

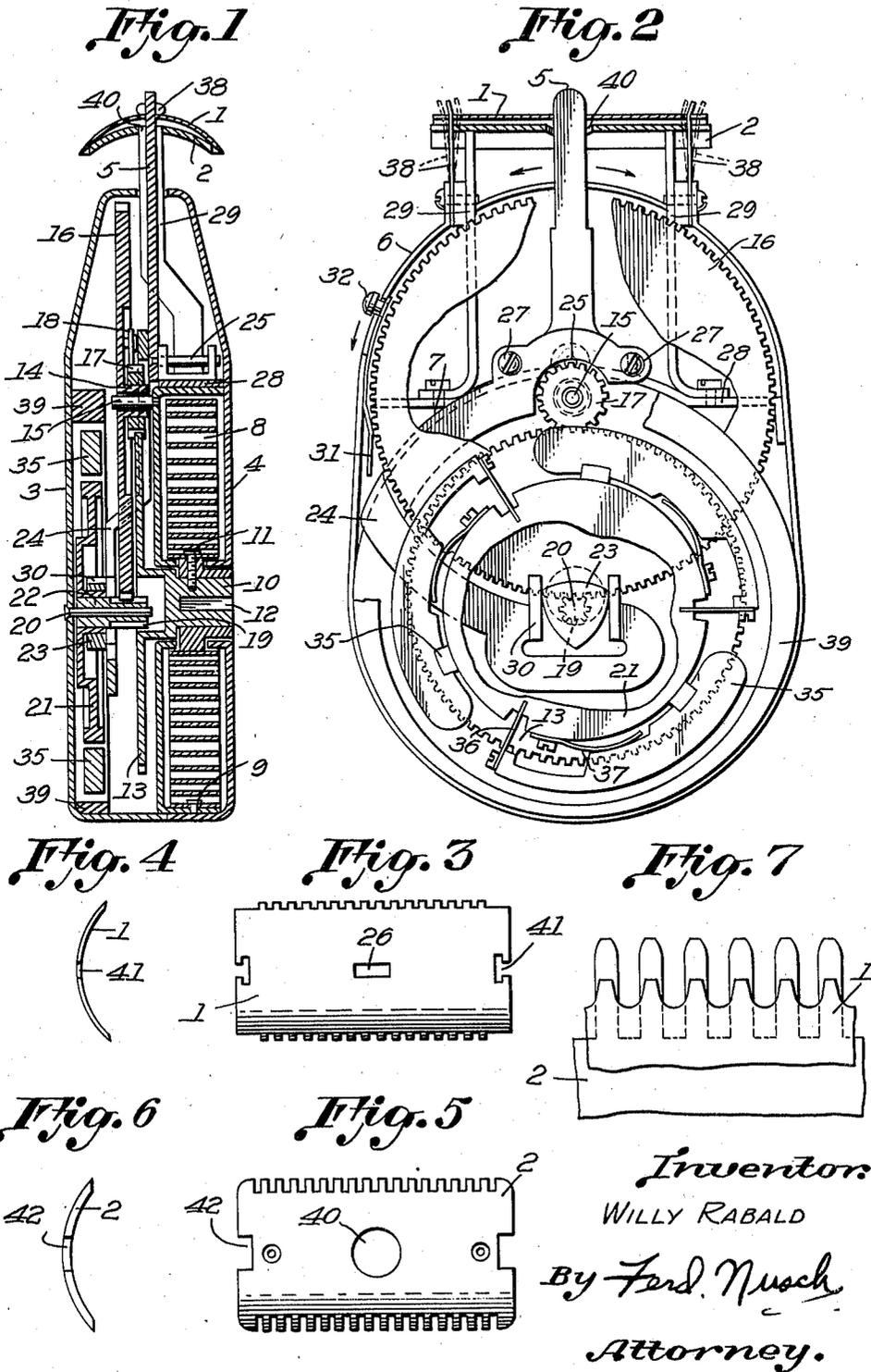
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HAIR CLIPPING MACHINE

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# UNITED STATES PATENT OFFICE

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## HAIR CLIPPING MACHINE

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5 Claims. (Cl. 30-43)

This invention relates to a hair clipping machine equally suitable for dry shaving, that is shaving without employing soap and water and for beard and hair cutting.

