June 19, 1923. 1,459,653

T. CZELUSNIAK ET AL

RAZOR BLADE SHARPENING MACHINE

Filed Sept. 22. 1921 2 Sheets-Sheet 1

FIG. 1.

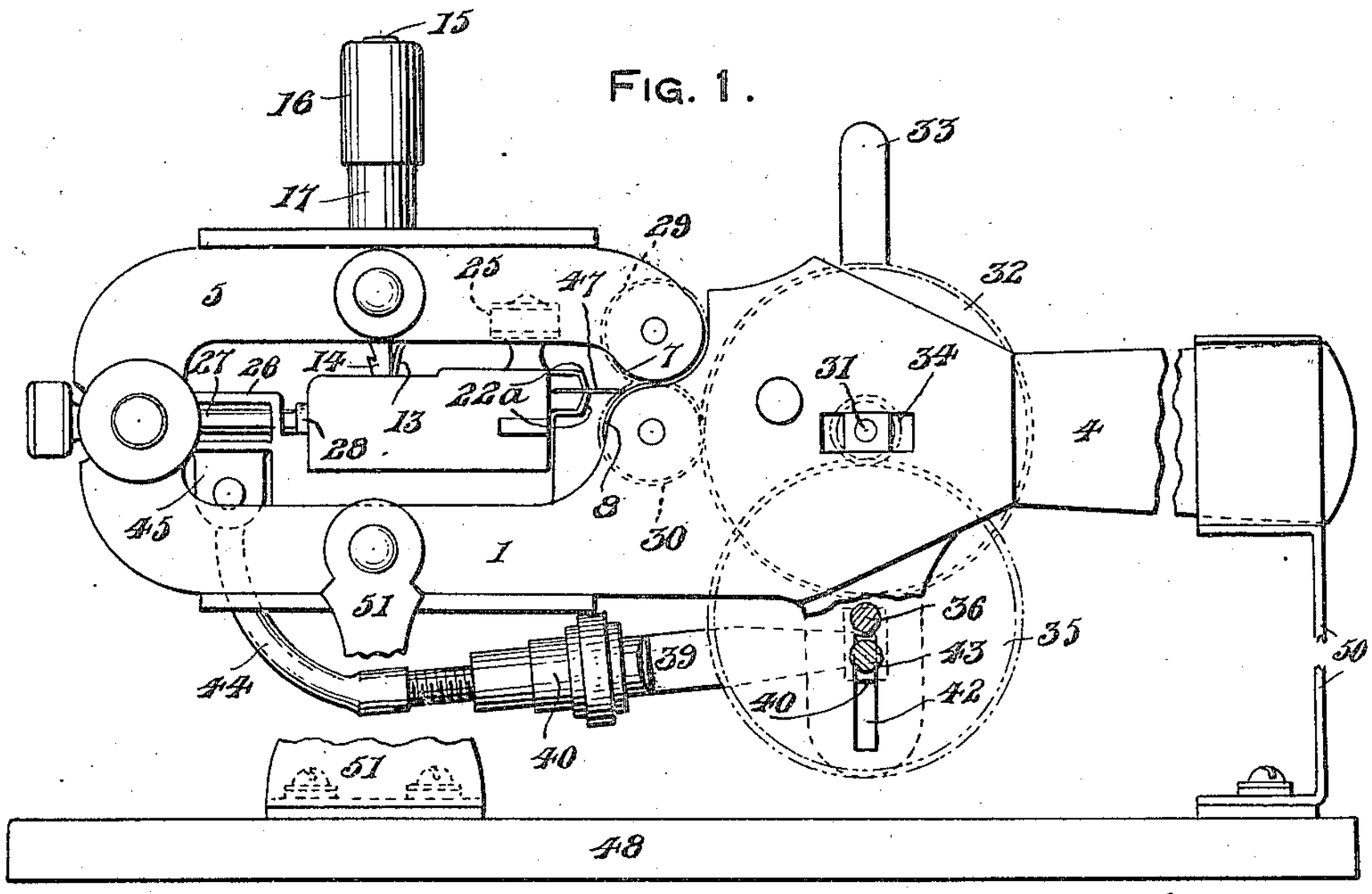



FIG. 2.

