

Mar. 13, 1923.

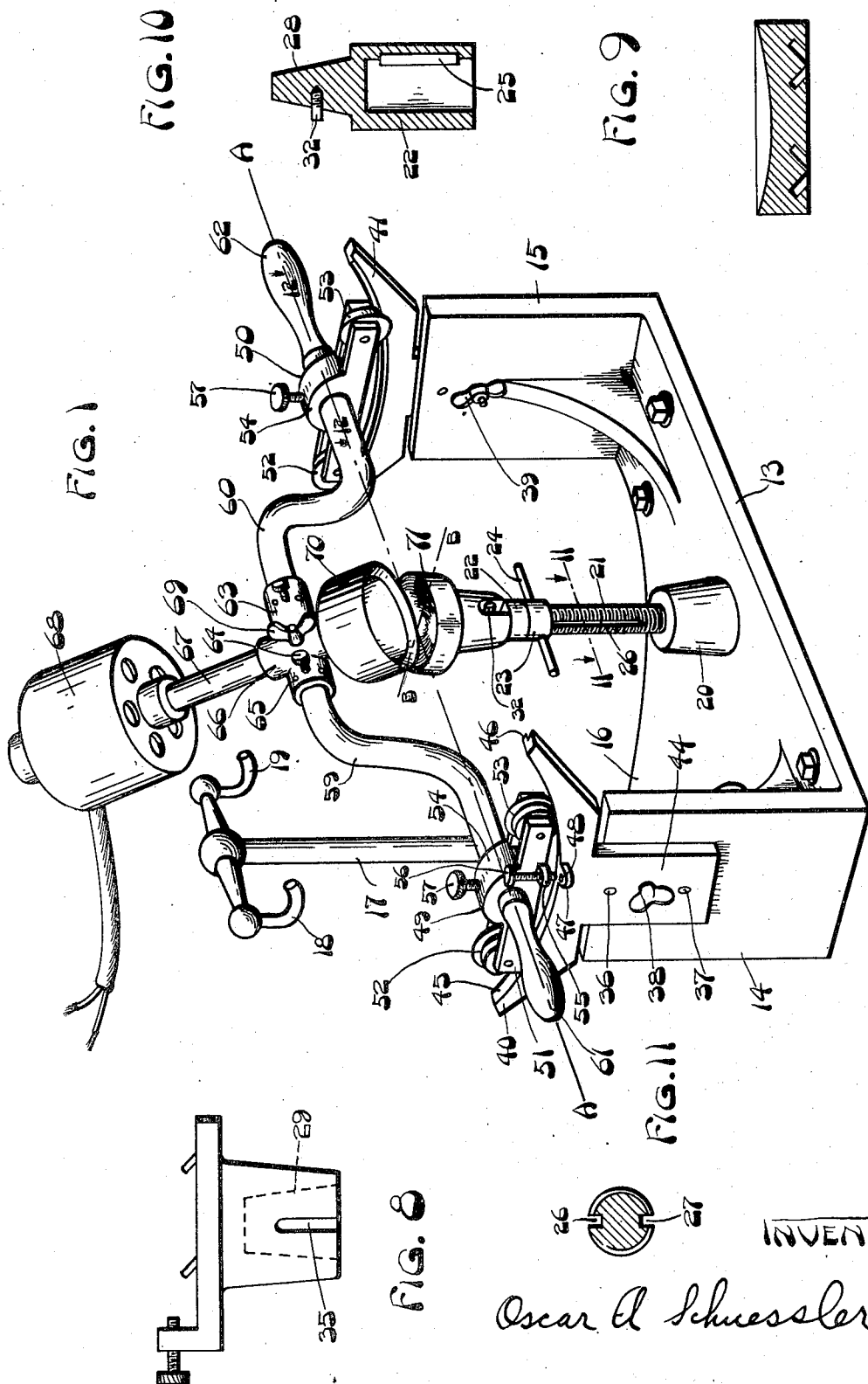
1,448,239

O. A. SCHUESSLER

LENS LAPPING TOOL GRINDER

Filed Jan. 3, 1921

3 sheets-sheet 1



Mar. 13, 1923.

