

(No Model.)

4 Sheets—Sheet 1.

T. G. BUGBEE.  
WOOD WORKING MACHINERY.

No. 424,091.

Patented Mar. 25, 1890.

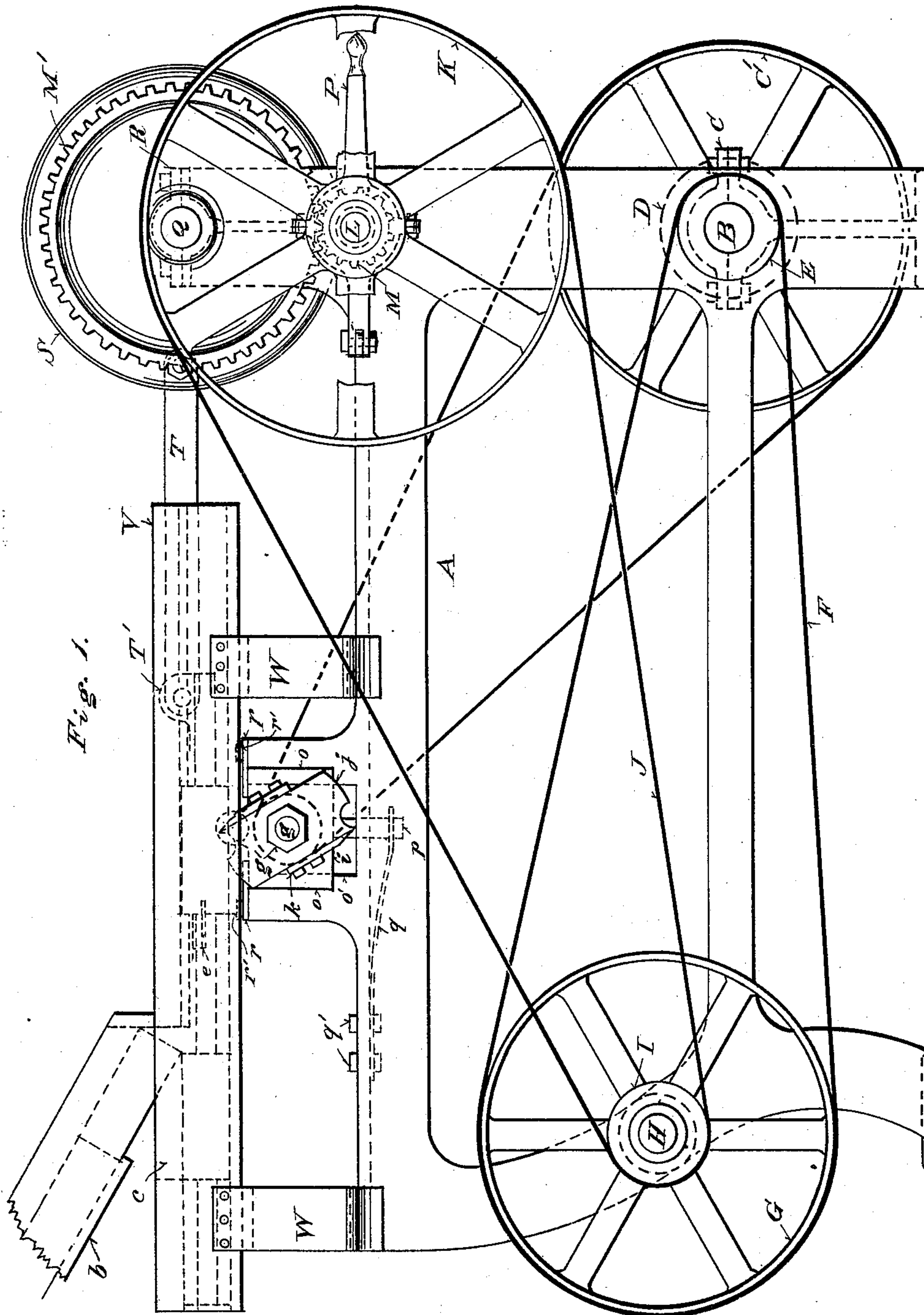


Fig. 1.

