

(No Model.)

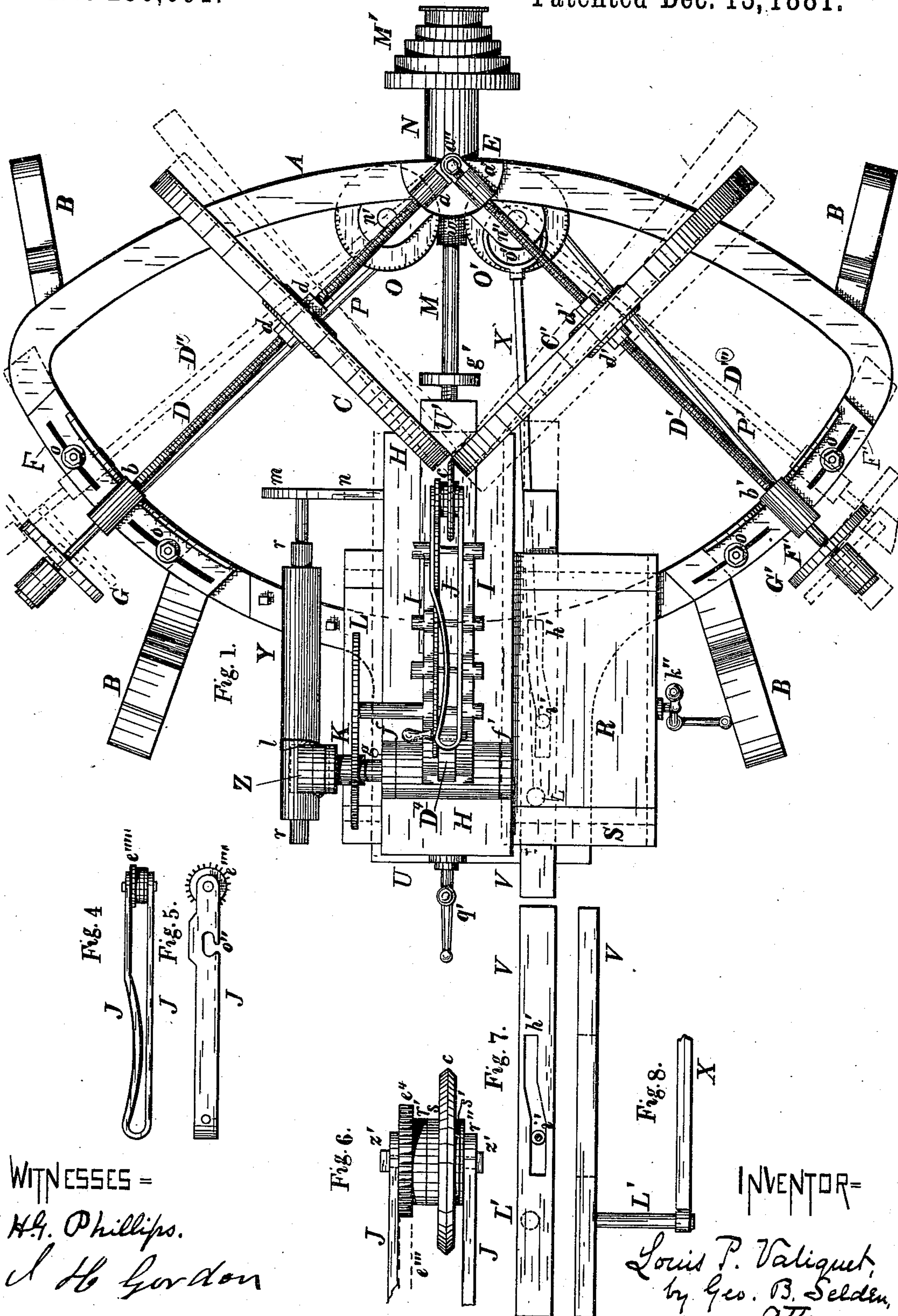
3 Sheets—Sheet 1.

L. P. VALIQUET.

MACHINE FOR GRINDING SPECTACLE GLASSES.

No. 250,691.

Patented Dec. 13, 1881.



WITNESSES =

H. G. Phillips.

A. H. Gordon

INVENTOR =

Louis P. Valiquet,
by Geo. B. Selden,
Atty.

