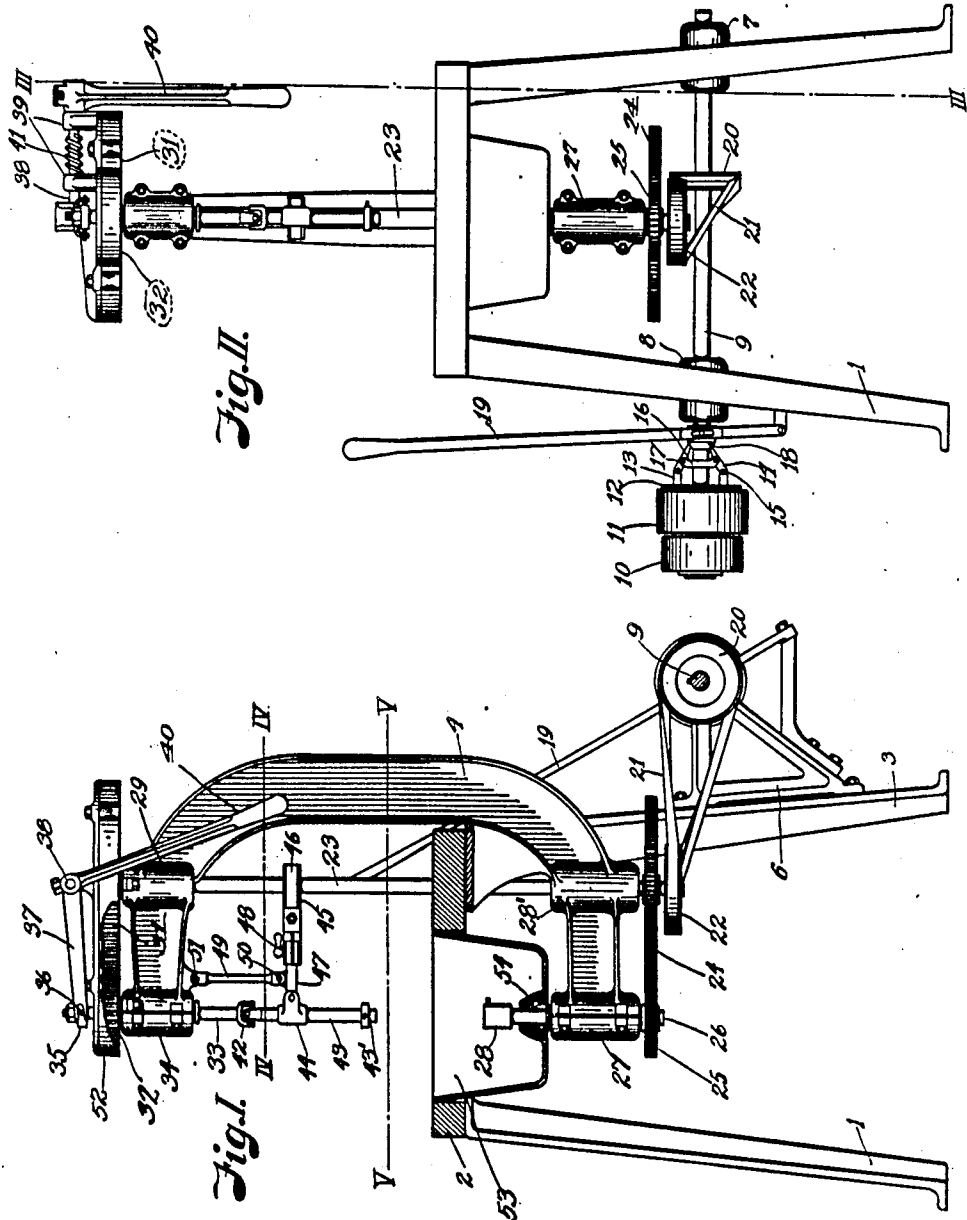


W. K. ROGERS.
LENS GRINDING MACHINE.
APPLICATION FILED AUG. 8, 1910.

1,037,992.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. III.

