J. SPAANDER.

LENS GRINDING MACHINE.

APPLICATION FILED MAY 1, 1919.

1,436,626. Patented Nov. 21, 1922.

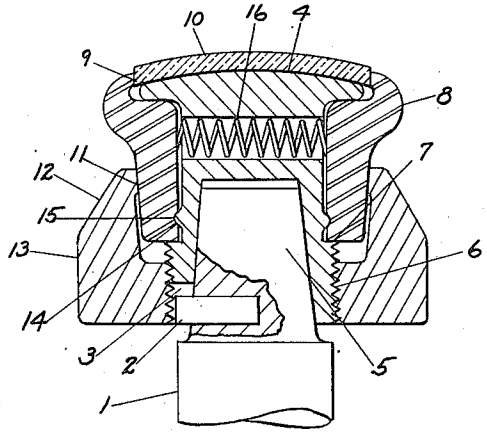


FIG. I.

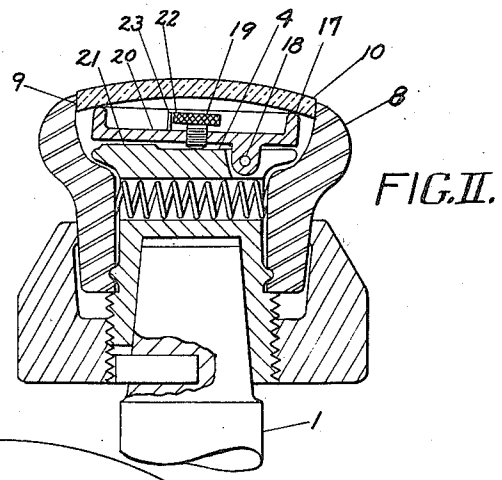


FIG. II.

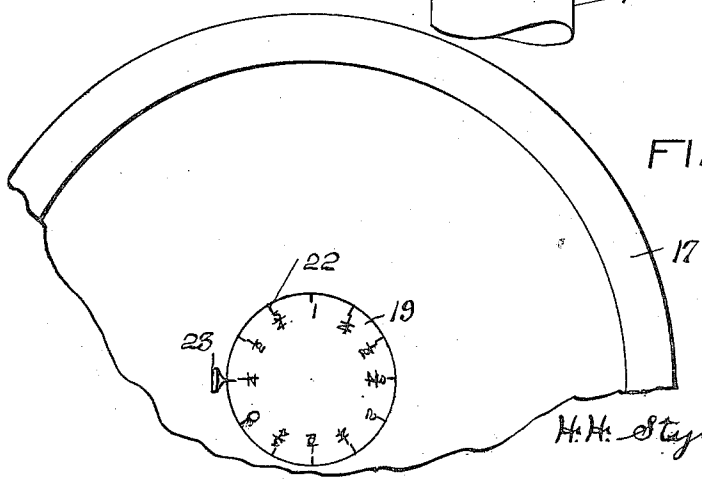


FIG. III.

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UNITED STATES PATENT OFFICE.

JAN SPAANDER, OF SOUTHBRIDGE, MASSACHUSETTS, ASSIGNOR TO AMERICAN OPTICAL COMPANY, OF SOUTHBRIDGE, MASSACHUSETTS, A VOLUNTARY ASSOCIATION OF MASSACHUSETTS.

LENS-GRINDING MACHINE.

Application filed May 1, 1919. Serial No. 293,916.

To all whom it may concern:

Be it known that I, JAN SPAANDER, a subject of the Queen of Holland, residing at Southbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Lens-Grinding Machines, of which the following is a specification.

This invention relates to improvements in lens grinding machines and has particular reference to means for holding the lens during the grinding operation.

The leading object of the present invention is the provision of novel and improved means which will satisfactorily hold a lens for grinding without the use of pitch or other adhesives.

A further object of the present invention is the provision of an improved device particularly adapted for use in connection with a lens, one surface of which has already been prepared, which will automatically position the lens to control the presence or absence of prism in the finished product.

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 vertical sectional view of my invention.

Figure II represents a similar view of a slightly different form thereof.

Figure III represents a fragmentary plan view of the lens supporting table and adjusting device therefor.

In the drawings, the numeral 1 designates a lower grinding spindle of a lens grinding machine which is preferably adapted to be rotated in any well known manner, although it will be understood that my invention is equally applicable for use in connection with a non-rotatable spindle or holder. The spindle is preferably provided with a laterally projecting pin 2 adapted to be engaged in the slot 3 in the mushroom shaped body 4 of my invention, the member 4 in addition being provided with the conical socket 5 into which the tapered upper end of the spindle 1 fits, the pin and slot engagement of the parts serving to secure them against relative rotation.

It will be noted that the body member 4 is exteriorly threaded as at 6 at the lower portion and above the threads is provided with the shoulder 7. Resting on this shoulder 7 are the lens clamping members 8 having the inwardly curved jaw portions 9 adapted to engage the edge of a lens blank 10. These clamping members have tapered outer faces 11 adapted to be engaged by the interiorly tapered flange 12 of the nut 13 which is engaged on the threaded portion 6 of the member 4 whereby upward screwing of this nut will wedge or force the jaws inward into operative engagement with the lens blank, while reverse screwing will loosen them to permit of removal of the blank.

