Dec. 11, 1928. 1,694,728

C. A. ADAMS

RESTRAINING DEVICE FOR LENS GRINDING MACHINES

Filed Aug. 2, 1926

Fig. 1.

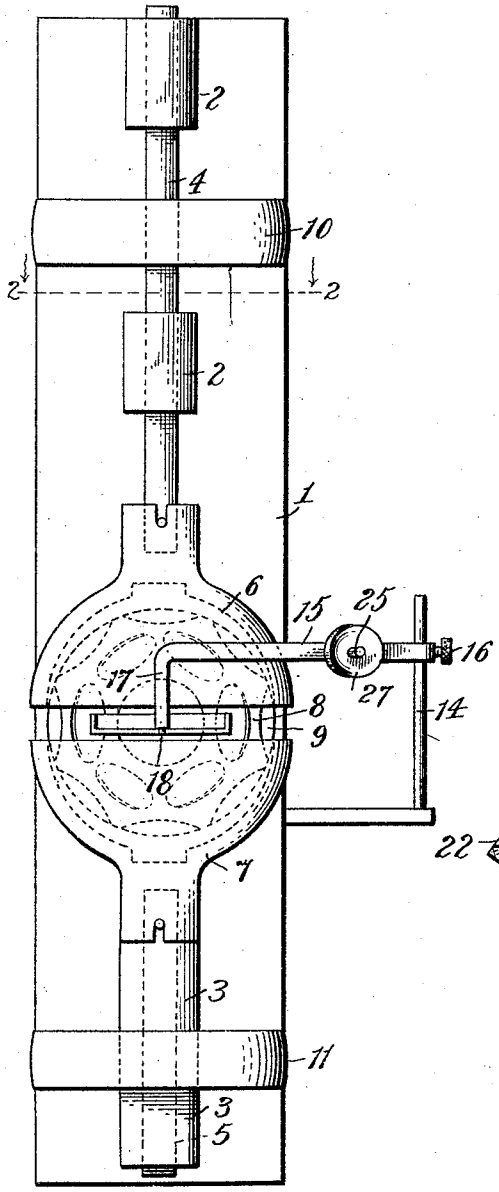


Fig. 2.

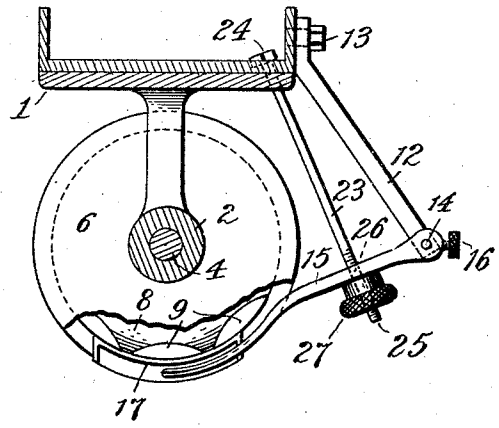
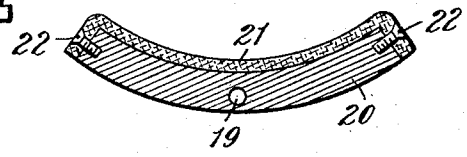


Fig. 3.



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UNITED STATES PATENT OFFICE.

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RESTRAINING DEVICE FOR LENS-GRINDING MACHINES.

Application filed August 2, 1926. Serial No. 126,652.

My invention relates to new and useful improvements in grinding machines and more particularly to a lens grinding machine of the type illustrated in my copending application filed December 31, 1923, Serial No. 683,694.

In the form of machine illustrated and described I provide the cup-shaped grinding tools between which is positioned a spherical blocker which carries the lenses to be ground. The principal object of my invention resides in the provision of a device engageable with the blocker to prevent the same from rotating with only one of the tools.

Another object of the invention resides in the provision of a restraining device which is adjustable to properly position the same relative to the blocker.

A further object of the invention resides in the provision of a shoe which engages the blocker, said shoe having a removable surface secured thereto.

With the above and other objects in view, which will appear as the description proceeds, by invention consists in the novel details of construction, and arrangement of parts, described in the following specification and illustrated in the accompanying drawings, and while I have illustrated and described the preferred embodiments of the invention, as they now appear to me, it will be understood that such changes may be made as will fall within the scope of the appended claims.

In the drawings:

Fig. 1 is a front elevation.

Fig. 2 is a section on the line 2—2 of Fig. 1 looking in the direction of the arrows, and

Fig. 3 is a horizontal section through the restraining shoe.

