Oct. 16, 1923. 1,470,995

A. E. MAYNARD ET AL

EDGING MACHINE

Filed Nov. 26, 1919 2 Sheets-Sheet 1

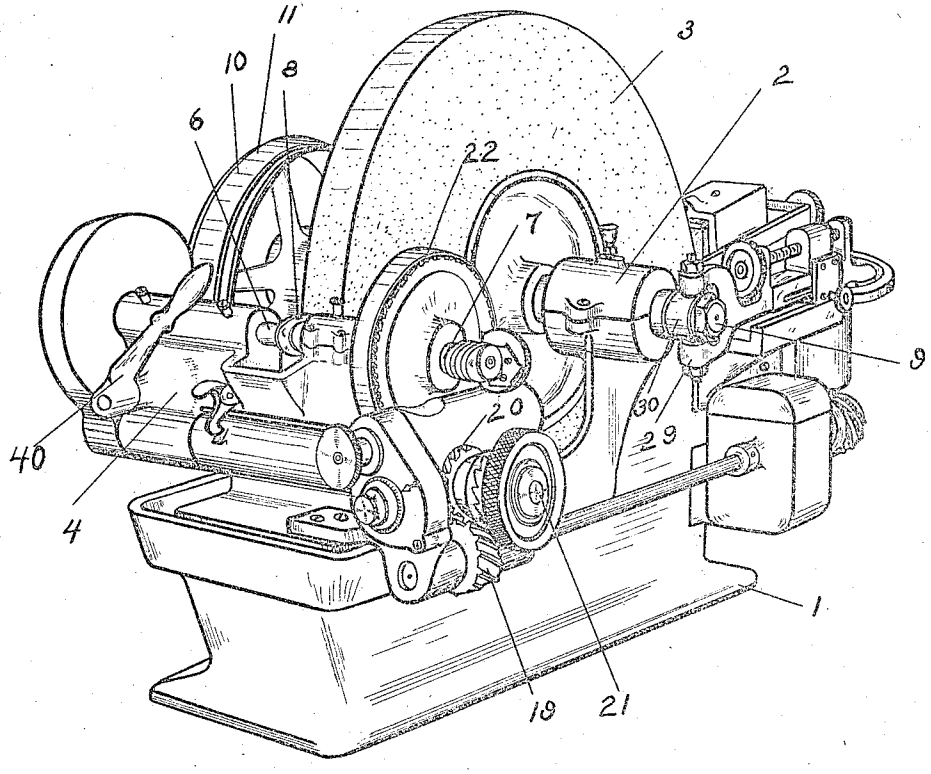


FIG. I

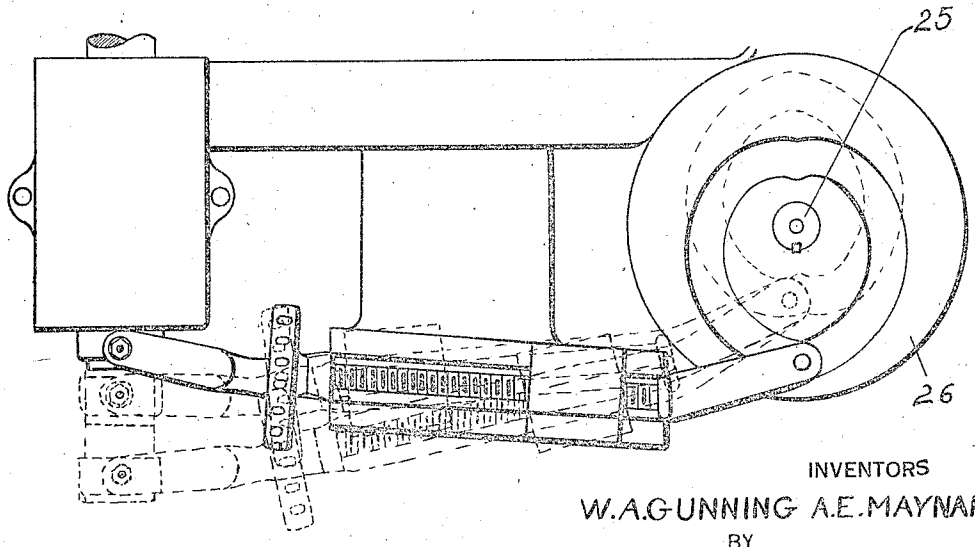


FIG. II

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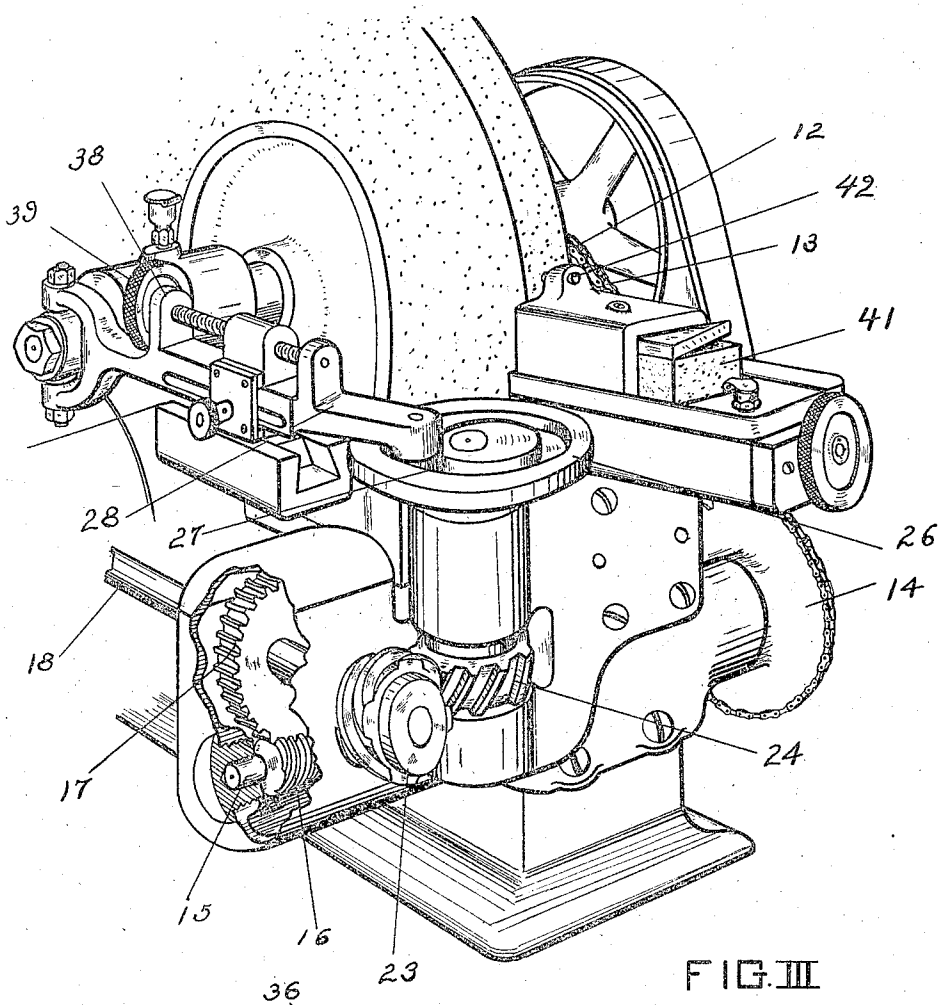


FIG. III

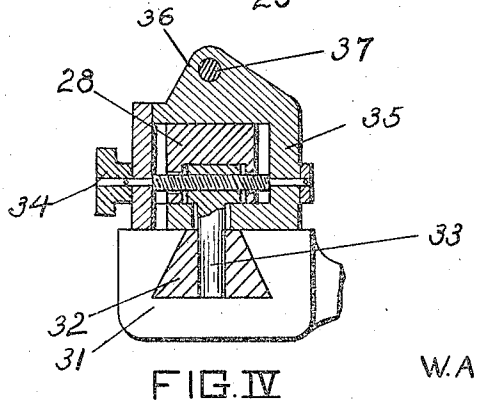


FIG. IV

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Patented Oct. 16, 1923. 1,470,995

UNITED STATES PATENT OFFICE.

ALBERT E. MAYNARD AND WILLIAM A. GUNNING, OF SOUTHBRIDGE, MASSACHUSETTS, ASSIGNORS TO AMERICAN OPTICAL COMPANY, A VOLUNTARY ASSOCIATION OF MASSACHUSETTS.

EDGING MACHINE.

Application filed November 26, 1919. Serial No. 340,733.

To all whom it may concern:

Be it known that we, ALBERT E. MAYNARD and WILLIAM A. GUNNING, citizens of the United States, residing at Southbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Edging Machines, of which the following is a specification.

This invention relates to improvements in edging machines, and has particular reference to an improved machine particularly adapted for use in the edging of ophthalmic lenses.

One of the leading objects of the present invention is the provision of a novel and improved means for transmitting the driving power from a high speed shaft to the lens and stone shifting mechansim so that these parts will properly function at desired low rates of speed.

Another object of the invention is the provision of a novel and improved manner of adjusting the stone throw and simplification of mechanism hitherto employed for this purpose.

A further object of the present invention is the provision of an improved stone adjustment mechanism in which ordinary adjustments may be readily made as desired and in which special adjustment of the stone may be made for honing or other purposes when unusually wide or varied throw thereof is desired.

