Feb. 5, 1929. 1,701,108

A. E. HARMS ET AL

MACHINE FOR GRINDING RAZOR BLADES

Filed Jan. 22, 1927

Fig. 1.

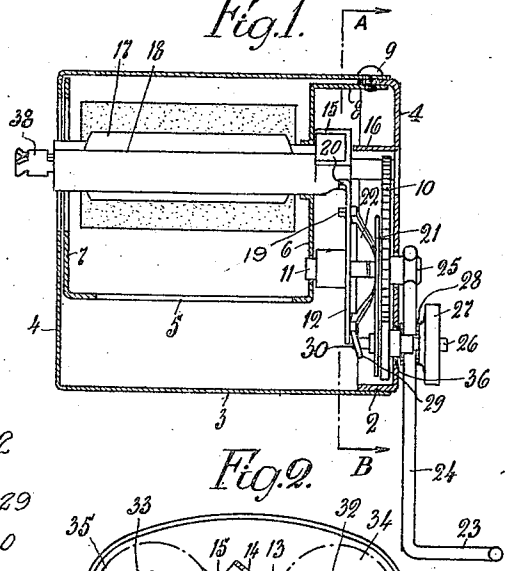


Fig. 5

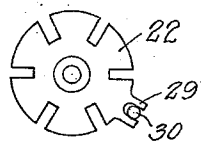


Fig. 8



Fig. 2.

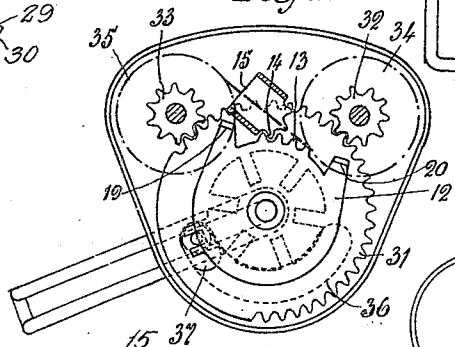


Fig. 4

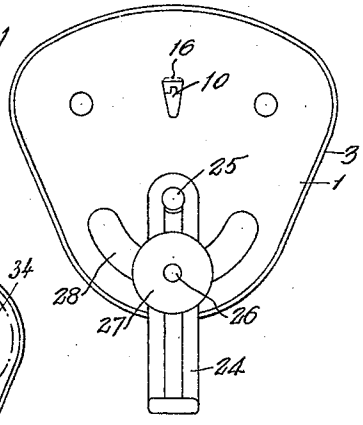


Fig. 6

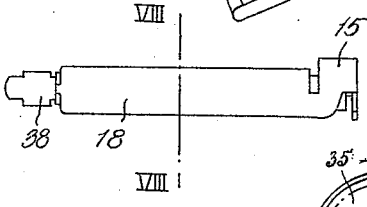


Fig. 3.

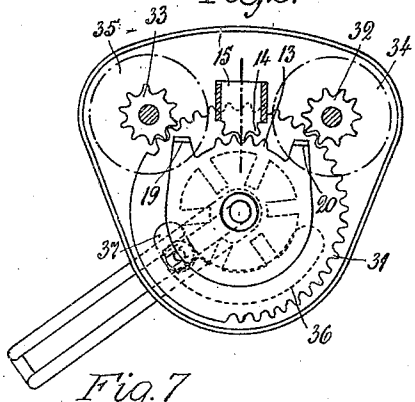
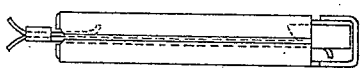


Fig. 7



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UNITED STATES PATENT OFFICE.

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MACHINE FOR GRINDING RAZOR BLADES.

Application filed January 22, 1927. Serial No. 162,759.

Our invention relates to a machine for grinding razor blades, of the kind in which the blades are ground by two grinding rollers, which alternatively revolve in the one and the opposite direction and which operate in such a manner that the blades are alternately ground on the respective sides of the two edges which bear against the rollers.

The characteristic feature of the invention consists in the manner in which the edges of the blade are removed from their grinding position, before the rotation of the grinding rollers is reversed.

In the accompanying drawing a constructional form of the invention is shown:

Fig. 1 being a longitudinal section through the machine.

Fig. 2 is a section on the line A—B in Fig. 1 with the razor blade in one of its grinding positions.

Fig. 3 is a similar view with the razor blade swung away from the rollers before these are rotated in the reverse direction.

Fig. 4 is an end view of the machine.

Fig. 5 is a front view of the elastic plate showing its connection with the spindle.

Fig. 6 is a rear view of the blade holder.

Fig. 7 is a side view of the blade holder.

Fig. 8 is a section through the blade holder taken on line VIII—VIII of Fig. 6.

