March 6, 1951 J. NOGUERA 2,544,468

ROLLER GEARING FOR DRAFTING MECHANISMS FOR TEXTILE FIBERS

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Fig. 1.

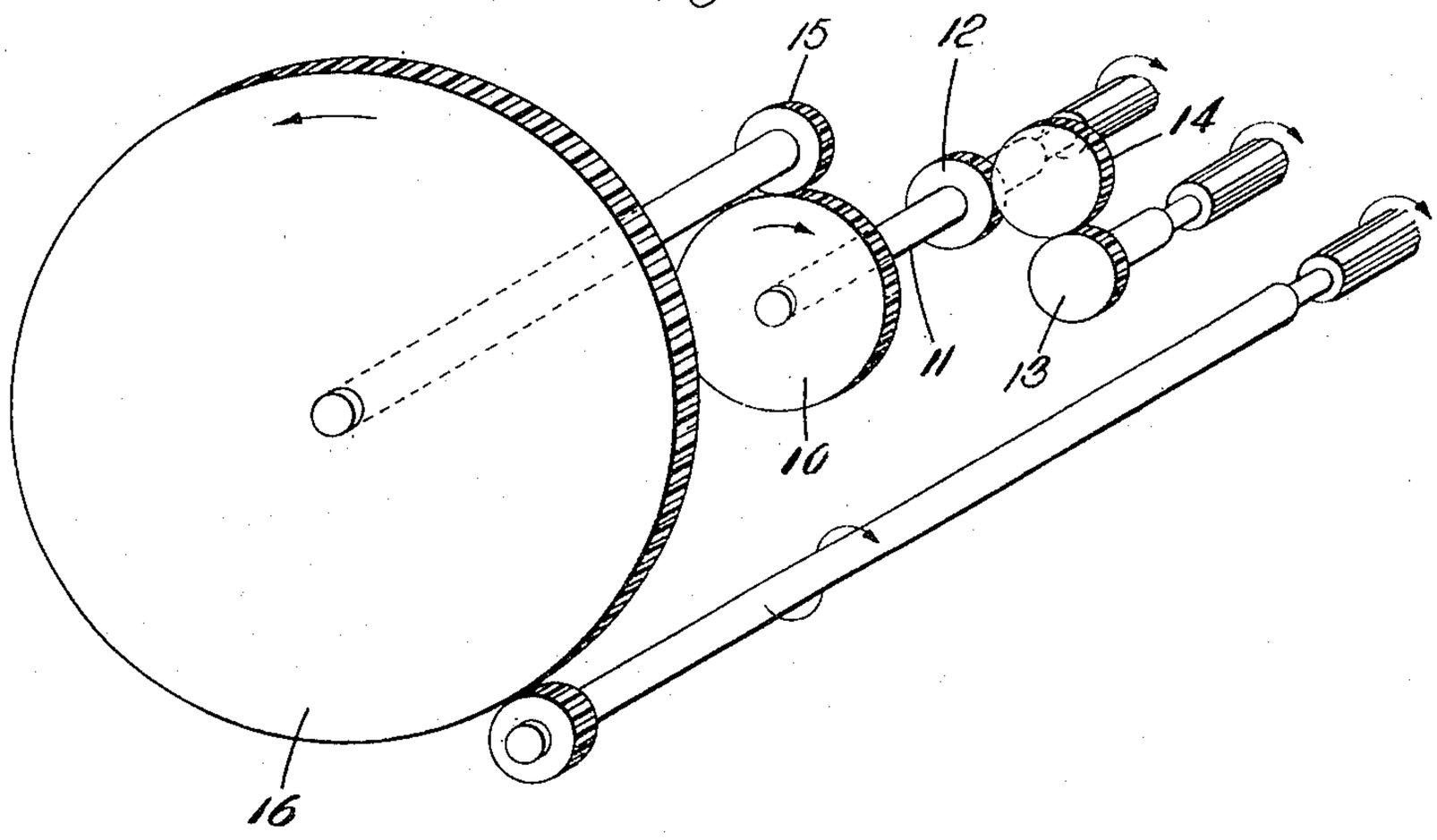

Fig. 2.

