A. E. LARSSON.

WHEEL DRESSING MECHANISM.

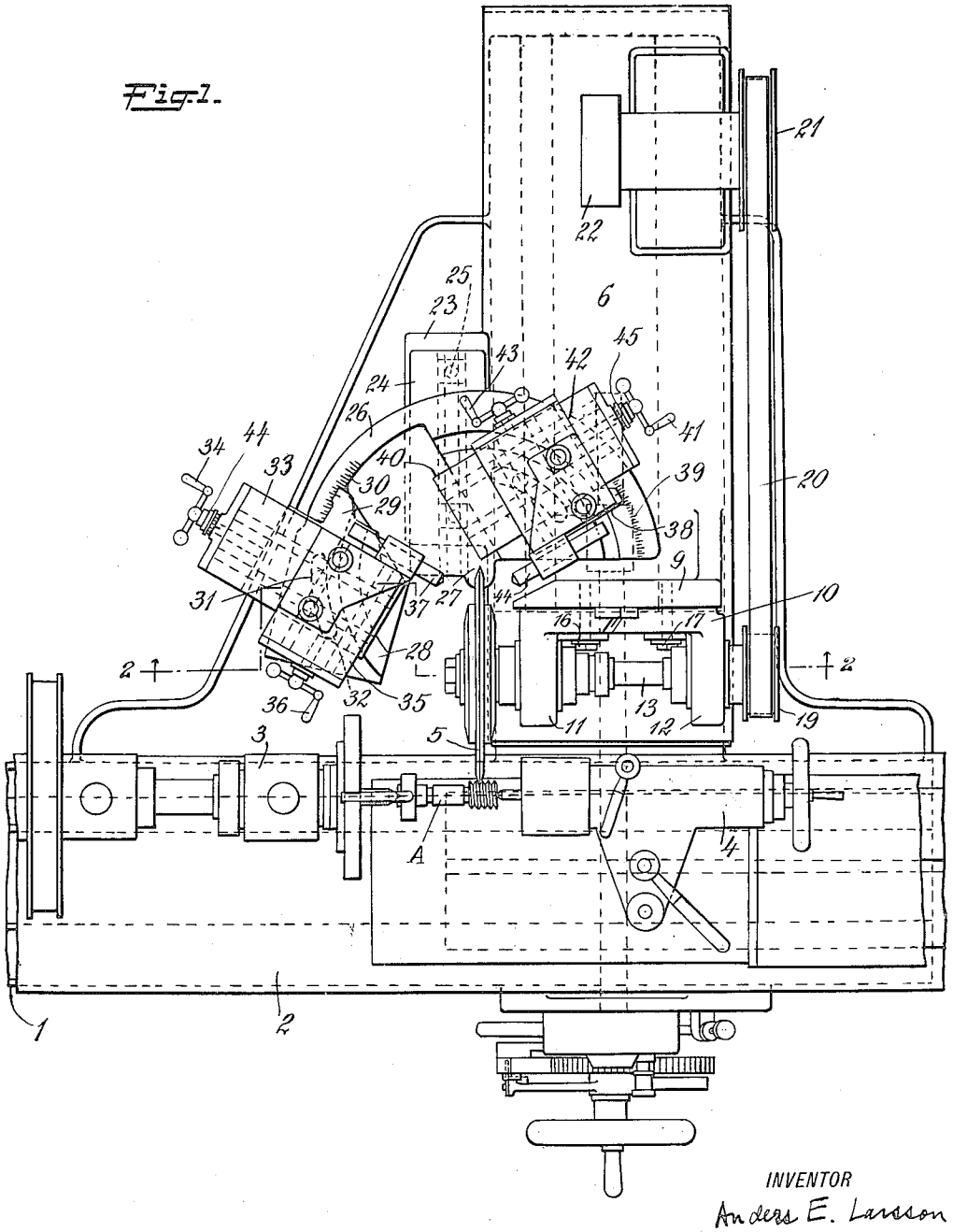
APPLICATION FILED MAR. 16, 1918.

