(No Model.) 4 Sheets—Sheet 1.

T. F. GILROY.

GLASS BEVELING MACHINE.

No. 370,187. Patented Sept. 20, 1887.

Fig. 1

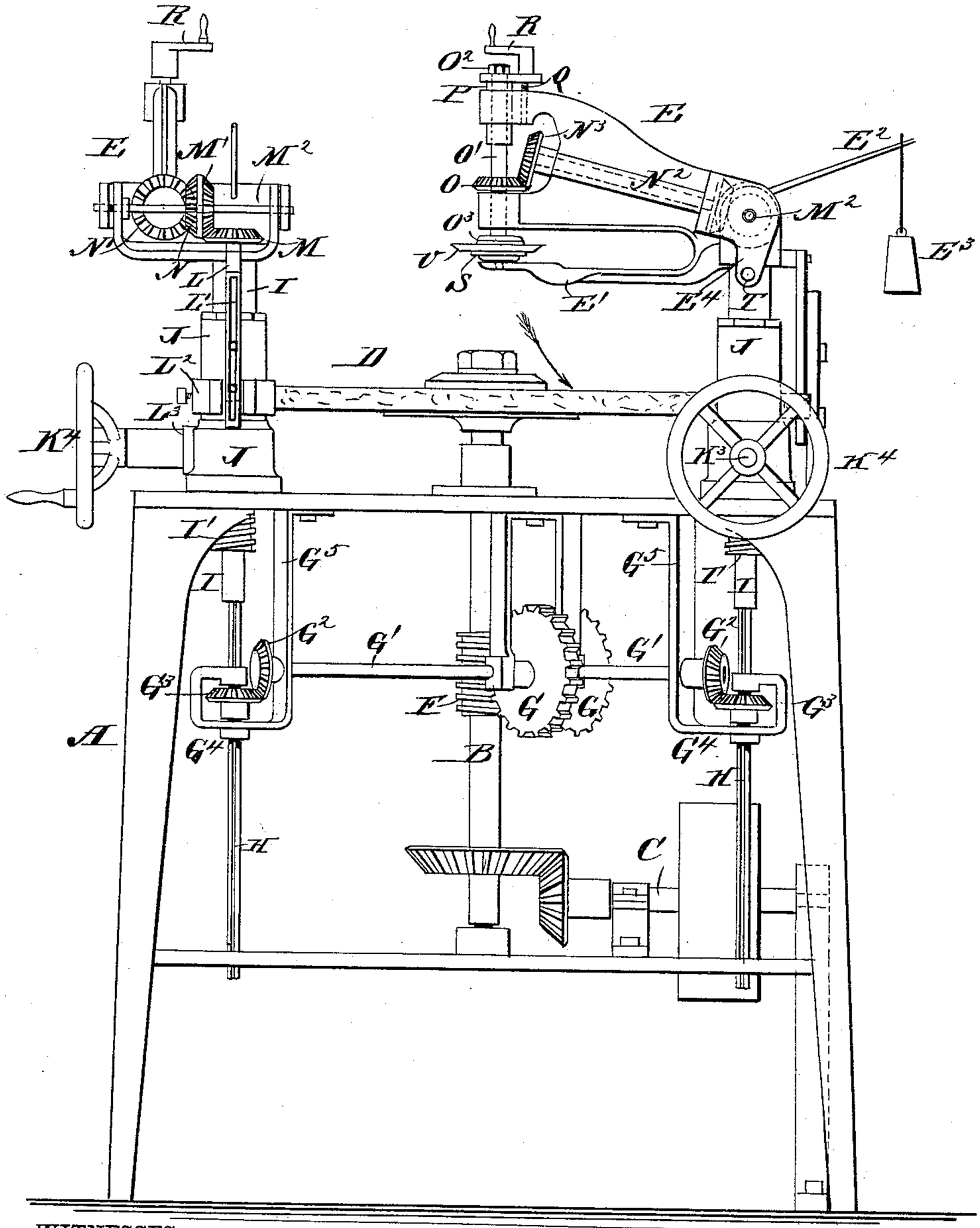

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Fig. 2.

