

H. M. ALBEE.  
MACHINE FOR CARVING FIGURES IN RELIEF AND INTAGLIO.  
APPLICATION FILED JULY 24, 1908.

960,765.

Patented June 7, 1910.

3 SHEETS—SHEET 1.

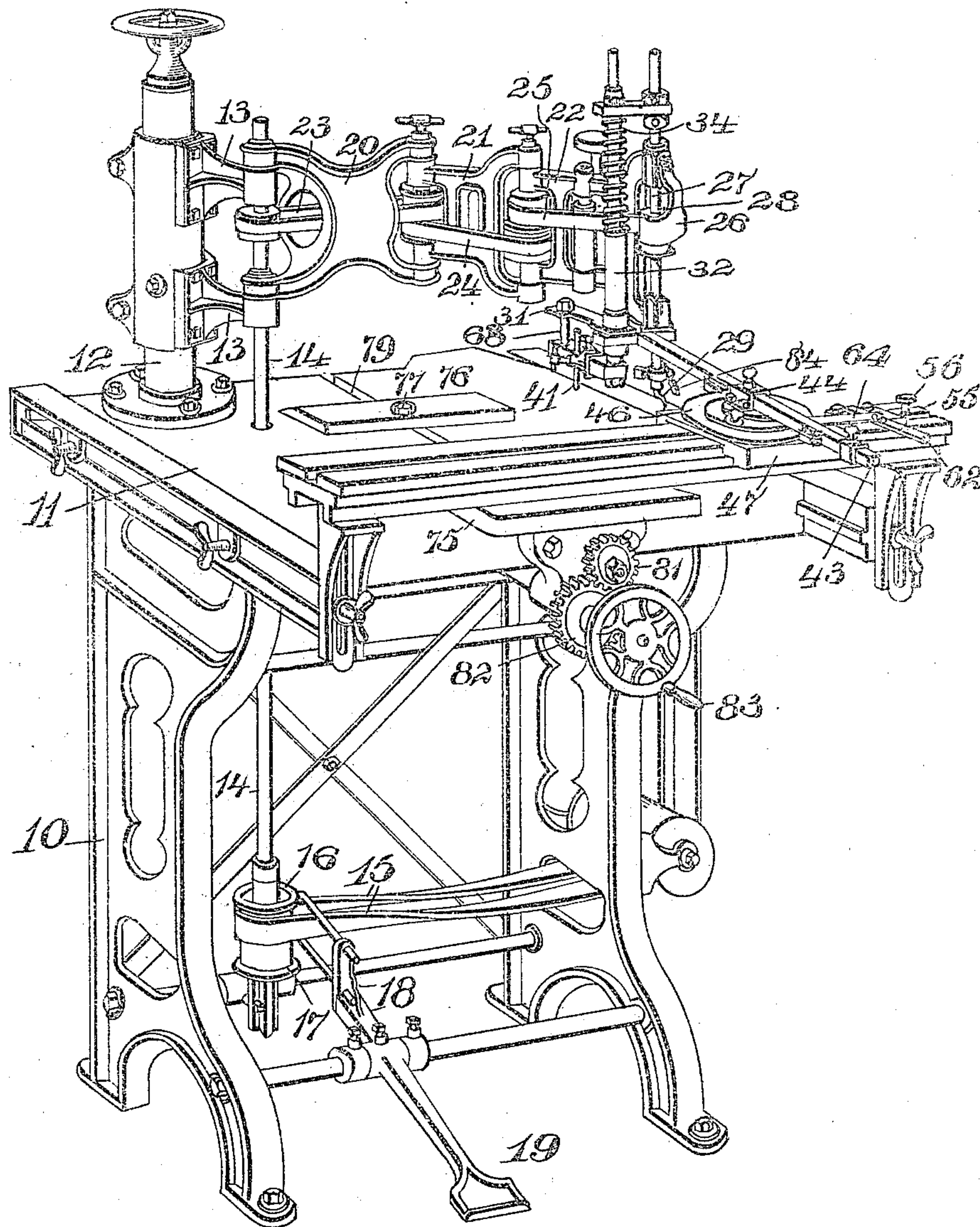


Fig. 1

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E. A. Peck  
M. Johnson.

