

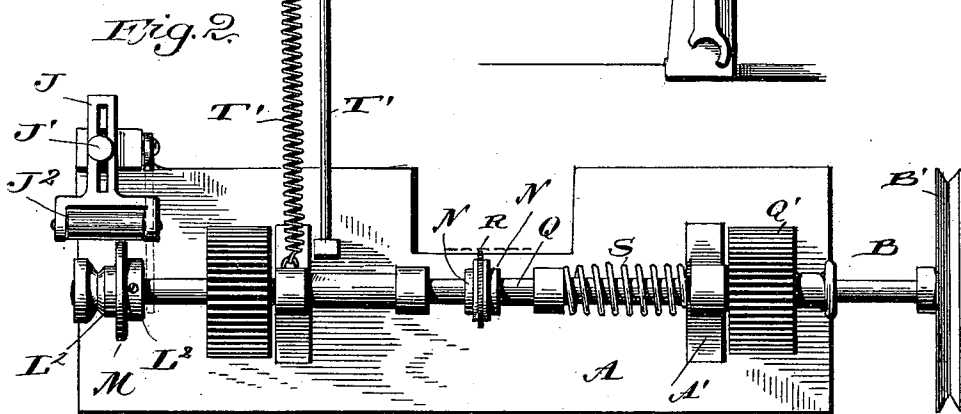
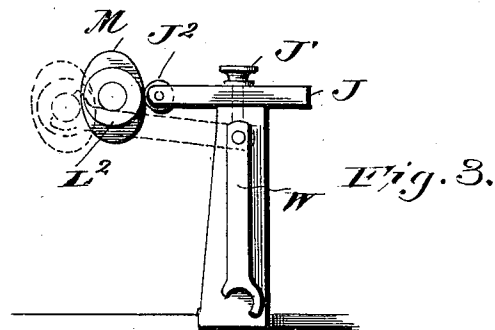
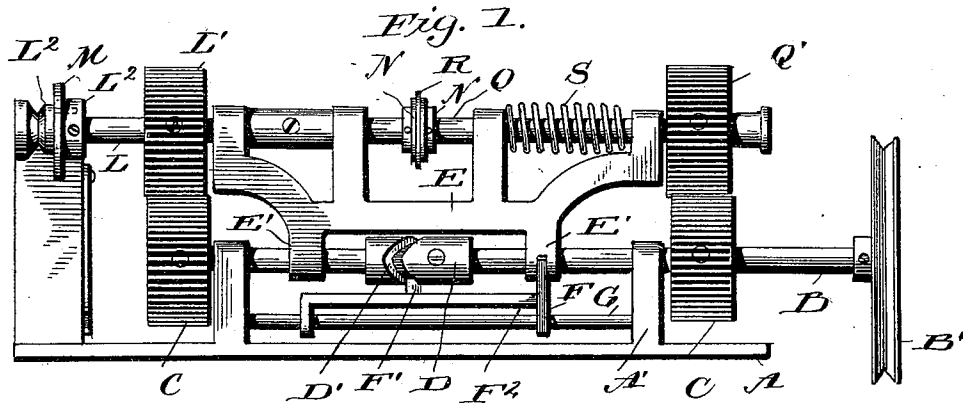
No. 615,089.

Patented Nov. 29, 1898.

H. E. MURDOCK.  
LENS GRINDING MACHINE.

(Application filed Mar. 5, 1898.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

HERMAN E. MURDOCK, OF PORTLAND, MAINE.

## LENS-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 615,089, dated November 29, 1898.

Application filed March 5, 1898. Serial No. 672,721. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN E. MURDOCK, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Lens-Grinding Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in machines for polishing curved surfaces, and especially to a machine of this nature which is adapted to grind lenses and so constructed that while the lens is being held resiliently against the grinding-stone a reciprocating movement is imparted to the glass, so as to cause an even and true surface and prevent the formation of grooves or other defects in the surface.

A further part of the invention resides in the provision of a lens-grinding machine which is mounted so as to have both a longitudinal and a lateral movement during the grinding process, suitable means being provided to hold the lens against the grinding-surface and for gaging the size to which it is desired to have the lens ground.

To these ends and to such others as the invention may pertain the same consists, further, in the novel construction, combination, and adaptation of parts, as will be hereinafter more fully described and then specifically defined in the appended claims.

The invention will be clearly understood when taken in connection with the drawings which form a part of this application, and in which drawings similar letters of reference indicate like parts throughout the several views, in which—

Figure 1 is a side elevation of my improved lens-grinding machine. Fig. 2 is a top plan view of the machine. Fig. 3 is an end elevation of the shaft carrying the gage-disk and adjustable roller.

