

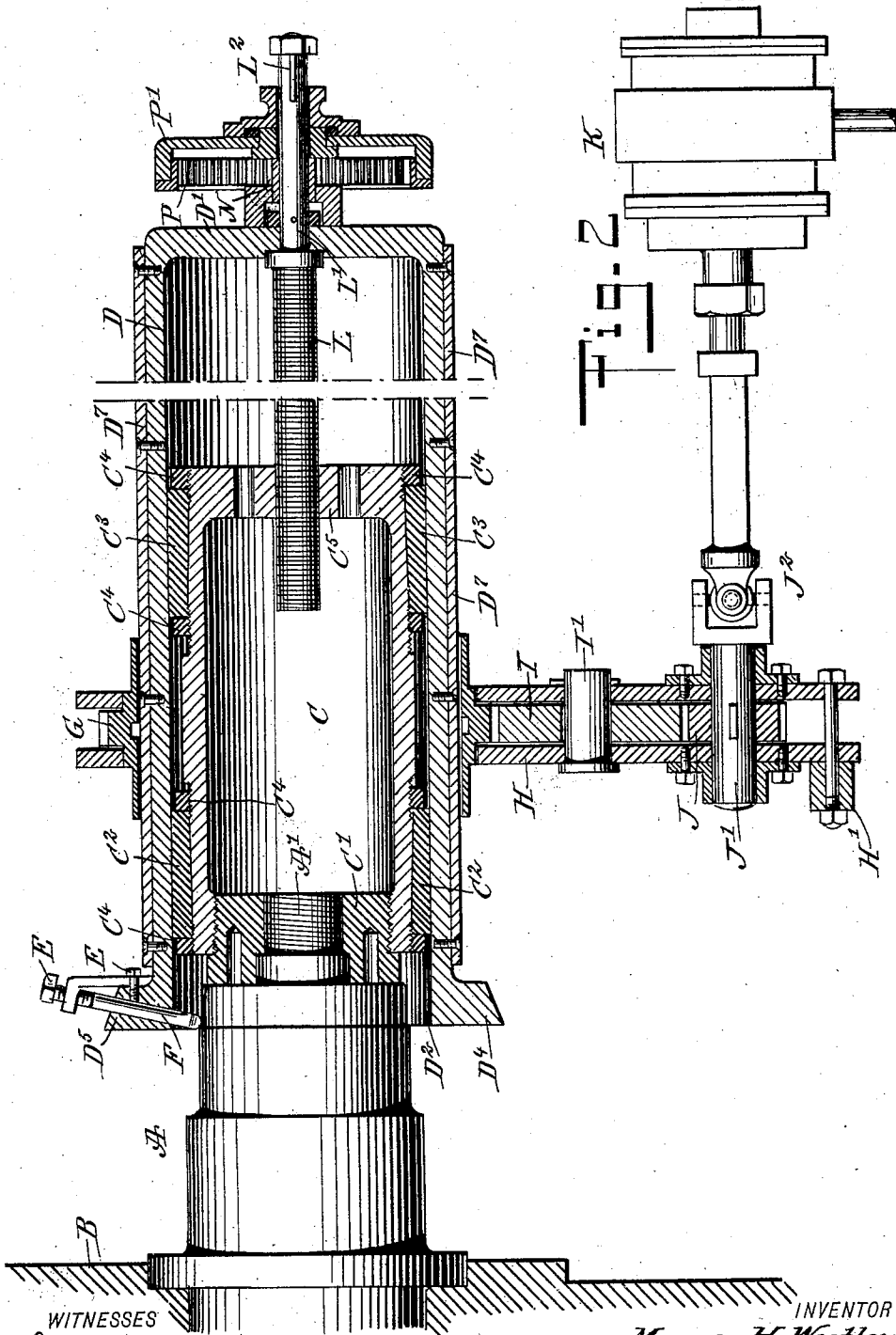


No. 884,966.

PATENTED APR. 14, 1908.