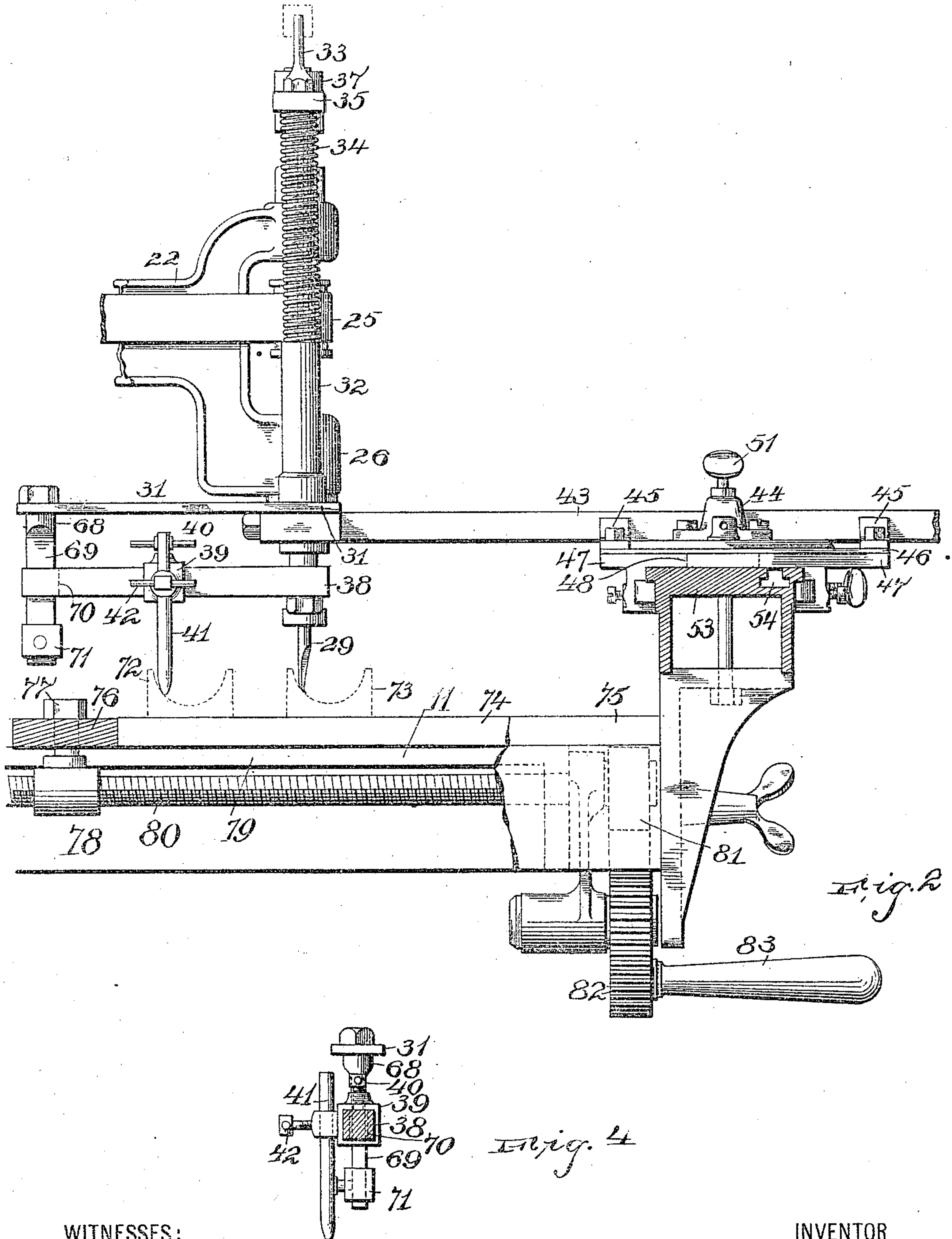
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