

(No Model.)

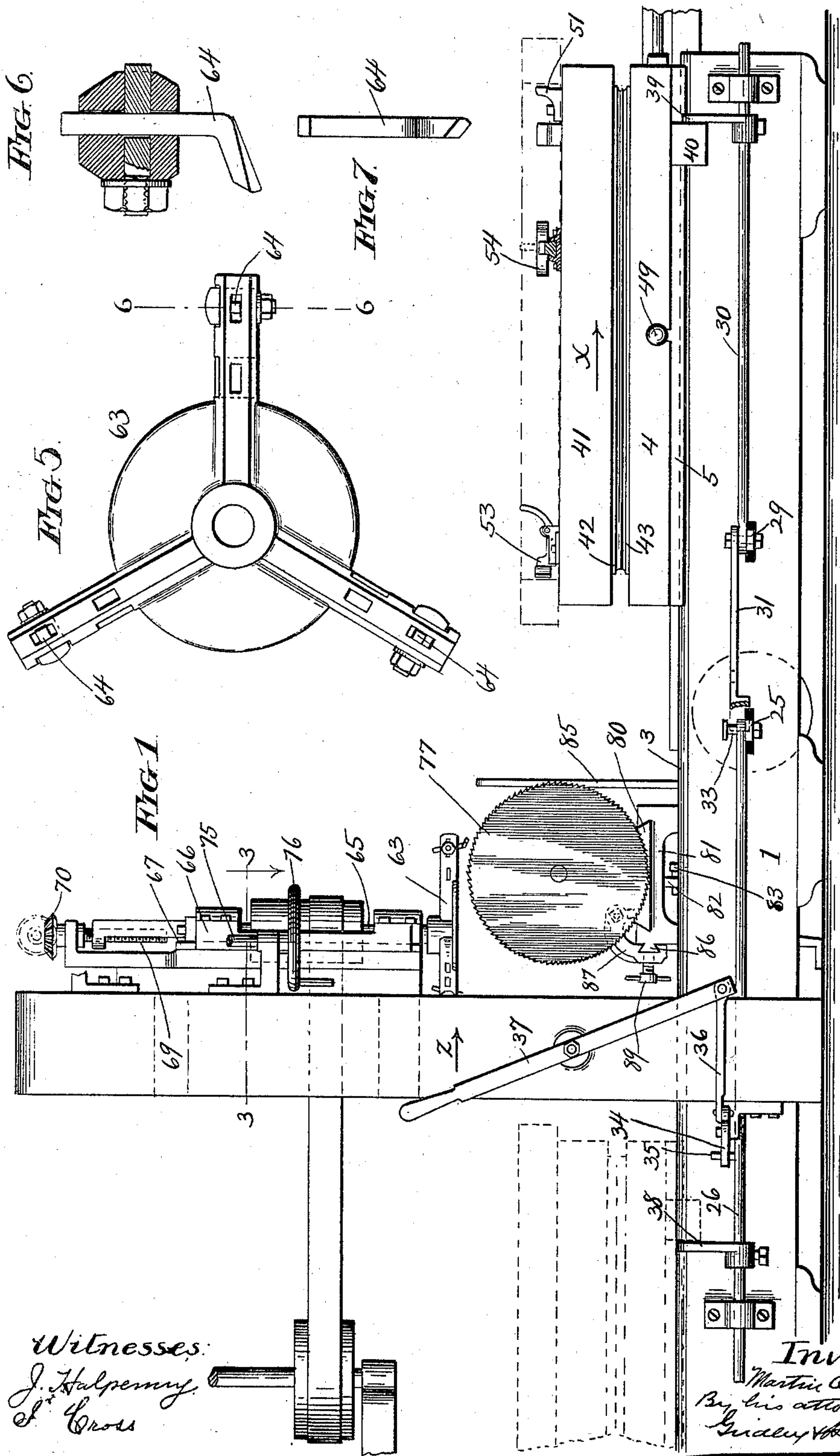
4 Sheets—Sheet 1.

M. OLSON.

MACHINE FOR PLANING AND TRIMMING PIANO BACKS, &c.

No. 584,789.

Patented June 22, 1897.



(No Model.)