In the drawings 1 indicates the support carrying the bearings 2 and 3, a rotatable shaft 4 being mounted in the bearings 2 and a rotatable shaft 5 in the bearings 3. Detachably connected to the lower end of the shaft 4 is the cup-shaped grinding tool 6 and detachably connected to the upper end of the shaft 5 is the cup-shaped grinding tool 7. The spherical blocker is shown at 8 with the lenses 9, to be ground, spotted thereon. Normally the adjacent faces of the grinding tools are spaced apart as shown more particularly in Fig. 1 of the drawings and the tools 6 and 7 are rotated in opposite directions through means of power applied to the pulleys 10 and 11. In practice I have found that in grinding machines such as is illustrated in my copending application above identified when the lenses have been spotted upon the blocker and the blocker placed between the two grinding tools rotated in opposite directions the blocker has a tendency to catch in with the upper or lower tool and rotate with it. This results in grinding only the lenses which are opposite to the inner surface to the other tool. It is the object of my present invention to provide a restraining device which will retard the movement of the blocker sufficiently so that the blocker will not catch in either of the grinding tools but the tools and blocker may rotate relative to one another to allow a proper grinding of the lenses. In other words while the grinding tools are being rotated constantly in opposite directions the blocker is making various turns or twists, and does not have a constant motion in any one direction. Part of the time the blocker turns on a vertical axis, at other times on a horizontal axis, and at other times on various diagonal axes. At times the blocker might even stand still. The restraining device causes the blocker to perform all sorts of turns, twists and gyrations during the grinding so that uniform grinding is had over all the outer lens areas.

In carrying out my present improvements I provide a horizontally extending bracket 12 which is secured to the support by means of the screw 13 or other suitable fastening. Extending upwardly from the bracket 12, adjacent the outer end thereof, is the post 14 which carries the arm 15. This arm 15 is both vertically and rotatably adjustable upon the post 14, the post 14 passing through an eye formed adjacent the end of the arm, and the arm is held in its adjusted positions by means of the thumb screw 16. Formed on the end of the arm 15, opposite to that connected to the post 14, is the depending projection 17 the lower end of which is reduced and threaded as shown at 18. The threaded end 18 is received in the threaded opening 19 of the restraining shoe 20, the restraining shoe being curved as shown more particularly in Fig. 3 to engage the outer surface of the blocker. A felt lining 21 is secured to the inner face of the shoe 20 by means of the screws 22 or other suitable fastenings.

A rod 23 passes through an opening formed in the support 1, this rod having the en-

larged head 24 at one end and being threaded at the opposite end as shown at 25. The threaded end of the rod passes through an opening 26 formed intermediate the ends of the arm 15 and a nut 27 is received on the threaded end and engages the outer face of the arm as shown more particularly in Fig. 2.

From the above detail description it is thought that the construction of my device will be clearly understood. The arm 15 is adjusted vertically on the rod 14 to properly position the shoe 20 between the edges of the grinding tools to engage the blocker as shown more particularly in Fig. 1. When the vertical adjustment has been made the nut 27 will be adjusted on the rod 23 to engage the shoe with the blocker and when this has been done the screw 16 will be tightened to hold the arm in its vertically adjusted position. It will be understood that the rod 23 will have sufficient movement relative to the support as to allow for the vertical adjustment of the arm upon the rod 14 and that the shoe which is threaded onto the lower end of the depending portion 17 of the arm 15 will have sufficient swinging movement to engage the blocker. The shoe will not be engaging with the blocker with sufficient pressure to prevent rotation thereof but merely with sufficient pressure to restrain the movement of the blocker so that it will not rotate with either one of the grinding tools. Preferably when the initial grinding of the lenses is taking place the felt lining 21 will be removed from the shoe but will be attached to the shoe in the finishing and polishing process.

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

1. In a machine of the character described a support, a pair of lens grinding tools carried by the support and adapted to operate in opposite directions, a lens carrying blocker adapted to be positioned between the tools, a bracket carried by the support, a vertically adjustable and horizontally swinging arm carried by the bracket, and means carried by the arm and engageable with the blocker for restraining the movement thereof.

2. In a device of the character described a support, a pair of lens grinding tools carried by the support and adapted to operate in opposite directions, a lens carrying blocker adapted to be positioned between the grinding tools, a bracket carried by the support, a vertically extending member carried by the bracket, an arm carried by the vertically extending member for vertical adjustment and horizontal swinging movement, means for holding the arm in its vertically adjusted position, a member carried by the arm and adapted to engage the blocker for restraining the movement thereof, and means for holding the arm in position with the member carried thereby in engagement with the blocker.

3. In a device of the character described, a lens grinding tool, a lens blocker adapted to hold lenses to be ground by the tool, a vertically adjustable and horizontally swinging arm adapted to engage the blocker to retard the movement thereof relative to the tool, means for holding the arm in its vertically adjusted positions, and means for holding the arm in engagement with the blocker.

4. In a device of the character described, a support, a grinding tool carried by the support, a lens blocker adapted to hold lenses to be ground, a bracket secured to the support, a vertically extending post carried by the bracket, an arm carried by the post for horizontal swinging movement and adapted to be vertically adjusted, said arm engaging the blocker to retard the movement thereof relative to the tool, means for holding the arm in its vertically adjusted positions, and means for holding the arm in engagement with the blocker.

In testimony whereof I affix my signature.

CHARLES A. ADAMS.