WITNESSES

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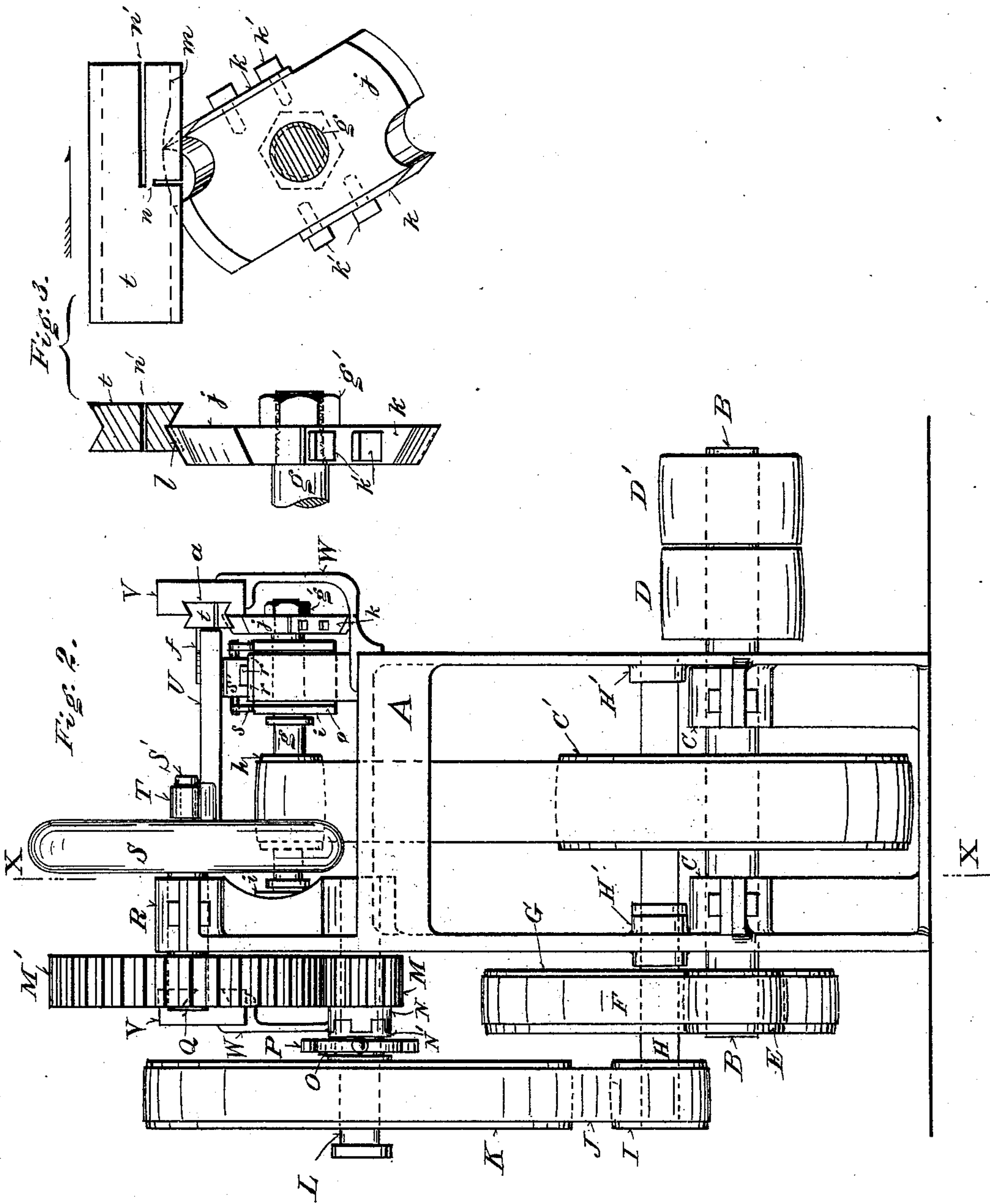
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