W. Morehouse,

Hollow Auger.

No. 34,159. Patented Jan. 14, 1862.

Fig. 3

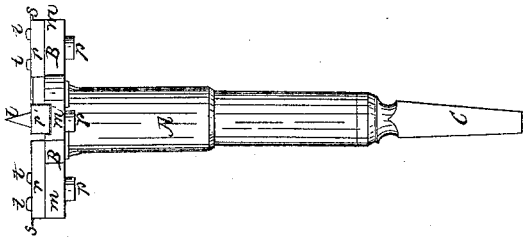


Fig. 5

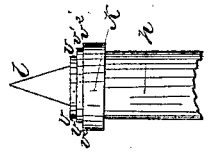


Fig. 2

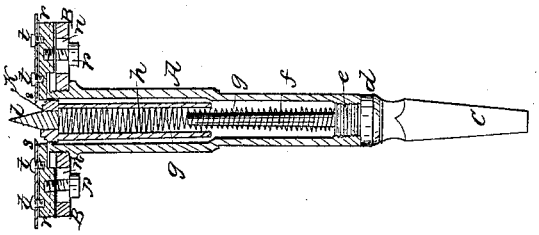


Fig. 4

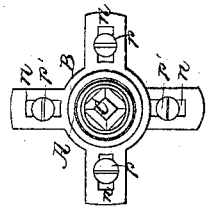
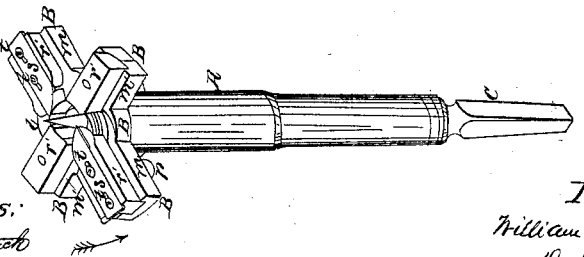


Fig. 1



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UNITED STATES PATENT OFFICE.

WILLIAM MOREHOUSE, OF BUFFALO, NEW YORK.

IMPROVEMENT IN SPOKE-TENON AUGERS.

Specification forming part of Letters Patent No. **34,159**, dated January 14, 1862.

To all whom it may concern:

Be it known that I, WILLIAM MOREHOUSE, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Spoke-Tenon Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention has for its object the adaptation of a single spoke-tenon auger to the capacity for work of several augers of a like character, but of different sizes, or which is capable of cutting different-sized tenons and in a more perfect manner.

My implement is mainly intended to be used for cutting tenons on the ends of the spokes of carriage-wheels, but is equally well adapted to cut circular tenons within its capacity whenever and wherever required.

In the several figures the same letters indicate the same or analogous parts.

Figure 1 is a perspective view of my spoke-tenon auger; Fig. 2, a vertical longitudinal section of same; Fig. 3, a plan elevation; Fig. 4, an inverted plan view of Fig. 1, and Fig. 5 an enlarged view of the center sliding graduated plug K shown in section in Fig. 2.

My spoke-tenon auger consists of a hollow main socket A, upon which the cutter-head B is secured by being screwed—the latter upon the former—the male and female screw-threads being so formed on the said socket and cutter-head as to forcibly hold the latter upon the former when the implement is in the act of cutting a tenon. The upper portion of socket A is attached to a square-tapering shank C for inserting the implement into a "stock," or a lathe-head if used in a "lathe," and which shank is enlarged, as at *d*, to receive upon it the upper end of socket A, as shown in Fig. 2. Below enlargement *d* the diameter of the shank C decreases, as at *e*, and forms a screw-thread in such manner as to secure the said part *e* into the upper end of socket A, male and female screw-threads being cut upon these parts and also so formed that the motion of the implement when in use to cut a tenon shall tend to keep the parts in the relation they bear to each other in Figs. 1, 2, and 3. Below the screw-thread cut on part *e* the diameter of the shank C still decreases, and, extending down midway of socket A, forms a steady-pin *f*, which is inclosed by a spiral spring *g*, as clearly shown in Fig. 2. This spring is made of such diameter that it may be wholly inclosed by the complete depression of tubular sleeve *h* within socket A, and thus prevent the loss of its power by torsion or what is commonly known as "buckling," one end of said spring abutting against the inside of a graduated plug K at one end of sleeve *h* and the other end against the shoulder formed by the screw-threaded part *e*.

