June 21, 1949. M. BERGER 2,474,027

ELECTROMECHANICAL SAFETY RAZOR

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FIG. 1

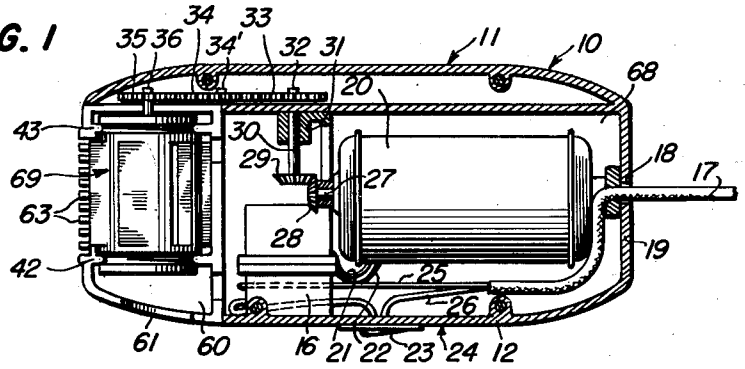


FIG. 2

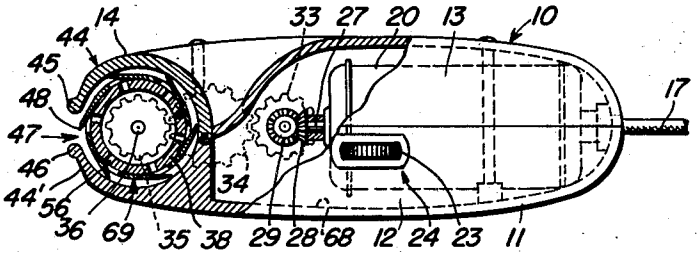


FIG. 3

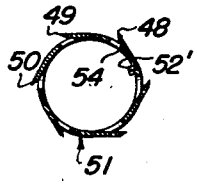


FIG. 4

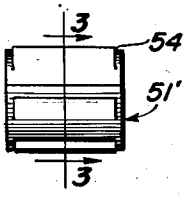


FIG. 5

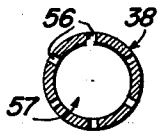


FIG. 6

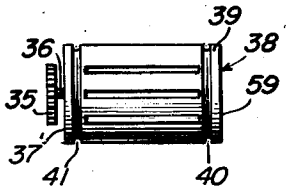


FIG. 8

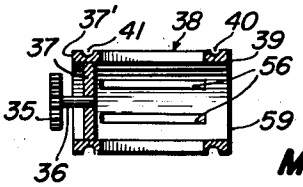
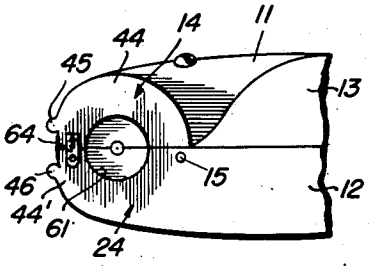


