N. JOSIAS.

COMBINATION SAW TABLE AND SINGLE SPINDLE SHAPER.

APPLICATION FILED JAN. 17, 1920.

1,346,031.

Patented July 6, 1920.

7 SHEETS—SHEET 1.

Fig. 8.

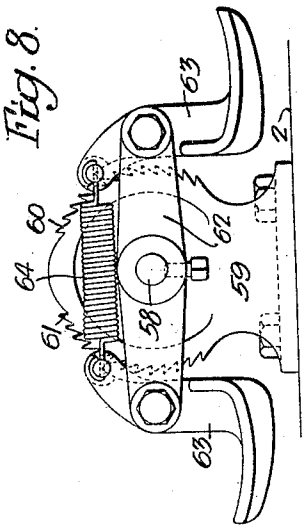


Fig. 9.

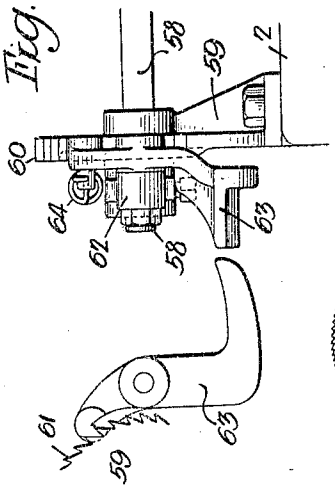
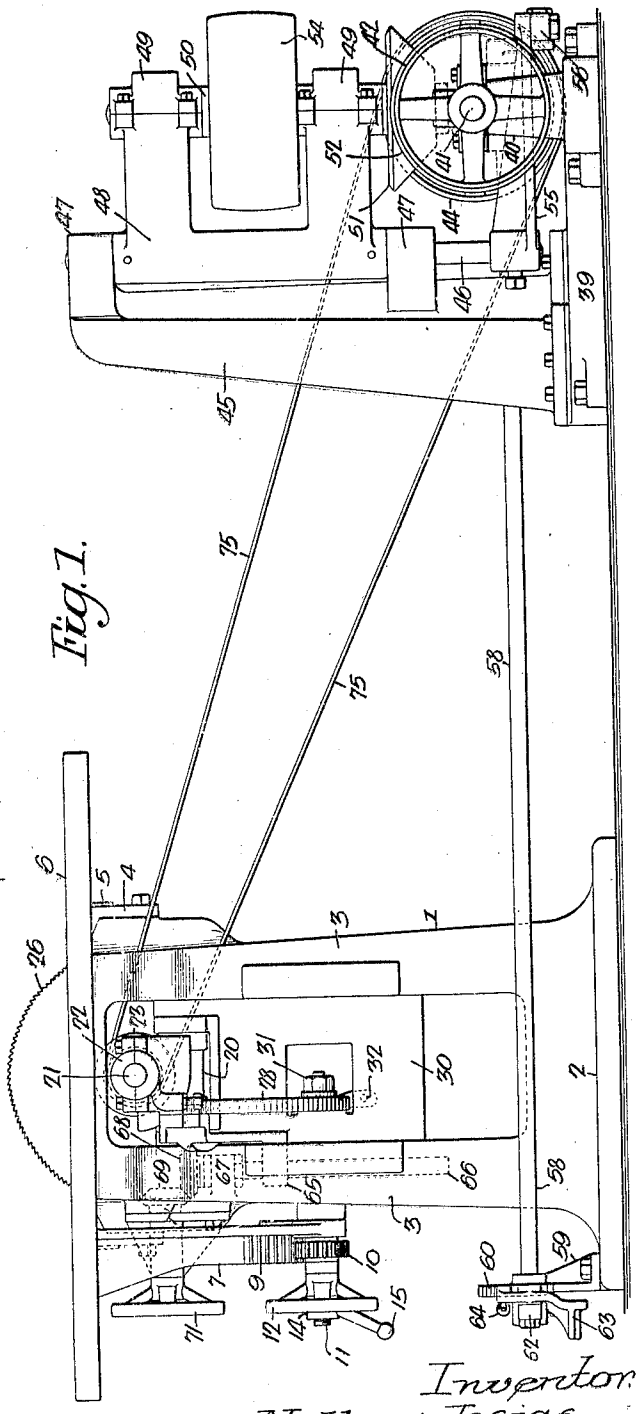


Fig. 10.

Fig. 1.