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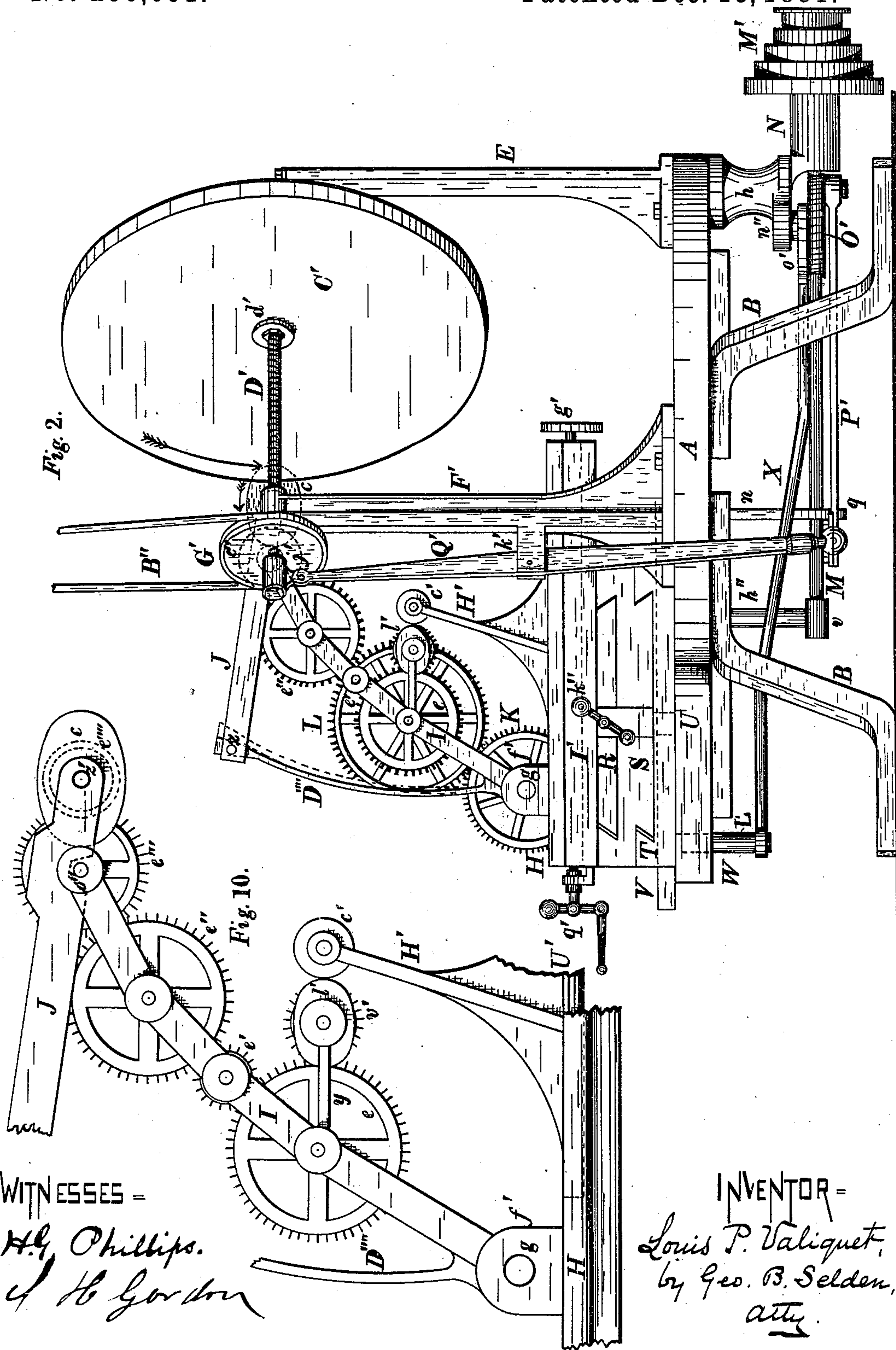
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