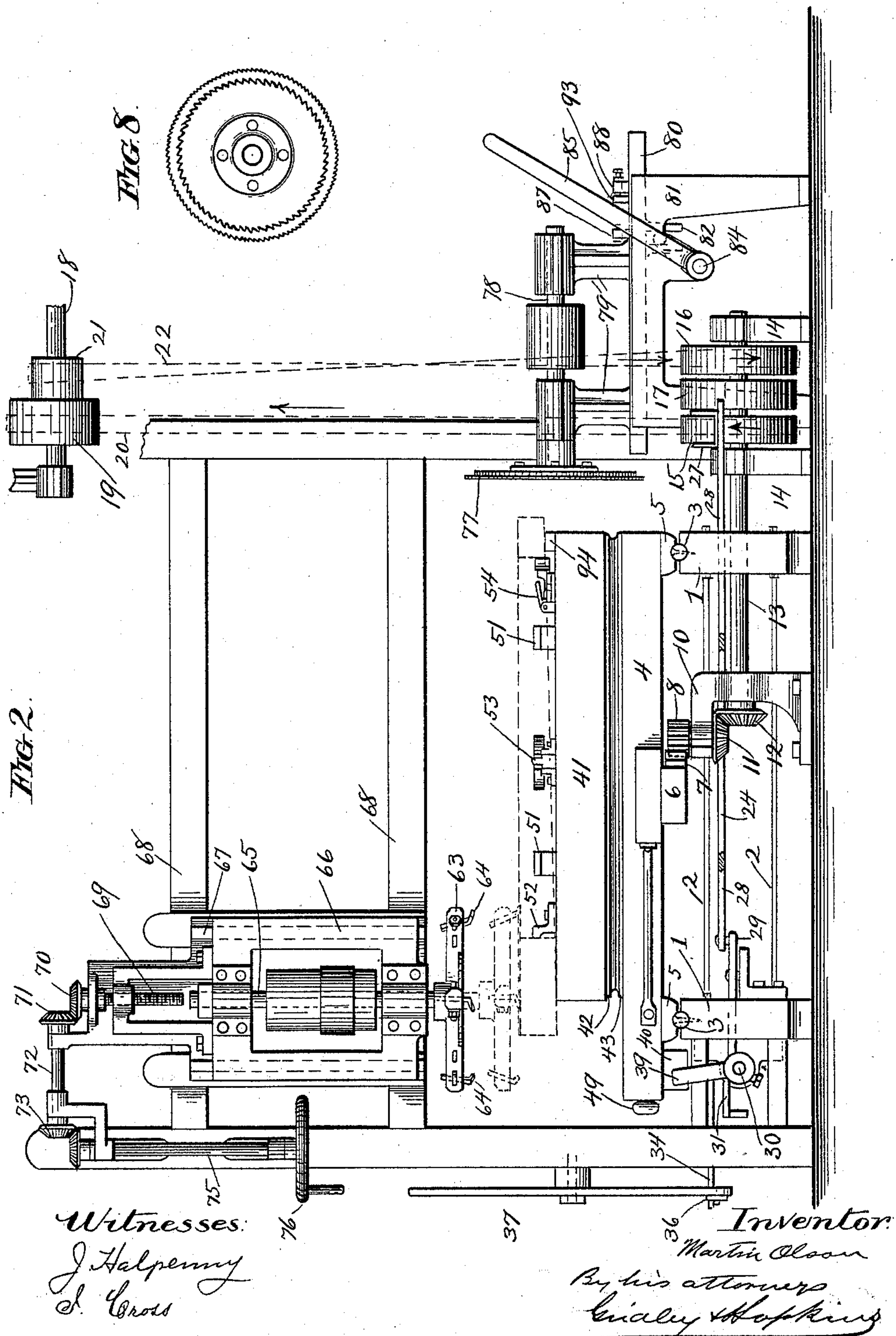
4 Sheets—Sheet 2.

M. OLSON.

MACHINE FOR PLANING AND TRIMMING PIANO BACKS, &c.

No. 584,789.

Patented June 22, 1897.





(No Model.)

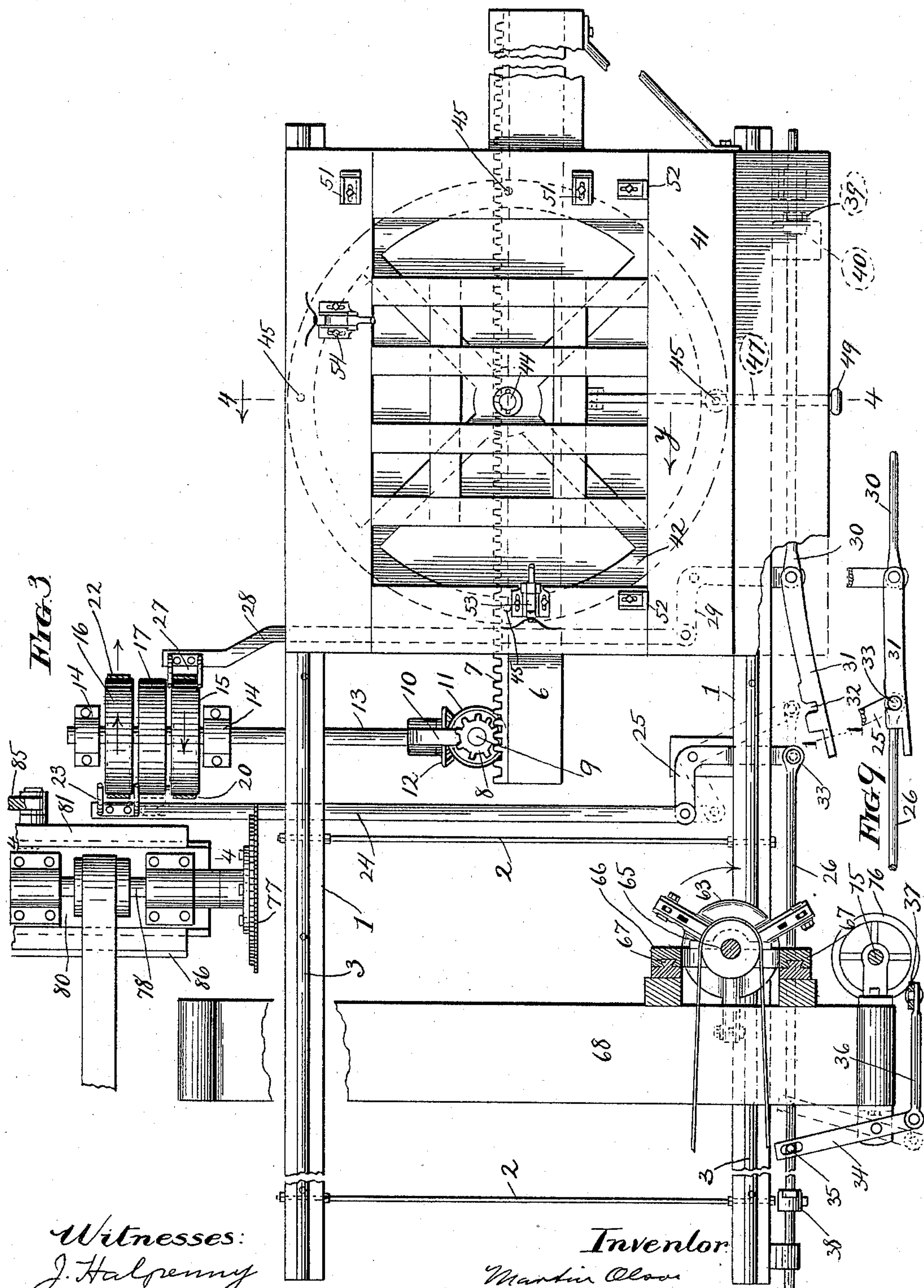
4 Sheets—Sheet 3.