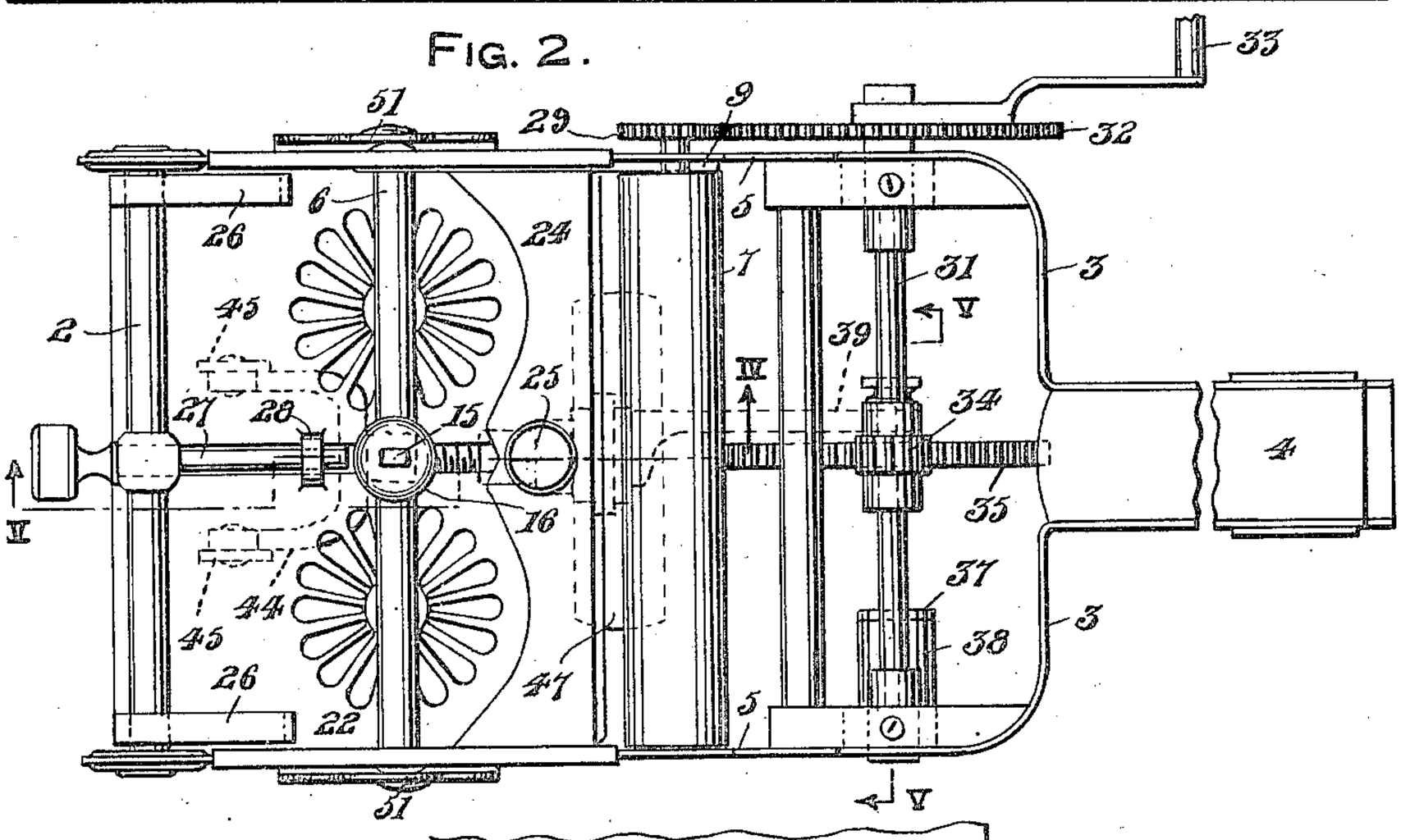



FIG. 9.

