(No Model.) 2 Sheets—Sheet 1.

J. J. MESSING.

REVERSING ATTACHMENT FOR SCREW CUTTING LATHES.

No. 482,261. Patented Sept. 6, 1892.

Fig. I.

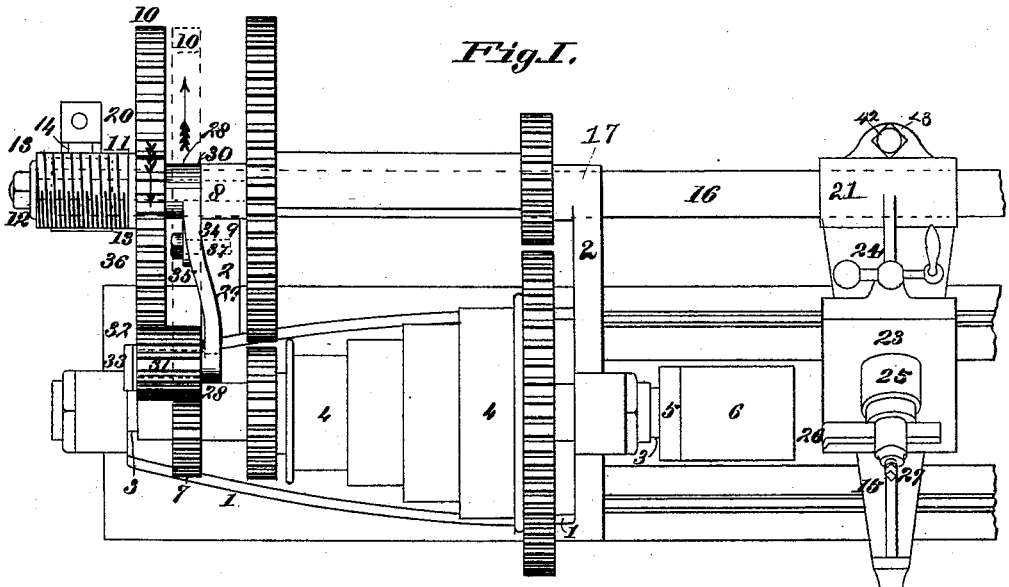

Fig. II.

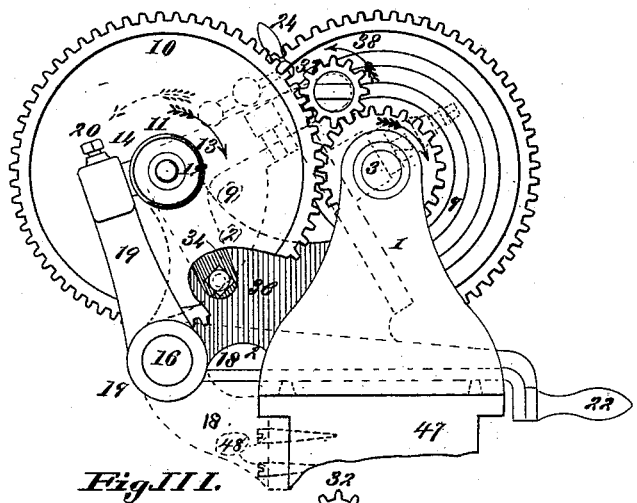

Fig. III.

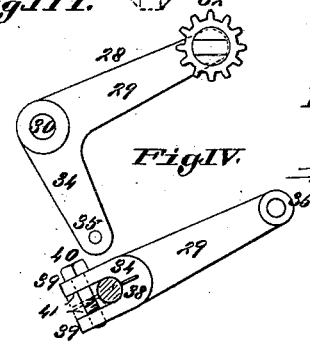

Fig. IV.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. V.

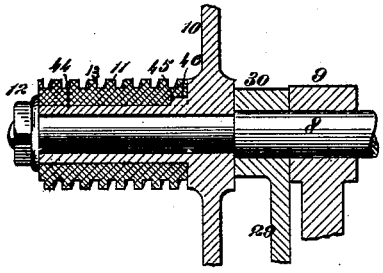
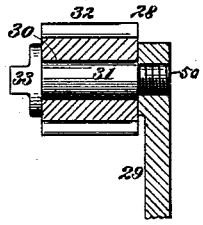


Fig. VI.



