C. J. TROPPMAN.

LENS GRINDING MACHINERY.

APPLICATION FILED AUG. 23, 1918.

1,292,926. Patented Jan. 28, 1919.

Fig. 1

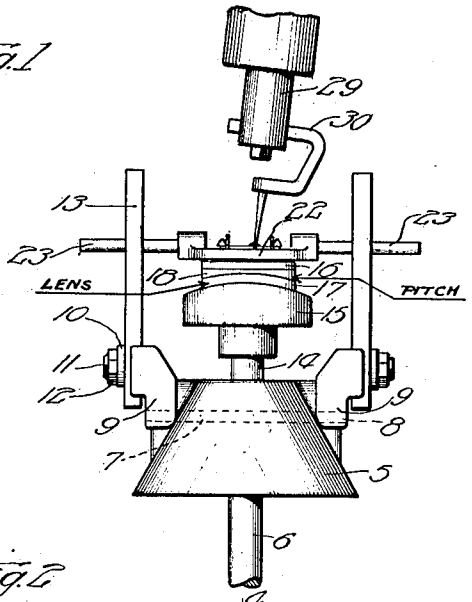


Fig. 2

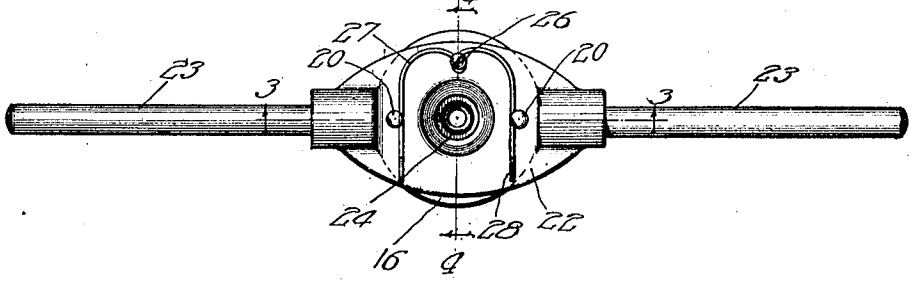


Fig. 3

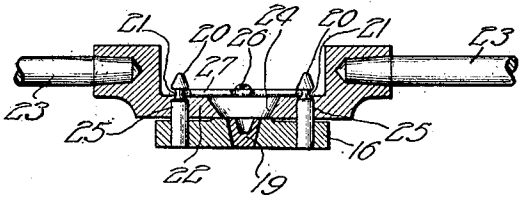
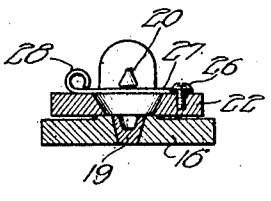


Fig. 4



Witnesses:
Arthur H. Allen
Robert H. Weir

Inventor
Charles J. Troppman
Benjamin, Pendleton & Lundy
Attys.

UNITED STATES PATENT OFFICE.

CHARLES J. TROPPMAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO F. A. HARDY & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

LENS-GRINDING MACHINERY.

1,292,926. Specification of Letters Patent. Patented Jan. 28, 1919.

Application filed August 23, 1918. Serial No. 251,120.

To all whom it may concern:

Be it known that I, CHARLES J. TROPPMAN, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lens-Grinding Machinery, of which the following is a specification.

My present invention has relation to improvements in lens grinding machinery and has special reference to the provision of facilities for permitting the ready attachment of the lens supporting block to and its disengagement from, the grinding head or mechanism for grinding toric lenses.

Toric lenses are lenses of a concavo-convex form, having curvature of different radii upon different meridians, and for this reason the meridians of the lens must be kept in unvarying relation to the meridians of the grinding tool. In such machinery the bar for holding the meridians of the lens in the desired relation to the meridians of the grinding tool has a tendency to ride away and become detached from the lens supporting block which permits the meridians of the lens to be shifted with relation to the meridians of the tool, through the friction of the grinding. The object of my present invention is to provide a simple, inexpensive and easily operable means for securing the lens supporting block to and detaching it from the bar for holding the meridians of the lens in desired relation to the meridians of the grinding tool so that while these parts may be readily assembled and disassembled, they will not become disengaged by the action of the machine.

I attain the above object by means of the structure shown in the accompanying drawing, in which,—

Figure 1 is a fragmental elevation of a grinding head for toric lenses.

Fig. 2 is a plan, upon somewhat larger scale than Fig. 1, of the bar for holding the meridians of the lens in desired relation to the meridians of the grinding tool, with my invention embodied therein.

