

(No Model.)

G. W. BUGBEE & F. DANNER.

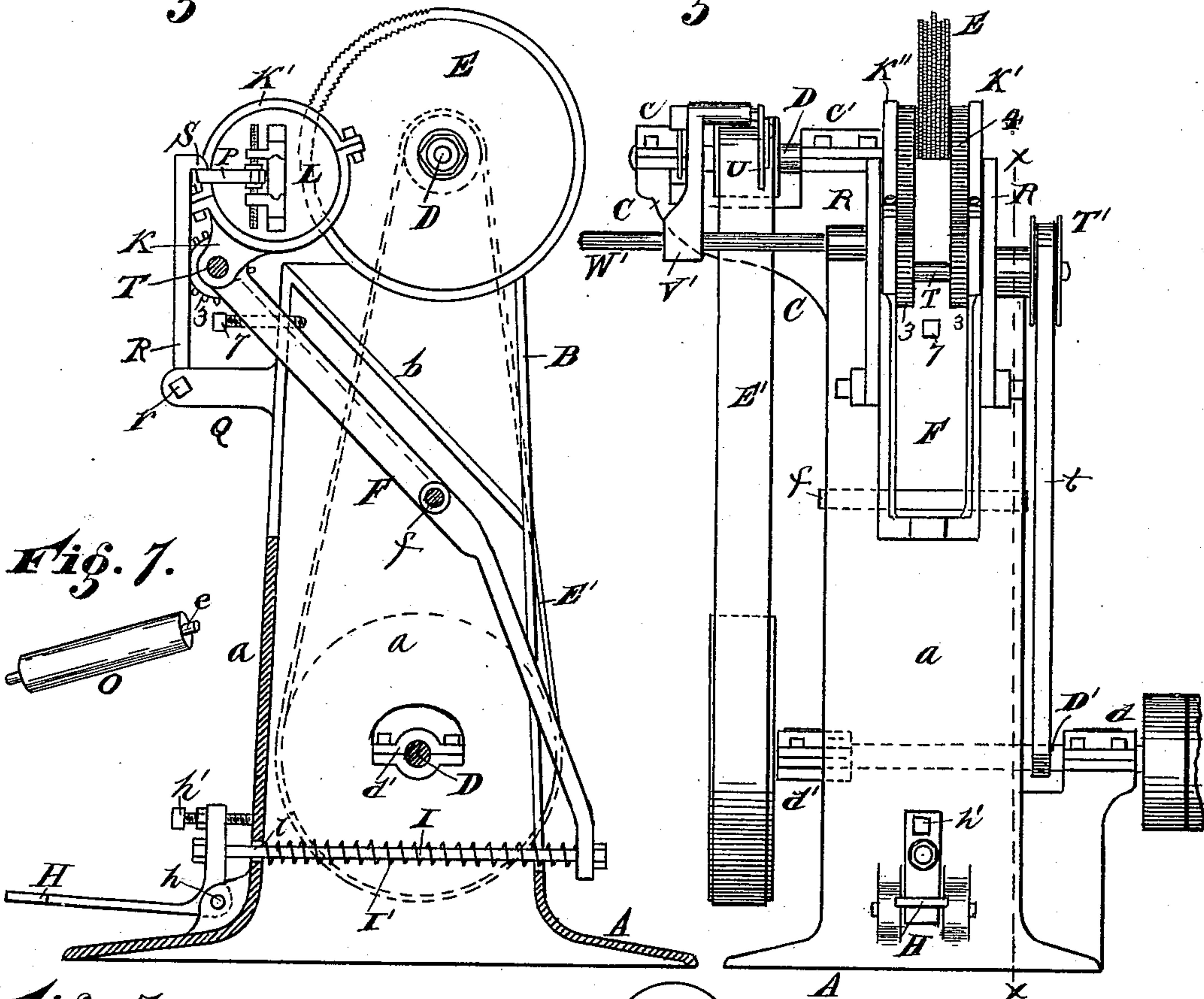
BLIND SLAT TENONING MACHINE.