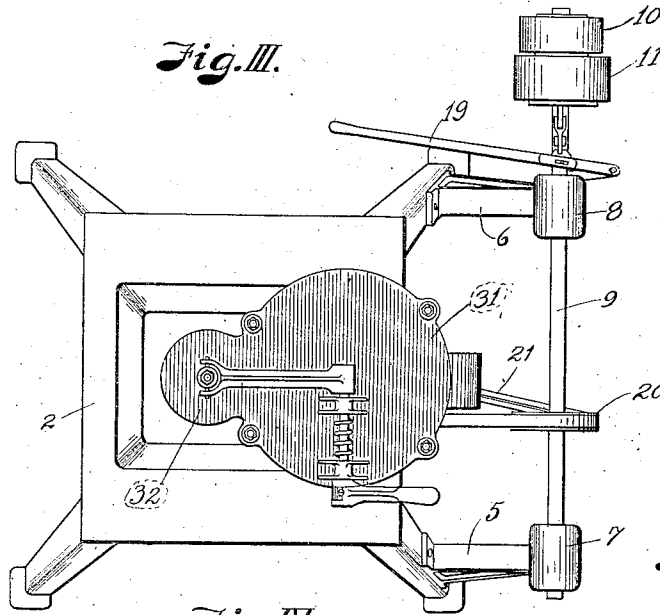


Fig. VI.

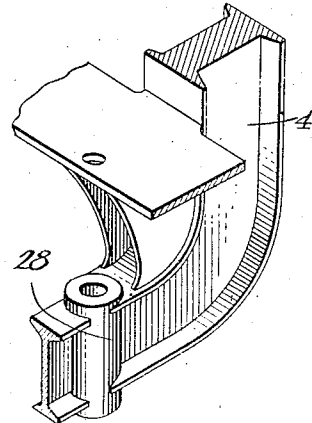


Fig. IV.

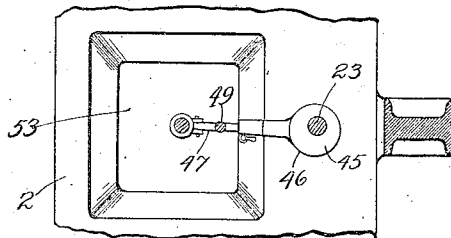
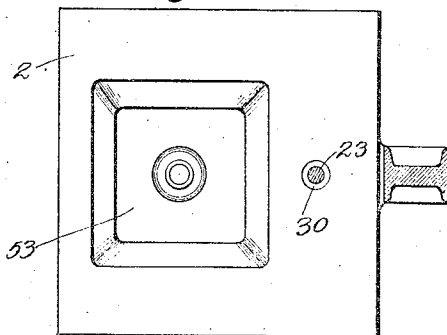


Fig. V.



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WALTER K. ROGERS, OF KANSAS CITY, MISSOURI.

LENS-GRINDING MACHINE.

1,037,992.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed August 3, 1910. Serial No. 575,206.

To all whom it may concern:

Be it known that I, WALTER K. ROGERS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, 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 and figures of reference marked thereon, which form a part of this specification.

My invention relates to a machine for grinding and forming optical lenses and the like which require time and skill in their production, and has for its principal object to provide a device for automatically regulating the eccentricity of the grinding tools commonly used in the grinding of said lenses.

It is a further object of my invention to provide a convenient means of raising and lowering one of the lens grinding tools without changing the initial adjustment of the machine.

It is a further object of my invention to provide a quick means of starting and stopping the grinding tools by the insertion of a friction clutch of any well known type between the driving pulley and the machine.

It is a further object of my invention to provide other improved details which will hereinafter be fully described and claimed and are illustrated in the accompanying drawings, in which:—

Figure I is a longitudinal sectional elevation of a machine constructed according to my invention. Fig. II is a front elevation of same. Fig. III is a plan view of same. Fig. IV is a plan section on the line IV—IV, Fig. I, showing the eccentric mechanism. Fig. V is a plan section on line V—V, Fig. I, showing the table, basin and lower grinding tool. Fig. VI is a perspective view of a portion of the frame showing the means of joining the C frame to the legs.

Referring more in detail to the parts:—1 designates the supporting legs which are preferably of the design illustrated and are bolted to the front edge of table 2. The rear end of table 2 is supported by means of a similar set of legs 3 which in turn support a C-shaped frame work 4, which is

preferably cast integral with the legs 3 so as to insure rigidity and compactness of construction. At the rear legs 3 are brackets 5 and 6 having journals 7 and 8 in which the driving shaft 9 is revolubly mounted. Revolubly mounted on the far end of shaft 9 is a pulley 10 which is securely fastened to drum 11, so that the pulley and drum may revolve as a unit about the shaft 9.

11 designates the friction drum of any well known type of clutch, having a cone shaped or flat engaging surfaces.

12 designates the driven friction member which is slidably mounted on shaft 9 and has projecting lugs 13 to which toggle levers 14 are hinged and flexibly secured by means of pins 15, the levers 14 being flexibly secured by pins 17 in yokes 16 which are rigidly mounted upon shaft 9.

Cone 18, which is actuated by hand lever 19, is adapted to slide laterally upon shaft 9; thus engaging and forcing levers 14 outward, thereby causing the friction disk 12 to engage drum 11 and the whole to revolve as a unit.

