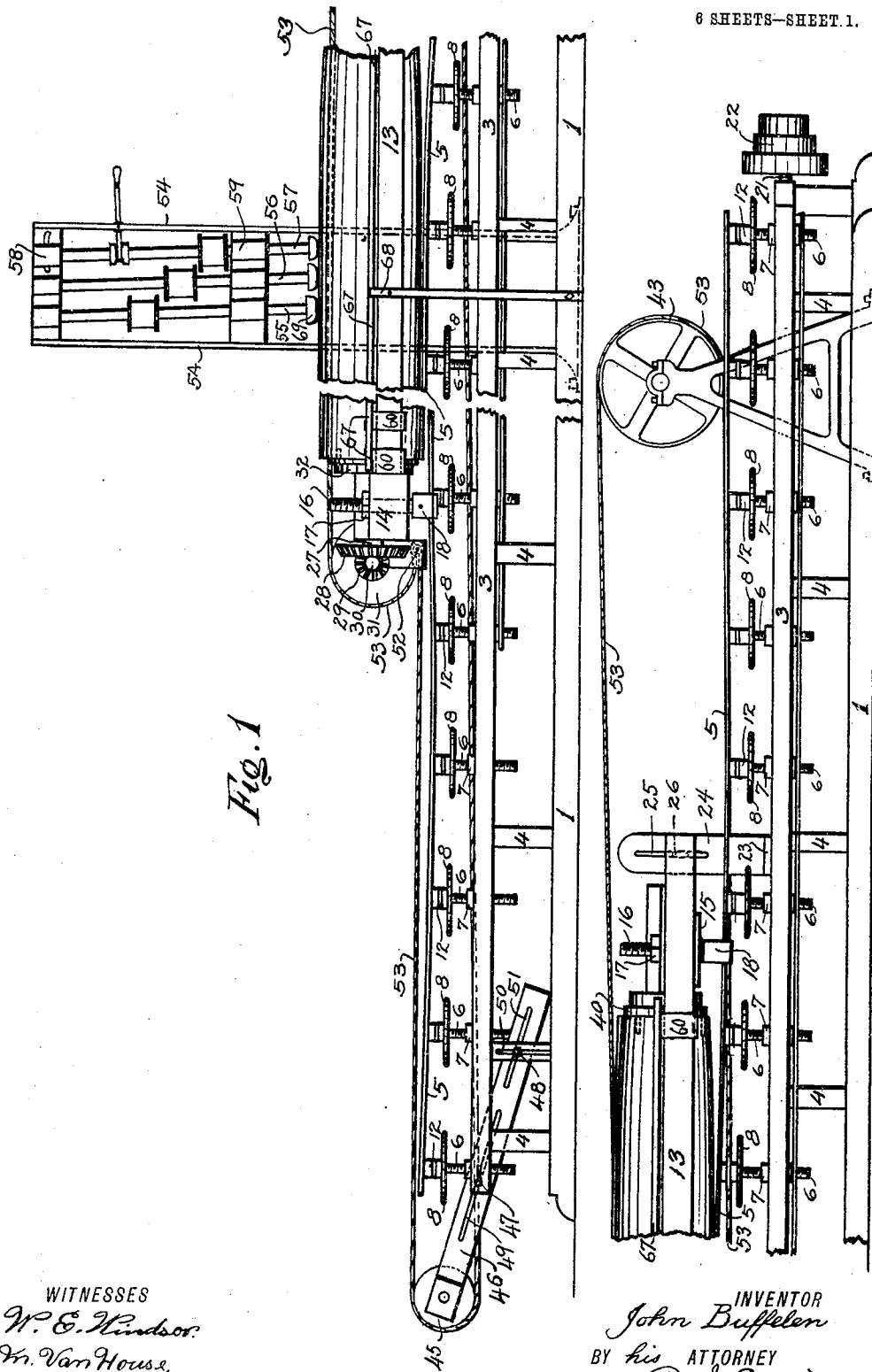


No. 809,552.

PATENTED JAN. 9, 1906.

