No. 658,426. Patented Sept. 25, 1900.

J. H. BURCK.

TOOL GRINDING MACHINE.

(Application filed Aug. 14, 1899.)

(No Model.) 3 Sheets—Sheet 1.

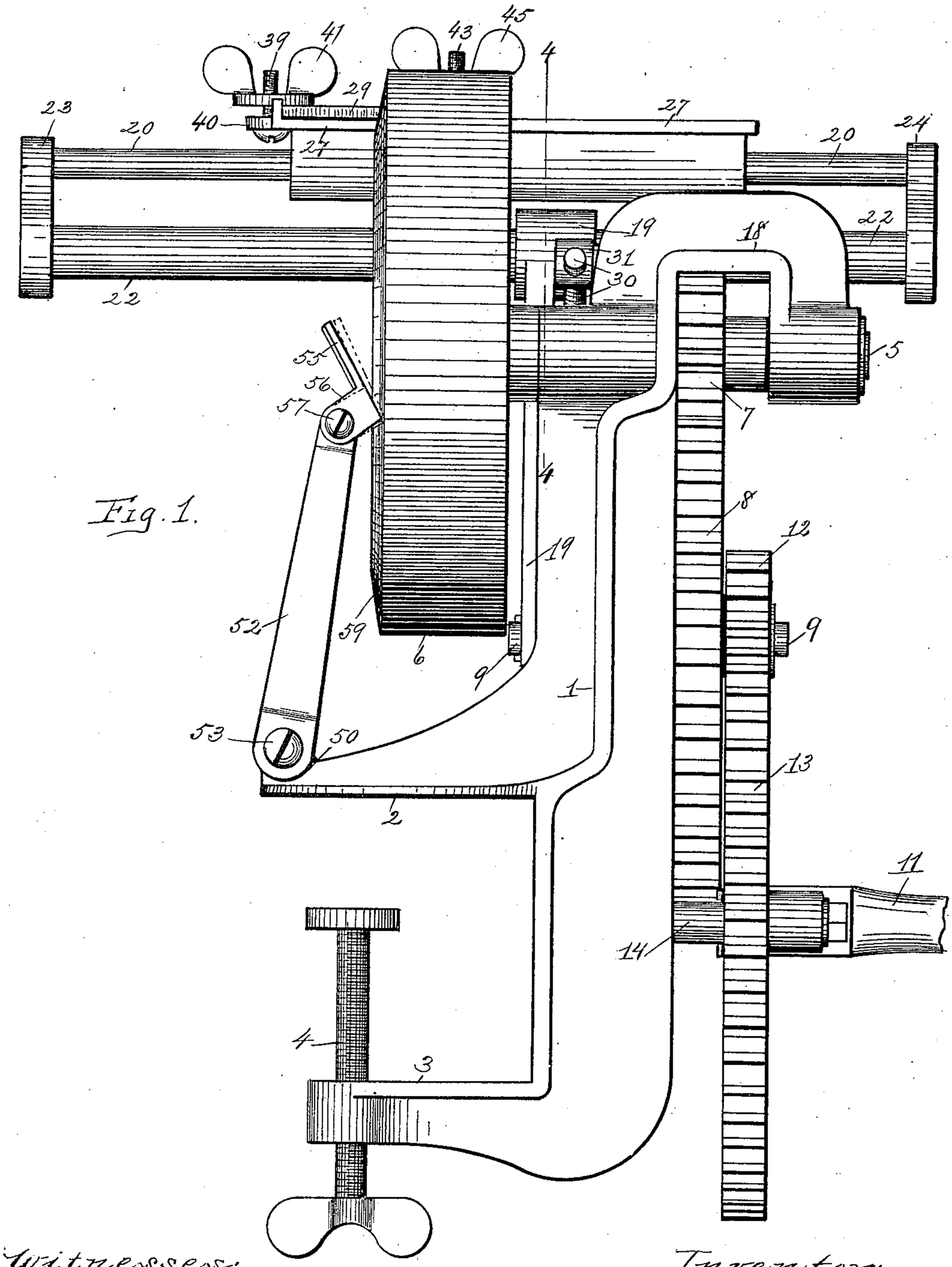

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