Between the bearings 7 and 8 on shaft 9 is secured a driving pulley 20 which, through the agency of a V-belt 21, drives a pulley 22 which in turn drives shaft 23. Rigidly mounted upon shaft 23 is a large gear 24 which engages a smaller gear 25 that is keyed securely to a shaft 26. Shaft 26 is journaled in bearing 27 and carries a chuck 28 which is so constructed as to admit a grinding tool commonly used in grinding lenses of this description.

Shaft 23 is revolubly mounted in bearings 28' and 29, there being a circular aperture 30 in table 2 of sufficient diameter to admit shaft 23 without bearing on same. At the top of shaft 23 is secured a large gear 31 of equal size with gear 24 which engages a smaller gear 32 of equal size with gear 25. The said gear 32 drives a spindle shaft 33 which is slidably mounted therein and journaled in bearing 34 on frame 4. The upper end of shaft 33 carries a loose collar 35 having trunnions 36 which are slidably fitted in a forked yoke lever 37, rigidly connected to a shaft 38 journaled in bearings 39, and is manipulated by means of lever 40 within easy reach of the operator. On the periphery of shaft 38 is a spring 41 which is so adjusted as to keep the spindle 33 normally down. At the lower end of spindle 33 is a universal joint 42 of any well known

type, supporting a shaft 43 which is in turn journaled in bearing 44 and carries at its lowest point a chuck 43'. The bearing 44 is adapted to be moved longitudinally forward and backward by means of an eccentric 45 on shaft 23; the eccentric having a band 46, the forward end of which receives a stub 47 which is held securely therein by means of a clamping device 48. The stub shaft is supported and directed in its longitudinal movement by means of a link 49 pivotally connected thereto by a pin 50 and to the main frame 4 by a pin 51.

The gears at the top of the machine are surrounded by a guard or casing 52 which eliminates the danger of the running gears and at the same time supports the mechanism for operating the spindle.

A basin 53 is provided in the table 2 for retaining any fluid or granular material used in the process of grinding, and has a raised portion 54 in its bottom for preventing such grinding substances from coming in contact with shaft 26. In order to obviate overflow of the grinding substances, the basin is made deep and the grinding confined to the lower portion so that any liquid thrown by the centrifugal force of the tools will not be scattered.

In use, the machine obtains its power from any convenient source through a belt passing over pulley 10, which may be driven constantly. A grinding tool, such as is used in this work, is placed on the chuck 28 and the lens is mounted in a suitable manner on shaft 43. The upper spindle being normally down, the two come together within the basin and are held in contact by spring 41 which maintains a pressure throughout the operation. Having thus equipped the machine, the shifter lever 19 is moved laterally outward, causing the clutch members to engage and drive pulley 20 and belt 21, which latter drives pulley 22 and shaft 23. Gears 24 and 31 being rigidly mounted on said shaft 23 will revolve therewith and drive gears 25 and 32, which in turn drive shafts 26 and 33 respectively. It is apparent that said shafts 26 and 33 will both revolve in the same direction but in an oppo-

site direction from shaft 23, that shaft 33 is adapted for longitudinal movement in journal 34, and that chuck 43', which is driven from shaft 33, is adapted for transverse movement, so that the lens may be ground to a double curvature with the same operation.

Having thus described my invention, what I claim as new therein and desire to secure by Letters-Patent is:—

1. In a lens grinding machine, the combination with a tool holder, of an eccentric, a bearing carried by said eccentric, a jointed spindle journaled in said bearing and adapted for coöperation with the tool holder, a lever connected with said spindle, and a spring acting on said lever to tension the spindle toward the tool holder, substantially as and for the purpose set forth.

2. In a lens grinding machine, the combination of a suitable frame, a tool holder mounted in said frame, a revoluble shaft, an eccentric carried by said shaft, a link adjustably connected with said eccentric and having a bearing, a link pivotally suspending said eccentric link from the frame, a spindle revolubly mounted in said bearing and having a joint for permitting transverse pivotal movement, a lever connected with said spindle, and a spring yieldingly acting on said lever to normally retain said spindle in the direction of the tool holder.

3. The combination with a supporting frame, of a laterally disposed driving shaft, a vertically directed operating shaft, an eccentric on said operating shaft, provided with a collar, two vertically directed spindle shafts revolubly mounted in alinement with one another, the upper shaft having a universal coupling, a stub connecting the upper spindle shaft with said eccentric, and a link connecting the stub with said frame for the purpose set forth.

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

WALTER K. ROGERS.

Witnesses:

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