

No. 661,218.

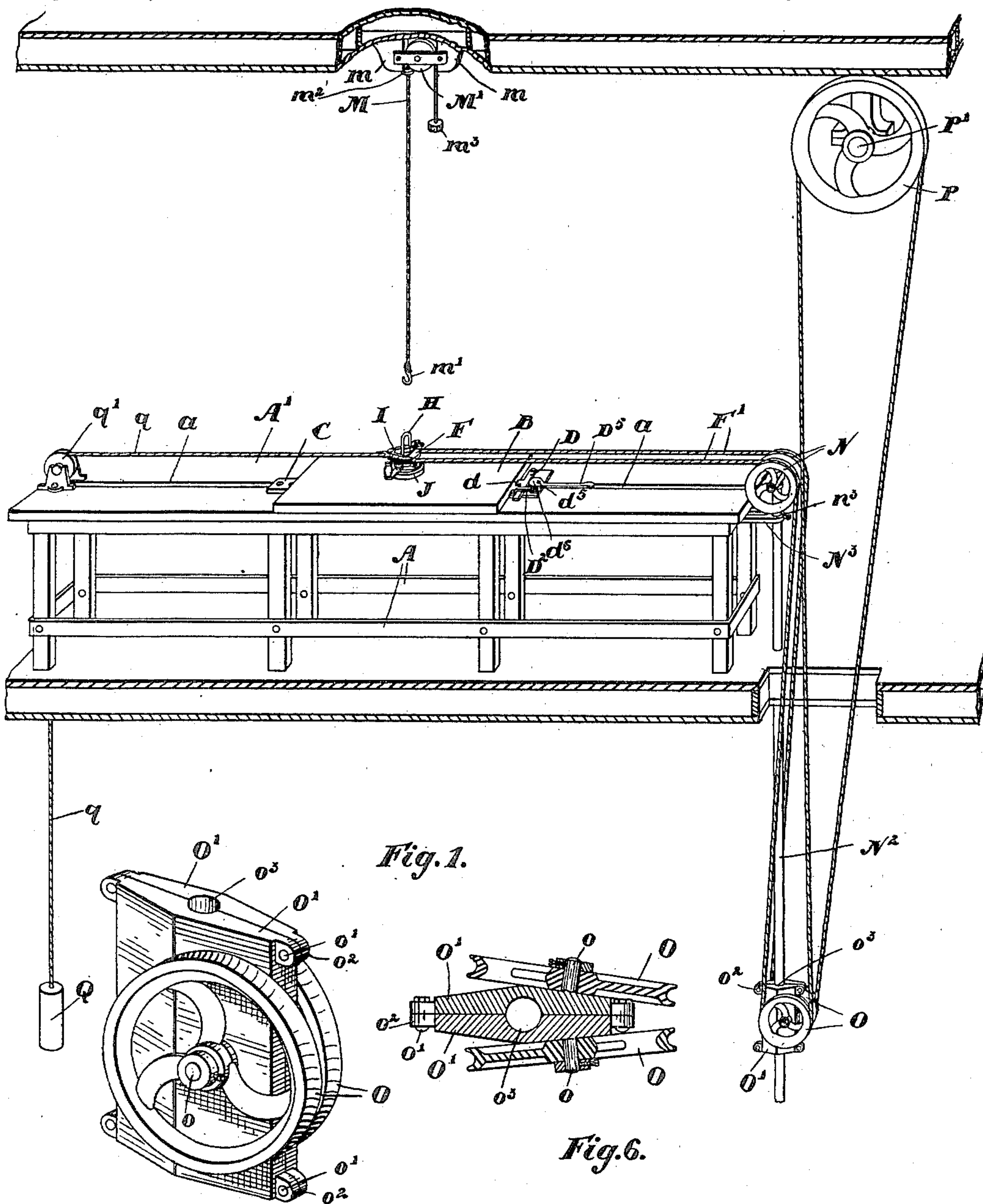
Patented Nov. 6, 1900.

S. J. LAUGHLIN.
TOOTHING MACHINE.

(Application filed June 19, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
A. Demmon
C. W. Adams.