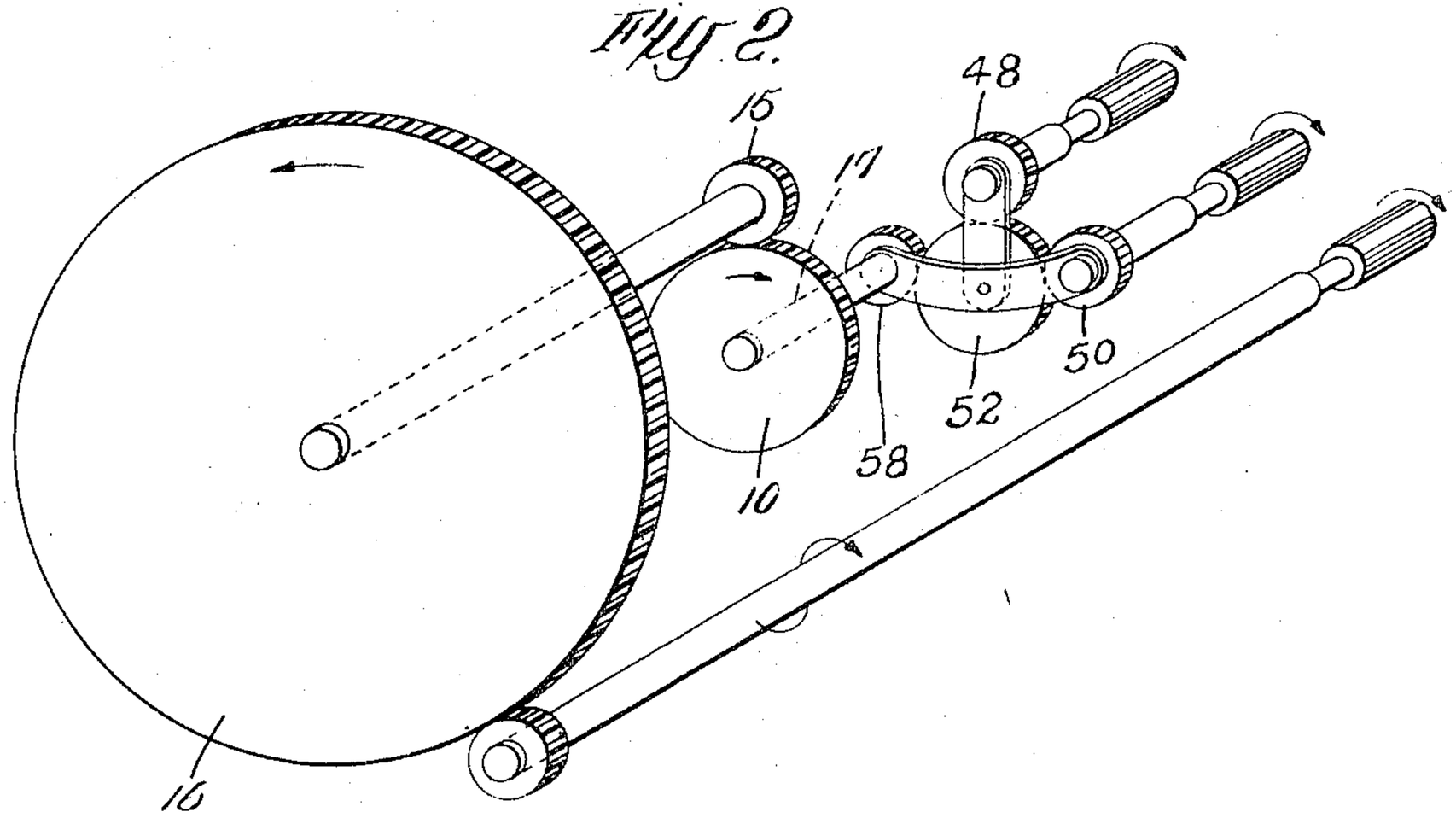

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FIG. 3.