J. BUFFELEN.
WOODWORKING MACHINE.
APPLICATION FILED SEPT. 29, 1904.

6 SHEETS—SHEET 1.



WITNESSES

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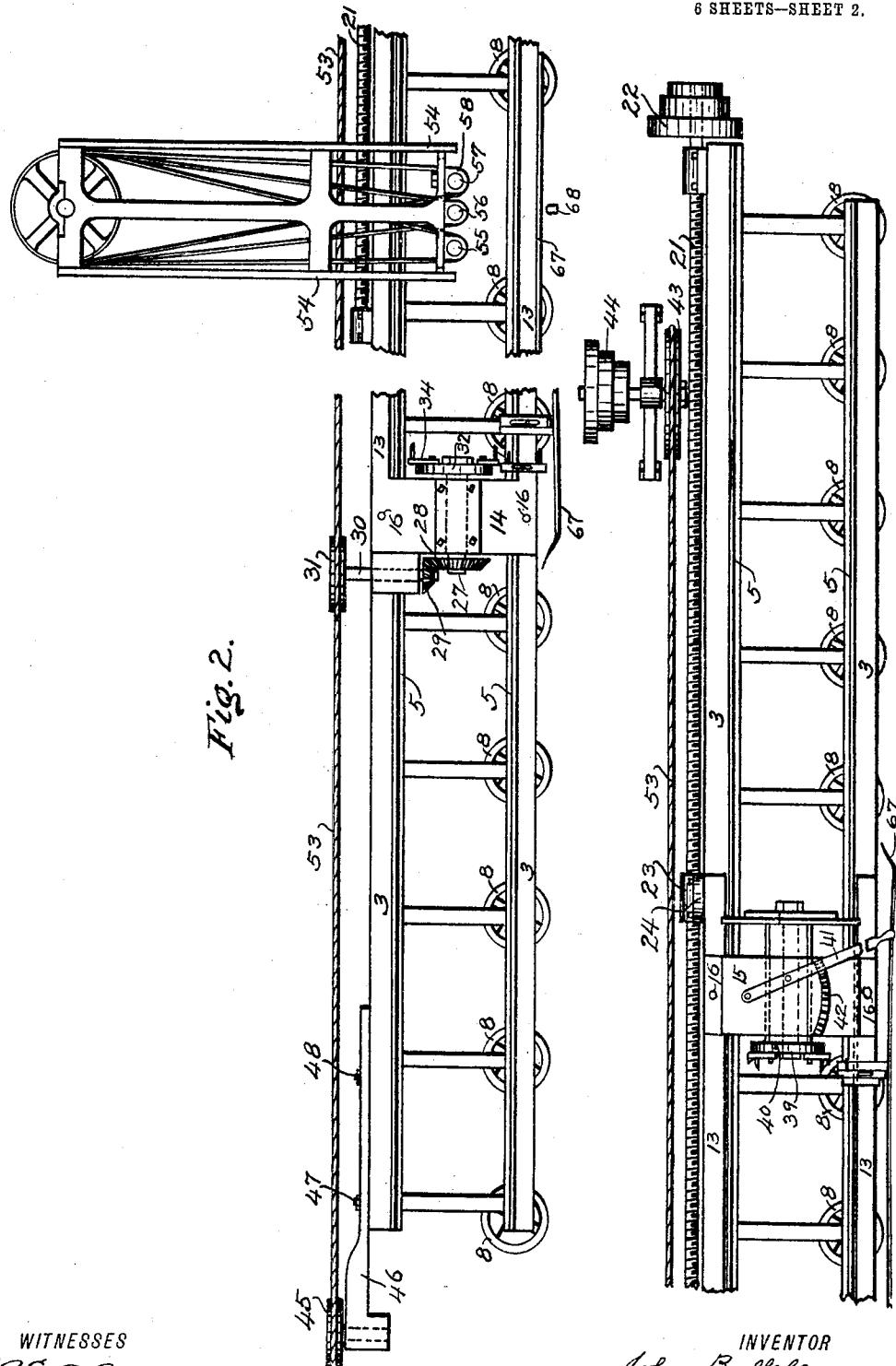
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6 SHEETS—SHEET 2.



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6 SHEETS—SHEET 3.

Fig. 3.

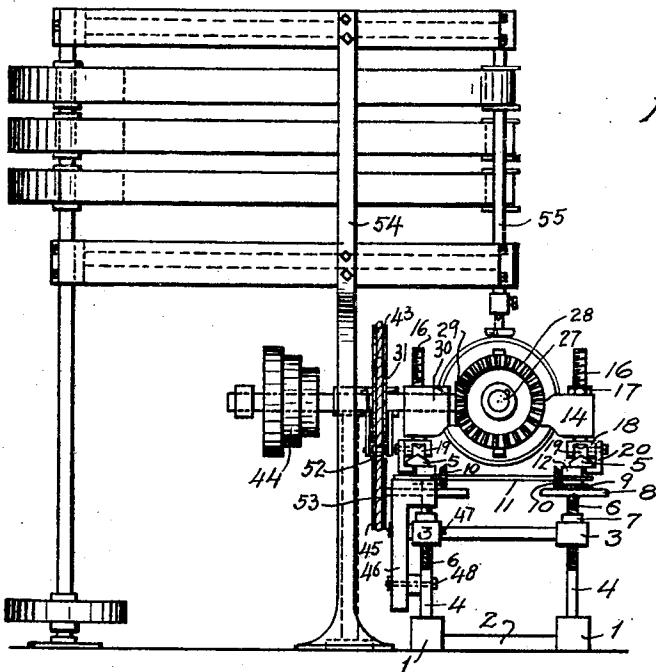


Fig. 8.

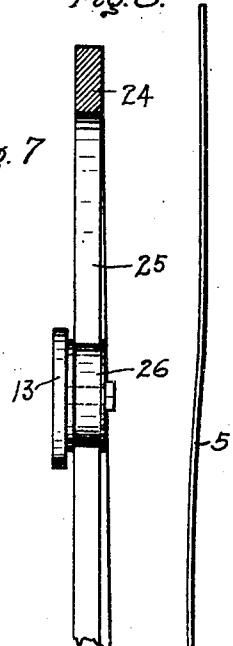


Fig. 7

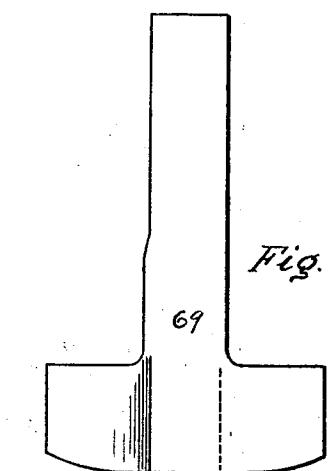


Fig. 4 Fig. 5.

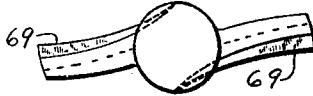
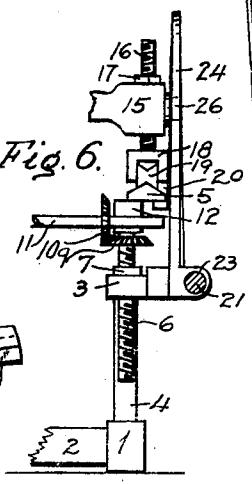


Fig. 6.



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6 SHEETS—SHEET 4.

