

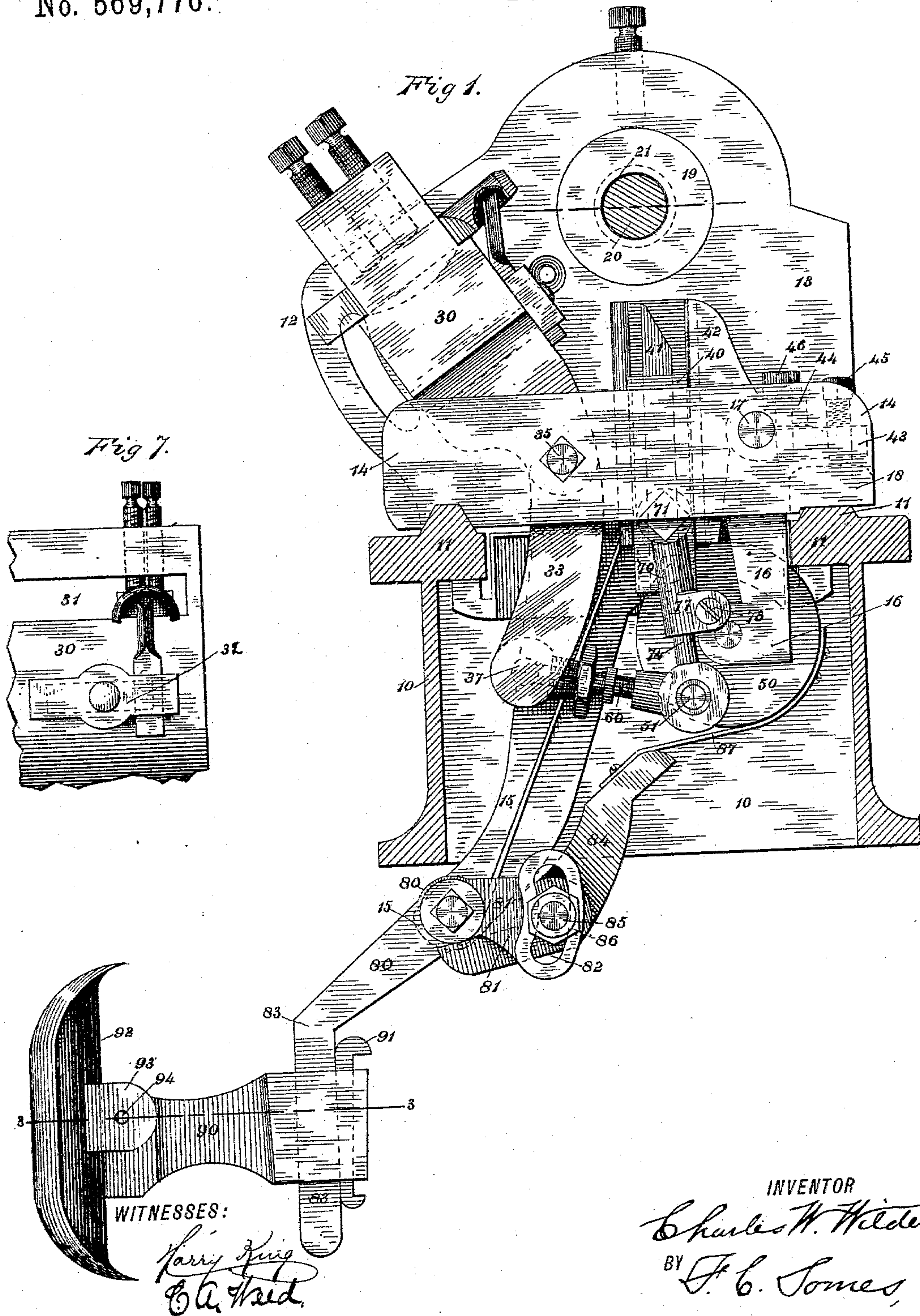
(No Model.)

4 Sheets—Sheet 1.

C. W. WILDER.  
WOOD TURNING LATHE.

No. 569,776.

Patented Oct. 20, 1896.



WITNESSES:

