

A. PELLOW.
LENS GRINDER.
APPLICATION FILED JULY 17, 1919.

1,399,400.

Patented Dec. 6, 1921.

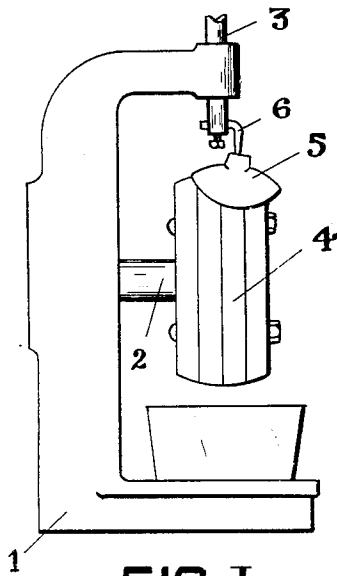


FIG. I

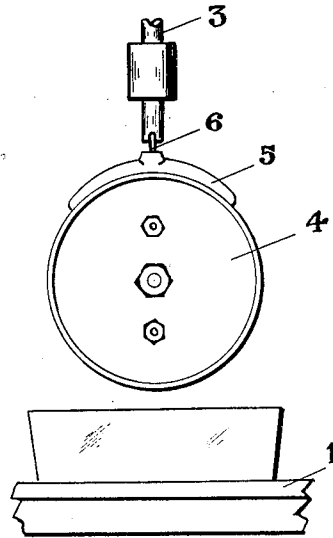


FIG. II

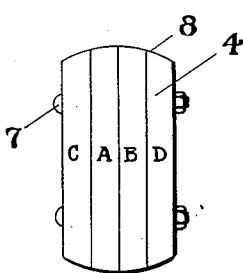


FIG. III

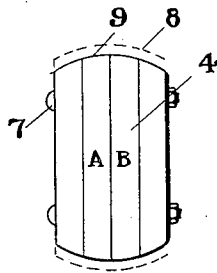


FIG. IV

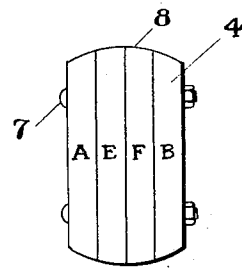


FIG. V

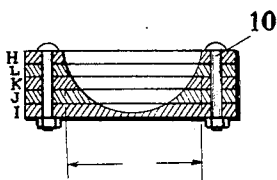


FIG. VI

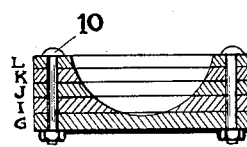


FIG. VII

INVENTOR
ARTHUR PELLOW

BY
H. H. Styll & H. K. Parsons
ATTORNEYS

UNITED STATES PATENT OFFICE.

ARTHUR PELLOW, OF SOUTHBRIDGE, MASSACHUSETTS, ASSIGNOR TO AMERICAN OPTICAL COMPANY, OF SOUTHBRIDGE, MASSACHUSETTS, A VOLUNTARY ASSOCIATION OF MASSACHUSETTS.

LENS-GRINDER.

1,399,400.

Specification of Letters Patent.

Patented Dec. 6, 1921.

Application filed July 17, 1919. Serial No. 311,405.

To all whom it may concern:

Be it known that I, ARTHUR PELLOW, 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 Lens-Grinders, of which the following is a specification.

This invention relates to improvements in lens grinding, and has particular reference to an improved construction of lap or tool for use in forming the desired curve on the lens.

Prior to my invention great waste has been experienced in connection with the grinding of lenses due to the fact that the grinding tools, particularly as employed in grinding lenses in quantities, or in grinding large pieces of glass, must be initially formed to a certain curve, while as the grinding operation is carried out the curve will wear deeper and deeper directly down onto the tool, while there will be lateral portions which will not be subject to this wear, with the result that ordinarily only about one-third of the material of the tool may be used and the other two-thirds wasted. This is an important item in connection with the commercial production of lenses on a large scale.

It is, therefore, one of the objects of my present invention to provide a novel and improved construction of tool in which the parts shall be so formed and capable of such adjustment that a maximum of wear may be attained.

In connection with the prior art grinding of lenses it has frequently been the custom, both in the formation of spherical and of cylindrical lens surfaces, to make use of what is known as a grinding wheel having a proper transverse curve and having the radius of its circumference the radius of the curve to be thus produced. The great disadvantage in employing this type of tool resides in the fact that as the surface wears away the circumferential radius will be shortened so that the life of the tool on its curve is relatively short.

