No. 643,172. Patented Feb. 13, 1900.

A. TINDEL & O. ALBRECHT.

CRANK PIN OR ECCENTRIC TURNING LATHE.

(Application filed Apr. 25, 1898. Renewed July 13, 1899.)

(No Model.) 4 Sheets—Sheet 1.

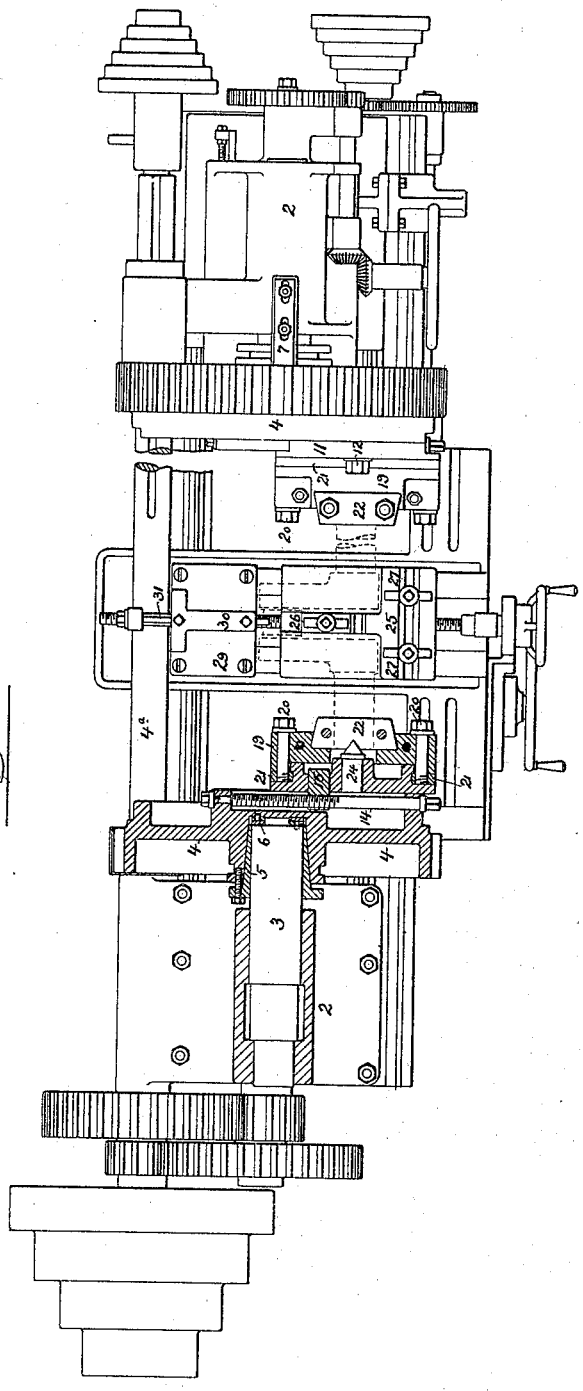

Fig. 1.