M. OLSON.

MACHINE FOR PLANING AND TRIMMING PIANO BACKS, &c.

No. 584,789.

Patented June 22, 1897.



Witnesses:  
J. Halpenny  
S. Cross.

Inventor:  
Martin Olson  
By his attorneys  
Gibbs & Hopkins

(No Model.)

4 Sheets—Sheet 4.

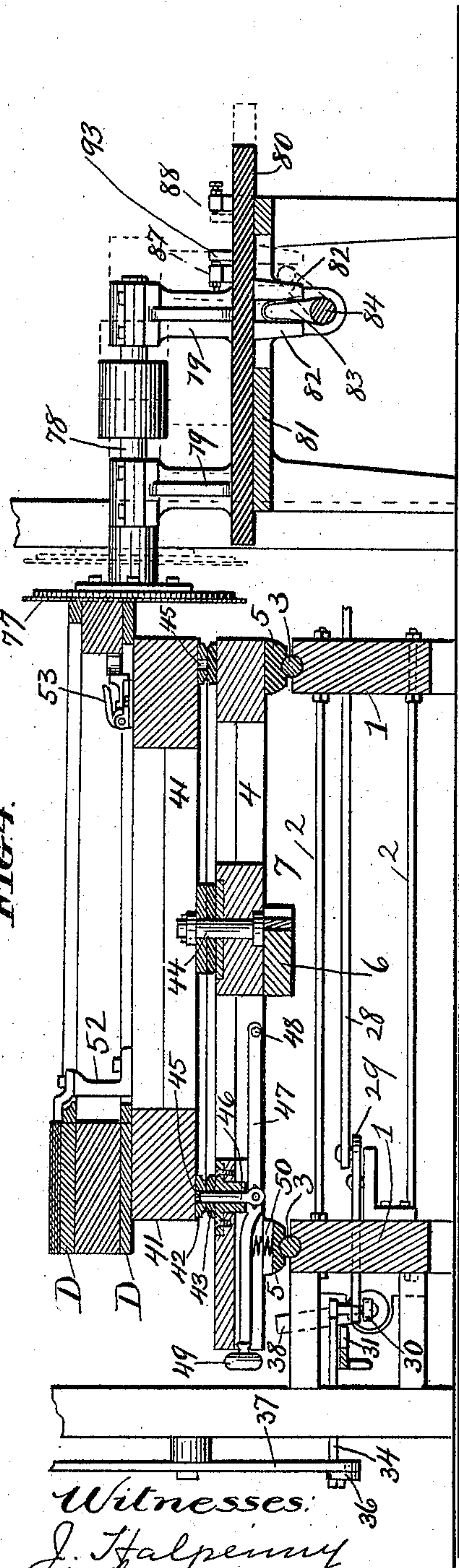
M. OLSON.

MACHINE FOR PLANING AND TRIMMING PIANO BACKS, &c.

No. 584,789.

Patented June 22, 1897.

FIG. 4.



Witnesses:  
J. Halperin  
S. Cross.

FIG. 13.