*Harry King*  
*E. A. Ward*

INVENTOR

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ATTORNEY

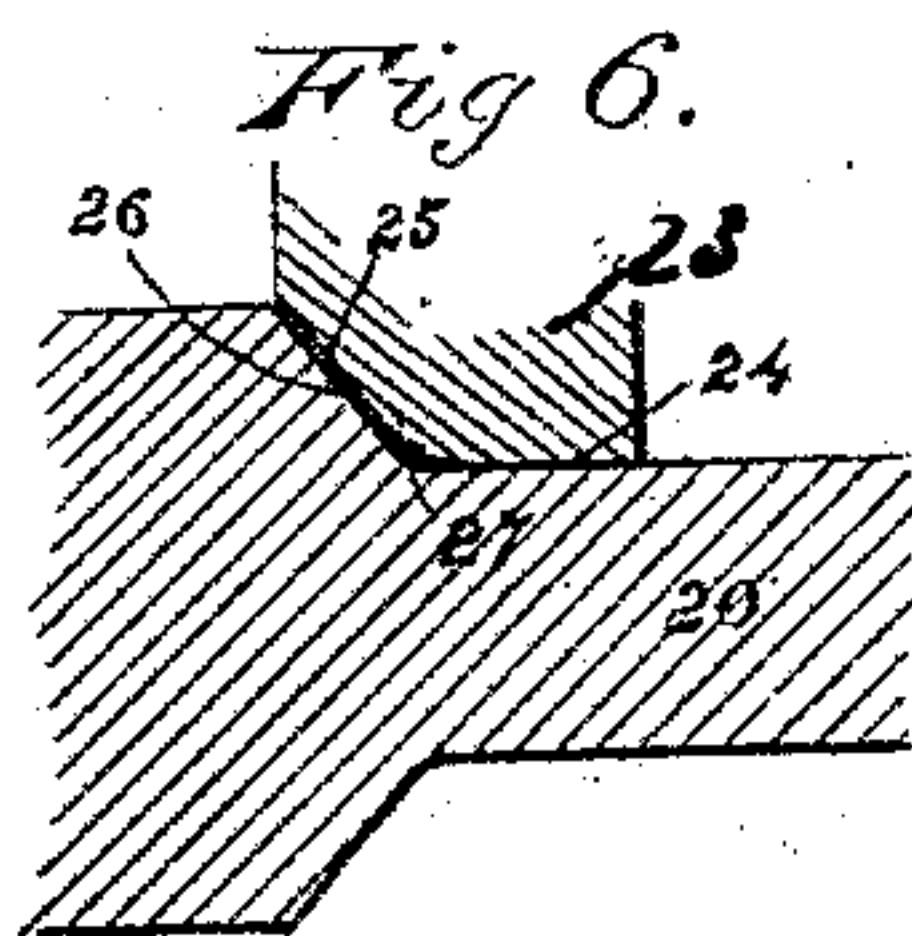
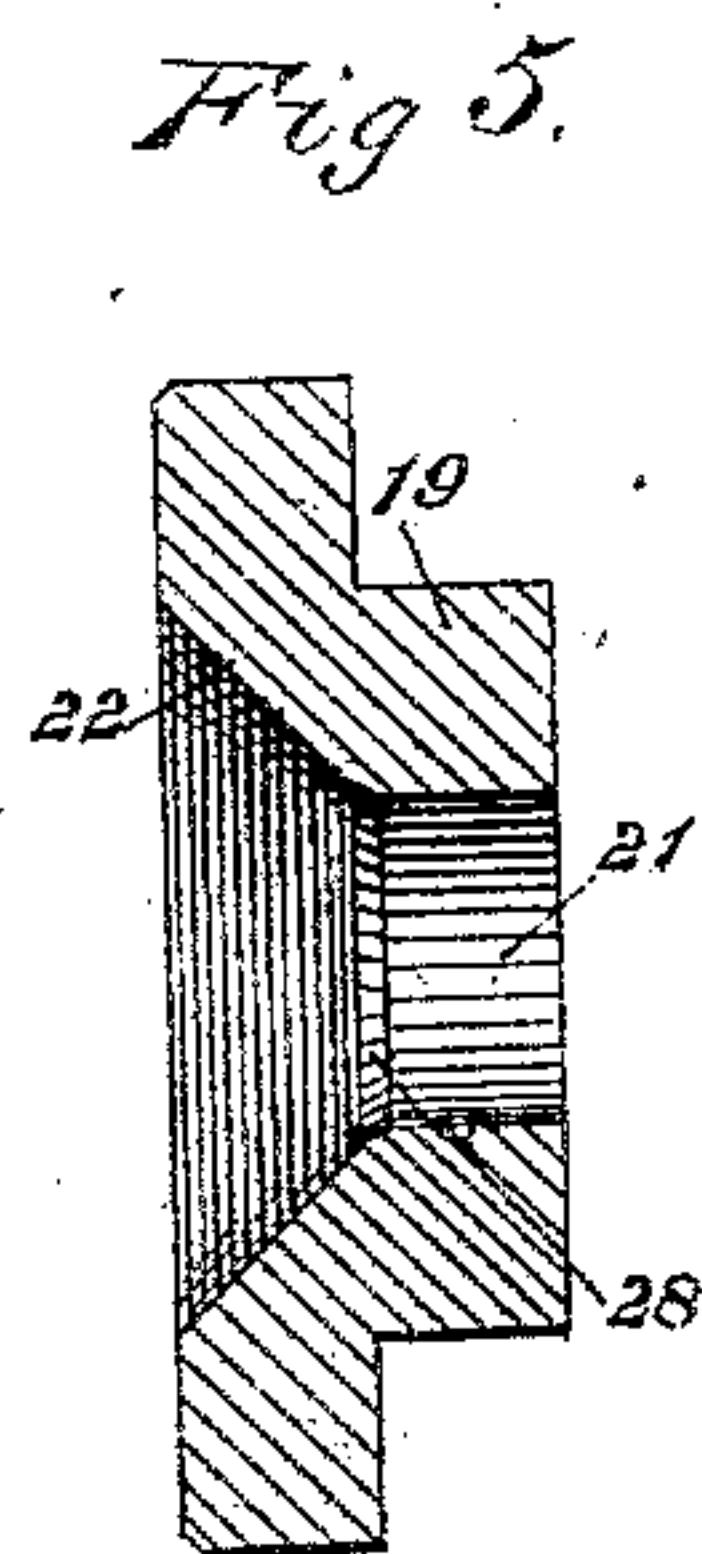
