

(No Model.)

3 Sheets—Sheet 1.

J. E. RICHARD.
LATHE ATTACHMENT.

No. 500,722.

Patented July 4, 1893.

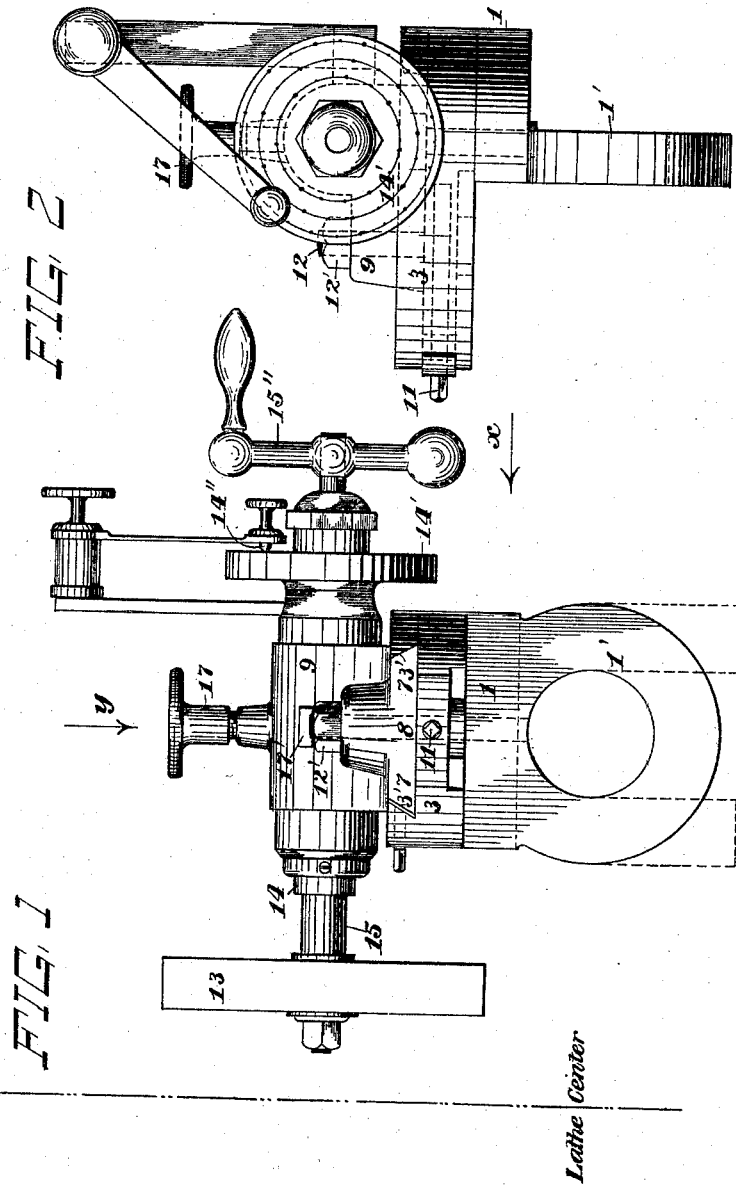


FIG. 2

FIG. 1

Lathe Center

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WITNESSES:

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By *Henry Conner*
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(No Model.)

3 Sheets—Sheet 2.

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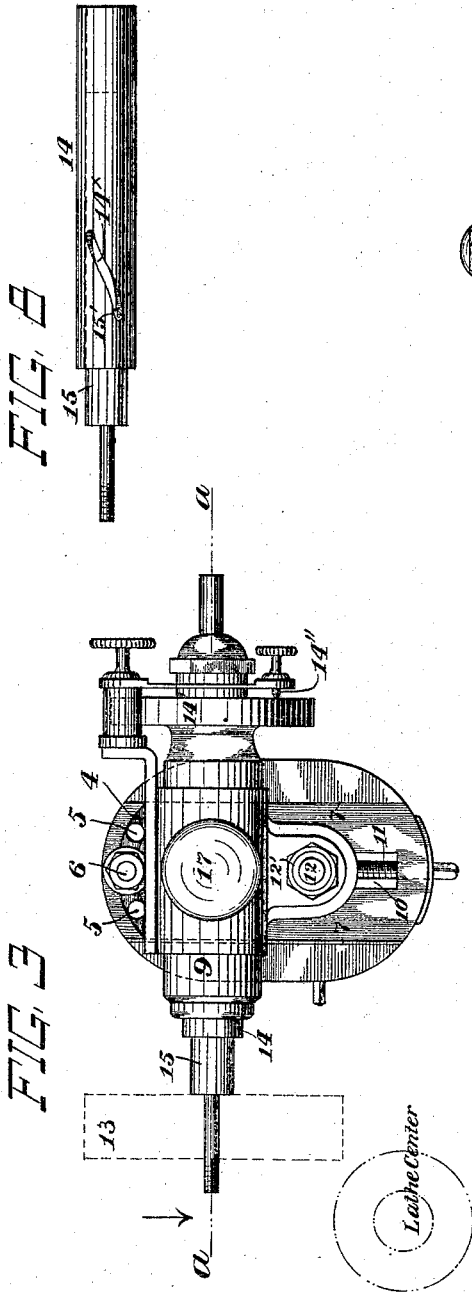


