

No. 622,794.

Patented Apr. 11, 1899.

W. BRODHAGE.  
TENONING MACHINE.

(Application filed Mar. 26, 1898.)

(No Model.)

Fig. 2.

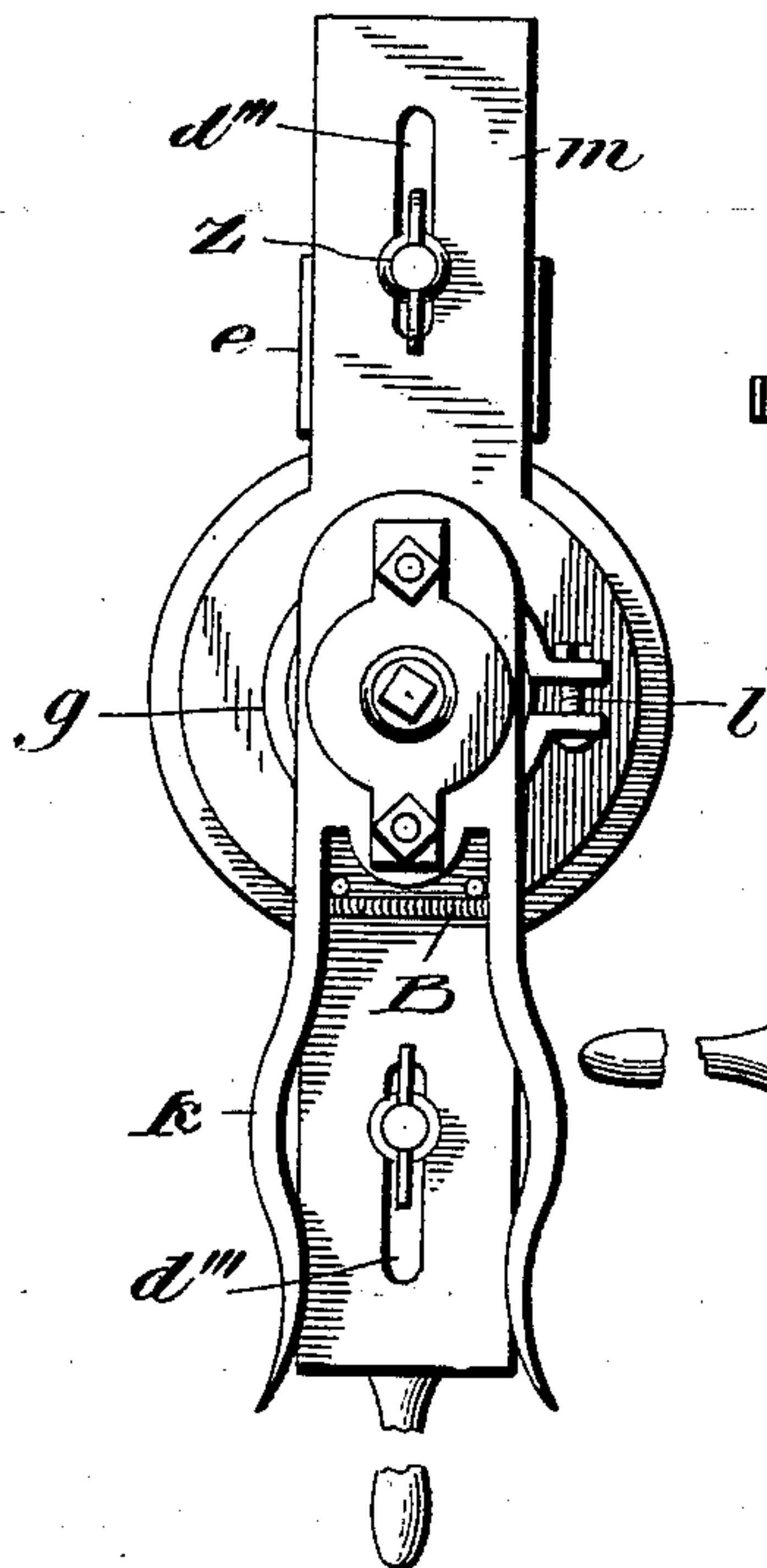


Fig. 3.

