

No. 720,509.

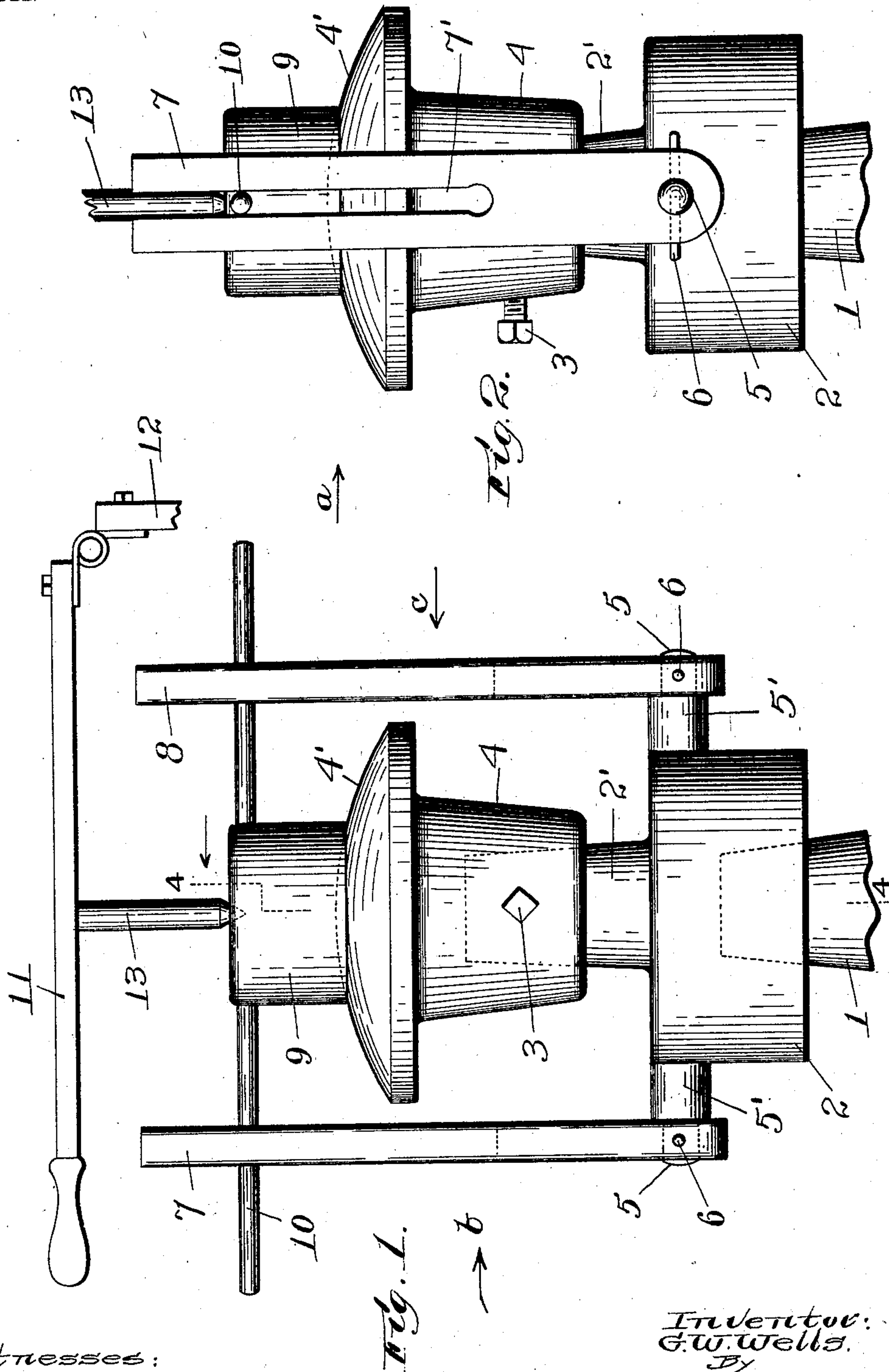
PATENTED FEB. 10, 1903.

G. W. WELLS.  
GRINDING AND POLISHING MACHINE.

APPLICATION FILED MAY 9, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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# UNITED STATES PATENT OFFICE.

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## GRINDING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 720,509, dated February 10, 1903.

Application filed May 9, 1902. Serial No. 106,585. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. WELLS, a citizen of the United States, residing at Southbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Grinding and Polishing Machines, of which the following is a specification.

My invention relates to a grinding and polishing machine, and more particularly to a machine for grinding and polishing lenses and to that class of machines shown and described in United States Letters Patent No. 512,012, of January 2, 1894.

The object of my invention is to provide a simple and inexpensive machine of the class referred to and designed particularly to grind and polish one lens at a time.