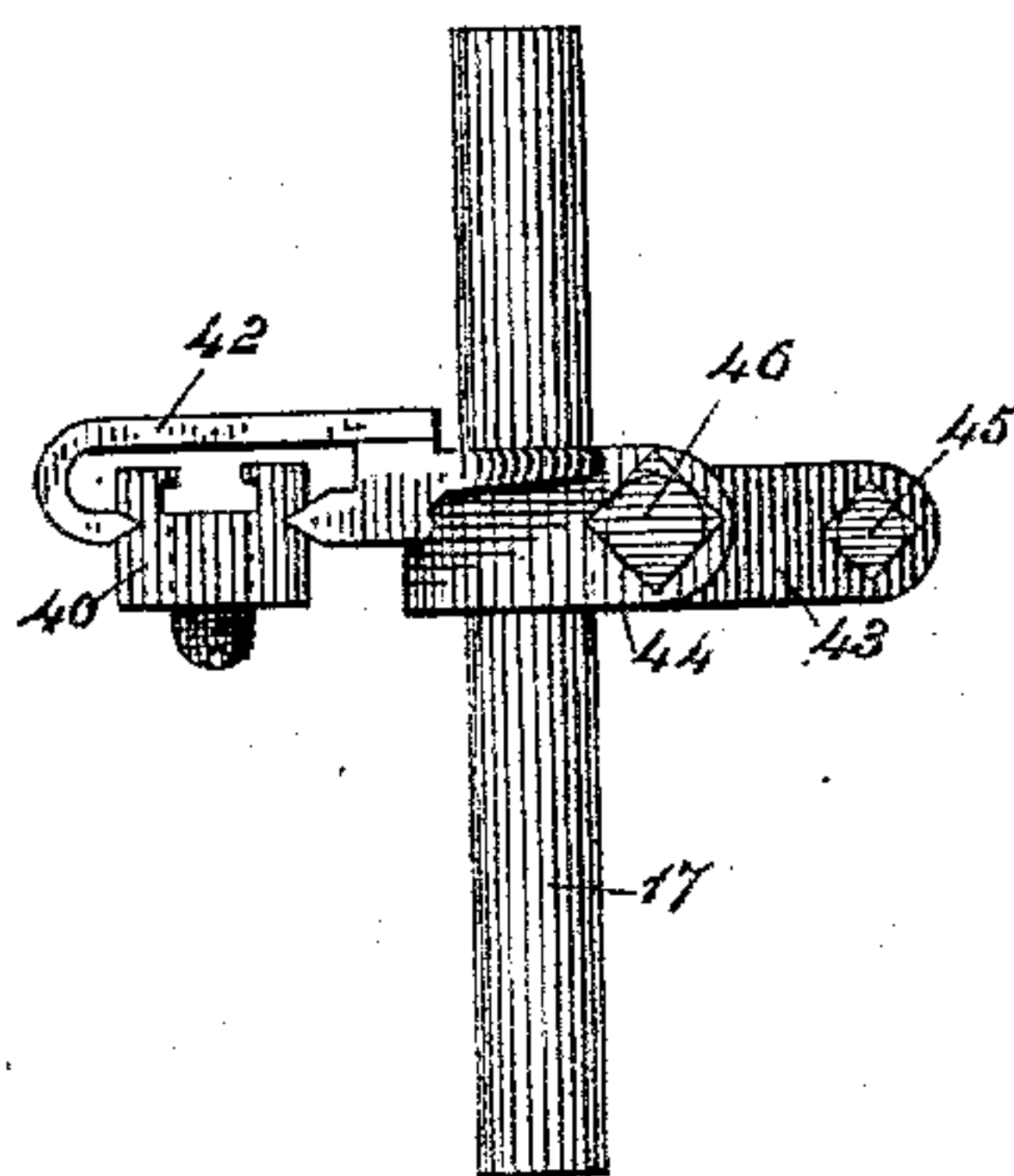
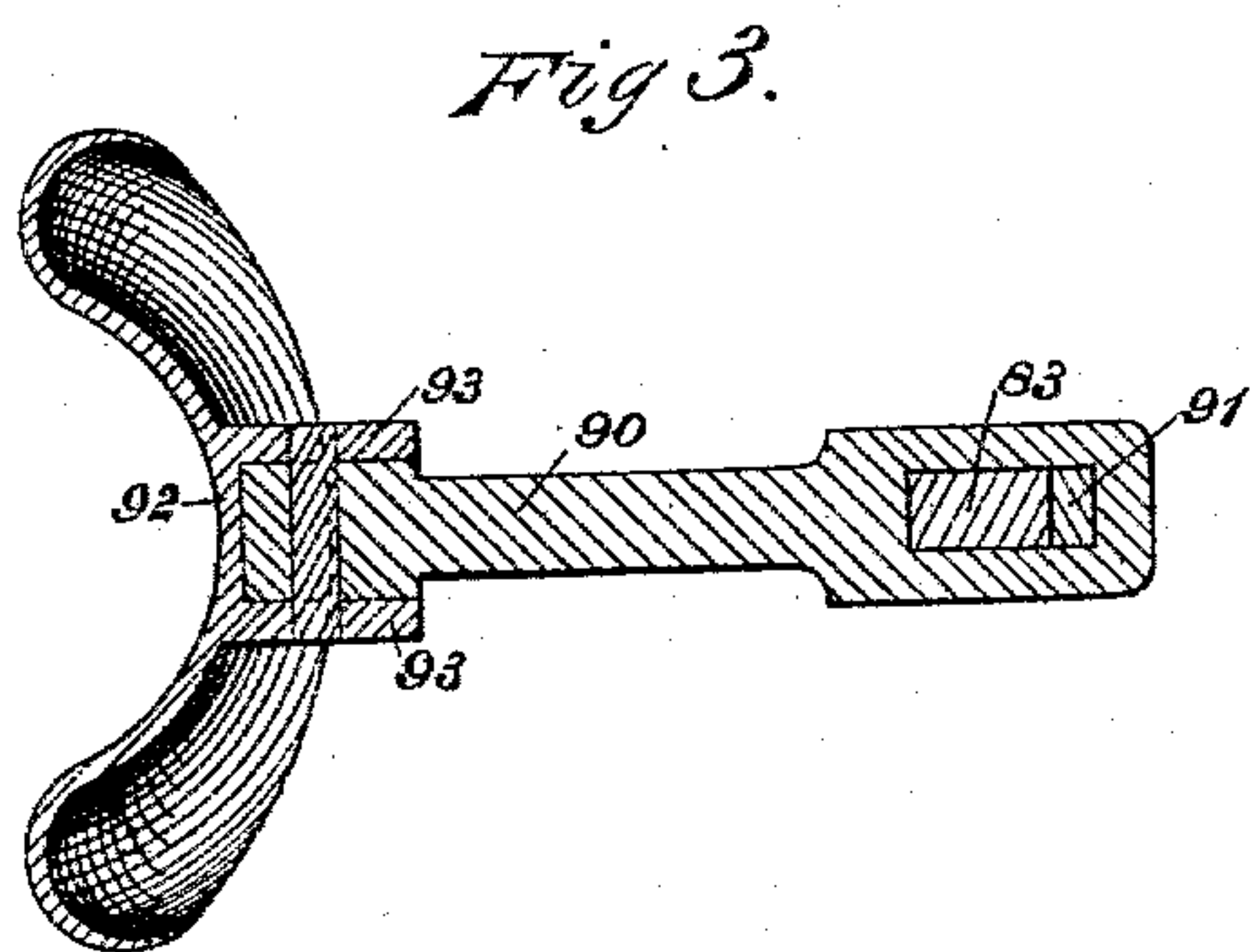
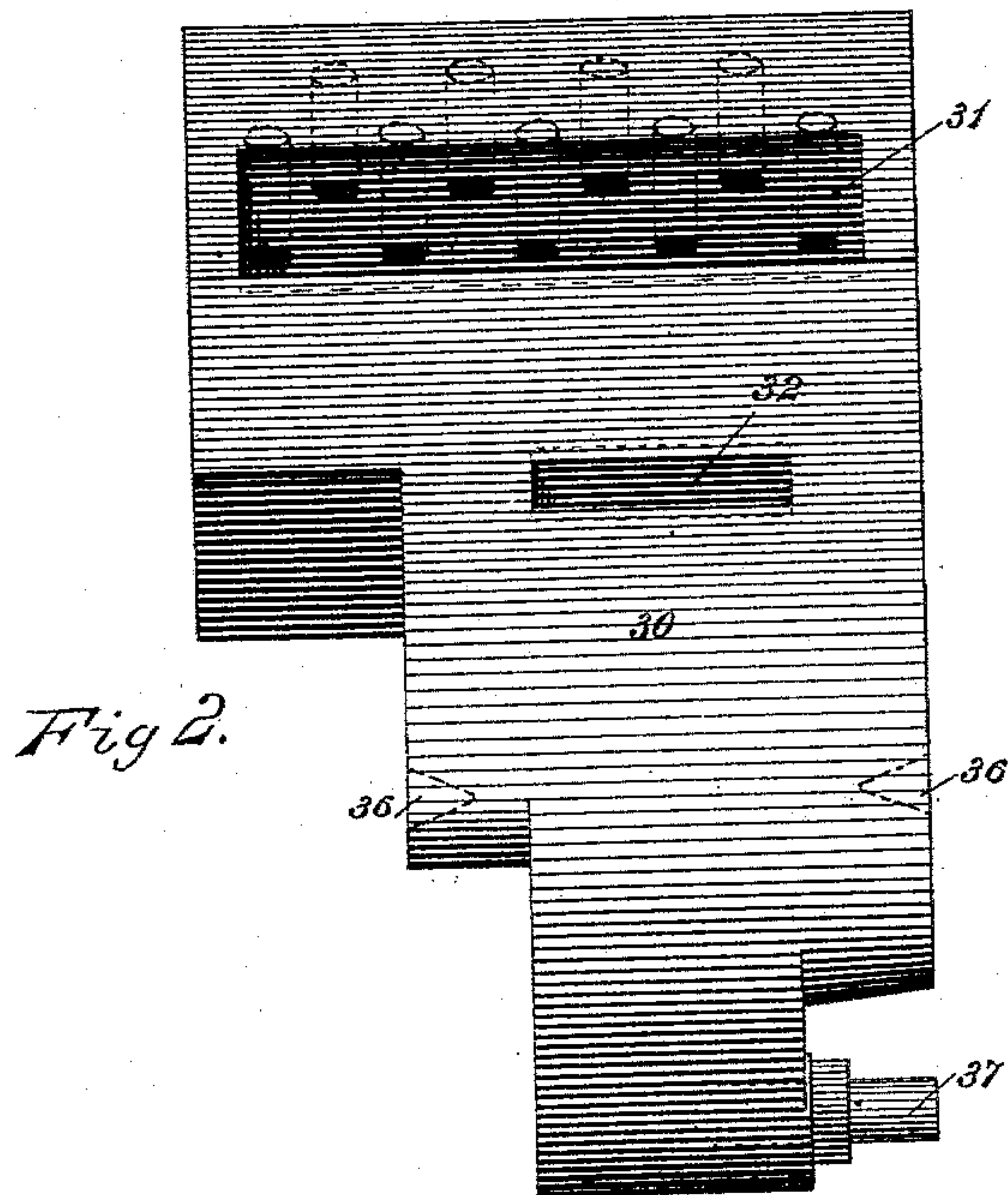
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(No Model.)