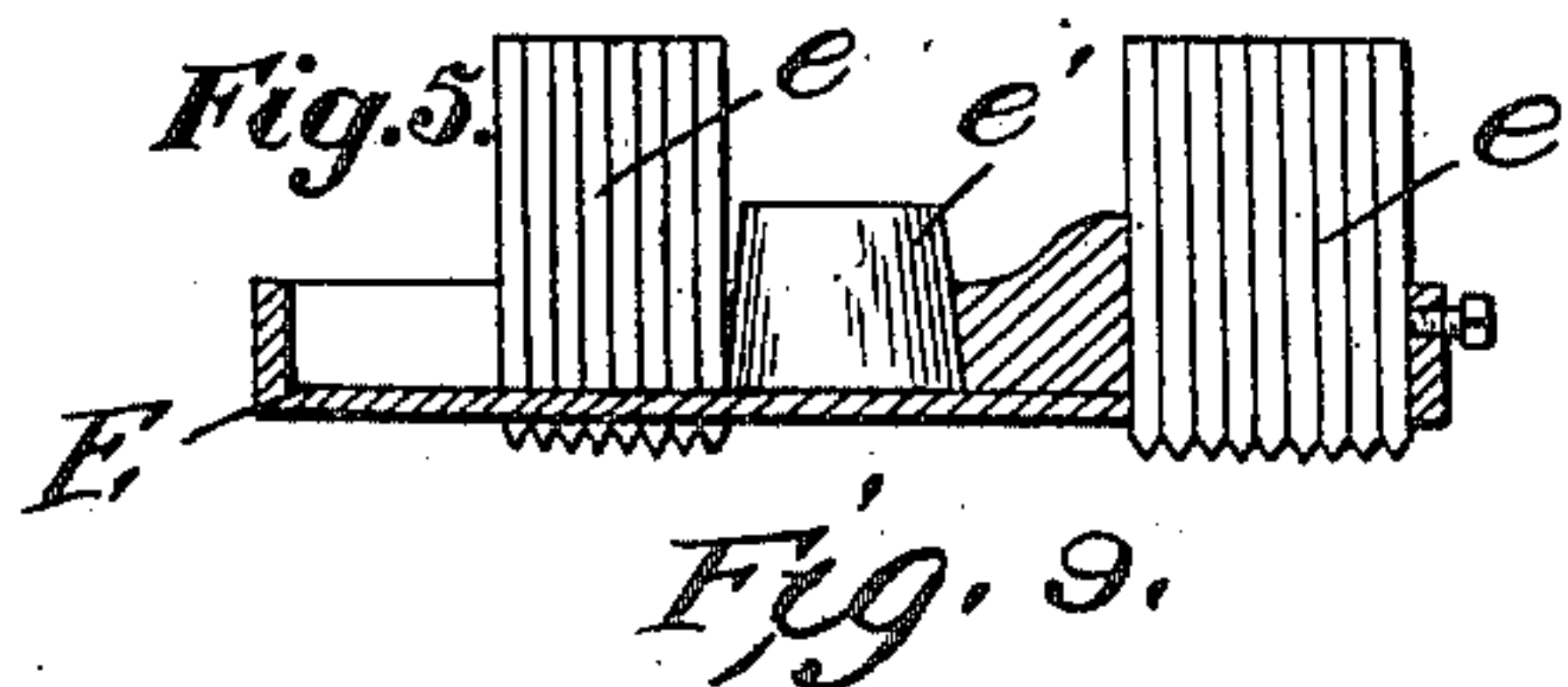


Fig. 9.

Inventor.
S. J. Laughlin.
by Fetherstonhaugh & Co.
Atty.

No. 661,218

Patented Nov. 6, 1900.

S. J. LAUGHLIN.
TOOTHING MACHINE.

(Application filed June 19, 1899.)

(No Model.)