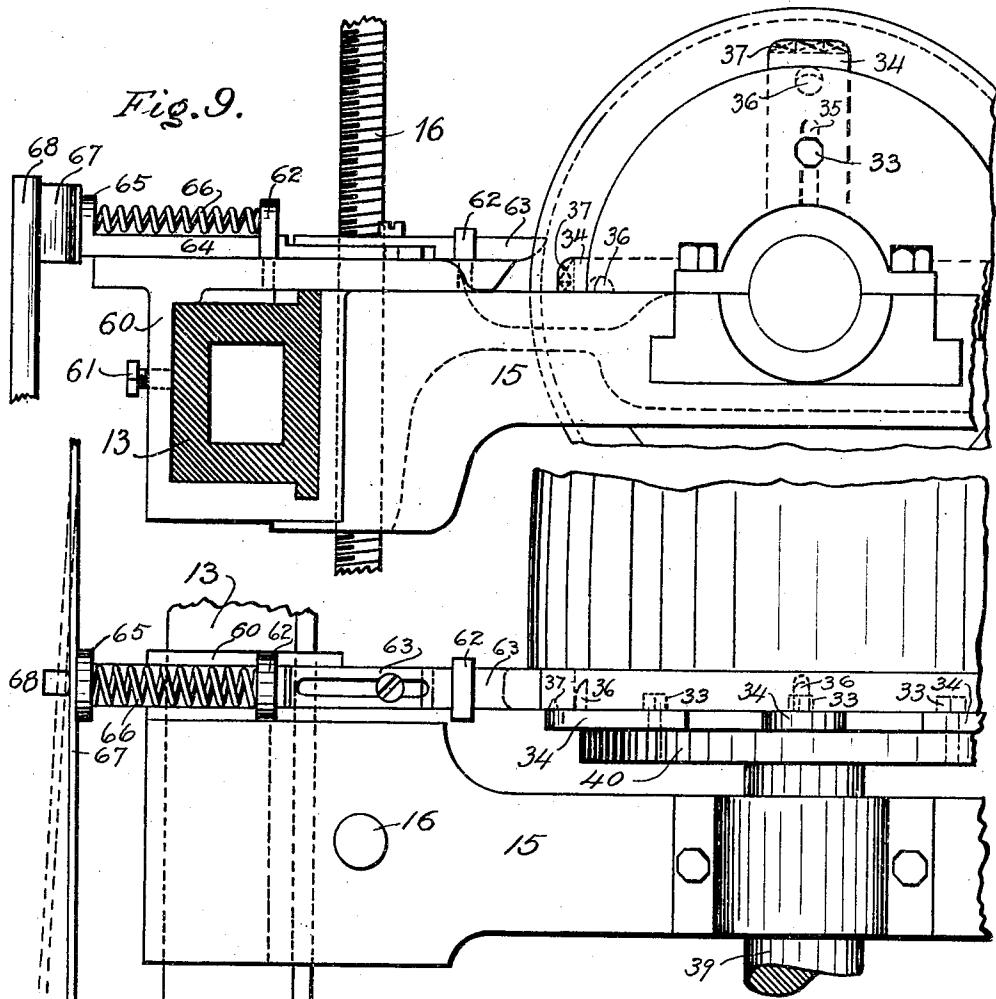


Fig. 10.

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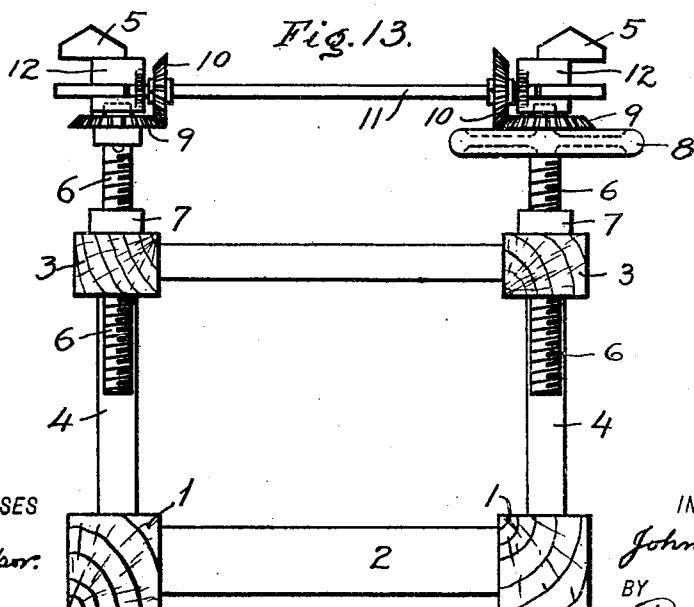
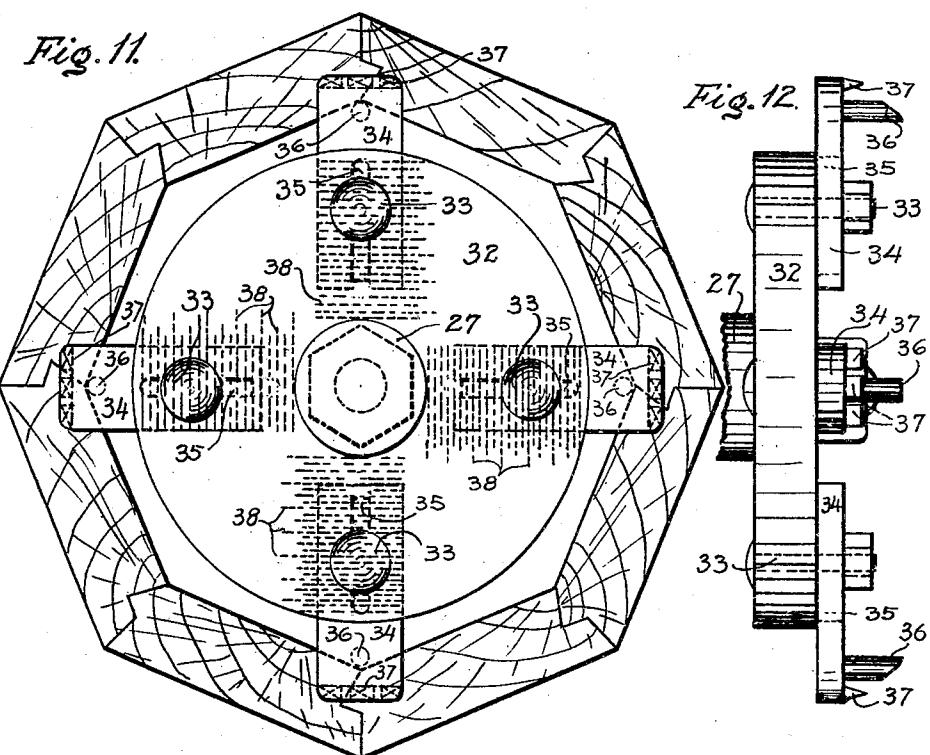
PATENTED JAN. 9, 1906.