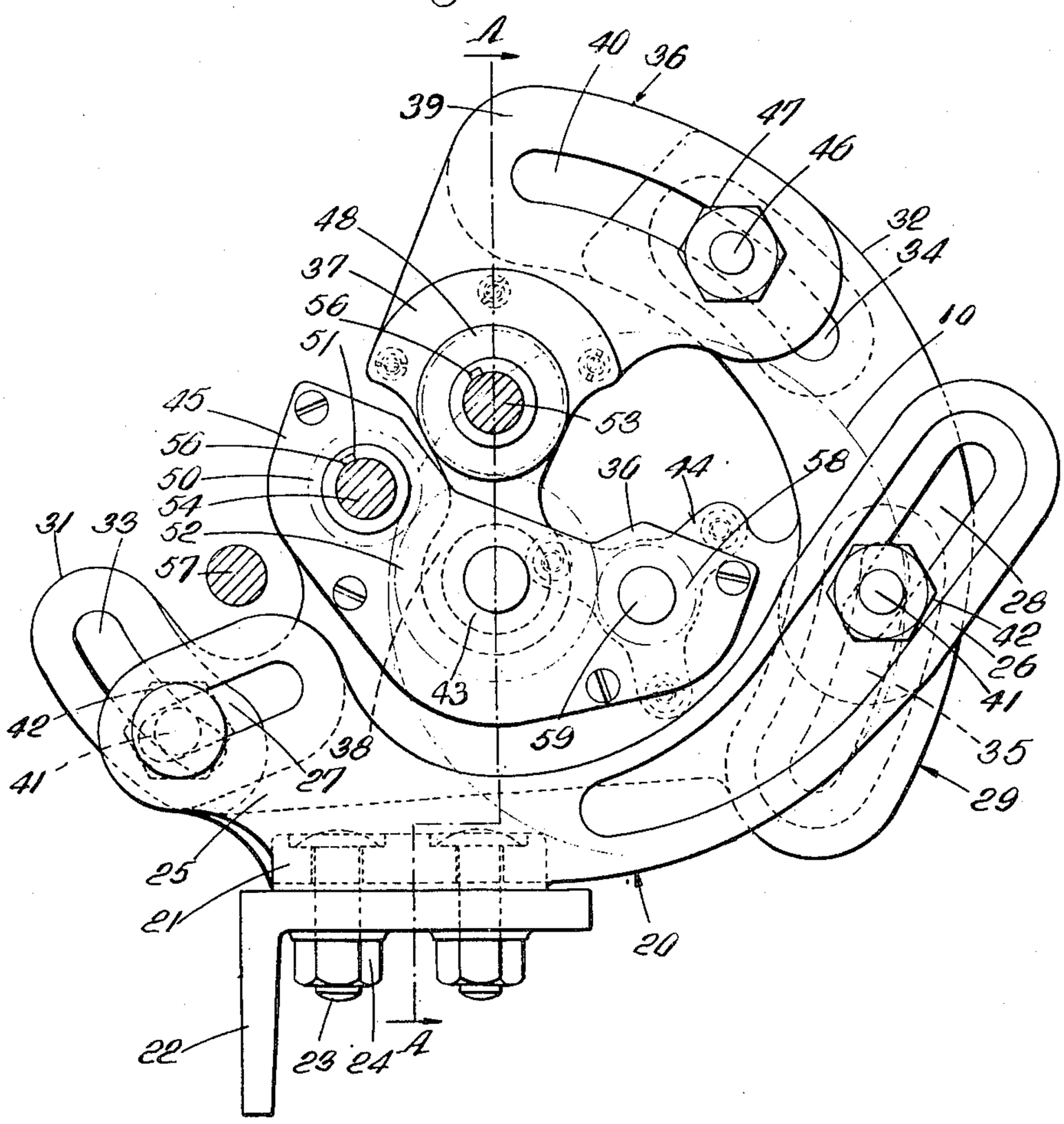

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Fig. 4

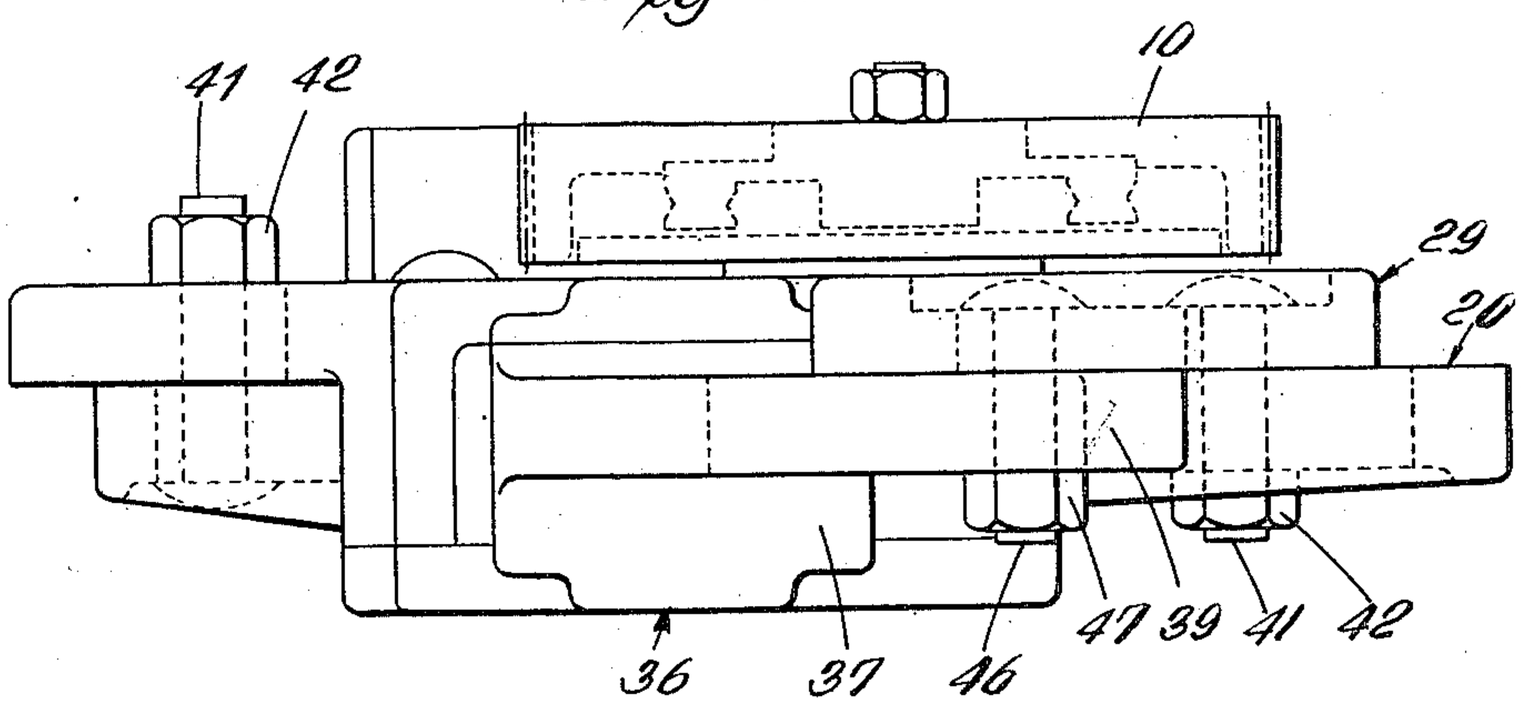
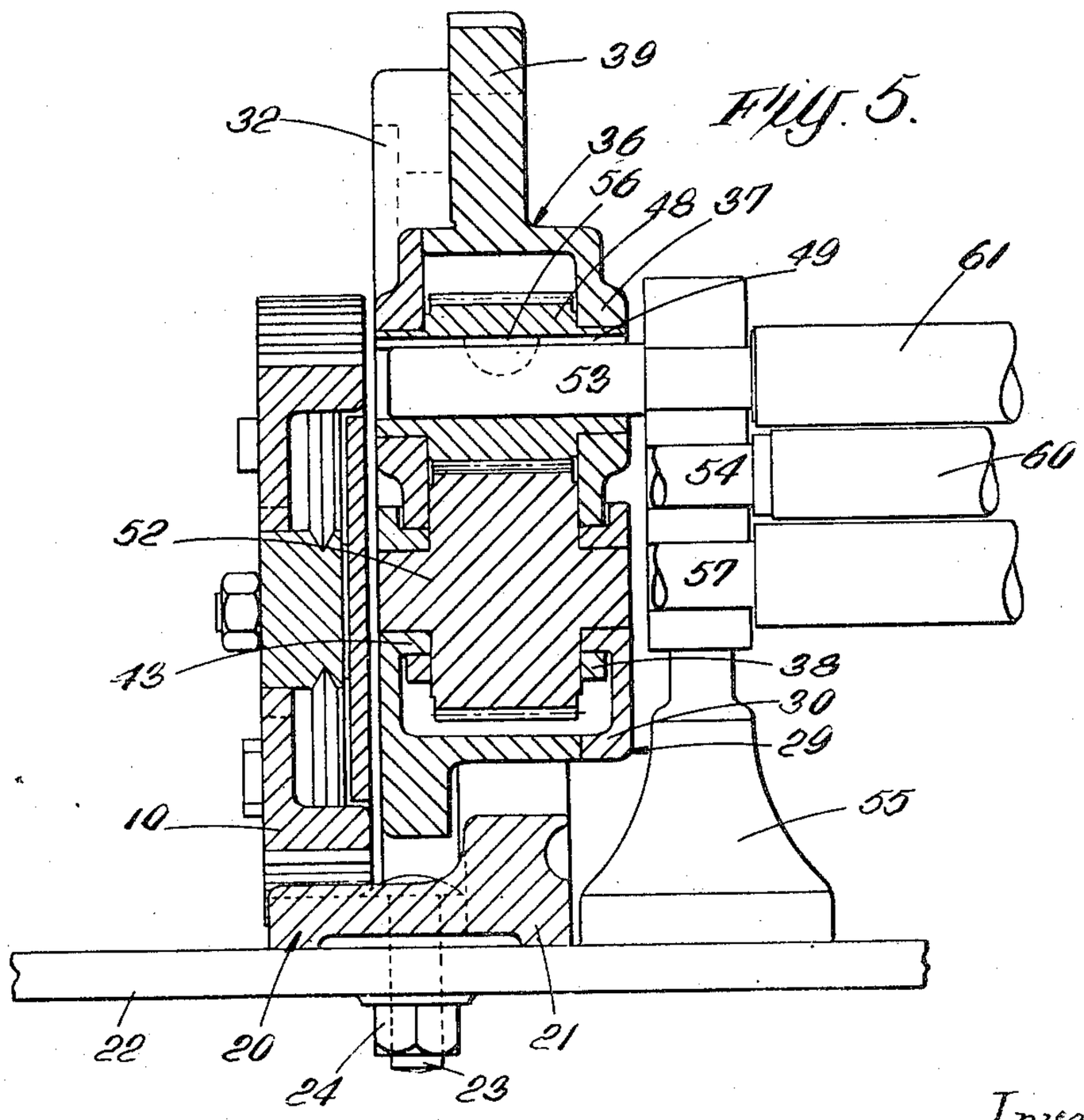


Fig. 5.



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UNITED STATES PATENT OFFICE

2,544,468

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 accompanyings, 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** for the double carrier wheel **52**, and on each side 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 over-lapping 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 roller pinions and with said compound pinion, 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

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

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.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,177,929	Lambert	Oct. 31, 1939
2,387,091	Rooney	Oct. 16, 1945

FOREIGN PATENTS

Number	Country	Date
13,445	Great Britain	of 1906
345,122	Great Britain	Mar. 19, 1931