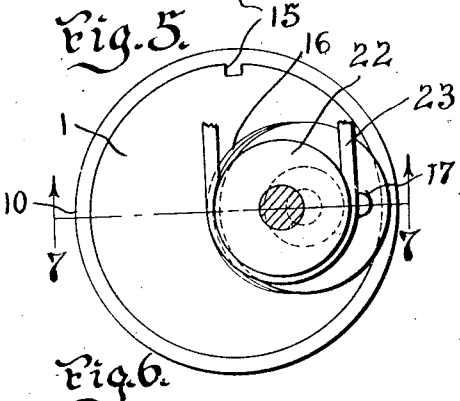
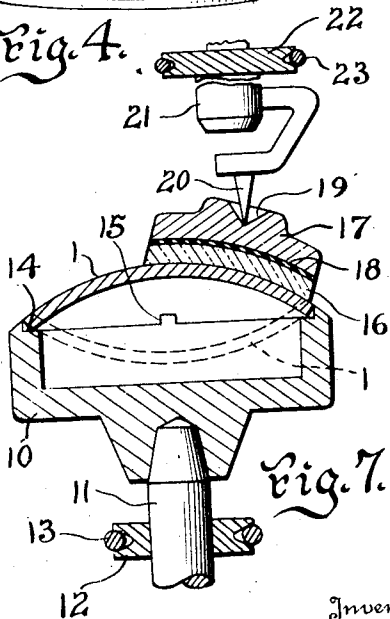
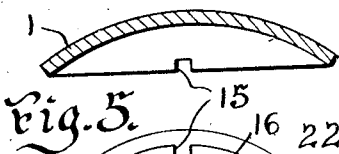
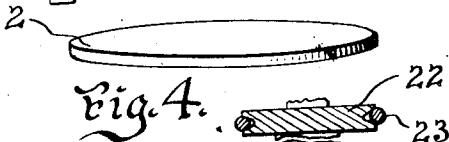
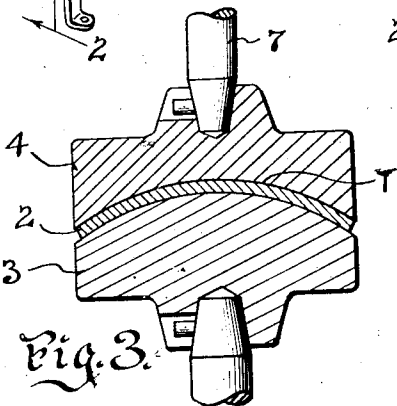
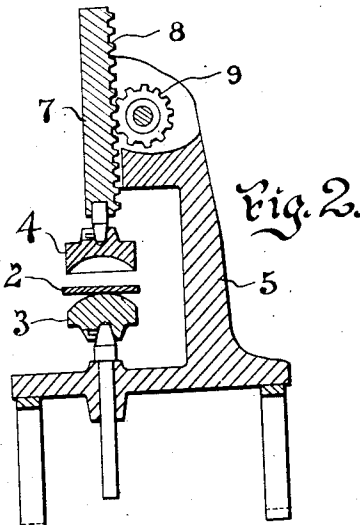
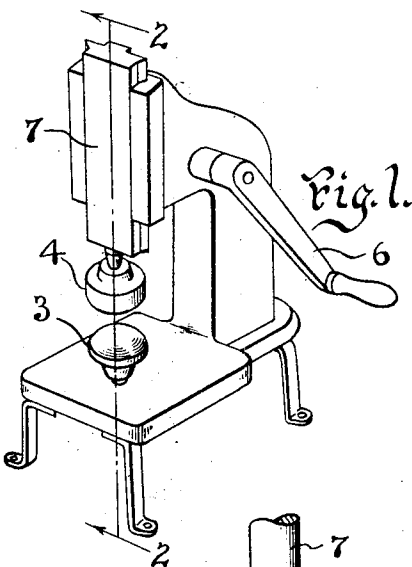


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A. E. MAYNARD
SURFACING MACHINE

Filed April 9, 1926



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SURFACING MACHINE.

Application filed April 9, 1926. Serial No. 100,824.

This invention relates to lens surfacing machines and has particular reference to an improved surfacing lap or tool for the same and the process of making it.

5 The principal object of the invention is to provide improved means for making a surfacing tool or lap which does not have to be machined, molded or re-trued, and one that is easy and quick to produce.

10 Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings and it will be understood that many changes and modifications may be made in the details of construction and arrangement of parts without departing from the spirit of the invention as set forth in the appended claims. The preferred forms only of the invention have been
15 shown by way of illustration.