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APPLICATION FILED SEPT. 29, 1904.

6 SHEETS—SHEET 6.



No. 809,552.

PATENTED JAN. 9, 1906.

J. BUFFELEN,
WOODWORKING MACHINE,
APPLICATION FILED SEPT. 29, 1904.

6 SHEETS—SHEET 6.

Fig. 14

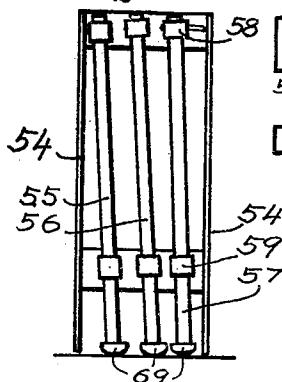


Fig. 15

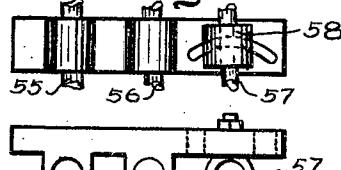


Fig. 16.

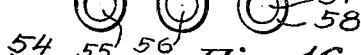


Fig. 17

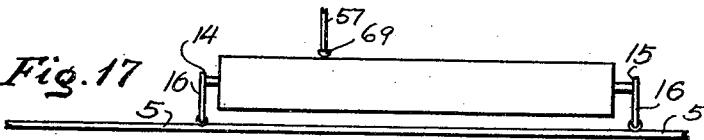


Fig. 18.

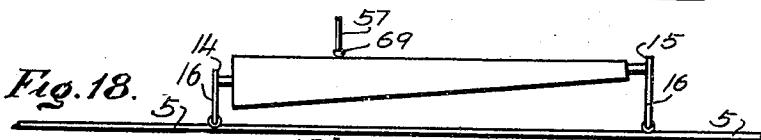


Fig. 19.

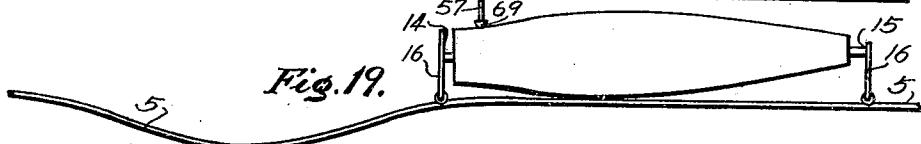
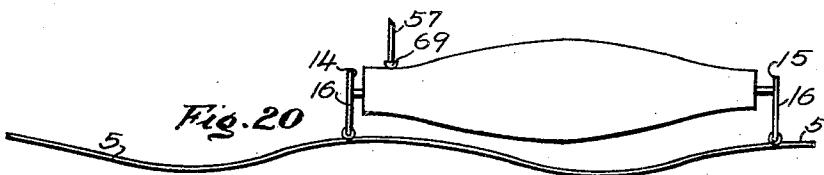


Fig. 20



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UNITED STATES PATENT OFFICE.

JOHN BUFFELEN, OF TACOMA, WASHINGTON.

WOODWORKING-MACHINE.

No. 809,552.

Specification of Letters Patent.

Patented Jan. 9, 1906.

Application filed September 29, 1904. Serial No. 226,481.

To all whom it may concern:

Be it known that I, JOHN BUFFELEN, a citizen of the United States of America, residing at Tacoma, in the county of Pierce and State 5 of Washington, have invented certain new and useful Improvements in Woodworking-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to woodworking-machines, and more particularly for those for turning wooden columns and other articles having variable diameters, and has for its objects, first, to vary the diameter at different parts of the column without shifting the knives; second, provide for tapering as well as bulging in the column; third, finish the column from the rough in one action of the machine; fourth, to flute a finished column of irregular varying diameter without shifting the knife. I attain these objects by the devices illustrated in the accompanying drawings, in which

Figure 1 is a side elevation of my machine, 25 being broken into three parts, so as to get it on the sheet. Fig. 2 is a plan thereof with the column removed, and Fig. 3 is an end view thereof. Fig. 4 is a side elevation of my knife, and Fig. 5 is a plan thereof. Fig. 30 6 is a detail showing the device connecting the feed-screw to the column-carriage, and Fig. 7 is a detail thereof. Fig. 8 represents the bent track on which the column-carriage travels. Fig. 9 is an end view of the groove-cutter, and Fig. 10 is a plan thereof. Fig. 11 is an end view of the column face-plate, and Fig. 12 is a side view thereof. Fig. 13 is a detail of the track-bending mechanism. Fig. 14 is a side view of the knife-spindles in their 40 normal positions. Fig. 15 is an enlarged side view of the bearing-blocks for the knife-spindles, and Fig. 16 is a plan thereof. Figs. 17, 18, 19, and 20 are exaggerated diagrammatic representations of some of the variations obtained by altering the elevation of one of the face-plates and by bending the rail.

Similar numerals of reference refer to similar parts throughout the several views.

The frame of my machine is constructed 50 of a pair of parallel floor-pieces 1, secured together at suitable intervals by the cross-pieces 2 and supporting the pattern-track and formed of pairs of rail-bars 3 on the posts 4, which are placed sufficiently close to insure the proper stiffness for the rail-bars.

