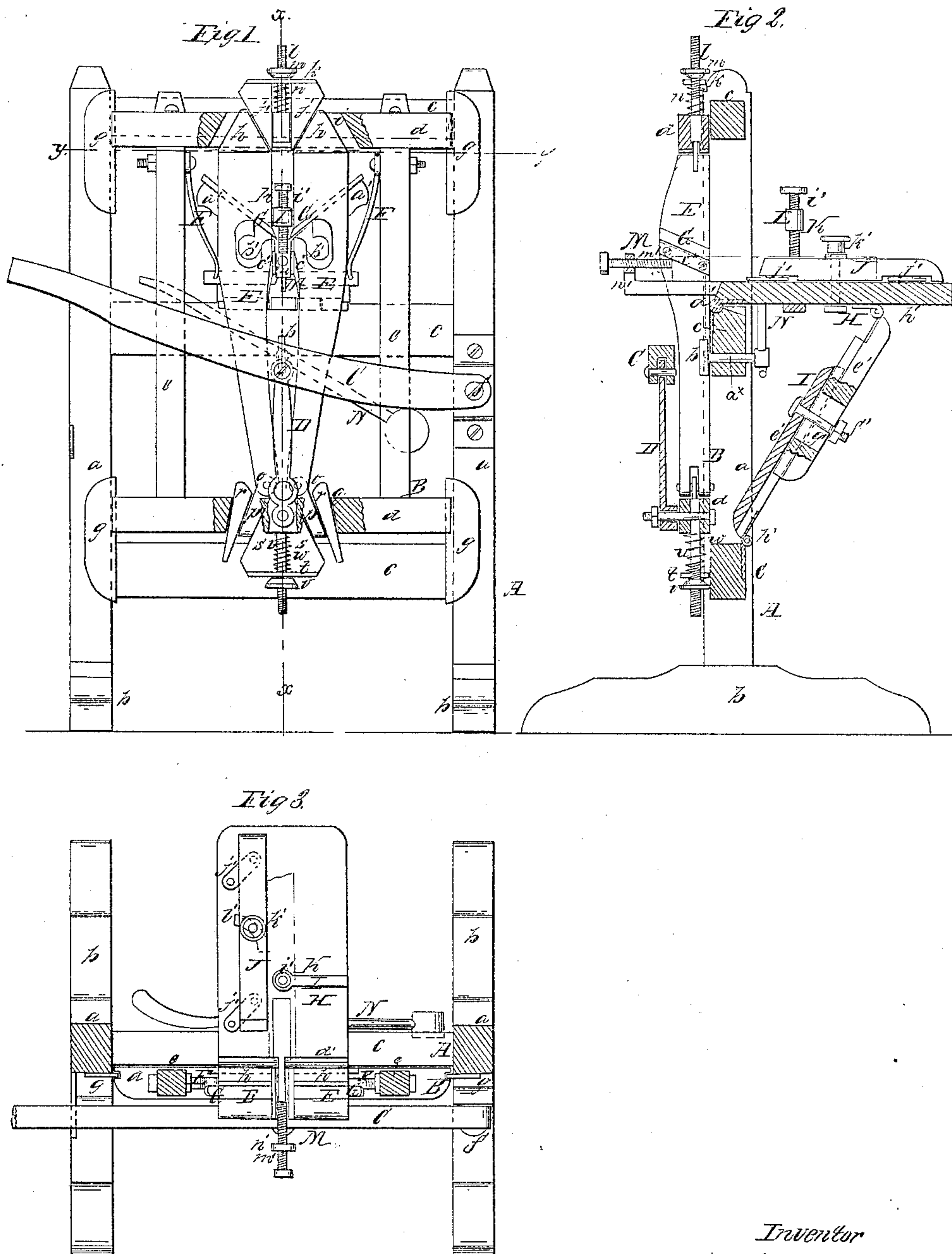


*J. M. Simpson,*  
*Tenoning Machine.*

*N<sup>o</sup> 37,060.*

*Patented Dec. 2, 1862.*



*Witnesses,*  
*J. W. Brown*  
*G. W. Reed*

*Inventor*  
*John M. Simpson*  
*per M. H. B.*  
*Attorneys*



# UNITED STATES PATENT OFFICE.

JOHN M. SIMPSON, OF MAULTVILLE, NEW YORK.