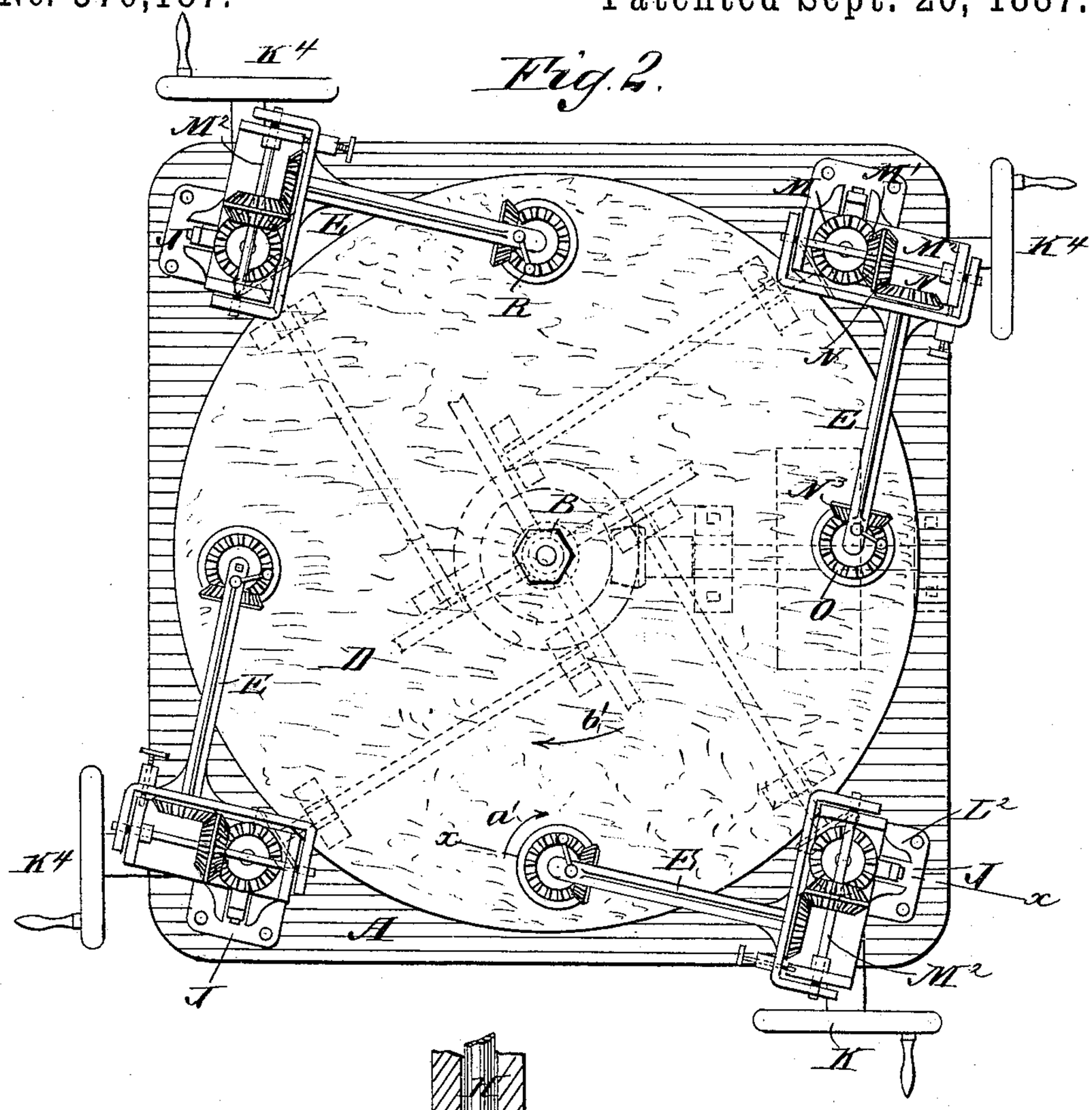