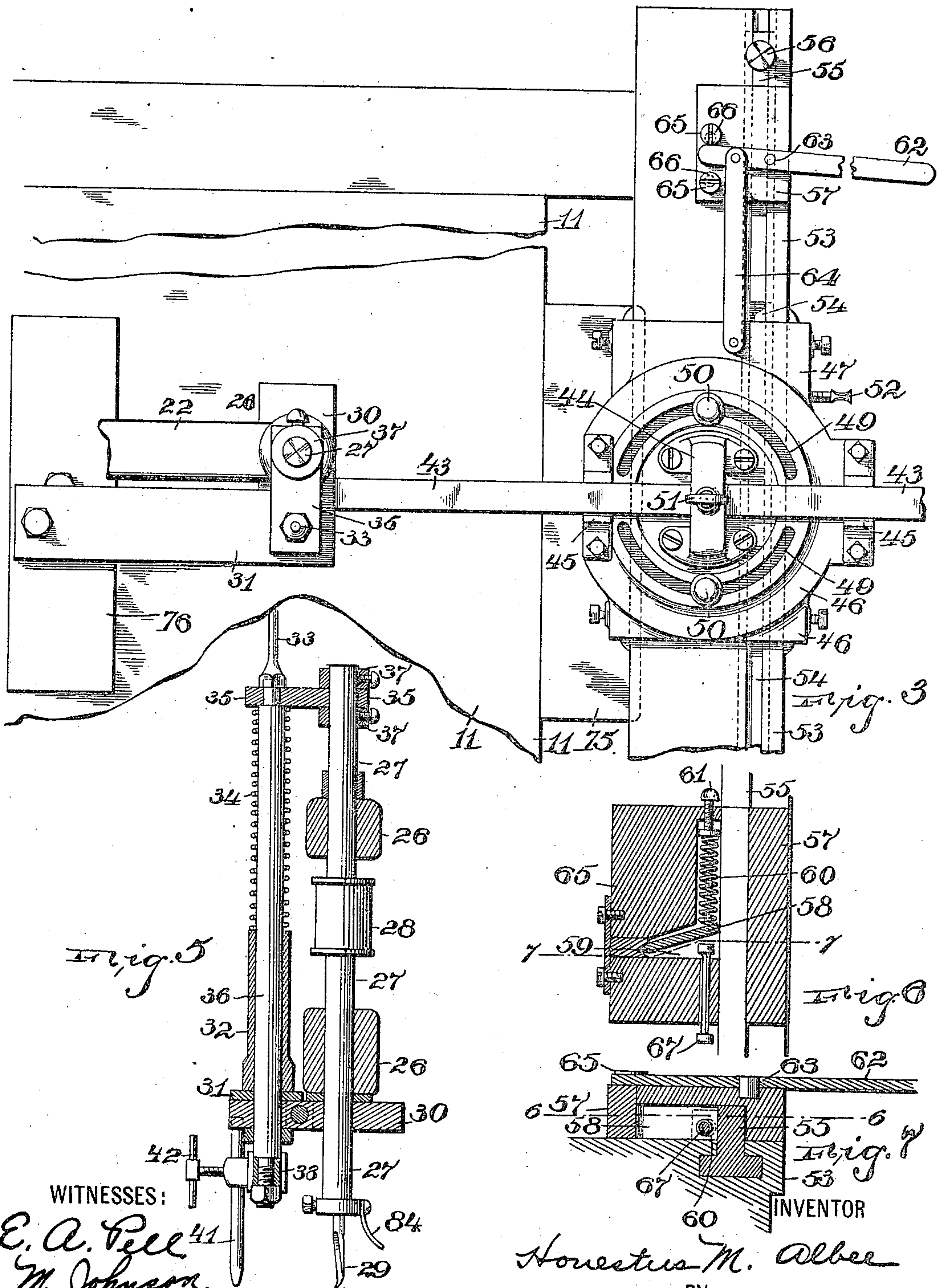


