Sept. 2, 1924. 1,506,998

W. REICHMANN

DEVICE FOR GRINDING AND POLISHING RAZOR BLADES

Filed Sept. 1, 1922

Fig. 1

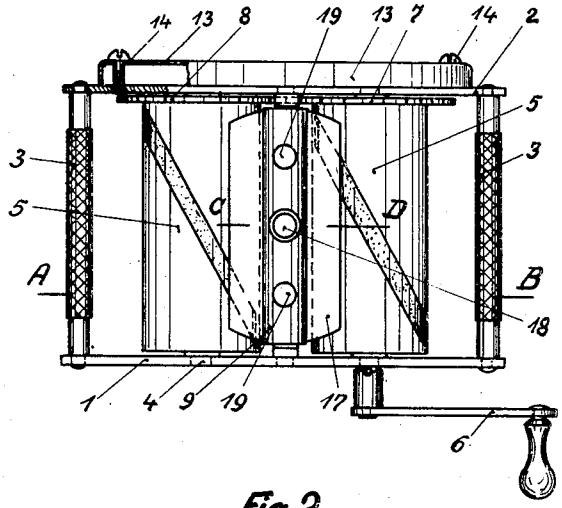


Fig. 6

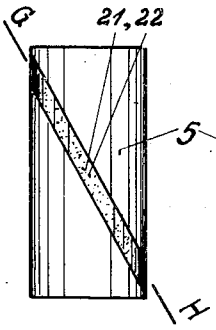


Fig. 7



Fig. 8

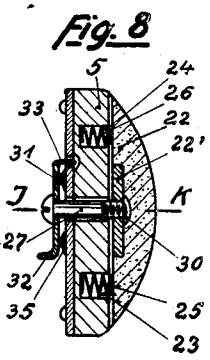


Fig. 2

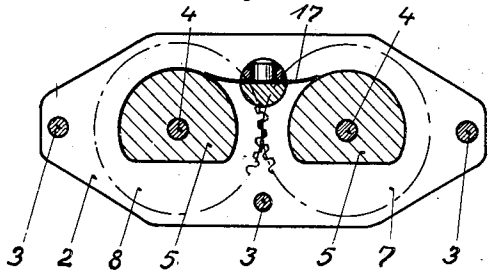


Fig. 9

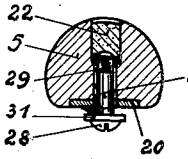


Fig. 3

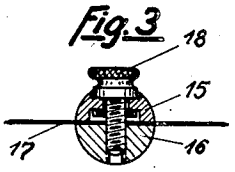


Fig. 10

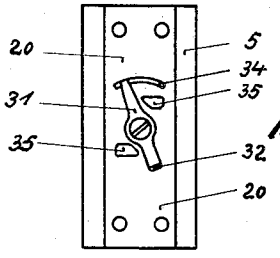


Fig. 4

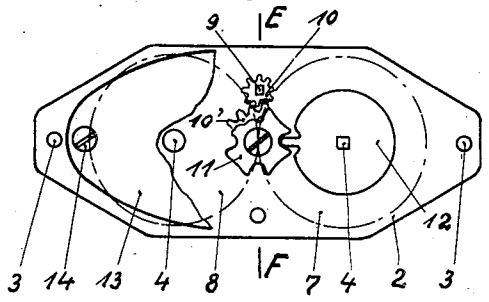
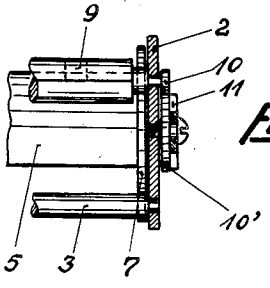


Fig. 5



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Patented Sept. 2, 1924. 1,506,998

UNITED STATES PATENT OFFICE.

WILLY REICHMANN, OF HAMBURG, GERMANY.

DEVICE FOR GRINDING AND POLISHING RAZOR BLADES.

Application filed September 1, 1922. Serial No. 585,750.

