

(No Model.)

4 Sheets—Sheet 1.

L. & D. LAKE.
MACHINE FOR CUTTING KEY SEATS.

No. 543,309.

Patented July 23, 1895.

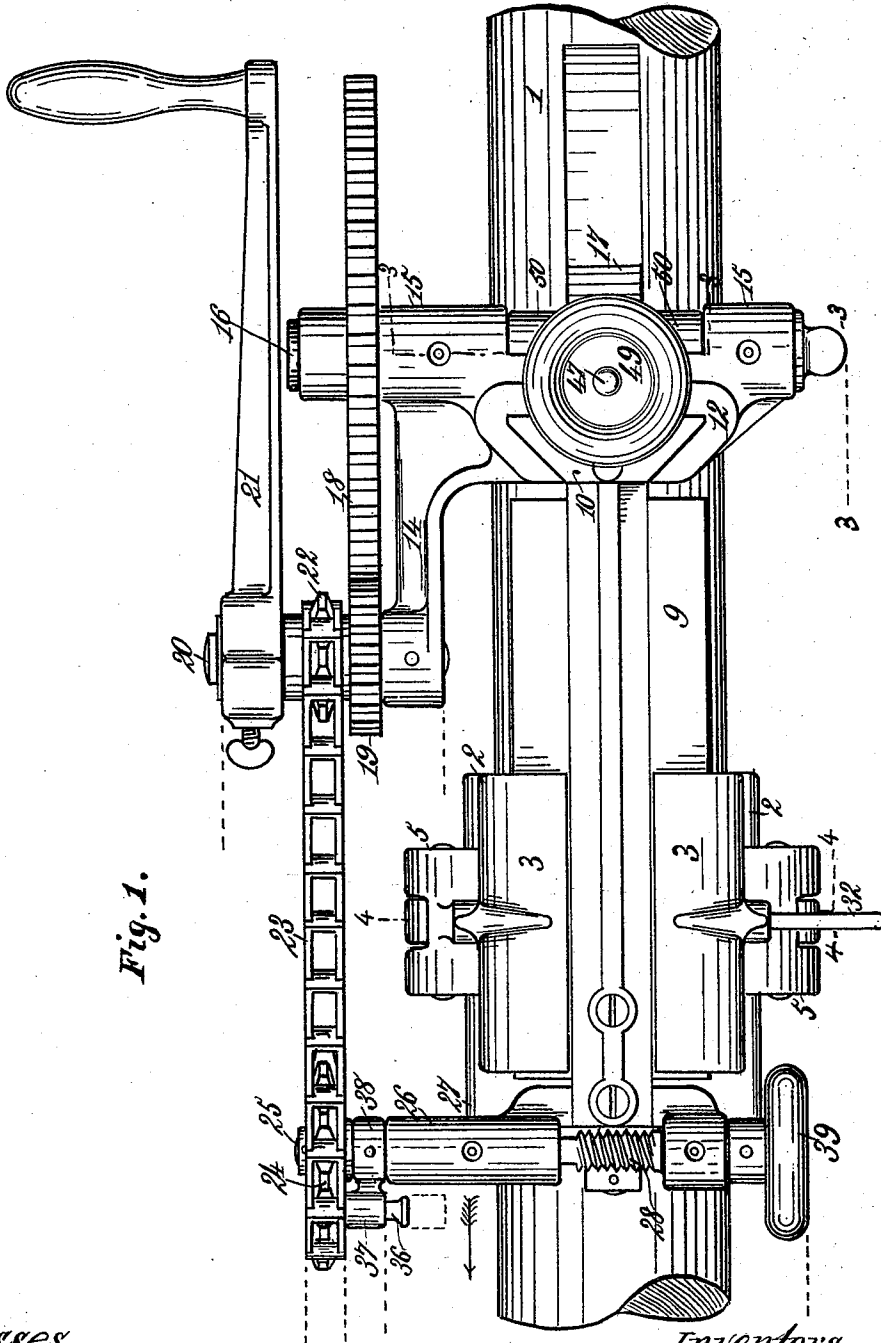


Fig. 1.