1,448,239

O. A. SCHUESSLER

LENS LAPPING TOOL GRINDER

Filed Jan. 3, 1921

3 sheets-sheet 2

FIG. 3

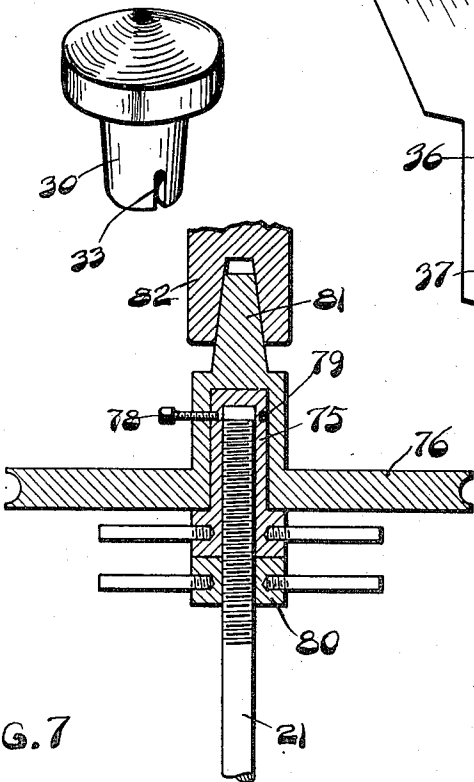


FIG. 2

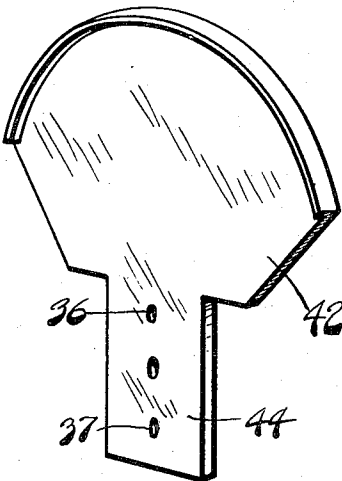


FIG. 7

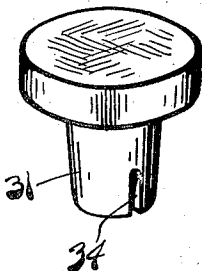
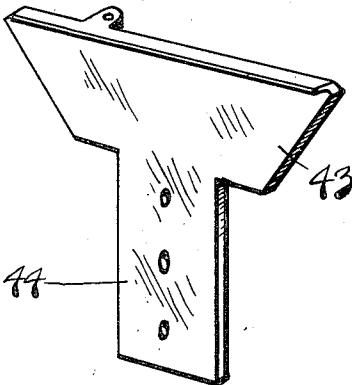


FIG. 5

FIG. 4



INVENTOR

Oscar A. Schuessler

Mar. 13, 1923.