M. H. WESTBROOK.  
CRANK PIN TURNING MACHINE.  
APPLICATION FILED MAR. 12, 1907.

4 SHEETS—SHEET 2.



WITNESSES  
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INVENTOR  
*Moses H. Westbrook*  
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ATTORNEYS

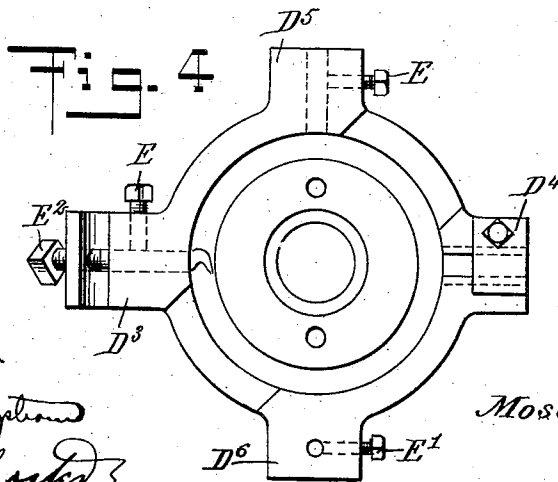
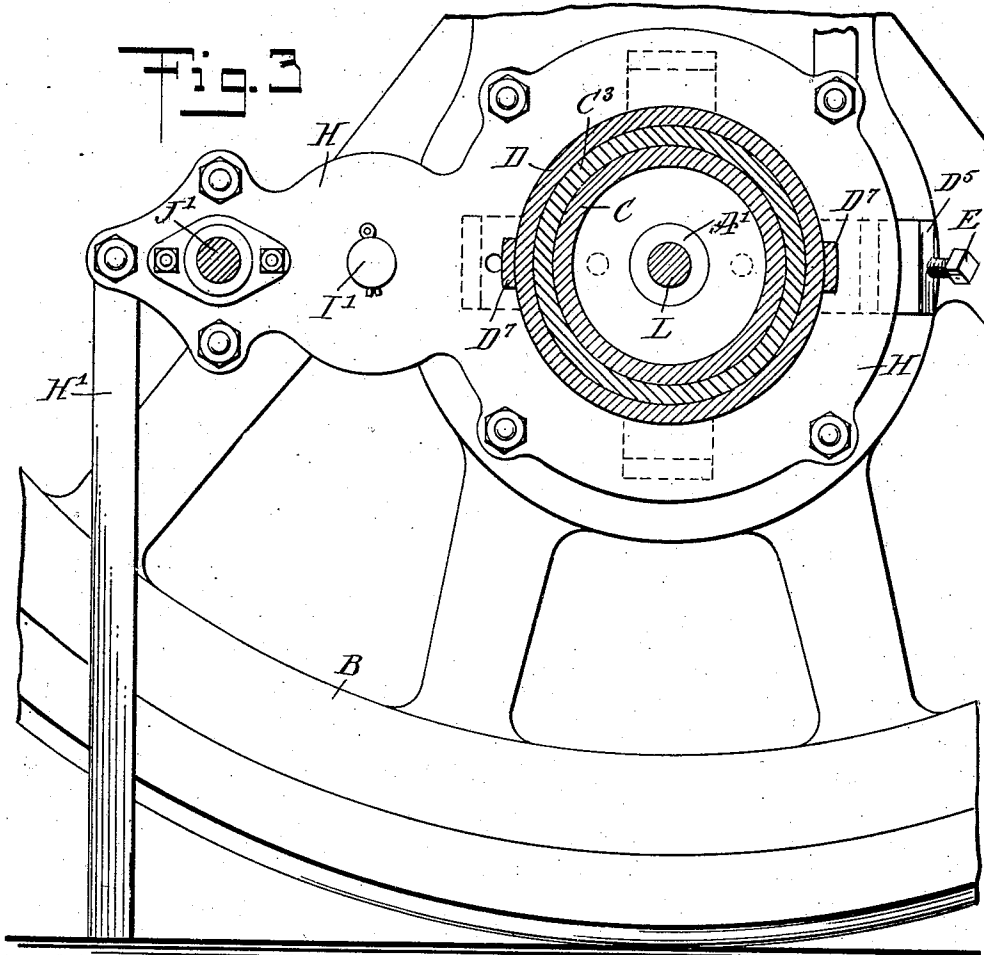
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# UNITED STATES PATENT OFFICE.