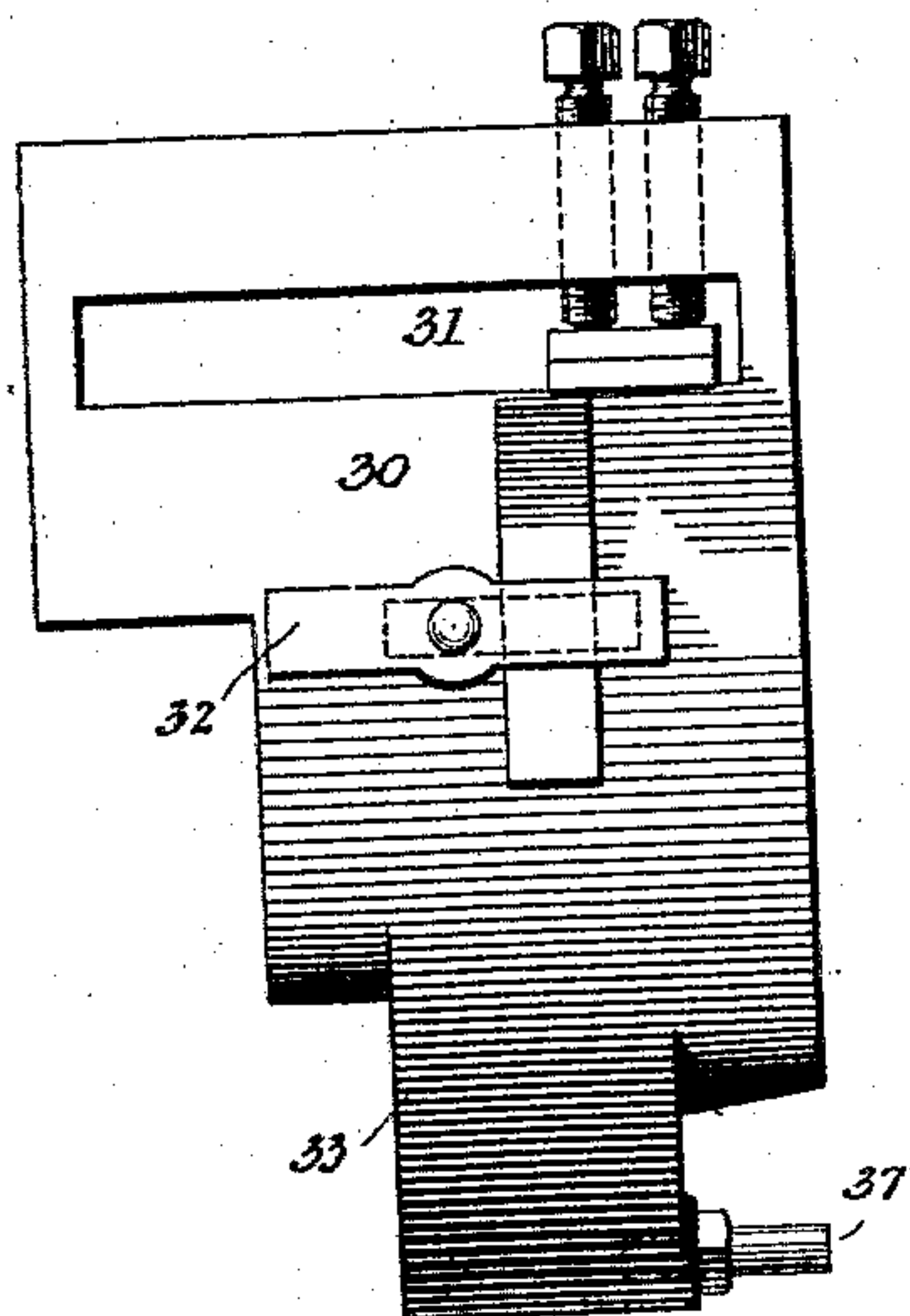
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C. W. WILDER.  
WOOD TURNING LATHE.