Reference now being had to the details of the drawings by letter, A designates the base

of the machine, which has mounted thereon the brackets A', in which is mounted the shaft B. This shaft carries keyed thereto the cog-wheels C, and mounted centrally between the said cogs is the roller D, having a cam-groove D' therein. Mounted loosely on the shaft B is the rack E, which has the arms E', which are apertured and journaled to the said shaft B. Pivoted to an arm E is the link F, to which is secured the shaft F<sup>2</sup>, which carries a pin F', which is adapted to travel in the groove D' in the cam D and causes a reciprocating movement to the said rack E as the shaft B rotates, as will be noted. The said shaft F<sup>2</sup>, which carries the pin, is mounted to move back and forth on the shaft G, but holding the said shaft F<sup>2</sup> so that the pin thereon will always remain in the groove, whether the rack E is held vertically or tilted to one side, as will be noted. Mounted in the upright arms K of the rack E is the shaft L, which carries keyed to one end the geared wheel L', which is adapted to mesh with the wheel C, and said shaft L carries collars L<sup>2</sup>, between which the gage-disk M is held. At the inner end of the said shaft L is a clamping-disk N, which may be covered with rubber, felting, or any other semi-elastic or adhesive material, between which and a similar disk on the inner adjacent end of the shaft Q is adapted to be held the lens R to be ground. The said shaft Q carries at one end a geared wheel Q', adapted to mesh with the wheel C' on the shaft B, and said shaft has a splined connection with a section of the shaft carrying the clamping-disk N, and mounted on the said shaft between the arms K is a coiled spring S, which bears against a collar on the telescoping portion carrying the disk and normally holds the same under the tension of the spring against the lens.

Mounted on the outer end of the shaft B is the driving-wheel B', to which power is conveyed to the machine.

Mounted on an upright portion of the frame of the machine is the slide J, which is longitudinally slotted and held in place by means of thumb-screw J'. The forwardly-extending arms of this rack, having journaled therein the roller J<sup>2</sup>, are provided to gage the size at which it is desired the lens to be ground,

as by moving the said rack backward and forward the lens will be ground accordingly and prevented from being unevenly ground, as the roller will come in contact with the circumference of the disk M, which will hold the frame and the shaft carried thereby from further contact with the lenses to be ground. Mounted on the rear side of the frame is a spring-arm T, to the free end of which is connected one end of the coiled spring T', the other end of the said coiled spring being connected to the upper or laterally-swinging frame E, whereby the said rack has a tendency under the tension of the coiled spring T' to be held to one side of a vertical position, as against the grinding-stone V, which is shown in dotted lines in the drawings.

It will be noted from the foregoing that the size of the lens to be ground may be gaged by placing disks M of different sizes between the clamping members and by the regulation of the rack J, carrying the roller J'.

In Fig. 3 I have illustrated a means whereby the upper end of the swinging frame and shaft may be held away from the grinding-stone, which consists in pivoting to a portion of the support an arm W, which is scalloped out at its end and adapted to receive the end of the shaft carrying the gage.

Having thus described my invention, what I claim to be new, and desire to secure by Letters Patent, is—

1. In a lens-grinding machine, the operating-shaft, mounted in a suitable frame, a rack mounted loosely on said operating-shaft, lens-carrying shafts carried by the rack and geared connection between same and the operating-shaft, a cam-grooved member on the operating-shaft, a shaft adapted to travel with the

said rack, and having a lug engaging in the said cam-groove, combined as set forth.

2. In a lens-grinding machine, the combination of the operating-shaft having gear-wheels, and mounted in a suitable frame, the cam-grooved member keyed to said shaft, the rack mounted loosely on the operating-shaft, a shaft F pivoted to the said rack, the lug on shaft F designed to engage in the said cam-groove, of the lens-carrying shaft mounted in the rack, the geared wheels on the lens-shafts, and a spring for causing the ends of the shafts to clamp the lens as shown and described.

3. In a lens-grinding machine, the operating-shaft, swinging rack, lens-carrying shafts having geared connection with the operating-shaft, and the means for reciprocating the rack, combined with the gage-disk, the adjustable roller-holding slide, and the spring-arm T carried by the frame of the machine, and the coiled spring connected to the end of said spring-arm, its other end fastened to the swinging rack, as and for the purpose set forth.

4. In combination with a lens-grinding machine having an operating-shaft, swinging rack, lens-carrying shafts, having geared connection to the operating-shaft, the gage mechanism, and a pivoted arm W, having a recessed portion at its end, adapted to engage with the shaft carrying the gage mechanism, as shown and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN E. MURDOCK.

Witnesses:

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EDITH L. WRIGHT.