MOSES HENRY WESTBROOK, OF PORT HURON, MICHIGAN.

## CRANK-PIN-TURNING MACHINE.

No. 884,966.

Specification of Letters Patent.

Patented April 14, 1908.

Application filed March 12, 1907. Serial No. 361,928.

*To all whom it may concern:*

Be it known that I, MOSES HENRY WESTBROOK, a citizen of the United States, and a resident of Port Huron, in the county of St. Clair and State of Michigan, have invented a new and Improved Crank-Pin-Turning Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for turning crank pins on locomotive drive wheels and arranged to permit convenient and accurate attachment of the machine to the wrist pin, with a view to insure perfect truing thereof according to the original quartering.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied; Fig. 2 is a sectional plan view of the same; Fig. 3 is an enlarged cross section of the same on the line 3—3 of Fig. 1; Fig. 4 is a face view of the tool carriage and tool holders; Fig. 5 is an enlarged plan view of the improvement, the feeding device being shown in section, and Fig. 6 is a cross section of the feeding device on the line 6—6 of Fig. 5.

The turning machine is temporarily mounted axially on the wrist pin A of the locomotive drive wheel B, and for this purpose the turning machine is provided with a cylindrical bed C, having at its inner end a face plate C' screwing onto the reduced threaded end A' of the wrist pin A, the face plate abutting against the face of the outer end of the wrist pin A, so as to hold the bed C in axial alinement with the wrist pin A, as plainly illustrated in Figs. 1 and 2.

The bed C is provided near its ends with bushings C<sup>2</sup>, C<sup>3</sup> held in place by nuts C<sup>4</sup> screwing on the bed C, and on the said bushings C<sup>2</sup>, C<sup>3</sup> is mounted to turn and slide the cylindrical carriage D, having its outer end D' closed and its inner end D<sup>2</sup> open to allow the carriage D to readily pass over the wrist pin A on feeding the carriage D inward, as hereinafter more fully described.

The inner open end D<sup>2</sup> of the carriage D is

provided with a plurality of tool carriers or posts D<sup>3</sup>, D<sup>4</sup>, D<sup>5</sup>, having set screws E or like fastening devices for securing the turning tools F in the said tool posts, the said turning tools being of various shapes for properly cutting the wrist pin A, with a view of accurately truing the same; thus, the tool post D<sup>3</sup> is intended to carry a roughing tool, the tool post D<sup>4</sup> a finishing tool and the tool post D<sup>5</sup> a special fillet tool for turning the fillet of the wrist pin A. The end D<sup>2</sup> of the carriage D is also provided with a tool post D<sup>6</sup> for receiving a transversely extending marking tool in the form of a rod, adapted to be secured in place by a set screw E', the marking tool serving to strike a circular line on the face of the wheel B, to indicate whether the wrist pin A is bent or not. If the crank pin A is found to be bent, it is first straightened out, that is, bent back to the original position, after which the crank pin is turned by the machine, as hereinafter more fully described.

In order to impart a turning motion to the tool carriage D, the following arrangement is made: On the carriage D are arranged lengthwise extending keys D' engaging keyways formed in the hub of a gear wheel G, mounted to turn in a transversely extending frame H provided at its outer end with a leg H' adapted to rest on the floor or other support. The gear wheel G is in mesh with an intermediate gear wheel I mounted on a stud I' held on the frame H, and the intermediate gear wheel I is in mesh with a pinion J having its shaft J' journaled in the frame H and connected by a universal joint J<sup>2</sup> with the shaft of a suitable electric or other motor K. Thus when the motor K is running a rotary motion is given to the shaft J' and pinion J, which latter then rotates the intermediate gear wheel I, which in turn turns the gear wheel G, so that a rotary motion is given to the carriage D.