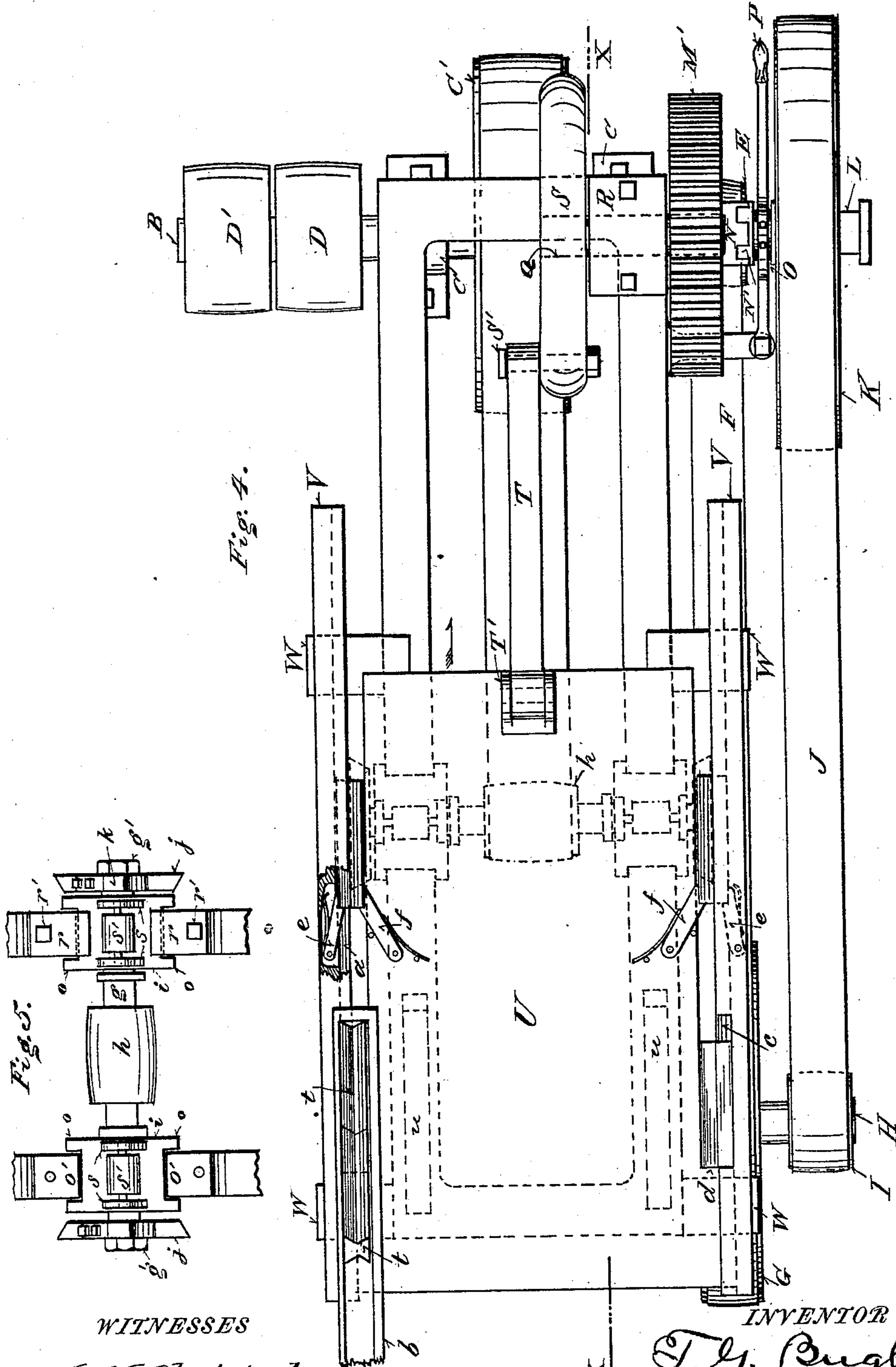
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(No Model.)