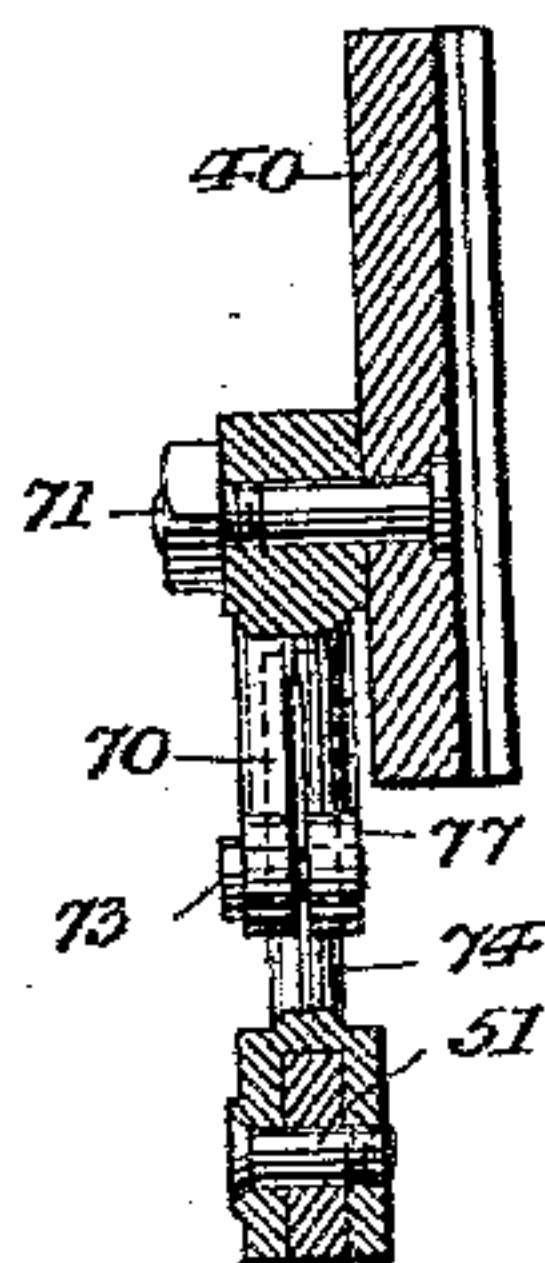
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*Fig. 8.*



*Fig. 9.*



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(No Model.)