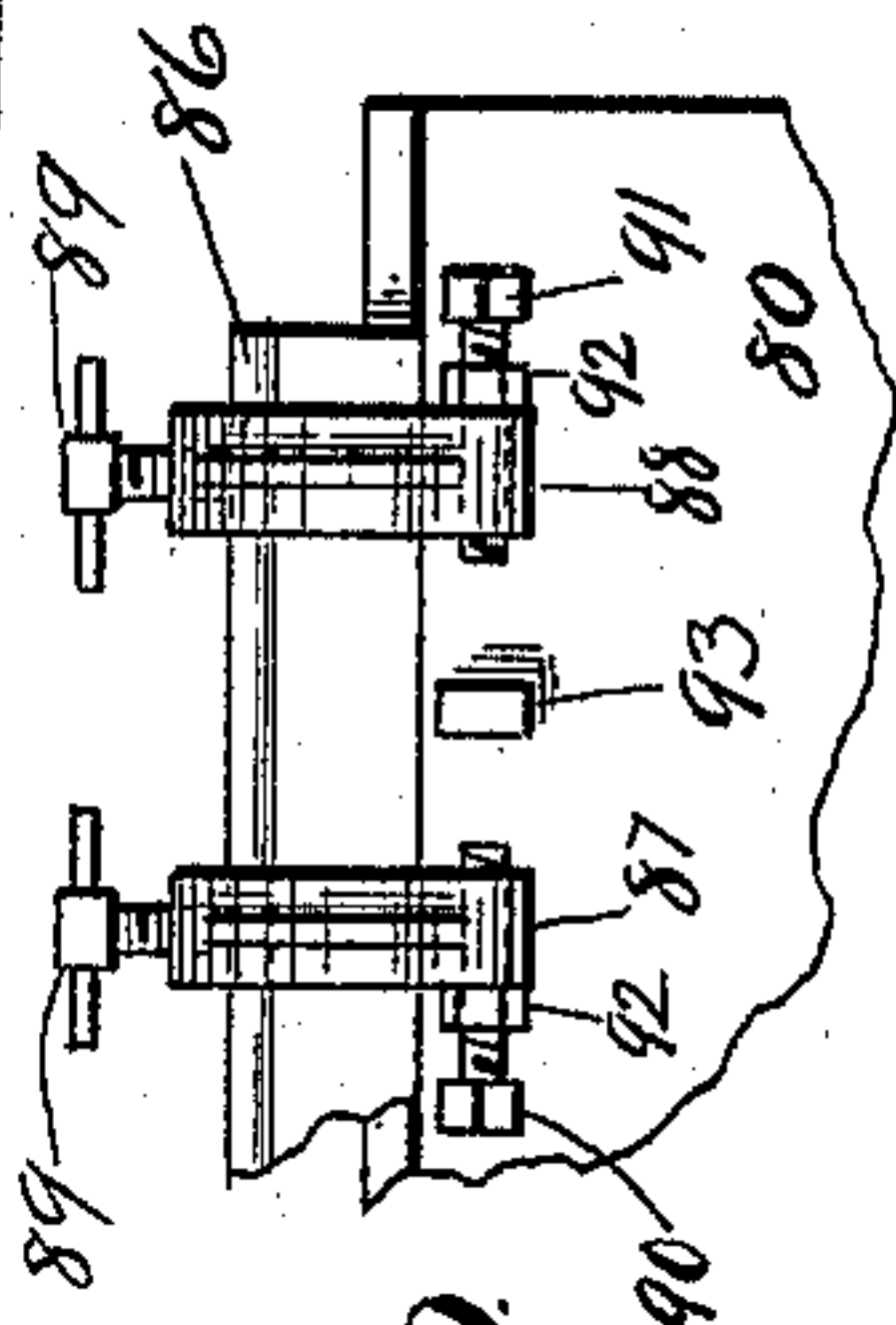


FIG. 10.

