

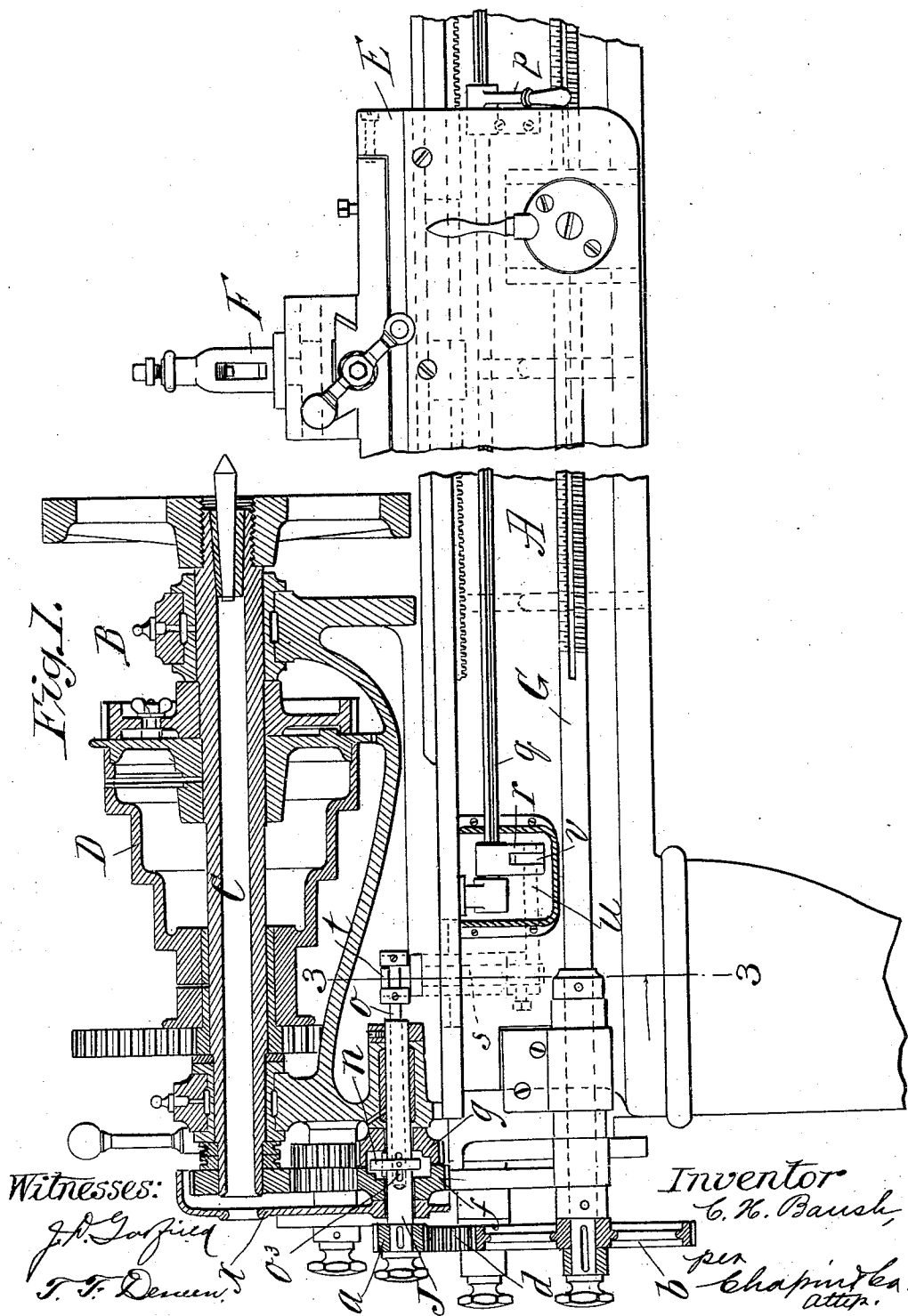
(No Model.)