No. 336,835.

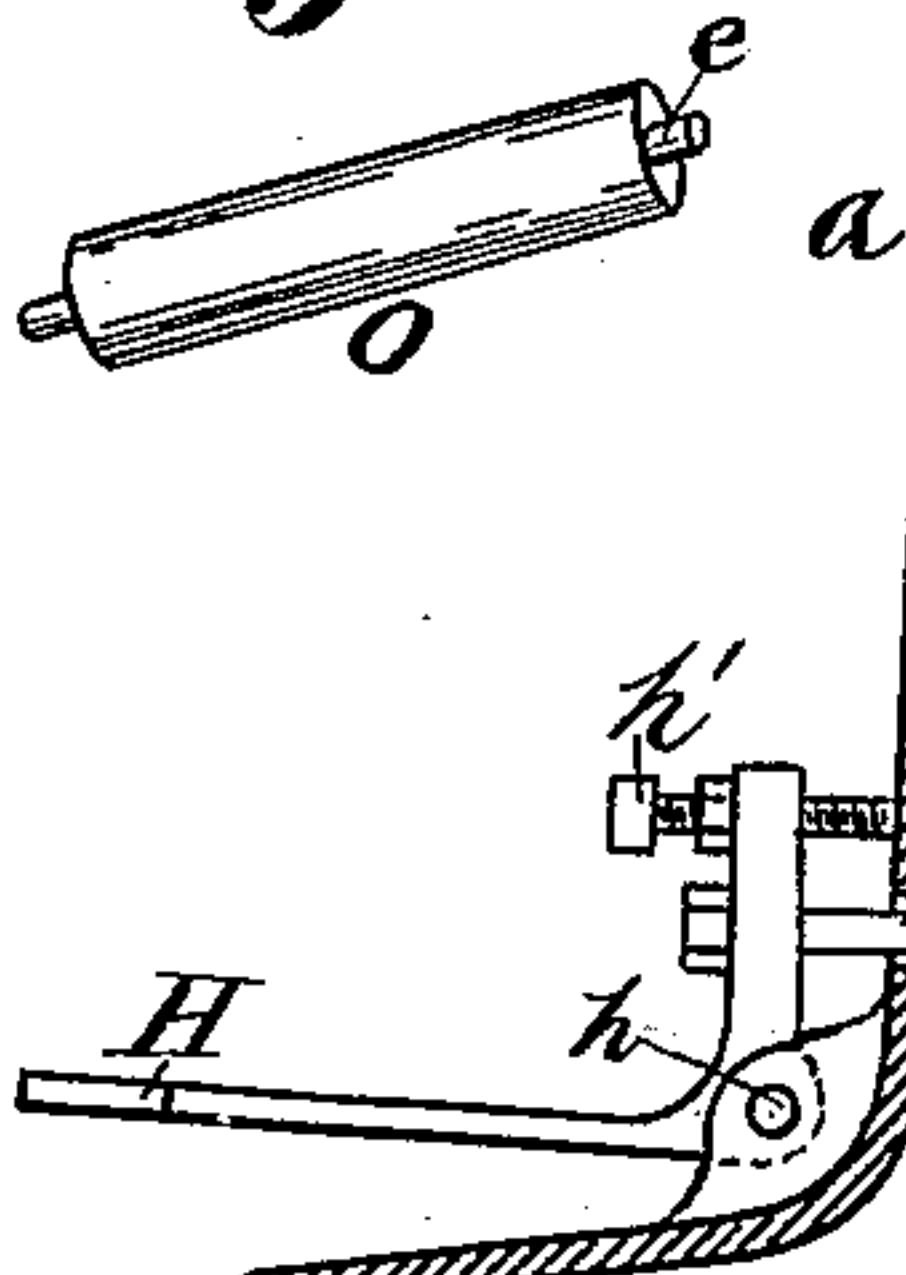
Patented Feb. 23, 1886.

