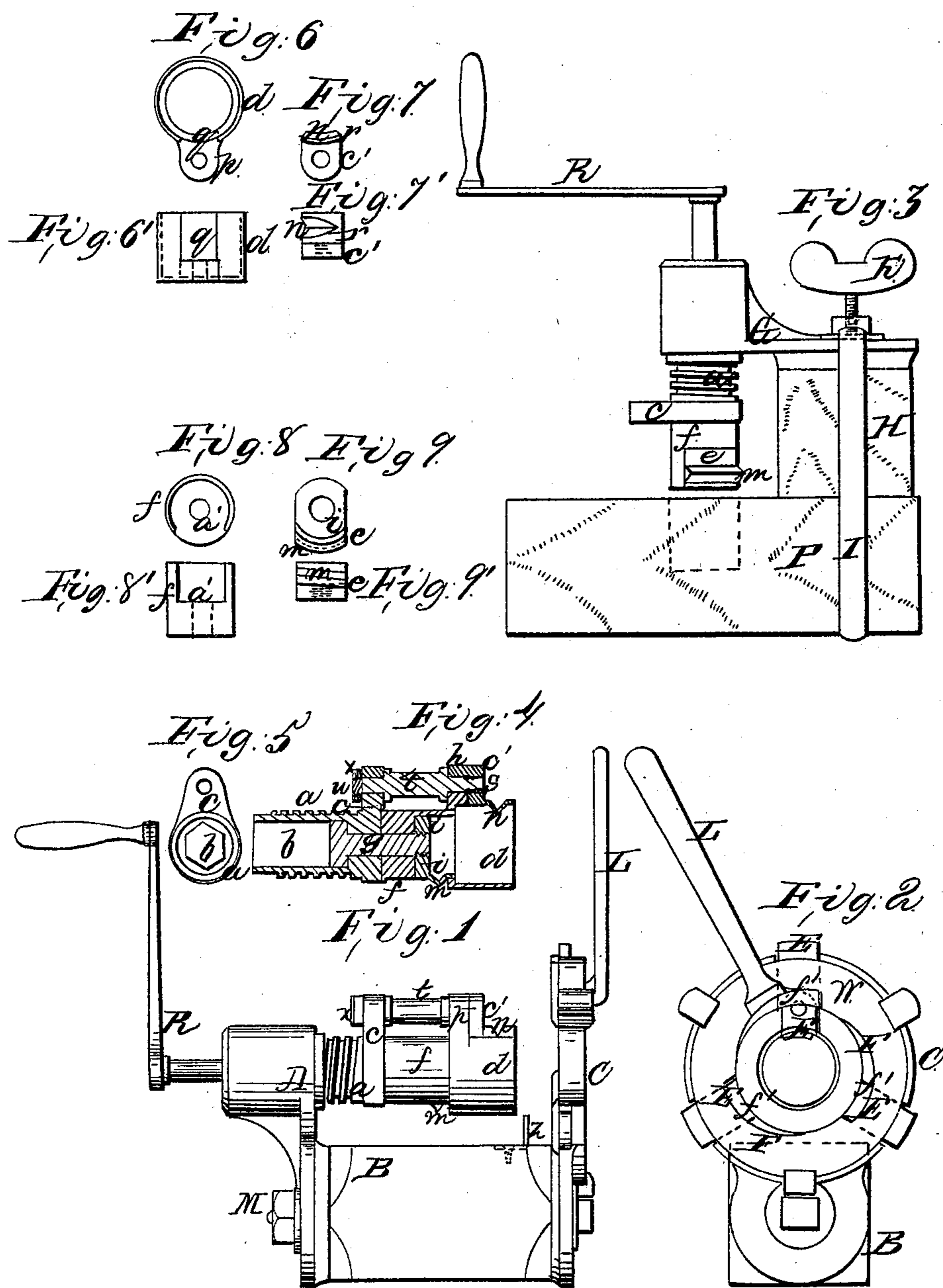


H. Smith,
Making Wooden Screws,
No. 10,261. Patented Nov. 22, 1853.



UNITED STATES PATENT OFFICE,

HIRAM SMITH, OF NORWALK, OHIO.