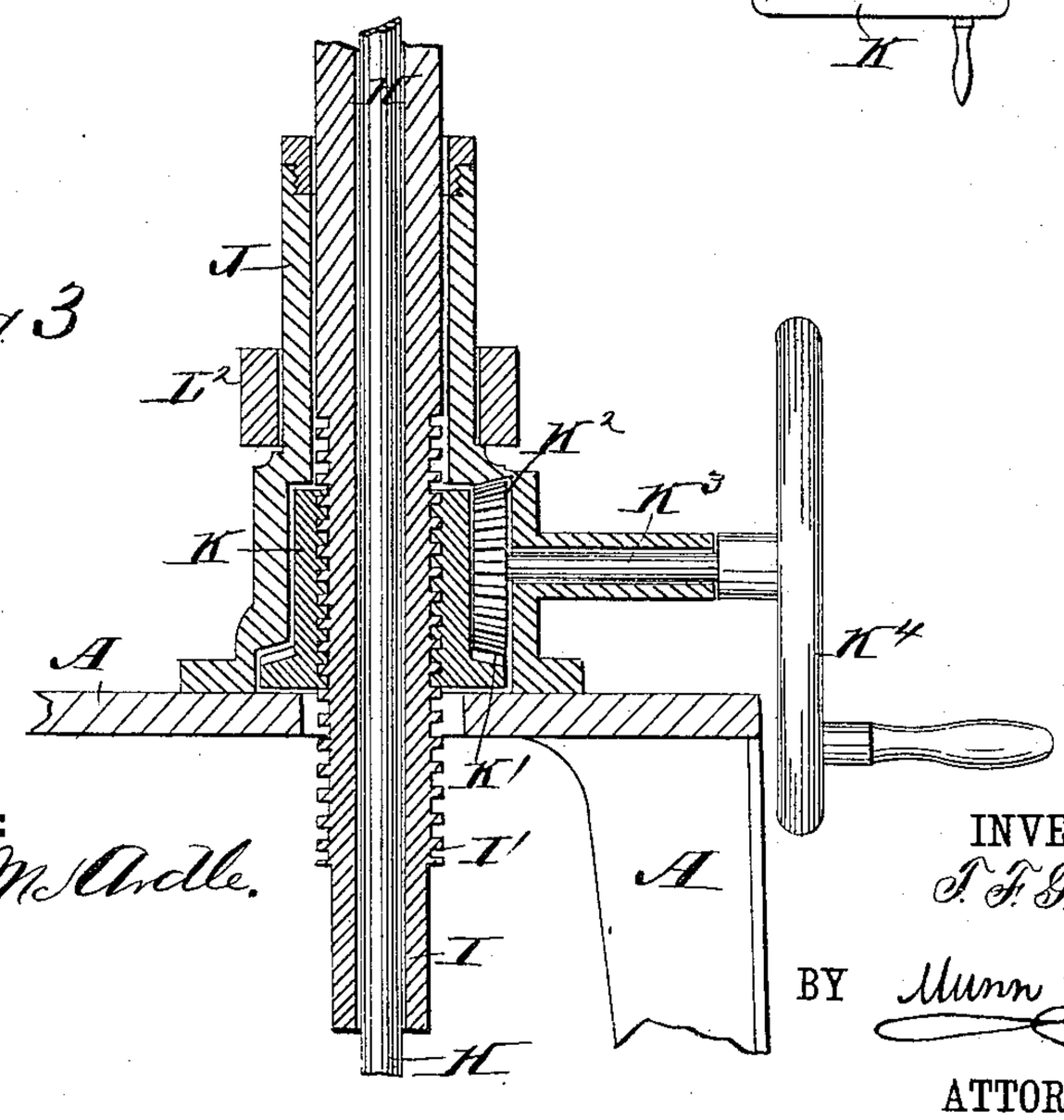