*Fig. 1.*

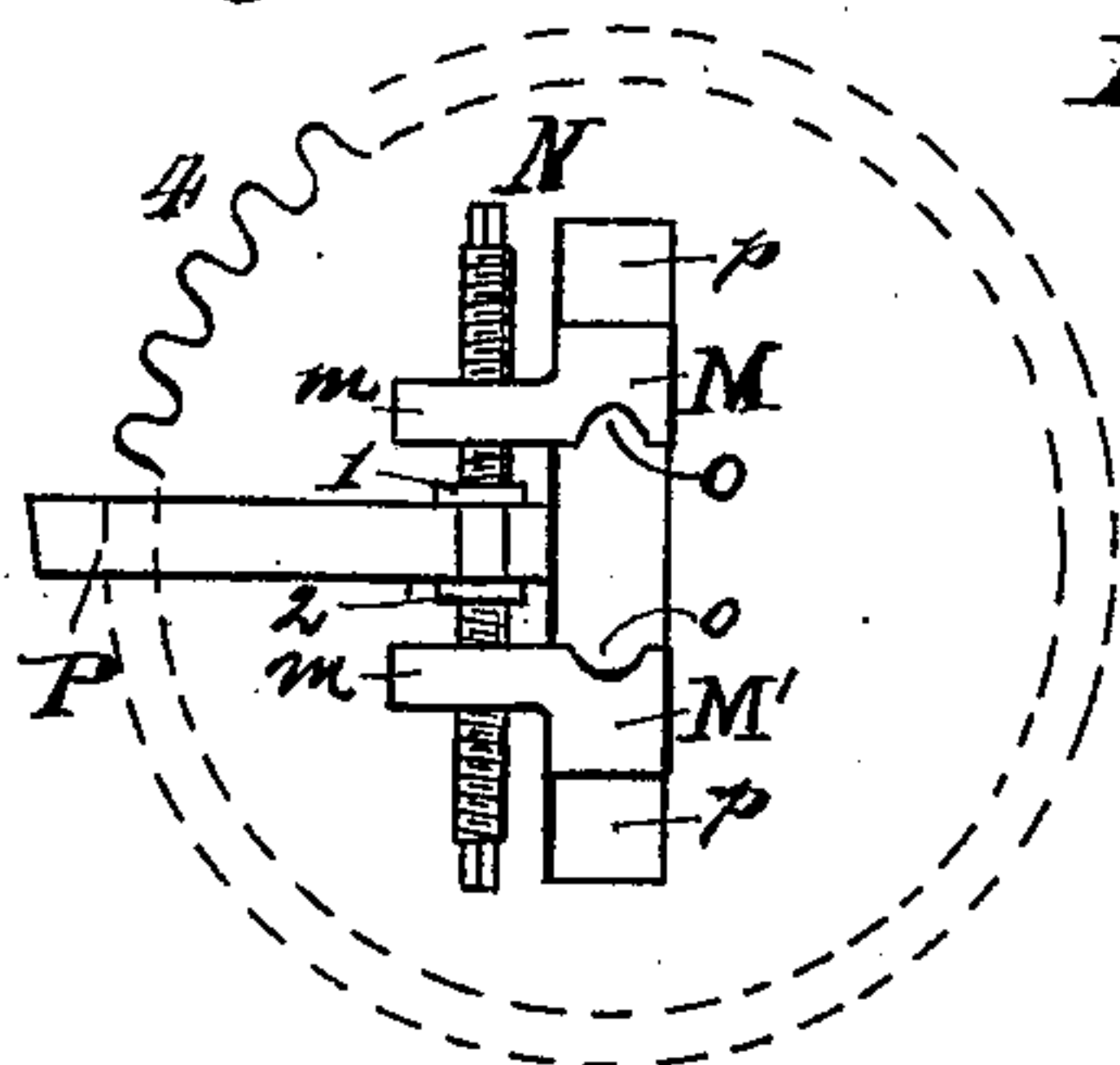
*Fig. 2.*



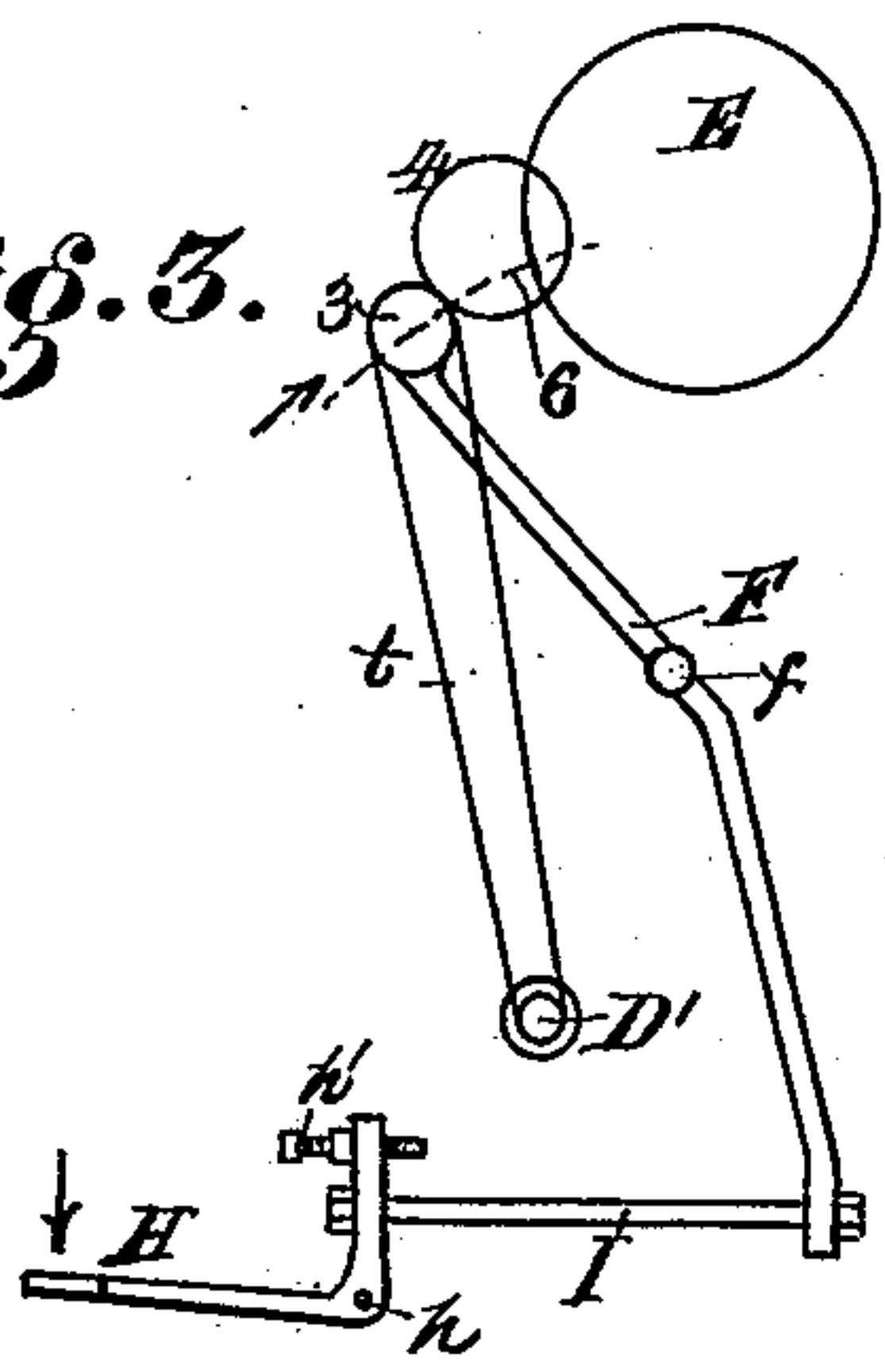
*Fig. 7.*



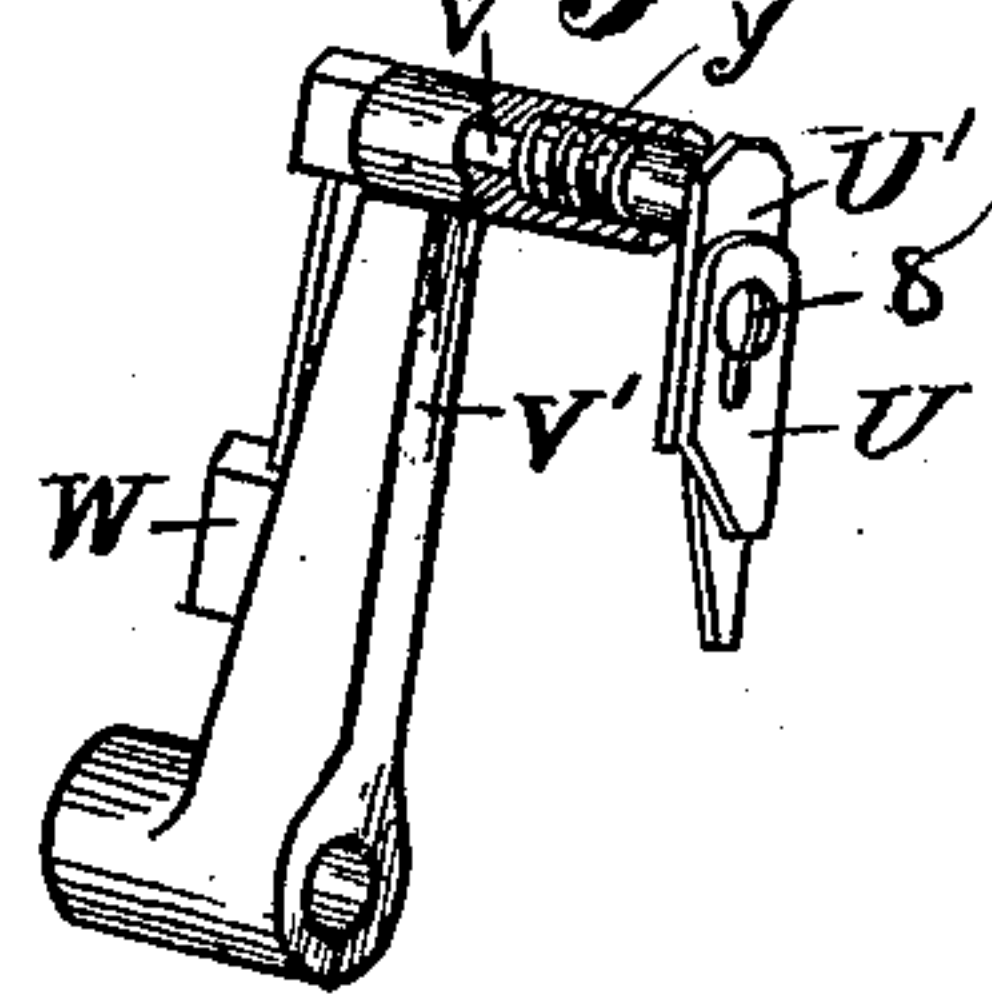
*Fig. 4.*



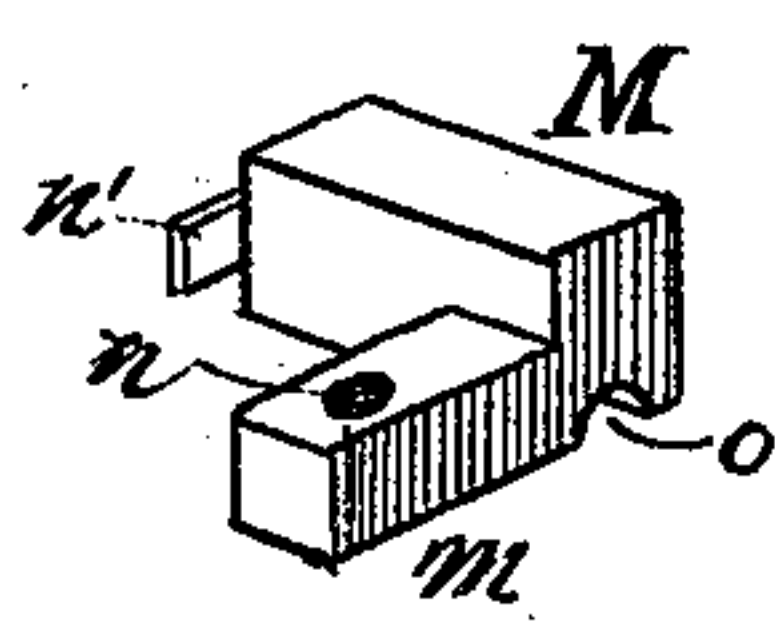
*Fig. 3.*



*Fig. 6.*



*Fig. 5.*



Attest

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# UNITED STATES PATENT OFFICE.

GEORGE W. BUGBEE AND FREDERICK DANNER, OF CINCINNATI, OHIO, ASSIGNORS TO THE EGAN COMPANY, OF SAME PLACE.

## BLIND-SLAT-TENONING MACHINE.

SPECIFICATION forming part of Letters Patent No. 336,835, dated February 23, 1886.

Application filed December 2, 1885. Serial No. 184,477. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE W. BUGBEE and FREDERICK DANNER, residents of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Blind-Slat-Tenoning Machines, of which the following is a specification.