3 Sheets—Sheet 1.

C. H. BAUSH.
LATHE.

No. 482,991.

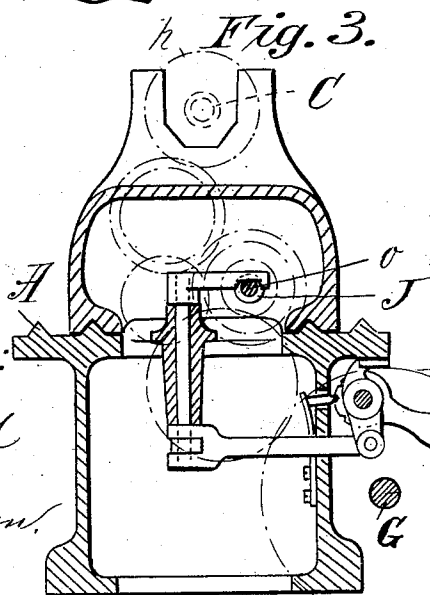
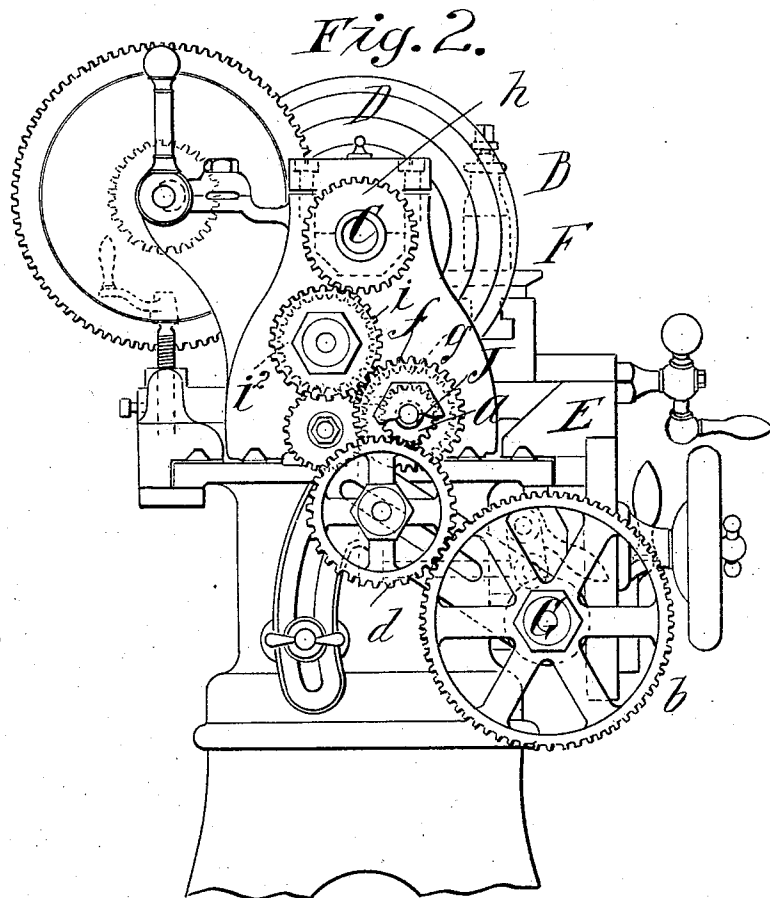
Patented Sept. 20, 1892.



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LATHE.

No. 482,991.