2 Sheets—Sheet 2.

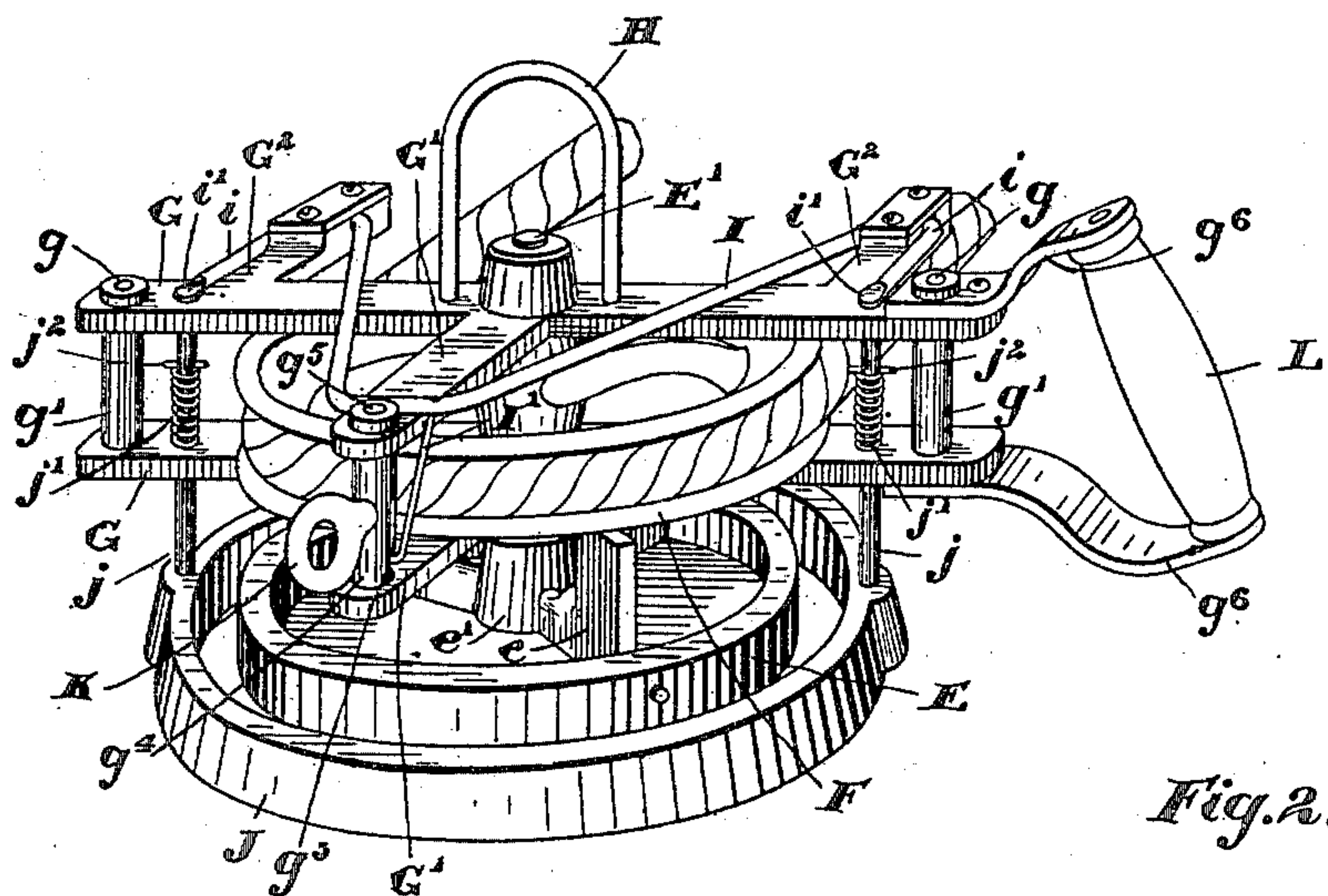


Fig. 2.