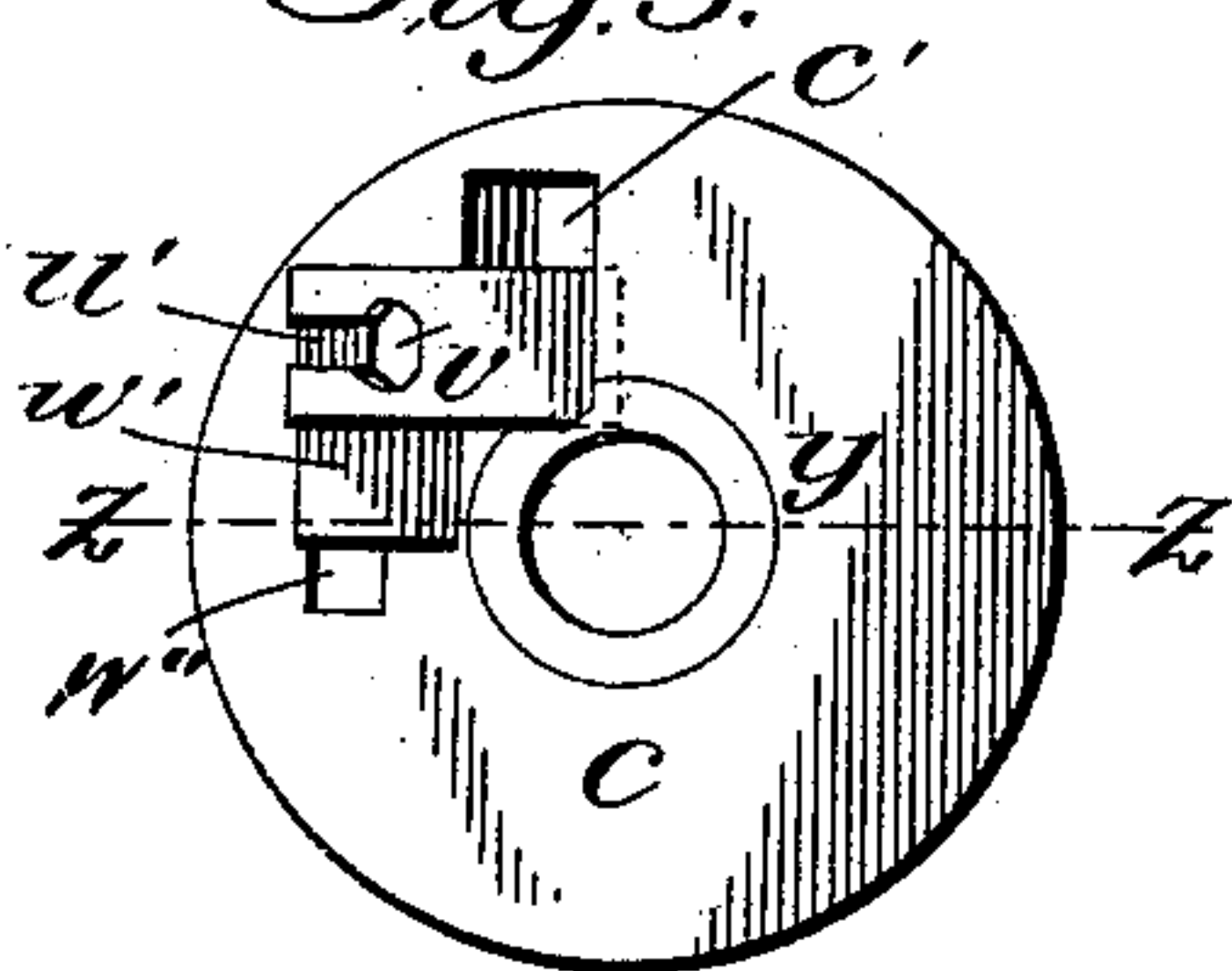


Fig. 4.