A further object of my present invention, therefore, is to provide a novel and improved construction by which the tool may be readily varied to compensate for this wear, to the end that the necessary curve may be

maintained and maximum wear of the several parts of the tool accomplished.

Other objects and advantages of my improved construction should be readily apparent by reference to the following specification taken in connection with the accompanying drawings, and it will be understood that I may make any modifications in the specific details of construction shown and described within the scope of the appended claims without departing from or exceeding the spirit of my invention.

Figure I represents a side view of a grinding machine embodying my improvement.

Fig. II represents a front view thereof.

Fig. III represents an edge view of the grinding wheel removed.

Fig. IV represents a view similar to Fig. III showing the wear of the tool.

Fig. V represents a similar view illustrating the manner of adjustment to compensate for such wear.

Fig. VI represents a sectional view of another form of construction.

Fig. VII represents a view illustrating the adjustment of parts of Fig. VI to compensate for wear.

In the drawings, the numeral 1 designates the frame of a machine having journaled therein the horizontal shaft 2 and the vertical shaft 3. Mounted upon the horizontal shaft 2 is a grinding wheel or tool 4 co-operating with the lens block 5 driven from the shaft 3 by the crank pin 6 to secure the necessary cross motion in grinding of the lenses carried by the block 5.

Fig. III illustrates a sectional view of one of my improved grinding tools made up of the sections A, B, C and D, suitably secured together as by the bolts 7.

Fig. IV indicates by the dotted lines 8 the original extent of the tool surface, while the full line 9 indicates its present extent after having been worn down through use. Ordinarily with the prior art forms of construction this tool must now be thrown away, being useless for the production of the type of lens for which it was intended. With my improvement, however, it is merely necessary to separate the grinding tool if desired, removing the disks C and D, and interposing between the disks A and B the new disks E and F of increased diameter, as indicated in Fig. V. The disks A and B

now form the shorter side portions and are of the proper height for this purpose so that in place of an entire new tool being formed only half a tool or central portion has been inserted.

It will be understood moreover that while I have shown the tool as composed of but four parts, that any number of laminations or disks may be employed for this purpose, the idea being that in each case the disk starting at the center is worn down to edge size when it is removed, its place having been taken each time by a new disk so that the work need not be long delayed in forming a new tool, while maximum use is obtained from each of the disks. The same idea is equally applicable to regular concave or convex tools. In the case of concave tools, for example, as shown in Figs. VI and VII, the tool is similarly built up of a number of laminations or layers held together by the bolts 10. These laminations after the first construction of the tool start in as the solid blocks or plates G, while as the grinding progresses they will gradually be worn into larger and larger rings until they reach the condition of the top ring shown at H, Fig. VI. They having then outlived their usefulness in connection with this particular curve, the ring H is removed and a new plate takes the place of I, which wears up gradually into the form of the plates I, J, K and L, which in succession are moved upward as was the plate H until finally removed as no longer useful in this particular place, although possibly useful in connection with a different curve, the grinding keeping the curve constant and enabling the several disks to be thoroughly used until the larger portion has served its intended purpose, the portion actually being used being indicated by the dividing lines and arrows

11 in connection with Fig. VI, from which it will be seen that considerably over half of the plate is used up before it reaches the final position H and is removed.

In addition I would call particular attention to the fact that on account of the use of the series of plates slight grooves are provided on the face of the lap, which if desired may be accentuated by holding the plates in slightly spaced relation. These grooves form emery receiving channels or pockets aiding in insuring the proper supply of abrasive being at all times present between the lens and surface being ground.

I claim:

1. The process of constructing and maintaining a lens grinding tool in proper operative condition consisting in detachably connecting a series of plates, forming a proper curve on the edge of a series of such plates, and restoring the tools as worn by progressively shifting the plates outwardly from the summit, and building up the tool at the summit by the insertion of additional plates.
2. The process of constructing and reconstructing a grinding tool to secure maximum wear from the grinding tool, consisting in building the tool of a series of laminations, separably connecting said laminations and progressively shifting the laminations from summit to edge of the curve being ground thereby, inserting new units at the summit, and removing a unit from the edge as a new unit is placed at the summit to preserve the wear and bulk of the tool substantially constant.

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

ARTHUR PELLOW.

Witnesses:

ALICE G. HASKELL,
H. E. COLEMAN.