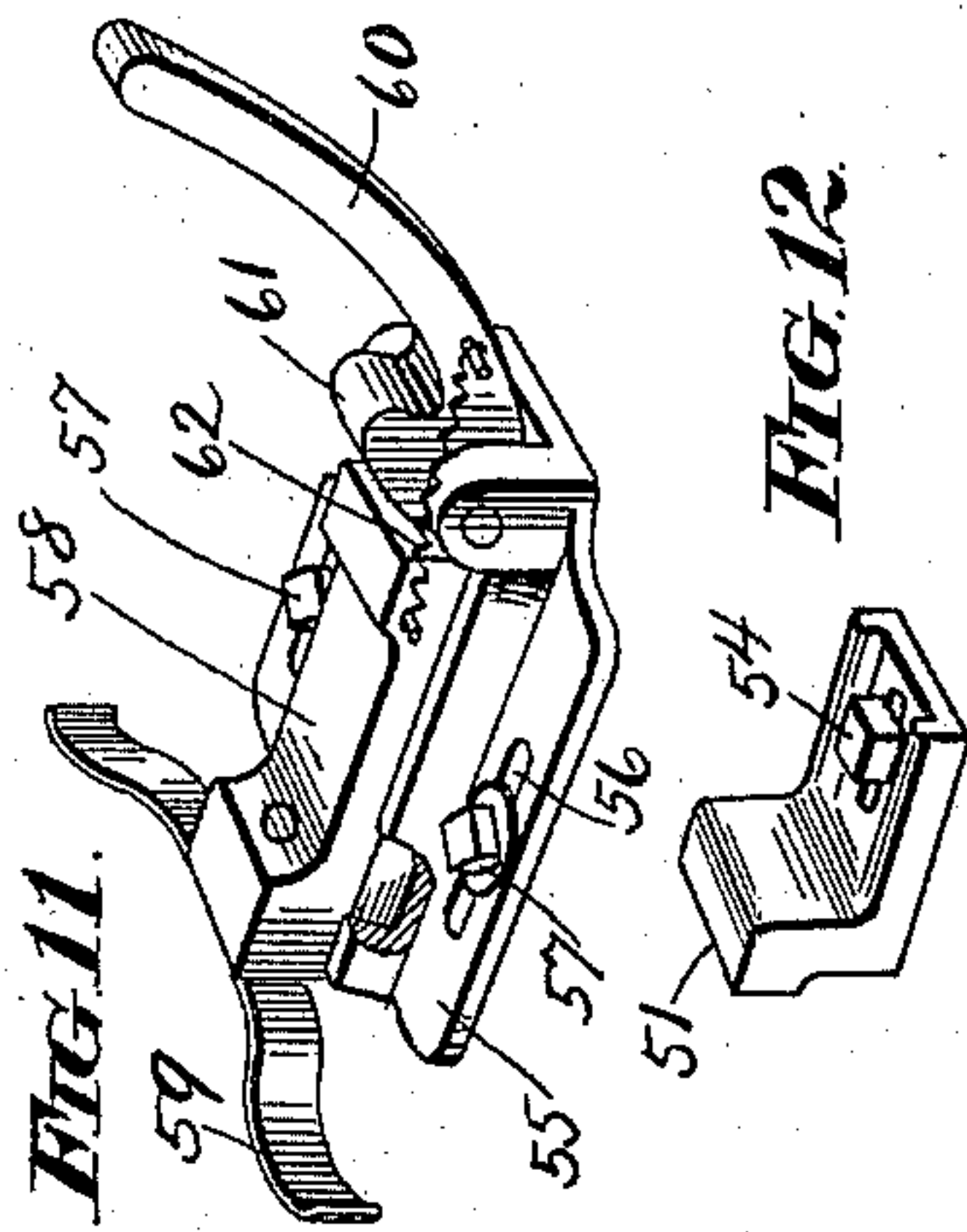


FIG. 11.

FIG. 12.

Inventor:

Martin Olson  
By his attorney  
Leidy & Hopkins



# UNITED STATES PATENT OFFICE.

MARTIN OLSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE OLSON & COM-STOCK COMPANY, OF SAME PLACE.

## MACHINE FOR PLANING AND TRIMMING PIANO-BACKS, &c.

SPECIFICATION forming part of Letters Patent No. 584,789, dated June 22, 1897.

Application filed May 5, 1896. Serial No. 590,276. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN OLSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Planing and Trimming Piano-Backs and other Articles, of which the following is a specification.

The frame of a piano-back comprises a number of uprights, which are separated and held at the proper distances apart by a number of blocks arranged between them at top and bottom, the whole being secured together by glue. This frame is usually constructed of stock that is rough-sawed, and after the several parts are secured together it is necessary to plane the opposite faces of the frame in order to prepare it for receiving the veneering, and after the veneering is applied it is necessary to trim the edges of the back in order to make it of true rectangular shape. This work of planing the frame and trimming the back has heretofore been done by hand; and the object of the present invention is to enable its accomplishment by machinery.

In the drawings I have shown the invention as being embodied in a machine which is designed especially for planing and trimming piano-backs, but of course the invention is not limited in this respect. On the contrary, any or all of its several features may be embodied in machines for planing or trimming other articles, and I reserve to myself the exclusive right to so embody them.

It should also be here noted that while I have shown and shall describe the invention as being embodied in a machine for operating upon rectangular articles, still the invention is not limited in this respect, but, on the contrary, may be embodied in machines for operating upon articles of different shapes.

The invention consists in the features of novelty that are particularly pointed out in the claims hereinafter, and in order that it may be fully understood I will describe it with reference to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a side elevation of a machine

embodying the invention. Fig. 2 is a rear elevation thereof. Fig. 3 is a plan view thereof, with some of the parts in section, on the line 3 3, Fig. 1. Fig. 4 is a vertical section thereof on the lines 4 4 and 4 4, Fig. 3, with the reciprocating carriage in such position that said lines coincide. Fig. 5 is a plan view of the cutter-head of the planer. Fig. 6 is a section of a portion thereof on the line 6 6, Fig. 5. Fig. 7 is an elevation of one of the bits. Fig. 8 is an elevation of the saw. Fig. 9 is a plan view of a portion of the mechanism for shifting the belts. Fig. 10 is a plan view of a fragment of the machine, showing in detail the construction and arrangement of the stops for determining the position of the saw. Fig. 11 is a perspective view of one of the movable dogs. Fig. 12 is a perspective view of one of the fixed dogs. Fig. 13 is a perspective view of the frame of a piano-back after it has been planed.

As shown in Fig. 13, the frame of the piano-back consists of a number of uprights A and a number of blocks B and C, arranged between them at top and bottom, respectively, and serving to hold them at the proper distances apart, the blocks B being considerably wider and thicker than the blocks C, and the parts A being of graduated thickness. When these parts are secured together, which is done by gluing them, there will be considerable unevenness, which must be removed in order to prepare the frame for receiving the veneering, which is shown in Fig. 4 at D. When the frame is in condition for receiving the veneering, the top side is somewhat thicker than the bottom, and its thickness is graduated from top to bottom, this being true also of the completed back.

The invention relates in part to those features of the machine by which the frame of the back is dressed to this particular shape and in part to those features of the machine by which the back is trimmed and trued after the veneer is applied to the frame.

