April 14, 1953 A. SEIDNER 2,634,557

LENS GRINDING MACHINE

Filed Feb. 18, 1950

Fig. 1

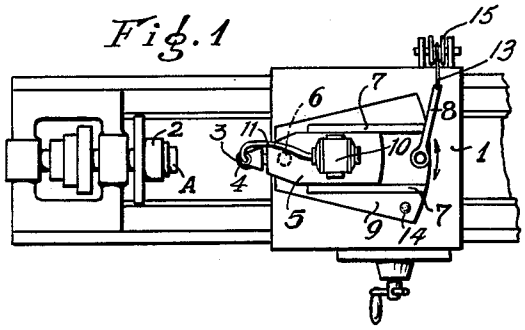
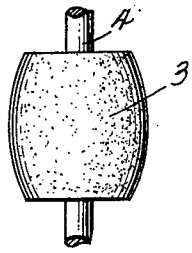


Fig. 2



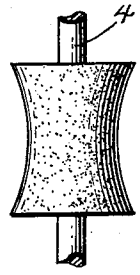


Fig. 3

INVENTOR

Albert Seidner

BY

J. F. Bassecches

His ATTORNEY

Patented Apr. 14, 1953 2,634,557

UNITED STATES PATENT OFFICE

2,634,557

LENS GRINDING MACHINE

Albert Seidner, Tel Aviv, Israel

Application February 18, 1950, Serial No. 144,873
In Israel November 20, 1949

2 Claims. (Cl. 51—33)

1

This invention is concerned with grinding lenses, more especially with the grinding of eye glasses. This operation is as a rule hitherto performed by means of rotating tools having a curvature identical with that of the lenses to be produced and covered with Carborundum or the like abrasive material or with embedded diamond splinters. More especially the invention relates to machines for grinding lenses with a toric surface. Known machines of this kind are shown in the United States Patents No. 1,901,181 of J. J. McCabe and No. 2,065,103 of L. G. Simpson. These known machines operate with a conical tool, having an annular abrading edge which produces during the rotation of the tools about its own axis the curvature of the lens in the vertical meridian and during the swinging movement about a different axis the curvature in the horizontal meridian. Owing to this construction and operation of the known machines the planes of the vertical meridians are not radial to the center of the horizontal meridians with the result that the vertical curvatures of the lens are quite distorted into some elliptical form.

The object of the invention is to devise a machine which eliminates the just mentioned deficiency and is capable not only to produce spheric surfaces, but also correct toric or other surfaces of complicated curvatures likely to be desired.

According to the invention, the new machine comprises a body of rotation provided with a grinding material, a swinging plate, the axis of rotation of said body being carried by the swinging plate, the axis of the body of rotation being parallel to the axis of the swinging plate, means for rotating the body, means for swinging the plate, and a holder for the lens to which the body of rotation is to be applied.

Now according to the invention the tool is formed as a body of rotation of a spherical convex, concave, parabolic or other shape. This body is rotated about its own axis and is additionally swung about an outside axis, whereby the curvature of said body itself combines with the curvature of the swinging movement to the final curvature desired on the lens.

Furthermore the distance of the two axes and possibly the angle between them may be adjustable.

In the annexed drawing:

Fig. 1 is a schematic plan view of an arrangement in which the new tool is incorporated;

Figures 2 and 3 show various forms of the new tool.

2

The invention is exemplified by a simple executional form, as shown in Fig. 1. In this case the tool is mounted on the carriage 1 and the blank A is fixed on the head stock 2 of a lathe.

The head stock 2, being of conventional construction, holds the blank A in the usual way. Its surface is exposed to the grinding action of the tool 3. This stool is barrel-shaped, as defined above and is shown in Figs. 2, 3. Tool 3 is rotated about an axis 4 in the direction of the arrow.

The tool is journalled with the ends of its axle in a slide 5 movable in a plate 9 swingingly arranged on a vertical pivot 6 fixed in carriage 1. Slide 5 lies above said pivot and may be shifted and fixed at will in a guideway 7 of plate 9. The end portion of slide 5 carrying axle 4 may be connected with the main part by a horizontal swivel, so as to permit its being inclined to create an angle between turning axis 4 and swinging axis 6. The swivel can be fixed in every desired angular position.

In case of Fig. 2 the tool will as a rule be located in front of pivot 6; in case of Fig. 3 it will be located behind and above that pivot.

The tool 3 is driven by an electromotor 10 located on slide 5 and coupled with axle 4 of the tool by a flexible shaft 11.

On plate 9 is fixed a vertical handle 14 by means of which this plate can be swung in one direction to effect the working stroke. In the reverse direction the plate 9 is swung by a rod 8 attached with one end thereto and with the other end to a cord 13 running over a roller 15 to a weight (not shown) effecting the idle stroke.

Having a tool of a given diameter, the axial section of the finished lens in one direction is determined by the curvature of this tool and in the other direction by the different arm lengths i. e. the distance from the axis 6 to the axis of tool 3. By changing one or both component magnitudes, different toric surfaces will be produced. In operation the tool is always rotated. For spherical lenses the lens may be rotated or it may be fixed. For torical surfaces the lens must be fixed and only the tool is rotated as well as oscillated to and fro.

What I claim is:

1. A machine for grinding lenses comprising a frame, a carriage movable on the frame, a swinging plate connected by a pivot with the carriage, a guide way on the plate, a slide movable and fixable in the guide way, a body of rotation journalled with an axle at the head of said slide and provided with a grinding material on its

surface, means for rotating the said body, means for swinging the plate with the guide way, and a holder for the lens to which the body of rotation is to be applied, the axle of the body of rotation being adjustable to be parallel to the axis of the pivot or to enclose an angle therewith.

2. A machine for grinding lenses comprising a frame, a carriage movable on the frame, a swinging plate connected by a pivot with the carriage, a guide way on that plate extending from the front to the rear of said pivot, a slide movable and fixable in the guide way, a body of rotation journaled with an axle at the head of said slide and provided with a grinding material on its surface, means for rotating the said body, means for swinging the plate with the guide way, and a holder for the lens to which the body of rotation is to be applied, the body of rotation having in its axial direction a profiled curvature corresponding to the curvature of the lens to be produced.

ALBERT SEIDNER.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
441,570	Leighton	Nov. 25, 1890
1,475,626	Galeski	Nov. 27, 1923
1,630,253	Bugbee	May 31, 1927
1,901,181	McCabe	Mar. 14, 1933
1,941,598	Cleveland	Jan. 2, 1934
2,020,117	Johnston	Nov. 5, 1935
2,035,173	McGill	Mar. 24, 1936
2,049,874	Sherk	Aug. 4, 1936
2,065,103	Simpson	Dec. 22, 1936
2,112,836	Evans	Apr. 5, 1938
2,195,050	Wallace	Mar. 26, 1940
2,237,744	Mullen	Apr. 8, 1941
2,455,065	Keller	Nov. 30, 1948

FOREIGN PATENTS

Number	Country	Date
222,255	Germany	May 2, 1910