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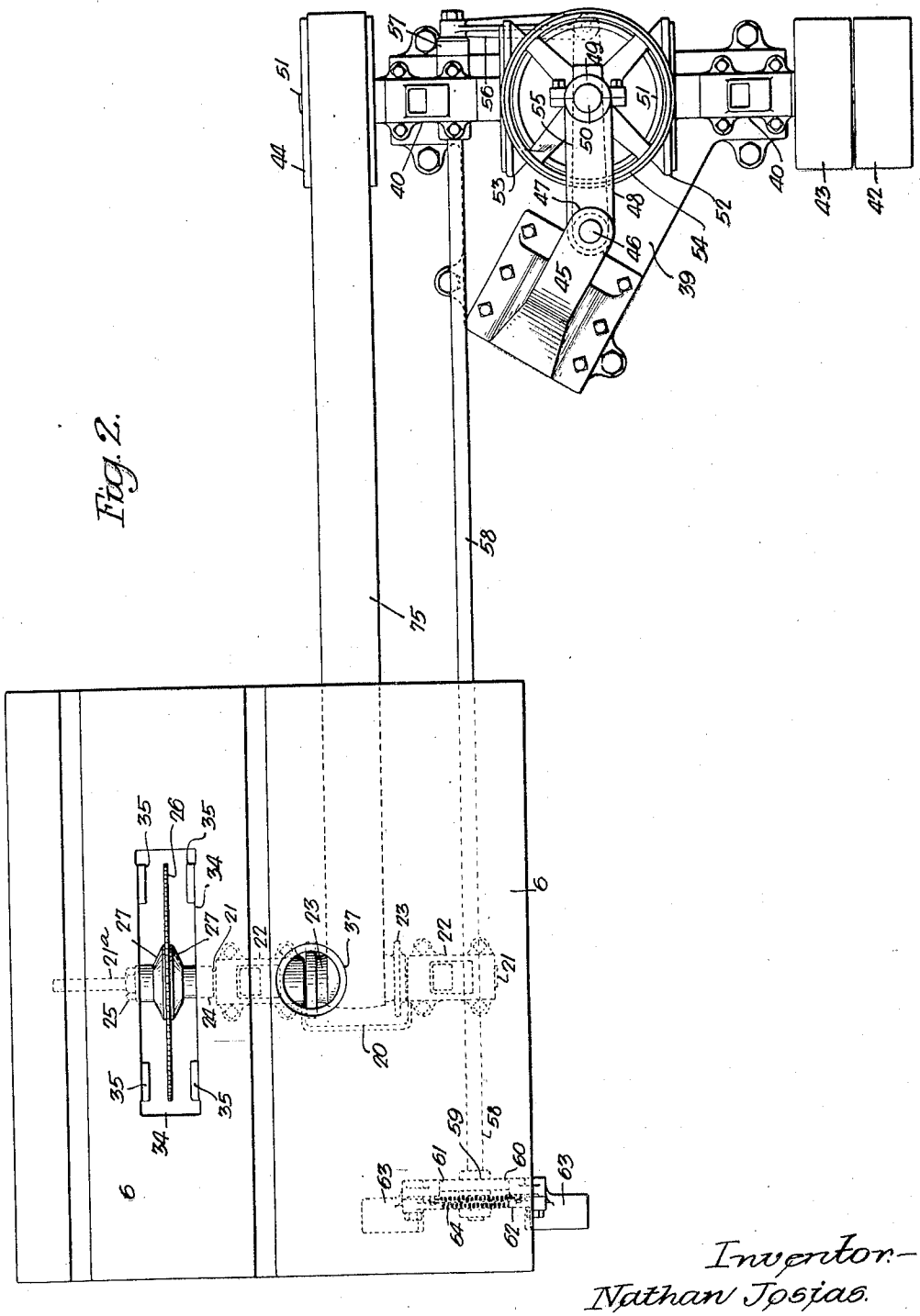


Fig. 2.