Fig 3



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(No Model.) 4 Sheets—Sheet 3.

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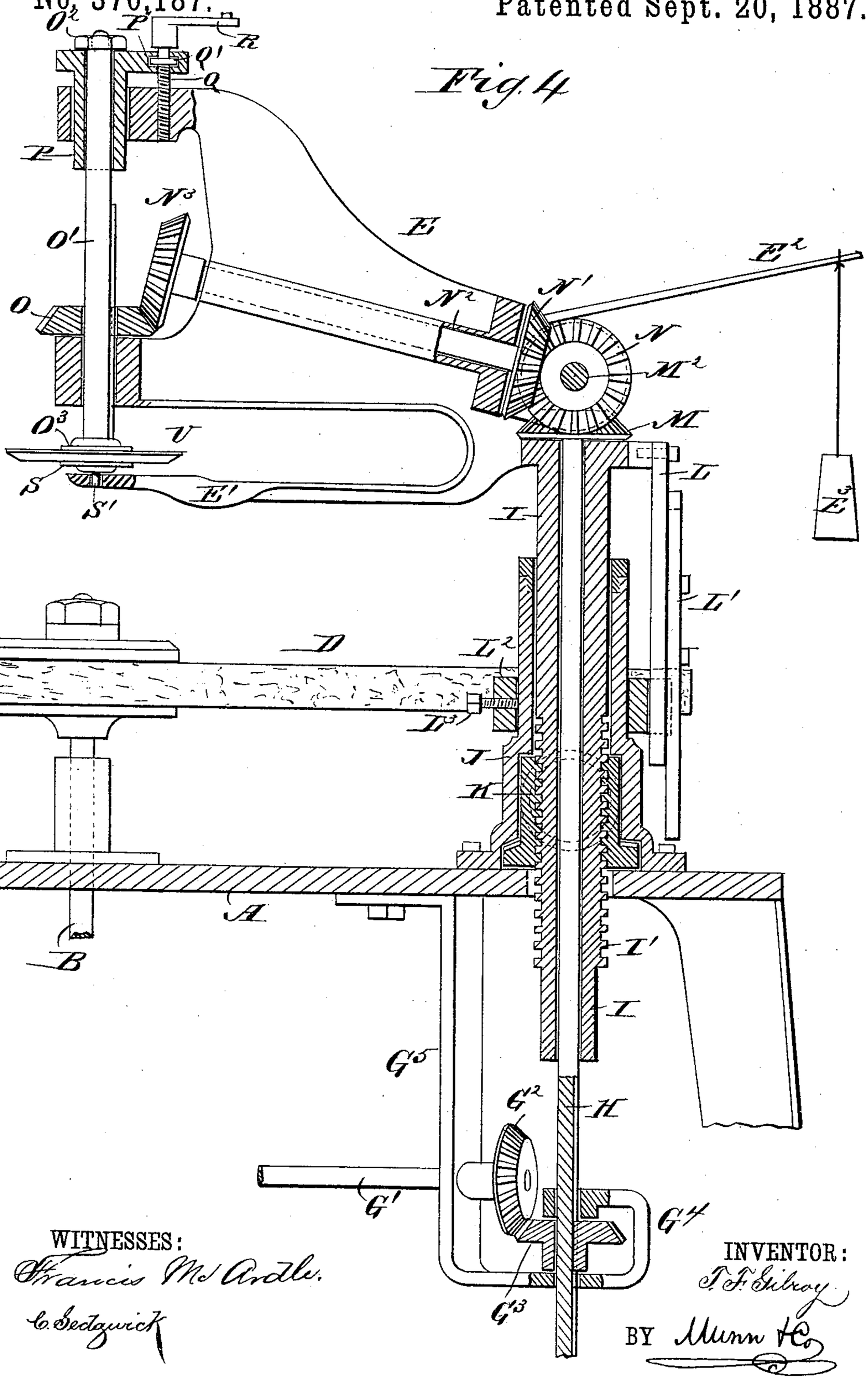
Fig. 4



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T. F. GILROY.