4 Sheets—Sheet 4.

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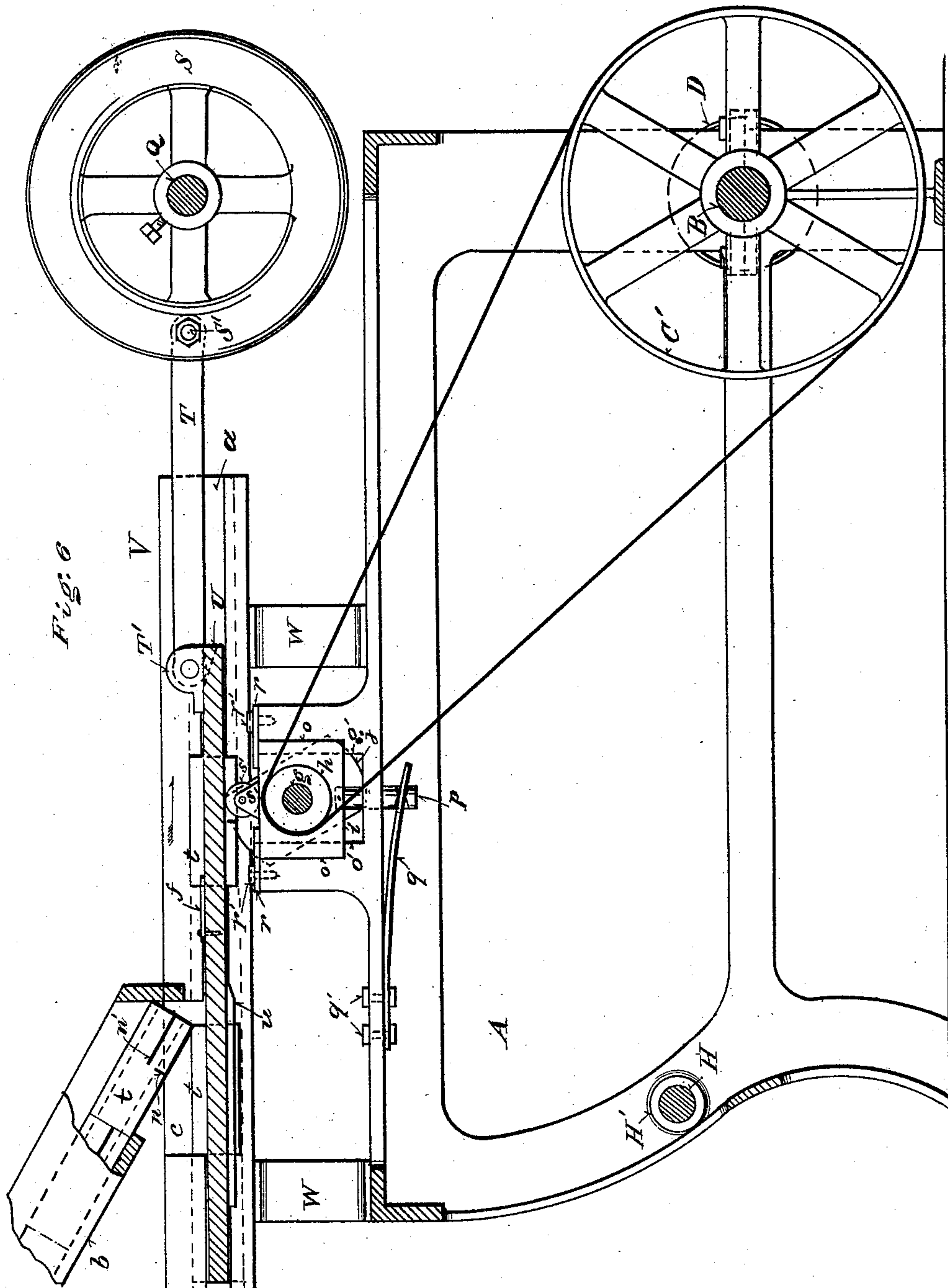


Fig. 6

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# UNITED STATES PATENT OFFICE.