The invention relates to a special construction of the clipper head, the design and operation of which are based on entirely different principles to those of the known hair clipping apparatus and which is driven by a spring motor of special construction accommodated in a flat handle casing tapering to the clipper head and of convenient oval cross-sectional shape.

According to the invention the clipper head is of arc-shaped cross-section with cutting edges on both sides, and in which the upper clipper blade, movable in longitudinal direction towards the two sides, has on its longitudinal edges teeth, the gap between the teeth and the depth of the teeth being approximately equal to the thickness of a hair, that is about 0.2 to 0.3 millimetre, and is ground to knife-edge sharpness in a shape corresponding to that of the lower stationary curved guard, the flexible shearing blade being held and guided on each narrow side by a blade spring or a lever.

An embodiment of the invention is illustrated by way of example in one and a half natural size on the accompanying drawing in which:—

Fig. 1 shows the machine in longitudinal section.

Fig. 2 is a front elevation with the front wall of the housing removed.

Fig. 3 shows the clipper blade in plan view.

Fig. 4 is a side elevation of Fig. 3.

Fig. 5 shows the guard plate in top plan view.

Fig. 6 is a side elevation of Fig. 5.

Fig. 7 shows in top plan view on a scale about 20 times enlarged a portion of the guard with clipper blade resting thereon.

The clipper head comprises a guard 2 of arcuate cross-section serving for supporting the clipper blade 1.

The spring motor provided for shifting the clipper blade 1 is accommodated in a housing 6 comprising two halves 3 and 4, and from the upper end of which the clipper head projects so that it is completely exposed. The clipper blade conforming with the curved shape of the guard 2 is sharpened and ground along its longitudinal sides to form teeth having a gap and a depth both equal to the thickness of a hair, that is about 0.2 to 0.3 millimetre (Fig. 7). The reciprocating movement of the clipper blade 1 of the hair clipping machine is effected by an arm 5 of a two-armed lever 7 oscillated by the spring

motor. The housing 6 (3 and 4) accommodates the motor spring 8 connected at its outer end to the inner side of the housing wall at 9, whereas its inner end is mounted on a winding pin 10 at 11. The spring 8 is wound by means of a key inserted into a square hole 12 or a slot in the winding pin 10. A toothed wheel 13 is keyed on the pin 10 and meshes with a toothed wheel 17 slipped on the hub 14 of a toothed wheel 16 rotatable on a pin 15 projecting from the spring barrel. A pawl 18 arranged on the side of the toothed wheel 16 adjacent the toothed wheel 17, which is recessed to partly accommodate the wheel 16 and save space, allows the winding of the spring 8 without influencing the toothed wheel 16, whereas, when the spring 8 exerts a pulling action, the toothed wheel 16 is coupled with the toothed wheel 17, causing this wheel to rotate and this rotary movement is transmitted to a pinion 19 slipped loosely on to an arbor 20 projecting from the inner side of the casing half 3. The hub 22 of the governor disc 21 fits on the pinion 19, so that the governor disc 21 and consequently the governor participates in the rotation of the pinion 19.

In order to convert the rotary movement into an oscillating movement, such as is necessary for the clipper blade 1, a triangular cam 23 with convex sides is mounted on the hub 22 of the regulator disc 21. This cam is engaged by the bifurcated end of an arm 24 forming with the above mentioned arm 5 the two-armed lever 7 oscillatable about a pivot pin 25. The end of the arm 5 projects into an aperture 26 in clipper blade 1 in such a manner that, when being oscillated alternately to one side and the other by the rapidly rotating triangular cam 23, it effects the longitudinal movement of the clipper blade 1.