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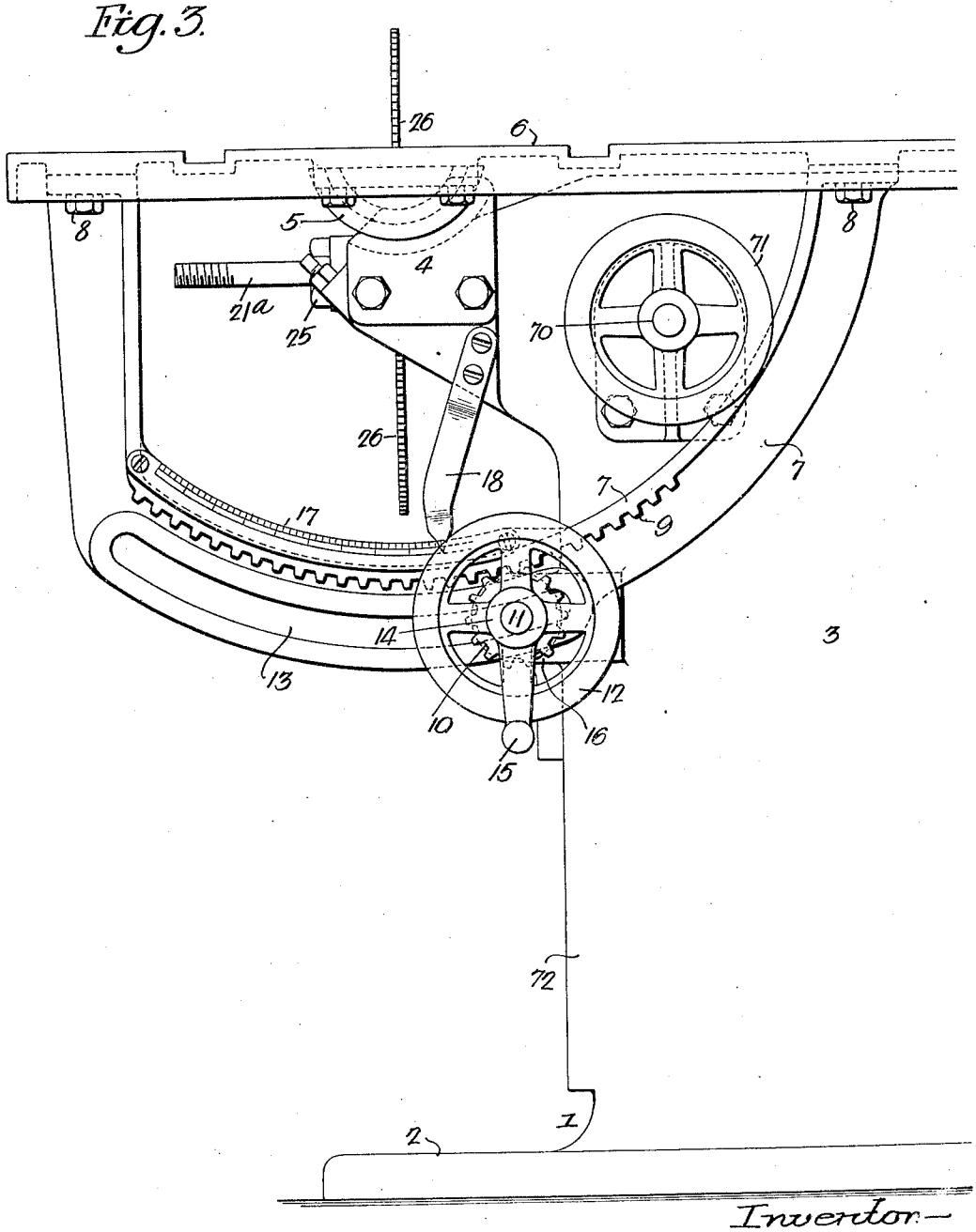
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7 SHEETS—SHEET 3.

Fig. 3.



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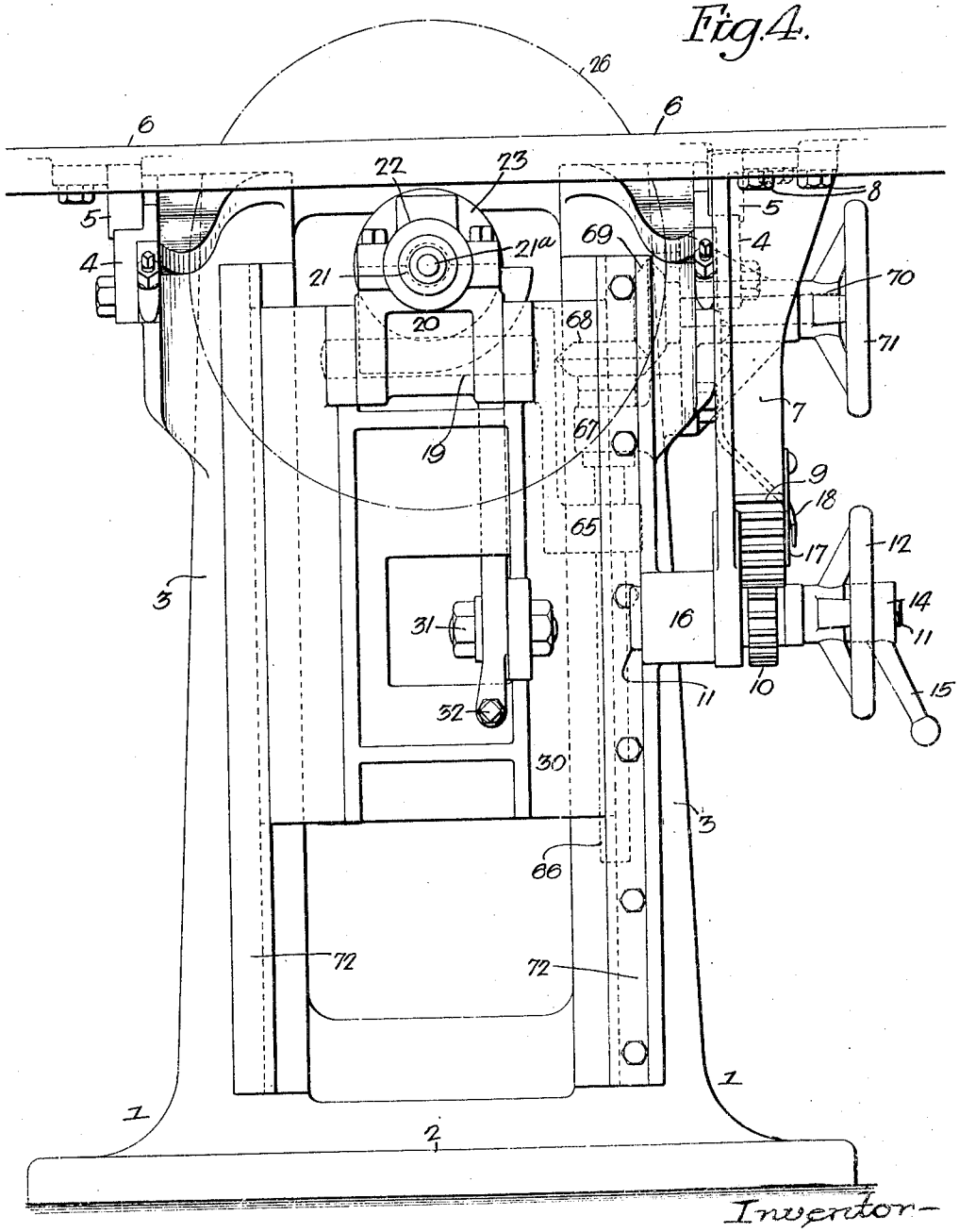
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7 SHEETS—SHEET 4.