To all whom it may concern:

Be it known that I, WILLY REICHMANN, a citizen of the German Republic, and resident of Hamburg, Germany, have invented a new and useful Device for Grinding and Polishing Razor Blades (for which I have filed an application in Germany on June 14, 1921), of which the following is a specification.

This invention relates to a device for grinding and polishing shaving-knife blades with aid of grindstones inserted into polishing rollers. The device is to be operated by hand, and the blades may be rough-ground, as well as fine-ground, or polished respectively.

Devices for the rough-grinding and the fine-grinding of razor-blades are known in many forms of construction, and also combining the respective tools in one apparatus has already been proposed, also in this way the grinding roller was to be provided with a spirally shaped groove intended to receive an elastic leather strip adapted for use as polishing means, so that the thus constructed device could be employed for grinding, as well as for polishing the blade.

Whilst, now, with the known constructions, one of the two tools must be brought into operative position by hand-pressure, the improved device forming the subject-matter of the present invention is so constructed that a curved rough-grinding stone which is located in an oblique recess of the leather roller that is intended for the fine-grinding, or polishing respectively, may be adjusted in radial direction. The rough grinding stone may be, either, drawn back into the polishing roller, contrarily to the pressure of a spring, or pressed outwards by springs beyond the circumferential surface of the polishing roller. The grinding stone may in either position be secured in place by appropriate means.

My invention is illustrated, by way of example, in the accompanying drawing, in which Figure 1 is a plan of the novel device. Figure 2 is a longitudinal section in line A—B of Figure 1. Figure 3 is a section through the blade carrier, in line C—D of Figure 1. Figure 4 is a rear view of the device, some parts being broken away. Figure 5 is a vertical section through the driving gear, in connection with portions of the neighbouring parts. Figure 6 is a plan of the grinding roller with the grinding stone inserted into it. Figure 7 is a side-view of the grinding roller shown in Figure 6. Figure 8 is a section in line G—H of Figure 6. Figure 9 is a section in line J—K of Figure 8. Figure 10 is a bottom view of a grinding roller.

1 and 2 are two parallel frame plates which are connected with each other by bolts 3. The plates 1 and 2 form bearings for axles 4 one of which extends through the plate 1 and is provided with a crank 6 which can be turned only in one direction. The rollers 5 are affixed to the spindles and the revolutions of one thereof is transmitted to the other spindle by cog-wheels 7 and 8, in such a manner that the rollers are rotated in opposite directions.

Between the rollers 5, but above the plane of the spindles 4, is located an axle 9 which is to carry the blade-carrier and is provided with a cog-wheel 10 meshing with a larger cog-wheel 10′. This wheel is connected with a Maltheser wheel 11 co-operating with a one-finger wheel 12 secured to the crank-carrying axle. At every revolution of this axle the cog-wheel 10 is turned by one tooth whereby the blade-carrier is turned for 180°. The gearing is covered by a cap 13 attached to the plate 2 by screws 14.

The blade-carrier consists of an upper member 15 and a lower member 16, between which the blade to be ground and polished is held fast by a screw 18.

The lower member 16 is provided with pins 19 which take through the known apertures of the blade, and the upper member 15 has corresponding cavities for the reception of the projecting heads of said pins.

Each of the two grinding and polishing rollers has a flat lower surface 20. The cylindrical portion of the circumferential surface is covered with leather, but an oblique groove 21 is left free, and a grinding or polishing stone 22 is inserted into that groove. The shape of the groove and the stone is such that the upper surface of the

latter is flush with the surface of the leather covering of the roller. The front and rear end of the grinding stone 22 should not quite extend to the horizontal plane of the axis of the roller. The bottom of the groove has two circular recesses 23 and 24 (Fig. 8) containing springs 25 and 26 which tend to lift the curved grind stone as much as is allowed by certain means provided for the purpose. They consist of a bolt (Fig. 9) having a threaded portion 29, an unthreaded portion or shank 27, and a head 28, and engaging with its threaded end a small plate 22′ inserted into a corresponding groove of the grindstone 22 and being firmly connected with it. The lower surface of the grindstone, where this latter contacts with said small plate, has a small cavity 30 just opposite to the end 29 of the bolt. The shank 27 passes through a plate 20 secured to the flat side of the roller 5 (Figs. 8–10), and is provided with a small double-armed lever 31 having at the one arm an upwardly bent end 32 and at the other arm a downwardly bent end 33. The end 32 serves as a handle for turning the lever, and the end 33 engages a curved slot 34 provided in the plate 20. The slot forms a guide for the lever 31, and its ends serve as abutments for it. The lever 31 co-operates also with two rounded-off projections 35 located on opposite sides relatively to the bolt 27 in such a position relatively to the lever 31 that this latter may be forced upon them whereby the bolt 27 is subjected to an axial pull and the grindstone 22 is drawn inwards.