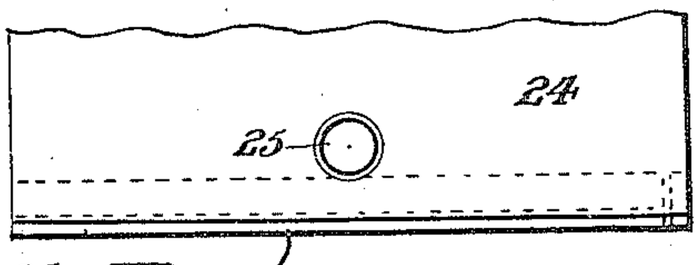
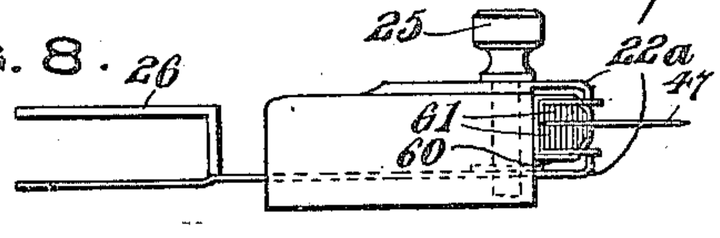



FIG. 8.

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Filed Sept. 22, 1921 2 Sheets-Sheet 2

FIG. 3.

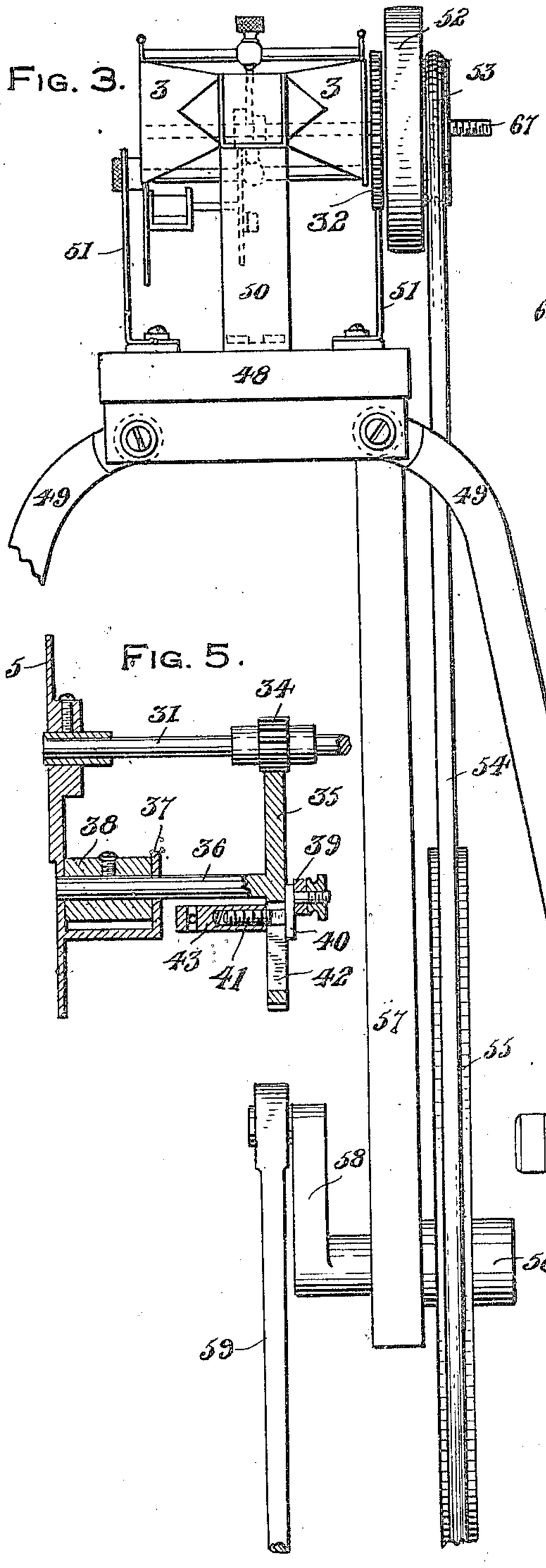



FIG. 5.




FIG. 6.