FIG. 7



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FIG. 9

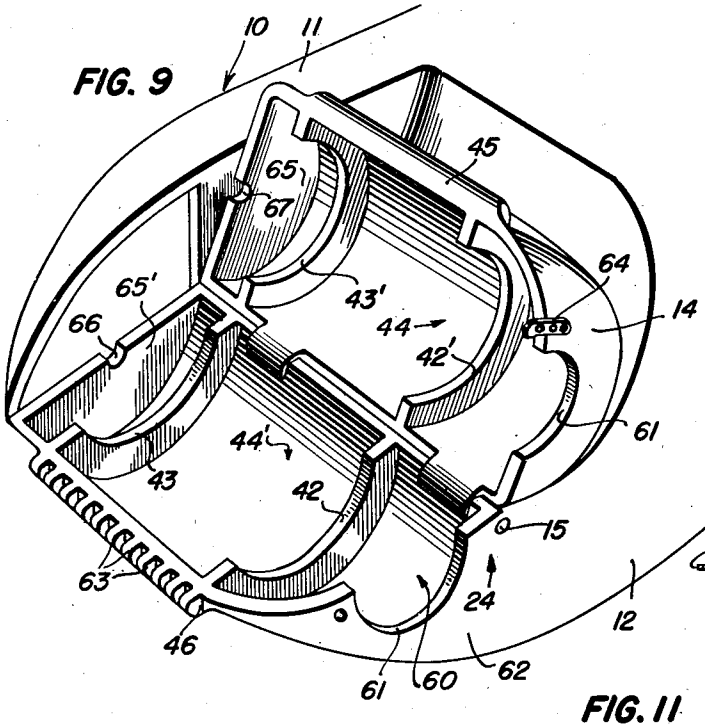


FIG. 12

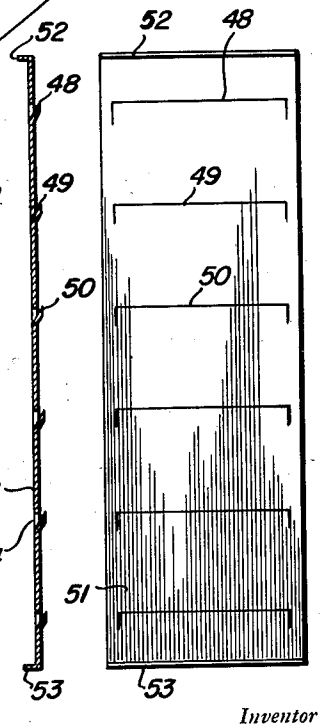


FIG. 11

FIG. 10

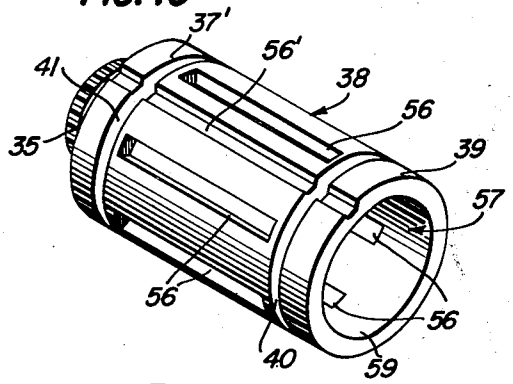
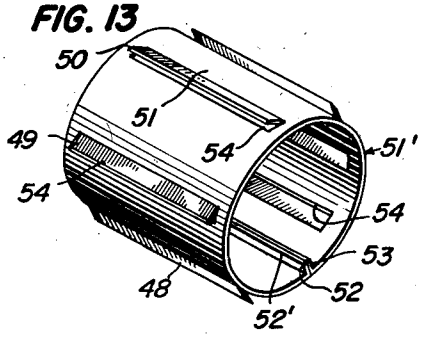


FIG. 13



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UNITED STATES PATENT OFFICE

2,474,027

ELECTROMECHANICAL SAFETY RAZOR

Morris Berger, Burlington, N. J.

Application March 18, 1946, Serial No. 655,127

5 Claims. (Cl. 30—42)

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The invention as described herein, and illustrated in the accompanying drawings, consists of a safety razor, an object of which is to provide in a razor a cylindrical cutter.

Another object of the invention is to provide a power driven cylinder carrying a series of cutter blades.

A further object of this invention is to provide a flexible cutter from which projects a series of spaced razor blade edges all integral with the cutter member.

Another object of the invention is to provide a mechanical safety razor comprising a shell forming a handhold and within which is an electric motor and a rotating cylinder driven by the motor around which cylinder is removably held a cutter member provided with a series of spaced razor edges which project between a pair of spaced lips which control the depth to which the razor edges may cut and also provide means for flattening the skin in the path of the cutter, whereby a uniform surface is presented to the cutter for action thereon.