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Witnesses:

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T. T. Deussen

Inventor,

C. H. Baush,

per

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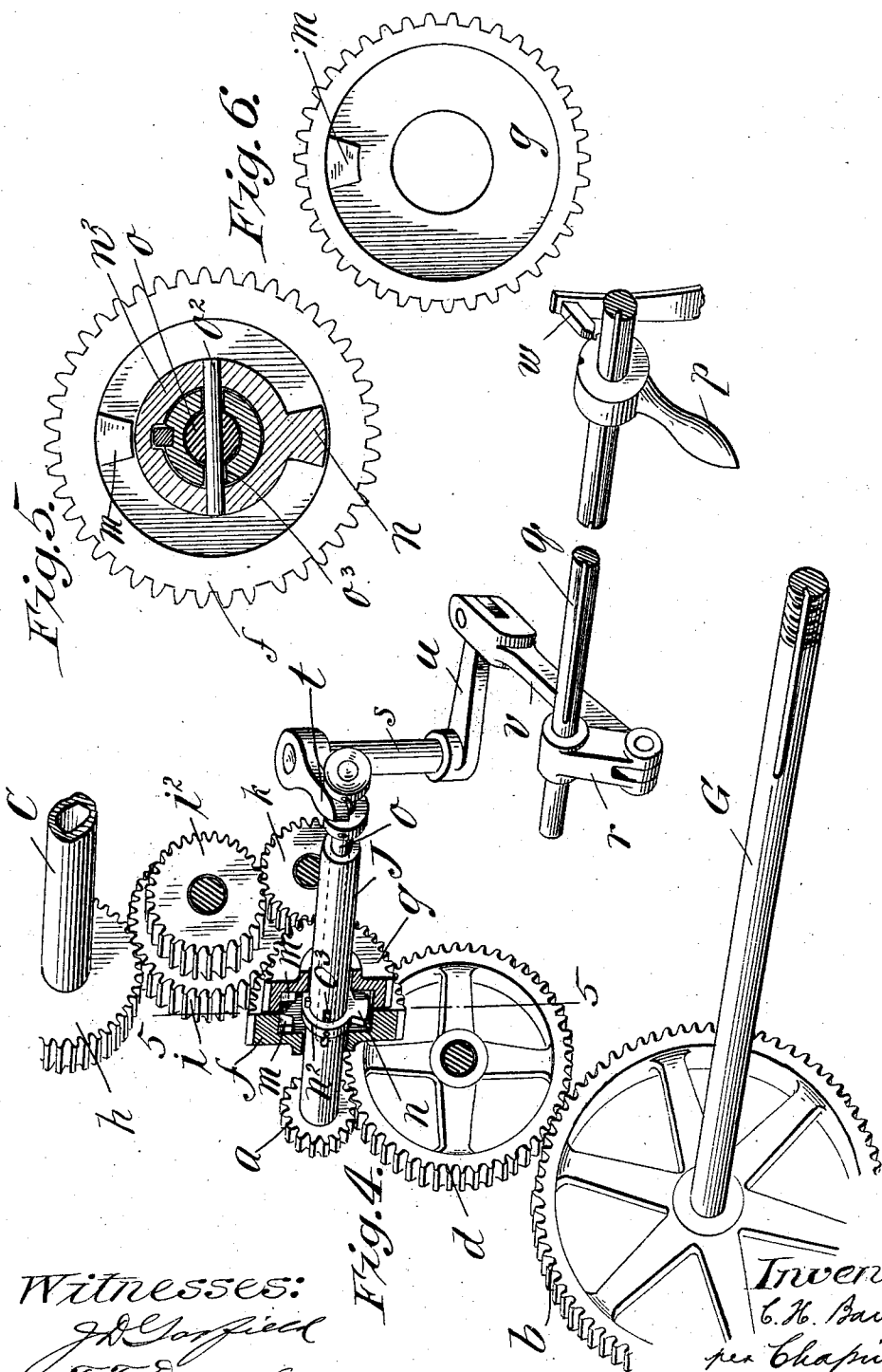
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3 Sheets—Sheet 3.

C. H. BAUSH.
LATHE.

No. 482,991.

Patented Sept. 20, 1892.



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UNITED STATES PATENT OFFICE.