FIG. 3

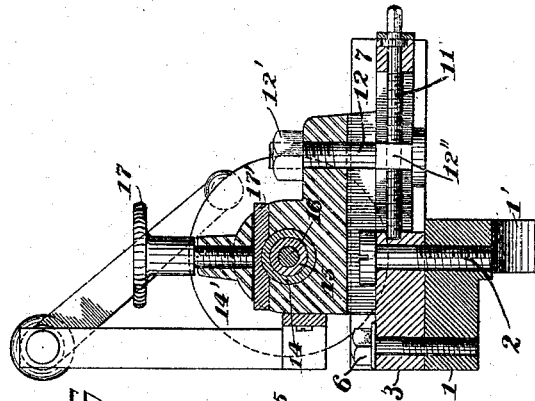


FIG. 5

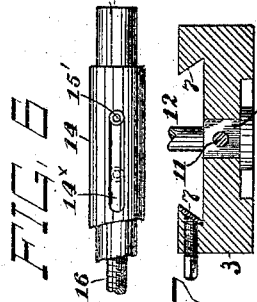


FIG. 6

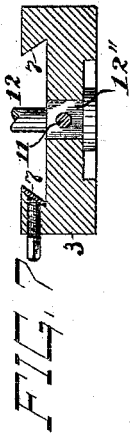


FIG. 7

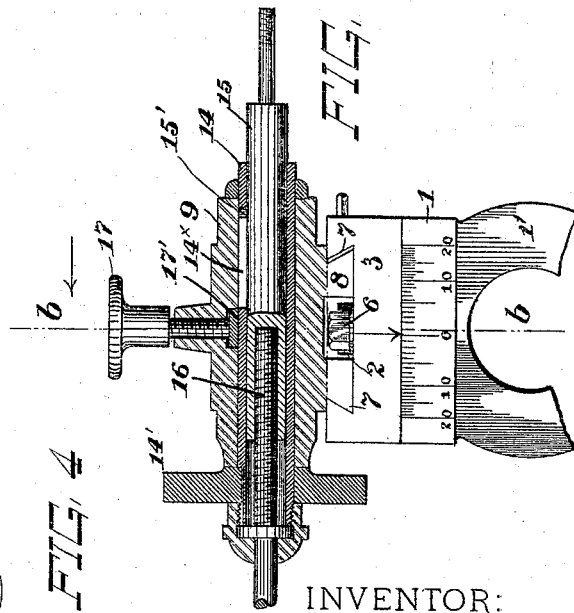


FIG. 4

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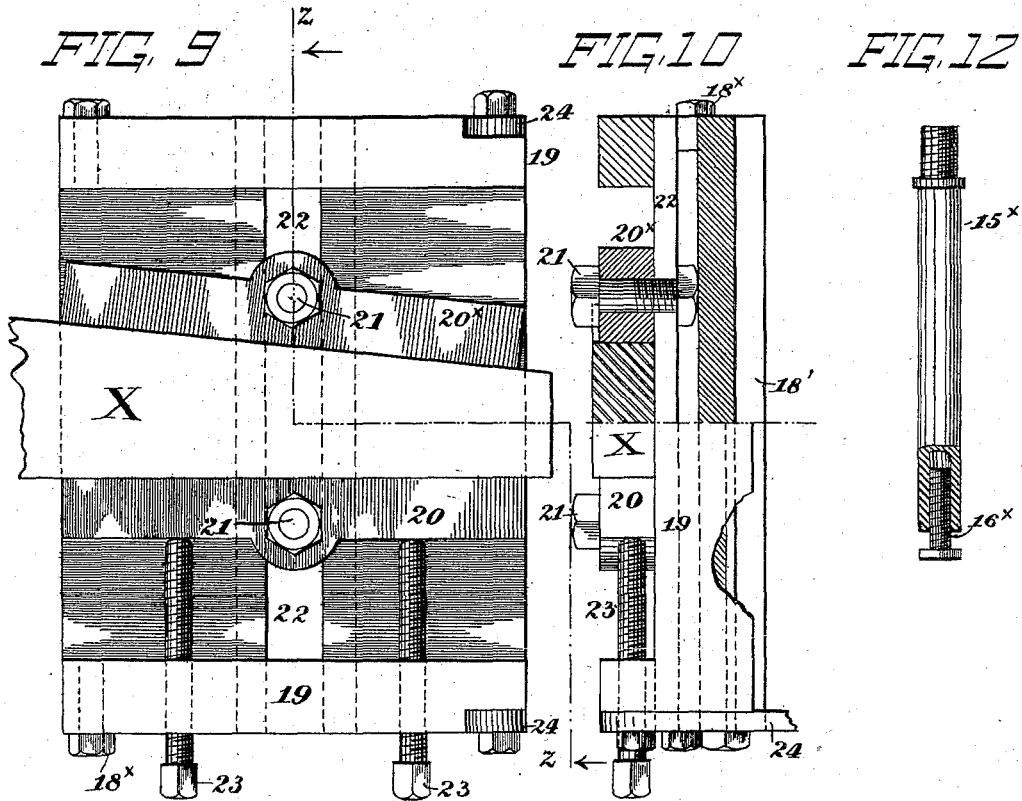
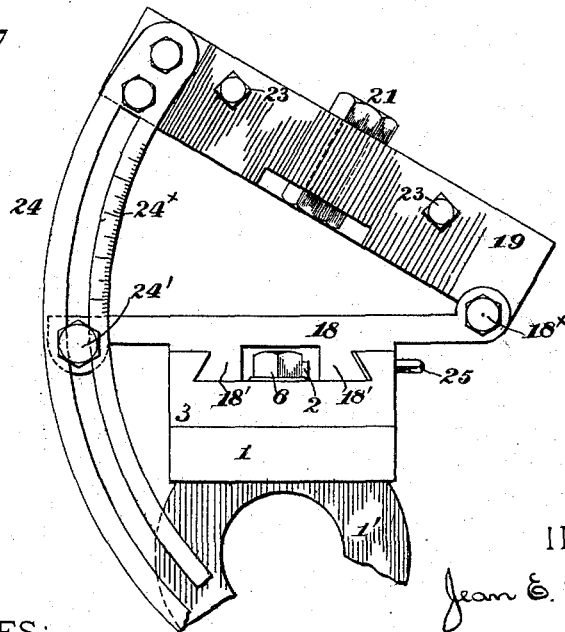


FIG. 11



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UNITED STATES PATENT OFFICE.

JEAN E. RICHARD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS,
TO JOHN SCOTT, OF SAME PLACE.

LATHE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 500,722, dated July 4, 1893.

Application filed July 1, 1892. Serial No. 438,660. (No model.)

To all whom it may concern:

Be it known that I, JEAN E. RICHARD, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Lathe Attachments, of which the following is a specification.

My invention relates to devices adapted for use on the ordinary machinist's lathe whereby different classes of work may be done expeditiously and correctly without the necessity of special machines for the purpose; and the object of the invention is to provide an attachment adapted to be fixed on or secured to the tool-post of the lathe, which will permit of cutting gears, either plain, bevel, or oblique, or of fluting drills and reamers, or of slotting and milling articles, all as will be more particularly described hereinafter with reference to the accompanying drawings, wherein—

Figure 1, is an under side plan view of an attachment embodying the principal features of my invention. Fig. 2, is a rear view of the same, as seen from arrow *a*, at the right in Fig. 1. Fig. 3 is a side view, as seen from the arrow *y*, over Fig. 1. Fig. 4, is a longitudinal section on line *a, a*, in Fig. 3, and Fig. 5, is a transverse section on line *b, b*, in Fig. 4. Figs. 6, 7 and 8 are detached detail views, which will be hereinafter described. Figs. 9, 10 and 11 are views illustrating an adjustable carriage or holder for articles to be cut or milled, as will be hereinafter described. Fig. 12 shows a chuck holder adapted to replace the mandrel in the carriage, as will be described.