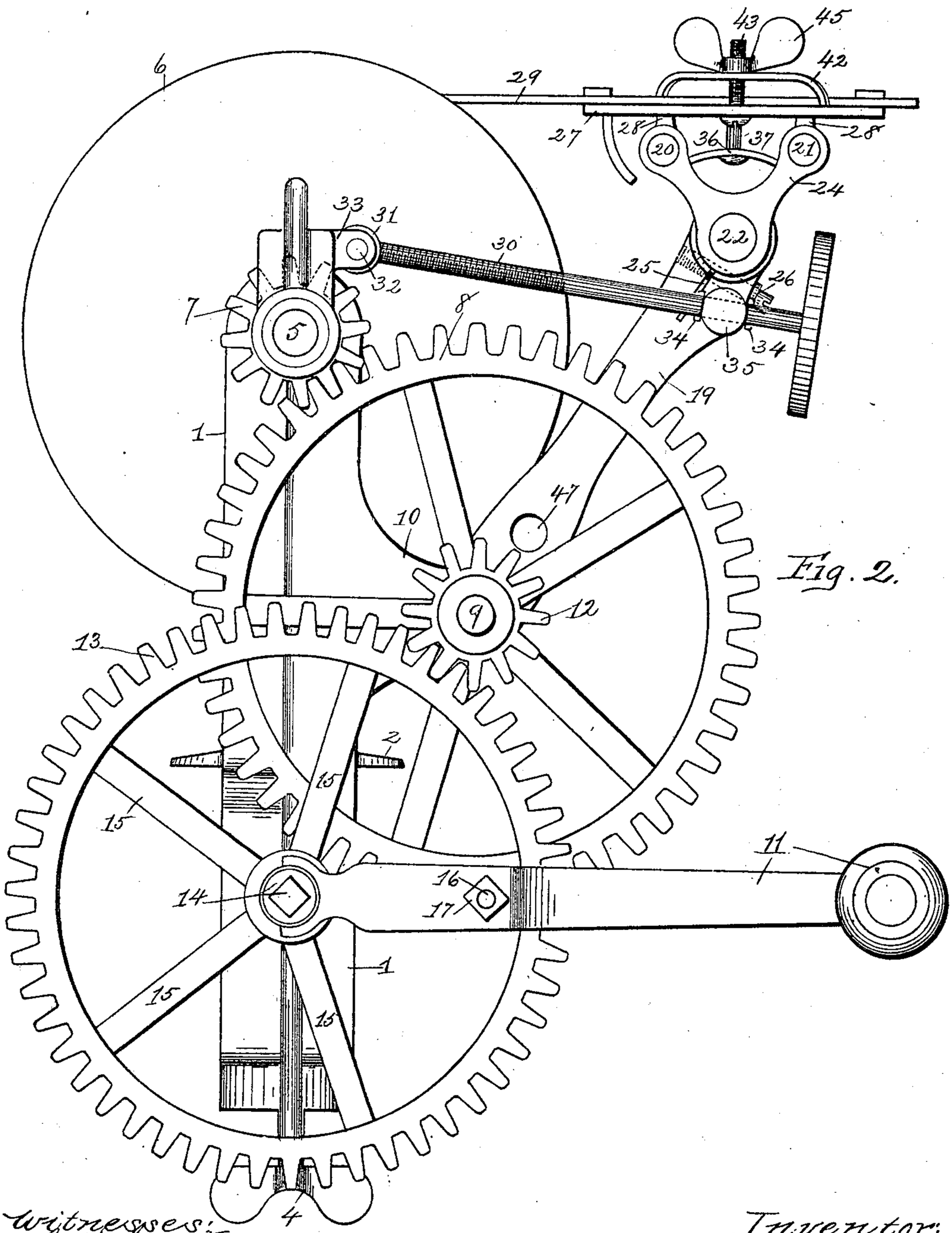

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 3

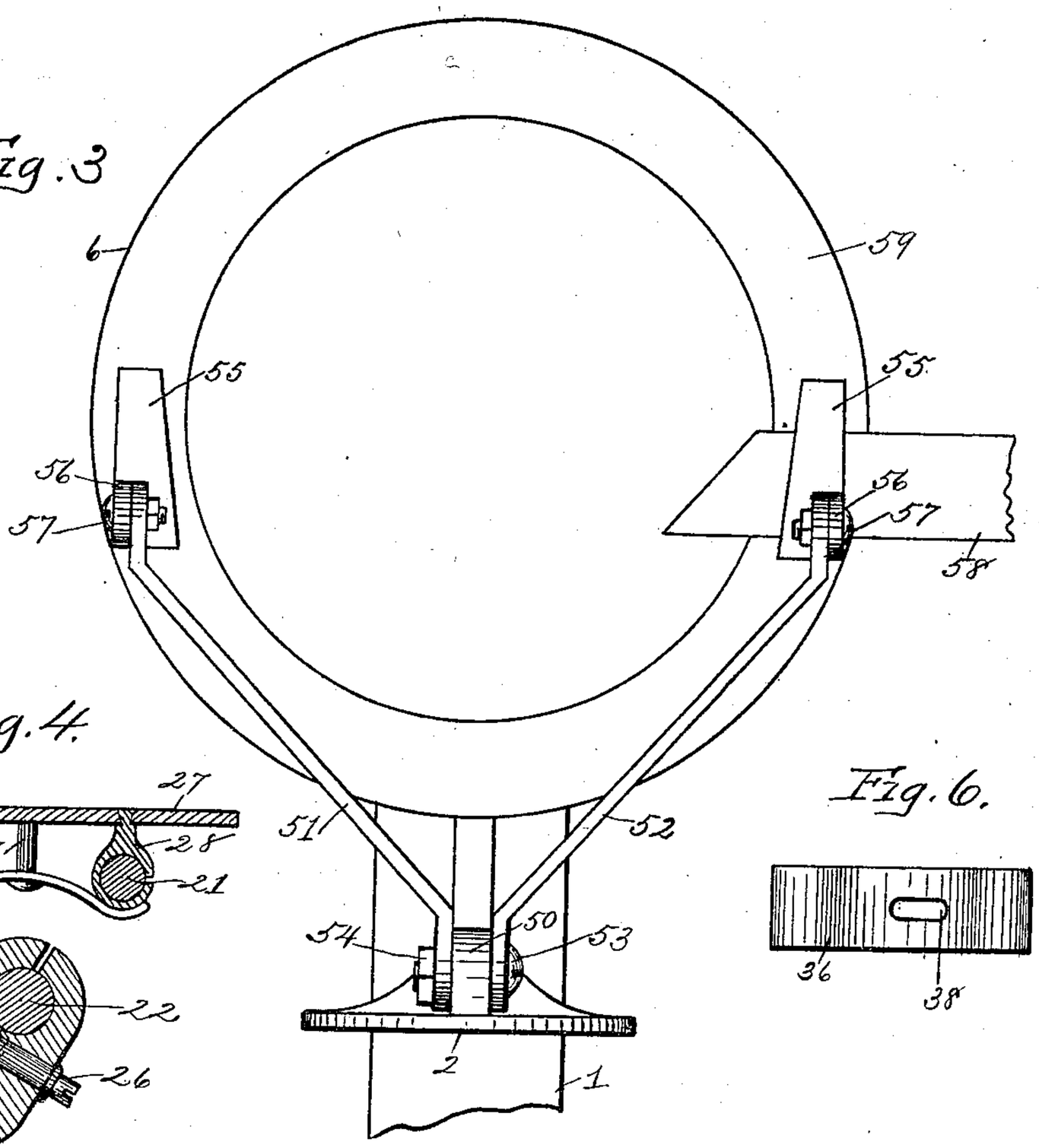


Fig. 4.