APPARATUS FOR CUTTING SCREWS ON BEDSTEAD-RAILS, &c.

Specification forming part of Letters Patent No. **10,261**, dated November 22, 1853

To all whom it may concern:

Be it known that I, HIRAM SMITH, of Norwalk, in the county of Huron and State of Ohio, have invented a new and useful Improvement in Screw-Cutters for Bedstead Rails and Posts; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, forming part of this specification, in which--

Figure 1 is a side elevation of the machine arranged for cutting the thread upon the rail-tenons. Fig. 2 is an end view of the clamp for holding the cutter to the rail. Fig. 3 is a side elevation of the machine arranged for cutting the post-threads. Fig. 4 is a longitudinal section of the spindle and cutter heads, taken through the axes of the spindle and bolt attaching cutter-head of male screw. Fig. 5 is an end view of the spindle. Fig. 6 is an end view of the rail-cutter head. Fig. 6' is an elevation of the same, showing opening in side. Fig. 7 is a top view of section *r*, cutter *n*, and attaching-base *c'*. Fig. 7' is an elevation of same. Fig. 8 is a top view of post-cutter head. Fig. 8' is an elevation of same. Fig. 9 is a top view of section *e*, cutter *m*, and base *i*. Fig. 9' is an elevation of same.

Similar letters in the several figures denote the same part of the machine.

My invention, which refers to the manner of attaching the V-cutters to the cutter-heads, the attachment of the cutter-heads to the spindle, and the mode of securing the machine to the rails and posts when in operation, consists, first, in constructing the V-cutters so as to form a portion of the cylindrical section of the head attached by a base at right angles to the axis of the head by means of bolts passing in the case of the cutter of the male screw through an ear upon the exterior of the head and in the other case through the axis of the spindle, as will be particularly described; second, in the employment of a system of clamps, hereinafter to be described, for the purpose of attaching the cutting machinery to the posts and rails during the operation of forming the threads.

The screw mandrel or spindle *a*, which is the same in both rail and post machines, is formed hollow in the rear with a polygonal

cross-section, as shown at *b*, Figs. 4 and 5. On the forward extremity of this spindle is the ear *c*, serving, as will be hereinafter shown, for attaching the rail cutter head *d*. In front of the spindle *a* is the post-cutter head *f*, open in one side, as seen in Fig. 8, for the reception of the section *e*, which contains the post-cutter *m*, the section *e* having at right angles the base *i*, containing a screw-thread fitting the bolt *g*, which passes through the spindle *a*, cutter-head *f*, and base *i*, its head being of the form shown at *b*, Fig. 5, the section being tightened by revolving the cutter-head *f* about the bolt after the base *i* has been placed in its seat *a'*. This forms the post-cutter shown in Fig. 3.

The rail-cutter head *d* is formed with the opening *q* in its side and is furnished with the perforated ear *p*. The V-cutter *n*, which is formed in the section *r* of the head, is secured by the bolt *s*, which passes through the ear *p* and base *c'* of the section *r*, screwing into the latter. The head *d* fits over the head *f* and is secured by the bolt *w* of the connecting-bar *t*, passing through the ear *c* of the spindle and fastened with the nut *x*.

The nut *A*, in which the spindle *a* works, is fastened to one extremity of the block *B*. On the other is the clamp *C*, in which the rail is held, being grasped by the slides *E*, which move inward by the movement of the eccentrics *F* against the projections *f'* of the slides.

The holder of the post-cutting machine consists of the standard *G*, attached to the block *H*, the post *P* being held against the block by the strap *I*, which passes around the post and block *H* and is tightened by the screw *K*. The mandrels are revolved by the crank *R*, which fits the cavity *b* in their rear.

The construction above described is applicable to both left and right threads.