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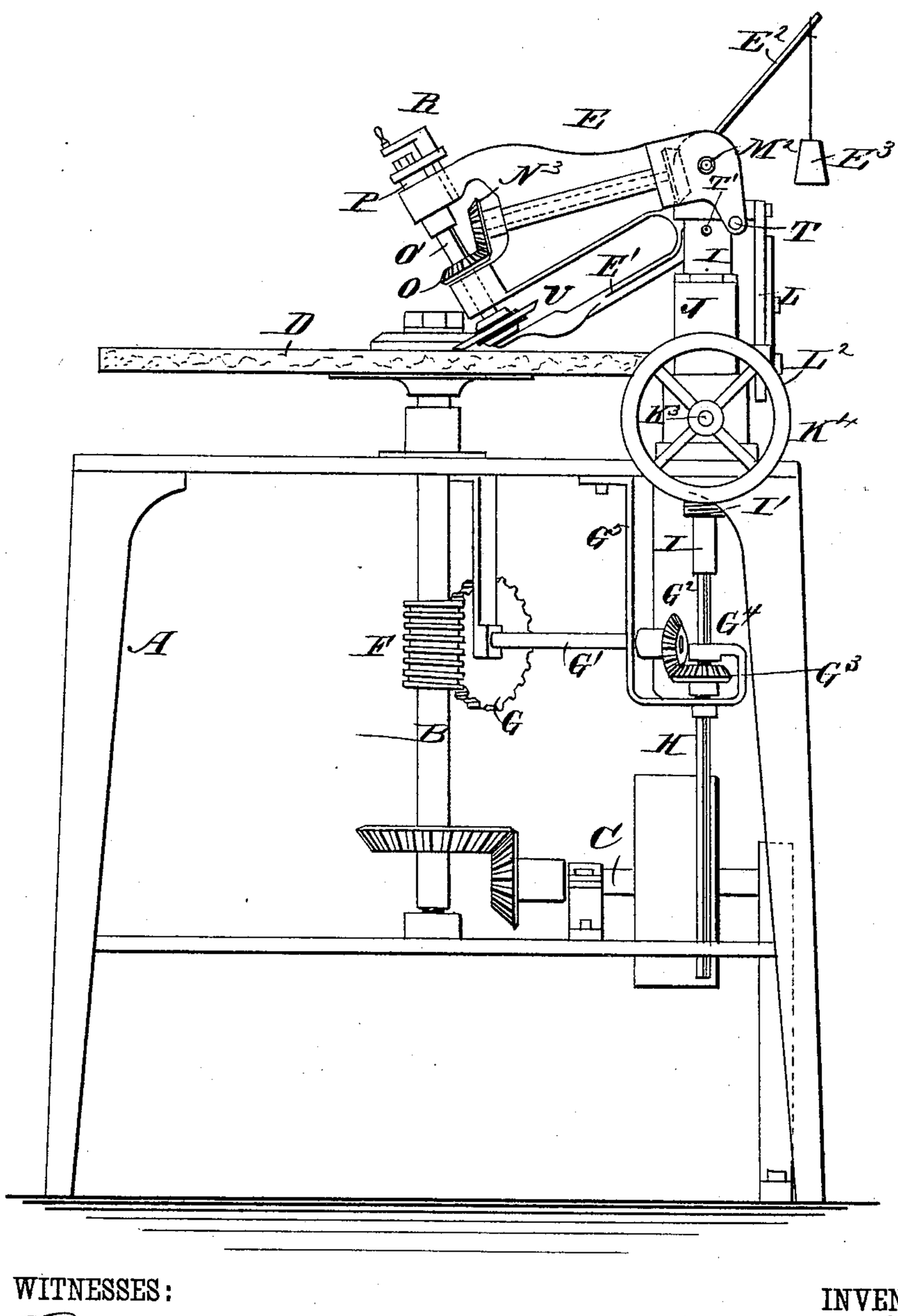
Fig 5



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UNITED STATES PATENT OFFICE.

THOMAS F. GILROY, OF NEW YORK, N. Y.

GLASS-BEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,187, dated September 20, 1887.

Application filed October 14, 1886. Serial No. 216,240. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. GILROY, of the city, county, and State of New York, have invented a new and Improved Glass-Beveling Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved glass-beveling machine which is simple and durable in construction and very effective in operation.

The invention consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of my improvement. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged central sectional elevation of the mechanism for raising and lowering the spindle carrying the swinging frame. Fig. 4 is an enlarged central sectional elevation of part of my improvement on the line *x x* of Fig. 2. Fig. 5 is a side elevation of my improvement, showing the frame thrown downward ready for work.

In the middle of a suitable frame, A, is mounted a vertical shaft, B, which is rotated by suitable means from the driving-shaft C. To the upper end of the shaft B is secured a grinding disk or wheel, D, around which are grouped any desired number of swinging frames, E, which are all alike in construction and operation, so that it will suffice to describe only one.