Fig. 4.



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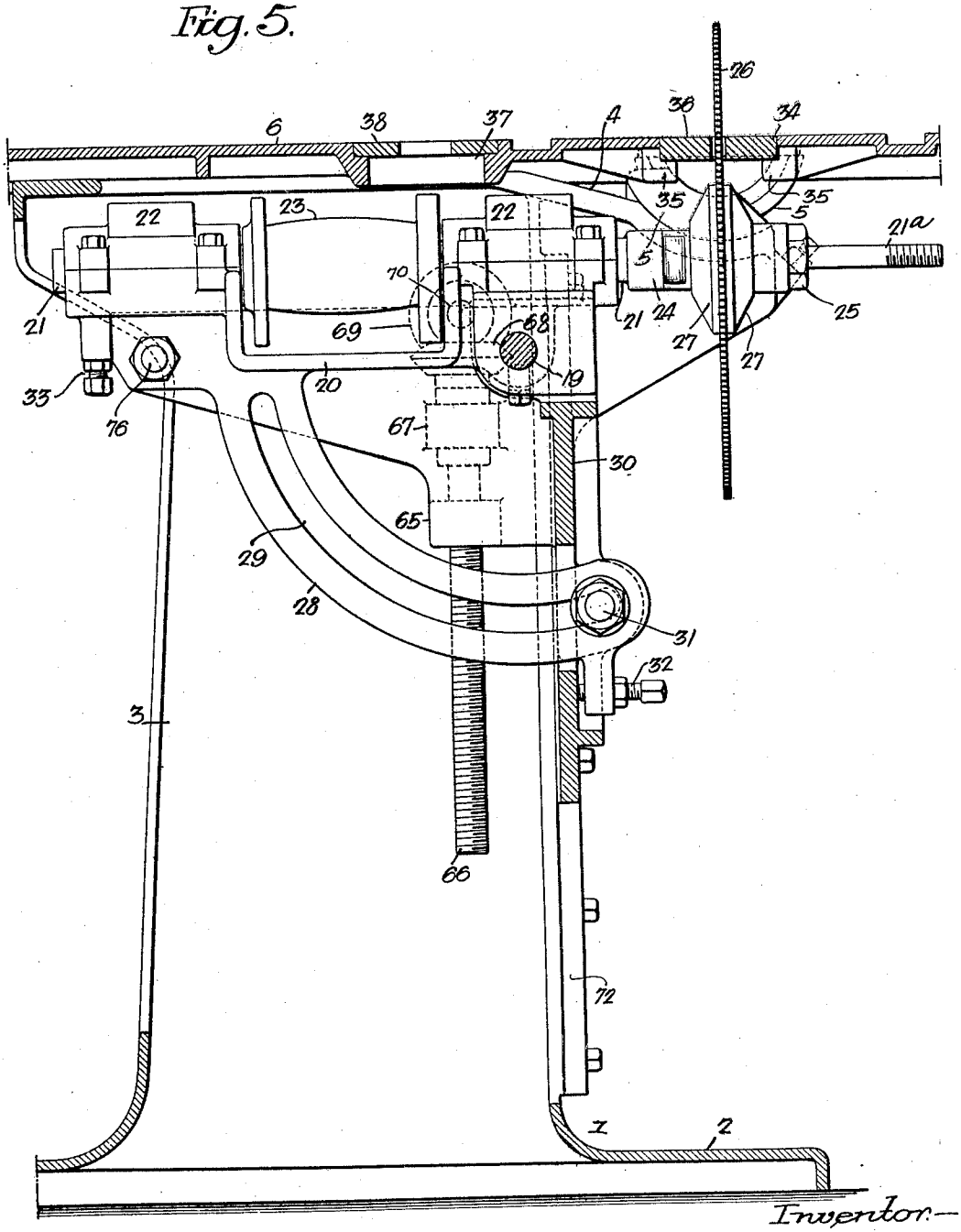
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7 SHEETS—SHEET 5.