Fig. 3 is a section on line 3—3 of Fig. 2; and

Fig. 4 is a section on line 4—4 of Fig. 2.

A grinding head for toric lenses, as shown in Fig. 1, comprises a preferably conical cap or head, 5, adapted to assemble and rotate with a vertically mounted spindle, 6. Through the cap or head, 5, is a transverse bore, 7, which serves as a bearing for a shaft, 8, to the ends of which are rigidly secured brackets, 9, in each of which are clamped, by means of a washer, 10, bolt, 11, and nut, 12, two rods, 13, of preferably square section, so that the two rods held by each bracket will be maintained parallel and in spaced relation with respect to each other and with the rods held in the opposite bracket. Arising from the cap or head, 5, is a stub column, 14, upon which is secured, so as to rotate therewith, the grinding tool, 15.

A disk shaped lens block, 16, is provided to which the lens, 17, to be ground is cemented by pitch, 18, or with any other suitable substance. The center of the face of the lens block opposite to the face to which the lens is secured, is centrally bored, and into this bore is preferably forced a bushing, 19, of harder metal, having a conical depression therein. This same face of the lens block is also provided with two eccentric bores, preferably on the principal meridian to be given the lens, into which eccentric bores are driven conical headed pins, 20, each of which is provided with an annular groove, 21, just below the conical head.

The meridan holding support comprises a central casting, 22, from diametrically opposite points of which extend rods, 23. The central casting, 22, is centrally bored to provide a preferably flaring perforation or opening, 24, therethrough, through which is exposed the conical depression in the bushing, 19, in the back of the lens block. The casting, 22, is also bored to provide holes, 25, through which extend the pins, 20, to a sufficient extent to expose the annular grooves, 21, provided below their conical heads. At a point to one side of the central opening, 24, and preferably on a line midway between the holes, 25, the casting, 22, is bored and tapped to receive the headed screw, 26, around which the central portion of a piece of spring wire, 27, is looped. This spring wire is formed so that either arm thereof will extend by and be held yieldingly within the grooves, 21, of the pins, 20, and thereby prevent the accidental withdrawal of these pins from the holes, 25. The ends

of the spring wire are preferably bent to form loops 28, as shown in Fig. 4, so as to afford finger grips to facilitate the manipulation of the wire to effect its engagement with and disengagement from the grooves, 21.

The arms, 23, extending from the casting 22, are brought between the respective pairs of rods, 13, which, as will be seen, permits the lens block and lens carried thereby to have all directions of movement, except rotational, with respect to the grinding tool.

A rotatable spindle, 29, depends from above the mechanism heretofore described and an arm, 30, carried thereby, having a conical end is brought into engagement with the conical depression in the bushing, 19, in the back or upper face of the lens block at a point eccentric with the axes of rotation of both the spindles, 6, and, 29. With the lens block held by the arm, 30, eccentric to the axis of rotation of the spindle, 6, the rotation of said spindle will cause movement between the lens block and the grinding tool, and the eccentric relation of said arm, 30, with the spindle, 29, will involve the shifting of the lens block through the rotation of the spindle, 29, so that the path of movement between the lens block and grinding tool will be constantly changing.

It will now be seen from the foregoing description, taken in connection with the drawing, that I have provided extremely simple means for securing the lens holding block to the grinding head by means of which the engagement and disengagement of the parts can be readily effected, and that a disengagement of these parts through the operation of the machine, or through accident will be prevented.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination with lens grinding mechanism having means for maintaining a lens in desired relation to the grinding tool, a lens supporting block provided with annularly grooved pins, said lens maintaining means being provided with perforations for the passage of said pins and means adapted to yieldingly extend into the grooves in said pins.

2. In combination with lens grinding mechanism having means for maintaining a lens in desired relation to the grinding tool, a lens supporting block provided with transversely slotted pins, said lens maintaining means being provided with perforations for the passage of said pins and a spring mounted upon said means adapted to yieldingly extend into the slots in said pins.

3. In combination with lens grinding mechanism having means for maintaining a lens in desired relation to the grinding tool, a lens holding block, pins extending therefrom into engagement with said lens maintaining means, and a spring latch mounted upon said lens maintaining means and adapted to coact with said pins.

Signed at Chicago, county of Cook and State of Illinois, this 25th day of July, 1918.

CHARLES J. TROPPMAN.

Witnesses:
E. O. TROEGER,
BENJ. T. ROVAHOUSE.