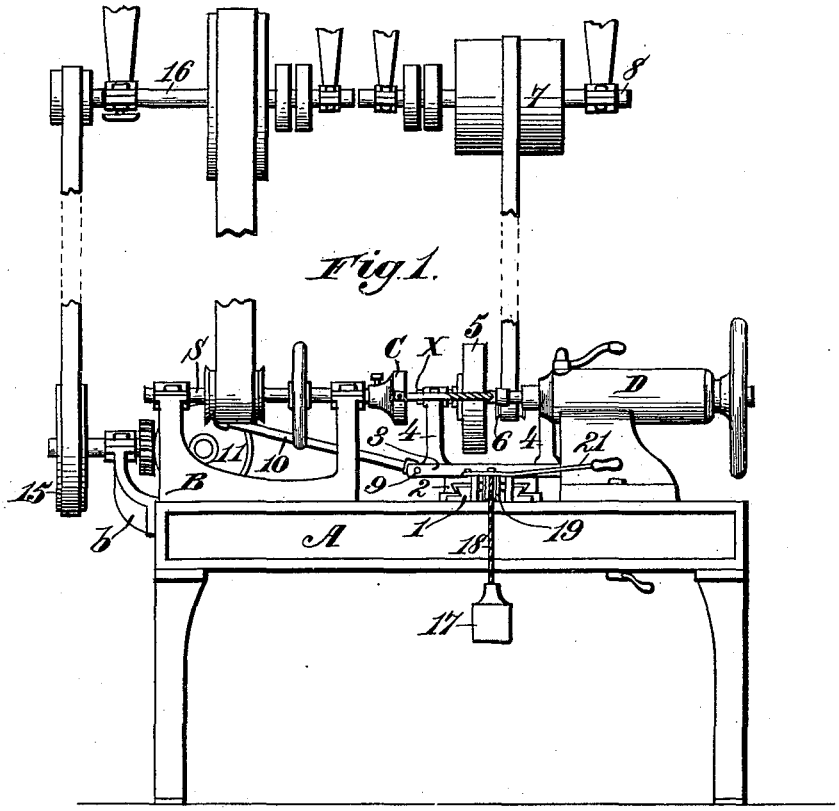
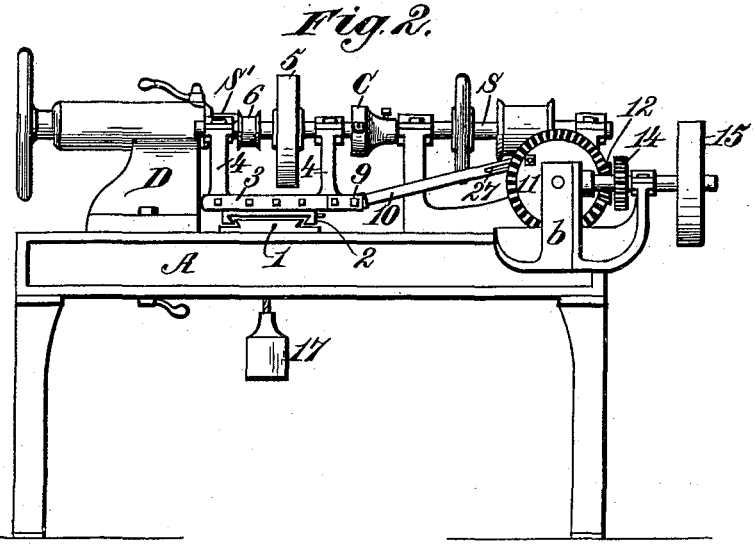
(No Model.) 2 Sheets—Sheet 1.

F. MARTIN.

FINISHING OR SIZING LATHE.

No. 463,747. Patented Nov. 24, 1891.





Witnesses.
Robert Gwatt.
J. A. Rutherford

Inventor.
Frank Martin.
By Wilkinson Atty.

(No Model.) 2 Sheets—Sheet 2.

F. MARTIN.

FINISHING OR SIZING LATHE.

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Fig. 3.

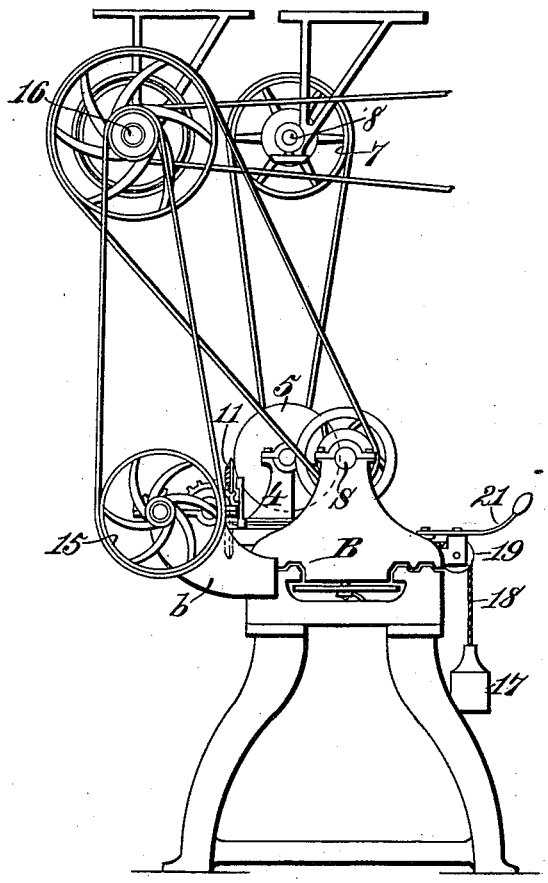


Fig. 4.