Fig. 5.



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7 SHEETS—SHEET 6.

Fig. 6.

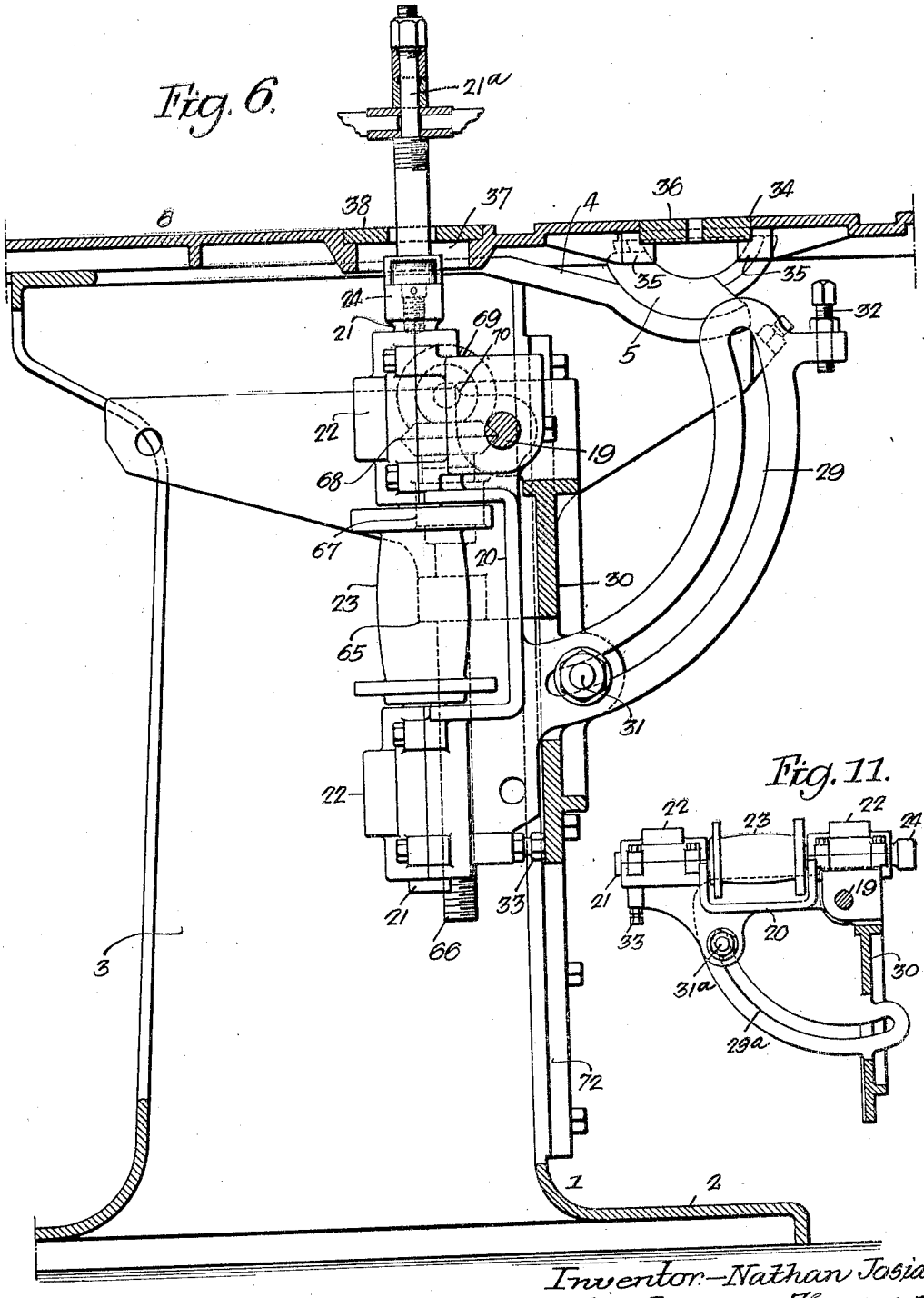


Fig. 11.

