Feb. 12, 1957 J. L. KLEINMAN 2,780,864

SHAVING IMPLEMENTS

Filed Feb. 20, 1953

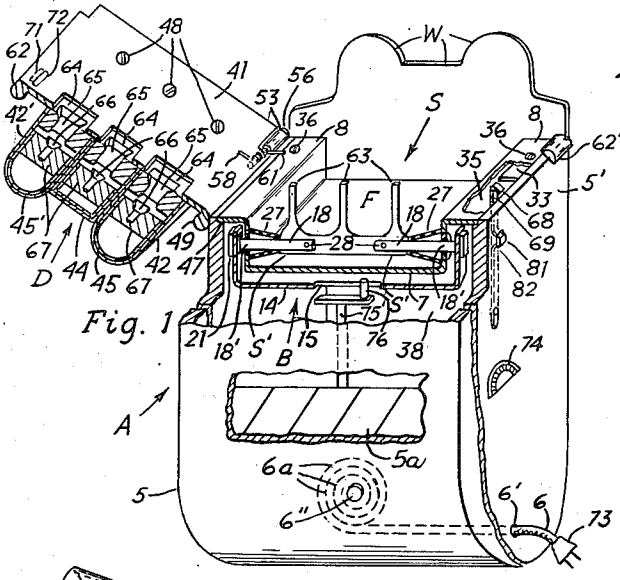


Fig. 1

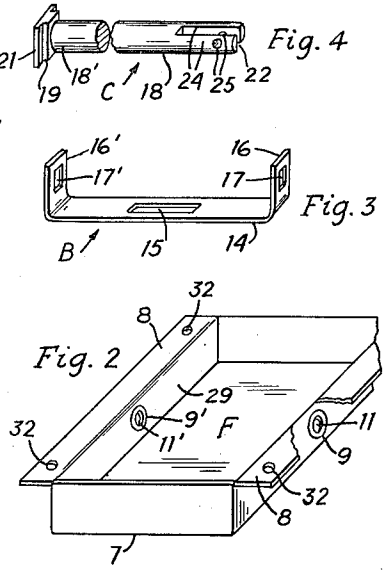


Fig. 2

Fig. 3

Fig. 4

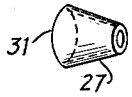


Fig. 5

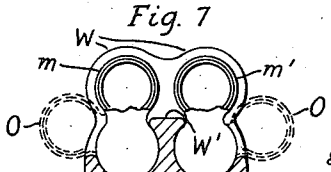


Fig. 7

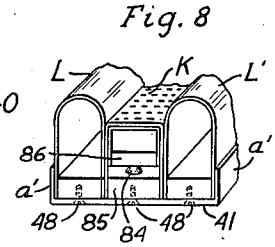


Fig. 8

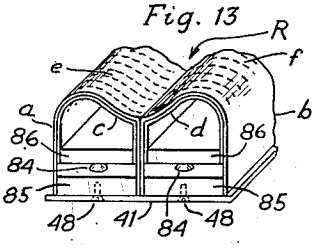


Fig. 13

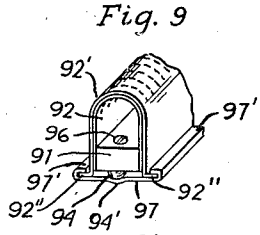


Fig. 9

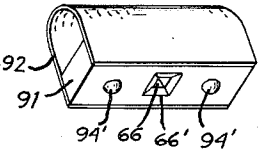


Fig 10

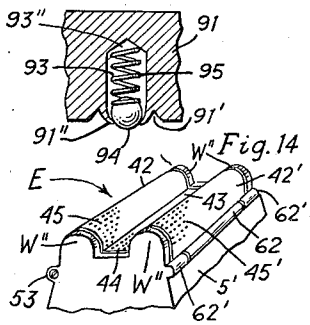


Fig. 11

Fig. 14

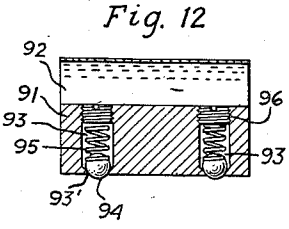


Fig. 12

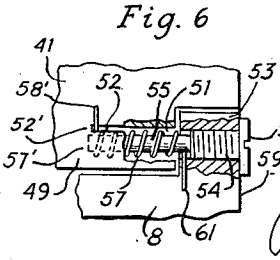


Fig. 6

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SHAVING IMPLEMENTS

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Application February 20, 1953, Serial No. 338,089

19 Claims. (Cl. 30—41)

This invention relates to the construction of shaving-implements in general, and more particularly to a type known as electric razors or dry shavers, and is filed as a continuation-in-part of my copending application Serial No. 226,685, filed May 16, 1951.

In accordance with my invention, I produce a shaving implement comprising a handle provided with a seat adapted to support an assembled shearing section or shaving unit thereon, and with means for holding the unit in shaving position, and with wall portions extending above the seat for covering the open end portions of the shearing sections of the unit when the latter is in shaving position, and with means for moving the shearing section away from the wall portions to uncover the said open end portions, and with a motor compartment, and with means preventing sheared hair from entering the said motor compartment, and with means for housing the connecting cord within the handle.

There is, therefore, thus produced, in accordance with my invention, a shaving-implement wherein the handle is provided with a seat to hold an assembled shearing section thereon, and wherein such shearing section comprises an element forming a base portion having individually removable shaving units secured thereto by suitable means, for example screw-threaded elements, and wherein the shaving units are provided with chambers having open end portions, and means for holding the assembled unit secured to its seat in a normal shaving position, and wherein wall portions extend above the seat for covering the end portions of the shaving units when the latter are in normal shaving position to prevent the escape of sheared hair therefrom while shaving, and wherein