The mechanism carried by each frame E is actuated from the vertical shaft B by means of a worm, F, which meshes into the worm-wheel G, attached to the shaft G′, mounted in suitable hangers on the frame A, and the said shaft G′ is also provided with the bevel gear-wheel G^2, which meshes into the bevel gear-wheel G^3, mounted on the vertical shaft H, by means of a key fitting into a slot in said shaft H, so that the rotation of the gear-wheel G^3 is transmitted to the said shaft H, and the latter can be moved up or down without disturbing the position of the gear-wheel G^3. The latter is held in place by the extension G^4 of the outer hanger, G^5, and the said extension also forms a bearing for the shaft H.

The shaft H passes through the hollow spindle I, which has its bearing in the casing J, fastened to one corner of the top of the frame A. The spindle I is provided with the external screw-thread, I′, which engages with the nut K, held in the casing J, and provided with the gear-wheel K′, (see Fig. 3,) which meshes into the gear-wheel K^2, attached to the shaft K^3, which has its bearing on the casing J, and is provided on its outer end with the hand-wheel K^4. To the upper end of the spindle I is fastened a bar, L, to which is secured the lengthening-bar L′, both bars being guided in a slot in the adjustable sleeve L^2, attached by the set-screw L^3 to the casing J.

To the upper end of the shaft H is secured the bevel gear-wheel M, which rests on the top of the spindle I, and meshes into the bevel gear-wheel M′, secured to the shaft M^2, mounted to rotate in the forked upper end of the spindle I. A second bevel gear-wheel, N, is also fastened on the shaft M^2, and meshes into the gear-wheel N′, attached to the shaft N^2, mounted in the swinging frame E, pivoted on the shaft M^2.

The shaft N^2 is provided with a gear-wheel, N^3, which meshes into the gear-wheel O, mounted on a shaft, O′, and held by means of a key in the shaft O′, fitting into a slot in the said gear-wheel O, so as to permit of raising and lowering the said shaft O′ without changing the position of the gear-wheel O. The shaft O′ has its lower bearing in the frame E, and its upper bearing in the sleeve P, in which it is held by means of the nut O^2. The sleeve P slides in the frame E, and can be raised or lowered with its shaft O′ by means of the screw Q, screwing into the frame E, and having a collar, Q′, placed in a recess in the arm P′ of the sleeve P. To the upper end of the screw Q is attached a crank-arm, R, by which the screw Q is turned. On an axial line with the shaft O′ is placed the disk S, having a trunnion, S′, which has its bearing in the front end of the arm E′ of the frame E. The glass disk, U, to be beveled is placed centrally on the said disk S, and the foot O^3, attached to the lower end of the shaft O′, is moved tightly upon the upper surface of the glass disk U, so that the

latter and its supporting-disk S are rotated by the rotation of the shaft O′. An arm, E^2, projects from the rear of the frame E, and a balancing-weight, E^3, is fastened to the said arm E^2.

An extension, E^4, on one side of the frame E is provided with a spring-pin, T, which engages with a corresponding aperture, T′, on the spindle I when the frame E is thrown into the position shown in Fig. 1. The pin T locks and holds the frame E in this position.

The operation is as follows: When the frames E are in the position shown in Fig. 1, then the glass disks, U, which are to be beveled are placed on the respective disks S and the shafts O′ are moved downward by turning the crank-arm R until the foot-clamps O^3 press the glass disks U tightly upon the disks S. Each frame E is then unlocked by disengaging the spring-pin T from the aperture T′ of the spindle I, and the frame E swings downward on its pivot (the shaft M^2) by its own weight until the edge of the glass disk U touches the grinding-wheel D. The latter is rotated from the driving-shaft C, and imparts a rotary motion to the shaft G′, which, by means of the gear-wheels G^2 and G^3, rotates the shaft H, and the latter, by means of the gear-wheels M M′ N N′, rotates the shaft N^2, which in turn imparts a rotary motion to the shaft O′ by means of the gear-wheels N^3 and O, and as the glass disk U is held on the foot O^3 of the shaft O′ it is also rotated in the direction of the arrow *a′* on the grinding-wheel D, which rotates in the opposite direction, as indicated by the arrow *b′*. (See Fig. 2.) The desired degree of bevel is obtained by raising or lowering the pivotal point of the frame E, which is done by turning the hand-wheel K^4, which causes the gear-wheel K^2 to rotate the nut K, whereby the threaded spindle I is caused to rise or descend, according to the direction in which the hand-wheel K^4 is turned. The spindle I is prevented from turning by the bar L or its lengthening-bar L′ being held in the notch of the collar L^2, secured by the set-screw L^3 to the stationary casing J; but when it is desired to change the position of the glass disk U on the face of the grinding-wheel D the set-screw L^3 is loosened and the spindle I and its pivotal frame E are turned to the desired place to cause the bars L and L′ to turn the collar L^2, and then the set-screw L^3 is again screwed up against the spindle I.