Our invention relates to improved means for constructing a blind-slat-tenoning machine.

One of the objects of our invention is to furnish improved means for stopping and starting the revolving chuck.

Another object of our invention is to provide easier means for regulating the guide-jaws.

Another object of our invention is to provide a yielding stop-gage for regulating the length of the slat.

Another object of our invention is to employ an open shell-frame, with a weighted arm pivoted thereon, to carry the oscillating chuck and head-block, all of which will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of our improvement, taken partly in section on line *x x*, Fig. 2. Fig. 2 is a front elevation of Fig. 1. Fig. 3 is a diagram showing the operation of the oscillating head-block and chuck. Fig. 4 is a detail view of the revolving chuck. Fig. 5 is a detail view of the guide-jaws. Fig. 6 is a perspective view of the oscillating gage, partly in section. Fig. 7 is a perspective view of a tenoned slat made on the machine.

A represents the base of the frame; *a*, the sides. It is preferably made of iron cast, of shell form, so as to provide a space for the oscillating arm F and the table.

*b* represents an inclined bed or shelf upon which the sawdust is discharged.

B represents the projection of one of the sides of the frame above the shelf or incline *b*, so as to form a ledge upon which the journal-boxes of the saw-arbor are mounted.

C represents a hanger or bracket cast upon and forming a part of the frame beyond the ledge B.

*c c'* represent journal-boxes in which the saw-arbor D journals.

E represents three saws, which are secured to the arbor in the usual manner, the center one being of larger circumference than the two outside ones, which two cut down the shoulders to form the tenon *e*, and the center one, being of larger diameter and projecting farther forward, cuts the tenon in two and leaves a tenon on the inner ends of the two slats which are severed by the central saw.

E' represents the main driving-belt, and D' the driving-shaft, which passes centrally through the frame *a* and journals in the boxes *d d'*, secured to the sides of the frame in any well-known manner.

F represents an oscillating arm journaled on a stud, *f*, which is secured to the frame, as shown in Fig. 1. This arm F oscillates in the opening formed by the sides of the shell-frame.

H represents a foot-treadle pivoted at *h* to the base of the frame.