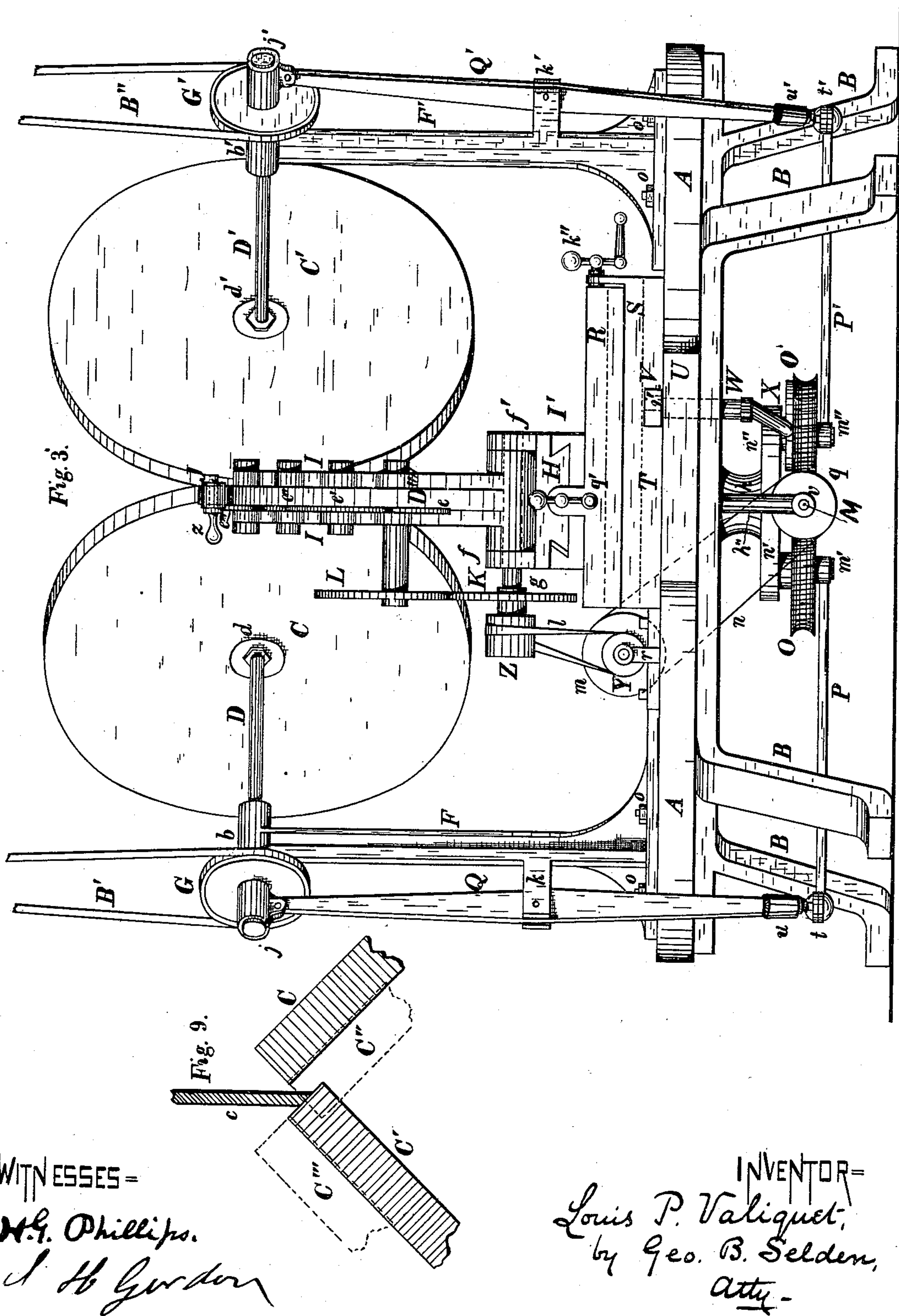
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UNITED STATES PATENT OFFICE.