1,424,765.

Patented Aug. 8, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



INVENTOR

Andreas E. Larsson

BY S. Jay Teller

ATTORNEY

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2 SHEETS—SHEET 2.

Fig. 2.

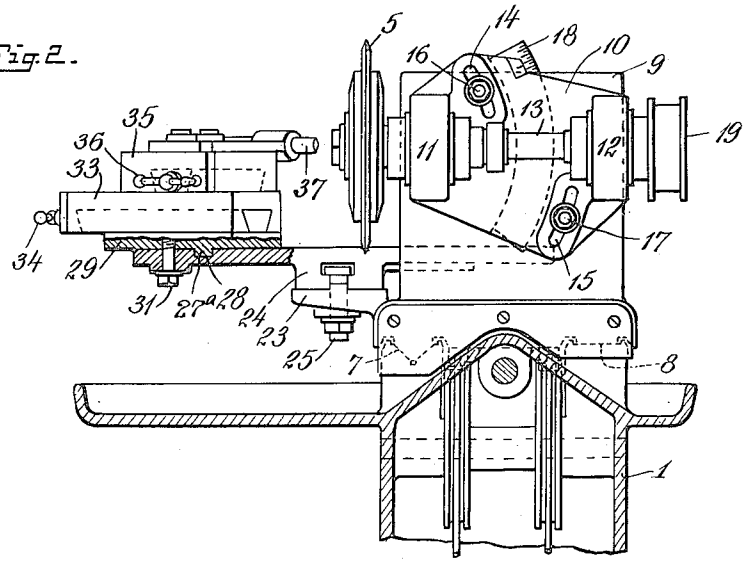
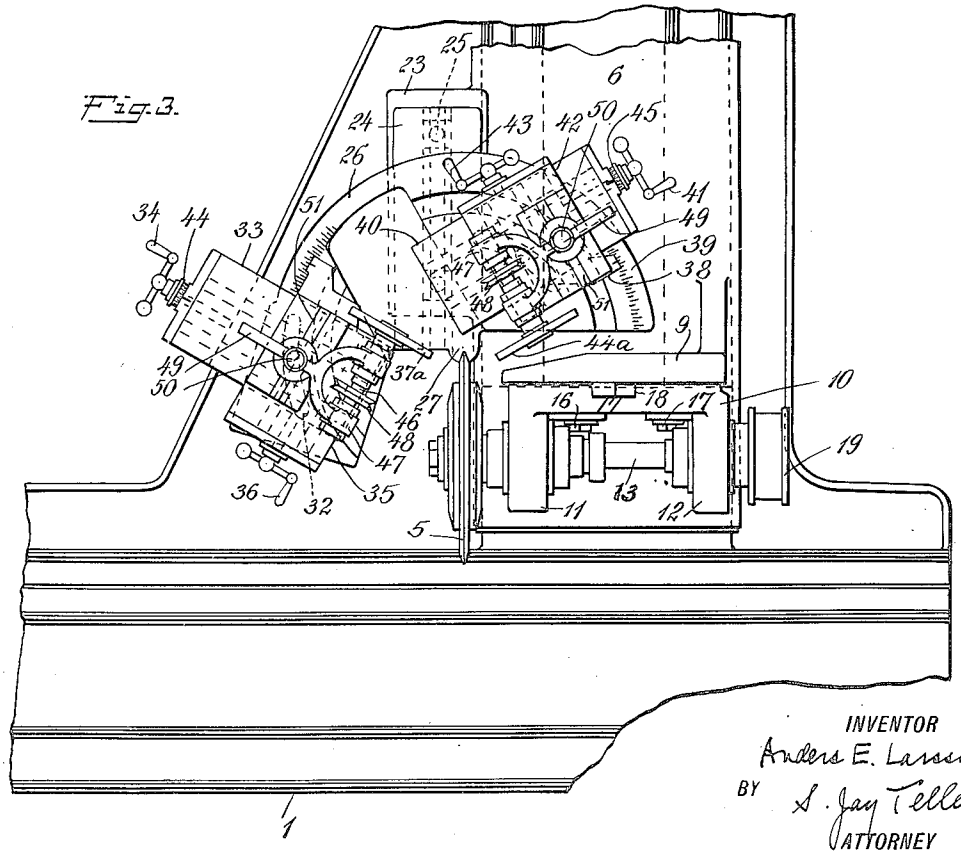


Fig. 3.