the shearing section may be moved or swung out of normal shaving position away from the wall portions to uncover the open end portions for the removal of sheared hair from the chamber of such shaving units, and means for holding such shearing section in such non-shaving position, and wherein such shearing section is adapted to be reverted back into normal shaving position, and wherein the implement is provided with a removably mounted non-perforated or non-punctured partition placed between the shaving section and the motor compartment to prevent the entrance of sheared hair from the shaving section into the motor compartment, and wherein the actuating elements are carried by the outer portion of the partition and are situated above the non-punctured floor of such partition, and wherein the handle is provided with a compartment for housing the connecting cord.

To illustrate the ordinary commercial utility of my shaving implement in daily life, a shaving implement constructed in accordance with my invention, of whatever style or type it may be made, could be utilized to great advantage; for example, in the ordinary type of electric razors the seat section of the handle, which is adapted to hold the shearing unit, is provided with one or more openings adapted to permit the motor actuating elements to pass therethrough for the purpose of engaging the movable shearing member for operable purposes. Each of these openings is of a size larger than the thickness of the actuating element for the purpose of permitting such element to move freely within such opning. A great number of sheared hairs, which come through the shearing slots, accumulate within the chamber of the movable member. These hairs usually make their way through the opening of the stationary member and then through the opening or openings of the seat section into the motor compartment and clog up the motor, in which case the motor becomes defective and the parts thereof cannot operate freely and properly, the user must then take his razor to the "service station" and undergo the expense for servicing and cleaning his electric razor. Furthermore, the movements of the clogged up joined sections increase motor noise and occasionally cause the motor parts to wear out quickly and lose their proper frictional fit, in which case the motor becomes deficient and useless, and the user must then undergo the expense of paying for a new motor. A matter which causes great annoyance and discomfort to the user, and is therefore a great hindrance to the expansion of the electric razor industry.