LOUIS P. VALIQUET, OF ROCHESTER, NEW YORK, ASSIGNOR TO HIMSELF
AND CHARLES J. ROBINSON, OF SAME PLACE.

MACHINE FOR GRINDING SPECTACLE-GLASSES.

SPECIFICATION forming part of Letters Patent No. 250,691, dated December 13, 1881.

Application filed July 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, LOUIS P. VALIQUET, of the city of Rochester, in the county of Monroe and State of New York, have invented an
5 Improved Machine for Grinding Spectacle-Glasses, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to an improved machine
10 for grinding the edges of spectacle-glasses to an oval form, which machine is fully described in the following specification, and the novel features thereof pointed out in the claims.

My improved machine for grinding spectacle-glasses is represented in the accompanying
15 drawings, in which—

Figure 1 is a plan view. Fig. 2 is a side elevation. Fig. 3 is a front elevation. Figs. 4 and 5 are respectively top and side views of the
20 holder. Fig. 6 represents the inner end of the holder, as seen from above, with a glass clamped in position to be ground. Fig. 7 is a plan view of the reciprocating cam-bar which moves the carriage. Fig. 8 is a side elevation of the same.
25 Fig. 9 is a sectional diagram representing the operation of the stones in grinding the bevels on the glasses. Fig. 10 is a side elevation of the swinging frame carrying the glass and form.

In the accompanying drawings, A is the
30 frame of my improved machine for grinding spectacle-glasses, which is provided with suitable legs, B B B, and supports the standards E F F', carrying the shafts D D' of the grinding-stones C C'. The frame may be of any suitable shape, and it should be of a size proportioned to that of the stones which it is designed to employ in the machine. From the front side of the frame a plate, U, projects outward and affords support for the traveling carriage H,
40 to which the swinging frame I, carrying the glass and former V, is attached. The carriage H is mounted on a slide, so that it may be adjusted to and from the grinding-stones, and also, if desired, transversely thereto, as hereinafter more fully pointed out.
45

In order to adapt them to be fitted into their frames, spectacle-glasses must be ground on their edges to an oval form, and their edges must be beveled from each side, as represented
50 in Fig. 6 of the drawings, at an angle of about forty-five degrees.

In order to grind the bevels on the edges of the glass, I employ two grinding-stones, C C', arranged relatively to each other at the desired angle, and to produce the oval form I support
55 the glasses in a suitable clamp or holder attached to the upper end of the swinging frame I, the motion of which is controlled by an oval rotary former, V, Figs. 2 and 10. The grinding-stones C C' are mounted on the shafts D D', being secured thereto by the nuts and washers d d', so that they can be adjusted lengthwise thereon, for the purpose of compensating for the reduction of the diameter of the stones resulting from use. The shafts D D' are supported
60 at their rear ends by the journal-boxes a a', pivoted at a'', so as to swing horizontally on a suitable plate on the upper end of the standard E. The forward ends of the shafts D D' revolve in their journal-boxes b b' on the
65 upper ends of the standards F F', which are attached at their lower ends to the frame A by means of slotted flanges and bolts o o, so that they may be adjusted to and from each other to vary the angle between the shafts, as represented by the dotted lines D D' in Fig. 1.
75

By means of the pivoted boxes a a' and the movable standards F F' the stones C C' may be set at such angles with each other as to produce any desired bevels on the edges of the
80 glasses. The shafts D D' receive a longitudinal sliding movement through their journal-boxes to prevent the grooving of the stones C C' by grinding at one place only in the following manner: The shaft M of the machine, to
85 which motion is imparted by a belt running over the pulley M' is supported from the frame A by the journals N and v, and is provided with a worm, w, Fig. 1, meshing with the worm-gears O O' and communicating motion thereto.
90 The journals N and v are supported from the frame A by the arms h h'', Fig. 2. The rotary movement of the worm-gears O O', which revolve on studs attached to the frame, is communicated to the shafts D D', so as to give them a
95 reciprocating movement through their journal-boxes, by means of the pitmen P P', levers Q Q', and boxes j j' on the outer ends of the shafts. The inner ends of the pitmen are attached to cranks m' m'' on the lower sides of the worm-
100 gears O O', and their outer ends are connected to the lower ends of the levers Q Q', pivoted near

the center of their length in the jaws k k' extending outward from the standard F F' . The boxes j j' are fitted on a reduced portion of the shafts D D' , so that their reciprocating motion is transferred to the shafts. By this arrangement it will be perceived that the motion of the cranks m' m'' attached to the worm-gears O O' imparts to the shafts D D' a reciprocating end-play through their journal-boxes, thereby shifting the grindstones C C' , as represented by the dotted lines in Fig. 1 and at C'' C''' in Fig. 9, so as to bring all parts of their grinding-surfaces successively into operation on the spectacle-glasses, thereby preventing the grooving of the face of the stones.