CHRISTIAN H. BAUSH, OF HOLYOKE, MASSACHUSETTS.

LATHE.

SPECIFICATION forming part of Letters Patent No. 482,991, dated September 20, 1892.

Application filed February 5, 1892. Serial No. 420,410. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN H. BAUSH, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Lathes, of which the following is a specification.

This invention has especial reference to improvements in the driving and reversing mechanism for the feed-screw shaft which actuates the slide or tool carriage for lathes, whereby by the provision and operation of the novel and comparatively simple and readily-controlled appliances between or relative to the driving-spindle and the feed-screw shaft the latter may have the forward or reversed rotation, as desired.

The invention to this end consists in the combination, with the driving spindle or shaft, of another rotatable element and a feed-screw shaft geared thereto, a pair of gear-wheels, each loose on said rotatable element, and means for effecting the engagement of either of said gears with said element, and gearing between the driving-spindle and one of said pair of gears for driving the rotatable element in one direction, and other gearing between the driving-spindle and the other one of said pair of gears for reversely driving the rotatable element.

The invention may be otherwise stated as consisting in constructions and combinations of parts, all substantially as will hereinafter more fully appear, and be set forth in the claims.

In the accompanying drawings the invention is fully and clearly illustrated.

Figure 1 is partly a vertical sectional view lengthwise of a lathe with the improved mechanism applied thereto, some of the parts, however, being shown in side elevation. Fig. 2 is an end elevation. Fig. 3 is a vertical section on line 3 3, Fig. 1. Fig. 4 is a perspective view of the novel reversing mechanism, shown as removed from the ordinary lathe structure. Fig. 5 is a face view and cross-section in detail of one of a pair of gear-wheels and the rotatable element on which it may have an engagement or on which it may rotate freely. Fig. 6 is an inner face view of the other of the pair of gear-wheels which is

adapted to be engaged with or rendered loose on the rotatable supporting element therefor.

In the drawings, A represents the bed of the lathe, of which B is the head-stock, the spindle or driving-shaft C having the usual cone-pulleys D.

E is the carriage for the side or tool rest, which latter is indicated at F, the same being longitudinally movable along the bed, and, as usual in lathes, is engaged by the longitudinally-extended feed-screw shaft G.

The means to which this invention particularly relates for effecting, as desired, from the running of the spindle C in a given direction either a forward or reversed feeding rotation of the feed-screw shaft and consequent forward or reversed movement of the side rest or carriage engaged by the feed-shaft will be now described in detail. J indicates a rotatable element, here shown as a sleeve mounted in suitable bearings of the head-stock with its axis parallel with the spindle and screw-shaft, and has fixed on its end a gear-wheel *a*, which is geared to the gear-wheel *b* on the extremity of the feed-screw through the intermediate gear *d*. *f* and *g* indicate two gear-wheels side by side on the said rotatable element J, with one of which *f* the gear *h* on the driving-spindle C is geared through the intermediate gear-wheel *i*, which is in mesh with both the said gear-wheels *h* and *f*. The gear-wheel *h* on the spindle is otherwise geared to the other loose gear *g*—that is to say, through the train constituted by the gear-wheel *i*², which is mounted to move as one with the gear *i*, and the additional idler-gear *k* in mesh with both gears *i*² and *g*. It is manifest that the spindle C and gear *h*, having a rotation in one direction, will insure the rotation of the gear-wheel *f* in the same direction and the rotation of the gear-wheel *g*, owing to the additional idler in the train, in the reverse direction, and to insure the rotation of the feed-screw shaft for the forward or reversed feed it is only necessary to effect the engagement of the one or the other of the gears *f* and *g* with the sleeve J. The inner adjacent faces of the gear-wheels *f* and *g* are chambered and provided with an engagement member or abutment *m*, while *n* indicates a dog which is formed as a radially-projecting

member of a collar n^2 , which is mounted for a sliding movement on the part J. The sliding movement is imparted to the collar by the endwise movement of the rod o , which plays longitudinally within the sleeve and has at its inner extremity a cross-pin o^2 , the outwardly-projecting extremities of which project through the longitudinal slots o^3 through the sides of the sleeve and have an engagement with said dog-provided collar. On forcing the rod o outwardly the gear f only will be in engagement with the sleeve J and the feed-screw shaft will rotate with the spindle C, or forcing the rod o inwardly the gear-wheel g only will be in engagement with the sleeve when the feed-screw shaft will have a rotation the reverse of that of the spindle.