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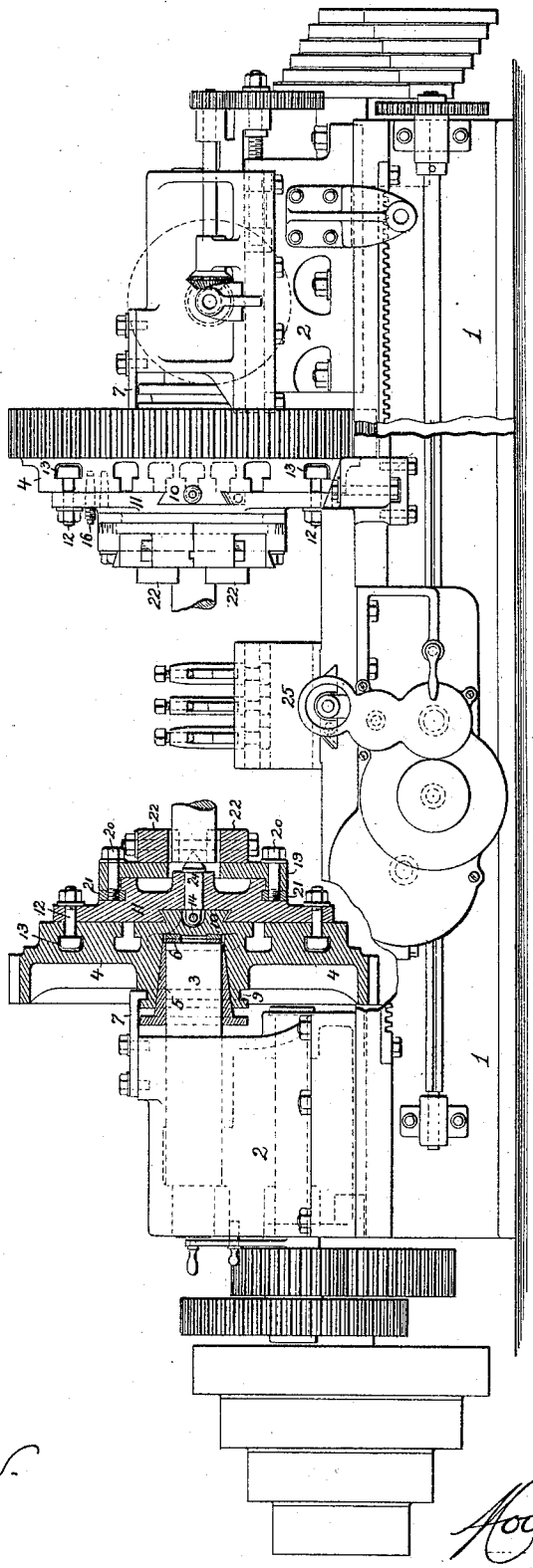

Fig. 2.