The base of the machine consists of two heavy parallel sills 1, which rest upon the floor and are securely connected together by means of tie-bolts 2. Upon the tops of these sills is a track, which preferably consists of



round rods secured in place by means of screws passing through them and into the sills. Upon this track a carriage 4 is mounted so as to be capable of sliding thereon, 5 grooved shoes 5 being secured to the under side of the carriage for receiving the rods.

To the under side of the carriage is secured a heavy beam 6, carrying a rack 7, with which engages a pinion 8, secured to a short 10 vertical shaft 9, which is journaled in a standard 10. Upon the lower end of this shaft is secured a miter-wheel 11, meshing with a similar wheel 12, carried by a shaft 13. This shaft is journaled near one of its ends in the 15 standard 10, and near its other end in standards 14, and between these standards 14 the shaft is provided with two idle-pulleys 15 16 and a fixed pulley 17. The feed-shaft is rotated in one direction or the other, as may 20 be necessary, by power derived from a counter-shaft 18, through the medium of a pulley 19 and a belt 20 or a pulley 21 and a crossed belt 22. It will be understood that when the 25 two belts 20 and 22 are on the pulleys 15 and 16, respectively, (these pulleys being idle,) the feed-shaft will remain at rest, and by shifting one or the other of the belts to the fixed pulley 17 the feed-shaft will be rotated in one 30 direction or the other. If the uncrossed belt 20 is shifted to the fixed pulley 17, the direction of rotation of the feed-shaft will be such that the carriage will be moved in the direction of the arrow *x* in Fig. 1. On the other 35 hand, if the crossed belt be shifted to the pulley 17 the direction of rotation of the feed-shaft will be such that the carriage will be moved in the direction of the arrow *y* in Fig. 3. As will be more fully explained herein- 40 after, it is during the movement of the carriage in this latter direction that the cutter (whether it be the planer or the saw) does its work. The return movement of the carriage is preferably faster, and in order to accomplish this the pulleys 19 and 21 are made of 45 different diameters.

The belt-shifter 23 for the belt 22 is carried by an endwise-movable rod 24, one end of which is pivotally connected to one arm of a bell-crank lever 25, to the other arm of which 50 is pivotally connected one end of an endwise-movable rod 26. By moving this rod 26 endwise the belt 22 may be shifted from one to the other of the pulleys 16 17.

The belt-shifter 27 for the belt 20 is carried 55 by an endwise-movable rod 28 one end of which is pivotally connected to one arm of a bell-crank lever 29, the other arm of which lever is pivotally connected to an endwise-movable rod 30. 31 is a latch one end of 60 which is pivoted at the junction of the bell-crank lever 29 and rod 30. Near its other end it is provided with a notch 32, which is adapted to engage a pin 33, located at the junction of the bell-crank lever 25 and rod 65 26. As shown in Figs. 1, 2, 3, and 4 of the drawings, the latch 31 is out of engagement with the pin 33, and when this is the case the

rods 26 and 30, and consequently the belt-shifters 23 and 27, are entirely independent 70 of each other, but when the latch 31 is in engagement with the pin 33, as shown in Fig. 9, the rods 26 and 30 are coupled together, so that they will move as a single member. The 75 length of the latch 31 and the proportions of the other parts are such that when the rods 26 and 30 are thus coupled together the shifters 23 and 27 will occupy such positions with relation to each other that one or the other 80 of the belts will always be on the fixed pulley 17, and consequently the carriage will be moving in one direction or the other.

The rods 26 and 30 may be moved endwise for the purpose of operating the belt-shifters 85 either automatically or by hand. For operating them by hand I provide a lever 34, one arm of which has a slot for receiving a pin 35, which projects from the rod 26, a link 36, one end of which is pivotally connected to the 90 other arm of the lever 34, and a hand-lever 37, one arm of which is pivotally connected to the other end of the link 36. The coupled rods 26 and 30 may be moved in the desired direction by proper movement of the hand-lever 37.

For operating the belt-shifters automatic- 95 ally the rods 26 and 30 are provided with tappets 38 and 39, respectively, which tappets are disposed in the path of a shoulder 40 or a similar part projecting from the carriage, the positions of these tappets and the shoulder being such that as the carriage is about to complete its travel in each direction the shoulder 100 40 comes in contact with one of the tappets, and during the remainder of the travel of the carriage in this direction the rods 26 and 30 are moved, and in doing so shift the belts through the mechanism already described and condition the parts for moving the carriage 105 in the opposite direction. So long as the rods 26 and 30 are coupled the carriage will continue to travel back and forth, but when they are uncoupled the traveling of the carriage will be stopped as soon as its shoulder 110 40 comes in contact with one or the other of the tappets and moves it far enough to shift the corresponding belt, whichever it may be, from the fixed to the loose pulley. For example, as shown in Figs. 1 and 3, the carriage has just completed its backward movement. In doing so it shifted the belt 20 from 115 the pulley 17 to the pulley 15, but there being no connection between the rod 30 and the belt-shifter 23 (the latch 31 being out of engagement with the pin 33) the belt 22 was not automatically shifted from the pulley 16 to 120 the pulley 17. This may be done, however, by moving the hand-lever 37 in the direction of the arrow *z* in Fig. 1. The carriage will then move in the direction of the arrow *y*, Fig. 3, and when it has traveled far enough 125 to bring the shoulder into engagement with the tappet 38 the rod 26 will be moved endwise and the belt 22 automatically shifted from the pulley 17 back to the pulley 16, and



assuming that the latch 31 is still out of engagement with the pin 33 the movement of the carriage will again cease.