Referring to the drawings in which similar characters of reference are used to denote corresponding parts throughout:

Figure 1 is a perspective view of a press
25 used for forming the tool;

Figure 2 is an elevation in cross section on line 2—2 of Figure 1;

Figure 3 is an enlarged detail view of the forming dies shown in Figure 2;

30 Figure 4 is a perspective view of the sheet from which the surfacing portion of the tool is formed.

Figure 5 is a cross sectional view through the center of the tool after it has been
35 formed;

Figure 6 is a plan view of the tool in use on a surfacing machine;

Figure 7 is a cross section on line 7—7 of Figure 6.

40 Referring to the drawings, Figure 5 shows a cross section of my finished tool 1. I preferably make this tool of sheet copper, although other sheet metal or substances may be used. The sheet copper plate 2 shown in Figure 4 is placed between a pair
45 of forming dies 3 and 4 on the press 5 and power is applied to the press to force the die 4 down over the sheet 2 onto the lower die 3. Power may be applied to the press
50 5 by a hand crank 6, as shown in Figure 1, or by other power means. The die 4 is driven down onto the plate 2 by the die head 7 having the rack 8, which intermeshes

with the pinion 9 on the crank 6. The curved surfaces of the dies 3 and 4 are of 55 the curvature required for the surfacing tool 1 and they are opposite in sense.

The tool or shell 1 may be used for grinding either convex or concave surfaces as desired. For grinding a concave surface the 60 upper surface is used, and for grinding a convex surface the under surface is used. In operation the pressed plate tool 1 is fitted in a carrier 10, which fits on the spindle 11 of a surfacing machine which is driven by the 65 pulley 12 and the belt 13. The holder 10 has a tool holder recess or shoulder 14 for retaining the tool in place. The tool is prevented from creeping in the tool holder 10 by means of the fins and slots 15. The one 70 holder 10 is so designed that it may hold the tool either for convex surfacing or concave surfacing, as shown in Figure 7. The concave surfacing is shown in full lines and the convex surfacing in dotted lines. The 75 lens or other object 16 to be ground is held by a lens holder 17, to which it is secured by a layer of pitch or other adhesive 18. The holder 17 has a grinding pin recess 19 into which fits the grinding pin 20 on the spindle 80 21 of the surfacing machine which is rotated by the pulley 22 and the belt 23.

Prior to bending my plate to the form of the surfacing tool I preferably make it in the form of a disc so that it presses down 85 evenly and smoothly in the dies to the shape required for the lens holder 10.

In operation the tool 1 is used with the ordinary abrasives, such as rough or fine emery and water, and I have found from 90 experience that the tool soon becomes charged with the abradant. I have also found from experience that the life of a surfacing tool made in this way is much greater than the ordinary prior art cast iron sur- 95 facing tools with machine surfaces.

It will be seen from the foregoing description that the great advantage in using a tool of this kind is in the service it renders to the user of surfacing machines. It is not 100 necessary to make a heavy and expensive cast iron tool which surfaces must be carefully machined to shape, and which surfaces must be re-trued after surfacing from four to eight pairs of lenses, nor is it necessary 105 to cast a tool having the curvatures required

for surfacing. With this invention all the equipment that is necessary is the die press and the necessary dies for the various curvatures. To make a tool for any curvature it is only necessary to place the required pair of dies on the press and press the sheet material out to form and place it in the holder 10 on the machine. If for any reason the surfaces get out of shape it is only necessary to replace the tool in the die and re-shape it or if preferred an entirely new tool could be made by using a new disc of the material.

It will be understood that most any form of die press may be used with any suitable power. The devices shown in Figures 1 and 2 are suitable for carrying out the operation and giving satisfactory service.

From the foregoing description it will be apparent that I have provided extremely simple, inexpensive and facile means for providing surfacing tools with a minimum of expense and in a minimum of time and with a minimum of labor, and that I have provided means well adapted for carrying out all the objects of the invention.

Having described my invention, I claim:

1. An abrading tool comprising a recessed annular holder having means to secure it to the spindle of a surfacing machine and a thin pressed abrading plate having its inner and outer surfaces shaped to the required abrading curvature secured to and contacting only with the annular edge of

the holder and extending over the recessed portion thereof. 35

2. An abrading tool comprising a recessed annular holder having means to secure it to the spindle of a surfacing machine and a thin pressed abrading plate having its inner and outer surfaces shaped to the required abrading curvature secured to and contacting only with the annular edge of the holder and extending over the recessed portion thereof and having impressed into its outer abrading surface abradant particles. 45

3. An abrading tool comprising a recessed annular holder having means secured to the spindle of a surfacing machine, a thin copper abrading plate having its inner and outer surfaces shaped to the required abrading curvature and secured to and contacting only with the annular edge of the holder and extending over the recessed portion thereof. 50

4. An abrading tool comprising a recessed annular holder having means to secure it to the spindle of a surfacing machine, a thin copper abrading plate having its inner and outer surfaces shaped to the required abrading curvature secured to and contacting only with the annular edge of the holder and extending over the recessed portion thereof and having particles of abradant pressed into and secured to the outer abrading surface. 55 60 65

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