(No Model.)

A. B. SHARP.

BORING AND TENONING MACHINE.

No. 475,158. Patented May 17, 1892.

Fig: 1.

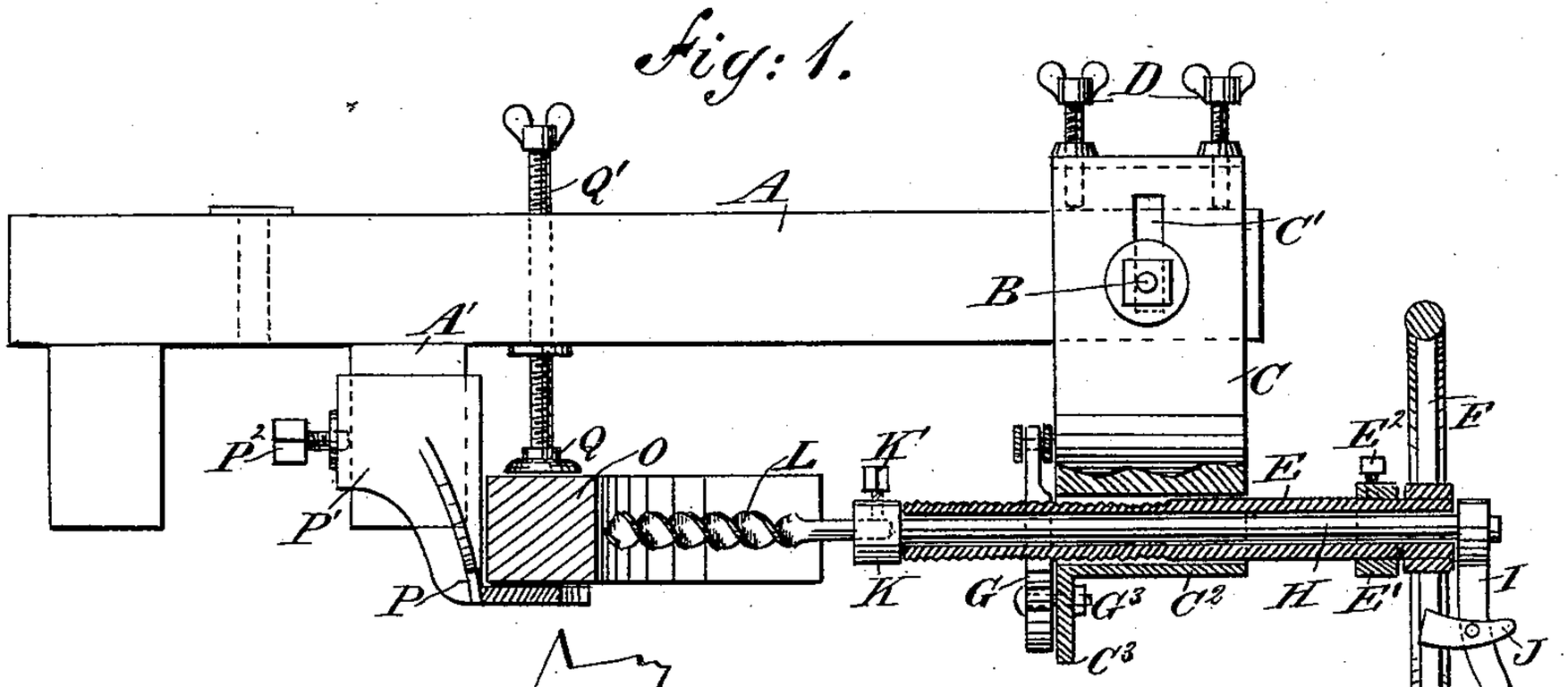

Fig: 2.