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UNITED STATES PATENT OFFICE.

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REVERSING ATTACHMENT FOR SCREW-CUTTING LATHES.

SPECIFICATION forming part of Letters Patent No. 482,261, dated September 6, 1892.

Application filed January 12, 1892. Serial No. 417,834. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. MESSING, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Reversing Attachments for Screw-Cutting Lathes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to means for reversing the screw-cut of a lathe from the normal right-hand to a left-hand thread by the intervention of a broad overlap pinion between the drive-pinion on the cone-shaft and the leader-wheel; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a plan top view and shows the hanger-bearing of the intermediate pinion mounted on the previous seat of the leader-wheel, which wheel is moved laterally on its spindle out of gear with its previous drive-pinion, and said broad intermediate pinion is shown geared with said drive-pinion and with said leader-wheel, thereby reversing the movement of the latter. Fig. II is an end view and shows the reversing action of said intervening pinion and the hanger attachment of the chaser-bar that carries the chaser-tool with its leader-die engagement with the screw-hob. It also shows the set-screw attachment of the angle-arm of the hanger to the rear-gear-arm. Fig. III is a perspective view of the intermediate reversing-pinion and shows its hanger, the bearing by which said hanger is mounted, and its perforate angle-arm by which said intermediate pinion is held in gear with the pinion that drives it and the leader-wheel which it drives; and Fig. IV is a modification of said hanger-arm minus its angle-arm, in which modification said intermediate pinion is maintained in its reversing-gear by the tightening of the bearings of said hanger-arm by means of a set-screw that is seated in extension-lugs that project from said bearings. Fig. V is an enlarged vertical detail section taken through the leader bearer-rod, the leader gear-wheel mounted thereon, the integral sleeve that projects from said wheel longitudinally along said bearer-rod, the feather or key projecting from said sleeve, the leader-hob provided with the key-seat, the hanger-bar that carries the broad duplex-acting pinion, and the upper arm in which said bearer-rod is mounted; and Fig. VI is a detail section taken through the hanger-bar that carries the broad pinion, the journals screw-seated to said hanger-bar, the broad duplex-acting pinion mounted on said journal, and the stud mounted on the outer end of said journal.

Referring to the drawings, 1 represents the head gear-frame of the lathe, and 2 is the back gear-frame. 3 represents the mandrel, that has its journal-bearings in said head gear-frame. 4 is the step cone-pulley, fast mounted on said mandrel and with which pulley the power-belt engages, and 5 is the chuck secured to and that turns with said mandrel and holds the metal 6, within or around which the screw is to be cut, and 7 is the drive-pinion, which is also mounted on said mandrel.

8 represents the leader bearer-rod, which is mounted in the upper arms 9 of the back gear-frame 2, on which bearer-rod is mounted the usual leader gear-wheel 10 and its leader, hob 11, that is governed by and turns with said wheel-clutch connection therewith, and 12 is the screw-nut, which is screw-seated on said bearer-rod and adjusts and holds said leader-wheel and hob to their seats thereon. There is a number of said transferable leader-holes, the peripheral guide-screws 13 of which are graded, respectively, from fine threads to coarse to correspond with and lead the cut of the various screws that are manufactured by the lathe.

13 represents the guide-screw around the periphery of the leader-hob 11, and 14 is the leader-die, which follows between the threads of said guide-screw and by its connections, to be presently described, leads the chaser-tool 15 to effect the cutting of either an inner or outer screw.

16 represents the chaser-bar, which has free latitude longitudinally in the bearings 17 in the lower arms 18, which arms are securely attached to the lathe-bed 47 by the set-screws 48, and said chaser-bar moves longitudinally in its bearings to the length of cut of the screw-threads to be effected, and has a rotary or oscillating movement therein to correspond with the movement of said chaser-tool

as the workman forces it to its work or retires it therefrom, as the case may be. 19 represents an approximately vertical guide-arm, which is fast mounted on said chaser-bar 16 and to whose head is secured the aforesaid leader-die 14 by the set-screw 20. The split-tube attachment end or split-holder clamp 21 of the chaser-tool 15 is fast mounted on the chaser-bar 16 by means of a draw-screw 42, that engages in its screw-seat 43, and said chaser-tool is operated by its handle 22 in effecting the cutting of the screw.