Witnesses.

A. H. Norris

Robert Enatt.

Inventors

Leon Lake

David Lake.

By James L. Norris.
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(No Model.)

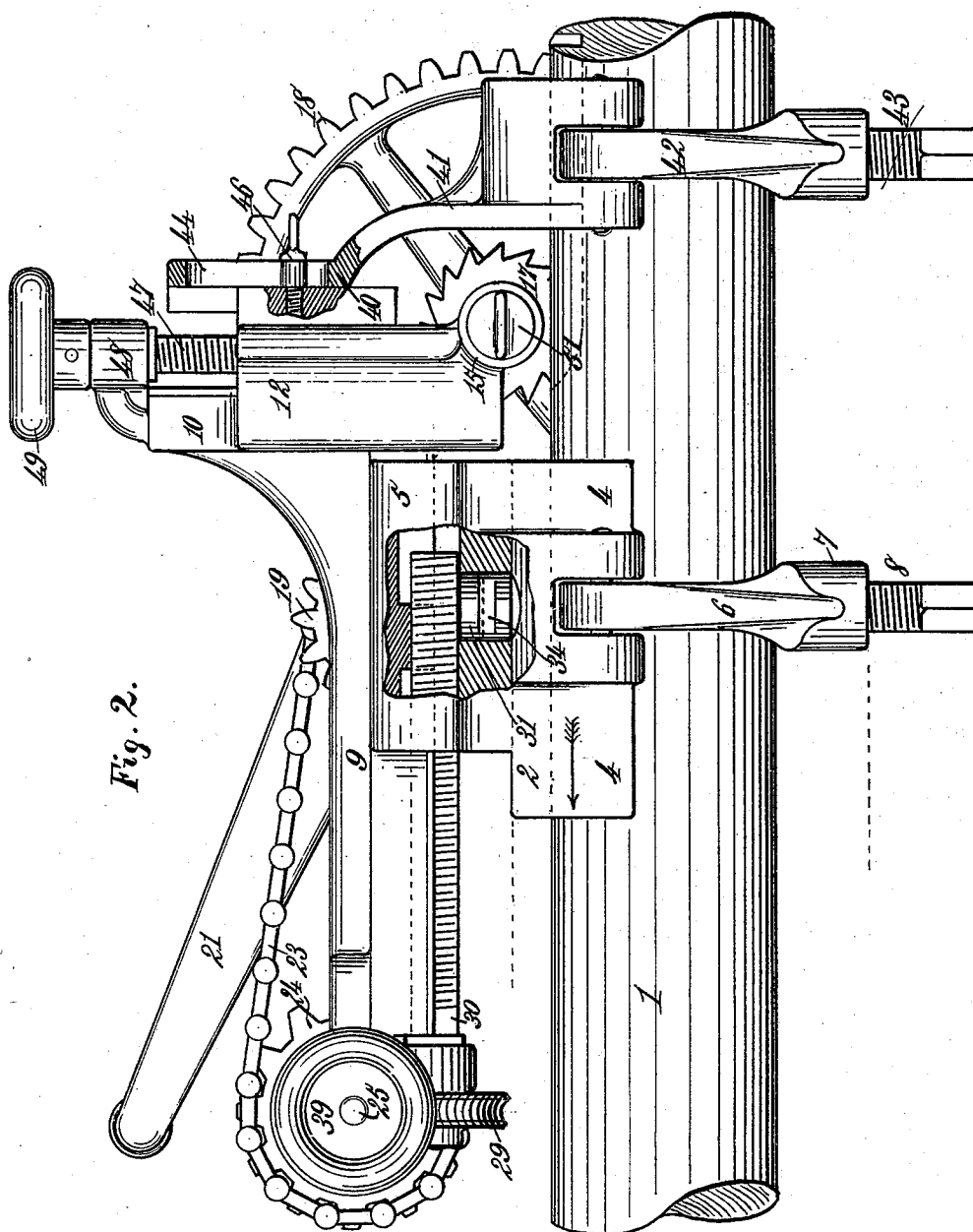
4 Sheets—Sheet 2.