The machine consists of a casing 1, the end walls 4 of which are of an essentially triangular shape preferably with rounded corners. One end wall has a circumferential flange 2 which is gripped by the side wall 3 of the casing. Within the casing is disposed a frame 5, the forward wall 6 of which has three projections 8 (only one of these is shown in the drawing) by means of which the frame can be fastened to the flange 2 by screws 9. In the rear wall 7 of the frame is provided a bearing for the socket 18 of the blade holder 38. This socket has, in known manner, longitudinal grooves for the blade 17, and into this socket is fitted a blade holder 38 of the known form. This blade holder can be drawn out of the socket, when a blade is to be placed in the holder, whereupon it is again slid into the socket, after it has received the blade. The socket has, however, at its rearmost end a pair of stops which, when the blade holder is drawn out will catch on corresponding stops on the blade holder so that the latter cannot be entirely removed from its socket. The socket 18 has at its front a bearing in the plate 6 and is beyond the latter provided with a square part 15. This part has teeth 14, and the socket 13 is prevented from shifting longitudinally by this square part 15 partly abutting against the plate 6, partly bearing against a projection 16 pressed out from plate 1. Through plate 1 passes a spindle, the inner end 11 of which is journaled in plate 6, while its outer end 25 has a groove therein which at the sides is enclosed by the two branches 24 forming a slot of the handle. These handle branches are at their outer end bent over at 23. The branches 24 engage a pin 26 which, at its outer end has a screw thread, and on which screws a nut 27 with washer 28. The pin 26 passes through the plate 1 in a slot 36 provided in the latter. The pin 26, further extends through a shorter slot 37 in a toothed disc 10 which is revoluble on the spindle 25 and proceeds further through a plate 21 which by means of an elastic conical plate 22 is held at a suitable distance from a disc 12 which is likewise revoluble on the spindle 11. This disc 12 is provided with teeth 13 which engage with the teeth 14 in the socket 18, and the disc 12 has, besides, two projections 19 and 20 which are intended to bear against the sides of the square part 15 of the socket 18. From the spring 22 proceeds a fork 29, between the branches of which lies the inner part 30 of the pin 26. The two grinding rollers 34 and 35 are fitted on spindles journalled in plates 7 and 1, and having immediately within the plate 1 pinions 32 and 33 with which the teeth 31 of the disc 10 mesh.

When the machine is lying in its box, the handle 24 is shifted in the groove on the pin 25 so that the bent over end 23 is about flush with the side wall 3 of the casing. Before the machine is used, the handle is drawn out into the position shown in Fig. 1 at which the ends of the branches 24 bear on the pin 25, and in such position the handle is secured by means of the nut 27, the washer 28 being screwed tightly against the handle. For use the casing is held in the left hand while the right hand seizes the handle 23, 24 and turns it alternately to and fro, this movement of the handle being limited by the pin 26 abutting in the ends of the circular curved slot 36 in plate. When a blade is to be placed into the machine, the socket 18 must with

its square part 15 be in the position shown in Fig. 3, at which the disc 12 likewise stands in its middle position, as shown in Fig. 3.

When the handle 24 is moved from the position shown in Fig. 2 to the position shown in Fig. 3, the pin 26 will not immediately carry with it the toothed disc 10 because the pin 26 will move freely in the slot 37 during this travel but it will immediately carry with it the plate 21, and by the aid of the fork 29 also the gliding spring 22 and the disc 12 bearing against the latter.

On the latter being turned the teeth 13 will move teeth 14 in such a manner that the square part 15 is moved into the position shown in Fig. 3 whereby the edges of the blades 17 have been removed from the grinding rollers 34 and 35. When the handle 24 is turned further counter-clockwise from the position shown in Fig. 3 so that the pin 26 travels further along the slot 36, the following will occur: The pin 26, which has reached the end of the slot 37, will now carry with it disc 10, the teeth of which will turn the wheels 32 and 33, and with these also the rollers 34 and 35 while simultaneously the blade 17 continues its movement until its edges are pressed against the rollers, the latter thereby grinding the respective edges of the blade, which is pressed against the revolving rollers by the friction between the disc 12 and the elastic disc 22. This counter-clockwise movement of the handle 24 will be arrested when the pin 26 reaches the end of slot 36 of the casing 1.

If no blade has been inserted into the socket 18, the movement of the square part 15 will be stopped due to contact against the projection 20.

When the handle 24 is moved back, that is to say clockwise, the blade 17 will first be moved into the position shown in Fig. 3 (after which the rollers will start their reverse rotation) and then further into the position shown in Fig. 2 where the blade is pressed against the rollers, the latter now grinding the other side of the blade.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:

In a machine for grinding blades of the kind in which two grinding rollers alternately revolve in the one and in the opposite sense of rotation and thereby alternately grind the blade on the respective sides of its edges bearing against the rollers, a blade holder, an operating oscillatable handle, means for oscillating said holder and revolving said rollers including a pinion member on the spindle of said blade holder, said pinion meshing with teeth of a disc, an elastic clutch between said disc and another toothed disc, this latter toothed disc meshing with toothed wheels on said rollers, the rotation of this latter toothed disc being limited and operated by the oscillation of the operating handle, the means for oscillating the blade holder, means consisting of a pin secured to said operating handle, said pin passing through a curved slot in the wall of the machine casing, thereupon through another shorter curved slot in the toothed disc driving the toothed wheels of the grinding rollers, and finally engaging with and operating the elastic clutch with the blade holder.

In testimony whereof we affix our signatures.

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OTTO FREDERIK JENNOW.