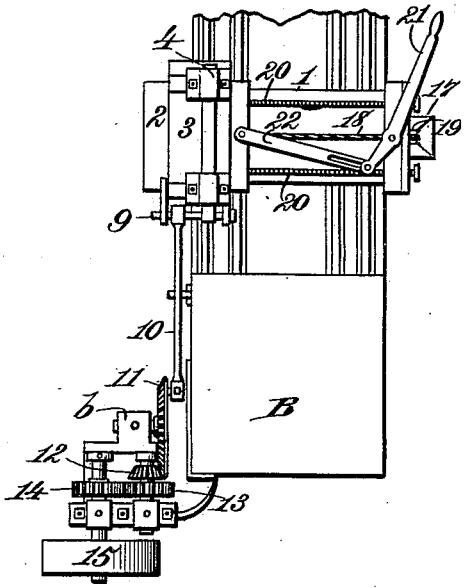


Fig. 6.

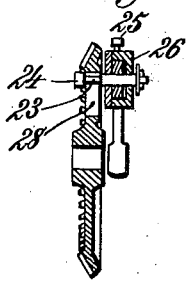
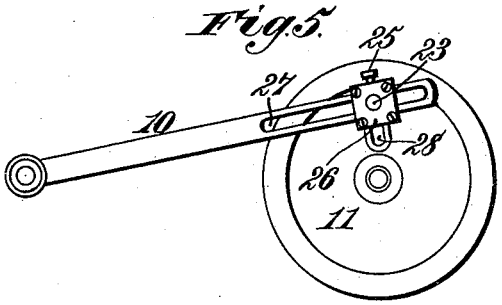


Fig. 5.



Witnesses.
Robert Burnett.
J. A. Rutherford.

Inventor.
Frank Martin.
By
K. Gill Stowell
Atty.

UNITED STATES PATENT OFFICE.

FRANK MARTIN, OF CINCINNATI, OHIO.

FINISHING OR SIZING LATHE.

SPECIFICATION forming part of Letters Patent No. 463,747, dated November 24, 1891.

Application filed February 4, 1891. Serial No. 380,254. (No model.)

To all whom it may concern:

Be it known that I, FRANK MARTIN, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Sizing or Finishing Lathes, of which the following is a specification.

My invention relates to the class of lathes known as "finishing" or "sizing" lathes, such as employed in "sizing" piston-rods, twist-drills, and similar cylindrical objects required to be dressed to a uniform diameter through a given length; and it consists in certain features of improvement, hereinafter described and claimed, whereby the usefulness and capacity of the machine are enhanced.

Mechanism embodying my invention is illustrated in the accompany drawings, in which—

Figure 1 is a front elevation of a lathe complete containing my improvements adapted to the sizing of twist-drills; Fig. 2, a rear elevation of same; Fig. 3, an end elevation of same; Fig. 4, a top or plan view of the slide-rest containing the dressing-wheel and its attachments; Fig. 5, an enlarged detail front view of the crank-wheel employed for reciprocating the dressing-wheel; and Fig. 6, a cross-section of the crank-wheel, showing in detail the constructive features of the adjustable crank-wrist.

Referring now to the drawings, A designates the lathe-bed; B, the head-stock; *s*, the spindle; C, a chuck, and D the tail-stock with adjustable hollow center *s'*, all being constructed, arranged, and operated from a counter-shaft 16 in the usual manner, and therefore require no further description. To these I add additional features consisting of a slide-rest carrying a dressing-wheel rotated in an opposite direction to that of the work and mechanism for reciprocating the dressing-wheel in a direction parallel, or approximately parallel, with the axis of the work. These, with their several adjustments and connections, constitute my improvements.

The slide-rest consists of a plate 1, adapted to rest upon and be secured to the lathe-bed A in the usual manner, forming a supporting guide-base for a plate 2, which is gibbed upon it to move transversely across the lathe-bed, and a plate 3, gibbed to the plate 2, so as to move at right angles to the movement of plate 2. Upon the plate 3 are two pillow-block bearings 4, in and between which is journaled a short mandrel carrying a dressing-wheel 5—such, for example, as an emery-wheel—and a flanged or grooved driving-pulley 6 adjacent thereto, by which the dressing-wheel is driven by belt connections from a wide-faced driving-pulley 7 upon a counter-shaft 8 above. At one end of the plate 3, between two projecting ears or lugs, is carried at right angles to its own line of movement a pin 9, by and upon which a pitman-rod 10 is attached pivotally to the plate 3. The opposite end of the pitman is adjustably secured to a crank-wheel 11, carried together with the reducing and transmitting gears 12 13 14, arranged, as shown in Figs. 2 and 4, upon a rear projection *b* of the head-stock B and driven by a pulley 15, having belt connections with the counter-shaft 16.