In order to prevent the movements of the arm 24 being checked by neighbouring parts and in order to save space, this arm is ogival and adjustably connected by screws 27 to the upwardly extending arm 5 engaging the clipper blade 1. This adjustability is attained by the fact that one of the screws 27, besides serving as fixing means, is also a pivot, whereas the other screw has clearance at the point where it passes through the arm 24, and this clearance allows an adjustment. The pivot pin 25 for the two-armed lever 7 is mounted in a strap 28 provided in the spring barrel and secured both in the wall of the spring drum and also in the side walls of the housing part 3. The strap 28, in the example

illustrated, is at the same time a support for stays 29 for fixing the guard 2.

To enable the bifurcated end of the arm 24 to freely engage the triangular cam 23, two plate-shaped abutments 30 are fitted one on each of the two prongs. To enable the motor to be stopped at any time when the machine is not required for use, a stop 31 is provided which, when shifted in the direction of the arrow (Fig. 2) by exerting pressure on the knob 32 accessible from the outer side of the housing, arrests the movement of the arm 24.

So as to still further reduce space in vertical direction and to ensure smooth running, the weights 35 distributed uniformly around the periphery of the governor disc 21 are each held by two blade springs 36, 37 arranged at an angle to one another. As the triangular cam 23 and governor disc 21 are rigidly connected, separate transmission elements are unnecessary.

The clipper blade 1 is held by blade springs 38 and the toothed cutting edges of the blade 1 are resiliently pressed against the curved guard surface by blade springs 38 which snap into recesses 41 in the small sides of the blade 1. These springs allow the movement and guiding of the blade, and if moved apart, allow the blade to be lifted off the guard.

An aperture 40 is provided in the guard 2 corresponding with the aperture 26 in the blade 1 and of such size that it allows the arm 5 to oscillate without hindrance. Apertures 42 are provided in the narrow sides of the guard 2 to enable the blade springs 38 to move without hindrance.

I claim:—

1. A hair clipping machine, comprising in combination a clipper head composed of a guard and a clipper blade both of curved cross-section of approximately the same radius, the edges of the blade resiliently bearing against the guard and being provided with teeth of a depth of about 0.2 millimetre hollowed out to knife edge sharpness on the side of the blade adjacent the guard, means for holding and guiding said blade on said guard, a housing carrying said clipper head, a spring motor accommodated in said housing, and means for transmitting rotary motion of said motor to reciprocate said blade.

2. A hair clipping machine, comprising in combination a clipper head composed of a guard and a clipper blade both of curved cross-section

of approximately the same radius, the edges of the blade resiliently bearing against the guard and being provided with teeth of a depth of about 0.2 millimetre hollowed out to knife edge sharpness on the side of the blade adjacent the guard, blade springs on said guard holding and guiding said blade on said guard, a housing carrying said clipper head, a spring motor accommodated in said housing, and means for transmitting rotary motion of said motor to reciprocate said blade.

3. A hair clipping machine, comprising in combination a clipper head composed of a guard and a clipper blade both of curved cross-section of approximately the same radius, the edges of the blade resiliently bearing against the guard and being provided with teeth of a depth of about 0.2 millimetre hollowed out to knife edge sharpness on the side of the blade adjacent the guard, levers on said guard holding and guiding said blade on said guard, a housing carrying said clipper head, a spring motor accommodated in said housing, and means for transmitting rotary motion of said motor to reciprocate said blade.

4. In a machine as specified in claim 1 the transmitting means, comprising a pivot pin in said housing, a two-armed lever oscillatably mounted on said pin, said blade having an aperture and one arm of said lever projecting through said aperture, a triangular cam driven by the spring motor cooperating with the other arm of said lever to oscillate said lever and impart a reciprocating movement to said blade, and a governor disc connected with said cam to maintain the rotation of said cam constant.

5. In a machine as specified in claim 1 the transmitting means, comprising a pivot pin in said housing, a two-armed lever oscillatably mounted on said pin, said blade having an aperture and one arm of said lever projecting through said aperture, a triangular cam driven by the spring motor cooperating with the other arm of said lever to oscillate said lever and impart a reciprocating movement to said blade, a governor disc connected with said cam to maintain the rotation of said cam constant, weights on said governor discs, and two blade springs carrying each of said weights and enclosing an angle of 90°.

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