Whereas in an electric razor made in accordance with my invention, the above-mentioned objectionable features are completely eliminated. In my invention the actuating elements for oscillating the movable shearing members are not carried by the motor, they are not a part of the motor, they do not protrude through openings leading from the motor compartment to the shearing units (as is the case with the ordinary type of electric razors), such openings are therefore not necessary in my structure, the actuating elements in my disclosure are carried by the outer side wall portion of my non-perforated or non-punctured partition and are located above such partition. My removably mounted non-punctured partition covers completely the motor compartment not leaving any opening for sheared hair to enter such motor compartment, thereby preventing the clogging up of the motor by sheared hair. Thus the normal operation of the motor will not be hampered by any foreign matter thereby prolonging its life, efficiency and smooth operation, rendering better service and greater shaving comfort and satisfaction to the user to an extent not accomplished heretofore by the ordinary type of electric razors, particularly so when the partition and the actuating elements can be easily removed or replaced at will.

Furthermore, the fact that my structure provides wall portions extending above the seat of the shaving units to cover the open end portions of the chambers of the shearing sections, acting as closure elements for such chambers when the shearing section is in normal shaving position, eliminates the need for specially built closure elements. This, of course, simplifies the structure and reduces the manufacturing cost of the instrument. A matter which naturally is of great importance to the manufacturer and to the consumer.

The simple and easy manner in which the shearing section of my shaving unit can be moved or hinged out of its normal shaving position into a non-shaving position, for the removal of sheared hair, and then be reverted back into normal shaving position for shaving purposes, affords the possibility for the user to clean the shaved hair from the instrument with greater ease and convenience than is possible with the ordinary type of electric shavers. And the fact that my non-perforated or non-punctured partition covers the motor chamber completely, lessens, to a great extent, the sound of the motor noise. This of course, would add greatly to the comfort of the user and increase the popularity of the instrument to an extent whereby the instrument would become an indispensable item with the user.

For explanatory purposes the following may be pointed

out: The present type of electric shavers are provided with removable connecting cords. The average user not being mechanically inclined usually places the plug of his connecting cord into his shaver in a somewhat forceful manner, particularly so when in a hurry for his shave. By doing so the connecting members, between the plug and the shaver, occasionally become loose or bend out of shape, in which case the proper electric connection for operating the shaver can not be obtained. The user is then compelled to resort to a "service station" and undergo service and alteration expense in order to make his shaver operable for shaving purposes. Such occurrences cause annoyance and discomfort to the user, at times, to an extent resulting in the discontinuation of using an electric shaver, thereby causing great hindrance to the growth or expansion of the electric razor industry, a matter which is of great concern to the manufacturers of electric shavers.

But an electric razor made in accordance with my invention completely eliminates the above-mentioned objectionable features. The connecting cord of my shaving implement is secured directly to the structure at the interior of the handle and is housed within the handle compartment. It can be moved out to the desired length and can be withdrawn back into the handle compartment by merely pressing the button at the outer face of the handle. It can thus be seen that this form of structure will provide great convenience and comfort to the user; prove economical and practical, and aid greatly in the expansion of the electric shaver industry.

From the above, it is evident that my present invention is an important contribution to the art of making electric shavers. It solves the above-mentioned problems in a complete and satisfactory manner. It will be readily seen, that, an electric shaver, produced, in accordance with my invention, fulfills a long felt need in the industry of electric razors. Namely, the fact that the actuating elements in my structure are not carried by the motor, but are carried by the outer side wall portion of my partition, and are located above the non-perforated floor which covers the motor compartment (and is underlying the shaving units) eliminates the necessity of providing the motor compartment with the usual actuating-openings, thereby eliminating the means by which sheared hair may enter into the motor compartment and thus naturally preventing the clogging up of the joined parts of the motor; so that such motor will be kept in a clean condition and be able to operate freely and normally in its closed compartment, thereby prolonging the life, use and efficiency of such motor. This in itself is a very important, and much needed, improvement over the ordinary type electric razors.