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# UNITED STATES PATENT OFFICE.

HONESTUS M. ALBEE, OF NUTLEY, NEW JERSEY.

MACHINE FOR CARVING FIGURES IN RELIEF AND INTAGLIO.

960,765.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed July 24, 1908. Serial No. 445,138.

*To all whom it may concern:*

Be it known that I, HONESTUS M. ALBEE, a citizen of the United States, residing at Nutley, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Machines for Carving Figures in Relief and Intaglio; 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, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to a machine for routing and carving, and is designed to provide a tracer and also a drill that are to move simultaneously and constantly in sympathy with each other so that very fine work can be accomplished.

The invention is designed more particularly for carving in wood and for forming wooden articles with an irregular outline, such as wooden pipes and the like, and the drill and the tracer are designed to be so well balanced as to lightly ride over the surfaces that the tracer comes in contact with, and thus simulate as far as possible the tracing by hand, and thus make an easy smooth drilling, which gives the best results in the finished product by having the drill enter the work to be cut, in an even manner.

A further object of the invention is to provide a feeding device for feeding the mechanism carrying the drill and the tracer so that they will have a step-by-step forward movement, and it will not be possible to hastily cut a piece of work, since the drill must traverse the work transversely in one direction before it is advanced for the next step, and these distances that the drill and tracer are advanced can be regulated by means of an apparatus installed on the feeding device.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a machine embodying my improved mechanism. Fig. 2 is a side view of the drilling apparatus and showing the table in section. Fig. 3 is a broken view showing a top view of the drilling device and of the portion of the table shown in Fig. 2. Fig. 4 is a detail section showing the method of attaching the tracer to the machine, and Fig.

5 is a section of a drilling apparatus shown in Fig. 2. Figs. 6 and 7 are a horizontal and vertical section, respectively, of the step-by-step feeding device.

The device is embodied in a machine which can be made up in any number of designs and styles, but I illustrate in Fig. 1 a machine frame 10 which forms a base for the structure, and has on the top a table 11. On this table is a support 12 which is designed to carry a mechanism for holding the drill so that the drill can be moved while positively driven in every direction horizontally. The particular form of driving and supporting apparatus in the illustration consists of brackets 13 on the support 12, which brackets have, in the end, a shaft 14 which extends down through the table and is driven by a belt 15, from any suitable source of motive power, which is designed to ride on the fast and loose pulleys 16 and 17, the belt being shifted by the belt-shifter 18 secured to a treadle 19, or any other method of manual manipulation may be employed. On the brackets 13 and pivoted thereon is a swinging member 20 supporting another swinging member 21, which in turn has a swinging member 22 thereon, each of these members having pulleys driven from the shaft 14 by the belts 23, 24 and 25, as will be seen from Fig. 1. I am not of course limited to this particular construction, and so far as described the machine is not new.

On the end of the swinging member 22 is a bracket 26 which has a bearing shown in section in Fig. 5, and in this swinging member is mounted a shaft 27 having a pulley 28 thereon which is actuated by the belt 25, this shaft 27 being revolved, at the same time being movable longitudinally in its bearings, and being provided on its lower end with any suitable removable drill 29. This comprises the drilling mechanism. Secured on the bottom in any suitable manner to the end of the swinging member 22 is a plate 30, and extending back therefrom is a strip 31 on which is mounted the guiding sleeve 32 carrying the rod 36 which has, near the top thereof, a bar 35 clamped by means of a nut 33, and on its other end being secured to the shaft 27 so as to raise and lower the same, this securing means being preferably caused by the collars 37. A spring 34 rests on the top of the sleeve 32 and abuts against the bar 35, and is of resiliency sufficient to not quite overcome the



weight of the parts depending thereon, which makes an easy working apparatus and permits of a smooth, graceful and sympathetic movement of the tracer to be herein described.

On the lower end of the rod 33 is a block 38 extending underneath the strip 31 and having a clip 39 arranged to slide thereon and adapted to be adjustably secured by the clamping screw 40. The tracer 41 is adjustably secured in the clip 39 and is fastened by any well known means, preferably by the screw 42.

It will be seen from this description that the action of the spring is to almost overcome the weight of the parts, and when the tracer 41 has its point traveling over a model which is to be similarly cut by the drill 29, these parts will ride up and down in unison when moved in any direction, the movement transversely of the table being caused by the manual manipulation of a handle 43 which extends out and passes through a housing 44, and the right angled guides 45 which are secured, along with the housing 44, to the swinging portion 46 mounted on the block 47 and having a stud 48 sliding in the block 47 so that the rod or handle 43 can be swung to give the drill a movement at any angle to the table. This movement is permitted by reason of the slots 49 which ride over the nuts 50, which nuts 50 in turn act to lock the portions in the desired position. A screw 51 can be employed to lock the handle 43 against movement in the housings and the guides. When the drill is to be repeatedly used in one channel, the whole block 47 can be regulated by means of a set-screw 52 shown in Figs. 2 and 3. The block carrying the guiding device for the drill and tracer can be given a step-by-step movement by means of an apparatus shown more particularly in Figs. 3, 6 and 7. This apparatus sets on the guide-plate 53 on which the block 47 travels, which guide-plate has a slot 54 in which fits a strip 55 which can be slid along at will or regulated by means of a set-screw 56. It will be understood that the strip 55 is movable from time to time as the work advances. Fitting over the strip 55 is a casing 57 which has a tooth 58 therein, one end of the tooth engaging the side of the strip 55, and the other end being fulcrumed in the end of the recess 59 in the casing 57. A spring 60 tends to throw the end of the tooth in engagement with the strip and the pressure of this spring can be regulated by a screw 61. On top of the casing is mounted a lever 62 which is fulcrumed at 63 on the top of the casing, and the lever 62 is in turn connected by a link 64 with the block 47. It will readily be seen that when the handle is operated in one direction, the tooth 58 will be caused to bind tightly on the strip,