The manner of operation of the device is as follows: After the blade 17 to be worked has been clamped in between the members 15 and 16 of the carrier 9, the levers 31 are so turned that they do not rest upon the projections 35. In this position of the levers the springs 25, 26 press the grinding stone 22 so much radially outwards that their outer surfaces lie somewhat lifted over the circumferential surfaces of the rollers 5. As the grinding stones are supported by the springs, they may elastically yield radially inwards. Owing to this, the grinding procedure is not positive, the less, as also the blade itself is elastic. If now the crank is turned, the grinding stones are made to pass, both at the same time, two cutting surfaces lying on the same side of the blade. After a complete revolution of the crank 6 the gear-wheels 10, 11, 12 turn the blade-carrier for 180°, as already described, and therefore, also the blade is thus turned. The change of position of the blade-carrier occurs at that time at which the flat portions of the rollers 5 are turned towards the blade. After the blade has been properly preliminarily ground at its four faces of its cutting edges by repeated rotation of the rollers, the fine-grinding, or polishing respectively is effected as follows:

The lever 31 is so turned that it rests upon the projections 35. In this position of the lever the grindstones are pulled inwards, contrarily to the pressure of the springs 25, in such a measure, that their outer surfaces lie below the circumferential surfaces of the rollers 5. Now the blade is subjected to the action of the leather covering of the rollers whereby it is finished in a short time at all faces of the cutting edges.

When the grindstone has been worn off after some time, it may be re-adjusted by a slight turning of the bolt 27 in the proper direction by its head 28, so that the amount of wear and tear is compensated. It is obviously also easily possible to exchange an entirely worn-off or damaged grindstone for a new one.

Having now described my invention, what I desire to secure by Letters Patent of the United States is:

1. A device for grinding and polishing razor-blades, comprising, in combination, rollers having each an oblique groove in a portion of its circumferential surface; a leather covering upon that surface, except said groove; a grindstone shaped correspondingly to the said groove and being located, and radially adjustable, in it; pressure springs arranged in recesses in said rollers below said grindstone; means for pulling the grindstone radially inwards counter to the pressure of said springs; a frame in which the said rollers are supported; means for holding a blade on said frame; and means for rotating the rollers, as set forth.

2. A device for grinding and polishing razor-blades, comprising, in combination, two rollers having each an oblique groove in a portion of its circumferential surface, a leather covering upon that surface, except said groove; a grindstone shaped correspondingly to the said groove and being located, and radially adjustable, in it; a plate inserted into a groove in the bottom of the grindstone; a threaded bolt extending from the opposite side of the rollers into the said plate; pressure springs arranged in recesses in said rollers and bearing against said plate; a frame in which the said rollers are supported; means for holding a blade on said frame; and means for rotating the rollers, as set forth.

3. A device for grinding and polishing razor-blades, comprising, in combination, two rollers having each an oblique groove in a portion of its circumferential surface, a leather covering upon that surface, except said groove; a grindstone shaped correspondingly to the said groove and being located, and radially adjustable, in it; a plate inserted into a groove in the bottom of the

grindstone; a threaded bolt extending from the opposite side of the rollers into the said plate; pressure springs arranged in recesses in said rollers; a double armed lever attached to the head end of said bolt; projections so arranged with respect to said lever that this latter may be forced upon them by being turned; a frame in which the said rollers are supported; means for holding a blade on said frame; and means for rotating the rollers, as set forth.

In testimony whereof I affix my signature.

WILLY REICHMANN.