Other objects of the invention include a simplification and improvement of the several details of construction of a machine of this character and should be readily apparent by reference to the following specification taken in connection with the accompanying drawings, and it will be understood that we 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 our invention.

Figure I represents a front perspective view of a machine embodying our improvements.

Figure II represents a fragmentary plan view thereof, possible adjustments being shown in dotted lines.

Figure III represents a rear perspective view with parts broken away to illustrate interior gear mechanism.

Figure IV represents a detail sectional view of the shift lever pivot structure.

In the drawings, the numeral 1 designates the base of the machine provided with the bearings 2 for the stone 3, and having pivotally mounted thereon the carriage 4 having the lens clamp spindles 6 and 7 for securing in position the lens 8 to be edged.

Power for rotation of the stone may be applied to the stone shaft 9 as through the pulley 10 and drive belt 11, said shaft 9 being further provided with the sprocket 12 for driving the sprocket chain 13 passing over the second sprocket wheel 14 which drives the shaft 15 at the rear of the machine. This shaft 15 is provided with the worm 16 meshing with the gear 17 on the forwardly extending shaft 18, which is provided with the second worm 19 in mesh with the gear 20 on the shaft 21, which through suitable connection drives the gear 22 on the lens spindle or shaft 7, and thus the lens, the proper reduced speed motion being thus supplied from the rear shaft 15 to the lens, the shaft 15 being capable of being driven either from the grindstone shaft or from an independent source of power, as preferred by the individual user.

It is well known in the practice of edging that it is necessary for satisfactory work to relatively reciprocate the lens and grindstone to prevent the glass from wearing away the stone in a circumferential groove.

In the present instance we have made use of the principle of applying the lateral shifting movement to the grindstone rather than to the lens carriage, although the mechanism described is equally capable of either operation. As illustrated we have shown the worm 23 carried by the shaft 18 and meshing with the gear 24 on the vertical shaft 25 which bears the heart-shaped face cam 26 for engagement with the roller 27 of the shift lever 28. This shift lever has at its forward end the yoke 29 engaging with the shift collar 30, suitably rotatably mounted on the grindstone spindle 9, but held against endwise movement thereon so that any reciprocating movement applied to the collar through the yoke will be transmitted to the grindstone shaft and stone. To cause the cam 26 to reciprocate the stone we suitably intermediately pivot the lever to the base 1. The connection in this instance is shown as

the dove-tail slide groove 31, in which rides the slide 32 having pivotally mounted therein the pin 33 transversely adjustable as by the thumb nut 34 with respect to the yoke 35 which spans the shift lever 28 and is provided with the upstanding lug or portion 36 through which passes the longitudinal adjusting screw 37 rotatably held against longitudinal sliding movement in the lugs or bracket members 38 on the lever 28.

It will thus be seen and particularly understood by reference to Figure III of the drawings, that rotation of the screw 37 as by the knurled wheel or controlling disc 39 will cause the bracket or yoke 35 and thus the pin 33 and slide 32 to move along the slide way 31 and to hold the pivot at different points along the shift lever. It will be understood that inasmuch as the pivot point is intermediate the stone spindle engaging yoke at the one end of the lever and the cam controlling the opposite end of the lever shifting of the pivot longitudinally of the lever will vary the amount of transverse sliding movement imparted to the stone for the fixed or unvarying movement given the other end of the lever by the operating cam. This is desirable in the edging of lenses since the machine may be intended to edge but a single lens when it is preferred the lens travel practically from edge to edge over the stone or for adjustment of the throw so that several lenses may be edged and the outermost lens at each side during the travel of the stone will come approximately to the edge of the stone at that side but will not run off the stone.

At this point we would call attention to the fact that the clamping of the lenses between the spindles 6 and 7 is controlled by the handle 40 which slides back the spindle 6 for insertion or removal of the lenses, while the spindle 7 is held against any longitudinal movement. The result of this is that the position of the right hand lens in the machine is at all times constant and the allowance in throw of stone need only take into consideration the variance in position of the left hand lens or lenses being edged.