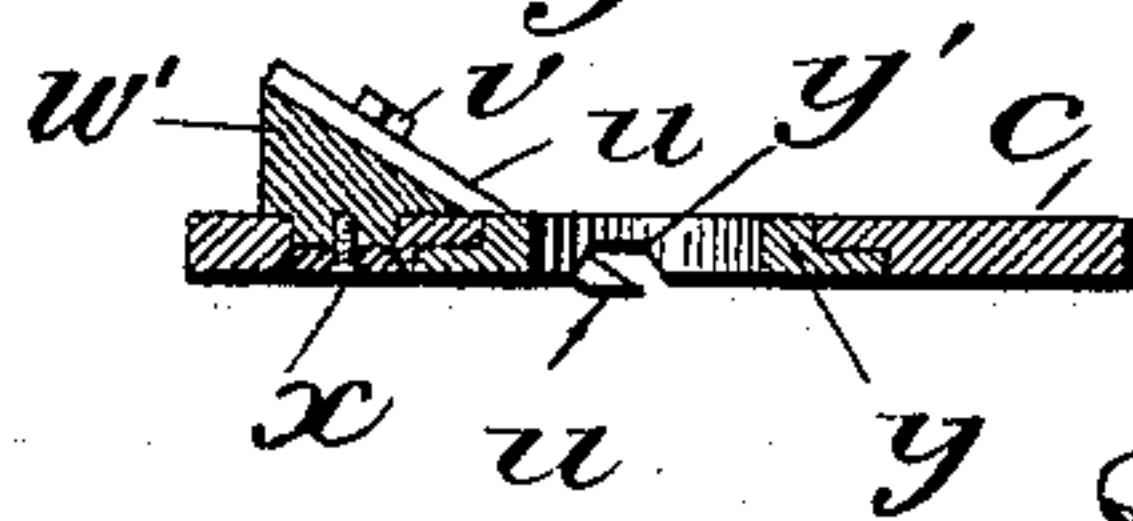
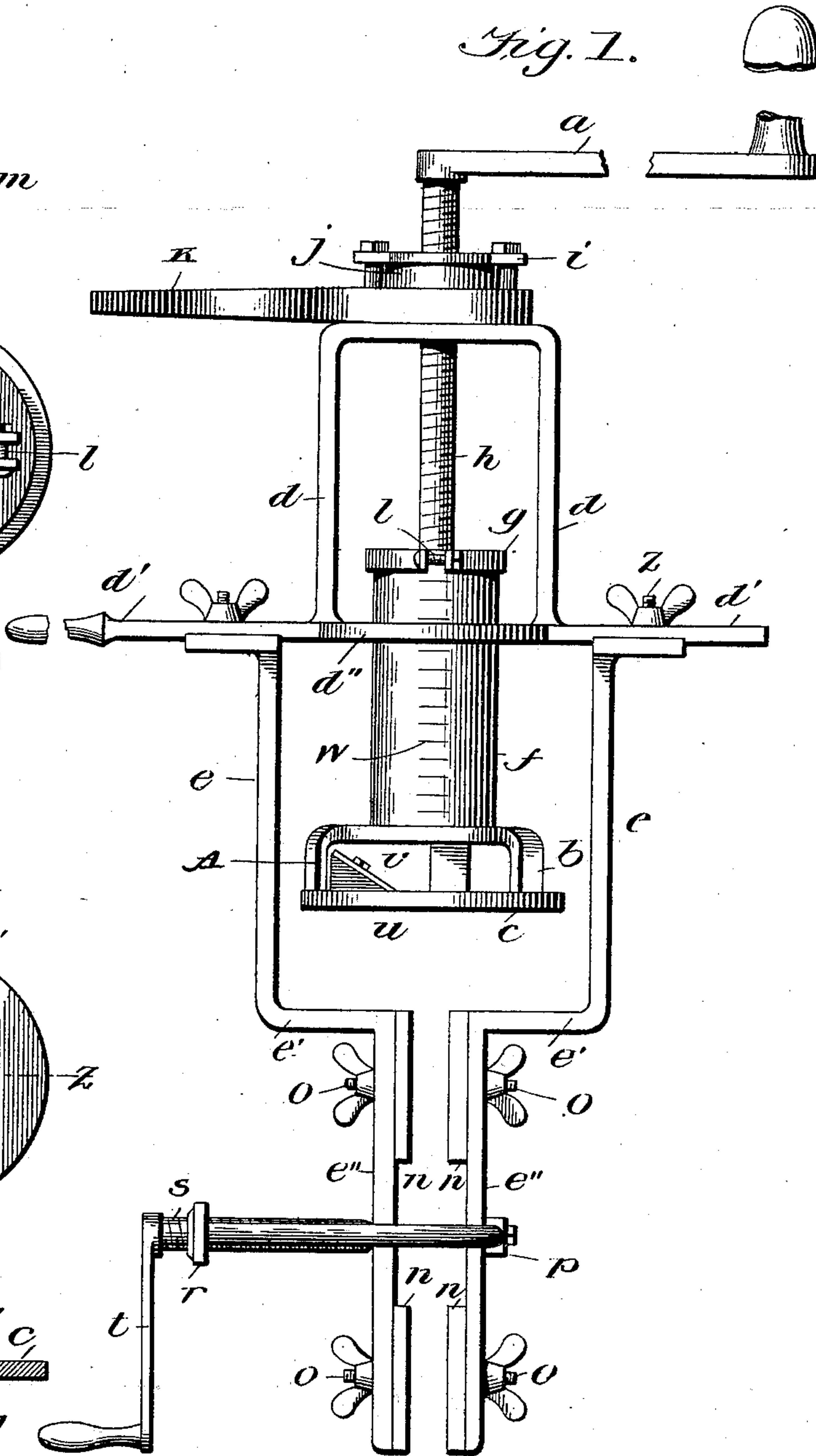