It will be seen that the swinging frame E by its own weight holds the edge of the glass disk U into contact with the face of the grinding-wheel D, and this weight on the disk U can be increased or decreased by changing the balancing-weight E^4. It will also be seen that the glass disk to be beveled revolves in an opposite direction to that in which the wheel D revolves, whereby the bevel on the glass disk is ground very rapidly.

The vertical adjustability of the spindle I and the pivotal frame E permits of grinding any desired bevel upon the edge of the glass disk U, and the means by which the glass disk is held and rotated permits of changing the disks very rapidly after they are ground, and also of grinding disks of any desired diameter.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a beveling-machine, the combination of a grinding-wheel with a swinging frame, a revolving shaft mounted in the said frame and carrying the glass disk to be beveled, and the screw-threaded spindle engaging with the gear-wheel nut actuated by the hand-wheel for raising or lowering the said frame, substantially as shown and described.

2. In a beveling-machine, the combination of a revolving grinding-wheel with a pivoted frame, a revolving shaft mounted in the said frame and carrying the glass disk to be beveled, the screw-threaded spindle engaging with a nut carrying a gear-wheel gearing with a hand-wheel, and a shaft geared to the shaft carrying the glass disk, and to a second shaft, the latter shaft gearing with a shaft also geared to the grinding-wheel shaft, substantially as shown and described.

3. In a beveling-machine, the frame E, the disk S, having its bearing on the said frame, and the revolving shaft O′, having the foot O^3, in combination with the spindle I, on which the said frame is pivoted, and means for raising or lowering the said spindle, comprising the gear-wheel nut engaging a screw-thread on said spindle and a hand-wheel, substantially as shown and described.

4. In a beveling-machine, the frame E, the disk S, having its bearing on the frame E, and the shaft O′, mounted in the said frame E, in combination with the screw Q, connected to an arm, P′, of a bearing-sleeve, P, supporting the upper end of said shaft, for raising and lowering the said shaft, substantially as shown and described.

5. In a beveling-machine, the frame E, the disk S, having its bearing on the frame, the adjustable shaft O′, and the threaded spindle I, on which the said frame is pivoted, in combination with the gear-wheel nut K, in which screws the said spindle, the gear-wheel K^2 and the shaft K^3, for turning the said gear-wheel nut, substantially as shown and described.

6. In a beveling-machine, the frame E and the vertically-adjustable spindle I, on which the said frame is pivoted, in combination with the central shaft B, carrying the grinding-wheel, the worm F on the said shaft, the worm-wheel G, meshing in the said worm F and attached to the shaft G′, the gear-wheel G^2 on the said shaft G′, the gear-wheel G^3, meshing in the gear-wheel G^2 and attached to the shaft H, the shaft H, moving vertically with the spindle I, the gear-wheel M on top of the shaft H, the gear-wheel M′, meshing into the gear-

wheel M and fastened on the shaft M^2, the shaft M^2, having its bearings on the spindle I and forming the pivot for the frame E, the gear-wheel N on the shaft M^2, meshing into the gear-wheel N′ on the shaft N^2, the shaft N^2, mounted in the frame E and carrying the gear-wheel N^3, the gear-wheel O, meshing into the gear-wheel N^3, mounted on the shaft O′, held to slide vertically in the frame E, the disk S, and means for adjusting and holding the shaft O′, substantially as shown and described.

THOS. F. GILROY.

Witnesses:
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