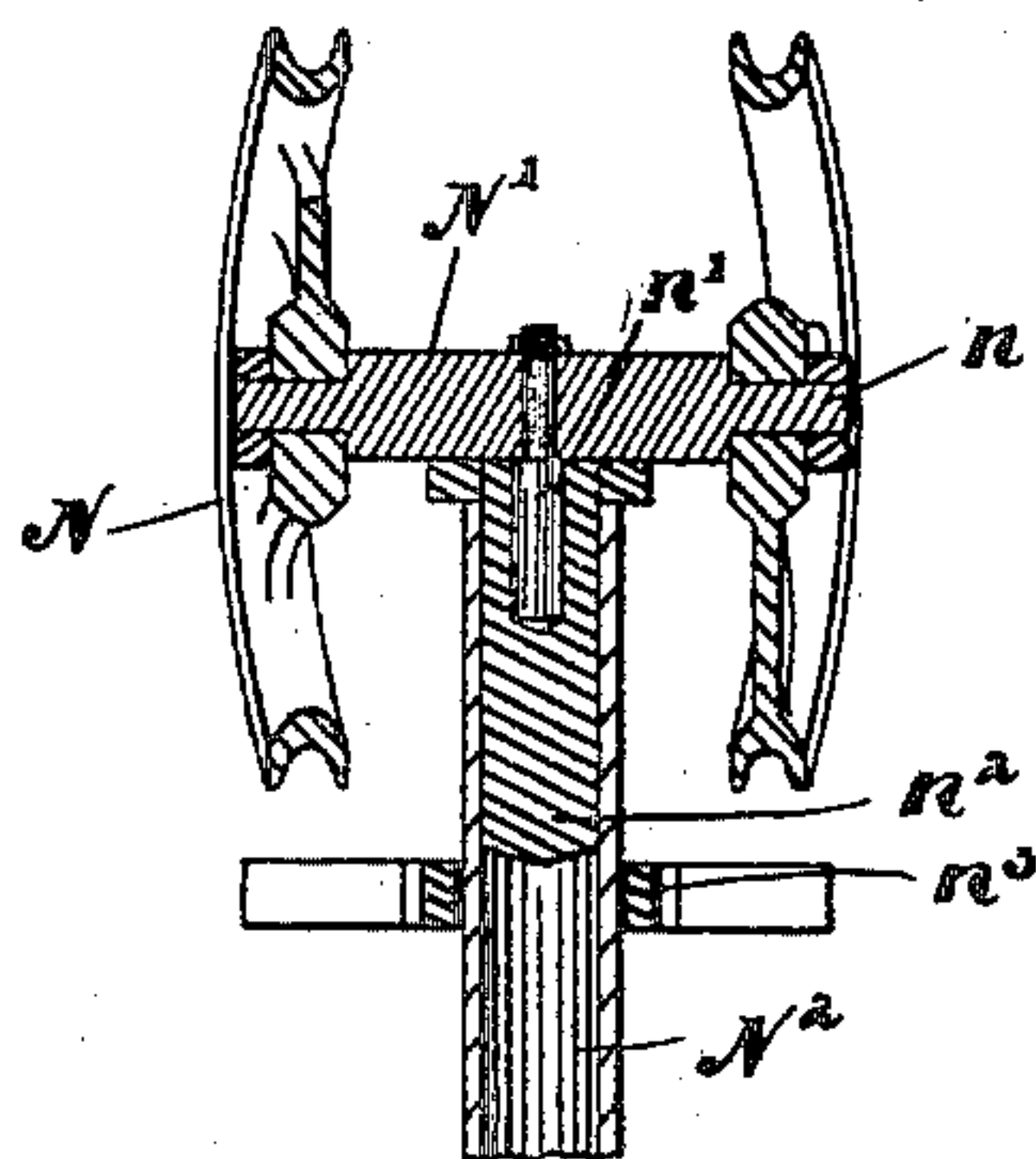


Fig. 4.