My above-mentioned non-punctured partition, by covering the motor compartment, muffles the sound and reduces the motor noise, thereby eliminating annoyance and irritation to the user, and instead renders a quiet, pleasant and nerve-soothing feeling while shaving. This of course is a very desirable feature which will tend to stimulate the marketing of the razor.

The fact that the shearing sections in my structure can be readily moved or swung out of normal shaving position into a non-shaving position will greatly facilitate the cleaning of such shearing sections and/or the adjustment or replacement of parts. In addition thereto, the fact that wall portions, extending above the seat, act as closure elements for the shearing members, when the latter are in normal shaving position, will completely eliminate the necessity of separate closure elements, thereby reducing manufacturing cost and add greatly to the comfort and satisfaction of the user.

Then too, the fact that in my structure the connecting cord is not removably mounted to the bottom portion of the implement, but is secured directly to a portion of the structure within the handle, and is being housed within such handle when not in use, will add greatly to the comfort of the user. The cord will always be ready for use without danger of damaging or distorting the parts at the point of connection, thereby assuring safe and comfortable shaving operations.

Thus, an electric shaver, produced, in accordance with my invention, fulfills a long-felt need in the electric shaver industry. My herein invention teaches a new and unique form of structure not known heretofore in the art of manufacturing electric shavers. A structure wherein the seat for the shearing section above the motor compartment is not punctured and therefore serves as a protector or cover for such compartment preventing the falling or flowing of shaved hair into the vicinity of the motor, so that such motor is maintained within its compartment in a clean and unclogged-up condition, thereby prolonging the life, efficiency, and service of such motor, and wherein wall portions extend above the seat of the shaving units serving as closure elements for the chambers of the shearing members when the latter are in normal shaving position eliminating the need of separate closure elements, and wherein the shearing section may be moved, swung or hinged away from the wall portions into a non-shaving position for cleaning purposes, and wherein the actuating elements for oscillating the movable shearing members are not carried by the motor thereby eliminating actuating-openings in the motor compartment, and wherein the connecting cord is housed within the handle compartment, thus prolonging the life and usefulness of the shaving-implement, such achievements have not been accomplished heretofore by electric sheavers. It is thus obvious that my invention solves the most vexing problems in the art of making electric shavers. My invention is therefore, from a business point of view, a practical and very important contribution to the electric shaver industry. An electric shaver, made in accordance with my invention, will last longer, will operate more efficiently, and will render better service to the user. Such an implement can be utilized to greater advantage and in a more satisfactory manner.

The variety of possible applications of my novel construction in connection with different types of shaving-implements, as hereinabove indicated, is so prolific that for the purpose of illustrating the invention the specific embodiment of my invention in its application to a shaving-implement exhibiting the greatest difficulties has been selected. Such shaving-implement is one which necessarily must conform most rigidly to the contours of the portion to be shaved and one which has the field of greatest possible commercial use. For this purpose I have selected for illustration of my novel construction, a shaving-implement constituting a multiple-head electric shaver, so that the principles of construction may be best illustrated in a shaving-implement known as a multiple-head electric shaver.

For a fuller understanding of the nature and objects of the invention, reference is had to the following detailed description in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of my shaving implement with the shearing section in a removed non-shaving position, partly broken away, showing part of the inner structure of the shearing section;

Fig. 2 is a perspective view of my removable non-punctured partition member for covering the motor compartment and for carrying the actuating elements;

Fig. 3 is a perspective view of the member for operating the actuating elements;

Fig. 4 is an enlarged perspective view of the pivotal member for operating the actuating elements;

Fig. 5 is an enlarged perspective view of the cone-shaped washer positioned upon the pivotal member;

Fig. 6 is an enlarged view of the hinge section of the shearing head;

Fig. 7 is a modified cross-sectional view of my shearing head structure;

Fig. 8 is a perspective front view of my assembled shearing head structure;

Fig. 9 is a modified perspective front view of one of my shearing units;

Fig. 10 is a perspective view of one of my shaving units;

Fig. 11 is an enlarged view of the tensioning structure of the shearing unit;

Fig. 12 is a view of the adjustable tensioning structure of the shearing unit;

Fig. 13 is a perspective front view of modified shearing units in assembled form;

Fig. 14 is a perspective view of the shearing section of my shaving implement in normal shaving position.

