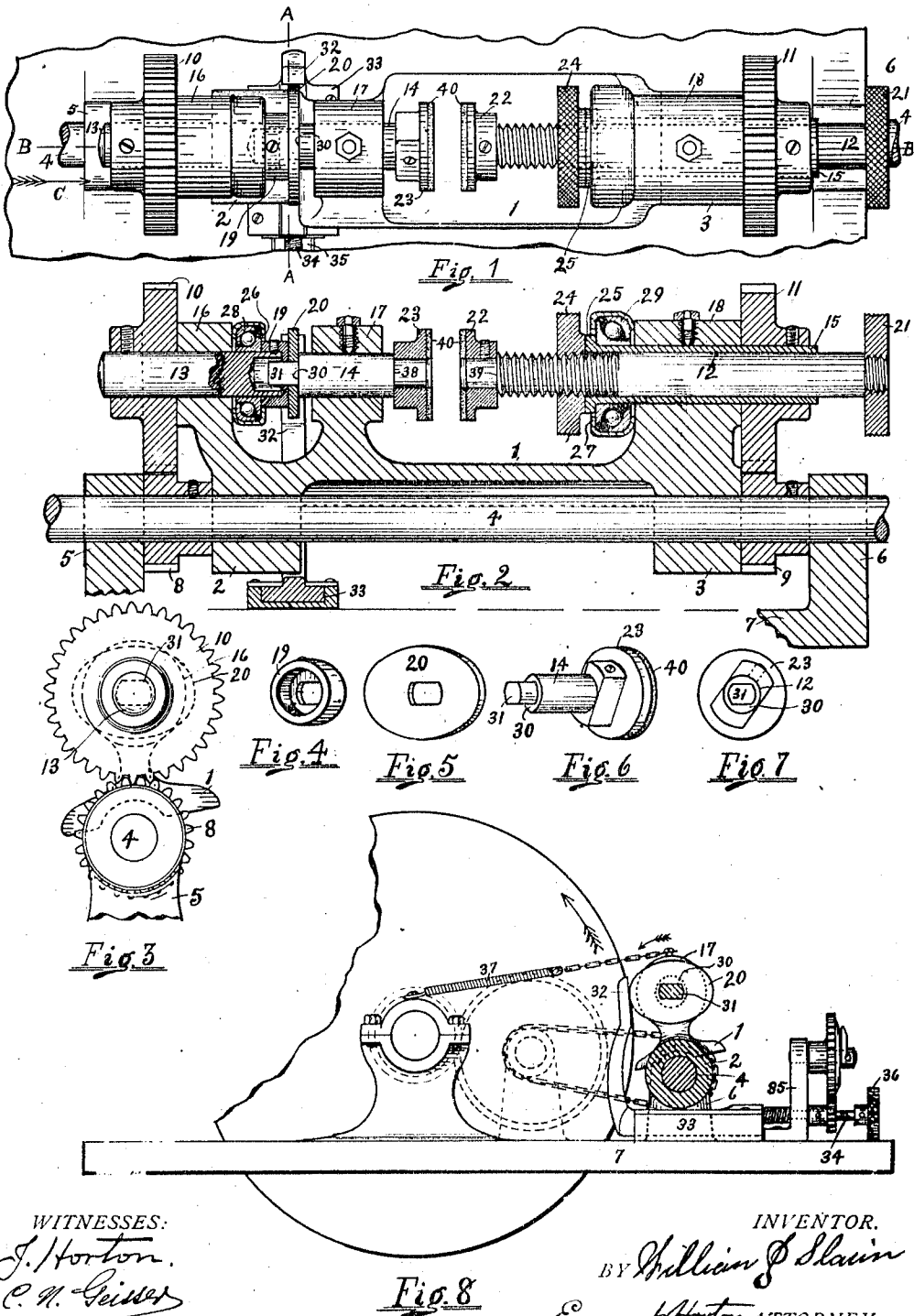


W. J. SLAVIN.
LENS GRINDING MACHINE.
APPLICATION FILED JAN. 15, 1910.

980,133.

Patented Dec. 27, 1910.



WITNESSES:

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LENS-GRINDING MACHINE.

980,133.

Specification of Letters Patent. Patented Dec. 27, 1910.

Application filed January 15, 1910. Serial No. 538,314.

To all whom it may concern:

Be it known that I, WILLIAM J. SLAVIN, a citizen of the United States, residing at Horseheads, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Lens-Grinding Machines, of which the following is a specification.

My invention relates to improvements in lens-grinding machines for grinding into shape the lenses used in spectacles or eyeglasses and for other similar purposes.

The invention consists in the general construction of the frame and parts which operate in holding the lens-pattern and the lenses as they are rotated and formed in conjunction with the grinding stone.

The main objects of my invention are to provide a new and better means to hold the lens-pattern, to facilitate its removal or readjustment, and more perfect coöperation with the lens holding heads, to provide for locating the lens-pattern to one side of the face of the stone close to and between bearings of the frame and where it is free from the washings of the stone, then again in providing a multiple of quickly operated shafts in separate bearings in which they are rotatable with endwise adjustment for firmly gripping the lens-pattern while the lenses are likewise gripped between the lens holding heads, and such other features of improvement as will be more particularly described hereinafter and pointed out in claims.