Upon the top side of the carriage is mounted 5 a turn-table. This turn-table is preferably constructed of an open frame 41, to the under side of which is secured a circular bearing-ring 42, which rests upon a corresponding ring 43, secured to the top of the carriage, 10 the turn-table being secured in place on the carriage by means of a king-bolt 44. The ring 42 is provided with a number of perforations or sockets 45, which are adapted to receive a bolt 46, which passes through a perforation in the ring 43 and is pivotally connected at its lower end to a lever 47, one end 15 of which is fulcrumed to the carriage at 48 and the other end of which projects beyond the side of the carriage and is preferably provided with a handle 49, a spring 50 being arranged in operative relation to the lever 47, whereby the bolt 46 is held normally projected above the bearing-ring 43 and is automatically returned to this normal position 25 immediately upon the removal of the force which moved it therefrom. When the bolt is in engagement with one or another of the sockets or perforations 45, the turn-table is prevented from turning, and when it is desired to turn it the bolt is withdrawn from 30 engagement therewith by depressing the lever 47 through the medium of the handle 49. When thus disengaged, the turn-table may be turned to the desired position, and upon 35 removing the pressure from the handle 49 the spring 50 will again automatically project the bolt 46 into engagement with one of the sockets or perforations 45 and thereby again lock the table. As before stated, the machine 40 shown in the drawings is for making piano-backs, and these being of rectangular shape only four of the sockets or perforations 45 are required, but a greater or less number may be used, depending upon the shape of the article to be operated upon. While the means 45 just described for locking the table in position is simple and effective and while I shall claim the details in its construction, still I desire to have it understood that in its broadest aspect the invention is not limited to this 50 particular means for locking the turn-table, but on the contrary comprehends any means which will permit of its being turned to the desired position and there securely held.

55 Upon the top side of the table is arranged the means for holding the article. Where the article is in the nature of an open frame, (as is true of piano-backs,) for holding it I prefer to use a plurality of fixed dogs 51, having their working faces presented outward and disposed in the same vertical plane for engaging the inner surface of one side of the article, a plurality of fixed dogs 52, having their working faces presented outward and 60 disposed in the same vertical plane for engaging the inner surface of that side of the article which is adjacent to the side engaged

by the dogs 51, and a plurality of movable dogs 53 54 for engaging the inner surfaces of the remaining sides of the article. As shown 70 more clearly in Fig. 12, each of these fixed dogs preferably consists of an angle-iron having in its base a slot for receiving a bolt 54, by which it is adjustably secured to the table.

As shown more clearly in Fig. 11, each of 75 the movable dogs consists of a base-plate 55, having longitudinal slots 56, through which pass bolts 57, whereby it is adjustably secured to the table, a slide 58, of dovetail shape in cross-section, fitting in a corresponding 80 groove of the base-plate 55, a plate-spring 59, secured to one end of the slide 58, a lever 60, fulcrumed to the base 55 and having a cam 61, engaging the other end of the slide 58, and a spring 62, connected at one end to the slide 85 and at the other end to the lever, for withdrawing the slide when the lever is moved to the position shown in this figure. The positions of the dogs 51 52, when they are once 90 adjusted, being permanent, they will of course determine the position of the article on the table, and the article will be held to its position by the combined action of these fixed dogs and the movable dogs, the springs 59 of the movable dogs being sufficiently stout to 95 securely hold the article as against any force that will be exerted upon it by the cutter, and at the same time sufficiently yielding to allow for slight inequalities in the dimensions of the article. I prefer to use both the fixed 100 and the movable dogs, and I prefer to construct them as described; but I desire to have it understood that in its broadest aspect the invention is not limited to the character or construction of these dogs. 105

I do not claim as my invention any of the details in the construction of the planer, and, on the other hand, my invention is not limited to a planer of any particular construction. I prefer, however, to use what is known 110 as a "Daniels" planer, which consists of a cutter-head 63, carrying a number of bits 64 and secured to the lower end of a shaft 65, which is journaled in a frame 66, having dovetailed grooves for receiving guides 67, of corresponding shape, secured to cross-heads 68 115 of the main frame, means being provided for adjusting the frame 66 vertically for bringing the cutter-head to proper position with relation to the work. For adjusting the 120 frame 66 I may use a screw 69, swiveled to the main frame and having threaded engagement with the frame 66, a miter-wheel 70, secured to the screw, a miter-wheel 71, meshing with the wheel 70 and secured to one end of 125 a shaft 72, which is journaled in the main frame, a miter-wheel 73, secured to the other end of the shaft 72, a miter-wheel 74, meshing with the miter-wheel 73, a shaft 75, journaled in the main frame and carrying the 130 miter-wheel 74, and a hand-wheel 76 for turning the shaft 75.