Fig. 4a

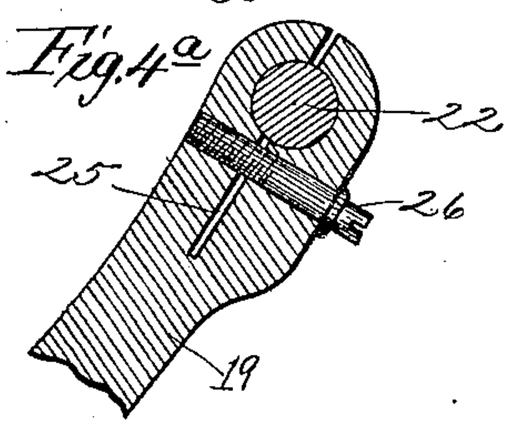
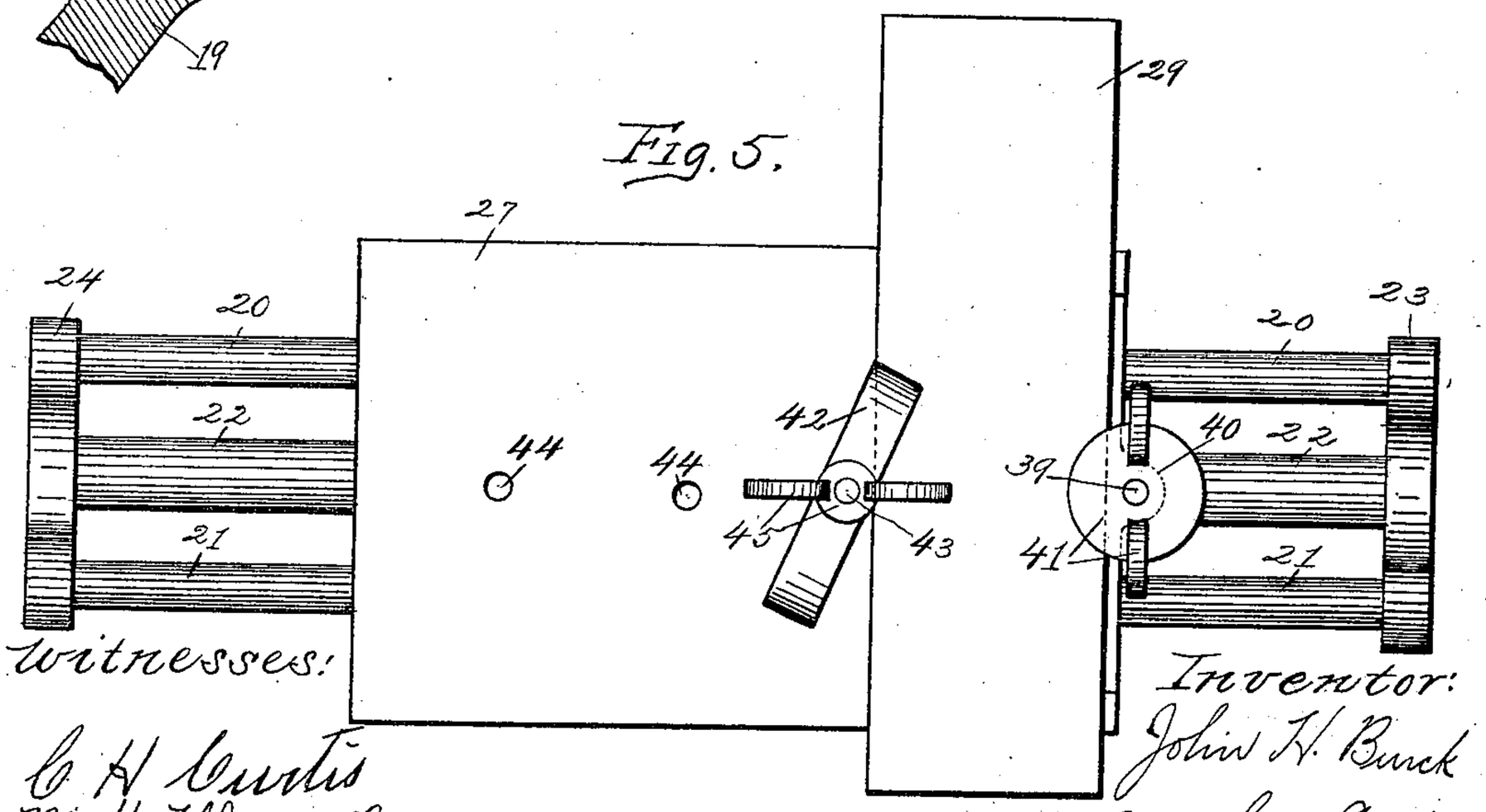


Fig. 6.

Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN H. BURCK, OF HOOSICK, NEW YORK, ASSIGNOR TO THE EMPIRE IMPLEMENT MANUFACTURING COMPANY, OF ALBANY, NEW YORK.

TOOL-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 658,426, dated September 25, 1900.

Application filed August 14, 1899. Serial No. 727,100. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. BURCK, a citizen of the United States, residing at North Hoosick, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Tool-Grinding Machines, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the numerals of reference marked thereon, which form a part of this specification.

Similar numerals refer to similar parts in the several figures.

Figure 1 of the drawings is a front elevation of my improved grinding apparatus with the tool-clamping devices detached. Fig. 2 is a side elevation of the same, viewed from the right-hand side as seen in Fig. 1. Fig. 3 is a side elevation, viewed from the left, of a portion of the apparatus, comprising the beveled grinding-wheel and the tool-supports facing the side of the wheel. Fig. 4 is a vertical cross-section of the tool-supporting table and slideway, taken on the broken line 4 4, Fig. 1. Fig. 4^a is a vertical cross-section of the upper end of the pivoted support for the tool-supporting table and slideway. Fig. 5 is a top plan view of the table and bed detached from the pivoted support. Fig. 6 is a top plan view of the table-controlling spring detached.

The upright standard 1 is provided with a clamping device, as jaws 2 and 3 and thumb-screw 4, for attaching the machine to a bench or table in a common well-known manner. The standard is also provided near its upper end with bearings which support the shaft 5, rotary therein, of the grinding-wheel 6. Fixed on said shaft is the pinion 7, meshing with a gear-wheel 8, rotary on stud 9, projecting horizontally from the offset 10 on the standard. The wheel 8 is also provided with the pinion 12, fixed thereon and meshing with the gear-wheel 13, rotary on the stud 14, projecting horizontally from the standard. The wheel 13 is provided with an operating-handle 11, bolted to one of the spokes 15 of the wheel 13, as by bolt 16 and nut 17. The upper part of the standard is provided with an offsetting bend 18 to support a bearing for the outer end of shaft 5. The inner end of stud 9, projecting inwardly from offset 10, forms a pivot for the lower end of the oscillatory arm 19. The upper end of this arm is adapted to carry a tool-support facing the periphery of the grinding-wheel. This tool-support comprises a tilting slideway and a table 27 movable thereon. The slideway comprises the two rods 20 and 21, which are secured in fixed relation to each other and the third rod 22 by the end pieces 23 and 24, secured to the ends of the rods. The rods are all parallel with each other, and the lower rod 22 is secured to the upper end of the oscillatory arm 19, as shown in Fig. 4. The arm is provided with an aperture adapted to receive the rod 22, and is provided with the slit 25, extending from the end across and some distance below the aperture, so that the bifurcate arms in connection with the screw-threaded bolt 26 form a clamp to hold the rod 22, the bifurcate arms being apertured and one of them screw-threaded to receive the bolt, as shown.

The table is provided on its lower side with the blocks 28, adapted to slide longitudinally of the slideway-rods. By loosening the clamping device which supports rod 22 the latter rod can be rotated therein to tilt the table, and when the table has been tilted to the desired position it can be fixed in such a position by turning the screw-bolt 26 of the clamping device.

The table is adapted to support a planing-iron or a chisel or similar tool in a position to be bevel-ground on the periphery of the grinding-wheel, as shown in Fig. 2. The bevel-angle can be changed at will by bolting the table, as just explained. As the operation of grinding proceeds the tools may be steadily and gradually moved toward the grinding-wheel by changing the inclination of the arm 19. This is accomplished by means of the feed-screw 30, which is rotary in a bearing in block 35, pivotal on the upper end of the arm 19, and a screw-threaded nut 31 on the upper end of the standard. The nut is the head of a bolt the stem 32 of

which is rotary in the bracket 33 on the standard. The end of the feed-screw which passes through the nut is correspondingly screw-threaded. The other end of the feed-screw is not screw-threaded, but is provided with flanges or pins 34, fixed thereon on opposite sides of the pivoted bearing-block 35 on the arm 19 to prevent longitudinal movement of the screw relatively to the arm.