Referring primarily to the first seven figures of the drawings, 1, is a base plate on which is formed an apertured flange 1', to embrace the tool-post of any ordinary machinist's lathe. This flange enables the attachment or device to be fixed securely but removably to the tool-post for convenient use. Secured to the upright face of the base plate 1, by a screw or pin, 2, is a rotatable plate, 3, which turns about the screw 2 as a center. The upper faces of the plates 1 and 2, are rounded or convex concentric with the screw 2, and as represented in Fig. 4, the face of one plate is marked with graduations while the other is

marked with a pointer or index, so that the degree of rotation of the one on the other may be readily measured. In the plate 3 (see Fig. 3), is a slot 4, concentric with the screw 2, and in the adjacent face of the plate 1, coinciding with said slot, are one or more holes, 5, in which may be set a clamping screw, 6, to clamp and hold the plates 1 and 3, in any position they may be set.

In the outer face of the plate 3, is formed a dovetail keeper guide, 7, seen in the detached, sectional view, Fig. 7; and in this keeper guide is mounted a dovetail slide 8, fixed to or forming a part of a holder or carriage 9. This carriage is adapted to be moved across the face of the plate 3 to any desired extent, and fixed in position when set, by means of a mechanism best seen in Fig. 5. In the plate 3, parallel with the keeper guide 7, is a slot 10, in which is mounted a collared adjusting screw 11, which screws through a square portion of the body of a bolt 12, set in the carriage 9, and provided with a nut 12'. The square, 12'', on the bolts fits and plays in the slot 10. The screw 11, serves to move the carriage in the keeper guide and the bolt 12 serves to clamp it in place when set. Thus it will be seen that the carriage 9, has two adjustments, viz: one rotatively about the screw 2, and the other across the face of the plate 3.

Fig. 4, illustrates the form of holder and feed for the article or thing to be cut, as a gear wheel, (13, in Fig. 1,) for example. In a cylindrical bore in the carriage 9, is rotatively mounted a sleeve, 14, which is collared against endwise movement and provided with a dividing or index plate 14', of the usual kind employed in gear cutters. Mounted on the carriage is the usual spring finger and point, 14'' used in connection with the plate 14'. Mounted to slide longitudinally in the sleeve 14, is the arbor 15, which carries the gear to be cut. This arbor is compelled to turn with the sleeve 14 by means of a stud, 15', on the arbor (see detached view Fig. 6) which engages a slot, 14^x, in the sleeve 14. Longitudinal movement is imparted to the arbor 15, by a screw 16, which has collared bearings and is provided with a crank 15'', seen in Fig. 1. This crank is removable and I have omitted it from Figs. 2 and 3.

The operation of the attachment described, for cutting gears or like work, is as follows: A cutter or milling tool is mounted on the lathe spindle, and the blank, as 13 in Fig. 1, is secured on the end of the arbor 15, the attachment having been previously secured to the tool post of the lathe. If the gear to be cut is a spur gear, the axis of the arbor 15 will usually be arranged horizontally, and the carriage be set at the proper height for the milling tool or cutter to cut to the desired depth when the gear blank 13, is moved over it by the feed screw 16. After the plate 14', has been set, the sleeve 14, is held firm against rotation during the feeding operation by a screw 17, and a clamping shoe, 17', (see Fig. 5) which is slipped into a mortise in the carriage and has a concave face where it bears on the sleeve. This shoe is interposed between the screw 17 and the sleeve.

If the gear to be cut is a spiral or skew gear, the slot, 14^x, in the sleeve will be spiral, as seen in Fig. 8, which shows this feature. I have shown a sleeve with a straight slot in Fig. 6, and one with a spiral slot in Fig. 8, but it will be obvious that the same sleeve may have both a straight and a spiral slot in it, on opposite sides, so that either can be used at will; or it may have two or more spiral or helical slots of different pitches. This arrangement of several slots in the same sleeve is too obvious to require illustration, and is within the knowledge and skill of any good workman who can construct such a device. Twist drills, straight fluted drills, fluted reamers, and all work of this character may be constructed with this attachment. For cutting bevel gears, or any beveled work, the plate 3 will be turned about the screw 2 and set at the proper angle, and the feed effected by means of the regular tool feed of the lathe; that is, the whole attachment will be fed transversely of the lathe bed by means of the tool post and its carriage.