*h'* represents a regulating-screw which passes through the upper end of the arm of the treadle. This set-screw is regulated so that its point will strike the column of the frame to regulate the movement of the treadle.

I represents a connecting-rod, one end of which is fastened to the arm of the treadle H and the other end secured to the lower end of the oscillating arm F.

I' represents a coiled spring wound upon said shaft, so as to aid in securing the oscillating movement of the arm F.

*i* represents a slot larger than the shaft I, pierced through the frame, so as to allow a free movement of the connecting-rod I. Upon the upper end of arm F is rigidly secured a head-block, K.

K' represents a cylindrical ring which forms a journal-bearing for one of the chuck-heads. It is preferably made of two sections bolted together, like the ordinary journal-box.

K'' represents a similar cylindrical journal for the opposite head, and is placed upon the opposite side of the head-block.

L represents a chuck journaling in the bearing K'. This chuck is slotted to receive the adjustable gage-blocks M M'.

*m m'* represent arms extending out to one side of the gage-block.

*n* represents, say, a right-hand screw-thread



cut in the arm *m*. Arm *m'* has a left-hand screw-thread.

*n'* represents a gib at one end of the guide-blocks *M M'*, which, with the arm *m*, holds the guide in position.

*N* represents a right-and-left-hand screw provided with reverse threads engaging with those in the arms *m m'*, respectively. As screw *N* is turned backward or forward the gage-blocks *M M'* are brought together or spread apart to adjust them to the proper distance for receiving the slat *O*, which rests in the grooves *o* and is guided to the saws. In the journal-bearing *K''* is provided a similar chuck, being the counterpart of that shown in Fig. 4. The guide-blocks *M M'*, if desired, may have a yielding spring adjustment of any known form of construction.

*P* represents stops, which are rigidly secured to the chucks, preferably by being seated in grooves and securely bolted thereto; but they may be cast integral with the chuck.

*1 2* represent collars upon the shaft of the screw *N*, which engage over the stops *P* and hold it from lateral movement, so that the gage-blocks *M M'* will move in their slots *p* equally to and from the center. A similar guide is formed upon the chuck journaled in the bearing *K''*.

*Q* represents a lug or arm extending out from the column of the frame.

*R* represents an adjustable hook, the shank of which is pivoted to lug *Q* by a bolt, *r*. This hook *R* may be adjusted to any vertical position, and rigidly secured to such adjustment by the pivot-bolt *r*.

*S* represents the hook proper, which engages over the lug or arm *P*. This hook *S* serves as a stop to check the revolving of the chucks *L*, as will be hereinafter explained.

*3* represents a spur-gear, which engages with the gear *4*, as shown in Fig. 2. Gear *4* is cut upon the chuck inside of its journal-bearing. Gears *3* are mounted on shaft *T*, which journals in the upper end of arm *F*. It is preferably forked, with a journal-box upon each limb. Shaft *T* is driven by pulley *T'* and belt *t*, which passes around and is driven by shaft *D'*.

When the shaft *T* and the oscillating arm *F* are in the position shown in Figs. 1 and 3, the belt *t* is loose and shaft *T* is stationary. In this position the slat is fed into the guides *o* in the guide-blocks *M M'*, and passed through until the end of the slat strikes the gage *U*. When it is in position for operation by the saws, the operator places his foot upon the treadle *H*, which drives shaft *I* inward and moves the upper end of shaft *F* in the direction of the dotted lines *6*. (Shown by diagram, Fig. 3.) This draws belt *t* taut, which drives shaft *T* and sets chuck *L* to revolving. The chuck *L* being carried forward, so as to present the slat to the saws, a tenon is formed simultaneously on one end of two slats and cut in two in the center, so as to form one of the tenons *e*, as shown in Fig. 7. The spring *I'*

and the weight of the head-block *K*, when the foot-treadle *H* is released, will bring the chuck *L* back into the position shown in Fig. 1, in which position the slat is shoved forward for a second operation. Spring *I'* assists in bringing arm *F* back to its normal position.