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INVENTOR

Anders E. Larsson

BY A. Jay Teller

ATTORNEY

UNITED STATES PATENT OFFICE.

ANDERS E. LARSSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PRATT & WHITNEY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

WHEEL-DRESSING MECHANISM.

1,424,765. Specification of Letters Patent. Patented Aug. 8, 1922.

Application filed March 16, 1918. Serial No. 222,929.

To all whom it may concern:

Be it known that I, ANDERS E. LARSSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Wheel-Dressing Mechanism, of which the following is a specification.

The object of the invention is to provide a wheel dressing mechanism which is particularly adapted for use in connection with or as a part of a thread grinding machine of the type set forth in my copending application Serial No. 222,928, filed on even date herewith. It will be understood, however, that the present invention is not limited for use with the said thread grinding machine. In accordance with the invention, I provide two dressing tools which are independently mounted and independently operable, the supports for these tools being adjustable to permit the lines of movements of the tools to be angularly adjusted. A further object of the invention is to provide improved means whereby the wheel dressing mechanism as a whole may be adjusted with respect to the grinding wheel. Further objects of the invention will be apparent from the following specification and claims.

In the accompanying drawings I have shown two embodiments of the invention, but it will be understood that the drawings are intended merely for the purpose of illustration and are not intended to define or limit the scope of the invention, the accompanying claims being relied upon for that purpose.

Of the drawings:

Fig. 1 is a plan view showing a wheel dressing mechanism embodying the invention applied to a grinding machine of the type shown in my aforesaid copending application. The grinding machine is not shown in its entirety as many of the parts are not directly involved in the present invention.

Fig. 2 is a front elevation, partly in section, along the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary plan view similar to Fig. 1 but showing another embodiment of the invention.

The grinding machine to which the wheel dressing mechanism is applied comprises a main frame 1 upon which is supported a longitudinally movable table 2. This table carries a headstock 3 and a tailstock 4 having centers which support a blank to be ground. The blank is shown as being an internal thread gage A. The grinding wheel is indicated at 5, and this is positioned to engage the threads of the blank A. By means of suitable mechanism not fully shown, the blank is rotated first in one direction and then in the other, the table 2 being reciprocated in synchronism to enable the wheel to follow the thread convolutions. The wheel is mounted on a carriage 6 which is transversely movable along ways 7 and 8 formed on the main frame. By means of suitable mechanism, not shown, the carriage is moved forward to bring the wheel into engagement with the blank at the beginning of movement in one direction and the carriage is moved backward to disengage the wheel from the blank at the beginning of movement in the other direction.

The grinding wheel is preferably mounted on the carriage in the following manner. A bracket 9 projects upward from the carriage and a plate 10 is secured to the bracket. The plate 10 carries bearings 11 and 12 in which is rotatably mounted a spindle 13 carrying the wheel 5. The plate 10 is angularly adjustable, with respect to the bracket 9, about a transverse horizontal axis which preferably passes through the center of the grinding wheel. As shown, the plate 10 is provided with two arcuate slots 14 and 15 through which extend bolts 16 and 17 secured to the bracket 9. By loosening the nuts on these bolts the plate can be adjusted to position the wheel 5 at any desired angle to conform to the angular pitch of the threads to be ground. After adjustment the plate 10, together with the spindle and the wheel, can be locked in adjusted positions by tightening the nuts on the bolts. Preferably a scale 18 is provided to show the adjustment of the wheel.