The connection between the upper ends of the levers Q Q' and the boxes j j' may be made by a pin and slot or by any usual form of sliding joint.

The carriage H , which supports the swinging frame I and the roller c' , against which the former l' bears, is arranged on a slide, I' , so that it can be adjusted to and from the stones by the handle g' . The slide I' is provided on its lower side with the transverse slide R , which is arranged to be adjusted in the supporting-plate S by means of the screw and handle h'' , by turning which the carriage H and swinging arm I may be shifted laterally with reference to the grinding-stones. The supporting-plate S is also arranged to be adjusted transversely, being provided with a slide fitted to the plate T secured to the frame of the machine.

Through the plate T and underneath the slide of the supporting-plate S is placed the reciprocating cam-bar V , which is moved backward and forward by the connection X , which is attached at one end to the eccentric o' on the worm-gear O' , and at the other to the cam-bar by the stud L' , which projects downward through a slot in the plate U of the frame. A cam-groove, h' , is formed in the cam-bar V , (see Fig. 7,) into which a pin, i' , projects downward from the lower surface of the slide S . The pin i' may, if desired, be provided with a friction-roller. As the cam-bar V reciprocates backward and forward the cam-groove h' , operating on the pin i' , causes the slide S to reciprocate a short distance across the machine, as represented by the dotted lines in Fig. 1, so as to apply the glass c first on one of the grinding-stones and then on the other, by which means the edges of the glass are ground on the proper bevel. It should be understood, however, that the machine will operate without the employment of the reciprocating cam-bar V and the auxiliary slide S and T , the stones C C' being so arranged with reference to each other that one of them is traveling along in contact with the edge of the glass while the other is executing that part of its journey in which it does not come in contact with the glass, as represented in the sectional diagram, Fig. 9. In that diagram the stone C' is represented as operating on the edge of the glass c , grinding a bevel on one side of the edge thereof while the

stone C has traveled away from the edge. When the stone C returns to the position represented by the dotted lines C'' it will produce a bevel on the opposite edge of the glass, while the stone C' occupies approximately the position C''' .

The swinging frame I consists of two parallel bars, between which the gears e e' e'' e''' revolve on suitable transverse shafts, which bars are connected together at their lower ends and arranged to swing freely on the rod g between the lugs f f' on the upper side of the carriage H . The weight of the swinging frame serves to press the glass against the stones; or, if desired, a spring may be used to increase the pressure, or it may be diminished by counterbalancing the frame by a weight attached to an arm extending outward therefrom. The glass to be ground is attached to the upper end of the swinging frame by the holder J , and an arm, y , Fig. 10, projecting inward from the frame, supports the rotary former l' , by which the swinging motion of the frame is controlled. The former and the glass revolve at the same speed, being connected together by the train of gearing e e' e'' e''' v' . The former is made of a shape similar to that to which it is desired to grind the spectacle-glasses, and smaller in proportion to the length of the arm. Formers of different sizes and shapes may be employed to adapt the machine to grinding all desired sizes and shapes of spectacle-glasses. The former l' runs against a roller, c' , carried by an arm, H' , projecting upward from the slide U' on the upper side of the carriage H . The slide U' is dovetailed or otherwise secured to the carriage so that it may be adjusted thereon by the hand-wheel and screw g' . The inclination of the swinging frame with reference to the horizontal line and the point of contact of the glass on the grindstones may be altered by shifting the position of the slide longitudinally on the carriage H .

The holder J consists of two metallic bars or plates provided at their inner end with studs z z' , on which the pinion e'''' and the clamps r' r'' , provided with the rubber disks s s' revolve. The glass, while being ground, is held between the disks s s' , which are pressed toward each other by the side plates forming the holder J . The glass is inserted between the disks by springing the side plates apart, which close up on it and produce sufficient friction upon the rubber disks to hold it in place. The lower sides of the holder are provided with hook-notches o'' , which engage with the shaft of the gear e''' or with studs inserted in the frame J . The outer end of the holder is supported by the spring-arm D'''' , which rises upward from the frame I . A pin, z , passes through the holder and the upper end of the spring-arm.