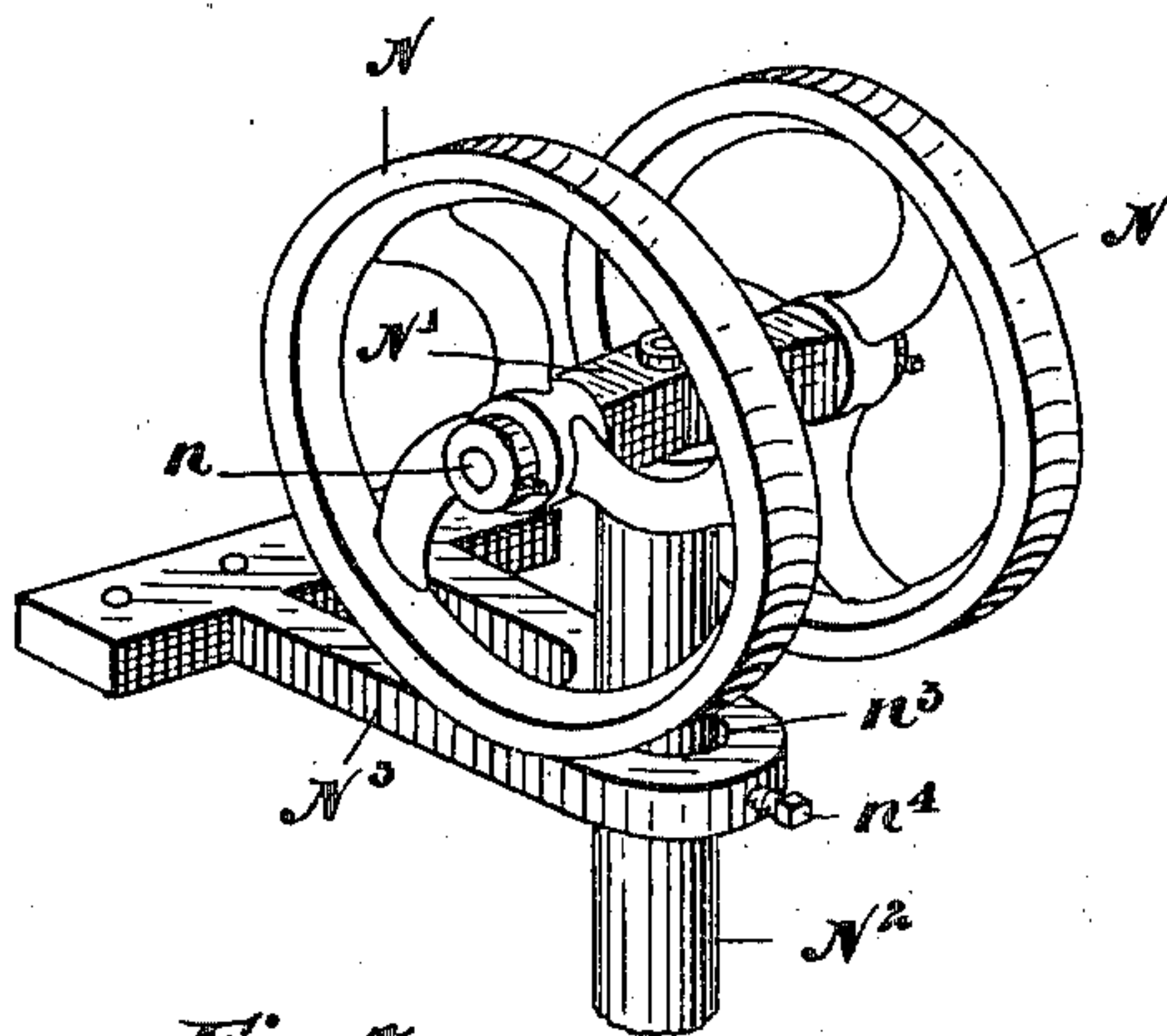


Fig. 3.