Referring to the accompanying drawings in which like figures represent like parts—Figure 1 is a complete plan view of the holder frame and its parts. Fig. 2 is a sectional elevation of same but showing in addition the lower operating shaft on which the lens holder frame is mounted to oscillate toward and away from the grinding stone, and boxes of the main frame broken away supporting said shaft, with pinions thereon which impart rotation to the upper gears and shafts of the holder. Fig. 3 is an end elevation partly of Fig. 1 in direction of the arrow C. Fig. 4 is a perspective view of the shaft cap serving to lock two of the shafts together while gripping the lens-pattern between them. Fig. 5 is a perspective view of the lens-pattern. Fig. 6 is a per-

spective view of the central shaft which has at one end one of the lens holding heads, and at the other end a flattened part with shoulder for holding the lens-pattern. Fig. 7 is a view of same parts as Fig. 6 looking directly at the flattened end of the shaft. Fig. 8 is a view in elevation of the grinding stone and other parts of a lens grinding machine showing the relation of my improved lens and pattern holding device therewith on section A A Fig. 1.

With reference to the drawings 1 represents the body portion of the frame of my improved holder, its lower part forming the boxes 2 and 3 which support the holder frame on the shaft 4 which is journaled in raised boxes 5 and 6 of the main frame 7 of the grinder. Between said raised boxes and those of the holder frame are the pinions 8 and 9 made fast on the shaft 4 and intermeshing with the gears 10 and 11 which serve to rotate the shafts 12, 13, 14 and sleeve 15 journaled in the boxes 16, 17 and 18, which form the upper part of the holder frame. Fig. 8 illustrates a means for rotating said shaft 4, such as may be imparted from the shaft of the grinding stone.

Shafts 12, 13, and 14, are arranged in the same axial line, the shafts 12 and 14 are made to slide endwise in their bearings, the center shaft 14 being free to slide in direction of the lens gripping heads until withdrawn from coupling with the cap 19 fixed on the shaft 13 and releasing the lens pattern 20 so it may be freely removed or replaced.

The knurled disk 21 provides means by which the shaft 12 may be quickly reciprocated by hand to bring the lens holding head 22 to bear on a lens placed between it and the head 23 of the central shaft 14, at which time to make the grip on the lens more complete, or of such pressure as may be desired, a check nut 24 threaded on the shaft 12 and knurled on its periphery may be screwed to lock with the face and shouldered end 25 of the sleeve 15. As thus locked it will be seen that the end pressure of the shafts while gripping the lens firmly in grinding will also grip the lens-pattern, and that the end thrust of said shafts will not materially affect their rotation because of the ball-bearing rings 26 and 27 suitably housed with

balls and counteracting rings 28 and 29, located adjoining the frame boxes and back of the shoulder at the inner end of the sleeve 15 which rotates with shaft 12, and shoulder 5 made by the cap 19 on shaft 13.

The lens-pattern 20 is formed oval corresponding to the desired form for the lens when ground, and is made of hardened steel with a rectangular opening through its center, which corresponds in size to the opening in the faced end of the hardened steel cap 19, and to the end of the shaft 14 fitted to nicely pass through said openings in the pattern and cap up to a shoulder 30 which engages the side of the pattern, the shaft 13 having a hole drilled in its capped end sufficiently large to not interfere with the end 31 of the central shaft 14 as it passes through the cap in being coupled therewith.

Referring to Fig. 8 the lens-pattern is shown in contact with an arm 32 made adjustable to slide in the way 33, by means of the hand screw 34, held in the standard 35 bolted to the frame 7. By turning the screw with the knurled disk 36 the arm 32 may be moved toward or away from the axis of the stone, moving the lens so it may be ground on the periphery of the stone to such diametrical measurement as may be desired, the connecting gearing revolving the lens in opposite direction to that of the stone. Oscillation is given the holder frame as the differential diameters of the pattern come in contact with the arm in its rotation, being held thereto by the spring 37 connected to the journal box of the stone and pulling from the top of the holder frame.

It will be seen that the shaft 12 is given revolution only at such times as the check nut 24, threaded on said shaft, locks it together with the sleeve carrying it and on which the gear 11 is made fast.

The shafts 12 and 14 at their adjoining ends are turned down to form a reduced end and shoulder 38 and 39 on and against which the lens holding heads 22 and 23 are mounted, said heads being covered on their abutting faces with pads 40 made of rubber or other suitable material for accommodating

themselves to uneven surfaces, and to hold well on the lenses gripped between them.

Having thus fully described my improvements, what I claim and wish to secure by Letters Patent is:—

1. In a lens grinding machine, the combination with the grinding stone, of a lens holder having a central box intermediary of two other boxes, a reciprocable and rotatable shaft independently carried in said box, said central shaft having a central and squarely formed tenon with shoulder for taking on the lens pattern at one end and the lens gripping head at the other for cooperation with two outer shafts.

2. In a lens grinding machine, the combination with the grinding stone of a lens holder having a central box independent and intermediary of two outer boxes, an independent shaft in the central box, a lens pattern with a squared hole through its center to engage the central shaft, an outer shaft with cap with a squared central hole to also engage the central shaft and the lens pattern, and another outer shaft reciprocable to and from the central shaft and provided with a thread and nut for engagement with a rotatable sleeve for carrying and rotating said shaft.

3. In a lens grinding machine, in combination, a holder frame supported by two lower boxes, and having one central box and two end boxes in its upper portion, a shaft independently journaled in each of the upper boxes, the central shaft having a lens gripping head on one side of its box, and a squared tenon end on the other side, its gripping head communicable with a head on one of the outer shafts, and its tenon end communicable with a squared hole through the center of the lens former and the center of a cap covering the end of the other outer and rotatably driven shaft.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. SLAVIN.

Witnesses:

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