and the block 47 will be sent forward by reason of the lever acting on its fulcrum 63 and forcing the link 64 and the block 47 along the guide plate, and on the reverse movement of the handle the tooth 58 will slide on the strip 55, and the added weight and the friction of the block 47 will cause it to stand still and the casing 57 will advance since the pivotal connection between the link 64 and the lever 62 will act as a fulcrum. Thus the alternate movements of the handle will give a step-by-step movement to the block 47 which will give a corresponding motion to the handle 43 and the drilling apparatus.

The distance the block 47 is to travel on each propulsion can be regulated by the throw of the handle 62, the free end of this handle or lever being flanked by the studs 65 which are mounted in the casing eccentrically, as shown at 66 in Fig. 3, so that a turning of these studs will diminish or increase the distance between them so that the handle 62 will have more movement. In this way the travel of the block 47 is finally adjusted. The reason for this step-by-step movement is that when the handle 43 is operated back and forth to cause the tracer and the drill to travel over the work in a straight line in one direction, and the tracer 41 and the drill 29 follow the same path on the pattern and the product, respectively, the product is cut as an exact duplicate of the pattern. Therefore these parallel movements of the drill and the tracer are as far apart as is regulated by the distance between the heads 65 of the studs 66 and they insure a workman going thoroughly over the work, since he cannot hurry the drill along the length of the table.

It will be understood that the turning of the stud 65 can be regulated for very small distances, up to spaces that are comparatively large. A suitable pin 67 is installed in the casing 57 and so disposed that it can be forced against the tooth 58 to disengage its end from the side of the strip 55, and thus permit the casing 57 to be slid backward along the strip.

It will be understood that while the drill and tracer, when detached, can be moved in every direction horizontally, they can be limited to a straight movement by means of the handle 43, when used under normal conditions, the movement by the handle being at right-angles to the movement caused by the casing 57 actuated by its handle 62. On the end of the plate 31 is a bolt 68 having a narrowed portion 69 which receives the slotted end 70 of the block 38 so as to insure the holding of the tracer in its proper position in relation to the drill 29, the bolt 68 having a stop 71 which can be slid on the bolt so as to limit the downward movement of the tracer and



the drill at a certain point. This bolt 68 makes the block 38 rigid horizontally and prevents any lost motion between the tracer and the drill. The pattern 72 along with the piece 73 to be finished are placed on a board 74, which is laid on the table 11, and clamped between a projecting piece 75 and the clamping block 76 which has a bolt 77 connecting it with a sleeve 78, this bolt extending down through a slot 79 in the table 11, and the sleeve 78 engages the screw-threaded rod 80 which is operated by the gears 81 and 82 which are in turn manipulated by means of the handle 83, and in this way the work can be quickly and securely fastened in place and there is no possible way for a slipping of the pattern or the piece to be finished. Of course any kind of drill can be used, the drill being selected according to the work to be done, and in the same way the tracer will be formed so as to best fit the contour to be traced. The finer the work, of course the finer the tracer and drill to be used.

Attention is again directed to the spring which nearly overbalances the weight of the tracer, the drill and its operating mechanism so that the pressure of the tracer and the drill are not their full weight, and a smooth tracing on the model is the result, in contradiction of the result when the whole weight of the apparatus rests on the drill.

To the drill-spindle I prefer to attach an apron or wing 84 of leather or similar material to create a current of air to blow dust from the work being cut and keep it clearer so that the progress of the work can be easily seen by the operator, which is desirable particularly in fine work.

Having thus described my invention, what I claim is:—

1. A carving machine comprising a movable support, a shaft mounted in the support, means for operating the shaft, a rod in the support, a connection between the bar and the shaft, a cutter on the end of the shaft, a follower on the rod, and a spring having one end abutting on the support and the other end arranged to exert a pressure little less than the weight of the rod, the shaft and their accessories, and means for limiting the downward movement of the rod.