Devices for effecting the longitudinal movement of the rod o which may be employed consist as follows: q represents a splined rock-shaft mounted in bearings at the front of the lathe-bed, on which is the spline-engaging handle-lever p and also the crank-arm r . s is a vertical rock-shaft having at its upper end the arm t , which engages the extremity of the said rod o , and having at its lower end a crank-arm u , with which one end of the link v is pivotally connected, the other end of the link being pivoted to the crank-arm r . The hub of the handle-lever p is notched, with which engages a spring-detent w for maintaining the rock-shaft in any given adjusted position, readily permitting, however, the shifting movements of the parts of the application of sufficient positive pressure upon the handle-lever.

In Fig. 1 there is shown a casing x for certain of the gears at the end of the head-stock, which casing is, however, omitted from Fig. 2 for the purposes of clearer illustration.

An advantage inuring to this invention, in addition to the simplicity and efficiency of the reversing mechanism, resides in the arrangement of the novel gearing and coacting parts, whereby they are readily accessible for lubrication or other purpose.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a lathe, in combination, the driving-spindle, a shaft, and the feed-screw geared to the latter, a pair of gear-wheels each loose on said shaft, and means for effecting the engagement of either of said gears with said shaft, and gearing between the driving-spindle and one of the said pair of gears for driving said shaft in one direction, and other gearing be-

tween the driving-spindle and the other of said pair of gears for reversely driving the shaft, substantially as described.

2. In a lathe, in combination, the driving shaft or spindle, the sleeve mounted for rotation, and a feed-screw shaft geared to the sleeve, a pair of gear-wheels each loosely mounted on the sleeve and each having an abutment member gearing between the driving-spindle and said sleeve-supported gears for driving the latter in opposite directions, a collar adapted to slide along the sleeve and having a dog to engage the abutment-piece of either of said pair of gears, and a rod movable endwise within the sleeve and having a pin projecting through a slot which is formed through the sleeve and engaging said slide-collar, substantially as and for the purposes set forth.

3. In a lathe, in combination, the driving shaft or spindle having the gear h thereon, the rotatable sleeve having a slot o^3 and the gear a , and the feed-screw shaft G, having the gear b , and the intermediate gear d , connecting said gears a and b , the gears f and g , normally loose on the sleeve and each having an abutment-piece, as m , the dog-carrying slide-collar, and the rod o , having the pin o^2 , projected through the sleeve-slot, engaging the collar, the gear i , in engagement with said gears h and f , and the gear i^2 , mounted to rotate as one with said gear i and having the gear k between it and the gear g , and means for imparting endwise movements to said rod o , substantially as described.

4. In a lathe, the driving-spindle, the sleeve mounted for rotation, and a feed-screw shaft geared to the sleeve, a pair of gear-wheels loosely mounted on the sleeve and each having an abutment member, sets of gearing between the driving-spindle and said sleeve-supported gears for driving the latter, respectively, in opposite directions, the dog-carrying collar movable along the sleeve, and a rod movable endwise within the sleeve and having a pin projecting through a slot which is formed through the sleeve to engage the slide-collar, combined with the rock-shafts q and s , the latter having the arm t , engaging the rod o , and the crank-arm u , and said rock-shaft q having a handle-lever and the crank-arm r , and the link between said arms r and u , substantially as set forth.

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Witnesses:

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