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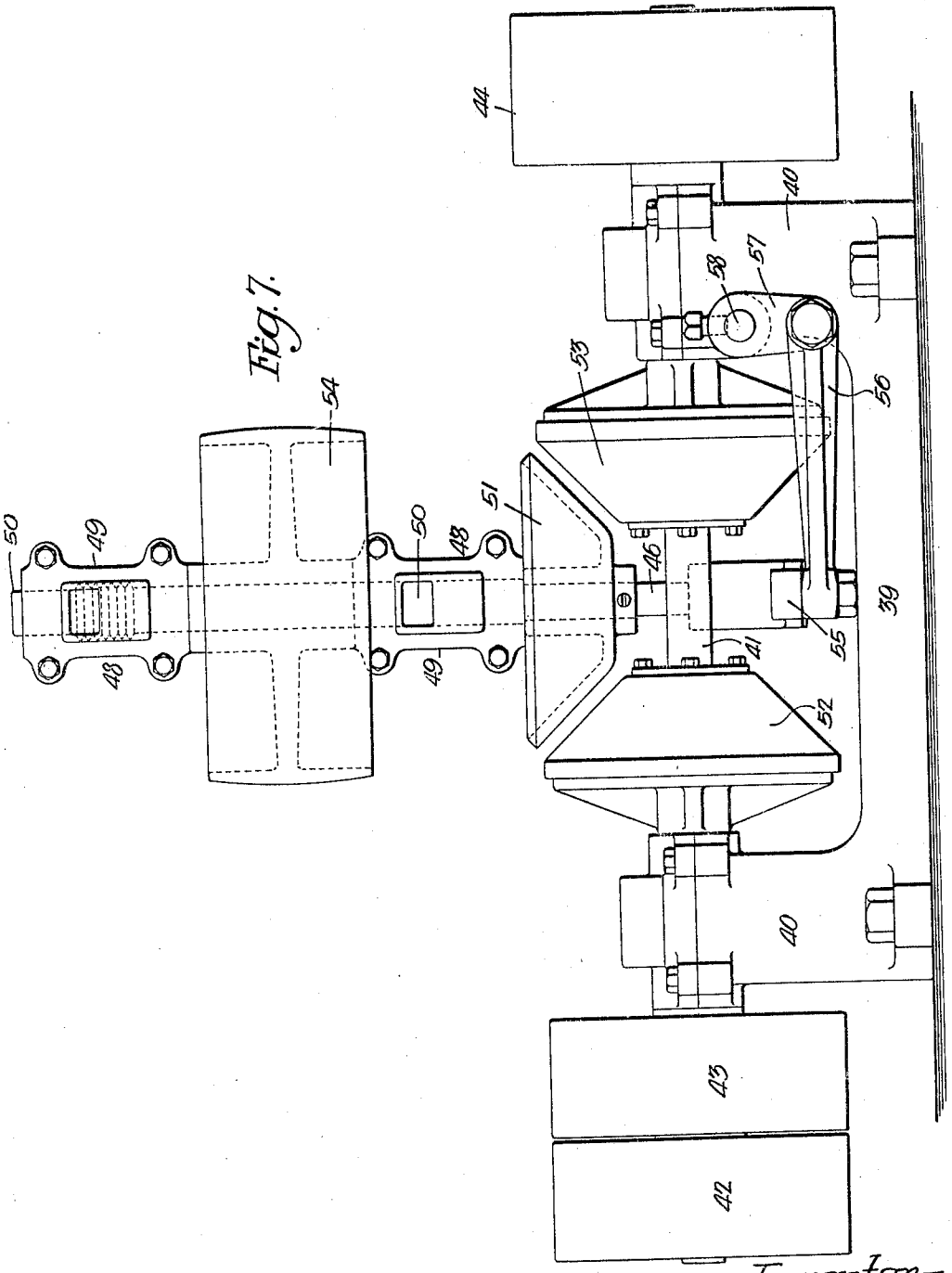
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7 SHEETS—SHEET 7.

Fig. 7.



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UNITED STATES PATENT OFFICE.

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COMBINATION SAW-TABLE AND SINGLE-SPINDLE SHAPER.

1,346,031. Specification of Letters Patent. Patented July 6, 1920.

Application filed January 17, 1920. Serial No. 352,057.

To all whom it may concern:

Be it known that I, NATHAN JOSIAS, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Combination Saw-Tables and Single-Spindle Shapers, of which the following is a specification.

My invention relates to certain improvements in the combined saw table and single spindle shapers of the type such as that shown in the patent granted to me on the 6th day of January, 1920, No. 1327390; the object of my present invention being to improve the construction of a combined saw table and single spindle shaper of this type, and to provide means for reversing the movement of the spindle. A further object of the invention is to so design the machine that one belt can be used to drive the spindle when it is in either of its two positions.