23 represents the adjustable slide of the chaser-tool, which slide is held to its adjustment by the screw-clamp 34, the said adjustment varying to the diameter of the screw to be cut. 25 is the die-holder turret secured to said slide, and 26 is the die-cutter, which is secured to said holder by the set-screw 27.

The aforesaid operative controlling connections between said leader-die 14, (which is itself controlled by said peripheral guide-screw 13,) on the one hand, at the drive end, and the chaser-tool 15, guided and driven thereby, on the other hand, are said guide-arm 19, on which said leader-die is mounted, (said die driving said guide-arm,) the chaser-bar 16, on which said guide-arm is mounted, (said guide-arm driving said chaser-bar,) and the split-holder clamp 21 of the chaser-tool 15, with its draw-screw 42, which clamp tightens the hold of said chaser-tool 15 on said chaser-bar 16, and thus said chaser-tool is guided and driven to effect its screw-cut, the respective right and left hand thread cuts being dominated by the respective use and disuse of the broad intervening pinion 32, as hereafter described. The pitch of said screws to be cut are adjusted by the respective transfer of the leader-hob 11 and the leader-die 14 to those that accord with the desired pitch.

The chaser-tool and its cutting-die, as shown in Fig. I, is adjusted for cutting an inner screw for a nut in the blank 6, which blank is chucked on the rotary mandrel of the lathe. The cutting of an outer screw is alike effected after the readjustment of the die-cutter 26 and the reversion of the chaser-tool.

Previous to the mounting of my reverse-gear attachment the leader-wheel 10 retains its normal position, (shown in broken lines in Fig. I,) in which case it gears direct with the drive-pinion 7, that is mounted on the mandrel or cone-carrier shaft 3, so that it, with its screw guide-hob II, turns in the direction shown in the broken-line arrow in Fig. II and guides the chaser-tool to cut a right-hand screw in or on the chucked blank 6, as the case may be, in accordance with whether an inner or outer screw is required to be cut.

While it has been necessary to describe and show the above numerically-indicated parts of the screw-cutter lathe on which is to be mounted my reverse-gear attachment to facilitate a knowledge of my device, yet the leading features of my invention are embodied in my reverse gear and its attaching devices, which I will now proceed to describe.

28 represents my reverse-gear attachment, which is constituted of the hanger-bar 29, the tube-bearing 30 of which is mounted on the leader bearer-rod 8, the journal 31, that projects from said hanger-bar, the broad-geared intervening coupling-pinion 32, mounted on said journal, the function of said intervening pinion being to reverse the leader-gear, the screw-nut 33, that holds said pinion on its journal-seat, and the angle-arm 34, that projects at a right angle from the main bearing end of said hanger-bar, in the perforate end 35 of which arm a set-screw 36 is seated, which screw engages in the screw-seat 37 in the rear gear-frame 2.

The means of attachment and operation of said intervening gear-reversing attachment is as follows: The leader-wheel 10 and its screw guide-hob 11 are removed from their bearer-rod 8, in which said leader-wheel had occupied the position shown in broken lines in Fig. I, in which it directly geared with the drive-pinion 7, by which means it and its guide-hob 11, by the action of the leader-die 14, the guide-arm 19, the chaser-bar 16, and the chaser-screw-cutting tool 15, had in its normal position been enabled to effect the cutting of a right-hand screw in or on (as the case may be) the clutched blank 6; but when it is required to cut left-hand screws in or on said clutched blank 6, the leader-wheel and its screw guide-hob having been removed, as stated, the tube-bearing 30 of the hanger-bar 29 is mounted on the leader bearer-rod 8 on the previous seat of the leader-wheel 10, and one side of the broad intervening pinion 32, which is mounted on the pendent end of said hanger-bar, is brought into gear connection with the drive-pinion 7. The leader-wheel 10 and its screw guide-hob are then replaced on their mount on the bearer-rod 8 immediately outside the tube-bearing 30 of the hanger-bar 29, the said leader-wheel being thus also brought into gear with my broad intervening pinion 32, which latter pinion thus both transfers and reverses the action of the drive-pinion 7 on the leader-wheel 10 and its guide-hob 11. It will thus be seen that as the leader elements of the device are thus by the intervention of my reversing attachment reversed from a right to a left hand movement the action of the chaser-screw-cutting tool, being governed thereby, has its movement alike reversed and cuts a left-hand screw.