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Witnesses,
A. H. Norris.
Robert Corbett.

Inventors
Leon Lake
David Lake.
By James L. Norriz.
Atty.

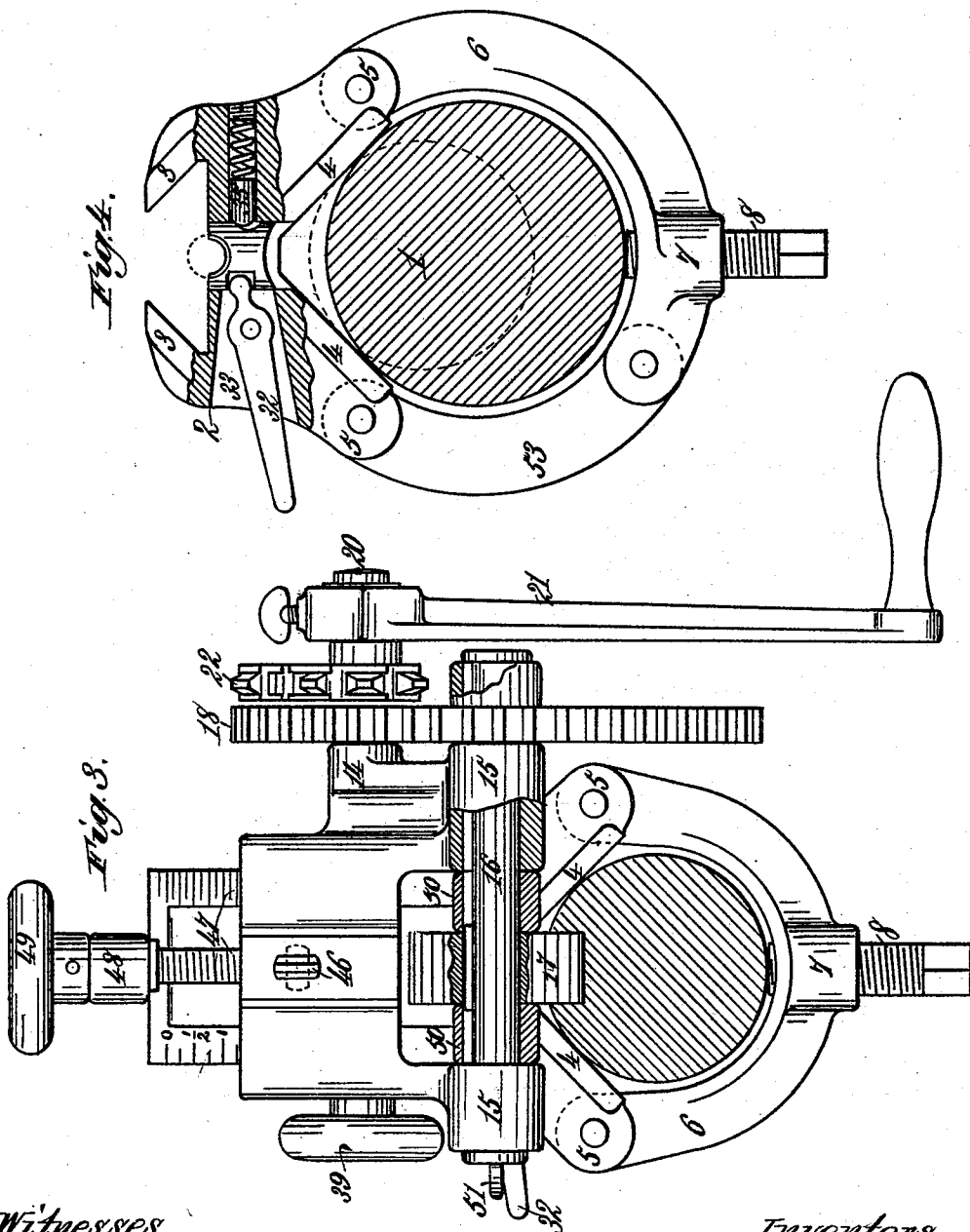
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L. & D. LAKE.
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Witnesses,
A. H. Norris.
Albert Everett.