Fig. 1.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## TENONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 622,794, dated April 11, 1899.

Application filed March 26, 1898. Serial No. 675,309. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BRODHAGE, a citizen of the United States, residing at Addieville, in the county of Washington and State of Illinois, have invented certain new and useful Improvements in Tenoning-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to spoke-tenoning machines; and it consists in the novel construction and arrangement of its parts, as hereinafter described.

The object of my invention is to provide such a machine with a pair of adjustable clamps, said clamps adapted to be moved so as to accommodate any size of spoke. The machine is provided with a hollow cutter-head, which is adapted to cut the tenon on the end of the spoke, and a means is provided whereby the said cutter-head is forced and thus accurately cutting each tenon.

In the accompanying drawings, Figure 1 is a side elevation of the complete machine. Fig. 2 is a top plan view of the machine with the crank *a* removed. Fig. 3 is a top plan view of the cutter-head with the yoke *b* removed, and Fig. 4 is a sectional view of the cutter-head cut on the line *z z* of Fig. 3.

The yoke *d* forms the upper portion of the machine. The adjustable clamps *e e* constitute the lower portion of the machine. The upper ends of the clamps *e e* are adjustably secured to the lower portion of the yoke *d*, as will be hereinafter explained. The cylinder *f* is hollow and is provided at its lower end with the cutter-head *c*, said head being connected to the cylinder by means of the yoke *b*. The exterior of the cylinder *f* is provided with a scale *w*, as shown in Fig. 1, and the adjustable band *g* is clamped about the exterior of the cylinder *f*, the said band *g* being located near the upper end of the cylinder. The threaded rod *h* is fixed at its lower end to the upper end of the cylinder *f*, and to the upper end of the threaded rod *h* is fixed a crank-handle *a*. The rod *h* passes through a perforation in the upper portion of the yoke *d* and also through the guide-plate *i* and the rubber washer *j*. The rubber