The operation of my improved cutter is as follows: To cut the male screws upon the tenons, the rail is first secured to a joiner's bench or in a vise, and the clamp *C* passed over its end until the shoulder of the rail rests against the stop *z* on the block *B*, the extremity of the tenon entering the head *d* of the spindle *a*, which is withdrawn to the full extent of its thread. The lever *L* of the eccentric plate *W* is then moved to the right,

forcing out the slides E and firmly grasping the rail. Having thus secured the rail, the crank R is inserted and the mandrel *a* moved forward, causing the V-cutter in the head *d* to form the thread as in ordinary cases. The cutters arranged for right and left threads may be placed on the opposite ends of the rail and the cutting of both completed before removing the rail from the vise, or one screw may be cut upon one end of several rails and the standard A removed by unscrewing the nut M of the bolt securing the standard and the clamp C to the block B, to be replaced by a similar one arranged for the other thread, which is then cut upon the unfinished ends of the rails. The threads may be cut upon both ends of the rail at the same time by securing longitudinally at opposite ends of the bench cutters and clamps, arranged as above described, for cutting the one right and the other left hand threads, the rail to be suspended between the sockets *d* by the clamps C, the bench to be arranged by any suitable contrivance to accommodate rails of various lengths. The operation of cutting the post-thread is similar to that described for the rail, the post P being secured in a vise and the cutter attached at the proper point by the strap I and screw K, as shown in Fig. 3, the requisite mandrel being used for producing either a left or right screw, as may be desired, or the block H may be made stationary and the post secured to it by wedges between the post and a stanchion secured to the bench at a suitable distance from and parallel to the block H. Another block with a cutter for the reverse thread may be placed the same distance on the opposite side of the stanchion, so that after cutting one thread the post has only to be turned over and secured against the other block H to cut the reverse thread.

The advantages of my improvement consist in the simple and at the same time effectual manner of securing the V-cutters and the facility with which the position of the post V-cutter may be changed with respect to the screw of the mandrel for the purpose of insuring good joints, a slight change in the position of the bolt *g*, effecting a corresponding change in the position of the cutter. This change is made by means of the polygonal head of the bolt *g*, which retains it in any desired position, thus obviating a serious objection common to all screw-cutters now in use by enabling the operator, should the first thread cut in the post fail to make a tight joint, to repeat the operation with the V-cutter in a different position with respect to the thread of the mandrel by simply unscrewing the cutter-head *f*, removing the bolt, and reinserting it in a changed position, which causes the cutter, when the head is screwed

up, to have a new position with respect to the mandrel. The screw by which the cutter is held is so cut that the pressure on the edge of the V-cutter while cutting tends to tighten the cutter-head on the spindle.

The simplicity in the operation of the machine presents advantages which will readily be seen by all who are acquainted with the operation of machines of this character.

Instead of turning the head *f* for starting the thread at any desirable point of the aperture in the post, the socket *d* may be made adjustable for starting the thread at any desired point of the rail-tenon by constructing the forward extremity of the spindle with a circular plate in place of the ear *c*, the plate being furnished with a circle of perforations for the insertion of the bolt *w*, thus permitting the socket *d* to turn upon the head *f* and be secured at the desired point for commencing the thread of the tenon and making the variation of the thread on the rail instead of the post, as above described. This adjustment of the head or socket by which the threads of post and rail are made to conform to each other by regulating the starting-point of either post or rail screw without changing the distances between the shoulders of the rail is of great importance to all interested in this branch of manufacture and will be readily understood and appreciated.

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

1. The formation of the V-cutters, as described, in sections of the cutter-heads which are secured by means of screw-bolts, substantially as herein set forth.

2. Securing the section of cutter-head containing the post V-cutter by means of a polygonal-headed bolt passing, as described, through the hollow spindle, cutter-head, and section-base, which arrangement, in addition to securely holding the V-cutter, admits of the adjustment of the cutter, as herein described, for insuring the formation of tight joints between the post and rail.

3. The method herein described of attaching the tenon-socket *d* to the spindle.

4. The arrangement of the standards A and G and clamp C upon the blocks B and H, by which the machine is secured to the posts and rails and the operation of cutting facilitated, as herein set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

HIRAM SMITH.

Witnesses:

J. PARSONS OWEN,
A. G. SUTTON.