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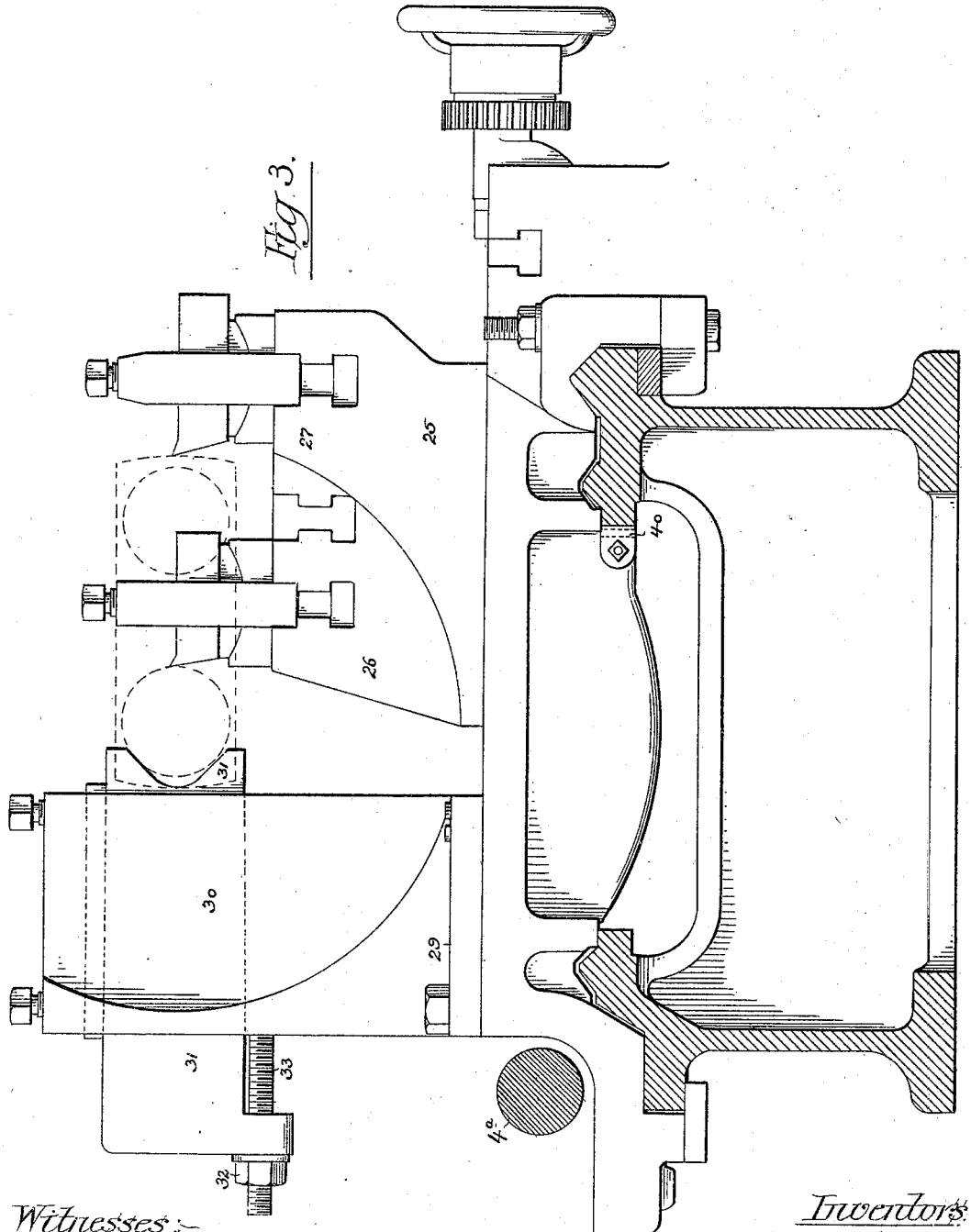
(No Model.) 4 Sheets—Sheet 3.