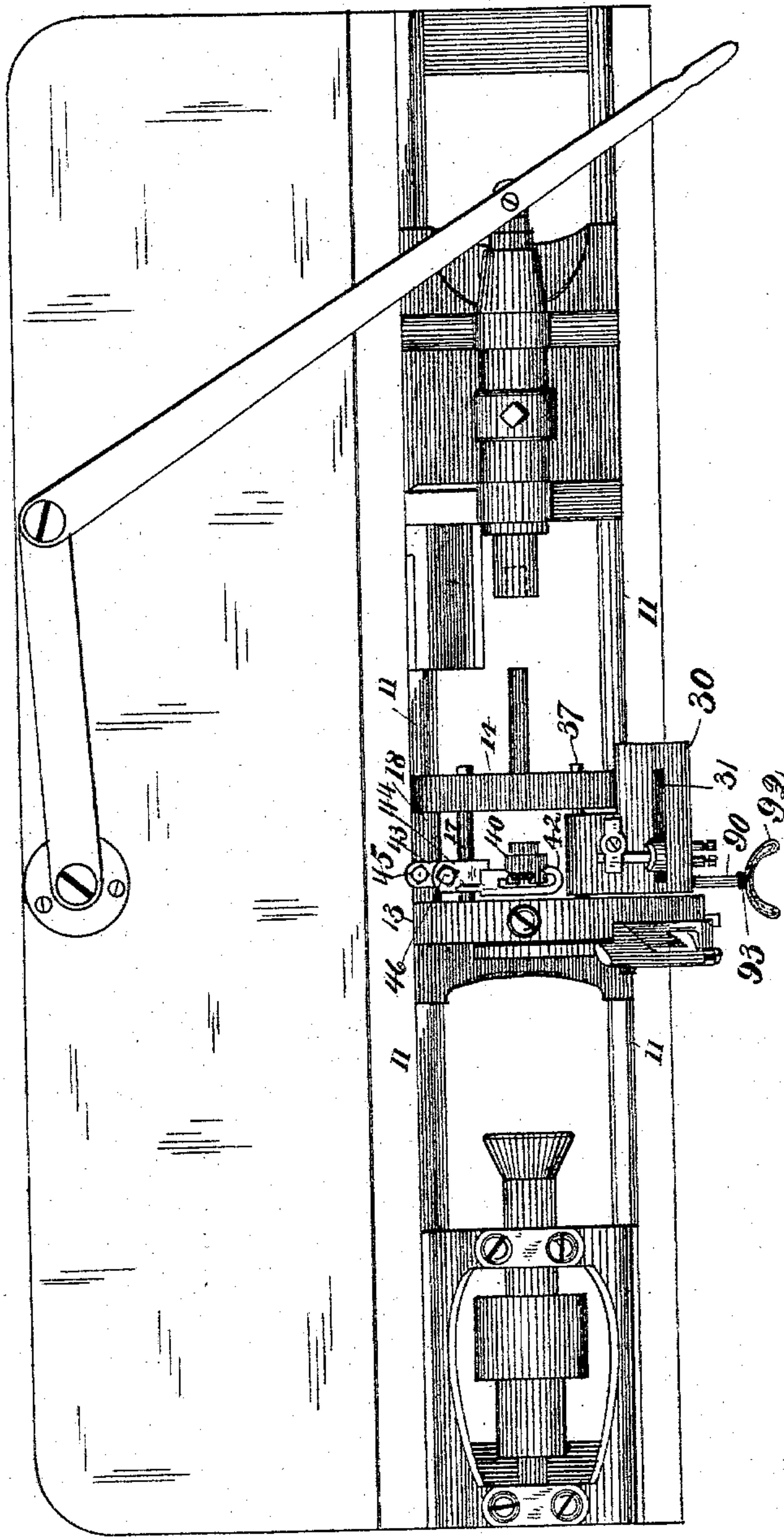
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Fig. 11.



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# UNITED STATES PATENT OFFICE.

CHARLES W. WILDER, OF FITCHBURG, MASSACHUSETTS.

## WOOD-TURNING LATHE.

SPECIFICATION forming part of Letters Patent No. 569,776, dated October 20, 1896.

Application filed June 17, 1890. Serial No. 355,774. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. WILDER, a citizen of the United States, residing at Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Wood-Turning Lathes, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to a wood-turning lathe of the same general character as the lathe heretofore patented to me by Patents Nos. 242,242, 254,419, and 345,466, and illustrated and described on pages 208 to 210 of  
15 *Rose's Modern Machine-Shop Practice*, published by Charles Scribner's Sons, New York, 1889, being a lathe for producing small wooden articles, such as druggists' boxes, tool-handles, piano-pins, balls, rings, and similar work,  
20 in uniform sizes and shapes without further measurements than those necessary to set the tools in their respective positions. The bed of a lathe of this class is equipped with a fixed head-stock, a sliding tail-stock, and a  
25 central or intermediate sliding tool-holding carriage. The head-stock has a chuck to hold and revolve a long stick of wood, from which a number of articles may be successively turned. The central carriage is fitted  
30 with a guide-ring to receive the roughed-out end of the stick, and is provided with a roughing-out tool on its front side, and shaping, finishing, and cutting-off tools on its tail side, and the tail-stock carries a boring-tool for si-  
35 multaneously boring the work.

Figure 1 of the accompanying drawings represents a transverse section of a lathe-bed and an elevation of the tool-carriage which slides thereon, as viewed from the tail-stock  
40 end of the lathe. Fig. 2 represents an enlarged view of the swinging tool-holder for holding the shaping and finishing tools. Fig. 3 represents a horizontal section on line 3 3 of Fig. 1 of the adjustable arm and knee-plate of the knee-lever. Fig. 4 represents a  
45 plan view of the tool-holder for the cutting-off tool and its supporting mechanism. Fig. 5 represents a diametrical section of the guide-ring of the sliding carriage. Fig. 6 repre-  
50 sents a longitudinal section of a portion of the stick being turned and an end view of the roughing-tool in operative contact with

said stick. Fig. 7 represents a rear elevation of a portion of the swinging tool-holder with its tools. Fig. 8 represents an elevation of 55 the tool-holding block. Fig. 9 represents a vertical section of the connecting-rod and the sliding plate. Fig. 10 is a plan view of my wood-turning lathe.