In order to feed the carriage D in the direction of its axis, a feed screw L is provided, screwing in the outer end C<sup>5</sup> of the bed C, the said feed screw having its reduced non-threaded end L' mounted to turn in the outer end D' of the carriage D, so that when the feed screw L is turned it screws axially in or out of the bed C and thus moves the carriage D inward or outward on the bed C.

In order to impart a turning motion to the feed screw L by power, the following arrange-

ment is made: On the outer end D' of the carriage D is secured a pinion N adapted to mesh with a gear wheel O, meshing with an internal gear wheel P held on a casing P' 5 mounted to turn with and slide on the end L' of the feed screw L, by providing the said end L' with a longitudinal key or a feather L<sup>2</sup>. The casing P' is provided with a handle P<sup>2</sup> under the control of the operator, for either 10 turning the casing P' and its internal gear wheel P by hand or by sliding the casing P' lengthwise on the end L' of the feed screw, to move the gear wheel O in or out of mesh with the pinion N rotating with the carriage D. 15 The gear wheel O is mounted on a stud O' provided at its outer end with an arm O<sup>2</sup> having a fork O<sup>3</sup> straddling a guide rod O<sup>4</sup> secured to the frame H and extending parallel to the axis of the carriage D. The stud 20 O' is held at its other end on an arm O<sup>5</sup> mounted loosely on the end L' of the feed screw L, but moving with the casing P' when the latter is shifted in a longitudinal direction, either by hand or when moving along 25 with the carriage D.

The operation is as follows: When the face plate C' is screwed on the threaded end A' of the wrist pin A, and the motor K is started, then a rotary motion is given to the carriage 30 D, so that the latter carries the turning tool F around with it, whereby the cutting edge of the turning tool cuts a chip on the peripheral face of the wrist pin A. The operator having hold of the handle P<sup>2</sup> can turn the casing P' 35 and consequently the feed screw L directly whenever it is desired to feed the carriage D, and with it the tool F, by hand in an inward direction, so as to true up the entire wrist pin A.

40 If desired, the feed screw L can be turned by the revolving carriage D, by shifting the casing P' and with it the internal gear wheel P and the gear wheel O, so that the latter is engaged or moved in mesh with the pinion 45 N. When this takes place the rotary motion of the carriage D rotates the gear wheel O, which in turn rotates the internal gear wheel P and the casing P', thus turning the feed screw L.

50 It is understood that the wrist pin A is turned by the usual suitable turning tools held on the tool posts D<sup>3</sup> and D<sup>5</sup>, and a fillet tool is used in the tool post D<sup>4</sup>, for turning the fillet of the wrist pin A.

55 Thus from the foregoing it will be seen that the wrist pin A can be completely trued up, and as the turning machine is axially arranged on the wrist pin it is evident that the truing up is according to the original quartering of the wrist pin A. 60

The bushings C<sup>2</sup>, C<sup>3</sup> are preferably split and arranged on the tapering ends of the bed C, and can be readily adjusted in the direction of the length of the bed by the nuts 65 C<sup>4</sup>, so as to take up all wear relative to the in-

terior surface of the carriage D, mounted to turn on and slide lengthwise on the said bushings C<sup>2</sup>, C<sup>3</sup>.