Inventors,
Leon Lake,
David Lake.
By James L. Norris.
Atty.

(No Model.)

4 Sheets—Sheet 4.

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Fig. 5.

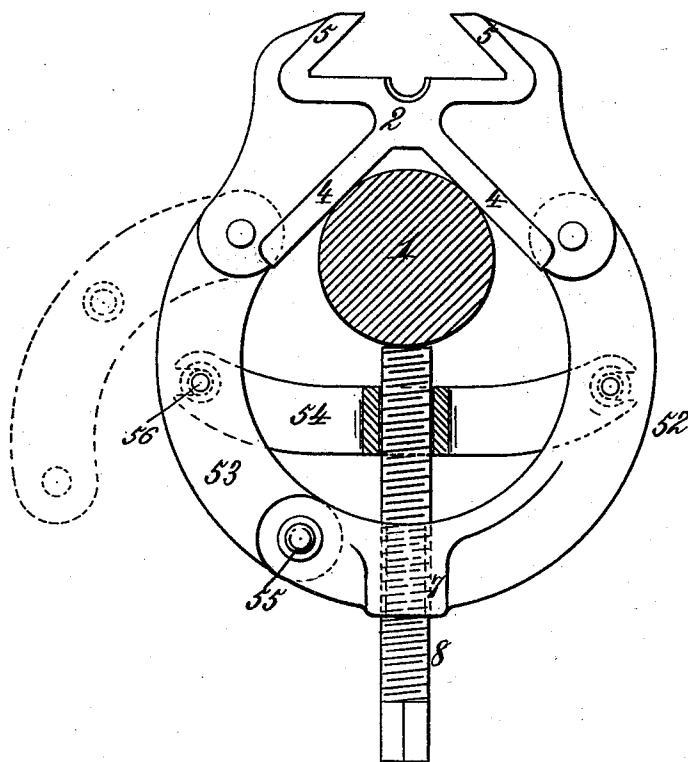
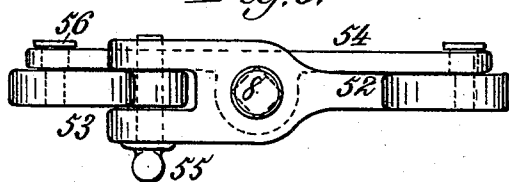


Fig. 6.



Witnesses,
A. H. Norris,
Robert Conant,

Inventors,
Leon Lake
David Lake,
By James L. Norris,
Atty,

UNITED STATES PATENT OFFICE

LEON LAKE AND DAVID LAKE, OF PHILADELPHIA, PENNSYLVANIA; SAID
DAVID LAKE ASSIGNOR TO HATTIE I. LAKE, OF SAME PLACE.

MACHINE FOR CUTTING KEY-SEATS.

SPECIFICATION forming part of Letters Patent No. 543,309, dated July 23, 1895.

Application filed October 1, 1894. Serial No. 524,618. (No model.)

To all whom it may concern:

Be it known that we, LEON LAKE and DAVID LAKE, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Machines for Cutting Key-Seats, of which the following is a specification.

Our invention has for its purpose the provision of a portable key-seating mechanism, which shall be adapted to operate upon shafting placed in any position or of any diameter, the seat-forming devices having an automatic feed-movement and being so controlled as to insure the formation of the key-seat in parallelism with the axis of the shaft operated upon.

To these ends our invention consists in the novel features of construction and new combinations of parts hereinafter fully described, and then particularly pointed out in the claims, which conclude this specification.