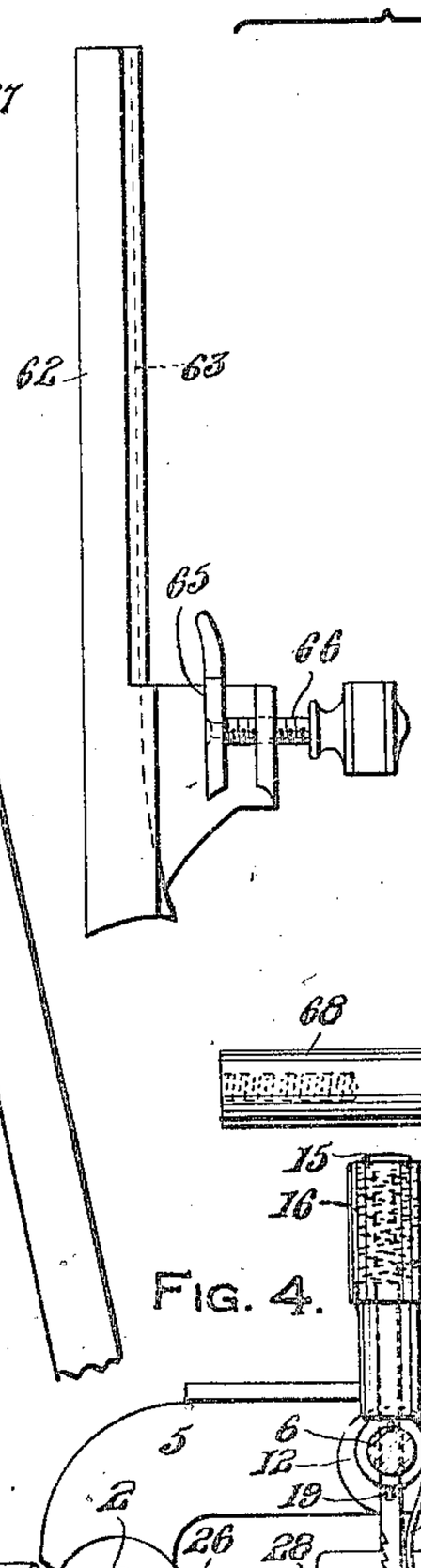
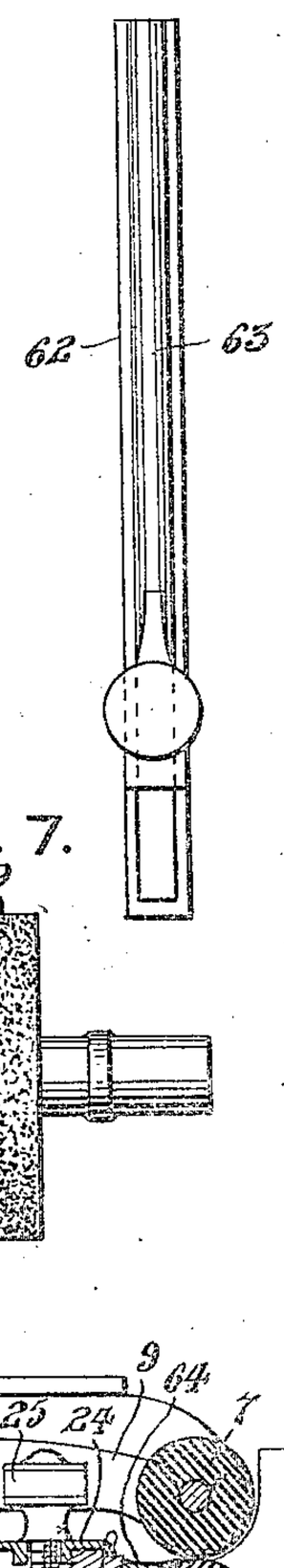



FIG. 7.