My invention consists in certain novel features of construction of my machine, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a front view of a grinding and polishing machine with my improvements applied thereto looking in the direction of arrow *a*, Fig. 2. Fig. 2 is an end view looking in the direction of arrow *b*, Fig. 1. Fig. 3 corresponds to Fig. 2, but shows some of the parts in a different position; and Fig. 4 is a central vertical section on line 4 4, Fig. 1, looking in the direction of arrow *c*, same figure.

In the accompanying drawings, 1 is a driven spindle, which may be the spindle of the ordinary lens-grinding machine, with a taper end, on which is supported my machine to have a rotary motion with said spindle.

2 is the base of my machine, with a taper recess 2' in its under side to receive the taper end of the spindle 1. (See Fig. 4.)

In the drawings, 9 and 4 are respectively the upper and lower cooperating grinding instrumentalities, which are technically known in the art as the "block" and the "lap," respectively; but I desire to have it understood that so far as the present invention is concerned these parts may be considered simply as two cooperating grinding devices, irrespective of their specific characteristics.

The base 2 has a projection 2'' extending therefrom and preferably of circular shape in cross-section, on which is removably supported one of the cooperating grinding de-

vices, shown in this instance as the lap or grinding-tool 4, by means of a set-screw 3, the said lap or tool having in this embodiment of the invention a convexed upper surface 4'.

In the base 2 is mounted, in this instance to have a rocking motion, a shaft 5. The ends of the shaft 5 extend beyond the base 2 and have thereon, in this instance, collars or sleeves 5'. On the extreme ends of the shaft 5 are secured, in this instance by a pin 6, the lower ends of the two guide-bars 7 and 8. These guide-bars have a rocking motion with the shaft 5. Each guide-bar 7 and 8 has a longitudinal slot therein. The slot 7' in the guide-bar 7 is shown in Figs. 2 and 3.

Extending over the lower grinding-surface 4' and resting thereon in its normal position is the cooperating grinding device or block 9, having in this instance a concaved lower surface, the curvature thereof corresponding to the convexed curvature of the grinding-surface 4'.

The block 9 has a rod 10 extending through its upper part and secured thereto, and the projecting ends of said rod 10 extend through the slotted portions of the guide-bars 7 and 8 and are free to move up and down therein.

It will be understood that the lens to be ground is secured upon the under side of the block 9 in the usual way.

To hold the block 9 down upon the grinding tool or lap 4 and to move it around thereon, I use in this instance a lever 11, pivotally supported on a post 12 and having the downwardly-extending pin 13 thereon, with a pointed end adapted to extend loosely into a recess in the upper side of the block 9.

The operation of my machine will be readily understood by those skilled in the art. The lens to be ground is secured to the block 9, and power is applied to the spindle 1. The revolution of the spindle 1 will cause the base 2 and the grinding device or lap 4 to rotate, and with them the shaft 5, carrying the guide-bars 7 and 8, and through said guide-bars 7 and 8 and the rod 10, extending into the slots in said bars, cause the upper block 9 to rotate. By means of the lever 11 the block 9 may be moved laterally by the operator, whereby a rocking motion is communicated to the block 9, as shown in Fig. 3.

While I have shown the parts disposed to



have the lens secured to the upper of the grinding instrumentalities, it is quite evident that this arrangement might be reversed within the scope of my invention.

5 The advantages of my improvements in grinding and polishing machines will be readily appreciated by those skilled in the art. It is of simple and inexpensive construction and can be readily operated and is particularly adapted for grinding one lens at a  
10 time.

It will be understood that the details of construction of my machine may be varied, if desired. The curvature of the grinding-  
15 tool may be the reverse of that shown in the drawings, and one of the devices 4 or 9 may be stationary, while the other rotates. The upright guide-bars 7 and 8 may be mounted loosely on the shaft 5 to rock thereon, said  
20 shaft being stationary, if preferred.

My machine may be used for grinding a straight cylinder lens, if desired.

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

1. In a lens-grinding machine, the combination with a rotatable base, a shaft mounted

therein and extending therefrom at diametrically opposite sides, a single-slotted guide-bar supported on each end of said shaft, and a  
30 block and a lap, one of said parts being removably supported on said base, the other of said parts extending over the first-mentioned part, and having a rod or pin extending out from opposite sides thereof with its end extending  
35 through a slot in said guide-bar, substantially as shown and described.

2. In a lens-grinding machine, the combination with a rotatable base, a shaft centrally mounted therein, and having a rocking mo-  
40 tion, a single-slotted guide-bar fast on each end of said shaft, and a block and a lap, one of said parts being supported on said base, the other of said parts extending over the first-mentioned part and having a rod or pin ex-  
45 tending out from opposite sides thereof with its end extending through the slot in said guide-bars, and means for pressing down and moving the upper part laterally, substantially as shown and described.

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