We have, therefore, particularly designed our machine so that in place of both the right and left movements of the stone being varied by change in adjustment of the shift lever, as has been the case prior to our invention, we maintain the right hand position of the stone constant and by shifting our pivot point vary only the left hand position. The manner in which this result is accomplished may perhaps be best understood by reference to Figure II from which it will be seen that the guide-way in place of being placed parallel to the base 1 is disposed at a forwardly converging angle with respect to the base and general plane of the machine, but that this angle is so calculated as to be parallel to and preferably in alinement with the central portion of the shift lever over which the shift yoke 35 moves when the cam is in position to give the stone its maximum movement toward the lever, or in other words, with the right face of the stone to the maximum left shifted position. The result of this positioning of the guide-way is that irrespective of the adjustment of the pivot 33 along the guide-way there will be no variation in the left shift of the stone, the variation all being in its shift toward the right, as is indicated by the two sets of dotted lines in Figure II, showing the effect of the maximum and minimum pivot adjustments as respects the throw toward the right, the throw toward the left remaining constant in the position indicated by the full lines

It will be noted that carried at the back of the frame is the hone 41 of sufficient width to at all times bear against the face of the stone and keep it in condition, and we have shown additionally there disposed the truing device 42 normally operating on the face of the stone and aiding in keeping it in condition. It is, however, sometimes desirable to more thoroughly true up the stone and to make sure the truing device 42 passes over the entire surface of the stone from edge to edge, and to accomplish this result we have provided the adjustment screw 34 for shifting the pivot transversely with respect to the lever engaging yoke 35, in that by this temporary adjustment of the pivot it is possible to increase the movement of the stone toward the lever so that the truer may pass over the right hand edge of the stone, the throw being set substantially great so that the stone in the opposite direction will still pass over the other edge of the stone. This device, however, is required only for truing up a stone and is not needed in connection with the regular edging operations although usable in these if desired, as when one side of the stone is wearing slightly more than the other and it is desired to use but one-half or a selected portion of the width of the stone in place of the entire width when the pivot may be adjusted for the amount of throw desired by movement longitudinally in the guide-way and may then be transversely adjusted to limit the movement to a certain portion of the stone face, when it will have established a new lateral movement as respects the face of the stone regardless of further longitudinal movement of the pivot.

We claim:

1. An edging machine including a base, a stone, and a lens holder mounted on the base, and means for relatively laterally shifting one of the parts with respect to the base, including a rock lever having one end attached to one of the parts, means for oscillating the opposite end of the lever, a pivot longitudi-

nally adjustable with respect to the lever, and a guide bracket carried by the base and formed with a guide-way for the pivot disposed parallel with the lever at one limit of movement thereof, whereby this limit remains a constant irrespective of longitudinal adjustment of the pivot as respects the lever.

2. An edging machine including a lens holder and a stone for edging a lens within the holder, one of said members being laterally shiftable, a cam and rock lever for laterally shifting said member, a variable pivot for the rock lever and a guide along which the pivot moves, the guide being disposed diagonally as respects the body of the machine, the angle of the guide corresponding with the position of the lever at the limit of throw in one direction whereby adjustment of the pivot along said angular guide will vary the throw in one direction while maintaining it constant in the opposite direction.

3. An edging machine including a lens holder and a stone for edging a lens within the holder, one of said members being laterally shiftable, a cam and rock lever for laterally shifting said member, a variable pivot for the rock lever and a guide along which the pivot moves, the guide being disposed in angular relation to the body of the machine and corresponding with the position of the lever at the limit of throw in one direction whereby adjustment of the pivot along said angular guide will vary the throw in one direction while maintaining it constant in the opposite direction, and means for laterally shifting the pivot as respects the lever to change the normally fixed limit of throw.

4. A lens edging machine including a frame having a driven stone shaft journaled therein, a second shaft parallel with the stone shaft and driven thereby, a third shaft disposed at right angles to the first two shafts and driven from the second, said shaft projecting both forwardly and rearwardly of the other two shafts a lens carriage having driving mechanism operable from the forward portion of said third shaft, and stone reciprocating mechanism operated by the rearwardly projecting portion of said shaft.

5. In a device of the character described, the combination with a frame of cooperating lens holding and lens edging members carried thereby, one of said members being laterally shiftable, and operable mechanism for said laterally shifting member, including a rock arm, a yoke spanning the rock arm and longitudinally adjustable with respect thereto, a transversely adjustable pin depending from the yoke, a guide along the frame, and a slide member movable on the guide and engaging the pin, substantially as and for the purpose described.

6. In a machine of the character described, a frame, cooperating lens holding and lens edging members carried thereby, and means for laterally shifting one of said members including a guide carried by the frame, a block slidable on the guide and having a pin receiving aperture, a pin journaled in the aperture, a yoke, laterally adjustable connections between the pin and yoke, a rock arm mounted in the yoke and engaging the slidable block, and means for longitudinally shifting the yoke as respects the arm, the block moving along the guide during said longitudinal adjustment and means for rocking the arm about the pin as a fulcrum.

In testimony whereof we have affixed our signatures, in presence of two witnesses.

ALBERT E. MAYNARD.
WILLIAM A. GUNNING.

Witnesses:
ESTHER M. LAFLER,
ALICE G. HASKELL.