To one end of tubular sleeve *h* is attached a graduated plug K, having working-faces of varying diameters, as clearly shown by enlarged view in Fig. 5 at *v*, *v'*, and v^2, and which faces may be increased to any desirable number from the least to the greatest diameter of tenon intended to be cut with one implement. These faces may be marked with figures indicating the size of the tenon which the implement may be adjusted to cut. As, for example, face *v* may be marked by the figures $\frac{1}{2}$, face *v'* by the figures $\frac{5}{8}$, and face v^2 by figures $\frac{3}{4}$, thus indicating that when the proper adjustment is made *v* will show that a tenon may be cut a half-inch in diameter, *v'* a tenon five-eighths of an inch in diameter, and v^2 a tenon three-fourths of an inch in diameter, and so on, according to the number of graduations on plug K. The extreme diameter of plug K fits accurately into socket A, and is steadied by contact with the interior of such socket for an extent, say, to midway of its length, on being depressed therein, the tubular sleeve *h* being also of a diameter to accurately fit within and be steadied by the balance of the length of said socket A in such act of depression, as is clearly indicated in sectional view, Fig. 2.

In the center of plug K, I secure in any suitable manner a centering-pin *l*, as shown in the drawings, its point being adapted to maintain the implement in due central relation to the tenon being cut.

The cutter-head B is composed of a piece of metal, which in general outline is formed as shown in Figs. 1, 2, 3, and 4, and with projecting arms *m m* and *m' m'*, through which adjusting-slots *n* are made to receive set-screws *p* and *p'*. The set-screws *p* pass into knife-blocks *r*, which are let into grooves in

the face of the arms m, as shown in Figs. 1, 2, and 3, and may be adjusted lengthwise of said grooves at any desirable given point by means of said set-screws within the range of said slots. The working-face of these knife-blocks are armed with cutters s, said cutters being let into the face of the said blocks a depth equal to the thickness of the knives or cutters, and may be therein adjusted in a longitudinal direction toward or from the centering-pin l, according to the width of shaving to be cut by set-screws t, which are properly made to take into the knife-blocks r. Guide-blocks r' are situated at right angles to the said knife-blocks and adjusted by set-screws p'. They are also secured to arms m' in the same manner as the knife-blocks are secured to arms m of the cutter-head B. These guide-blocks, as well as the knife-blocks, are at their inner ends scalloped out concentric with the point of center-pin l or with the longitudinal axis of the implement. These ends thus press upon the periphery of the tenon being cut, and as the tenon enters the socket A, the graduated plug K and sleeve h meanwhile receding, assists in steadying the implement upon the spoke upon which the tenon is cut. Said blocks may also all be made thicker at their inner than their outer ends, and with a taper from end to end on their working-face, so as to bear upon that portion of the spoke outside of the tenon being cut with as little frictional surface as possible. Supposing the implement to be set to cut a tenon three-fourths of an inch in diameter, the knife-blocks and steady-blocks will be adjusted toward the center-pin l until their scalloped ends abut against or are in vertical line with the full diameter of the graduated plug at V^2, Figs. 2 and 5, and are secured in such position by their set-screws. The implement then being rapidly rotated in the direction of the arrow, Fig. 1, a circular tenon is formed upon the end of the spoke, which, as the spoke is "fed up," enters the socket A, the center-pin l and plug K and sleeve h meanwhile receding within the socket A, and said pin l being all the while maintained in its bearing centrally upon the end of the tenon by reason of the tension of the spring. The tenon being cut and withdrawn the plug K resumes its original position, as in Fig. 2, ready for another operation, which may form a like tenon or one of a greater or less diameter, according as the steady-blocks and knife-blocks are set with reference to the several graduations upon the plug K.

It will be observed that my implement is so constructed that its cutter-head B and shank C may be removed from the tubular socket A in order to adjust its interior parts in case of derangement or a necessity for renewing such parts.

Having thus described my said invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A center sliding plug which performs the double function of centering and gaging the varying sizes of tenons.

2. A graduated center sliding plug, in combination with a tubular sleeve, a compressible spring, and a surrounding tubular socket.

3. A tubular sleeve carrying a centering-pin, in combination with a compressible spring, a steady-pin, and a surrounding socket, substantially as described.

4. Knife-blocks and guide-blocks having scalloped inner ends, as described, in combination with a graduated center sliding plug and tubular sleeve, as described.

5. Making the shank C and steady-pin f in one piece and confined to the socket A by an intermediate screw-body, which forms shoulders for one end of the socket and one end of the spring to abut against.

In witness whereof I have hereunto set my hand and seal.

WM. MOREHOUSE. [L. S.]

Witnesses:

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JAMES GILLESPIE.