In the very outset I wish to have it clearly understood that this invention is not what is commonly known as an electric shaver. It does not shave on a dry beard the stubble of which enters holes or slots clogging the shaver and making it impossible to get a clean, close, smooth shave. It does not chip or break the hair but cuts close and clean into lather supported bristles, thus avoiding the pull and consequent hurt resulting from the dry shaver of the common electric shaver. My razor shaves on a fully lathered beard, the blade edges coming into direct shaving contact with the beard and skin while retaining the safety principle and shaves in a fraction of the time required by other razors or shavers.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings in which:

Figure 1 is a plan view of the razor, a cover being removed therefrom,

Figure 2 is a longitudinal sectional elevational view of the device,

Figure 3 is a transverse sectional view of a cutter member,

Figure 4 is an elevational view thereof,

Figure 5 is a transverse sectional view of a cutter supporting cylinder,

Figure 6 is an elevational view of a shaving cylinder,

Figure 7 is a broken away detail view of a casing,

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Figure 8 is a longitudinal sectional view of Figure 6,

Figure 9 is a considerably enlarged perspective view of the front end of a casing member,

Figure 10 is an enlarged detail perspective view of shaving cylinder,

Figure 11 is a longitudinal detail sectional view of a cutter before being shaped,

Figure 12 is an elevational view thereof, and

Figure 13 is a perspective view of the cutter after being formed into a cylinder and before being placed upon the cylinder of Figure 10.

While one embodiment of the invention is illustrated in the above referred to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any way departing from the spirit and intention of the device which is to be limited only in accordance with the appended claims. And while there is stated the primary field of utility of the invention it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to designate the same parts and elements throughout and in which 10, refers to the invention in its entirety and 11 indicates a shell or casing formed in upper and lower sections 12 and 13, the upper section being provided with a forward semi-cylinder 14, hingedly connected as at 15, and regarding which further will be said later on.

Within the lower section 12, of the case is a transformer 16, to which a service cord 17, is connected through a bore 18, in the rear wall 19, of the member 12. The transformer is hooked up to an electric motor 20, by wires 21 and 22. A switch 23, on the outer wall 24, of the case is connected by wires 25 and 26, through which the current to the motor may be controlled.

On the shaft 27, of the motor is a bevel gear 28, meshed with a like gear 29, on shaft 30, supported in a bearing 31, and to the end 32, of which last shaft a gear wheel 33, is fixed and which drives an idler gear 34 on shaft 34' and the idler gear in turn drives a gear 35, fixed on a stub shaft 36 fixedly mounted on the end wall 37 of a rotatable cylinder 38. The cylinder 38, is provided adjacent its ends 37' and 39, with annular grooves 40 and 41, within which are adapted to seat bearing flanges 42 and 43, 42'

and 43', within the cylindrical forward end 44, of the case 12.

Both of the said semi-cylindrical members 14 and 44' terminate in longitudinal horizontally disposed lips 45 and 46 adapted to be moved over the face of a user and between which is a longitudinal gap or space 47, into which the razor edges 48, are adapted to project for engagement with the surface of the skin of a user upon which the said lips 45 and 46 are seating, said lips being adapted to hold the skin between said lips flat for action of said blade edges.

The blade edge 48, above referred to, is one of a series 49, 50, etc., struck out in spaced apart relation from a strip cutter 51, of very thin flexible steel and the terminals 52 and 53 of which are welded together forming a cylinder 51', whereby the cutter may be mounted on cylinder 38 and held fixedly thereon by the inside tongue 52' formed by flanges 52 and 53 which slide in a groove 56' of roller 38. The cut-outs 54, from which the blades 48, etc., are struck align with slots 56, in the cylinder 38, whereby lather and bristles shaved from the face will be forced therethrough and into the interior 57, of the cylinder and from thence through the open end 59 thereof and into space 60, in the case 12, from where it will be driven through an aperture 61, in the forward end 62 of said wall 24. The lip 46 is in the form of a safety guard as indicated at 63. A spring catch 64 is provided to secure the cylinder member 14 to its companion 44' when in closed position. The end walls 65 and 65' of members 14 and 44' are provided with bearing slots 66 and 67 for the shaft 36. It is to be noticed that a watertight compartment 68 is provided in the casing 11 within which the transformer, motor and wiring therefor are located in order that the forward end 44 of the case may be washed of lather without water reaching said compartment. The shaving unit 69 is removable from the member 44' for cleansing and for replacement of a new cutter cylinder 51' when necessary. The unit 69 includes the cylinder 38 and the cutter cylinder 51'. The blades 48, etc., are projected just far enough from the strip 51 to just graze the skin through the space 47, as clearly indicated in Figure 2 of the drawings.