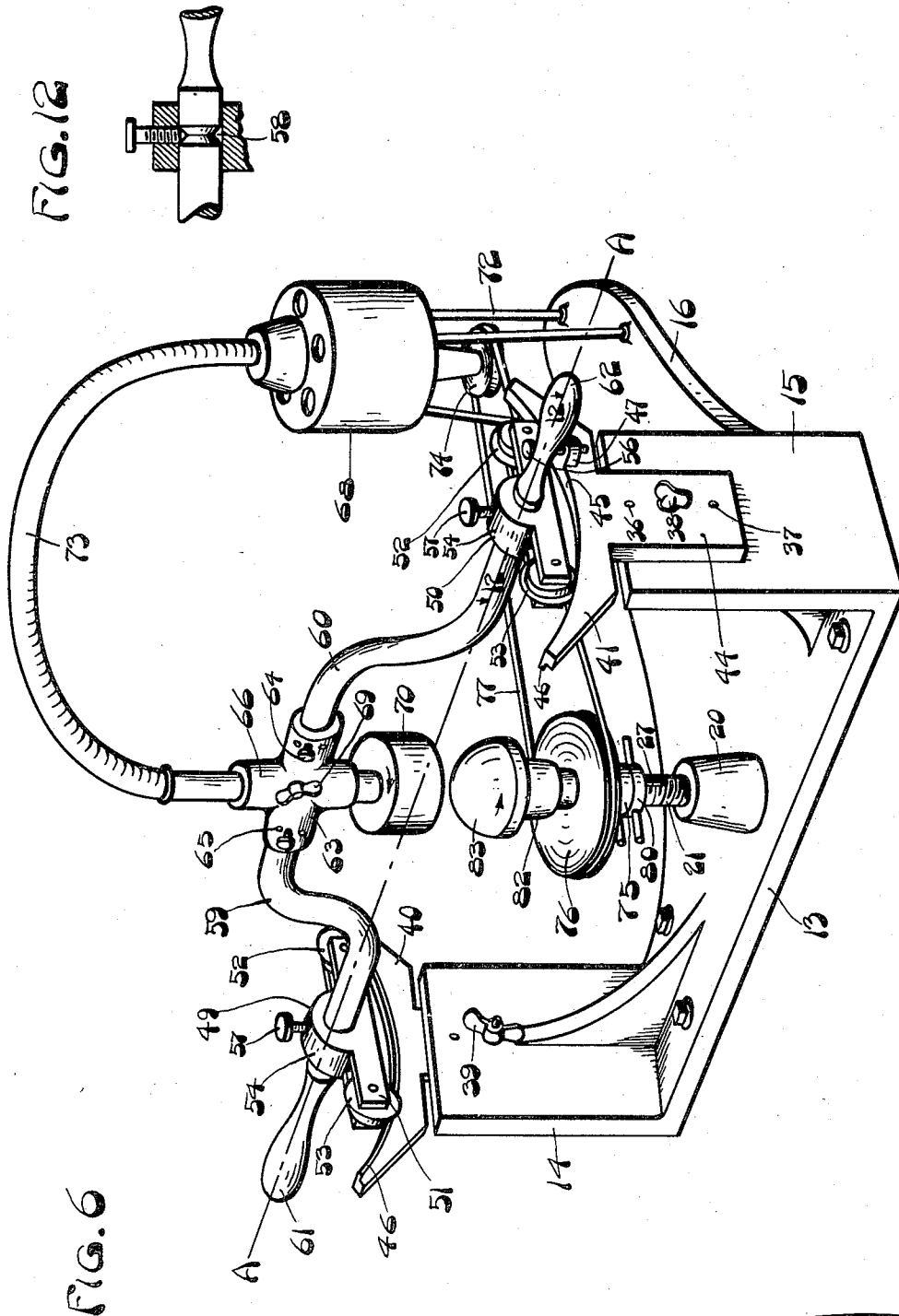
1,448,239

O. A. SCHUESSLER

LENS LAPPING TOOL GRINDER

Filed Jan. 3, 1921

3 sheets-sheet 3



INVENTOR

Oscar A. Schuessler

UNITED STATES PATENT OFFICE.

OSCAR A. SCHUESSLER, OF CINCINNATI, OHIO.

LENS-LAPPING-TOOL GRINDER.

Application filed January 3, 1921. Serial No. 434,708.

To all whom it may concern:

Be it known that I, OSCAR A. SCHUESSLER, a citizen of the United States, residing in Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in a Lens-Lapping-Tool Grinder, of which the following is a specification.

This invention has for an object to produce a grinder for lens lapping tools, in which greater accuracy of grinding may be attained than in other grinders known to me and in which the grinding element will maintain its accuracy until worn out completely.

A further object is to produce an improved lapping tool grinder which is of much simpler construction and operation than other grinders known to me and in which lapping tools of all sizes and shapes may be handled for grinding and restoration to former degrees of accuracy.

These and other objects are attained in the grinder described in the following specification and illustrated in the accompanying drawings in which:—

Fig. 1 is a perspective view of a lapping tool grinder embodying my invention in position and equipped for the grinding of a concave lapping tool.