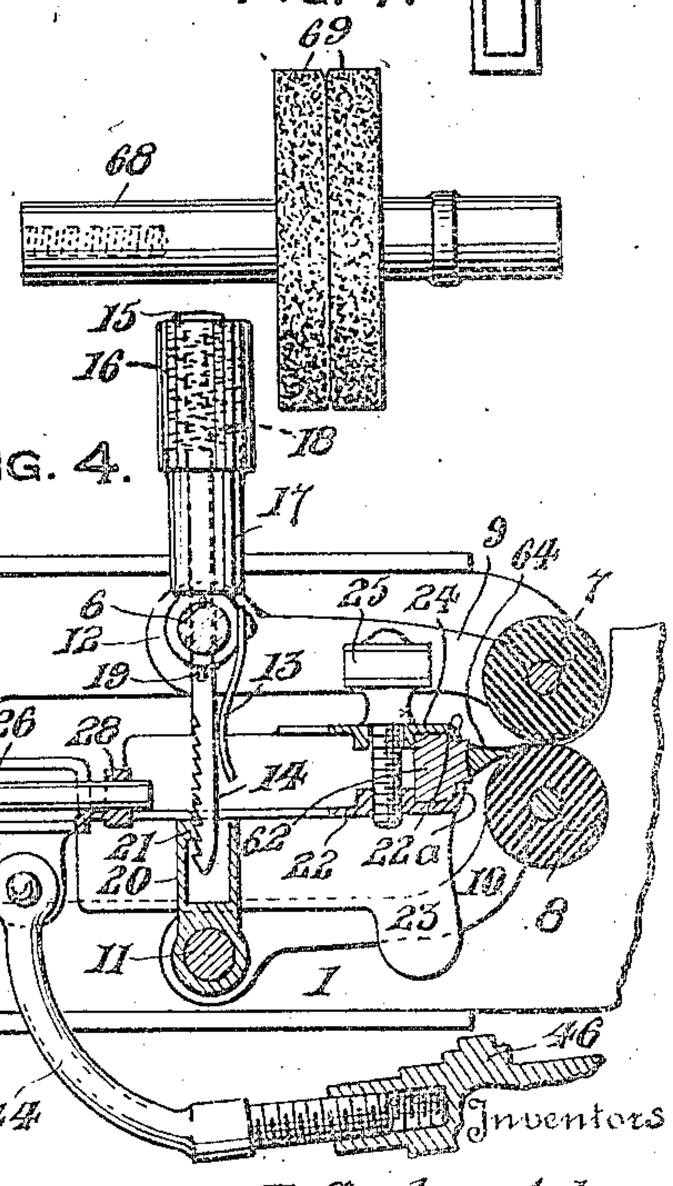




FIG. 4.

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Patented June 19, 1923. 1,459,653

# UNITED STATES PATENT OFFICE.

TONY CZELUSNIAK AND LEO CHODUBSKI, OF OSWEGO, NEW YORK.

## RAZOR-BLADE-SHARPENING MACHINE.

Application filed September 22, 1921. Serial No. 502,486.

*To all whom it may concern:*

Be it known that we, (1) TONY CZELUSNIAK and (2) LEO CHODUBSKI, (1) a citizen of the United States of America and (2) a citizen of Poland, residing at Oswego, in the county of Oswego and State of New York, have invented certain new and useful Improvements in Razor-Blade-Sharpening Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in razor blade sharpening machines and has particular reference to a device that is capable of portable use as a hand device and is also constructed for mounting upon a stand or support to be operated by foot power or otherwise.

The primary object of the invention resides in the provision of a razor blade sharpening machine wherein the sharpening rollers are removably carried by a hinged frame, the frame being moved upon its hinge connection to permit removal of the rollers for substitution of other rollers for different abrasive surfaces and also for cleaning the machine when desired.

A further object of the invention embodies a machine of the above type wherein the hinged frame sections carrying the sharpening rollers are maintained in a closed position by a spring device that controls the relative positions of the sharpening rollers.

A still further object of the invention embodies a razor sharpening machine having hinged sections supporting sharpening rollers with a blade carriage interposed between the sections and reciprocated during rotary movement of the sharpening rollers to move the blade in directions toward and away from the rollers.

The invention further embodies a support or stand for the machine, the handle employed for operating the device by hand being removable and a belt pulley substituted therefor to be driven by foot power mechanism.

The machine may also be employed for sharpening knives and similar instruments by attaching a grinding or emery wheel axially of the power driven pulley.

The machine is designed for sharpening razor blades of different types such as safety razor blades and straight edge blades, an attachment being provided for holding the straight edge blades in the blade supporting carriage.

With the above general objects in view and others that will appear as the nature of the invention is better understood, the invention consists in the novel form, combination and arrangement of parts hereinafter more fully described in connection with the accompanying drawings and in which like designating characters refer to corresponding parts throughout the several views.

