part of the drafting mechanism, a bracket for supporting said middle roller pinion, said compound pinion and said double carrier wheel so that they are constantly in mesh, said bracket being attached to said double-armed member so that it can be adjusted in arcs extending about the axis of said middle roller pinion and a further device for supporting said back roller pinion so that it is constantly in mesh with said double carrier wheel, said further device being adjustably supported on said bracket.

2. Means for supporting gearing according to claim 1, wherein said bracket comprises a gear box having bearings for supporting, respectively said middle roller and compound pinions; and a bearing for supporting said double carrier wheel, a foot member on one side of said gear box having an arcuate slot therein struck about the axis of said middle roller pinion, said foot being connected to one arm of said double-armed member by means of a bolt engaging in said arcuate slot and a quadrant arm having an upper arcuate slot struck about the axis of the double carrier wheel and a lower arcuate slot struck about the axis of the middle roller pinion, said quadrant arm being connected to the second arm of said double-armed member by means of a bolt engaging in said lower arcuate slot.

3. Means for supporting gearing according to claim 1, wherein said device for supporting said back roller pinion comprises a bearing for said back roller pinion, arms depending from said bearing for engagement with the bearing of said double carrier wheel and an inclined arm having an arcuate slot therein struck about the axis of said double carrier wheel, said arm being attached to said bracket by means of a bolt engaging in said arcuate slot.

4. Means for supporting gearing according to

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claim 1 wherein said double-armed member comprises a base which is secured on a fixed part of the mechanism and two arms upwardly extending one on each side of said base, said arms having elongated straight slots formed therein for receiving securing means for attaching said bracket to said member.

5. Means for supporting gearing for the drafting rollers in drafting mechanism for textile fibres, said gearing including a back roller pinion, a middle roller pinion, a compound pinion and a double carrier wheel, said double carrier wheel being in mesh with both said back and middle roller pinions and with said compound pinion, said means comprising a member attached to a fixed part of the mechanism and having two slotted arms formed thereon, a bracket having a gear box provided with bearings respectively for supporting said middle roller pinion, said compound pinion and said double carrier wheel so that they are constantly in mesh, a foot on one side of said gear box having an arcuate slot therein for attachment to one of said arms by means of a bolt which engages in said arcuate slot and the slot in said arm, and a quadrant arm on the other side of said gear box having upper and lower arcuate slots formed therein, said quadrant arm

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being attached to the other arm of said double-armed member by means of a bolt engaging in said lower arcuate slot and in the slot in said other arm, and a further device having a bearing for supporting said back roller pinion, arms depending from said bearing for engagement with said double carrier wheel bearing and an inclined arm having an arcuate slot formed therein, said inclined arm being attached to the quadrant arm on said bracket by means of a bolt engaging in the arcuate slot in said inclined arm and in the upper arcuate slot in said quadrant arm.

JOSEPH NOGUERA.

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