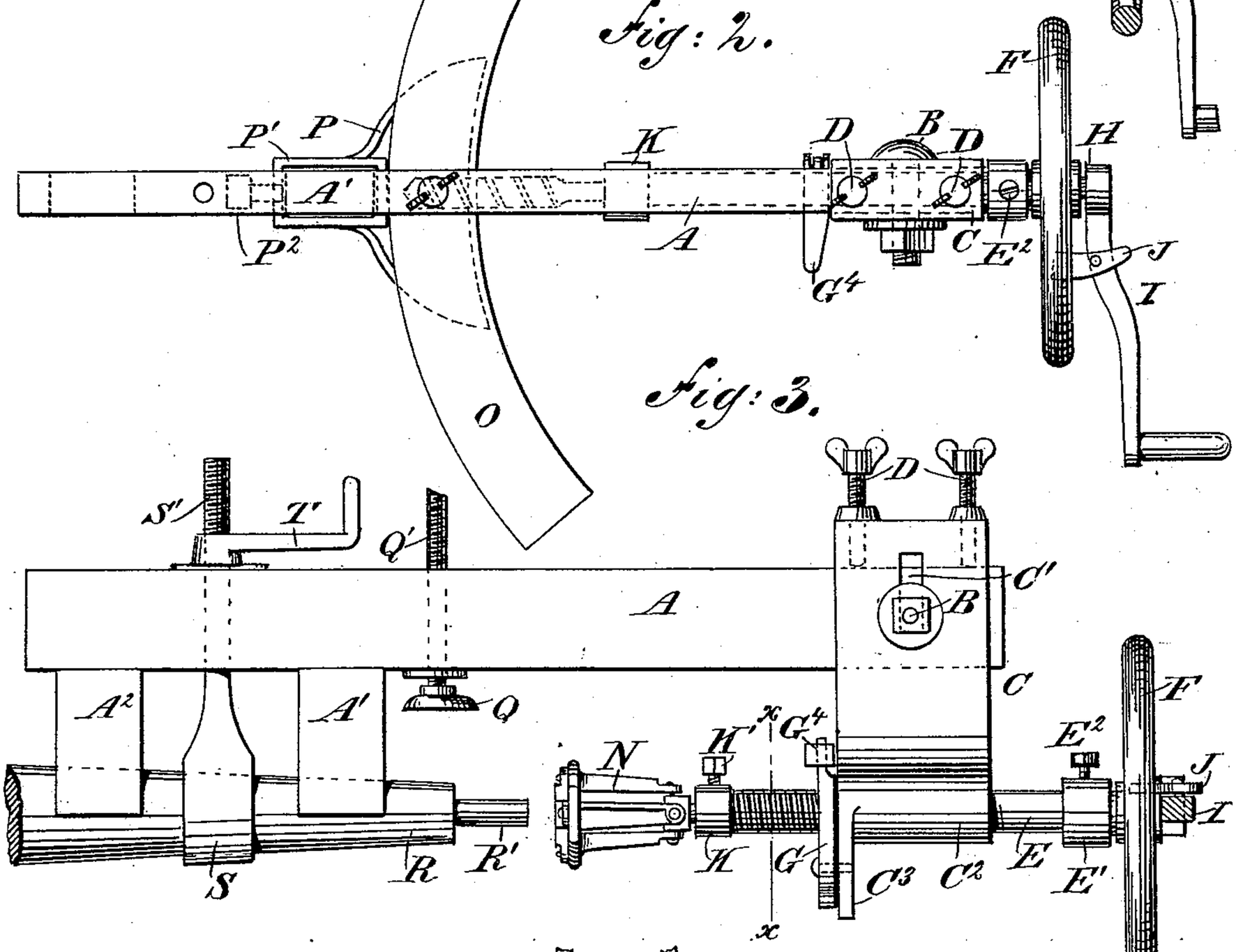

Fig: 3.

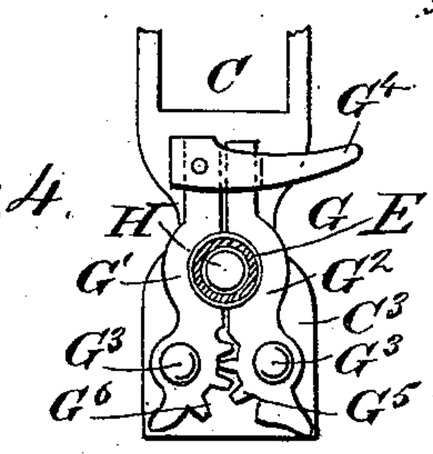

Fig: 4.

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UNITED STATES PATENT OFFICE.