Similar numerals of reference indicate cor- 60 responding parts in the different figures.

The body or frame 10 of the lathe is provided with suitable guideways 11, one of which is preferably A-shaped and the other flat, as shown in Fig. 1. 65

The tool-carriage 12, which slides on the guideways 11 of the lathe-body, is similar in its general construction to the tool-carriage shown in the patents above referred to, hav- 70 ing a tall upright transverse web 13 near its front end, a short transverse upright web 14 at its rear end, a long dependent arm 15, and a short dependent arm 16.

The tool-carriage herein described is also provided with a fixed longitudinal rod 17, sup- 75 ported at its ends in the webs 13 and 14, and extending above and parallel with the carriage-foot 18 at the rear side of the lathe, as shown in the dotted lines in Fig. 1. The web 13 has a central aperture provided with a 80 guide-ring 19, which serves to hold and guide one end of the stick 20 while the articles are being turned therefrom. This guide-ring has the ordinary straight bore 21 for guiding and centering the stick and the ordinary flaring 85 mouth 22 for holding the stick, said mouth being preferably corrugated circumferentially.

In order that the stick from which the articles are to be made be properly fed through the guide-ring to be acted upon by the shap- 90 ing, finishing, and severing tools on the tail-stock side thereof, it is necessary that it be held by the flaring mouth 22 of the ring, said flaring mouth thus constituting a rest for the stick of wood being worked. The roughing- 95 out tool 23 for cutting off the corners of the stick and shaping it to fit the mouth and to pass through the bore is disposed in the usual manner, as shown in the patents referred to, in a recess in the guide-ring. This tool is an- 100 gular in cross-section, as shown in Fig. 6, its blade comprising a horizontal web 24, which shapes the stick into cylindrical form for passage through the bore, and an inclined web



25, which forms a beveled end bearing-surface 26 on the stick adapted to fit against the flaring mouth 22 of the guide-ring. The horizontal and inclined webs of the blade are necessarily united by a rounded curve instead of a sharp angle, and consequently the beveled face 26 of the stick, which bears against the flaring mouth of the ring, is united with the cylindrical face of the stick, which passes through the bore of the ring, by a rounded corner or curve 27, corresponding with the curve of said blade. When the flaring mouth of the guide-ring and the cylindrical bore thereof are united at a sharp angle, as heretofore, this curvature 27 on the stick strikes said angle at the outer end of the bore before the beveled face 26 becomes fairly seated against the ring-mouth, and consequently an irregular feeding of the stick results. To avoid this defect, the guide-ring in my present invention is provided with an annular recess 28 (see Fig. 5) between the front end of the bore and the flaring mouth. In this construction the stick can pass into the bore a distance sufficient to permit its beveled face to come in contact firmly with the flaring mouth of the ring without contact of the base curve of the stick with the outer edge of the bore.

30 In the shaping and finishing of some articles produced on a lathe of this character two or more tools are necessary. When these tools are arranged, as heretofore, side by side in the same tool-slot of the tool-holder, their construction must be such that their cutting edges will fit perfectly one to the other or the joint between them will leave a mark on the finished work.

One object of this invention is to avoid the defect referred to on the finished work without the expense of constructing the tools so that their cutting edges will match side by side. To this end, the swinging tool-holder 30, for the shaping and finishing tools, is provided with two tool-slots 31 and 32, disposed one above the other, in which the tools may be so adjusted relatively to each other that their cutting edges will overlap. (See Fig. 8.) In this arrangement of the tools the path on the work of one tool partially overlaps the path of the next tool, and the line where one tool stops cutting and the other begins to cut cannot be seen on the finished article. This tool-holder 30 has a dependent curved shank 33, and is supported and pivoted about midway of its length on pivot-pins 35 of the carriage, the conical ends of said pins entering conical sockets 36 in opposite edges of the tool-holder, as indicated in Figs. 1 and 2. The shank 33 has a pivot-stud 37 for connection with the mechanism, which oscillates the holder to cause the insertion or withdrawal of the knives from the work.

65 The tool-holder 40, for the severing-tool 41, is guided in its vertical movements in an adjustable tool-support 42, pivoted to the rod

17 of the carriage. This tool-support has a rearwardly-projecting arm 43, which passes under the rod 17, and a shorter arm 44, which passes over said rod. An adjusting-screw 45 passes through the arm 43 and rests at its lower end on the top of the foot 18, and by turning this screw the arm 43 is raised or lowered, and consequently the support 42 is oscillated on its pivot and the severing or cutting-off tool is adjusted into proper position on a radius of the guide-ring 19 for cutting off the work. These features are clearly shown, partly in full lines and partly in dotted lines, in Fig. 1. When the screw is turned down, it acts directly on the foot 18 to adjust the tool toward the left, and when turned up the weight of the tool-support tends to hold the end of the screw in contact with said foot and adjust the tool toward the right. A set-screw 46 passes loosely through the upper arm 44 and takes into a screw-threaded hole in the lower arm 43. This screw and the arms serve as a clamp for adjusting the support longitudinally on the rod. By turning down the set-screw 46 the arms 43 and 44 are clamped together and made to bind on the pivot-rod 17, whereby the support is fastened in the desired position on the rod. By turning up said set-screw the pressure of the arms on the rod is released and the tool-support can be moved longitudinally on the rod to adjust it in the desired position thereon, so that the cutting-off tool will operate on the work at a greater or less distance from the guide-ring. These features are also shown in full lines and dotted lines in Fig. 1.