By means of the construction thus far described the general operation of the device is effected and is as follows: The object to be dressed—for example, a twist-drill X—is held between the lathe centers and rotated in the usual manner from the counter-shaft 16. The emery-wheel 5 (adjusted to the work, as hereinafter described) is rotated in the opposite direction by its connections from the counter-shaft 8, and at the same time reciprocated parallel, or approximately parallel, with the axis of the drill X by the pitman 10, driven by the crank-wheel 11 from the counter-shaft 16, pulley 15, and gear-connections 12 13 14, by which the speed is reduced and motion translated at right angles, as required. Therefore the cutting effect of the wheel 5 is distributed longitudinally upon the work between the limits of lateral reciprocation of the dressing-wheel automatically as the operation proceeds.

The special constructions for adjustment are as follows: The plate 2 moves freely upon its supporting guide-plate 1 transversely to and from the work X, being normally held to the work by a counter-weight 17 and cord 18, passing over an idler-sheave 19, journaled at the end of plate 1. Set-screws 20 20 are arranged in the path of the plate 2, as limiting abutments to regulate the adjustment to and fro from the work, as required by varying sizes of work, or to compensate the wear of

the wheel 5. A hand-lever 21, pivoted to swing horizontally on plate 1 and attached by a link 22 to plate 2, furnishes a ready means of receding the plate 2 against the normal effect of the counter-weight 17 in placing new work in the machine. The movement of the plate 2 referred to is accommodated in relation to the fixed plane of the pitman 10 by the long pin 9, before described, which retains the pitman connection, while permitting the free lateral movement of the plate 2 in relation to said pitman.

For the purpose of varying the stroke of pitman 10 to suit the length of the work required, and also varying the relative position of the zone of reciprocatory action of the wheel 5, both the crank and its pitman are made adjustable in length. To this end the crank-wrist 23 is made adjustable by a set-nut 24 in a radial slot 28 of the crank-wheel 11 to vary the crank length. The connection of the crank-wrist with the pitman 10 is through a sliding block 26, adjustable longitudinally upon the pitman and held by a set-screw 25. A preferable construction is shown in which the pitman 10 is longitudinally slotted, as at 27, the slot forming a guide for the block 26, which projects into it and through which the wrist-pin 23 also passes. These two adjustments enable the operator to readily adjust the zone of action to the work and vary the width of the zone, as required.

While I have described the ultimate action of the machine as being parallel to the axis of the work, it will be readily seen that by suitable adjustments of the plate 1 upon the bed (proper play being allowed for in the pitman connections) its action may be varied from parallelism, so as, for example, to give proper clearance to drills or in truing up conical belts or pins where exact fit is required, or to give a slight "taper" to the work for any purpose. The same result is accomplished by setting the lathe centers slightly out of line.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In a lathe of the character indicated, the combination of the bed A, the guide-base 1, the guide-plate 2, gibbed to said base to move thereon across the lathe-bed, a weight 17, connected with and normally compelling the said movement of the guide-plate, a plate or frame 3, gibbed to the plate 2 and movable thereon parallel with the lathe-bed, a rotary dressing-wheel 5, carried upon said frame in or approximately in a parallel axis with the work to be dressed, the pitman 10, the cogged crank-wheel 11, the pulley 15, and the intermediate reducing and transmitting gears, substantially as described.

2. In a lathe of the character indicated, the combination of the lathe-bed A, the guide-plate 2, movable across said lathe-bed, the abutment-screws 20, the hand-lever 21, the link 22, the weight 17, the plate or frame 3, movable on the guide-plate 2, parallel with the lathe-bed and carrying a rotary dressing-wheel 5, and mechanism for reciprocating said wheel-carrying frame, substantially as described.

3. In a lathe of the character indicated, the combination, with the reciprocable slide-rest carrying a rotary dressing-wheel, of the slotted pitman 10, the cogged crank-wheel 11, having a radial slot 28, the adjustable crank-wrist 23, adjustable block 26, a driving-pulley, and intermediate transmitting and reducing gears, substantially as described.

4. In a lathe of the character indicated, the combination of the slide-rest constructed substantially as described, the pitman, and the laterally-extended pin, whereby the pitman remains pivotally connected with the reciprocatory wheel-frame while permitting transverse adjustments of the latter, substantially as set forth.

5. In a lathe of the character indicated, the combination of a slide-rest adjustable to and from the work, an adjustable pitman pivotally connected with said slide-rest by means of a laterally-extended pin, whereby a transverse movement or adjustment of the slide-rest is permitted, a crank-wheel having a radial slot, an adjustable wrist-block, and a wrist-pin operating in said block and adjustable in the crank-wheel slot, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK MARTIN.

Witnesses:
L. M. HOSEA,
E. HOSEA.