TRUMAN G. BUGBEE, OF SHEBOYGAN, WISCONSIN.

## WOOD-WORKING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 424,091, dated March 25, 1890.

Application filed September 21, 1889. Serial No. 324,649. (No model.)

*To all whom it may concern:*

Be it known that I, TRUMAN G. BUGBEE, a citizen of the United States, residing at Sheboygan, in the county of Sheboygan and State of Wisconsin, have invented certain new and useful Improvements in Wood-Working Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in wood-working machines. It is known that the tongues that slide back and forth in the grooved sections of an extension-table, for instance, swell by absorbing moisture, and so fill the groove that the sections stick and work hard in extending and closing the table. It has been found that if one end of the tongue is made compressible by means of saw-cuts and a groove is cut in one side of it, so as to leave only a portion of the original bearing-surface, and thus form a swell, the clearance thus given will cause the tongues to slide easily at all times, while the spring of the wood bearing on the swell or portion left in contact with its guide is sufficient to keep it from rattling. This groove has been cut previously by hand at considerable labor and expense.

The object of my machine is to provide means for cutting this groove rapidly and cheaply in any number of tongues, whereby the cost of reduction is lessened and a uniformly better article produced than by any previous method.

In the accompanying drawings, forming a part of this specification, and in which like reference-letters indicate corresponding parts, Figure 1 represents a side elevation of the machine and a portion of the feed-chute; Fig. 2, a rear elevation of the machine; Fig. 3, a cross-section of a cutter-shaft with a cutter-head mounted thereon, showing its position near the beginning of its operation on a wooden tongue, also an edge view of said cutter and a cross-section of said tongue, showing the shape of the groove cut in the latter; Fig. 4, a plan view of the machine and a portion of one feed-chute, the other removed and other portions of the machine broken away in order to show construction; Fig. 5, a portion of the frame of the machine having ver-

ed therein and a cutter-shaft and attachments mounted in said boxes; and Fig. 6, a vertical longitudinal section of the machine on the line X X, Fig. 4, having portions of the chute broken away to show construction.

Let A represent the frame of a wood-working machine; B, the driving-shaft rotatably mounted in suitable bearings C C, (shown best in Fig. 2,) between which is mounted a large pulley C', and having mounted near one end the fast and loose pulleys D D', respectively, while near the other end is a small pulley E, connecting by a belt F with a larger pulley G, mounted on a shaft H, turning in suitable bearings H' H' in said frame A, while a smaller pulley I is also mounted on said shaft H and turns with it, thus giving a slower motion through the belt J to a larger pulley K, mounted to rotate and when unclutched to slide longitudinally on a shaft L, fixed in the frame A aforesaid, whereby the number of rotations of the pulley K is much less than those of said driving-shaft B. Rotatably mounted on said shaft L is a small gear M, having on one face a portion of a clutch N, engaging with a corresponding portion N', secured to said pulley K, which latter portion has an annular groove O, engaged by the surrounding portion of a lever P, pivoted to the frame A, whereby the pulley K may be thrown out of or into connection with the said gear M, that meshes with a larger gear M', fastened near one end of a shaft Q, turning in a suitable bearing R, carried by a bracket on the frame A, and having mounted on the other end a balance-wheel S, provided with a pin or stud S', projecting from its outer face, in order to carry one end of a pitman or connection T, the other end of which is pivoted in a casting T', secured to a table U, slidingly mounted in guides V V, firmly secured by brackets W to the frame A, whereby a reciprocating motion is imparted to said table. A dovetailed groove *a* is cut on the inner face of each guide V of a shape suited to receive half the thickness of the tongue *t*, and the guide is cut away from above, as shown at *c*, to allow the tongues to enter the said grooves. Over each opening *c* is placed an inclined chute *b*, into which the tongues are fed by hand, and slide down through an opening in the bottom of the chute, so as to suc-