Above the rail-bars 3 are supported the rails 5 by the screw-supports. These screw-supports consist of the screw parts 6, screwing into a sleeve 7, supported on and secured to the rail-bar 3. One of each pair of the screw-posts 6 is provided with a hand-wheel 8, by means of which the screw-post is turned. The other screw-post of the pair is turned simultaneously by any suitable positive connection between the screw-posts. I have 60 illustrated one such connection in Fig. 13. The bevel-gears 9 are secured to the screw-posts 6 and gear with the bevel-gears 10, which are secured to the transmitting-rod 11, which is suitably supported on the blocks 12, 70 secured to the rails 5 and into which the screw-posts 6 are journaled. Thus by turning the hand-wheel 8 of one of the posts 6 the corresponding post 6 is turned an equal amount, and the position of the rails 5 are 75 simultaneously lowered or raised an equal distance, and as these screw-posts 6 occur at frequent intervals the rails 5 may be bent to any form desired. I have shown the rails 5 as being of double beveled shape, and this is 80 the form I prefer, though there are many other forms which might be used.

The column-carriage passes along the machine on the rails 5 and is substantially a rectangular frame fitting around the column and composed of the two longitudinal members 13 slightly longer than the column and joined by the end cross-pieces 14 and 15, which respectively form the head and tail of the carriage. Near each corner of the above 85 frame the vertical screw-legs 16 pass, supporting the frame and being locked by the nuts 17. On the ends of these screw-legs 16 are pivoted the yokes 18, in which the beveled wheels 19, which run on the beveled rails 5, are journaled. The lugs 20 extend downward from the yokes 18 and pass under the edge of the rails 5, so as to hold the carriage down on the rails 5.

As the carriage is supported directly by 100 the rails and as they can be bent so as to vary in height from the floor from point to point, it is evident that no inflexible connection can be made between the feed mechanism and the carriage. The feed-screw 21 is journaled 105 to one of the rail-bars 3 and runs a little more than half the length of the rails 5. This feed-screw is driven by any suitable means, the pulleys 22 being shown to indicate that it may be run by belt from any 110

counter-shaft which is convenient. The feed-nut 23, which engages and travels along the feed-screw 21, slides along the rail-bar 3 and is provided with a long vertical extension 24, having the vertical slot 25 therein, in which the roller 26 is adapted to slide. This roller 26 is secured to a convenient point on one of the bars 13 of the column-carriage, so that as the screw 21 is turned it forces the carriage along the rails 5, the roller 26 passing up or down in the slot 25 with the variations in the height of the rails 5 from the floor. The heights of the head and the tail cross-pieces 14 and 15 can be made to differ by means of the screw-legs 16, and as these cross-pieces directly carry the ends of the column it is evident that with a fixed vertical tool the column may be tapered from end to end.

On the head cross-piece 14 is mounted in suitable bearings the spindle 27, having secured to its outer end the bevel-gear 28, gearing with the bevel-pinion 29, mounted on the counter-spindle 30, which is also supported in suitable bearings on the cross-piece 14 and which has the grooved pulley 31 secured to its outer end. Thus by driving the pulley 31 the spindle 27 is rotated. On the inner end of the spindle 27 is secured the face-plate 32, which consists of a flat circular plate, into which the four bolts 33 are screwed, extending out beyond the face thereof, as shown in Fig. 12. On these bolts 33 are fastened the extension clutch plates or arms 34 by means of nuts, the bolts 33 passing through slots 35 therein. At a short distance from the end of each of the arms 34 are the pins 36, adapted to engage inside of the sections of the column, and directly across the ends of the arms 34 are the teeth 37, adapted to grip into the end of the column. The gage-marks 38 on the face of the plate 32 are made so that the arms 34 may be set symmetrically about the center and at the proper distance therefrom, enabling the pins 36 to engage the inner sides of the column-sections at the corners thereof and the teeth 37 to enter into the end of the column, and when the column is rotated on the spindle 27 it will be central therewith.

The tailpiece 15 has a sliding spindle 39, mounted in suitable bearings and having a face-plate 40, similar to the face-plate 32. The lever 41, which operates and controls the sliding spindle 39, has a ratchet-dog secured to its lower side to engage in the quadrant-ratchet 42, Fig. 2, so that when the face-plate 40 has been forced as far as it will go by means of the handle-lever 41 the ratchet and dog will hold it firmly in place.

The face-plate 32 is rotated, as above explained, by the grooved pulley 31. The grooved pulley 43, Fig. 1, is mounted in any suitable manner near the end of the machine and is driven by a belt from a counter-shaft 65 through the pulleys 44. At the other end of

the machine and in line with the pulley 43 is mounted the similar adjustable pulley 45. This pulley is mounted on the arm 46, which is supported by the two bolts 47 and 48. The bolt 47 is secured in the rail-bar 3 near its end and passes through the slot 49 in the arm 46, while the bolt 48 passes through the slot 50 in the post 4 and the slot 51 in the arm 46. Thus by loosening the bolts 47 and 48 the arm 46 and the pulley 45 may be moved into any desired position.

A small idle wheel 52 is mounted on the column-carriage at a point in line with and below the grooved pulley 31. An endless rope 53 passes around the above pulleys 43 and 45, around the idle wheel 52 and the pulley 31, so that when the pulley 43 is rotated it imparts rotary motion to the above parts, and thus to the face-plate 32, which turns the column supported between it and the face-plate 40. As the column-carriage is moved along the rails 5 by the feed-screw 21 the pulley 31 and the idle wheel 52 travel with it along the rope 53 and keep rotating, and, further, the rise and fall of the pulley 31 due to the above-described bends in the track 5 will not affect its rotation on account of the flexibility of the rope.