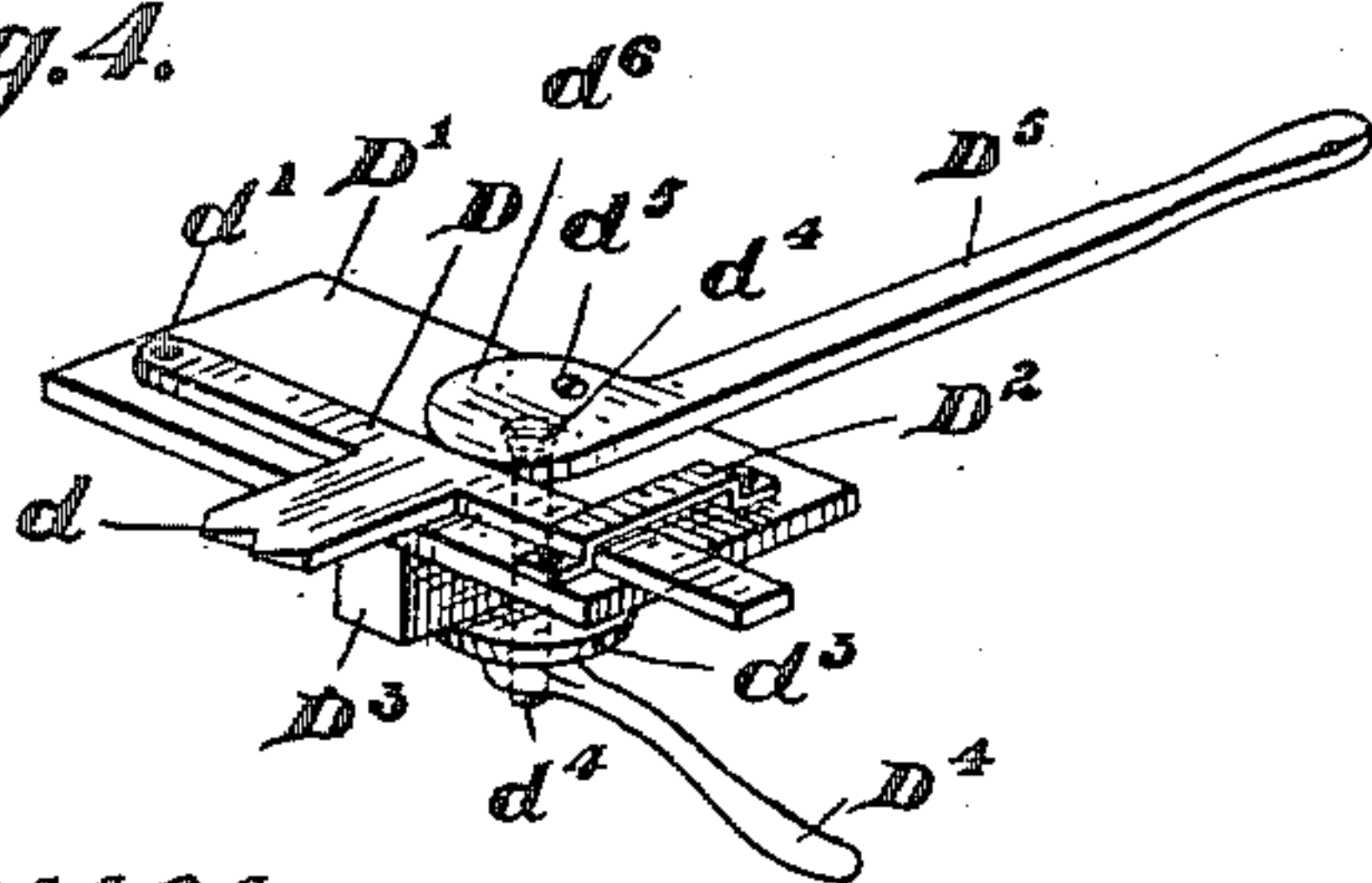


Fig. 7.

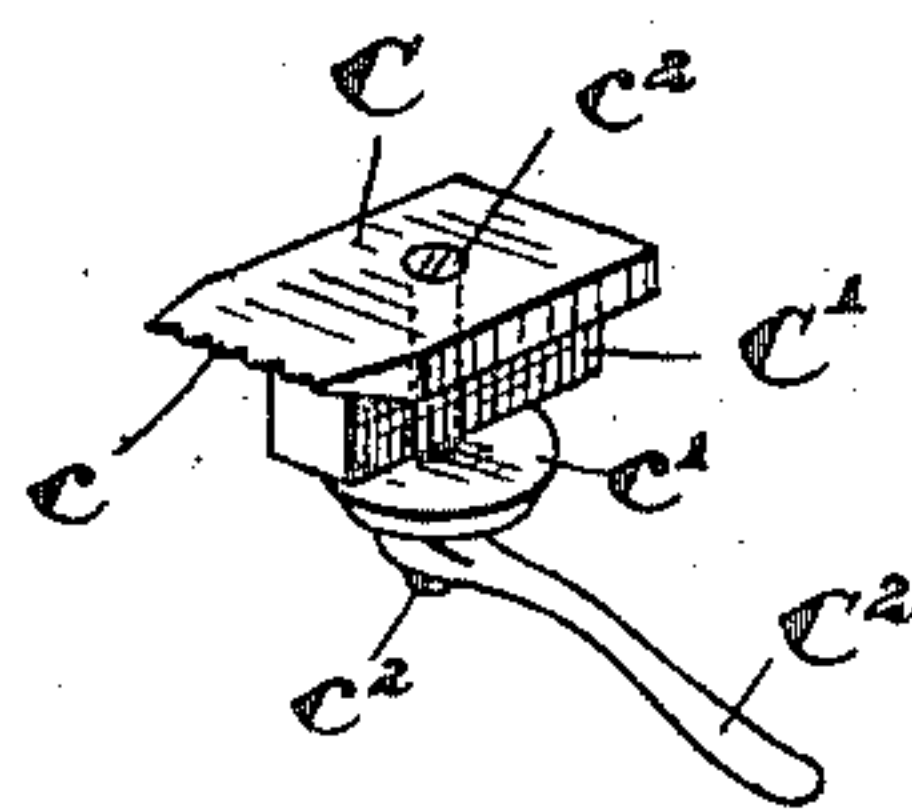


Fig. 8.

Witnesses.

A. W. Hennison

C. H. McAdams.

Inventor.

S. J. Laughlin

by Featherstonhaugh & Co
Atnys.

UNITED STATES PATENT OFFICE.

SAMUEL JOHN LAUGHLIN, OF GUELPH, CANADA, ASSIGNOR TO EDMUND PALMER HAWKINS, OF SAME PLACE.

TOOTHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,218, dated November 6, 1900.

Application filed June 19, 1899. Serial No. 721,085. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL JOHN LAUGHLIN, manufacturer, of the city of Guelph, in the county of Wellington, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Tothing-Machines, of which the following is a specification.

My invention relates to improvements in tothing-machines; and the object of the invention is to devise a means whereby the cutter-head may be manipulated with the greatest possible ease and conveniently driven during the various gyrations over the board to be operated upon, and a subsidiary object is to provide a secure means for holding the board rigidly in position during the operation of the tothing cutter-head.

The invention consists, essentially, of the tothing cutter-head provided with a suitable adjustable guard and operating-handle, a pulley on the cutter-spindle connected by a driven rope and guiding-pulleys and vertically-adjustable pulleys to the pulley on the main driving-shaft, the vertically-adjustable pulley, which is designed to keep the driven rope taut, being counterbalanced by a weight connected over a guiding-pulley to the opposite side of the cutter-head, the board being suitably held in position by clamps and the parts being constructed and arranged in detail, as hereinafter more particularly explained.