Fig. 3.



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(No Model.) 4 Sheets—Sheet 4.

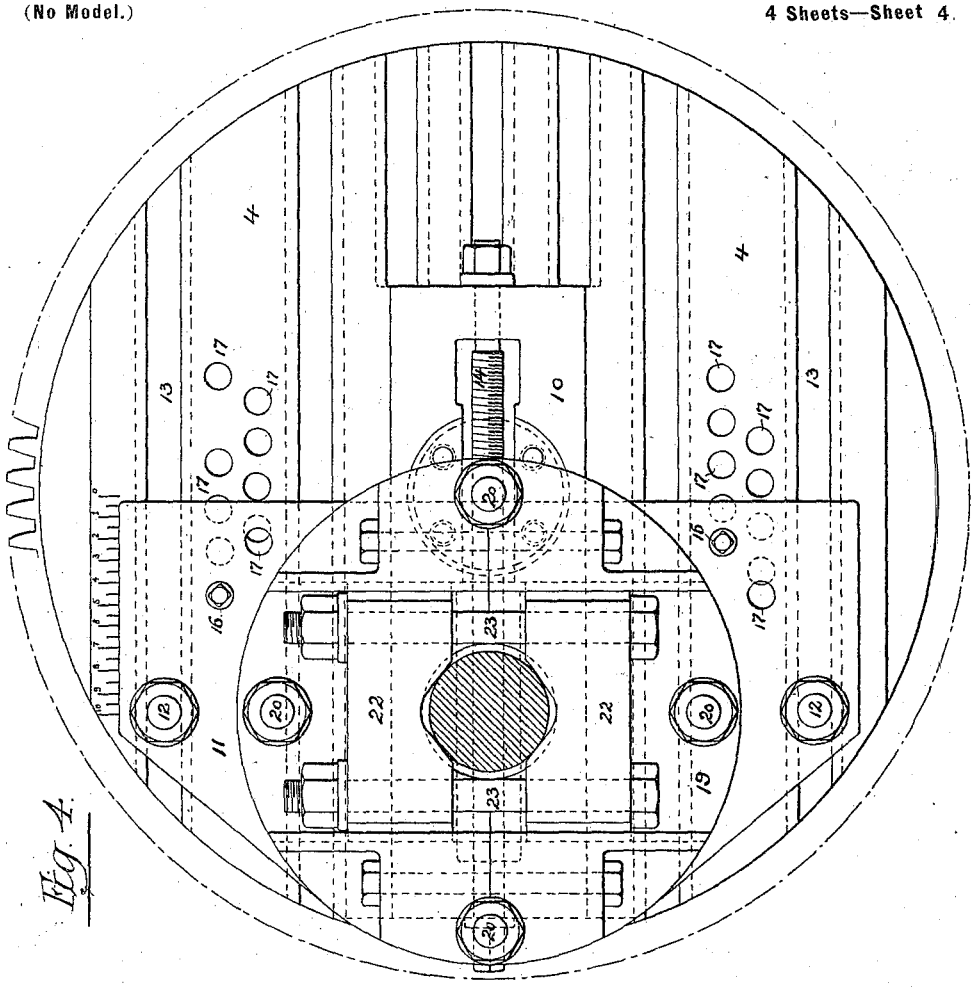

Fig. 4.

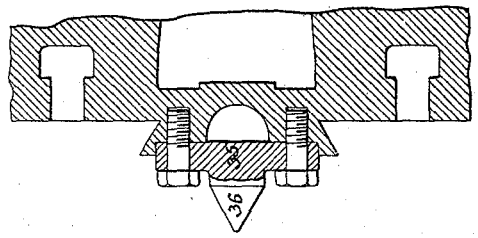

Fig. 5.

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UNITED STATES PATENT OFFICE.

ADAM TINDEL AND OTTO ALBRECHT, OF PHILADELPHIA, PENNSYLVANIA.

CRANK-PIN OR ECCENTRIC TURNING LATHE.

SPECIFICATION forming part of Letters Patent No. 643,172, dated February 13, 1900.

Application filed April 25, 1898. Renewed July 13, 1899. Serial No. 723,717. (No model.)

To all whom it may concern:

Be it known that we, ADAM TINDEL and OTTO ALBRECHT, citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Crank-Pin or Eccentric Turning Lathes, of which the following is a specification.

Our invention consists of a lathe for turning the pins or other portions of crank and eccentric shafts, the object of our invention being to so construct such a lathe that it can be readily adapted for turning the pins of multiple crank-shafts or the eccentrics of multiple eccentric-shafts irrespective of the angle at which the cranks or eccentrics are set in respect to each other. This object we attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view, partly in section, of a crank-pin-turning lathe constructed in accordance with our invention, a portion of the crank-shaft being shown by dotted lines and the two heads of the machine being brought more closely together than they would be in the actual lathe. Fig. 2 is a side view of the lathe, partly in section. Fig. 3 is an enlarged transverse section. Fig. 4 is an enlarged front view of the face-plate and its accessories. Fig. 5 is a detail of a modification hereinafter referred to.

The bed 1 of the lathe is of any suitable length and has secured to it near each end a head-block 2, and in each of these head-blocks is securely mounted a fixed stud 3, on which can turn a face-plate 4, an adjustable tapered sleeve or bushing 5 serving to compensate for wear, and a pair of washers 6, interposed between the end of the stud 3 and the end of the central opening formed in the face-plate for the reception of said stud, serving to resist wear caused by end thrust, one of the washers being secured to the stud and the other to the face-plate by suitable retaining-pins, as shown in Fig. 1. The face-plate is held in position on the stud by means of a flanged and adjustable retainer-bar 7, which engages with an annular groove 9 in the hub of the face-plate and is secured to the upper portion of the head-block 2. The appurtenances of each of the face-plates 4 are alike. Hence a description of one will suffice for both.