The rough column is trimmed to the desired shape and diameter by means of the rotating knives suspended in fixed positions by the frame 54. I prefer to use three knives, which are secured into the spindles 55, 56, and 57. These spindles are not quite vertical, but lean toward the head of the machine. In this way the knives are tilted, so as only to cut with the portion nearest the head, the other portion being elevated to clear the part already cut. The knife mounted on spindle 55 does the rough cut, that one in spindle 56 cuts the column to size, while the one in spindle 57 smooths the column off. If it is desired to make a fluted column, a round column is first made as above. Then the knives in spindles 55 and 56 are removed, the spindle 57 is made vertical by shifting the upper lower bearing 58 in the slot in the frame 54, the bearing 59 being adjustable in said frame, and a special knife is inserted in said spindle 57. The column is then held from rotating and the spindle 57 is elevated by means of a handle. The carriage is then fed forward until the knife is at the point at which the flute is to begin. Then the knife is lowered and fastened, and the carriage is fed forward, thus cutting a flute in the column, the action being repeated for each flute. The flutes will be of uniform depth and shape because the knife is stationary, being fastened down, and the carriage will rise and fall for each flute on the bent track in exactly the same manner as it did when the smooth column was turned before the fluting began. Three grooves are ordinarily turned into columns of this character, one at each end, adapted to

fit into the base and capital, and one near its upper end, into which a collar of molding is fitted. These grooves I turn automatically at the same time that the column itself is being turned. This is done by mechanism illustrated principally in Figs. 9 and 10. To the part 13 of the column-carriage are adjustably secured the three knife-holder castings 60, being held in their proper positions by the set-screws 61. The loop-shaped lugs 62 are formed on the upper part of the casting 60 at convenient points thereon. Through the hole in the lugs 62 passes the groove-cutting - knife, which is formed in two parts, the cutting part or bit 63 being adjustable on the carrying part or knife-bar 64 by means of a screw passing through a slot in the part 63. The knife-bar 64 has an upward-extending lug 65, and a spring 66 is secured to and compressed between it and the lug 62. A long flat spring 67 is secured at its center to the center of the column-carriage. This spring 67 is slightly longer than the column-carriage and is bent away from the carriage except at the ends, which are reversed, so as to bend toward the carriage. This spring presses against the lug 65. The adjustable arm 68 is secured to the machine at a point opposite the rotating knives and may be brought closer to or farther from the carriage, according to the depth of groove which it is desired to cut. As the carriage moves on the rails the arm 68 presses the spring 67 against the lug 65 of the knife-bar 64, which in turn forces the bit 63 to cut the groove desired. The spring 66 is compressed by this action; but as the knife 63 passes the rotating knives the pressure is diminished and the spring 66 withdraws the knife 63 from the groove which it has cut.

In Figs. 4 and 5 I have shown the rotating knife 69, with which I turn the column. This knife consists of a central shank adapted to enter and to be fastened in a socket at the end of either of the spindles 55, 56, or 57, and of two knife-blades at the lower end of the shank.

Referring to the diagrammatic Figs. 17, 18, 19, and 20, I have intended to show therein in exaggerated form the possible adjustments of the carriage and track and the resulting shape of the column. Fig. 17 shows a straight track and the height of the head and tail pieces of the carriage equal, resulting in a perfect cylindrical column. Fig. 18 also shows a straight track, but shows the effect of raising the tailpiece above the level of the head - piece, this arrangement producing a perfect truncated cone-shaped column. Fig. 19 shows a half of the track straight, while the other half is sagged down, and also shows the tailpiece elevated, as in Fig. 18. This arrangement produces a bulge in the otherwise conical column. Fig. 20 also shows the tailpiece elevated, but shows a sag in each

half of the track, producing still another shaped column. It is evident that by changing the point of sag and the amount of it and by adjusting the head and tail pieces of the carriage a large variation in the shape of the column may be attained.

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

1. In a woodworking-machine, the combination of a fixed cutting-tool, an adjustable track, a carriage adapted to hold the wood to be worked mounted on said track, and adjustable legs supporting each end of said carriage upon said track whereby the position of the work on the carriage relatively to the cutting-tool can be varied; with means for rotating the work as it travels.

2. In a woodworking-machine, the combination of a fixed cutting-tool, an adjustable track, a carriage supported at its ends by said track and carrying the object to be operated on, a feed-screw beside the track, a traveling nut on said screw, and a pin-and-slot connection between said carriage and said traveling nut whereby said carriage is forced along said track irrespective of the adjustment of said track.

3. In a woodworking-machine, the combination of a fixed cutting-tool, an adjustable track, a carriage adjustably supported at its ends upon and relatively to said track, a feed-screw and traveling nut thereon, and a pin-and-slot connection between said carriage and said traveling nut whereby said carriage is moved along said track irrespective of the adjustment of said track and of said carriage; with means for rotating the work as it travels.

4. In a woodworking-machine, the combination of a fixed tool, an adjustable track, a carriage supported at its ends by said track, a feed-screw beside the track, a traveling nut on said screw, an upwardly-extending arm secured to said traveling nut and having a slot therein, and a roller-pin secured to said carriage and engaging in said slot whereby the longitudinal motion of said traveling nut is communicated to said carriage irrespective of the vertical movements of the carriage.

5. In a woodworking-machine, the combination of a fixed cutting-tool, a pair of parallel bendable rails, a series of screw-posts for bending and adjustably supporting each of said rails, operative means connecting the screw-posts in one series with the corresponding opposite screw-posts in the other series whereby the opposite posts may be simultaneously and correspondingly adjusted, and a traveling carriage adapted to hold the wood to be worked and being supported at each end by said rails; with means for rotating the work as it travels.

6. In a woodworking-machine, the combination of a carriage, rotatably mounted

face-plates thereon adapted to hold an article to be turned, a knife-holder on the carriage adjacent said face-plates and movable radially thereof, a knife mounted on said holder, a spring adapted to move the holder and withdraw said knife from the article to be turned, and means adapted to engage the holder and move the knife into contact with the article against the action of said spring as the carriage moves, with means for rotating the work as it travels, substantially as described.