In the drawings,

Figure 1 is a side elevational view, partially broken away of a razor blade sharpening device constructed in accordance with the present invention showing the adjusting nut and screw for regulating the length of reciprocations of the blade carrying support,

Figure 2 is a top plan view, partially broken away showing the handle operated gear drive mechanism for the sharpening rollers and illustrating by dotted lines a power pulley to be substituted for the handle,

Figure 3 is an end elevational view, partially broken away showing the machine supported on a base frame or table with the treadle mechanism and power pulley for operating the same,

Figure 4 is a detail sectional view taken on line IV—IV of Figure 2 showing the razor blade support, the supports for the removable sharpening rollers and the tension device for holding the hinge sections of the frame supporting the sharpening rollers in closed position, the spring device controlling the tension between the rollers,

Figure 5 is a detail sectional view taken on line V—V of Figure 2 showing a portion of the driving mechanism and the eccentric mounting of the rod for reciprocating the blade support,

Figure 6 shows side and front elevational views of an attachment for the blade support for accommodating razor blades of the straight edge type,

Figure 7 is a side elevational view of an emery wheel and carrying shaft to be attached to the drive pulley of the sharpening machine,

Figure 8 is a side elevational view of the

razor blade support removed from the machine and illustrating a modified form of supporting a safety razor blade, and

Figure 9 is a fragmentary top plan view of the razor blade support shown in Figure 8.

Describing the invention more in detail, there is illustrated a razor blade sharpening machine embodying upper and lower hinged sections, the lower section including side bars or plates 1 connected at one end thereof by a cross rod 2 while the other ends are curved inwardly as at 3 and are attached to a handle 4. The upper hinged section embodies side bars or plates 5 hinged upon the cross bar 2 and carrying a cross bar 6 intermediate the ends thereof as clearly shown in Figures 1, 2, and 4.

The mounting of the sharpening rollers 7 and 8 carried by the upper and lower sections 5 and 1 respectively is clearly shown in Figures 2 and 4, each roller including a bearing shaft rotatable at a pair of adjacent ends in the side bars of the hinged frame while the other ends are received in sockets in the opposite frame bars and retained by arms 9 and 10, the arm 9 being pivoted upon the shaft 6 while the arm 10 is pivoted upon the transverse shaft 11 carried by the sides 1 of the lower frame section.

A tension device for holding the hinged sections of the frame in closed position and for controlling the tension between the rollers 7 and 8 is shown more clearly in Figure 4 and includes a ring 12 keyed to the rod 6 and carrying a depending spring finger 13 upon one side thereof. A ratchet rod 14 slidably extends through the ring 12 and shaft 6 and has fixed to the upper end 15 thereof, a socketed head 16, a tubular section 17 surrounding the ratchet rod 14 above the ring 12 and telescoping within the socketed head with a coil spring 18 interposed between the upper closed end of the head and the upper end of the tubular section normally to hold the head and ratchet rod 14 at their limit of upward movement, such movement being limited by the lateral pin 19 carried by a side face of the ratchet rod and engaging the lower side of the ring as clearly illustrated, it being noted that the spring finger 13 engages the rear plain face of the ratchet rod with the opening in the ring and rod 6 being slightly larger than said rod to permit limited pivotal movement of the ratchet rod. A keeper for the ratchet rod 14 is carried by the rod 11 as shown in Figure 4 and embodies a socket member 20 open at its upper end and having an inwardly directed tooth 21 to be engaged by the teeth of the ratchet rod. From this description, it will be seen that pressure upon the socket head 16 will cause a downward movement of the socket head and ratchet rod 14 carried thereby against the tension of the spring 18 to cause the teeth of the ratchet rod to engage the tooth 21 upon the socket keeper 20, thereby locking the hinged sections of the frame in closed position and also controlling the tension between the rollers 7 and 8.

The blade supporting frame embodies a plate section 22 having depending end walls 23 disposed within the side walls 1 of the lower hinged section, a clamping plate 24 overlying the plate section 22 and secured thereto by the adjusting screw 25 as clearly shown in Figure 4. The rear end of the plate 22 extends beneath the cross bar 2 and has offset arms 26 at the opposite corners thereof overlying the rod 2 to provide a guide for the plate during reciprocable movements thereof to be later described. A further guide for the plate embodies a rod 27 carried by the cross rod 2 with the forward end thereof freely extending through an eye 28 carried by the plate 22.