On the front of the face-plate is a dovetailed transverse guide 10, to which is adapted a cross-head 11, said cross-head also carrying bolts 12, the heads of which are adapted to traverse slots 13 in the face-plate. In the projecting guide-rib 10 of the face-plate is a recess containing an adjusting-screw 14, which is mounted in fixed bearings in said projecting guide-rib and engages a nut 15, secured to the cross-head 11, so that by manipulating said adjusting-screw 14 the cross-head may be caused to move back and forth across the face-plate 4 and may be secured in position after adjustment by tightening the nuts on the bolts 12. Openings 17 in the sliding cross-head register with similar openings 17 in the face-plate under different conditions of adjustment of the cross-head on the latter, and thus provide a ready means of determining the adjustment of the cross-heads to suit cranks of different throw, the cross-heads being secured in place by means of dowel-pins 16, adapted to registering openings 17. Intermediate adjustments are provided for by a graduated scale on the face-plate, as shown in Fig. 4.

On the cross-head 11 is mounted a supplementary face-plate 19, which has bolts 20 engaging with a ring 21, adapted to an annular recess in the cross-head, so that the face-plate 19 can be turned on the latter, and to suitable guides on said face-plate 19 are adapted a pair of clamping-jaws 22, which can be caused to move toward each other by tightening-nuts upon clamping-bolts 23. Hence these jaws can be firmly clamped upon the end portion of a crank-shaft upon which the lathe is to act, the sliding cross-head 11 having a projecting center pin 24 for properly centering said shaft before the clutch-jaws are tightened upon the same. The supplementary face-plate is made in halves bolted together as shown in Figs. 1, 2, and 4, so that it can be removed when it is desired to turn the end portion of the crank-shaft beyond the cranks.

The peripheries of the supplementary face-plate 19 and of the adjacent portion of the cross-head 11 are graduated, so that after the

cross-head has once been adjusted on the main face-plate, so as to properly center one of the crank-pins of a multiple crank in order to effect the turning of the same, future adjustments of the crank-shaft can be effected by simply turning the supplementary face-plate 19 throughout any desired number of degrees, in accordance with the angle at which the cranks of the shaft are set in respect to each other.

The tool-holder slide which we employ is adapted for carrying a series of cutting-tools, whereby we can at the same time turn not only a crank-pin, but also the outer curved portions of the crank-arms on each side of the same. In order to effect this result, the tool-holder slide 25 is T-shaped—that is to say, it has a central projecting finger 26 and laterally-projecting portions 27—so that it is adapted for carrying three tools, one for acting upon the crank-pin and one on each side of the same for acting upon the rounded ends of the crank-arms on each side of said crank-pin, as shown in Fig. 1, the central projecting portion 26 of the tool-holder being of a length proportionate to the greatest throw of crank which is likely to be turned, so that the crank-arms will always swing clear of the side projecting portions 27 of the tool-holder slide.

Transverse adjustment of the tool-holder slide may be effected by any of the means usually employed for the purpose, and the cutting-tools may be held in place on the slide by suitable clamps in any well-known or available manner.

In order to provide a support for the crank-pin and to prevent the springing of the shaft or cranks by the pressure of the cutting-tool upon said crank-pin, we secure to the longitudinally-traversing carriage of the machine a standard 29, constructed, like the tool-holder slide, with a projecting tongue 30 to extend between the crank-arms, and in this standard is guided a transverse bearing block or rest 31, with V-shaped recess in its inner end, so that it offers a back bearing or rest for the crank-pin on the side opposite that upon which the cutting-tool is acting, thereby affording the proper support to said crank-pin and preventing the springing of the crank-shaft or cranks by the pressure of the cutting-tools. Transverse adjustment of the block 31 may be effected by means of a nut 32, adapted to a screw-stem 33, projecting outwardly from the standard 29, as shown in Fig. 4.

Each of the face-plates 4 has a spur-wheel which meshes with a pinion on the common driving-shaft 4^a at the back of the lathe, so that the face-plates will be rotated in unison.

