No. 632,150. Patented Aug. 29, 1899.

E. B. SAINSBURY.

CRANK PIN TURNING MACHINE.

(Application filed Oct. 22, 1898.)

(No Model.)

Fig. 4.

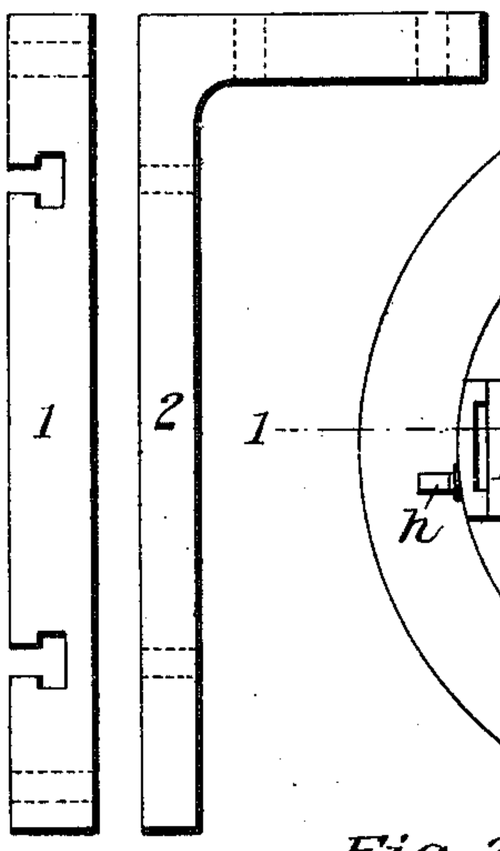


Fig. 1.

Fig. 3.