Secured to the end of the spindle 13 opposite to the wheel is a belt pulley 19 and this pulley is engaged by a belt 20 which passes over a pulley 21 at the rear of the carriage 6. The pulley 21 is mounted on a short horizontal shaft which also carries a belt pulley 22. By means of a belt engaging

the pulley 22 power is transmitted for rotating the grinding wheel.

The carriage 6 has a bracket 23 which projects laterally therefrom at the rear of the wheel and which serves as a support and guideway for a carrier slide 24 movable forward and backward along lines parallel to the central plane of the wheel. By means of bolts 25 the slide may be secured in adjusted position. The upper part of the slide 24 is in the form of a broad base plate 26 having its periphery in the form of a circular arc, the center of which at 27 is approximately vertically beneath the edge of the wheel at the rear when the carrier slide is in its normal position of adjustment. At one side, as for instance at the left-hand side, the plate 26 has an arcuate groove 28 constructed about the center 27. A plate 29 rests upon the plate 26 and has an arcuate tongue 27ª which fits the groove 28. It will be seen that the plate 29 may be angularly adjusted about the center 27, being guided by the walls of the groove 28 during such movement. A scale 30 is provided on the plate 26 for indicating the angular adjustment of the plate 29. A bolt 31 projects downward from the plate 29 through a slot 32 in the plate 26. By means of this bolt the plate 29 can be secured in adjusted position.

Formed on the top of the plate 29 is a guideway for a slide 33 which can be moved under the control of a screw carrying a handle 34. Formed on the top of the slide 33 is a guideway for a slide 35 which can be moved under the control of a screw carrying a handle 36. The two slides 33 and 35 are movable at right angles to each other. The slide 35 carries a suitable dressing tool 37. I have shown a diamond pointed tool, but it will be understood that the invention is not so limited.

At its opposite side the plate 26 carries a plate 38 which is similar to the plate 29 and which is similarly supported and guided. The plate 26 is provided with a scale 39 for indicating the angular adjustment of the plate 38. Carried by the plate 38 is a slide 40 controlled by a screw having a handle 41. Carried by the slide 40 is a slide 42 controlled by a screw having a handle 43. The slides 40 and 42 are similar respectively to the slides 33 and 35. The slide 42 carries a dressing tool 44 similar to the tool 37.

If desired the dressing tools such as the diamond tools 37 and 44 or the rotating dressing wheels 37ª and 44ª may be mounted on the lower slides 33 and 40 and guided forward and backward over the surface of the wheel 5 by any suitable guiding means. These guiding means may be in the form of sliding plates similar to 35 and 42 without the screws 36 and 43 so that they may be operated readily by hand or any other means permitting the dressing tools to be moved in a direction at right angles to the direction of movement of the slides 33 and 40. Obviously any means constraining the dressing tools to operate in a direction at right angles to the movement to the slides 33 and 40 may be adopted without departing from the spirit and scope of the invention.

When the dressing mechanism is to be used, the slide 24 is adjusted forward or backward in accordance with the diameter of the wheel so as to bring the center 27 approximately vertically beneath the rear edge of the wheel, so that the center 27 will lie approximately in a vertical axis which is tangent to the periphery of the wheel. Then the plates 29 and 38 are angularly adjusted so as to bring the slides 35 and 42 at the proper angles to the central plane of the wheel. Ordinarily both slides are placed at an angle of 30°, this angle being read directly on the scales 30 and 39. Then one of the slides, as for instance 33, is adjusted to move the dressing tool 37 into position to engage the edge of the wheel. By means of the screw 36 the slide 35 is then moved forward or backward to move the dressing tool along the wheel and properly dress one side thereof. Then the other tool 44 is brought into operative relation to the wheel by means of the slide 40 and is moved forward and backward by means of the slide 42. After the wheel has been properly dressed the two slides 33 and 40 are moved backward to withdraw the tools from engagement with the wheel. Preferably the screws for the two slides carry respectively scales 44 and 45 which enable the operator to restore the slides to their former positions, when it again becomes necessary to dress the wheel.

It will be seen that, inasmuch as the dressing tools are at the back of the wheel and directly opposite the points of engagement between the wheel and the work, they automatically compensate for errors which would otherwise arise because of angular adjustment of the wheel.