A taper-key 40 may be inserted between one of the side bars of the bed and a bearing on the tool-slide carrier, as shown in Fig. 3, so as to insure the proper firm bearing of said tool-slide carrier on its guides at all times.

When it is desired to use the lathe for other work than the turning of crank-pins, the cross-heads 11, with their supplementary face-plates 19, may be removed from the face-plates 4, and a plate 35, having a projecting center pin 36, may be secured to the face of the projecting rib 10 of each of the main face-plates, as shown in Fig. 5.

It will be evident that a lathe constructed in accordance with our invention provides a ready means for turning the crank-pins of multiple crank-shafts or the eccentrics of multiple eccentric-shafts, the readjustment of the shaft so as to permit the turning of one pin or eccentric after another being effected by a simple turning of the supplementary face-plate 19, while the adjustment of the cross-head 11 to accommodate the throw of the cranks or eccentrics can be effected with equal readiness.

The use of the two face-plates, one at each end of the shaft, permits us to balance the shaft more effectively than when but a single face-plate is used, as the balance-weights instead of being concentrated upon a single face-plate at one end of the shaft can be divided between two face-plates, thus balancing the shaft at each end, and thereby preventing that tendency to twist the shaft which, in the case of a lathe having but a single face-plate, results when the shaft is being turned at the end farthest from said face-plate.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. The combination in a lathe for turning crank-pins or eccentrics, of a rotating main face-plate, a cross-head mounted so as to move transversely thereon, means for securing the cross-head to said face-plate after adjustment, and a supplementary face-plate mounted so as to rotate on said cross-head and having means for engaging and holding the shaft, substantially as specified.

2. The combination in a crank-pin or eccentric turning lathe, of a rotating main face-plate, a cross-head mounted so as to move transversely thereon, means for securing the cross-head to said face-plate after adjustment, a supplementary face-plate mounted so as to rotate on said cross-head, clamping-jaws carried by said supplementary face-plate, and provision for opening and closing said clamping-jaws, substantially as specified.

3. The combination in a crank-pin or eccentric turning lathe, of a rotating main face-plate, a cross-head mounted so as to move transversely thereon, means for securing the cross-head to said face-plate after adjustment, a supplementary face-plate mounted so as to rotate on said cross-head, provision on said supplementary face-plate for engaging and holding the shaft, and a center pin carried by the cross-head and concentric with the axis of rotation of the supplementary face-plate, substantially as specified.

4. The combination in a crank-pin or eccentric turning lathe, of a rotating main face-plate, a cross-head mounted so as to move transversely thereon, a supplementary face-plate mounted so as to rotate on said cross-head, a fixed stud on which the main face-plate rotates, and bearing-washers interposed between the end of said stud and the face-plate, one of said washers being secured to the stud and the other to the face-plate, substantially as specified.

5. The combination in a crank-pin-turning lathe, of mechanism for holding and rotating the crank-shaft, with a multiple tool-holder slide having a projecting portion carrying a tool for acting on the crank-pin, and one or more laterally-projecting portions with tool for acting on the end of the crank-arm, substantially as specified.

6. The combination in a crank-pin or eccentric turning lathe, of a pair of rotating main face-plates geared together so as to rotate in unison, and each having a cross-head mounted thereon so as to move transversely, means for securing the cross-head to the face-plate after adjustment, and each of said cross-heads having a supplementary face-plate rotatably mounted thereon, and each of said supplementary face-plates being provided with means for engaging and holding the crank-shaft, substantially as specified.

7. The combination in a crank-pin or eccentric turning lathe of a rotating main face-plate, a cross-head mounted so as to slide transversely thereon, and a supplementary face-plate rotatably mounted on said cross-head, and provided with means for clamping the shaft, said supplementary face-plate being composed of separable sections, whereby it can be removed to permit turning of the end portion of the shaft, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ADAM TINDEL.
OTTO ALBRECHT.

Witnesses:
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JOS. H. KLEIN.