ABEL B. SHARP, OF DURANGO, COLORADO, ASSIGNOR TO HIMSELF AND CHARLES NAEGLIN, OF SAME PLACE.

BORING AND TENONING MACHINE.

SPECIFICATION forming part of Letters Patent No. 475,158, dated May 17, 1892.

Application filed May 2, 1891. Serial No. 391,328. (No model.)

To all whom it may concern:

Be it known that I, ABEL B. SHARP, of Durango, in the county of La Plata and State of Colorado, have invented a new and Improved Boring and Tenoning Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved boring and tenoning machine, which is simple and durable in construction, very effective in operation, and more especially designed for forming the tenons on spokes and boring the tenon-apertures in fellies.

The invention consists of certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement as arranged for boring a felly. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the improvement as arranged for cutting and tenoning, and Fig. 4 is a transverse section of part of the same on the line *x x* of Fig. 3.

The improved boring and tenoning machine is provided with a supporting-beam A, on one end of which is held a bolt B, adapted to fasten a bracket C to the said beam A. The bracket C is formed with an opening, through which passes the beam A, and it is also provided with vertical slots C′, through which passes the said bolt, so that the bracket can be raised or lowered on the beam. In the top of the bracket screw the thumb-screws D, adapted to abut against the top of the beam A and serving to raise or lower the bracket C on the beam. In the lower end of the bracket C is held a bearing C^2, provided with a longitudinally-extending opening, in which is mounted to turn loosely and to slide a feed-screw E, made hollow and carrying on its outer end a hand-wheel F. On the feed-screw E, between the wheel F and the front end of the bearing C^2, is held a collar E′, adapted to be secured in place by a set-screw E^2. This collar serves to regulate the depth of the aperture to be bored in the felly and to regulate the length of the tenon. A nut G is adapted to engage the threaded portion of the feed-screw E, the said nut being preferably made in two parts G′ and G^2, pivoted at G^3 to an extension C^3 of the bracket C. On the other end of one of the parts of the nut G is pivoted a link G^4, adapted to engage the upper end of the other part, so as to lock the two parts in place to engage the thread of the feed-screw E, as is plainly shown in Fig. 4. On the pivoted ends of the parts G′ and G^2 are formed gear-teeth G^5 and G^6, respectively, in mesh with each other and adapted to move the parts G′ and G^2 simultaneously into or out of engagement with the feed-screw E.

In the hollow feed-screw E is mounted to turn a shaft H, carrying on its outer end a handle I, provided with a pawl J, adapted to be turned into such a position as to engage one of the spokes of the wheel F when the handle I is turned. The pawl J may be swung in line with the handle I, so that the shaft H can be turned without turning the feed-screw E.

On the inner end of the shaft H is held a socket K, adapted to support either the auger L or the tenon-cutting tool N, of any approved construction. The shanks of the auger L and the tenoning-tool N are secured in the socket K by a set-screw K′, screwing in the said socket against the respective shank. When the auger L is in place in the socket K, as illustrated in Fig. 1, then the device is arranged for boring the tenon-aperture in the felly O. The latter is supported on a foot P, projecting from a sleeve P′, held vertically adjustable on a block A′, secured to the under side of the beam A. The sleeve P′ is adapted to be fastened on the block A′ by means of a set-screw P^2, screwing in the said sleeve against the block. The periphery of the felly abuts against the front surface of the sleeve P′, the said felly being clamped in place on the foot P and sleeve P′ by a disk Q, held on the lower end of a screw Q′, arranged vertically and screwing in the beam A.

When the machine is to be used for cutting the tenon R′ on a spoke R, then the sleeve P′ is detached from the block A′ and the screw Q′ is screwed upward, as illustrated in Fig. 2, so as to be out of the way of the spoke. In

order to support the spoke R, a keeper S is provided, formed with a longitudinally-extending opening, preferably made to correspond in cross-section with the shape of the spoke. The keeper S is formed with a screw-thread S′, extending upward through the beam A and engaged at its upper end by a handled nut T for raising and lowering the keeper S to bring the spoke R into the proper position—that is, into alignment with the shaft H. The keeper S is arranged in the rear of the block A′, and a second block A^2 is arranged in the rear of the keeper S. The under sides of the blocks A′ and A^2 are V-shaped, so as to form a support for the spoke R to prevent the latter from moving out of alignment while the tenon is being formed.