To enable those skilled in the art to which our invention pertains to fully understand and to make and use the same we will proceed to describe said invention in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a plan view showing a portion of a shaft with our key-seating mechanism mounted thereon. Fig. 2 is a side elevation of the same, partly in section. Fig. 3 is a transverse section upon the line 3 3, Fig. 1. Fig. 4 is a transverse section upon the line 4 4, Fig. 1. Fig. 5 is a detail section showing a slight modification in construction. Fig. 6 is a plan view of the parts shown in Fig. 5.

The reference-numeral 1 in said drawings indicates a portion or section of shafting of any given diameter and arranged at any point where shafting is ordinarily used.

The numeral 2 denotes the main supporting-base of our key-seating mechanism, said base being provided with opposite jaws 3 inclined toward each other and rising above the said base 2. Upon each side of the base 2, and projecting below the same, are divergent or outwardly-inclined jaws 4, which are adapted to straddle the shaft, each being provided with a bifurcated joint 5 to permit the pivotal attachment thereto of the ends of a yoke 6, which is provided at or near its central portion with a boss or enlargement 7, through which is tapped a set-screw 8, its end

being adapted to bear against the shaft and lock the supporting-base 2 rigidly thereon at any required point.

Upon the base 2 and arranged between the converging jaws 3 is a slide 9, which is capable of longitudinal movement in a line parallel with the axis of the shaft. Upon one end of said slide is a vertical dovetailed block 10, upon which is mounted a slide 12, arranged at right angles to the line of movement of the slide or perpendicular to the axial plane of the shaft 1. Upon the lower end of the slide are bearings 15 for a transverse shaft 16. Upon this shaft, between the bearings 15, is mounted the seat-cutting tool 17, which is operated through a large spur-gear 18 on the end of the shaft and a pinion upon a short shaft or stud 20, rigidly mounted on a bracket-arm 14, which forms part of the slide 12. The prolonged hub of this pinion is provided with a crank 21 or other suitable means for producing revolution. A sprocket 22 is mounted on the hub of the pinion 19 and geared by a sprocket-chain 23 to a second sprocket 24, carried by a transverse shaft 25, which is supported in bearings 26, the latter being formed at the extremities of lateral brackets 27 at the end of the slide 9 opposite that carrying the dovetailed block 10. Said shaft 25 is provided with a worm 28, meshing with a worm-gear 29, which is mounted on the end of a central threaded shaft 30, lying in the longitudinal line of the slide 9. The threads of the shaft mesh with a feed-nut 31 seated in the supporting base 2. The feed-nut is capable of vertical adjustment by means of a lever 32, having its fulcrum in a transverse recess 33 on one side of the supporting-base 2, from which its end projects sufficiently to enable it to be operated. The other extremity of said lever lies in a notch 34 in the feed-nut. When the projecting end of the lever 32 is pushed downward and the feed-nut raised into mesh with the threaded shaft 30 it is held in engagement by a spring-pressed bolt 35, the rounded end of which enters a concave recess in the side of the nut. Sufficient power is easily exerted by the lever 32 to drive the bolt out of said notch and press the feed-nut down, thereby withdrawing it from operative engagement with the threaded shaft.

The sprocket 24 is normally loose upon the

shaft 25, and is operatively connected therewith by a clutch-bolt 36 carried by a bearing 37, which forms part of a collar 38, fixed on the shaft. By retracting the clutch-bolt the sprocket is operatively disengaged from the shaft and the latter may then be turned by a hand-wheel 39 or other suitable means on the other end of the shaft 25.

The front of the slide 12 projects sufficiently to provide a vertical guide for a slide 40, which forms part of a bracket 41, adapted to straddle the shaft in front of the cutter, a yoke 42 being provided to surround the shaft, its construction, and the set-screw 43 for securing it, being substantially similar to the yoke 6 and set-screw 8. A slot 44 is formed in the upper part of the bracket, which projects in front of the slide 40, and in said slot lies a thumb-screw 46, the end of which is tapped into the slide 12, as seen in Fig. 2. By turning the thumb-screw half a revolution in one direction the bracket is released, while a like turn in the opposite direction binds it firmly.