cessively enter the groove *a*. Each chute is long enough to hold a number of tongues set on edge, as suggested by dotted lines in Fig. 1 and shown in plan view in Fig. 4, while Fig. 6 shows a portion of a chute broken away and one tongue in the chute in position to drop through the opening into the bottom of said chute, when a tongue in the groove *a*, that now supports its lower corner, shall be carried onward by the reciprocating table. The last tongue in the chute *b* cannot drop into the groove *a* until the tongue which goes ahead of it and is now directly underneath is carried onward. Projections or shoulders on the table *U* engage the tongues as they enter the grooves and a forward movement of the table slides them past the spring catches or detents *e e*, pivoted to the said guides *V*, and thus prevents their return, as shown in Fig. 4, when a backward movement of the table occurs and brings the spring-catches *f f*, pivoted to the table, into engagement with said tongues, so that the next forward movement of the table will push the tongues onward again and out of the grooves in the guides into suitable receptacles and at the same time bring another set of tongues to the said catches *e e*. It will thus be seen that the reciprocating movement of the table *U* causes the tongues *t* to take two steps in their passage through the grooves *a*, resting at the detents *e e* till the next forward movement, for a purpose presently to appear.

I will now describe the cutter and its action. The aforesaid pulley *C'* belts to a pulley *h*, fixed on a shaft *g*, turning in bearing *i*, to be described presently. Near each end of said shaft *g* is removably mounted and held by a nut *g'* a suitable cutter-head *j*, carrying cutters *k*, securely fastened thereto and arranged to be conveniently adjusted on loosening the bolts *k'*. The shape of the cutters is such that they will cut a groove in each tongue acted on, of a section shown at *l* in Fig. 3, along one edge of the tongue, leaving a short portion at *m* untouched. The object of this portion, as before stated, is that when the tongue swells from absorbing moisture there is sufficient clearance to prevent its binding in the groove of an extension-table, for instance, and yet always has contact at the portion *m*, that was not cut away, because the spring of the wood left by the saw-cuts *n n'* tends to keep portion *m* in normal contact with its groove, as well as to allow a slight variation in the width of the tongue, whereby there is no chance of the tongues rattling nor sticking fast in their respective grooves.

I will now explain how the said portion *m* escapes being cut away. The aforementioned bearings *i* consist of suitable boxes with flanges *o*, embracing guides *o'* in the frame *A*. Projections *p* extend from the bottom of said boxes through suitable openings in the frame *A*, and at their lower ends engage with springs *q*, secured to the frame by bolts *q'*, whereby the boxes and the shaft *g* carried

therein tend to move upward, but are limited by the hold-down plates *r*, secured to the frame *A* by bolts *r'*. I may, if desired, use any other form of spring in connection with said projections *p* to cause said upward tendency. On the top of each box or bearing *i* is a pair of lugs or projections *s*, supporting a roller *s'* in contact with the bottom of said table *U*, to which table are secured strips *u*, with inclined ends in line with said rollers *s'*, so that in the aforementioned forward movement of the table *U* these strips *u* will engage said rollers, overcome the action of the said springs *q*, and depress said bearings *i* and the cutter-shaft carried therein just before the front ends of the said tongues *t* arrive at the said cutters *k*. The tongues pass over the depressed cutters, past the said detents *e*, and are prevented by them from returning when the table returns, thereby freeing the rollers from contact with the said strips *u* and allowing each cutter to rise to its normal position, whereby the beginning of the cut is made in the tongue over it, as shown in Fig. 3. On the next forward movement of the table the tongues now held by the catches *f* are carried onward in the direction of the arrow and the grooves cut to the rear ends thereof and then ejected from the grooves *a* in the guides *V*.

I would observe that while the device *U* has been termed a "table," it will be noted that its function is to carry or assist in carrying the tongues to the cutters, so that a device which performs this carrying function is considered the equivalent of what is contemplated by the term "table" as herein viewed.