A crank-wheel 50, provided with a crank-stud 51, is journaled at the lower end of the short dependent arm 16 of the carriage 12 within the lathe-frame 10.

An adjustable connecting-rod 60 connects the pivot-stud 37 of the tool-holder 30 with the crank-stud 51 of the crank-wheel 50. This adjusting-rod is extensible longitudinally by means of a sleeve and nuts, as shown, whereby it may be shortened or lengthened to increase or decrease the swing of the tool-holder 30.

A split socket-link 70 (shown in full and dotted lines in Figs. 1 and 9) is pivoted at its upper end by the pivot-bolt 71 to the lower end of the tool-holder 40 and is provided at its lower end with laterally-projecting ears 72, disposed on opposite sides of the slit, said ears being provided with a clamping-screw 73. An arm 74, pivoted at its lower end to the crank-stud 51 of the crank-wheel 50, extends into the pivoted socket-link 70, forming a telescopic joint therewith. The socket-link 70 and arm 74 constitute an extensible pitman connecting the crank-wheel and the holder of the severing-tool. On releasing the clamping-screw 73 the socket-link 70 may be raised or lowered on the arm 74 and the position of the severing-tool adjusted vertically to suit work of different diameters. It is important that the severing-tool be held deeply in the



socket of its holder to avoid vibration or breakage, and it can be so held in this arrangement, which provides for the adjustment of the tool-holder instead of the adjustment of the tool in the holder.

A knee-lever 80 is pivoted to the lower end of the dependent arm 15 of the tool-carriage 12. This knee-lever comprises a short horizontal arm 81, provided with an arc-shaped slot 82 at its outer end and a long bent arm 83, the lower end of which extends substantially in a vertical plane. An adjustable link 84 is supported at the outer end of the short arm 81 of the knee-lever, being provided with a stud 85, which engages the slot 82 of said arm, and being held in adjusted position by means of a nut 86. The upper end of the link 84 is connected by a strap 87 with the crank-wheel 50 for actuating the latter. A horizontal arm 90, provided with a vertical slot at its inner end, is vertically adjustable on the long arm of the knee-lever by means of a key 91. A concave knee-plate 92, provided with rearwardly-projecting ears 93, is pivoted at 94 to the outer end of the horizontal arm 90. This knee-plate is elongated and curved to fit the leg below the knee, its upper and lower ends being turned backward, as shown in Fig. 1. It is preferably composed of polished sheet metal. By the adjustment of the stud 85 in the arc-shaped slot of the arm 81 the position of the knee-plate may be shifted so that it will stand out more or less from the machine, as the operator may desire, and by loosening the key 91 it may be adjusted vertically on the knee-lever to suit the height of different operators.

As the knee-plate is pivoted on short ears and elongated vertically so as to embrace the leg of the operator, it may oscillate freely to conform to the incline of the leg without interfering with the motion of the knee-lever.

The features of the lathe not herein described are substantially the same as the corresponding parts of my other lathes, before referred to, and consequently they need not be herein described.

I claim as my invention—

1. The combination of a rotary lathe-stock for supporting the work and a laterally-movable tool-holder provided with two tool-slots disposed one above the other, and means for holding two lathe-tools in said slots, the tool of one slot overlapping the path on the work of the tool supported in the other slot, substantially as described.

2. The combination of a lathe-bed, a sliding carriage thereon having an upright web provided with a guide-ring for the work, and a pivoted tool-holder supported on said carriage and provided with two tool-slots disposed one above the other, whereby the tools supported therein may overlap on the work.

3. The combination of a tool-carriage pro-

vided with a horizontal rod, a pivoted tool-support adjustable on said rod and provided with vertical guideways, and a tool-holder movable vertically in said guideways.

4. The combination of a tool-carriage provided with a longitudinal rod, a pivoted tool-support longitudinally adjustable on said rod and provided with guideways, a tool-holder movable in said guideways, a crank-wheel, and an adjustable pitman connecting the crank-pin of the crank-wheel with said tool-holder.

5. The combination with a lathe-stock, of a tool-holder, a crank-wheel to which said tool-holder is connected, a knee-lever connected with said crank-wheel for actuating it, and an elongated concave swinging knee-plate pivoted to an arm of said knee-lever, substantially as described.

6. The combination with a lathe-stock, of a tool-holder, a knee-lever, mechanism connecting said knee-lever with said tool-holder for operating the latter, a horizontal arm vertically adjustable on said knee-lever and a swinging concave knee-plate pivoted to the upper and outer end of said arm, substantially as described.

7. The combination with a lathe-stock, of a tool-holder, a knee-lever, mechanism connecting said knee-lever with said tool-holder for operating the latter and embodying means adapted to alter the angle of said knee-lever; a horizontal arm vertically adjustable on said knee-lever, and a swinging knee-plate pivoted to the outer end of said arm and adapted to swing freely in upward direction on said outer end, substantially as described.

8. The combination with a lathe-stock, of a tool-holder, a crank-wheel to which said tool-holder is connected, a link, a flexible strap connecting said link and crank-wheel, a knee-lever, adjustable mechanism for connecting said link and knee-lever and adapted to alter the angle of said knee-lever, and means connected to, and adapted to operate the knee-lever, and pivotally adjustable thereon to thereby operate the tool-holder, substantially as described.

9. The combination with a lathe-stock, of a tool-holder, a crank-wheel to which said tool-holder is connected, a link, a flexible strap connecting said link and crank-wheel, a knee-lever provided with an arc-shaped slot at one end thereof, and adjustably connected to said link whereby the angle of said knee-lever can be changed, a horizontal arm vertically adjustable on said knee-lever, and a knee-plate pivotally movable on the outer end of said adjustable arm, substantially as described.

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