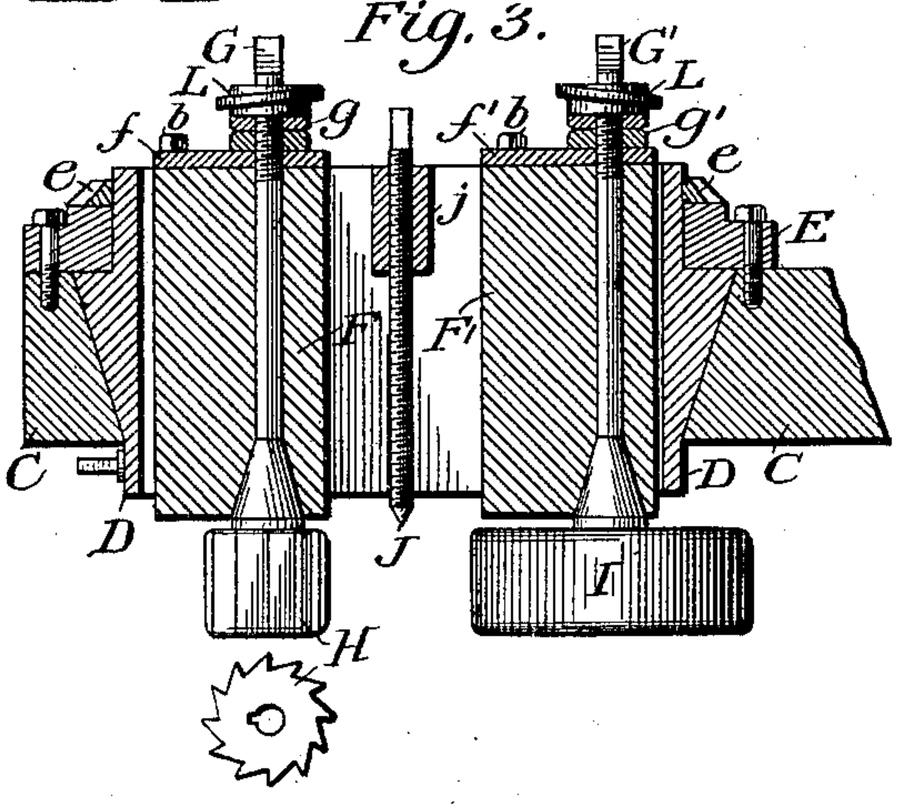
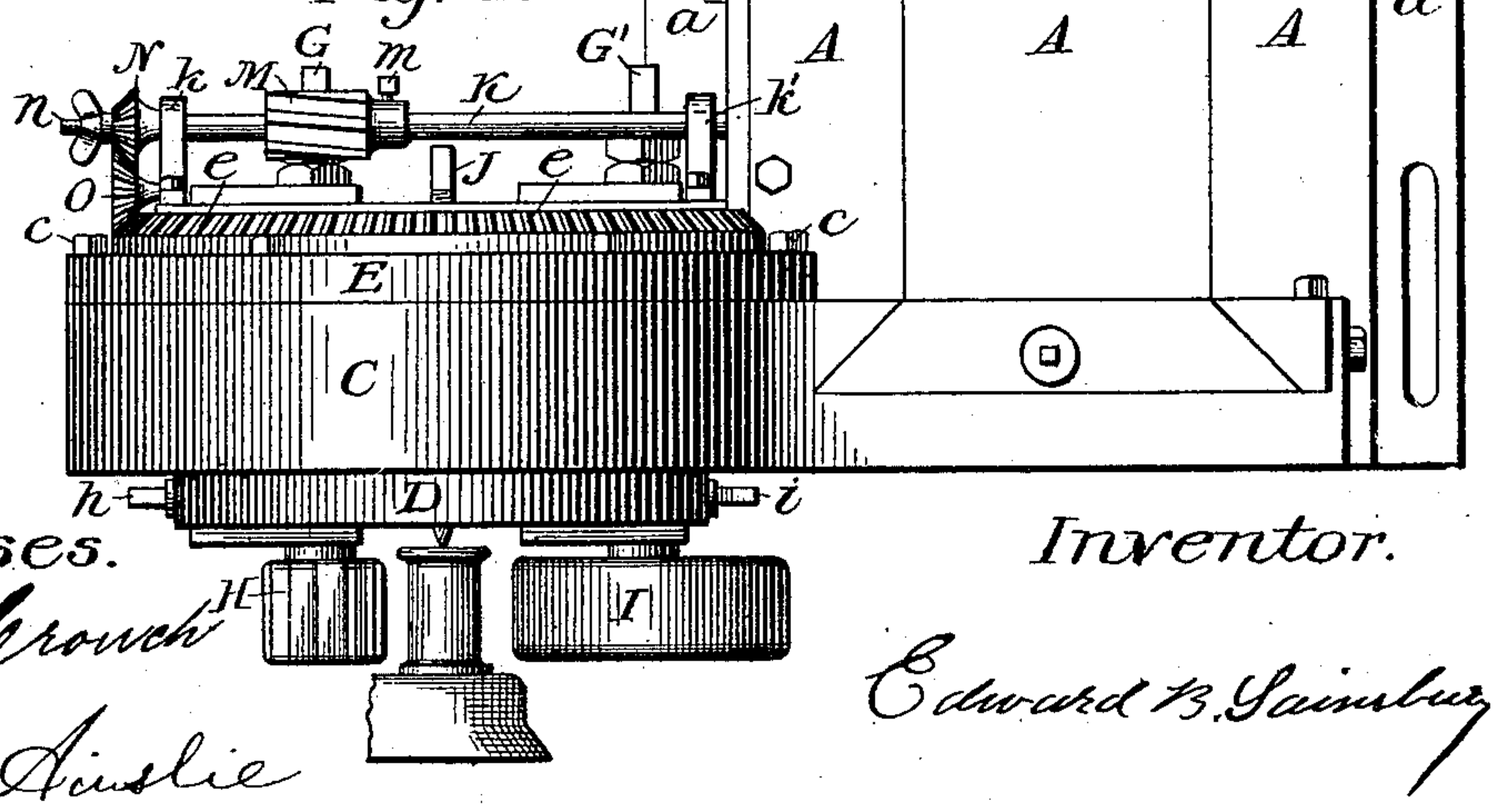


Fig. 2.



Witnesses.

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EDWARD BENNETT SAINSBURY, OF CARÁCAS, VENEZUELA.

CRANK-PIN-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,150, dated August 29, 1899.

Application filed October 22, 1898. Serial No. 694,320. (No model.)

To all whom it may concern:

Be it known that I, EDWARD BENNETT SAINSBURY, a subject of Her Majesty the Queen of Great Britain, residing at Carácas, in the Federal District of the United States of Venezuela, have invented a new and useful Crank-Pin-Turning Machine, of which the following is a specification.