7. In a machine for turning columns, the combination of a track, means for varying it vertically, a carriage, adjustable screws supporting and guiding the carriage on the track, and means on said carriage for engaging and supporting the column to be operated upon at its opposite ends with means for rotating the work as it travels.

8. In a machine for turning columns, the combination of a track, means for varying it vertically, a carriage, adjustable screws supporting and guiding the carriage on the track, and means on said carriage for engaging and supporting the column to be operated upon at its opposite ends; with means for rotating the column on the carriage during its travel, means for moving said carriage along said track, and a rotating cutting-tool adjacent to the path of the carriage and stationary relative thereto, adapted to operate upon the column as the latter moves therewith.

35 9. In combination, a base, a horizontally-disposed track thereon, means for vertically adjusting the track relative to the base, a horizontally-disposed carriage provided with vertically-adjustable rollers running upon said track; and rotatable face-plates on said carriage, adapted to support the object to be operated upon; with a feed-screw, a traveling nut thereon, and a loose connection between said nut and the carriage, for reciprocating the carriage on the track irrespective of the adjustment thereof, and a cutter adapted to operate on the object as it is moved therewith, substantially as described.

10. In a machine for turning wooden columns, the combination of a base, a horizontally-arranged track supported on said base, means for adjusting the track vertically relative to the base, a horizontally-disposed column-supporting carriage provided with rollers mounted on and guided by said track, and independently-adjustable column-supporting devices or heads on said carriage between which the object to be operated on is mounted; with a rotary cutting-tool adjacent to the carriage and adapted to operate upon the column as it is moved therewith, and means for rotating said column as it is moved past the cutter, substantially as described.

65 11. In a machine for turning columns, the

combination of a base, a track mounted thereon, means for adjusting all or part of the track, a carriage supported on and guided by said track, rotatable devices on said carriage for supporting the column to be operated upon at its opposite ends, means for varying the relative height of said supporting devices, and means for moving said carriage along said track; with a stationary series of rotary cutting-tools adjacent to the path of the carriage and adapted to successively operate upon the column as the latter is moved therewith, and means for rotating said column as it is moved past the cutter, substantially as described.

70 12. In a machine for turning wooden columns, the combination of a base, a horizontally-arranged track supported on said base, means for vertically bending or undulating the track, a horizontally-disposed carriage, adjustable screw-legs provided with rollers adjustably supporting the carriage on said track, column-supporting devices on said carriage adjustable one toward the other and between which the column is mounted, and means for rotating said supporting devices during the linear movement of the carriage; with a cutting-tool adjacent to the path of the carriage and stationary relative to the base adapted to operate upon the column as it is moved therewith, substantially as described.

75 13. In a machine for turning wooden columns, the combination of a base, a horizontally-arranged vertically-bendable track supported on said base, a horizontally-disposed carriage provided with adjustable rollers mounted on and guided by said track, and rotatable supporting devices on said carriage between which the object to be operated on is mounted; with a horizontally-arranged feed-screw, and a traveling nut thereon having a sliding engagement with the carriage; and a cutting-tool adjacent to the carriage adapted to operate upon the objects, substantially as described.

80 14. In combination, a base, a horizontally-disposed track thereon, adjustable screws for supporting and vertically adjusting the track relative to the base, a horizontally-disposed carriage provided with vertically-adjustable rollers running upon said track; rotatable face-plates on said carriage, adapted to support the object to be operated upon; a rotary cutting-tool mounted beside the path of the carriage, and adapted to operate upon the object on the carriage as it moves therewith, and means for rotating the work as it travels, substantially as described.

85 15. In combination, a base, a horizontally-disposed track thereon, means for adjusting the track relative to the base, a horizontally-disposed carriage moving upon said track; rotatable face-plates on said carriage adapted to support the object to be operated upon,

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a pulley mounted on the carriage, gearing between said pulley and one of the face-plates, pulleys at opposite ends of the frame, and an endless belt or rope running over said pulleys 5 to impart rotation to the object, a cutting-tool mounted beside the path of the carriage, and means for rotating said tool to operate upon the object on the carriage as it is moved therepast, substantially as described.

16. In combination, a base, a horizontally-disposed track thereon, screws for supporting and vertically adjusting the track relative to the base, a horizontally-disposed carriage running upon said track; rotatable face-plates 15 on said carriage adapted to support the object to be operated upon; means for reciprocating the carriage on the track, a cutting-tool mounted in a frame beside the path of the carriage, and means for rotating said 20 tool to operate upon the object on the carriage as it is moved therepast, substantially as described.

17. The combination of the base, vertically-adjustable screws attached to the sides 25 thereof, a vertically-bendable track supported on said screws; a reciprocating carriage provided with vertically-adjustable carrying-rollers mounted on said track; rotatable face-plates at the ends of the carriage adapted 30 to carry the column to be operated on; a pulley mounted on said carriage, gearing between the pulley and the adjacent face-plate; fixed and adjustable pulleys at opposite 35 ends of the base-frame, an endless rope running over said pulleys and on the carriage, a driven pulley for driving said rope; and means for reciprocating said carriage, substantially as described.

18. In combination, a base, a horizontally-disposed track thereon, means for vertically 40 adjusting the track, a horizontally-disposed carriage running upon said track; rotatable heads or face-plates on said carriage adapted to support the object to be operated upon, a pulley mounted on the carriage, gearing between said pulley and one of the face-plates, pulleys at opposite ends of the frame, and an 45 endless belt or rope running over said stationary and moving pulleys to impart rotation to the object, a cutting-tool mounted 50 beside the path of the carriage adapted to operate upon the object on the carriage as it is moved therepast, substantially as described.

19. In combination, a base, a horizontally-disposed track thereon, adjustable screws for 55 supporting and vertically adjusting the track relative to the base, a horizontally-disposed carriage provided with vertically-adjustable 60 rollers running upon said track; rotatable heads or face-plates on said carriage, adapted to support the object to be operated upon, a pulley mounted on the carriage, gearing between said pulley and one of the face-plates, pulleys at opposite ends of the frame, and an 65 endless belt or rope running over said stationary and moving pulleys to impart rotation to the object; means for reciprocating the carriage on the track; cutting-tools mounted in a frame beside the path of the carriage and fixed relatively thereto, and means for rotating said tools to operate upon the object on the carriage as it is moved therepast, substantially as described.