The machine is used as follows: When it is desired to bore a felly, the auger L is secured in the socket K by the set-screw K′, and the felly is placed on the foot P and fastened in place by the disk Q, screwed on top of the felly by the screw Q′. The operator now turns the handle I, the pawl J being in the position shown in Fig. 1, so that the shaft H, as well as the feed-screw E, is simultaneously revolved, the feed-screw being moved inward by screwing on the nut G. The auger L is thus moved into the felly O and forms the tenon-aperture therein. It is understood that the collar E′ had been previously set such a distance from the bearings C^2 that the auger L can bore an aperture of a depth corresponding to the said distance between the collar and the bearing C^2. When the machine is to be used for forming a tenon R′ on the spoke R, the auger L is removed from the socket K and the cutting-tool N is secured in the said socket. The collar E′ is set on the feed-screw E, so that the cutting-tool forms the tenon of the proper length. When the several parts are in the position illustrated in Fig. 3 and the operator turns the crank-arm I, then the feed-screw E and the shaft H are simultaneously revolved, so that the cutting-tool N cuts the end of the spoke to form the tenon R′. When the collar E′ moves against the bearing C^2, the tenon is formed of the proper length. The operator then throws the pawl J out of engagement with the wheel F and makes another revolution with the handle I, so that a square shoulder is formed on the spoke. Then the operator disengages the link G^4 from the upper ends of the parts G′ and G^2 of the nut G, so as to disengage the said parts from the threaded end of the feed-screw. He then takes hold of the wheel F and pulls outward on the same, so that the sleeve E, carrying the shaft H, is moved back into a starting position, the cutting-tool N being disengaged from the tenon R′. The parts G′ and G^2 are then again closed upon the feed-screw E and locked in place by the link G^4. The above-described operation is then repeated.

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

1. The combination, with a bearing and a hollow feed-screw turning in and sliding freely through said bearing, of a nut mounted on the bearing engaging the said screw and movable out of engagement therewith, and a tool-shaft extending through the feed-screw and provided with means for connecting it with and disconnecting it from the feed-screw, substantially as set forth.

2. In a boring and tenoning machine, the combination, with a bracket formed with a bearing, of a feed-screw mounted to turn and to slide in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a tool-shaft mounted to turn in the said feed-screw, and a handle held on the said shaft and provided with a pawl adapted to engage a wheel on the said feed-screw, substantially as shown and described.

3. In a boring and tenoning machine, the combination, with a vertically-adjustable bracket formed with a bearing, of a feed-screw mounted to turn and to slide in the said bearing, a nut made in two parts pivoted on the said bearing and movable into and out of engagement with the feed-screw, a link for locking the said pivoted parts of the nut together when in engagement with the screw, and gear-teeth formed on the said pivoted nut parts and in mesh with each other, substantially as shown and described.

4. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and adapted to engage the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, and a sleeve held adjustably on the said block and provided with a foot for supporting the felly, substantially as shown and described.

5. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, a sleeve held adjustably on the said block and provided with a foot for supporting the felly, and a screw-rod screwing in the said beam and carrying a disk adapted to engage the felly supported on the said foot, substantially as shown and described.

6. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-

screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, a sleeve held adjustably on the said block and provided with a foot for supporting the felly, and a collar held on the said feed-screw for regulating the depth of the aperture bored in the felly, substantially as shown and described.

7. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, and a keeper held vertically adjustable in the said beam and adapted to support the spoke in line with the said shaft, substantially as shown and described.

8. In a boring and tenoning machine, the combination, with a supporting-beam provided with a block, of a bracket held on the said beam and formed with a bearing, a feed-screw mounted to slide and to turn in the said bearing, a nut held on the said bearing and movable into and out of engagement with the said feed-screw, a shaft mounted to turn in the said feed-screw and having means for locking it to the same, a tool-holding socket held on the said shaft, a keeper held vertically adjustable in the said beam and adapted to support the spoke in line with the said shaft, and a collar held adjustably on the said feed-screw and adapted to regulate the depth of the tenon to be formed on the spoke, substantially as shown and described.

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Witnesses:
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