In applying the holder to the frame I the notches o'' are engaged with the shaft of the gear e''' , the outer end of the holder being engaged with the upper end of the spring-arm D'''' by the elasticity of which the notches o''

are held in place on the shaft. A number of holders may be provided for each machine, so that a glass may be placed in the clamps (by the use of any suitable guide) of one holder, while another glass is on the machine being ground, thereby obviating loss of time. The operation of changing the holders requires but a few seconds' time.

The train of gearing which rotates the glass and the former is driven from the shaft M by the pulley *q*, belt *n*, pulley *m*, roller Y, belt *l*, pulley Z, and gears K and L. The roller Y is carried by a shaft supported in journals in an arm, *r*, attached to the frame A. The roller is made sufficiently long to permit of the shifting of the belt *l* thereon as the carriage H is adjusted to and from the stones. The roller-shaft extends inward and carries the pulley *m* over which the belt *n* runs. The pulley Z and the gear K revolve together on the outer end of the shaft *g*, transmitting motion to the gear L, which is fast on the transverse shaft passing through the frame I, on which the gear *e* is secured. As the frame swings about the rod *g* it is evident that the gears K and L will always remain in mesh with each other, whatever position the frame may assume. The motion of the gear-wheel *e* is transmitted to the former *l'* and the glass *c* by the train of gears *e'* *e''* *e'''*, the last of which meshes with the pinion *e''''* attached to the holder when the latter is placed in position on the swinging frame.

Motion is imparted to the grinding-stones C C' by the belts B' B'' running over the pulleys G G'.

It is obvious that the number of gears employed in the swinging frame I is entirely immaterial. I prefer to run the glass and the grinding-stones in opposite directions, as represented in Fig. 2.

The arm H', which carries the roller *c'*, against which the former *l'* rests, may be made extensible, so that the vertical position of the roller *c'* may be varied to adapt the machine to grinding different forms of ovals.

I claim—

1. The combination of the grinding-stones C C', arranged at an angle with each other, the swinging frame I, rotary former *l'*, the glass-holder J, roller *c'*, and gearing connecting the former and the holder, substantially as described.

2. The glass-holder J, provided with the rotary clamps *r r'*, and the hooked notches *o''*, substantially as described.

3. In combination with mechanism, substantially as described, for presenting the glass to the stones, the grinding-stones C C' arranged at an angle with each other on shafts D D', provided with means for relative adjustment to vary the angle, substantially as and for the purposes set forth.

4. In combination with mechanism, substantially as described, for presenting the glass to the stones, the grindstones C C', arranged at an angle with each other on the threaded shafts D D', provided with means for adjusting the stones longitudinally thereon, substantially as and for the purposes set forth.

5. The combination and arrangement of the frame A, standards E F F', shafts D D', stones C C', carriage H, swinging frame I, and glass-holder J, substantially as described.

6. The combination, with the angularly-arranged stones C C', of the swinging frame I, former *l'*, gearing *e e' e'' e''' e''''*, glass-holder J, roller *c'*, slide U', and carriage H, substantially as described.

7. In combination with the angularly-arranged stones C C', the swinging frame I, provided with a suitable glass-holding clamp, former, and connecting-gearing, the supporting-roller *c'*, arranged to be adjusted to and from the stones and transversely thereto, substantially as described.

8. The combination, with the angularly-arranged stones C C', of the swinging frame I, provided with a suitable former and a glass-clamp, and connecting-gearing, the roller *c'*, carriage H, and slide S T, having pin and cam-bar V, substantially as described.

9. The combination, with the swinging frame I, provided with the former *l'*, and a suitable glass-clamp and connecting-gearing, and the roller *c'*, of the grinding-stones C C', arranged at an angle with each other and mounted on shafts D D', having end-play through their journals, substantially as described.

10. The rotary grinding-stones C C', arranged at an angle with each other, and capable of an alternating reciprocating motion lengthwise of their shafts, in combination with means for imparting such motion, substantially as and for the purposes set forth.

LOUIS P. VALIQUET.

Witnesses:

GEO. B. SELDEN,

CHARLES J. ROBINSON.