Figure 1 is a sectional perspective view showing two floors of a building and my improved machine complete. Fig. 2 is a perspective view of the cutter-head. Fig. 3 is a perspective view of the guiding-pulleys secured to the table. Fig. 4 is a cross-section. Fig. 5 is a perspective detail of the adjustable-angle guiding-pulleys. Fig. 6 is a sectional plan of Fig. 5. Fig. 7 is a detail of the adjustable clamp for holding one end of the board to be operated upon. Fig. 8 is a detail of the adjustable clamp for holding the opposite end of the board. Fig. 9 is a detail view of the cutter-head.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is a supporting-table for the work, of which A' is the top of the table. The top A' is provided with a longitudinal slot *a*.

B is the board which it is desired to smooth ready to receive the veneer.

C is one holding-clamp which is provided with teeth *c* and a depending tongue C', which is designed to extend through the slot *a*. *c'* is a washer, and *c*² is a screw-pin which extends through the portion C C' and washer *c'*. C² is a tightening-arm which is fitted onto the threaded end of the screw-pin *c*² and by which such clamping-block may be secured into any desired position in the slot *a*. The board B is pressed against the teeth *c* of the clamp C, so as to hold it in position, and the opposite end of the board is held in position by the clamping-lever D, which is provided with the laterally-projecting teeth *d* and is pivoted at *d'* upon the plate D', the movement of the lever being limited by the strap D².

D³ is a tongue depending from the plate D' and designed to extend through the slot *a*.

*d*³ is a washer, and *d*⁴ is a screw-pin extending through the plate D', tongue D³, and washer *d*³.

D⁴ is a tightening-arm which fits upon the end of the screw-pin *d*⁴ and is designed to tighten the plate, so as to hold it in any desired position in the slot *a*.

D⁵ is a lever pivoted at *d*⁵ and provided with a cam-shaped end *d*⁶. By swinging the lever D⁵ upon its pivot the lever D may be released or tightened, so as to project or release the teeth *d* at the end of the board. When the teeth *d* are projected into the end of the board, of course it will be securely held in position ready for the operation of the cutters.

E is the cutter-head, which is provided with suitable tothing-knives *e*, suitably secured in position. These knives are ground to points at their lower ends. By "tothing" is meant that the teeth form as they pass over the board a roughened surface, so as to form an easy means for applying glue and cementing two surfaces together. As the form of the cutter-head forms no essential feature of my invention, I do not particularly describe it except so far that it is provided with a hub *e'*, from which extends upwardly the spindle E'.

F is a grooved pulley suitably secured on the spindle E'.

G G are cross-bars provided with rectangular extensions G' and secured together at the ends by the pins *g*, extending through the

sleeves g' , which keep the bars at determined distances apart.

G^2 denotes two right-angular extensions extending laterally from the upper bar G , as indicated.

H is the hanging loop having the ends secured in the upper bars G .

I is a substantially acute angular loop journaled in the extensions G^2 , as indicated, and having the bent ends i provided with flat end portions i' .

J is a cutter-head guard-ring which is provided with upwardly-extending spindles j , which pass through both bars G and are normally spring-held above the level of the bottom of the knives by the spiral springs j' , extending between the lower bar G , and a pin j^2 , extending through the spindles. The upper ends of the spindles j extend directly underneath the flat ends i' of the angular loop I . The apex of the angular loop I is slightly flat and normally rests upon the top extension G' .

I' is a supplemental loop secured in the wire loop and extending downwardly on both sides of the bar G' . The end of the loop I' is normally held within the notch g^3 in the sleeve g^4 , separating the ends of the extensions G' , the pin g^5 holding the sleeves in position.

K is an eye attached to or forming part of the sleeve g^4 .

L is a handle connected to the bars G by the metal strap extensions g^6 . It will be noticed that the handle L is obliquely set for convenience in operating the cutter-head.

In the position that the guard is shown in the drawings the angular loop I is shown held down by the supplemental loop I' , extending into the notch g^3 of the sleeve g^4 , and in this position it will be understood that the cutters will not act upon the board, as the flat ends i' of the angular loop securely hold the guard down. By releasing the supplemental loop I' the ring-guard is thrown up, and the cutters are free to operate upon the board.

In order to suspend the cutter when it is desired to change the board, I provide a rope M , which passes over a grooved pulley M' , which has bearings in suitable brackets m , secured to the ceiling. The rope is provided with a hook m' at its lower end, a stop m^2 to prevent the hook from passing up beyond the reach of the operator of the machine, and a weight m^3 for maintaining the hook at the desired height.