The machine is very simple and durable in construction, and can be readily applied to 70 the wrist pin for truing up the same.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A crank pin turning machine comprising a cylindrical bed for attachment to the outer end of the crank pin, a cylindrical tool carriage mounted to turn on and to slide axially on the said bed, gearing for turning 75 the said tool carriage, the carriage having guided movement in the hub of one of the gears, and a means for feeding the said tool carriage in the direction of its axis. 80

2. A crank pin turning machine comprising a cylindrical bed for attachment to a 85 crank pin, a cylindrical tool carriage mounted to turn and slide on the bed, said carriage having keys on its periphery, gearing for rotating the carriage, one of the gears surrounding the carriage and having key-ways 90 receiving the keys of the said carriage, a frame in which the gearing is mounted, and means for feeding the carriage in the direction of its axis.

3. A crank pin turning machine, comprising a cylindrical bed for attachment to the 95 outer end of a crank pin, a cylindrical tool carriage mounted to turn and slide on the bed, means for turning the carriage, a feed screw mounted in the carriage and screwing 100 into the bed, a handled member mounted to slide on and to turn with the screw, and gearing for operating the member from the carriage when the said member is in one position on the screw, whereby provision is 105 made for operating the screw either by hand or power.

4. In a crank pin turning machine, a cylindrical bed having means at one end for attachment to the end of a crank pin, a cylindrical 110 tool carriage mounted to turn and slide on the bed, a gear wheel in the hub of which the carriage has sliding and guided movement, a frame in which the gear wheel is mounted having a lateral extension 115 provided at its end with a leg, a driven shaft mounted in the extension of the frame, a pinion on the shaft, and an intermediate gear wheel meshing with the pinion and the first named gear wheel. 120

5. In a crank pin turning machine, a cylindrical bed having means at one end for attachment to a crank pin, a cylindrical tool carriage mounted to slide and turn on the bed, means for turning the carriage, a screw 125 mounted on one end of the carriage and screwing into the bed, the outer end of the screw projecting beyond the end of the carriage, an internal gear wheel mounted on the projecting end of the screw, a pinion on the 130

carriage and an intermediate gear wheel between the pinion and internal gear wheel.

5 6. In a crank pin turning machine, a cylindrical bed having at one end means for attachment to a crank pin, a cylindrical tool carriage mounted to slide and turn on the bed, means for turning the carriage, a screw mounted in one end of the carriage and screwing into the bed, the outer end of the screw projecting beyond the end of the carriage, a pinion on the outer end of the carriage and through which the projecting end of the screw passes, a casing mounted on the projecting end of the screw to turn therewith and to slide thereon, and having an internal gear wheel, a gear wheel meshing with the internal gear of the casing and adapted to mesh with the pinion on the carriage, and means for mounting the said gear wheel.

10 7. In a crank pin turning machine, a cylindrical bed for attachment to the crank pin, a cylindrical tool carriage mounted to slide and turn on the bed, means for turning the carriage, a screw mounted in one end of the carriage and screwing into the bed, the outer end of the screw being plain and projecting beyond the end of the carriage, a casing having an internal gear wheel and mounted to slide on the projecting end of the screw and to turn therewith, a pinion on the carriage, an arm loosely mounted on the projecting end of the screw and movable with the casing, a gear wheel carried by the arm

and meshing with the internal gear wheel and adapted to mesh with the pinion of the carriage, and means for holding the gear wheel in position. 35

8. In a crank pin turning machine, a cylindrical bed having at one end means for attachment to a crank pin, a cylindrical tool carriage mounted to turn and slide on the bed, means for turning the carriage, a screw mounted in one end of the carriage and screwing into the bed, the outer end of the screw projecting beyond the end of the carriage, a pinion on the end of the carriage and through which the projecting end of the screw passes, a casing mounted to turn with and to slide on the projecting end of the screw and having an internal gear wheel, an arm loosely mounted on the projecting end of the screw, a stud carried by the arm, a gear wheel on the stud and meshing with the internal gear wheel and adapted to mesh with the pinion of the carriage, an arm at one end of the stud and having a forked outer end, and a guide rod between the members of the fork of the arm and extending parallel with the axis of the carriage. 40 45 50 55

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 60

MOSES HENRY WESTBROOK.

Witnesses:

E. C. SKIMIN,  
WM. RODERICK.