2. A carving machine comprising a support for supporting a shaft, the shaft being movable horizontally in every direction, a table, a cutter in the shaft, a follower on the supporting means, a block, a handle in the block, the handle being connected with the supporting means for the shaft, thereby providing for its manual manipulation in one direction, and means on the table and connected with the block for causing a step-by-step movement of the block along the table.

3. A carving machine comprising a frame, a support thereon, a shaft in the support,

the support being adapted to permit the movement of the shaft horizontally in every direction, a cutter in the shaft, means for rotating the shaft, means for elevating and depressing the cutter, a handle on the cutter support for moving it in one direction, and means secured to the handle and moving on the table for causing a step-by-step movement of the support and its cutter in a direction transverse to the movement imparted by the handle.

4. A carving machine comprising a support, a shaft mounted in the support, the support permitting the movement of the shaft horizontally, a table, a handle for actuating the support in one direction, means on the table for guiding the handle, means for locking the handle in the guiding means, a casing having manually operated means thereon for causing it to move along the table by a step-by-step movement, and a connection between the handle locking means and the casing.

5. A carving machine comprising a movable support, a shaft journaled in the support, means for rotating the shaft, a cutter in the end of the shaft, a sleeve on the support, a rod in the sleeve, a bar connecting the rod and the shaft, a spring abutting on the sleeve with one end and abutting on the bar with the other end, a block on the rod, a follower, means for adjustably securing the follower on the block, and means for limiting the downward movement of the follower and cutter.

6. A carving machine comprising a movable support, a shaft journaled in the support, means for rotating the shaft, a cutter on the end of the shaft, a sleeve on the support, a rod in the sleeve, a bar connecting the rod and the shaft, a spring abutting on the sleeve with one end and abutting on the rod with the other end, a block on the bar, a follower, means adjustably securing the follower on the block, means for limiting the downward movement of the follower and cutter, a handle secured to the support, means for guiding the handle in one direction, a table, means for supporting the guiding means on the table in sliding relation thereto, a casing on the table, manually operated means on the casing for engaging the table to move the casing forward by a step-by-step movement, and a connection between the casing and the guiding means for the handle.

7. A carving machine comprising a movably supported cutter and follower, a connection between the cutter and follower for causing their constant movement in sympathy, a table, a handle connected with the cutter supporting means, means sliding on the table adapted to guide the handle in one direction, a strip on the table, a casing, a tooth in the casing inclined to the strip, a



spring bearing on the casing and on the tooth to cause its end to engage the side of the strip, a lever on the casing having a handle for its manual manipulation, means for limiting the throw of the handle, and a connection between the casing and the guiding means for the handle.

8. A carving machine comprising a movably supported cutter and follower, a connection between the cutter and follower for causing their constant movement in sympathy, a table, a handle connected with the cutter supporting means, means sliding on the table adapted to guide the handle in one direction, a strip on the table, a casing, a tooth in the casing inclined to the strip, a spring bearing on the casing and on the tooth to cause its end to engage the side of the strip, a lever on the casing having a handle for its manual manipulation, a pair of heads arranged on each side of the handle to limit its movement, the heads having their studs eccentrically arranged thereon so that the rotation of the heads will cause the regulation, and a connection between the casing and the guiding means for the handle.

9. A carving machine comprising a movably supported cutter and follower, a con-

nection between the cutter and follower for causing their constant movement in sympathy, a table, a handle connected with the cutter supporting means, means sliding on the table adapted to guide the handle in one direction, a strip on the table, a casing, a tooth in the casing inclined to the strip, a spring bearing on the casing and on the tooth to cause its end to engage the side of the strip, a lever on the casing having a handle for its manual manipulation, a pair of heads arranged on each side of the handle to limit its movement, the heads having their studs eccentrically arranged thereon so that the rotation of the heads will cause the regulation, a connection between the casing and the guiding means for the handle, and a pin in the casing arranged to be pushed against the tooth to release the casing to permit it to be slid along its strip.

In testimony, that I claim the foregoing, I have hereunto set my hand this 23rd day of July 1908.

HONESTUS M. ALBEE.

Witnesses:

WM. H. CAMFIELD,  
E. A. PELL.