I would further observe that this machine has a double capacity—that is to say, it operates on two tongues at the same time, cutting the left-hand part of one tongue and the right-hand part of the other tongue, as suggested in Figs. 3 and 5, from the latter of which it will be seen that the cutters are reversely inclined.

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

1. In a wood-working machine, the combination, with a suitable frame, guides, a reciprocating table, and actuating mechanism therefor, chutes delivering tongues to the guides and table, and suitable spring-catches attached to the guides and table, respectively, the catches on the guides arranged to hold the tongues under operation and the catches on the table to force said tongues out as the table brings up succeeding tongues, of a horizontal cutter-shaft mounted under said table and carrying cutters revolving in a vertical plane, spring-controlled bearings which hold said shaft in normal position, and vertical guides therefor, the bearings being caused by the springs to approach the table and being depressed from the table by projections on the table that engage with said bearings.

2. In a wood-working machine, the combination, with a suitable frame and a reciprocating



eating table, of revolving cutters under said  
 table automatically adjustable to and from  
 the table by means of a strip on the bottom  
 of the table acting to depress said cutters at  
 5 a suitable period in the travel of the tongues,  
 grooved guides for the tongues which lead to  
 the cutters, a chute delivering the tongues into  
 the guides, suitable catches for the tongues,  
 a pitman, balance-wheel, and gear-and-clutch  
 10 connections for giving motion to the said table  
 through speed-diminishing pulleys.

3. In a wood-working machine, the combi-  
 nation, with a chute for delivering tongues,  
 a guide and a reciprocating table which con-  
 15 jointly receive and automatically hold the  
 tongue to be acted on and discharge it by the  
 forward movements of the table, and suitable  
 catches which assist the guides and table in  
 these operations, of vertical revoluble cutters,  
 20 reciprocating bearings therefor, and means to  
 throw the cutters out of the plane of the tongue  
 during a portion of the travel of the tongue  
 past the cutters and to return the cutters into  
 engagement with the tongue during the re-  
 25 mainder of the travel thereof.

4. In a wood-working machine, the combi-  
 nation, with an inclined chute with an outlet  
 for tongues in the bottom thereof, a guide lo-  
 cated under said chute having a portion cut  
 30 away to allow the entrance of the tongues  
 from said chute, a table also cut away to  
 receive the tongues, means to reciprocate  
 the table, and automatic catches, one on the  
 guide to hold the tongue from returning with  
 35 the table and the other on the table to dis-  
 charge the tongue from the guide, of revol-  
 uble cutters slidingly mounted in vertical

guides and normally occupying a position  
 within the reach of the tongue and a projec-  
 tion carried by the table and arranged to de- 40  
 press the cutters in advance of the tongue  
 and allow them to rise within the reach of  
 the tongue to act on a portion of the length  
 thereof.

5. In a wood-working machine, the combi- 45  
 nation, with two guides, each having a groove  
 and an entrance thereto for the tongues to  
 be operated upon, a reciprocating table oper-  
 ating between and in connection with said  
 guides, side portions of said table having a 50  
 sliding bearing in said grooves and cut away  
 to receive and hold the tongues and advance  
 them, a chute for each guide over each en-  
 trance thereto, and suitable catches for pre-  
 venting the return of the tongues and for 55  
 again advancing and discharging them with  
 the table, each former movement of the table  
 acting simultaneously to discharge one tongue  
 and advance the next to the middle of the  
 groove on each side, of vertical sliding spring- 60  
 actuated bearings near said guide, a cutter-  
 shaft mounted in the bearings, right and  
 left hand cutters carried by said shaft, and  
 projections on the table which depress the  
 bearings before and during a portion of the 65  
 travel of the tongues within the field of rota-  
 tion of the cutters.

In testimony whereof I affix my signature  
 in presence of two witnesses.

TRUMAN G. BUGBEE.

Witnesses:

FRANCIS WILLIAMS,  
 E. A. ZUFELT.