The construction shown in Fig. 3 is similar to that shown in Fig. 1 except that different tools are used for dressing the wheel. In place of the diamond pointed tools 37 and 44 I provide rotary wheels 37ª and 44ª of suitable material. The wheels are carried respectively by the slides 35 and 42. Each wheel is mounted on a spindle 46 rotatable in suitable bearings in a bracket 47. Carried by each spindle is a belt pulley 48 adapted to be engaged by a suitable round belt, not shown. Preferably each bracket 47 is adjustably mounted on the corresponding slide. As shown, the bracket has an integral arm 49 which extends through a vertical stem 50. The stem is adjustably mounted in a T-slot 51 formed in the top of

the slide. This construction permits the bracket 47, with the spindle and the wheel, to be adjusted with respect to the slide in either direction, as required.

It will be obvious that the manner of use of the mechanism shown in Fig. 3 is similar to that already described in connection with the mechanism shown in Figs. 1 and 2.

Throughout the foregoing specification and in the claims which follow, use is made of the terms "horizontal" and "vertical". It will be understood that these terms are used merely for the purpose of indicating the relation between the parts and are not to be construed strictly as limiting the positions of the parts.

What I claim is:

1. A mechanism for dressing the grinding wheel of a grinding machine, comprising a carrier slide movable forward and backward along lines parallel to the central plane of the wheel, a slide adjustable about an axis normally approximately tangent to the periphery of the wheel and mounted on the carrier slide, said second slide being movable to either side of the center line thereof and movable toward and from the wheel along lines at an angle to the lines of movement of the carrier slide, and means on said latter slide permitting a dressing tool to engage and dress a grinding wheel along a line at right angles to the direction of movement of said latter slide.

2. A mechanism for dressing the grinding wheel of a grinding machine, comprising a carrier slide movable forward and backward along lines parallel to the central plane of the wheel, a slide adjustable about an axis normally approximately tangent to the periphery of the wheel and mounted on the carrier slide, said second slide being movable to either side of the center line thereof and movable toward and from the wheel along lines at an angle to the lines of movement of the carrier slide, a slide mounted on the second slide and movable at right angles thereto, and a dressing tool carried respectively by the last mentioned slide and adapted to engage the grinding wheel to dress it.

3. A mechanism for dressing the grinding wheel of a grinding machine, comprising a carrier slide movable forward and backward along lines parallel to the central plane of the wheel, two slides adjustable about an axis normally approximately tangent to the periphery of the wheel and mounted on the carrier slide at opposite sides of the center line thereof and each movable toward and from the wheel along lines at an angle to the lines of movement of the carrier slide, two slides mounted respectively on the second slides and movable at right angles thereto and dressing tools carried respectively by the third slides and each adapted to engage the grinding wheel to dress it.

4. A mechanism for dressing the grinding wheel of a grinding machine, comprising a carrier slide movable forward and backward along lines parallel to the central plane of the wheel, two slides adjustable about an axis normally approximately tangent to the periphery of the wheel and mounted on the carrier slide at opposite sides of the center line thereof and each movable toward and from the wheel along lines at an angle to the lines of movement of the carrier slide, two slides mounted respectively on the second slides and movable at right angles thereto, and rotatable abrasive wheels carried respectively by the third slides and each adapted to engage the grinding wheel to dress it.

5. A mechanism for dressing the grinding wheel of a grinding machine, comprising a carrier slide movable forward and backward along lines parallel to the central plane of the wheel, two slides mounted on the carrier slide at opposite sides of the center line thereof and independently adjustable angularly about a common vertical axis, each slide being movable toward and from the wheel along lines at any desired angle to the lines of movement of the carrier slide, two slides mounted respectively on the second slides and movable at right angles thereto, and rotatable abrasive wheels carried respectively by the third slides and each adapted to engage the grinding wheel to dress it.

In testimony whereof, I hereto affix my signature.

ANDERS E. LARSSON.