F' is a driven rope, which passes around the pulley F and over the guiding-pulleys N N at the end of the table down around the angularly-set guiding-pulleys O and up over the main driving-pulley P , secured to the main driving-shaft P' . The guiding-pulleys N N are journaled upon the reduced ends n of the horizontally-bent cross-bar N' , which is journaled on the pin n' , extending upwardly from the stud n^2 , which is secured in the upper end of the tube N^2 . The tube N^2 is adjustably supported in the end hole n^3 of the bracket

N^3 by the set-screw n^4 . It will thus be seen that the guiding-pulleys N may be adjusted to any desired height, and being journaled on a vertical pin will swing horizontally to follow the gyrations of the cutter-head.

The guiding-pulleys O are journaled on studs o , attached to or forming part of the angularly-arranged plates O' O' , which are secured together by suitable pins or rivets o' , extending through the lugs o^2 . It will be noticed that the pulleys O at their outer end converge toward each other or lie parallel to one of the sides of the two outer sides of the plate O' and that the farther side away from the vertical plane passes immediately to the outside of the pulleys N . The plates O' O' have a central hole o^3 , through which extends the tube N^2 , upon the top of which the pulleys N are journaled. It will thus be seen that both the pulleys O and N move on the same center, and consequently will turn with each other according as to how the cutter-head is moved. The plates O' freely reciprocate upon the tube N^2 and serve, together with the pulleys, as a weight to take up the slack caused in the movement of the cutter-head. The plates O' and pulleys O are counterbalanced on the opposite end of the table by the weight Q , which is connected by the cord q to the eye K , attached to the sleeve g' , such rope passing over the guiding-pulley q^1 , secured on the end of the table.

In the construction hereinbefore described it will be seen that the cutters are perfectly counterbalanced and that they may be manipulated with the greatest possible ease, and the drive is a perfect one, as all the slack in the driven rope is taken up during all the gyrations of the cutters. When it is desired to move the board and put a new one in position, it is only necessary to pull down the hook m' , so as to grasp the hanging loop H , whereby the cutter may be suspended during the operation of removing the board and placing another one in position to undergo the same operation.

Although I show this invention as applied to a tothing cutter-head, it will likewise be understood that it might be with equal facility applied to drills or other machines of a like nature which require a certain amount of gyration over a plain surface in order to perform the different work for which they are designed.

What I claim as my invention is—

1. In a tothing-machine, the combination with the cutter-head and the spindle thereof and the cross-bars in which such spindle is journaled, of the guard-ring surrounding the cutter-head, the spindles extending from the guard-ring up through the cross-bar and spring means for normally holding the spindles and guard-ring up above the level of the bottom of the cutters as and for the purpose specified.

2. In a tothing-machine, the combination with the cutter-head and the spindle thereof and the cross-bars in which such spindle is

journaled, of the guard-ring surrounding the
 cutter-head, the spindles extending from the
 guard-ring up through the cross-bar, spring
 means for normally holding the spindles and
 5 guard-ring up above the level of the bottom
 of the cutters, the angular wire loops suitably
 supported on the extensions of the cross-bar
 and provided with a supplemental loop de-
 signed to engage with the notch on one of
 10 the sleeves of the connecting-spindles of the
 cross-bar and flat ends to extend over and
 abut the ends of the spindles of the guard-
 ring as and for the purpose specified.

3. The combination with the cutter-head
 15 and driving-pulley thereof secured on the
 spindle of the same, the freely-movable frame
 carrying said head and pulley, of the endless
 rope drive passing over the pulley of the cut-
 ter-head at one end and over the main driv-
 20 ing-pulley at the opposite end, the vertically-
 adjustable rod supported in a bracket at the
 end of the table, the angularly-set guiding-
 pulleys journaled on the end of a cross-bar

pivotally held on the top of the vertical rod;
 the plate vertically adjustable on the rod and 25
 the angularly-set converging guiding-pulleys
 journaled in studs on the plate and forming
 with the plate a weight to keep the rope taut
 during the gyrations of the cutter-head as
 and for the purpose specified. 30

4. In a machine of the class described, the
 combination with the table and longitudinal
 slot extending throughout the length thereof,
 of the clamping-plate C having a depending
 tongue and washer and screw-pin with a 35
 tightening-arm designed to hold one end of
 the board, and the opposite clamping-lever;
 the plate upon which it is pivoted, the tongue
 depending from the plate, the screw-pin and
 washer and tightening-arm and the cam-lever 40
 all operated in order to clamp or release the
 opposite end of the board as specified.

SAMUEL JOHN LAUGHLIN.

Witnesses:

JOHN SMITH,
 E. P. HAWKINS.