The slide 12 is fed downward as the cutter forms the seat by means of a screw 47, supported in a yoke-frame 48, and provided with a hand-wheel 49. The block 10 may be graduated, as shown in Fig. 3, to indicate the depth of cut.

The seat-cutting tool 17 is keyed upon its shaft and retained in position between the two bearings 15 by washers or short sleeves 50. Two or more cutting-tools may be placed upon the shaft together, when the width of the key-seat requires, and in such cases the washers or sleeves 50 will be interchangeable. A plug 51 is tapped into the end of one of the bearings 15 to hold the shaft in proper position and prevent any longitudinal play.

The yokes 6 and 42 may be replaced by extension-yokes 52, which only differ from those described by having an additional pivotally-connected link 53 and a cross-brace 54, having a central opening for the set-screw which is steadied and braced thereby. The link 53 is connected to the yoke at one end by a removable pin 55. The cross-brace 54 is forked at one end to straddle a supporting-pin 56. When used upon shafts of such diameter as to require the maximum capacity of the yoke, the cross-brace may be disconnected at its forked end and allowed to hang from its other pivotal support, or it may be wholly removed, as in Fig. 4.

When the machine is placed upon the shaft the yoke 42 is rigidly clamped thereto and the bracket 41 is secured to the slide 12. The set-screw 8 is then loosened and the yoke 6 and supporting-base are moved to the farther extremity of the slide, the feed-nut 31 being previously forced downward out of mesh with the threaded shaft 30. When in proper position, the set-screw 8 is turned into clamping engagement with the shaft, the set-screw 43 is loosened to release the yoke 42, and the machine is operated, passing over the same

line of work as many times as may be necessary in order to cut the seat to its required depth.

What we claim is—

1. In a portable machine for cutting key-seats in shafting, the combination with a supporting base, of means for clamping the same upon a shaft, a slide movable in said base and carrying the cutter-shaft, an independent yoke and set screw forming a vertically adjustable attachment on brackets on the slide, a longitudinal threaded shaft mounted on the slide, a vertically movable feed nut, and means for throwing said feed-nut out of and into mesh with the threaded shaft, substantially as described.

2. In a portable machine for cutting key-seats in shafting, the combination with a supporting base of a yoke detachably connected thereto, a set-screw tapped through the yoke to bear against the shaft, a slide carrying the cutter-shaft, and an independent yoke and set-screw forming a vertically adjustable attachment on brackets of the slide, substantially as described.

3. In a machine for cutting key-seats in shafting, the combination with a supporting base, of a slide movable in jaws forming part of said base, a cutter-shaft vertically adjustable in jaws on the end of said slide, a threaded shaft in bearings on said slide, a vertically movable feed-nut arranged in a seat in the base, means for moving said feed-nut, a lever having its point lying in a recess in said feed-nut, and gearing connecting the cutter shaft with mechanism for operating the threaded shaft, substantially as described.

4. In a portable machine for cutting key-seats in shafting, the combination with a supporting base and with means for clamping the same to the shaft, of a slide carrying the cutter-shaft, a longitudinal threaded shaft in bearings on said slide, a vertically movable feed-nut arranged in a seat on the supporting-base, a lever having its point lying in a recess in said feed-nut, and a spring-pressed bolt engaging a notch in the same, substantially as described.

5. In a portable machine for cutting key-seats in shafting, the combination with a supporting-base of a yoke having an extension link pivotally connected therewith, a cross brace having its ends connected to said link and to the opposite side of the yoke, and a set-screw tapped through the middle part of the yoke and lying in a seat in the cross-brace, its end abutting against the shaft, substantially as described.

In testimony whereof we have hereunto set our hands and affixed our seals in presence of two subscribing witnesses.

LEON LAKE. [L. S.]
DAVID LAKE. [L. S.]

Witnesses:

INDIA LAKE,
SARA ESTABROOK.