In Fig. 12 I have shown a mandrel 15^x, to replace the mandrel 15. This mandrel 15^x is adapted to hold a chuck, and is useful for some kinds of work. To use this chuck mandrel it is only necessary to take out the sleeve 14 with the mandrel 15 inclosed, and then remove the mandrel 15 and replace it by the chuck mandrel.

The carriage 9 being readily removable from the keeper guide in plate 3, this carriage may be taken off and another carriage for a different class of work substituted for it. I have shown such a device in Figs. 9, 10 and 11. This device comprises an adjustable carriage or holder for a piece to be slotted or milled, Fig. 9, being a face view of the clamping plate, and Fig. 10, a section of the same on line z, z, in Fig. 9. Fig. 11, is a plan view of the holder, showing it mounted in the keeper guide of plate 3.

The holder plate 18, is provided with a dovetail slide 18', which fits and plays in the dovetail keeper guide in plate 3, wherein it is

clamped when once adjusted, by means of a screw or screws 25, seen in Fig. 11, which screw into the edge of the plate 18. To this plate 18, is hinged at 18^x, a plate 19, provided with pivoted clamp jaws, 20 and 20^x. These clamp jaws are pivoted respectively, on bolts, 21, which engage a slot, 22, in the plate 19, and the clamping is effected by screws, 23, which bear on the jaw 20 at opposite sides of its pivot. The plate 19 may be set and fixed at any angle with the plate 18, by means of curved and slotted guides 24, secured to the opposite ends of plate 19, and engaging clamp screws 24' set in the plate 18. The guides 24 are represented in Fig. 11, as graduated.

In Figs. 9 and 10, X represents a beveled piece as clamped in the jaws of the carriage or holder.

Having thus described my invention, I claim—

1. In a lathe attachment, the base plate 1, provided with an apertured flange 1' for attachment to the tool post of the lathe, the plate 3, rotatably mounted on the plate 1, and provided with a dovetail keeper guide to receive a carriage for the piece to be operated on, the said carriage, means substantially as described for holding the piece on the carriage, means substantially as described for securing the carriage in the keeper when set, and a clamping mechanism for securing together the plates 1 and 3 when set, substantially as described and shown.

2. In a lathe attachment, the combination with the base plate 1, provided with an apertured flange 1' for attachment to the tool-post of a lathe, the plate 3, pivotally mounted on the face of plate 1, and provided with a keeper guide to receive a carriage or holder, means for clamping the plates 1 and 3 together when adjusted the carriage 9, mounted in the keeper guide in plate 3, and means for adjusting and setting the carriage in said guide, of the slotted sleeve 14, rotatively mounted in the carriage and provided with an index plate 14', the spring finger and point for use in connection with said plate, the arbor 15, mounted in said sleeve and provided with a stud which engages the slot in the sleeve, and the collared feed screw, 16, mounted in the carriage and adapted to move the arbor longitudinally, substantially as set forth.

3. In a lathe attachment for helical fluting, and the like the combination with the carriage 9, having in it a longitudinal bore, of the sleeve 14, rotatively mounted in said bore and provided with a helical slot as set forth, means substantially as described for measuring the degree of rotary movement imparted to said sleeve at each setting, means substantially as described for clamping said sleeve in place in the carriage, a longitudinally sliding arbor 15, mounted in said sleeve and provided with a stud which engages the slot in the sleeve, and a feed-screw 16, collared in its bearings and engaging a female screw in the arbor, substantially as set forth.

4. In a lathe attachment, the combination
with a plate, as 3, having in it a dovetail
guide, of a carriage or holder comprising a
plate 18, provided with a slide which engages
5 said dovetail guide, means for clamping said
slide in the guide, a plate 19, hinged to plate
18 and having slotted guides 24, means for
clamping said guides to the plate 18, and ad-
justable, pivoted clamp jaws, 20 and 20*

mounted on the plate 19 for clamping thereon to
the piece to be milled.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses.

JEAN E. RICHARD.

Witnesses:

HENRY CONNETT,
ANDREW COMSTOCK.