Fig. 2 is a perspective view of a convex track plate forming a detail of my invention.

Fig. 3 is a perspective view of a convex lapping tool corresponding to the plate shown in Fig. 2 and the cooperation with which will be hereinafter explained.

Fig. 4 is a perspective view of a plane track plate forming a detail of my invention.

Fig. 5 is a view of a plane lapping tool corresponding to the plate shown in Fig. 4 and the cooperation with which will be hereinafter explained.

Fig. 6 is a perspective view of my improved grinder modified somewhat to grind lapping tools of a spherical contour.

Fig. 7 is a fragmental sectional elevation of the lapping tool mounting of the grinder shown in Fig. 6.

Fig. 8 is a view of a holder for a different style of lapping tool from those shown in Figs. 3 and 5.

Fig. 9 is a sectional view of a lapping tool of the style adapted to occupy the holder shown in Fig. 8.

Fig. 10 is a sectional elevation of a holder designed to hold the lapping tools shown in Figs. 3 and 5 and which has been shown in position on the machine shown in Fig. 1.

Fig. 11 is a transverse sectional view taken on the line 11—11 of Fig. 1.

Fig. 12 is a fragmental sectional view taken on the line 12—12 of Figs. 1 and 6.

My invention consists in constructing a grinder in which a base 13 is provided with uprights or track supports 14 and 15 at its ends, with a rearward extension 16 which carries, as shown in Fig. 1, a standard 17 having hooked fingers 18 and 19 for supporting the carriage to be described, when it is not being used. Between the track supports I have provided a boss 20 having a vertical screw threaded shaft 21 therein. On this shaft a lapping tool holder 22, such as shown in Fig. 10, is slidably mounted, an adjustment nut 23 having handles 24, being mounted on the screw threads of the shaft for raising and lowering the holder to adjusted positions. The holder has a key 25 which reciprocates in keyways 26 or 27 in the shaft, see Fig. 11. The upper end of the holder is tapered to receive the correspondingly tapered socket 29 of the special holder shown in Fig. 8 or the sockets in the shanks 30 and 31 of the lapping tools shown in Figs. 3 and 5. A pin 32 is provided in the end of holder 22 for engagement with the slots 33 and 34 of the tools shown in Figs. 3 and 5 as well as the slot 35 of the holder shown in Fig. 8.

In the track supports 14 and 15 I have provided dowel pins which engage holes 36 and 37 in each one of the pair of track plates which are mounted on the supports, a thumb screw 38 and lock nut 39 being provided for holding the plates in position. In Figs. 1 and 6 I have shown a pair of concave plates 40 and 41 secured in position, the construction being also adapted to the securing of convex and plane plates 42 and 43 as shown in Figs. 2 and 4. In each style of plate the depending portion 44 is identical with those of the other styles, but the heads of the plates vary. In each style however the track surface 45 is provided with overhanging inwardly extending flanges 46 to form wide faces upon which the wheels of a carriage travel. Outwardly extending from the track surfaces are lugs

47 which are provided with screw-threaded apertures 48 for purposes to be described.

Upon the tracks a carriage travels, this carriage having two trucks 49 and 50, both trucks being identical and consisting of a frame 51 having flanged wheels 52 and 53 for operation over the track surfaces, a central bearing 54 being provided between the wheels. Extending outwardly from each track frame is a lug 55 in which a screw 56 is mounted for engagement with the opening 48 of 47 of the track for purposes to be described.

A screw 57 in each truck bearing 54 enters a groove 58, see Fig. 12, in each portion 59 and 60 of a cranked shaft extending between the tracks for holding them apart and in position on their respective tracks, as well as to hold the trucks in locked positions with relation to the shaft. Handles 61 and 62 are provided on the respective shaft portions for facilitating the operation of the carriage over the tracks.