The saw 77 is carried by shaft 78, journaled in standards 79, rising from a slide 80, which



is dovetailed and fits in a groove of corresponding shape formed for it in a base 81, the arrangement being such that the slide 80 may be moved endwise in a direction transverse to that in which the carriage moves. For accomplishing this endwise movement the slide 80 is provided with a pair of lugs 82, that project downward from its under side and receive between them a pin carried by a crank 83, which projects from a rock-shaft 84, that is journaled in the base 81 and provided with a hand-lever 85, whereby it may be rocked. Extending along one side of the frame 81 is a rib 86, of dovetailed shape in cross-section, upon which fit a pair of brackets 87 88, having grooves which receive the rib 86, set-screws 89 being provided for securing the brackets 87 88 in place.

90 and 91 are screws that pass through threaded perforations in the brackets 87 and 88, respectively, and 92 are lock-nuts by which the screws may be secured in place when once they are adjusted to the desired positions.

93 is a lug projecting from the slide 80 and disposed between the brackets 87 and 88 for the purpose of coming in contact with one or the other of the screws 90 91, and thereby limiting the movement of the slide 80 and consequently of the saw.

When the machine is used as a planer, the bracket 88 is loosened from the base 81 and the slide 80 is withdrawn far enough to prevent the saw from coming in contact with the article on the table, and the cutter 63 is adjusted to its proper position with relation to the article, as indicated by dotted lines in Fig. 2. The machine is then started, so that as the carriage travels in the direction of the arrow  $y$  in Fig. 3 one side of the article will pass and be planed by the cutter 63. The movement of the carriage is then reversed, and it is returned to the position shown in Figs. 1 and 3. The turn-table is then unlocked and turned so as to bring another side of the article in position to be planed and the carriage again caused to travel in the direction of the arrow  $y$ , these operations being repeated until all sides of the article have been planed. The carriage is then stopped, the movable dogs are withdrawn, and the article turned over and replaced on the carriage for similarly planing its opposite surface.

Where the machine is used for planing piano-backs, a block 94 is arranged upon one side of the table and the frame of the piano-back is placed upon the table with its lower and thinner side resting upon this block. The effect of this is to bring the uppermost side of the piano-back, as it rests upon the table, to a horizontal plane, notwithstanding the variation in its thickness.

When the machine is to be used for trimming piano-backs, the cutter-head of the planer is elevated, as shown by full lines in Figs. 1 and 2, so that it cannot come in contact with the article on the table, and the brackets 87 88 and screws 90 91 are so adjusted

that when the lug 93 is in contact with the screw 90 the saw will be in proper position for trimming the two longer sides of the back, and when the lug 93 is in contact with the screw 91 the saw will be in position for trimming the two shorter sides of the back. With this arrangement, when the machine is once properly adjusted it may be operated by an unskilled workman and at the same time its operation will be perfect.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a machine for trimming the outer edges of rectangular articles having sides of different lengths, the combination of a saw, a carriage movable back and forth past the saw, a track upon which the carriage is mounted, a turn-table mounted upon the carriage, means for locking or unlocking the turn-table at quarter-turns, a slide carrying the saw and movable back and forth at right angles to the direction in which the carriage moves, and stops for limiting the movement of said slide in both directions and thereby gaging or determining the proper positions for the saw in trimming the edges of the article, substantially as set forth.

2. In a machine for trimming the outer edges of rectangular articles having sides of different lengths, the combination with a carriage movable back and forth, a turn-table mounted upon the carriage, and means for locking and unlocking the turn-table at quarter-turns, of a saw, a slide carrying the saw, a base upon which the slide is mounted and is capable of moving back and forth at right angles to the direction in which the carriage moves, and a pair of adjustable stops adapted to limit the movement of the slide in both directions and thereby gage and determine the proper positions for the saw in trimming the edges of the article, substantially as set forth.

3. A machine of the class described having in combination a turn-table, means for securing the article thereon, a movable carriage upon which the turn-table is mounted, means for locking or unlocking the turn-table, a track upon which the carriage is mounted, means for moving the carriage back and forth on the track, a cutter arranged to plane the top side of the article as it rests upon the turn-table, and a saw arranged to trim the edge of the article, substantially as set forth.

4. A machine of the class described having in combination, a planer, a saw, a carriage movable back and forth past the planer and saw, a track upon which the carriage is mounted, means for moving the carriage back and forth, a turn-table mounted upon the carriage, means for locking or unlocking the turn-table, means for moving the cutter vertically toward and from the article to be planed, and means for moving the saw horizontally toward and from the article, substantially as set forth.

5. A machine of the class described having



in combination a planer a saw, a carriage  
movable back and forth past the planer and  
saw, a track upon which the carriage is  
mounted, a turn-table mounted upon the car-  
5 riage, means for locking or unlocking the  
turn-table, a movable frame carrying the cut-  
ter, and a movable slide carrying the saw,  
substantially as set forth.

6. In a machine of the class described, the  
10 combination of a cutter, a carriage movable  
back and forth past the cutter, a track on  
which the carriage is mounted, a shaft, means  
for transmitting movement from the shaft to  
the carriage, a pulley fixed to the shaft, a

pair of idle-pulleys disposed upon opposite 15  
sides of the fixed pulley, a pair of belts, a  
pair of belt-shifters each engaging one of said  
belts, a pair of endwise-movable rods having  
tappets arranged in the path of the carriage,  
means connecting each of said rods with one 20  
of the belt-shifters, and means for connect-  
ing or disconnecting said rods, substantially  
as set forth.

MARTIN OLSON.

Witnesses:

FRED W. COOK,  
JNO. A. COMSTOCK.