The hand operated devices for rotating the sharpening rollers 7 and 8 includes pinions 29 and 30 carried by the ends of the rollers 7 and 8 respectively adjacent the locking arms 9 and 10, the pinions being positioned outwardly of the frame sides 1 and 5. A shaft 31 journaled transversely of the lower frame 1 carries a relatively large gear wheel 32 upon the end thereof adjacent the pinions 29 and 30 with the gear wheel meshing with the lower pinion 30. A handle 33 removably secured to the gear 32 effects rotation of the gears and the grinding rollers in an obvious manner from an inspection of Figures 1 and 2.

To reciprocate the razor blade support, a pinion 34 fixed to the shaft 31 intermediate the ends thereof is in mesh with a gear wheel 35 shown more clearly in Figures 4 and 5, the gear wheel being fixed to the shaft 36 journaled in an angle bracket 37 carried by one of the side walls of the lower frame with the block 38 anchored to the shaft between the bracket and the side of the frame to prevent lateral movement of the shaft and gear 35. A turn buckle rod 39 is secured to a block 40 having a screw 41 adjustably extending through the radial slot 42 in the gear 35, the screw 41 being engaged by the nut 43 for clamping the block 40 to the gear 35 in an adjusted eccentric position. As shown in Figures 2 and 4, the end 44 of the turn buckle rod is bifurcated and bent upwardly for pivotal engagement with depending lugs 45 carried by the bottom plate 22 of the blade support, the nut 46 of the turn buckle primarily adjusting the distance between the eccentric mounting of the turn buckle rod and the connection of the rod section 44 with the plate 22, thereby giving a minute adjustment of the length of throw imparted to the blade support.

When the device is to be used as a portable instrument in the sharpening of razor blades, a blade 47 as shown in Fig. 1 is clamped between the jaws 22ª of the blade support, the tension on the blade being controlled by the clamping screw 25 as clearly shown in Figure 1. By rotating the gear 32 through the medium of the handle 33 connected thereto as shown in Figure 2, rotary motion is communicated to the pinion 30 of the roller 8 and the pinion 30 meshing with the pinion 29 upon the roller 7 will cause the rollers to be rotated in like directions for sharpening the blade. The hinged sections 1 and 5 of the frame are locked in a closed position by the tensioned ratchet rod 14 engaging the lug 21 of the socket keeper 20, the tension between the rollers 7 and 8 being controlled by the ratchet rod pressed downwardly against the tension of the spring 18 and maintained in engagement with the lug 21 by the spring 13 engaging the plain face of the ratchet rod as clearly shown in Figure 4. The rod connection 39 between the gear 35 and the rear end of the blade support 22 will cause a reciprocatory movement of the blade support by the eccentric connection between the rod and gear 35, the blade support being guided in its movement by the offset arms 26 and the rod and eye 27 and 28 respectively carried by the cross rod 2 and the plate 22, and clearly shown in Figures 2 and 4.

In the operation of the device, the blade support is given a reciprocatory movement between the hinge section of the frame to move the blade 47 in directions toward and away from the rollers 7 and 8, the blade being projected between the rollers for engagement upon opposite edges thereof. The blade support being pivotally mounted upon the rod 2, the same is self-adjusting to correctly position the blade 47 between the rollers 7 and 8. The length of reciprocatory movement of the blade support is controlled by varying the eccentric mounting of the rod 39 with the gear 35 as will be obvious from an inspection of Figure 5, a detail of minute adjustment of the throw of reciprocatory movement of the blade support being accomplished by the adjusting nut 46 of the rod 39.

It is also intended to mount the razor sharpening device upon a base support or standard and operate the same by foot power, attention being particularly directed to Figures 1 and 3 wherein a platform 48 mounted upon legs 49 and having a bracket 50 at one end thereof supporting the handle 4, side brackets 51 carried by the platform 48 having ends of the shaft 11 supported therein as clearly illustrated. The handle 33 for rotating the gear 32 is removed and a driven wheel 52 carrying a sheave 53 is secured to the outer face of the gear 32. A belt 54 passing over the sheave 53 encircles the pulley 55 fixed to a shaft 56 journaled in the depending arm 57 carried by the supporting frame, the shaft 56 having a crank portion 58 attached to a link 59 that is operated by a treadle device. By operating the crank shaft 56, power is communicated to the gear 32 for operating the sharpening rollers 7 and 8 and reciprocating the blade support 22 as above described.