My invention relates to an improved machine for turning, truing up, and polishing worn or cut pins without the necessity of removing the same from the cranks or wheels in which they are fixed; and the objects of my invention are, first, to effect the more rapid and perfect turning or truing up of a worn pin by the use of a rotary tool or milling cutter; second, as considerable difficulty has always been experienced in truing up a pin previously case-hardened to provide for the truing up of a pin so hardened or tempered without annealing the same and to effect the proper finishing or polishing of a pin already turned by means of a wheel or disk of emery or other grinding or polishing material revolving on its own center and simultaneously around the periphery of the pin to be trued up or polished, and, third, to provide a frame which although portable and capable of being bolted to the frame of a stationary engine is at the same time rigid and when bolted to a fixed foundation-plate constitutes a machine which is self-contained and which also allows of the rapid and perfect adjustment of the tool in any direction. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the machine with foundation-plate removed; Fig. 2, a top view showing the machine centered with respect to the pin to be turned. Fig. 3 is a cross-section of a part of the machine on the line 1 2, Fig. 1; and 1 and 2, Fig. 4, are end views of foundation and angle plates to which the machine is bolted when in use.

Similar letters and figures refer to similar parts throughout the several views.

The compound slide-rest A constitutes the frame of the machine and permits of perpendicular and lateral adjustment. The bottom rest is provided with the slotted lugs *a* for the purpose of bolting the machine to the foundation or angle plate 1 2, Fig. 4, as described hereinafter.

At the end of cross-rest B is a heavy bearing C, in which revolves the head D. I prefer to have this bearing conical, as shown in Fig. 3, with plate E and set-bolts *c* to take up wear.

In slot *d*, passing through the head D, are fitted two sliding blocks F F′. Revolving in these blocks in suitable bearings and provided with adjusting-nuts *g g′* are the shafts G G′. The plates or washers *f f′*, in conjunction with bolts *b*, serve to take up wear of blocks and also to retain the same in a fixed position while taking a cut.

On the end of shaft G is mounted a milling-cutter H and on shaft G′ an emery-wheel I or a disk of similar material. For ordinary purposes I employ a pair of sliding blocks and shafts, as herein described and illustrated. I, however, anticipate the necessity of sometimes using a single block and shaft, mounting the milling-cutter and emery-wheel alternately, as may be necessary. The sliding block F is provided with a screw *h*, placed far enough out of center to avoid contact with the shaft G, the object of which is to advance the block along the slot *d* toward the center of the head D, and with it the shaft G and milling-cutter H for the purpose of taking a cut and to withdraw the same when the cut is completed. A fellow screw *i* performs a like office to block F′ and emery-wheel I.

The screw-threaded center J enables the machine to be quickly and accurately centered with respect to the pin to be turned.

The mode of driving the machine forms no part of my invention. Motion may be given to the cutter, wheel, or disk by means of either a flexible shaft, endless rope, or gut band passing over an intermediate idler-pulley for taking up the slack as the head D revolves, or, where there is no steam-power, by hand. In either case the flexible shaft, the pulley for rope-gear, or the crank for hand-power is attached to the other end of the shaft on which is mounted the tool it is desired to drive.

The rotary motion of the head D, or what is practically the automatic feeding of the machine, may be effected in several ways.

The method I adopt is illustrated in Fig. 2, where the annular plate E is seen to perform a double function—that of taking up wear and keeping head D in its place—and, being cast with the teeth *c* on its outer face, it constitutes practically a circular rack in which the feed-gear of the machine acts. On each shaft is a screw-worm L L'. (Shown in Fig. 3.) Spindle K is supported by two small brackets *k k'*, bolted to head D. Pinion M is a sliding fit on the spindle to allow of its gearing with either worm and has a set-screw for retaining it in the required position. The pinion N is a revolving fit on the end of the spindle and is provided with the thumb-nut and friction-washer *n*, allowing it to be tightened up or slackened off, as desired. The intermediate pinion O, gearing into the pinion N and fixed wheel or circular rack *e*, gives the required rotary motion to the head D and with it the cutter H and disk I.