In the accompanying drawings:

Figure 1, is a side view of my improved combined saw table and single spindle shaper;

Fig. 2, is a plan view;

Fig. 3, is a front elevation of a portion of the table;

Fig. 4, is a view looking at the side of the machine opposite to that illustrated in Fig. 1;

Fig. 5, is a longitudinal sectional view through the standard and table showing the spindle in a horizontal position and the saw mounted thereon;

Fig. 6, is a view similar to Fig. 5, showing the spindle in the vertical position and a shaping cutter mounted thereon;

Fig. 7, is an end view showing the means for reversing the movement of the spindle;

Figs. 8, 9 and 10, are detail views of the treadle mechanism for the shaper, and

Fig. 11, is a view illustrating a modification.

1 is a standard having a suitable base 2 and side frames 3, and on this base are curved segmental bearings 4 to receive the curved projections 5 secured to the under side of a table 6. In the present instance, one of these bearings 4 is at each side of the standard, and there are two projections 5 on the table, as clearly shown in Fig. 4. 7 is a segmental rack shaped as shown in Fig. 3, and secured to the under side of the table by bolts 8. The teeth 9 of this rack mesh with teeth of a pinion 10 on a spindle 11 having a hand-wheel 12, and this spindle extends through a segmental slot 13 in the segment 7. On the spindle 11 is a clamping nut 14 having a handle 15 which, when the table is moved into position by turning the hand-wheel 12, can be locked to the standard by the nut 14, as the spindle 11 is carried by a bearing 16 on the standard, Fig. 4. On the segment 7 is a scale plate 17, and on the standard is a pointer 18 so that when it is desired to shift the table to an angular position, the gage plate will indicate the angle, and the table can be locked in the position to which it is adjusted.

On the standard 1 is a vertical slide 30 carrying a pivot pin 19, on which is mounted a frame 20 carrying a spindle 21 which, when in the horizontal position, as shown in Fig. 5, acts as a saw spindle, and when in the position shown in Fig. 6, acts as the shaper spindle.

The spindle 21 is mounted in bearings 22 on the frame 20, and has a flanged belt pulley 23 secured thereto, one end of this spindle has a hub 24 with a threaded opening therein to receive the threaded end of a shouldered extension 21^a which is pinioned to the hub as shown. Between the shoulder and a nut 25 is mounted a saw 26 and its clamp plates 27.

The frame 20 has a segmental projection 28 which is slotted, as at 29, and extending through the slot is a clamping bolt 31, which passes through a lug on the vertical slide 30 and clamps the segment in any position in which the frame 20 is adjusted, so that if the machine is to be used as a saw, then the frame 20 is moved so that the spindle 21 will be in a horizontal position, as in Fig. 5. When the frame is in this position a second clamping bolt 76 may be used to clamp the overhanging end of the frame to the slide 30, but should it be used as a shaper, then the clamping bolt 31 is released, and the bolt 76 entirely removed, then the frame 20 is turned on its pivot 19 so that its spindle 21 will assume a vertical position, as in Fig. 6.

In some instances, the vertical slide may be slotted, as at 29^a, Fig. 11, and a clamping bolt 31^a may be mounted on a lug of the frame 20 and adapted to the slot in the slide, without departing from the essential feature of the invention.

At the outer end of the segment 28 is a set screw 32 which bears against the face of the slide 30. By adjusting this set screw before clamping the frame 20 to the slide,

the spindle 21 can be accurately adjusted to its horizontal position, and on the frame 20 is a set screw 33 which bears against the inner side of the slide 30, as shown in Fig. 6, so as to adjust the spindle to its vertical position.

The table 6 has a slot 34 through which the saw 26 extends, and lugs 35 project under the slot so as to receive a detachable filling block 36, having a narrow slot for the saw. The saw table has an opening 37 through which the spindle 21 extends when in the vertical position, and the walls of this opening are shouldered so as to receive a removable block 38 having an opening for the passage of the spindle.

On the vertical slide 30 is an internally threaded lug 65, and passing through the lug is an adjusting screw 66, and on one of the side frames 3 is a bearing 67 through which the screw extends. On the upper end of the screw is a bevel wheel 68 meshing with a bevel wheel 69 on a horizontal shaft 70 having a hand-wheel 71, which is above the hand-wheel for operating the table. On turning the hand-wheel 71, the vertical slide with its spindle can be raised and lowered as desired. The slide 30 is adapted to guideways 72 on the standard 1, as shown.

At one side of the standard 1 is a base 39 having bearings 40 for a driving shaft 41. On one end of this driving shaft are fast and loose pulleys 42 and 43, and at the opposite end is a single pulley 44 fixed to the shaft, and a belt 75 passes around this pulley and around the pulley 23 on the spindle 21, as clearly shown in Fig. 1, when said spindle is in its horizontal position and the drive is direct, as it is not necessary to reverse the spindle 21 when the machine is used as a saw.