In Figure 8, there is illustrated a modified form of support for a safety razor blade wherein a U-shaped channel bar 60 encloses a pair of strips or bars 61 with the blade 47 positioned between the strips with the jaws 22ª engaging the channel irons 60 to force the strip 61 into binding engagement with the rear edge of the blade 47 thereby providing a binding or holding surface for the blade during the sharpening operation thereof.

An attachment for supporting a razor blade of the straight edge type in the blade support is illustrated in Figures 4 and 6, an elongated bar 62 having a concaved face 63 for engaging the rear edge of a straight edge blade 64 has the inner end of the blade engaged by the clamping block 65 adjusted by the screw 66 into binding engagement with the blade handle, the bar 62 being clamped between the jaws 22ª of the blade support as clearly shown in Figure 4.

It is also intended that the machine be employed for the sharpening of knife blades and like implements, a screw 67 projecting axially of the sheave 53 for reception of the socket end of a shaft 68 supporting a grinding wheel 69 as clearly shown in Figure 7.

From the above detailed description, it will be seen that the device is capable of use as a portable implement and also adapted for mounting upon a base frame of the support to be foot operated by a treadle device.

While there are herein shown and described the preferred embodiments of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What is claimed as new is:

1. A razor sharpening device of the class described including a frame formed of separable sections, a sharpening roller carried by each section, a blade support reciprocably mounted between the sections, means for adjustably holding the separable sections in closed position, said means including a tensioned ratchet rod carried by one section and a keeper carried by the other section to be engaged by the ratchet rod.

2. A razor sharpening device of the class described including a frame formed of separable sections, a sharpening roller carried by each section, a blade support reciprocably

mounted between the sections, means for adjustably holding the separable sections in closed position, said means including a tensioned ratchet rod reciprocably carried by one section and having limited pivotal movement relative thereto and a keeper member carried by the other section to be engaged by the ratchet rod.

3. A razor sharpening device of the class described including a frame formed of separable sections, a sharpening roller carried by each section, a blade support reciprocably mounted between the sections, means for holding the separable sections in closed position, said means including a tensioned ratchet rod reciprocably carried by one section and having limited pivotal movement relative thereto, a keeper member carried by the other section to be engaged by the ratchet rod, and a spring engaging the ratchet rod for holding the same in engagement with the keeper member.

4. A razor sharpening device of the class described including separable sections, a sharpening roller carried by each section, cooperating devices carried by the sections for holding the same in closed position, a blade support reciprocably mounted between the sections, meshing gears carried by the sharpening rollers, a power gear carried by one of the sections engaging one of said pinions, a turn buckle rod having one end adjustably eccentrically connected to a gear operatively connected with the power gear and having the other end connected to the blade support to effect reciprocation of said support.

5. A razor sharpening device of the class described including separable sections, a sharpening roller carried by each section, cooperating devices carried by the sections for holding the same in closed position, a blade support reciprocably mounted between the sections, meshing gears carried by the sharpening rollers, a power gear carried by one of the sections engaging one of said pinions, a turn buckle rod having one end adjustably eccentrically connected to a gear operatively connected with the power gear and having the other end connected to the blade support to effect reciprocation of said support and cooperating guide devices for the blade support carried by the support and and the frame.

6. A razor sharpening device of the class described including separable sections, a sharpening roller carried by each section, cooperating devices carried by the sections for holding the same in closed position, a blade support reciprocably mounted between the sections, meshing gears carried by the sharpening rollers, a power gear carried by one of the sections engaging one of said pinions, a turn buckle rod having one end adjustably eccentrically connected to a gear operatively connected with the power gear and having the other end connected to the blade support to effect reciprocation of said support, cooperating guide devices for the blade support carried by the support and the frame, said guide devices including a rod carried by the frame and an eye carried by the support slidably receiving the rod.

In testimony whereof we affix our signatures.

LEO CHODUBSKI.
TONY CZELUSNIAK.