In the modification shown in Fig. IV the angle-arm 34 is reduced to a short stump, and it and the adjacent end of the main hanger-bar 29 are provided with a split opening 38; also, instead of the closed construction of the bearing 30, as shown in Figs. I, II, and III, integral lugs 39 project beyond said bearing, and a set-screw 40, seated in its perforate screw-seats 41 in said lugs, springs them together, so as to effect a sufficiently rigid bear-

ing on the rod 8 to secure the retention of the intervening reversing pinion-wheel 32 in gear with the pinion-wheel 7 that drives it and with the leader-wheel 10 that it drives. The split opening 38 facilitates the work of said set-screw in drawing said lugs toward each other and thus contracting the bearings. This modificaiion is intended to be used where my reversing device is attached to stationary lathes, access to whose leader-gear is obstructed by any means, so as to make it difficult to make the reinforce connections of the angle-arm 34 by the set-screw 36 to the rear gears.

In the modification shown in Fig. IV the open end of the split bearing is shown as open back between the lugs 39 to the full diameter of the bearings, so as to enable the attachment of the hanger-bar 29 on its bearings with only a lateral displacement of the leader-wheel from its seat on its bearer-rod without removal from said rod, as shown in full lines in Fig. IV; but also, as shown in broken lines in said figure, this part of the device may have a nearly-closed split bearing, so as to effect a more rigid set to its fast bearing.

I claim as my invention—

1. In a reversing attachment for screw-cutting lathes, the combination of the leader gear-wheel 10 and screw guide-hob 11, the elongated bearing-rod 8, on which said leader-wheel and hob are laterally adjustable, the drive-pinion 7, the mandrel of the lathe on which said drive-pinion is mounted, the hanger-bar 29, the journal 31, that projects from said hanger-bar, the tube-bearing 30, that mounts to said bar, and the broad intervening reversing-pinion 32, that is mounted on said journal 31 and effects a reversing movement of said leader-wheel to that of its normal drive, substantially as described.

2. In a reversing attachment for screw-cutting lathes, the combination of the elongated bearing-rod 8, the leader gear-wheel 10, and screw guide-hob 11, laterally adjustable on said rod, the back gear-frame in which said rod is mounted, the drive-pinion 7, mounted on the mandrel that carries the cone-pulleys, the hanger-bar 29, having the mounting tube-bearing 30, the journal 31, that projects from said hanger-bar, the broad intervening reversing-pinion 32, mounted on said journal, the perforate angle-arm 34, that projects from said hanger-bar, and the set-screw 36, that secures said angle-arm to the back gear-frame, substantially as described.

3. In a reversing attachment for screw-cutting lathes, the combination of the laterally-adjustable leader gear-wheel and screw guide-hob, the drive-pinion 7, the attachable hanger-bar 29, carrying the journal 31, the broad intervening reversing-pinion 32, mounted on said journal, said hanger-bar provided with the slit-opening 38, the perforate lugs 39, and the set-screw 40, that tightens the mounting bearings of said hanger-arm, substantially as described.

4. In a reversing attachment for screw-cutting lathes, the combination of the laterally-adjustable leader gear-wheel 10 and screw guide-hob 11, the drive-pinion 7, the attachable hanger-bar 29, the intervening broad reversing-pinion 32, carried by said attachable hanger-bar, the guide-screw 13 on the periphery of said hob 11, the leader-die 14, that works in said screw, the guide-arm 19, the chaser-bar 16, the chaser-tool 15, the die-holder turret 25, the die-cutter 26, the set-screw that holds said cutter, the chuck 5 on the mandrel, and the blank 6, held by said chuck while said cutter effects its respective right and left hand screw cuts, substantially as described.

5. In a reversing attachment for screw-cutting lathes, the combination of the reversing-pinion 32, the interchangeable leader gear-wheel 10, and the hanger-bar that carries said pinion, the screw guide-hob 11, and drive-pinion 7, substantially as set forth.

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In presence of—
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SAML. KNIGHT.