My method of working the machine is as follows: For locomotive work on a suitable foundation I secure the foundation-plate 1, Fig. 4, by the side of the rail or pit in the repairing shop and run the engine alongside of it. I then bolt the machine to the foundation-plate, which is provided for the purpose with inverted-T-shaped slots, as shown. I next turn the wheel, with the worn pin, to a convenient position and center the machine by means of compound slide-rest A and the aid of center J, as shown in Fig. 2. I then advance the milling-cutter until it touches the most worn part of the pin and attach the driving power, as heretofore described, and as the cutter revolves I cause it to travel simultaneously around the pin by means of the feed-gear, as heretofore shown. When the pin is only slightly worn or has been previously case-hardened, I dispense with the use of the cutter and employ only the emery-wheel, which I also use for polishing a pin turned by the milling-cutter.

For turning up a pin on a stationary engine the machine is bolted to the frame of the engine by means of the angle-plate 2, Fig. 4. In certain cases, such as where there is insufficient space or where it is inconvenient to place the entire machine, the arm B may also be dismounted from the slide-rest and bolted or otherwise secured to or in the vicinity of the work to be manipulated. The cutter or disk need not be the exact width of the journal of the pin to be trued up. In many cases it will be found advantageous to have them only one-half or less and to take two or more cuts as required. It will also be evident that by removing the center J and nut *j* the machine may be utilized for a variety of other work, such as the turning of journals on shafts, &c.

I claim as my invention and desire to secure by Letters Patent—

1. In a crank-pin-turning machine an adjustable frame or slide-rest A the upper rest or arm B being provided with an annular bearing C encircling the rotary head D, a rotary head D revoluble in said bearing having a traverse-slot passing through it, a sliding block or bearing F fitted in said slot with means for traversing and adjusting the same, a shaft G revoluble in said bearing, and a rotary tool or milling-cutter H mounted on said shaft, in combination with means for revolving simultaneously the aforesaid rotary head and shaft thereby causing the milling-cutter to revolve on its own center and simultaneously around the periphery of the pin to be turned substantially as shown and described.

2. In a crank-pin-turning machine an adjustable frame or slide-rest A the upper rest or arm B being provided with an annular bearing C encircling the rotary head D, a rotary head D revoluble in said bearing having a traverse-slot passing through it, a sliding block or bearing F' fitted in said slot with means for traversing and adjusting the same, a shaft G' revoluble in said bearing, and an emery-wheel or disk of similar material mounted on said shaft, in combination with means for revolving simultaneously the aforesaid rotary head and shaft, thereby causing the emery-wheel to revolve on its own center and simultaneously around the periphery of the pin to be turned or polished substantially as shown and described.

3. A crank-pin-turning machine comprising an adjustable frame or compound slide-rest A the upper rest or arm B being provided with an annular bearing C encircling the rotary head D, the rotary head D revoluble in said bearing having a traverse-slot passing through it, a pair of sliding blocks or bearings F, F', fitted in said slot and provided with means for traversing and adjusting the same, a pair of shafts G, G', revoluble in said bearings, a milling-cutter H and emery-wheel I mounted on said shafts, and means for revolving simultaneously the aforesaid rotary head and shafts substantially as shown and described.

4. In a crank-pin-turning machine an arm or rest B provided with an annular bearing C encircling rotary head D, a rotary head D revoluble in said bearing having a traverse-slot passing through it, a pair of sliding blocks or bearings F, F', fitted in said slot with means for traversing and adjusting the same, a pair of shafts G, G', revoluble in said bearings, and a milling-cutter H and emery-wheel I mounted on said shafts, in combination with means for revolving simultaneously the aforesaid rotary head and shafts thereby causing the milling-cutter or emery-wheel to revolve on its own center and simultaneously around the periphery of the pin to be turned substantially as shown and described.

5. In a crank-pin-turning machine an arm or rest B provided with an annular bearing C encircling the rotary head D, a rotary head D revoluble in said bearing having a traverse-slot passing through it and provided with

center J for the more accurate adjustment of the mechanism, a sliding block or bearing F fitted in the aforesaid slot and provided with a screw *i* for the purpose of adjusting the same said screw being placed out of center to avoid contact with shaft G, a shaft G revoluble in the aforesaid bearing and adapted to carry a milling-cutter or emery-wheel, in combination with means for revolving simultaneously the aforesaid rotary head and shaft thereby causing the milling-cutter or emery-wheel to revolve on its own center and simultaneously around the periphery of the pin to be turned substantially as shown and described.

EDWARD BENNETT SAINSBURY.

Witnesses:
STEWART DAVIS,
ALEXANDER SMALL.