## IMPROVED MACHINE FOR CUTTING TENONS ON WHEEL-SPOKES.

Specification forming part of Letters Patent No. 37,060, dated December 2, 1862.

*To all whom it may concern:*

Be it known that I, JOHN M. SIMPSON, of Maultville, in the county of Saratoga and State of New York, have invented a new and Improved Machine for Cutting Tenons on Wheel-Spokes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front view of my invention; Fig. 2, a vertical section of the same, taken in the line *x x*, Fig. 1. Fig. 3 is a horizontal section of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a new and useful machine for cutting tenons on wheel-spokes, the tenons at the inner ends of the spokes, and which are inserted in the hubs of the wheel.

The invention consists in the employment or use of a reciprocating frame provided with adjustable cutter-bars and used in connection with an adjustable bed provided with a gage-clamp and guide, arranged substantially as hereinafter fully shown and described.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents an upright framing, which is composed of two vertical posts, *a a*, fitted in suitable bases, *b b*, and connected by horizontal cross-bars *c*.

B is a sliding frame or gate composed of an upper and lower cross-bar, *d d*, connected, near their ends, by vertical bars *e e*. This frame or gate B is operated by a lever, C, which is connected at one end to one of the posts *a* of the framing A by a fulcrum-pin, *f*, the lower cross-bar *d* being connected by a link, D, to the lever C, as shown in Fig. 1. The frame or gate B is fitted between guides *g*, attached to the vertical parts *a a* of the framing A, as shown clearly in Figs. 1 and 3.

E E represent two vertical bars, the upper ends of which have metal guides or plates *h h* in them, one in each, said guides or plates having oblique sides, so as to be of pointed form, and fitted in a longitudinal slot, *i*, in the upper cross bar *d* of the frame or gate B, as shown in Fig. 1. Between the two plates *h h* there are fitted taper keys or wedges *j j*, the

upper ends of which are attached to a horizontal bar or plate, *k*, through the center of which a vertical screw-rod, *l*, passes loosely, said rod being firmly secured in the slot *i*. On the upper part of the screw-rod *l*, above the plate *k*, there is fitted a nut, *m*, and on said screw-rod, below the plate *k*, there is placed a spiral spring, *n*, which has a tendency to keep the plate *k* elevated against the nut *m*, as will be fully understood by referring to Figs. 1 and 3.

To the lower end of each bar E there is secured by a pivot, *o*, a metal plate, *p*. These plates *p p* are fitted in a slot, *q*, in the lower cross-bar *d* of the frame or gate B, and bear against taper keys or wedges *r r*, which are fitted loosely in the slot *q*. Between the two plates *p p* there are fitted taper keys or wedges *s s*, which are attached at their lower ends to a plate, *t*, through which a screw-rod, *u*, passes loosely, and which has a nut, *v*, upon it below the plate *t*. A spiral spring, *w*, is placed on the screw-rod *u*, and this spring has a tendency to keep the plate *t* pressed downward in contact with the nut *v*. This arrangement of the keys or wedges *s s* is precisely the same as that of the keys or wedges *j j* in the upper cross-bar *d* of the frame or gate B.

F F represent two springs, which are attached one to each vertical bar *e* of the frame or gate B and bear against the vertical bars E E, having a tendency to keep the plates *h h* *p p* of the latter in contact with the keys or wedges *j j*, as will be fully understood by referring to Fig. 1. In each bar E there is fitted a cutter or planer, G. These cutters or planers have an oblique position in the bars E E, and are secured therein by keys or wedges *a'*, and directly overthroats *b'*, which are made in the bars E, for the escape of shavings. To the inner surfaces of the bars E E, just below the cutting-edges of the cutters or planers G, there are secured metal plates *c'*, and the inner surfaces of the bars E E, below said plates *c'*, are hollowed inward toward their centers to allow any shavings which may casually pass in between the work and the cutting-edges of the cutters or planers to escape freely.