20. In combination, a base, a horizontally-disposed track thereon, adjustable screws for 70 supporting and vertically adjusting the track relative to the base, a horizontally-disposed carriage provided with vertically-adjustable rollers running upon said track; rotatable heads or face-plates on said carriage, adapted 75 to support the object to be operated upon, a feed-screw, a traveling nut thereon, and loose connections between said nut and the carriage for reciprocating the carriage on the track, a series of cutting-tools mounted in a frame beside the path of the carriage and fixed relatively thereto, and means for rotating said tools to operate upon the object on the carriage as it is moved therepast, substantially as described.

21. In combination, a base, a horizontally-disposed track thereon, adjustable screws for 80 supporting and vertically adjusting the track relative to the base, a horizontally-disposed carriage provided with vertically-adjustable rollers running upon said track; rotatable heads or face-plates on said carriage, adapted 85 to support the object to be operated upon, a feed-screw, a traveling nut thereon, and loose connections between said nut and the carriage for reciprocating the carriage on the track; a cutting-tool beside the path of the carriage adapted to operate upon the object on the carriage as it is moved therepast, substantially as described.

22. In combination, a base, a horizontally-disposed track thereon, adjustable screws for 90 supporting and vertically adjusting the track relative to the base, a horizontally-disposed carriage provided with vertically-adjustable 95 rollers running upon said track; rotatable heads or face-plates on said carriage, adapted to support the object to be operated upon, a feed-screw, a traveling nut thereon, and loose connections between said nut and the carriage for reciprocating the carriage on the track; a cutting-tool beside the path of the carriage adapted to operate upon the object on the carriage as it is moved therepast, substantially as described.

23. The combination of the base, vertically-adjustable screws attached to the sides 100 thereof, a vertically-bendable track supported on said screws; a reciprocating carriage provided with vertically-adjustable carrying- 105

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rollers mounted on said tracks; rotatable face-plates at the ends of the carriage adapted to carry the column to be operated on; means for reciprocating said carriage comprising a longitudinal screw-shaft in the frame, a traveling nut thereon, a slidable connection between said nut and the carriage, and means for rotating said screw; with a rotatable cutter adjacent to the path 5 of the carriage adapted to operate upon the object mounted on the carriage as it moves therepast.

24. The combination of the base, opposite vertically-adjustable screws attached to the 15 sides thereof, opposite vertically-bendable tracks supported on said screws; a reciprocating carriage provided with vertically-adjustable carrying-rollers mounted on said tracks; rotatable face-plates at the ends of 20 the carriage adapted to carry the column to be operated on; a pulley mounted on said carriage, gearing between the pulley and the adjacent face-plate; fixed and adjustable pulleys at opposite ends of the base-frame, 25 and an endless rope running over said pulleys and that on the carriage; with a longitudinal screw-shaft in the frame, a traveling nut thereon, a slidable connection between said nut and the carriage, and means for rotating 30 said screw; and rotatable cutters adapted to operate upon the object mounted on the carriage as it moves therepast.

25. In a woodworking-machine, the combination of a fixed cutting-tool, a traveling 35 carriage adapted to hold the wood to be worked, means for rotating said wood in said carriage, an adjustable track for said carriage, and adjustable legs supporting each end of said carriage upon said track whereby 40 the position of the object on the carriage may be varied.

26. In a woodworking-machine, the combination of a longitudinally-movable carriage rotatably carrying the article to be turned, a 45 longitudinally-adjustable knife-holder secured to said carriage, a knife slidably mounted thereon, a spring adapted to withdraw said knife from the article to be turned, a flat spring secured to said carriage and adapted 50 to engage said knife and an adjustable stationary arm adapted to press forward said flat spring and said knife as said carriage travels.

27. In a woodworking-machine, the combination of a cutting-tool, a pattern-track, a 55

carriage adapted to hold the work mounted on said track, means for adjusting the carriage upon the track to vary the position of the work relatively to the cutting-tool, and means for rotating the work as it is moved 60 past the cutting-tool.

28. In a woodworking-machine, the combination of a fixed cutting-tool, a pattern-track, a work-supporting carriage mounted on said track, means for adjusting the ends 65 of the carriage relatively to the track so as to vary the position of the work relatively to the tool; means for moving the carriage on the track, and means for rotating the work on the carriage as the latter travels. 70

29. In combination, a base, a horizontally-disposed pattern-track thereon, a horizontally-disposed carriage moving upon said track, rotatable face-plates on said carriage adapted to support the object to be operated upon, a pulley mounted on the carriage, gearing between the pulley and one of the face-plates, pulleys at opposite ends of the frame, and an endless belt or rope running over said pulleys to impart rotation to the 80 object as the carriage travels, and a cutter beside the path of the carriage adapted to operate on the object as it moves therepast, substantially as described. 75

30. In a woodworking-machine, the combination of a fixed cutting-tool, a pattern-track, a carriage adapted to hold the object to be worked, mounted on said track, means for moving the carriage on the track, and means for rotating the work on the carriage 90 as it travels; with means mounted on and traveling with the carriage for annularly grooving the object, substantially as set forth.

31. In a machine for making columns, the combination of a pattern-track, a carriage 95 movable thereon; heads on the carriage for supporting the column, means for moving the carriage on the track, and means for rotating the column as it travels; with a cutter beside the track of the carriage adapted to 100 operate on the column as it moves therepast, and a cutter mounted on the carriage adapted to groove the column while it travels, substantially as described.

In testimony whereof I affix my signature 105 in presence of two witnesses.

JOHN BUFFELEN.

Witnesses:

CARL HELM,
P. C. PARHAM.