It is obvious that any known means may be employed to prevent the longitudinal movement of the screw relatively to the pivoted arm. I also provide a spring connection between the table and its slideway, which permits a yielding movement of the table and tool during the grinding operation. This spring connection consists of a sheet-metal spring 36, bearing at its ends upon the lower sides of the slideway-rods and is connected at its middle part with the table by means of the bolt or link 37, secured at its upper end to the table and passed through the slot 38, with the head on the lower end of the link bearing upon the lower side of the spring.

As a means for clamping the tool 29 to the table I provide a screw-bolt 39, which is passed through an aperture in the projection 40 of the table, with its head bearing on the lower side of the projection. The thumb-nut 41 is screwed down onto the screw-bolt until it tightly clamps the adjacent edge of the tool upon the table. The opposite edge of the tool is also clamped to the table by the arched bar 42, one end of which bears upon the table and the other end upon the tool, the screw-bolt 43 being passed through the aperture in the bar and one of a plurality of apertures 44 in the table, and the thumb-nut 45 screwed onto the bolt until it tightly engages the bar. The other apertures 44 permit tools of different widths to be clamped upon the table. The arm 19 is provided with one or more adjusting pivot-holes 47, adapted to receive the stud 9 for the purpose of supporting the slide-table at a lower level relatively to the grinding-wheel. On one side of the grinding-wheel I erect from the upper clamping-jaw of the standard a stud or post 50, upon which is pivoted the lower ends of the arms 51 and 52 by inserting the screw-bolt 53 through receiving-apertures in the arms and stud and securing the same in place by the nut 54. Upon the upper end of each arm is pivoted in a similar manner a tool-supporting table 55. The tables each have an apertured lug 56, through which the screw-bolt pivot 57 passes. It is obvious that the oscillatory movements of the arms will move the tables toward and from the wheel and that the oscillatory movements of the tables will change their inclination relatively to the side of the wheel, as indicated by dotted lines in Fig. 1. The slide-tables 55 are especially adapted for grinding knives and similar articles which have an equal bevel on the opposite sides of the blade.

I have shown in Fig. 3 a portion of a knife-blade 58 in position for grinding at the side of the wheel. The side of the wheel may be provided with a beveled surface 59 when desired. When the tables 55 have been adjusted to the proper position in engagement with the grinding-surface of the wheel, the arms 51 and 52 and their tables can be firmly secured in such positions by tightening the nuts on the screw-bolt pivots 53 and 57. I am thus able to utilize the same grinding-wheel and at the same time to grind two different classes of tools, those which are to be beveled on one side only and those which are to be equally beveled on both sides. It should be understood that when the blade 58 has been ground on one side in the position shown in Fig. 3 the other side is ground by resting the blade upon the table on the opposite side of the wheel. By varying the angle of inclination of the tables 55 relatively to each other the angle of the ground bevel can be correspondingly varied on the opposite sides of the blade. In grinding shears one blade is necessarily ground upon one of these supports and the other blade upon the other support, and the supports may be termed "right" and "left" supports. By providing the tables of these supports with an offset, as lug 56, near the edge of the table which is nearest the wheel and pivoting the projecting end of this offset to a stationary support, as the arm 57, which is held stationary by the bolt 53, the tool to be supported and ground is not only held to the proper level but forced against the the wheel by the action of the table, it only being necessary to force the tool to be ground downwardly between the table and wheel.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a grinding-machine, the combination with a grinding-wheel; and means for rotating the wheel; of a tool-support, comprising a table inclined to and facing the wheel, and an offset from the table at or near the table edge nearest the wheel; and a pivotal connection between the projecting end of the offset and a stationary support, substantially as described.

2. In a grinding-machine, the combination with a grinding-wheel; and means for rotating the wheel; of a tool-support comprising a table inclined to and facing the wheel, and an offset from the table at or near the table edge nearest the wheel; a supporting-arm pivoted at its lower end to a fixed support; and a pivotal connection between the upper end of the arm and the projecting end of the table-offset, substantially as described.

In testimony whereof I have hereunto set my hand this 27th day of July, 1899.

JOHN H. BURCK.

Witnesses:
GEO. A. MOSHER,
FRANK C. CURTIS.