To satisfactorily retain the jaws in position I may make use of any suitable pivot or rocking connection between the jaws and the member 4, as for example the circumferential rib 14 on the member 4 fitting into the groove 15 of the jaw members, the rib 6 providing a fulcrum on which the jaws swing.

To facilitate the employment of my construction if desired I may transversely bore the shank of the member 4 and place in this bore the spring 16 serving to normally press the jaws apart or into open position.

It will be noted that I have shown the upper face of the member 4 in Figure II as possessing the same transverse curvature as the blank 10 which is resting thereon. This is a decided advantage in the case of lenses which have been ground or finished on one side, in that they may be placed on the member 4 with their finished surface fitting tightly thereagainst and they will thus be accurately positioned with the chord of their curve at right angles to the axis of the spindle 1 so that all possibility of prismatic grinding of the lens in finishing the second surface is eliminated.

As an alternative form of construction in place of a special curved upper surface on the member 4, I may either form the member 4 with the upstanding annular flange 17 integral therewith or may form this flange separate from the member 4 and secure it thereto as by pivoting at 18, as illustrated in Figure III, or in any other desired manner. The advantage of making use of the annual

flange is that it will accurately fit any spherical curve, either convex or concave and will properly support it against tilting relative to the axis of the spindle 1. The form shown in Figure III possesses an additional advantage in that it is provided with the set screw adjustment 19 carried by the cross piece 20 connecting the sides of the flange and bearing against the member 4, adjustment of this set screw lifting the flange member off its normal seat 21 where it is in proper horizontal position or at right angles to the axis of the spindle 1 and giving it a desired amount of tilt, if desired the head of the set screw being provided with suitable graduations as at 22 to, in connection with the indicator 23, denote the amount of prism introduced by a particular adjustment of the screw, the idea being that this tilting will cause a corresponding tilting of the lens blank which will then have one side higher and one lower than the center causing a prismatic grinding of the final lens, as will be readily understood by those conversant in the art. In this way I may absolutely control the amount of prism to be ground on the lens without the difficulties usually attendant upon prismatic blocking of the lens.

It will be understood that the ordinary tilting for prism variation is so slight that the jaws 9 will still properly engage and retain the blank 10 in position within the grinder.

From the foregoing description the construction, operation and advantages of my improvement should be readily apparent and it will be seen that I have provided a novel, simple and inexpensive construction by which a lens blank may be readily clampingly held in exactly correct position for grinding, eliminating the necessity of pitch or other adhesive and the possibility of breaking in either the mounting or detachment of the lens from the blank to which it has been secured by the adhesive and have also provided an improved construction particularly adaptable for use when prismatic value is to be ground upon the lens.

I claim:

1. A device of the class described including a body portion having a supporting face upon which one surface of a lens blank is to be tightly fitted, lens clamping jaws fulcrumed on the body portion and provided with cam portions, a sleeve embracing the jaws, means for moving the sleeve over the cam portions of the jaws to force the same into operative position and means carried by the body portion and engaging the jaws for shifting the same into inoperative position.

2. A device of the class described including a rigidly supported body portion having a supporting face upon which one surface of a lens blank is to be tightly fitted, lens clamping jaws fulcrumed on the body portion and provided with cam portions, a sleeve embracing the jaws, means for moving the sleeve over the cam portions of the jaws to force the same into operative position and means carried by the body portion and engaging the jaws for shifting the same into inoperative position.

3. A device of the character described, comprising a socketed member having an exteriorly threaded lower portion surmounted by lateral projections, jaw members mounted on the upper portion of said member and having recesses interlocking with said projections, said jaw members having tapered outer faces and terminating in upper gripping jaws, a nut mounted on the threaded portion having a flange engaging the outer tapered faces of the jaws whereby movement of the nut in one direction cams the jaws together about the projections of the socketed member as fulcrums, and a supplemental rest in the form of an annulus pivoted to the socketed member and disposed between the jaws to provide a rest for the lens.

4. A device of the character described, comprising a socketed member having an exteriorly threaded lower portion surmounted by lateral projections, jaw members mounted on the upper portion of said member and having recesses interlocking with said projections, said jaw members having tapered outer faces and terminating in upper gripping jaws, a nut mounted on the threaded portion having a flange engaging the outer tapered faces of the jaws whereby movement of the nut in one direction cams the jaws together about the projections of the socketed member as fulcrums, a supplemental rest in the form of an annulus pivoted to the socketed member and disposed between the jaws to provide a rest for the lens, and means for angularly adjusting said annulus to vary the relationship of a lens when positioned between the jaws.

5. A device of the character described, comprising a base portion, jaws fulcrumed on the base portion, means for swinging the jaws on their fulcrums to clampingly engage a lens therebetween, a lens rest in the form of an annulus pivoted to the base portion intermediate the jaws, means for swinging said rest on its pivot to vary the angle of a lens mounted between the jaws, and means for indicating the angle to which said rest has been adjusted.

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

JAN SPAANDER.

Witnesses:
H. E. COLEMAN,
ALICE G. HASKELL.