washer *j* is located between the upper end of the yoke *d* and the guide-plate *i* and is retained perpendicularly in its position by means of the said plate *i*. A pair of threaded pliers *k* is adapted to be interposed between the lower face of the rubber washer *j* and the upper portion of the yoke *d*, as shown in Fig. 1. The said pliers when brought together are adapted to surround the threaded rod *h*, and the interior thread of the pliers engages the thread of the rod *h*, and thus as the crank-handle *a* is revolved the said rod *h* rises or falls, according to the direction in which the said handle is revolved. The yoke *d* is provided with the horizontal section *d'*, said section having at an intermediate point the bowed sections *d''*, between which the cylinder *f* passes. Beyond the outer sides of the perpendicular portions of the yoke *d* the horizontal section *d'* is provided with the elongated perforations *d'''*. The upper ends of the clamps *e e* are secured to the horizontal section *d'* of the yoke *d* by means of the threaded bolts and thumb-nuts *z*, the said bolts passing through the elongated perforations *d'''* and the thumb-nuts engaging the upper ends of the said bolts and clamping the parts together. Thus it will be seen that the upper ends of the clamps *e* may be shifted laterally along the horizontal portion *d'* and secured at any desired position. The lower portions of the clamps *e* are provided with the horizontal sections *e'* and the downwardly-extending sections *e''*. The clamping-blocks *n n* are secured to the inner sides of the downwardly-extending sections *e''* by means of the threaded bolts and thumb-nuts *o o*, as shown in Fig. 1. The loop *p* surrounds the downwardly-extending sections *e''*, the forward ends of the said loop *p* being secured together by means of the plate *r*. The threaded shaft *s* passes through a perforation in the plate *r*, the inner end of said shaft bearing laterally against the side of the nearer downwardly-extending section *e''* between clamps *e*. The cutter-head *c* is provided in its center with an opening adapted to receive a removable gage-plate *y*, the said gage-plate *y* being provided with a central opening, a separate gage-plate being provided for each size of tenon to be cut. Any suitable means is provided whereby the said gage-plate *y* is secured in its proper position



in the cutter-head *c*. A block *w'*, having an upper inclined surface, is located on the upper face of the cutter-head *c*, said block being adapted to slide longitudinally in the recess *w''* and being held in position by means of the screw *x*. (See Fig. 4.) The knife *u* is secured at its upper end by means of the bolt *v* to the inclined surface of the block *w*, the said knife being preferably provided at its upper end with an elongated slot *u'*, the bolt *v* passing through said slot, the head of the bolt holding the knife in position against the block. The lower end of the knife passes through the opening *c'* in the cutter-head *c* and a corresponding recess *y'* in the gage-plate *y*, the inner corner of the said knife being flush with the surface of the central opening of the gage-plate *y*.

In operation the device works as follows:  
 20 The wheel having the spokes to be tenoned is secured in a horizontal position. Thus the spokes extend horizontally. The end of one spoke is passed between the clamping-blocks *n n* of the clamps *e e*, and the clamps *e e* are set to throw the proper relative positions on the horizontal section *d'* of the yoke *d*. The shaft *s* is then revolved by means of the crank-handle *t*, and thus the lower sections *e''* of the clamps *e* are brought together and the machine is attached to the end of the spoke.  
 30 The threaded pliers *k* are then put in position on the threaded rod *h* and the crank-handle *a* is turned. The cutter-head *c* is then forced downward and causes the knife *u* to travel in a circular path, thereby cutting the tenon on the end of the spoke. The distance that the cutter-head *c* may be forced downward or the length of the tenon desired on

the spoke is regulated by the adjustment of the band *g*, which passes around the cylinder *f* and is clamped by means of the screw *l*, passing through its two ends. When the cutter-head *c* has been forced down until the band *g* strikes the horizontal portion of the yoke *d* and the crank-handle *a* is continued to be turned, the pliers *k* will be raised from the frame *d*, thus gradually pressing the rubber washer *j*, thereby gradually raising the knife *u* and steadily decreasing the coarseness of its cut until it ceases to take a cut at all, thus insuring a square shoulder on the tenon. The clamping-blocks *n n* are concaved on their inner faces and are thus adapted to receive any size of spoke.

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

A tenoning-machine consisting of a clamping mechanism, a framework carrying said clamps, a screw-threaded rod carrying at its end a cutting mechanism, a stop for said rod and cutting mechanism a means for revolving said rod and cutting mechanism, internally-threaded pliers adapted to surround said rod, the thread of the pliers being adapted to engage the thread of the rod, the pliers being normally located against a stationary portion of the framework, a flexible cushion interposed between the pliers and a stationary attachment of the framework.

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

WILLIAM BRODHAGE.

Witnesses:

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 JAMES MONROE WINFREE.