*7* represents an adjusting-screw passing through near the top of arm *F*, so that the inward movement of the chucks *L* may be arrested at any desired position. This adjustment is made with reference to the widths of slats, depth of shoulders, &c.

It is obvious that hook *R* and stop *S* hold the chuck from revolving; and in order that the stops may be released and the chuck set in motion at the desired time the stop *S* must be adjusted so as to be released at the desired point to set the chucks in motion as belt *t* is tightened by the foot-treadle.

In order that the slats may be cut at the desired length, we provide an oscillating gage, *U*, which is hung upon the shaft *V*, journaling in arm *V'*.

*W* represents a weight on a pendulous arm secured to the shaft *V*, so as to hold the gage *U* normally in a vertical position. The arm *V'* is adjusted preferably on an arm, *W'*, on a plane opposite the cutter of the chuck *L*, so that the slat will come in contact therewith when it is pushed through. The gage-arm *V'* is adjusted to any desired position on the arm *W'* to regulate the length of the slat. As the slat is revolved with the chuck *L* and then pushed through the machine, the gage *U* must be adapted to this operation.

We have provided a yielding spring, *y*, on the shaft or arm *V*, which fits in the sleeve or bore of the arm *V'*, as shown in Fig. 6.

The lower end of the arm *U* is made oblique or cut off, so that the tenon *e* will pass by the lower edge of the gage and the shoulder of the tenon come in contact therewith. As the slat is pushed through by the operator the spring *y* is coiled, the gage retreating until it is stopped by the stop on the shaft *V*.

When the operator places his foot on the treadle *H* and advances the chuck-head, and presents the slats to the operation of the saw, as the slat starts to revolve arm *U* is carried by the slat backward, and the retractile force of spring *y* pushes it past the shoulder, and it rests upon the face of the slat outside of the tenon, the shaft *V* freely oscillating, so that the gage *U* vibrates with the revolution of the slat *O*. As soon as the slat is cut off and drops down the weighted arm *W* brings the gage *U* back to a vertical position, ready for a second operation.

The gage-arm *U* is preferably made adjustable. For this purpose the arm *U'* is fixed to shaft *V*, and a sub-arm provided with a slot to receive the screw *8* is secured to arm *U*, for adjusting it up and down to correspond with the varying widths of slats *O*, which are to be tenoned by the machine.

We claim—



1. In combination with the frame *a* of a tenoning-machine, the oscillating arm *F*, pivoted below the table, the bearings *K' K''*, having chucks to receive the slats, the foot-lever *H*,  
5 and connecting-rod *I*, substantially as described.

2. In combination with the frame *a*, the stop *R*, adjustable upon a bracket on said frame, the hook *S*, the lugs *P*, the chucks to which  
10 said lugs are attached, and oscillating arms carrying the bearings in which said chucks are journaled, substantially as described.

3. In combination with oscillating arm *F*, carrying the head-block *K* and chucks *L*, the  
15 driving-shaft *T*, journaling in the oscillating head-block, and driving-belt *t*, for automatically stopping and starting the chuck with the oscillation of the arm *F* and tightening and  
20 slackening of the belt *t*, substantially as herein specified.

4. In combination with the chucks *L*, the

gage-blocks *M M'*, and right and left adjusting-screw *N*, journaled on chuck *L*, and engaging with right and left threads in arms *m m'*, for regulating the distance between the  
25 guide-blocks, substantially as herein specified.

5. In combination with a tenoning-machine, the gage *U*, hung upon the oscillating yielding spring-arm *V y*, substantially as herein  
30 specified.

6. In combination with a tenoning-machine, the oscillating weighted arm *V W*, spring *y*, and gage *U*, adjustably secured to the arm *U'*,  
substantially as herein specified.

In testimony whereof we have hereunto set  
35 our hands.

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FREDERICK DANNER.

Witnesses:

ROBERT ZAHNER,  
M. E. MILLIKAN.