It is obvious that in certain cases a transformer will not be needed and in which case a motor 20 will be mounted in its place and the transformer dispensed with.

From the foregoing specification it will become apparent that the invention disclosed will adequately accomplish the functions for which it has been designed and in an economical manner and that its simplicity, accuracy and ease of operation are such as to provide a relatively inexpensive device considering what it will accomplish and that it will find an important place in the art to which it appertains when once placed on the market.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Changes in shape, size and rearrangement of details and parts such as come within the purview of the invention claimed may be resorted to, in actual practice, if desired.

Having now described the invention that which

is claimed to be new and desired to be procured by Letters Patent is:

1. An electric safety razor comprising a longitudinally split casing forming upper and lower separable sections, the forward end of said lower section forming a semi-cylindrical cutter housing terminating in a transversely extending rounded guard lip, a semi-cylindrical cutter housing hinged to said upper section adapted to swing into position over said lower cutter housing and formed with a transversely extending rounded guard lip disposed in parallel spaced relation with said first-mentioned guard lip, a blade-supporting shaving cylinder rotatably mounted between said cutter housings, strip cutter blades detachably supported on said shaving cylinder, a gear on one end of said shaving cylinder, an electric motor in the opposite end of said split casing, means for energizing the same, and a gear train between said gear and electric motor.

2. An electric safety razor comprising a longitudinally split casing forming upper and lower separable sections, the forward end of said lower section forming a semi-cylindrical cutter housing terminating in a transversely extending rounded guard lip, a semi-cylindrical cutter housing hinged to said upper section adapted to swing into position over said lower cutter housing and formed with a transversely extending rounded guard lip disposed in parallel spaced relation with said first-mentioned guard lip, cooperating bearing flanges formed in the opposite ends of said cutter housings, a blade supporting shaving cylinder rotatably mounted between said cutter housings, annular bearing grooves in the opposite ends of said shaving cylinder engageable with said bearing flanges, strip cutter blades detachably supported on said shaving cylinder, a gear on one end of said shaving cylinder, an electric motor in the opposite end of said split casing, means for energizing the same, and a gear train between said gear and electric motor.

3. An electric safety razor comprising a longitudinally split casing forming upper and lower separable sections, the forward end of said lower section forming a semi-cylindrical cutter housing terminating in a transversely extending rounded guard lip, a semi-cylindrical cutter housing hinged to said upper section adapted to swing into position over said lower cutter housing and formed with a transversely extending rounded guard lip disposed in parallel spaced relation with said first-mentioned guard lip, cooperating bearing flanges formed in the opposite ends of said cutter housings, a blade supporting shaving cylinder rotatably mounted between said cutter housings, annular bearing grooves in the opposite ends of said shaving cylinder engageable with said bearing flanges, said shaving cylinder being formed with a longitudinally extending locking groove in its outer surface, a blade strip having spaced longitudinally extending edged cutter blades struck therefrom adapted to be disposed about said cutting cylinder, means on the ends of said blade strip disposable in said locking groove in the shaving cylinder for locking the same in position thereon, and an electric motor in said split casing operatively connected with said rotatable shaving cylinder for rotating the same.

4. The subject matter as claimed in claim 3, and said shaving cylinder being formed with a plurality of spaced longitudinally extending slots through which said spaced cutter blades will extend.

5. The subject matter as claimed in claim 3,

said shaving cylinder being formed with a plurality of spaced longitudinally extending slots through which said spaced cutter blades will extend, and said casing being provided with a lather discharging opening in its end remote from the gear on said shaving cylinder.

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