Between the portions 59 and 60 an adjustable rotatively mounted bearing 63 is located, adjustment screws or pins 64 and holes 65 being provided for this purpose. In the central portion 66 of this bearing the motor shaft sleeve 67 of a motor 68 is reciprocally mounted and may be secured in adjusted positions therein by a thumb screw 69. The lower end of the motor shaft carries the grinding element 70 used in cooperation with the lapping tool 71 which is to be ground.

In the operation of the device as shown in Fig. 1, the grinding element is adjusted to bring its edge in alignment with the center line A—A of the handle ends of the carriage shaft. The nut 23 is then adjusted to raise the tool 71 to engage the edge of the grinding element when in central position. With the screws 57, 64 and 69 locked, the motor is then started and the carriage is rolled back and forth over the track surfaces, the edge of the grinding element moving over the tool surface and cutting it according to the curvature of the tracks along the diameter B—B in the direction of the track surfaces, the curvature of the tool cutting a different curvature along the diameter at right angles to the diameter B—B and in alignment with the center line A—A. Thus with one operation two curvatures are given the tool surfaces. It will then be seen that by changing to plates of different concave curvature or to grinding elements of different diameters, varying tool surfaces may be ground in accordance with the degree of curvature of the lens to be lapped.

When a pair of convex plates, as shown in Fig. 2, are used for grinding a convex lapping tool, as shown in Fig. 3, the bearing 63 is rocked to bring the inside of the grinding element in contact with the tool, thus result-

ing in the grinding of a convex tool surface, the degree of curvature of the tracks and the diameter of the grinding element cooperating to produce the desired two curvatures of the lapping tool as in the case of the concave grinding.

The modification of my invention shown in Fig. 6, is designed to grind spherical lapping tools. In this modification the motor is mounted on legs 72 on the rearward extension 16 of the base 13, and is connected by a flexible shaft 73 with the grinding element 70, a sheave 74 being mounted on the motor shaft beneath the motor. On the shaft 21 an interiorly screw threaded sheave bearing 75 is mounted, the outer surface carrying a sheave 76 over which a belt 77 travels. To prevent displacement of sheave 76 a set screw 78 therein engages a groove 79 in the bearing. A locknut 80 is provided to prevent displacement of the bearing 75. The upper end 81 of sheave 76 is tapered for a friction fit with the shank 82 of the spherical lapping tool 83 so that the tool may be turned around to get all portions of its surface ground accurately should it be larger than the grinding element can handle at one setting.

In the operation of this modification the screw 69 is locked and screws 56 are brought into cooperation with openings 48 of track plate lugs 47, in order that the carriage will be held against movement. However screws 57 are released to allow the cranked shaft to be rocked in bearings 54. The grinding element with its cutting surface diameter touching the center line A—A is now ready and the sheave 76 is adjusted to lift the tool to engage the cutting surface. By now rocking the cranked shaft, with the motor driving the grinding element and tool in opposite directions, the spherical surface of the tool will be ground, and the curvature thereof may be changed in accordance with the diameter of grinding element used, it being preferably of the same hollow type shown in Fig. 1. It will be seen that regardless of which style of track-plates may be in position when a spherical lapping tool has to be ground, the carriage may be locked against movement because each style plate is provided with the lugs 47.

Having thus described my invention what I claim is:—

In a lens lapping tool grinder the combination of a frame consisting of a base having track supports at the opposite ends thereof tracks detachably mounted on the supports, wheeled trucks mounted on the tracks, bearings on the trucks, a cranked shaft secured to and spacing the trucks apart upon the tracks, said shaft having its cranked portion extending upwardly, a grinding element, and a rotatable member mounting the grinding element within the cranked portion of

the shaft with the cutting edge of the grinding element held in axial alignment with the axis of the shaft, a tool support on the frame between the tracks, and a tool adapted to be
5 held thereby adjustably to be brought into proper cooperative relation with the edge of the grinding element.

In witness whereof, I affix my signature in the presence of two witnesses:

OSCAR A. SCHUESSLER.

Witnesses:

CHARLES W. POTTER,
JOSEPH SCHUESSLER.