On an upright 45 is a vertical spindle 46 passing through bearings 47 on the upright, and carried by this spindle is a frame 48 having bearings 49 for a vertical shaft 50 carrying at its lower end a cone friction wheel 51, and on the shaft 41 are cone friction wheels 52 and 53. On the shaft 50 is a pulley 54, and the belt 75 passes around this pulley and around the pulley 23 on the spindle 21 when the spindle is in the vertical position, and the parts are so designed that the same belt 75 can be used when the spindle 21 is in either of its two positions.

Secured to the spindle 46 is an arm 55, which is connected by a link 56 to an arm 57 on a rock shaft 58 extending from the shifting mechanism to a position in front of the machine so that it can be operated and the frame 48 shifted by the operator's foot. The shaft 58 is mounted in a bearing 59 secured to the base of the frame 1, and on this bearing are ratchet teeth 60 and 61, and secured to the end of the shaft 58 is a two-armed lever 62 having pawls 63 pivotally mounted thereon, and a spring 64 tends to draw the pawls toward the ratchet teeth 60 and 61, so that by pressing the foot on one lever, the frame 48 can be shifted to one side and its cone wheel 51 will come into frictional contact with the cone 52 on the shaft 41. When the foot is placed on the other pawl 63, the cone wheel 51 will be shifted so as to come into frictional contact with the cone 53, and the rotation of the shaft 50 will be reversed. When the parts are in mid position, as in Fig. 8, the frame 48 will also be in mid position, and the cone wheel 51 will be out of contact with both of the cones 52 and 53.

By the above construction, it will be seen that I am enabled to provide a combination saw table and single spindle shaper in one machine, and to provide means for driving the spindle in either of its two positions, and also to provide means for readily reversing the spindle when it is used as a shaper. The spindle 21 can be adjusted to any angle desired and firmly locked in position after adjustment, and the driving mechanism is so designed that a single belt can be used for driving the spindle in any of its positions.

I claim:

1. In a combined saw table and single spindle shaper, the combination with a standard, a table carried thereby, and a frame mounted to slide vertically on one side of the standard, said frame having a pivot pin between the center of and said side of the standard, of a second frame pivotally hung at one end upon said pin, and having its free end provided with a segmental projection, a spindle mounted in bearings on the pivoted frame with its tool carrying end adjacent said pivot, and tiltable therewith through an arc of substantially 90°, and coacting means between the sliding frame and the segmental projection for clamping the latter in place with the spindle in either a horizontal or vertical position.

2. The combination in a combined saw table and single spindle shaper, of a standard having a vertical guide on one of its sides; a vertical slide mounted on said guide; means for adjusting the slide; a pivotally mounted table having a segmental rack and an operating pinion therefor, said vertical slide having a horizontal pivot pin between the center of and the side of the standard having said guide; a frame pivotally hung at one end upon said pivot pin and having its free end provided with a segmental projection; a spindle mounted in bearings on the pivoted frame with its tool carrying end adjacent said pin, said spindle being tiltable through an arc of substantially 90°; and coacting means between the slide and the segmental projection for

clamping the latter in place with the spindle in either a horizontal or vertical position.

3. In a machine of the character described, the combination of a standard having a vertical guide on one side; a vertical slide mounted on said guide said slide having a horizontal pivot pin between the center of and the side of the standard having said guide; a frame pivotally mounted at one end on said pin, and having its free end provided with a segmental projection; a spindle mounted in bearings on said frame with its tool carrying end adjacent said pivot, said spindle being tiltable with the frame through an arc of substantially 90°, and having its end adapted to receive either a saw or a shaper tool; coacting means between the vertical slide and the segmental projection for clamping the latter in place with the spindle in either a horizontal or vertical position; and adjustable stops for the pivoted frame whereby the driving spindle can be adjusted.

4. In a combined saw table and single spindle shaper, the combination of a standard having a guide at one side of its vertical center; a vertical frame mounted to slide in said guide, said frame having a horizontal pivot pin located between said guide and the vertical center of the standard; a frame pivotally hung at one end upon said pin; a spindle carried by the pivoted frame with its tool receiving end adjacent said pivot; means for securing the free end of the pivoted frame to a fixed portion of the standard, said means adapted to clamp the frame in place with the spindle in either a horizontal or vertical position.

5. In a combined saw table and single spindle shaper, the combination of a standard having a vertical guide on one of its sides; a vertical frame mounted in said guide and having a horizontal pivot pin; a frame having one of its ends mounted on said pivot pin; a spindle on the pivoted frame having its tool carrying end adjacent the pivot pin; a tiltable table having two openings therethrough, one of said openings being nearer one end of the table than the other and the other opening being substantially central of the table, the former of said openings adapted to admit a saw blade when the spindle is in a horizontal position and the other opening adapted to receive the tool carrying end of the spindle when the latter is in a vertical position; and means for clamping the pivoted frame in place when the spindle is in either a horizontal or vertical position.

NATHAN JOSIAS.