H represents a bed, the inner end of which is attached by a hinge or joint, *d'*, to the central cross-bar *c* of the framing A. This bed H is suspended at its outer end by a bar, I, formed of the parts *e' e'*, which lap over each other



and are connected together by a screw-bolt,  $f'$ , that passes through an oblong slot,  $g'$ , in one of the parts  $e'$ , the oblong slot admitting of the bar  $I$  being extended or shortened, so as to adjust the bed  $H$  in a horizontal or a more or less inclined position, as may be desired. The ends of the parts  $e' e'$  are respectively connected to the bed  $H$  and lower cross-bar  $c$  of the framing  $A$  by hinges  $h'$ . On the upper surface of the bed  $H$  there is placed a guide,  $J$ , and a clamp,  $K$ , the latter being formed by a vertical screw,  $i'$ , passing through a curved bar,  $L$ , and the guide  $J$  being formed of a straight bar attached to parallel pivoted plates  $j' j'$ , which are secured to the upper surface of the bed  $H$ . The guide  $J$  is secured at any desired point by a screw-bolt,  $k'$ , which passes through the guide  $J$  and a curved slot,  $l'$ , in the bed  $H$ .

$M$  is a gage, which is formed of a screw-rod,  $m'$ , passing longitudinally through a bent bar,  $n'$ , attached to the inner end of the bed  $H$ , as shown more particularly in Fig. 2.

$N$  is a lever attached to a shaft,  $a^x$ , on which a T-head,  $b^x$ , is formed or placed for spreading or forcing apart the bars  $E E$  to admit the end of the spoke between them.

The operation of the machine is as follows: The spoke to be operated upon is placed upon the bed  $H$  and against the guide  $J$ . The screw-rod  $m'$  of the gage  $M$  is adjusted according to the desired length of the tenon to be cut, and the inner end of the spoke is fitted against the screw-rod  $m'$ , and the spoke firmly secured in position on the bed  $H$  by screwing down upon it the screw  $i'$  of the clamp  $K$ . The bars  $E E$ , and consequently the cutters or planers  $G G$ , are separated a certain distance, corresponding to the desired thickness of the tenon to be cut, by adjusting the keys or wedges  $j j s s$ . The

inner end of the spoke, it will be understood, is forced between the bars  $E E$ , and the latter are forced apart thereby, and the operator, through the medium of the lever  $C$ , moves the frame  $B$  up and down the cutters or planers  $G G$  at each descent of the frame  $B$ , taking a shaving off from opposite sides of the spoke until the tenon is formed. The springs  $F F$  feed the cutters or planers  $G G$  to their work and until the plates  $h h p p$  of the bars  $E E$  are brought in contact with the keys or wedges  $j j r r$ .

This machine has been practically tested and has been found to operate in the most perfect manner. Any desired degree of bevel may be given the shoulders of the spokes by adjusting the bed  $H$  in a more or less inclined position.

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

1. The cutter-bars  $E E$ , placed in the reciprocating frame  $B$  and used in connection with the adjustable keys or wedges  $j j s s$ , all arranged substantially as and for the purpose set forth.

2. The adjustable bed  $H$ , provided with the gage  $M$ , guide  $J$ , and clamp  $K$ , when said bed is used in connection with the cutter-bars  $E E$  and reciprocating frame  $B$ , and arranged therewith as and for the purpose specified.

3. The combination of the cutter-bars  $E E$ , reciprocating frame  $B$ , and adjustable bed  $H$ , all arranged for joint operation as and for the purpose set forth.

JOHN M. SIMPSON.

Witnesses:

JAMES ASHMAN,  
EPHRAIM W. SIMPSON, Jr.,