Referring more particularly to the drawings, in which similar reference characters identify similar parts in the several views, in my novel shaving implement.

Arrow A indicates my shaving-implement comprising a motor-containing handle 5 housing a motor 5a; this handle 5 may be made of any suitable material, metal or plastic, and may be molded or machined to any suitable style or shape, and is adapted to be connected to a source of power by a cable cord 6.

A partition member 7, comprising a non-punctured floor F and side wall portions 29 and flanged portions 8 is adapted to be positioned upon the handle 5 to cover the motor compartment 38. The side wall portions 29 are provided with openings housing washers 9 and 9'. These washers 9 and 9' are provided with through openings 11 and 11', and the flanged portions 8 are provided with openings 32, for a purpose which will be hereinafter explained.

The swing member arrow B comprises a bottom portion 14 having an elongated slot 15 and two upright flange sections 16 and 16'. The flange 16 is provided with a non-circular opening 17 and the flange 16' is provided with a non-circular opening 17'.

The pivotal member indicated by arrow C comprises a body portion 18 (of circular shape cross-sectionally). This body portion 18 is, at one of its end portions, provided with a square or non-circular shaped shoulder section 19 and with a head portion 21; and is provided, at its other end portion, with a slot 22 forming two flange sections 24. Each of these flange sections is provided with an opening 25 for a purpose which will be hereinafter explained.

The swing member arrow B, the pivotal member indicated by arrow C and the actuating set indicated by arrow S are secured to the partition 7 in the following manner; the member arrow B is placed underneath the non-punctured floor F of the member 7 with its flange portions 16 and 16' opposite the washers 9 and 9'. One pivotal member arrow C is then placed into the flange opening 17 and through the opening 11 of the washer 9. Another pivotal member arrow C is then placed through the flange opening 17' and through the opening 11' of the washer 9'.

A cone-shaped washer 27 is then placed upon each of the pivotal members arrow C. The actuating set S is then placed between the wall portions 29 in a manner wherein the bottom end portions S' are placed within the slotted sections 22 of the pivotal member arrow C. A screw-threaded element or pivot 28 is then placed through the openings 25 and through openings (not shown) in the bottom end portions S' of the actuating set S, in a manner whereby the square or non-circular openings 17 and 17' are each positioned upon one of the shoulder portions 19 and held thereon against displacement by the head portions 21. The washers 27 will be pressed or forced by the end portions S' against the inner walls 29 in a manner whereby the enlarged end portions 31 of the washers 27 will cover the joints between the pivotal members arrow C and the washers within the walls 29, for a purpose which will be hereinafter explained.

In the course of assembling my shaving implement,

this assembled structure is placed upon the upper portion 5' of the handle 5 in a manner whereby the flange portions 8 is placed upon flange portions 33 of the handle portion 5' (see broken portion 35 Fig. 1), screw-threaded elements 36 are then placed within the openings 32 of the flange portions 8 and within aligned openings (not shown) of the flange portions 33, thus securing the box or partition 7 to the handle 5, covering the motor compartment and bringing the actuating element into desired position. The non-punctured partition floor F forms a wall portion of the motor compartment underlying the actuating elements and covering completely the motor compartment, so that the actuating elements are actually located above the non-punctured partition thus such non-perforated partition also serves as a receptacle to receive hair sheared by the shearing section. It will be seen that the flange portions 8 fit snugly within the grooved sections 47 of the handle portion 5' thereby completely closing such motor compartment 38.

The shearing section arrow D, comprises a base portion 41 and two individual shaving units 42 and 42' (spaced away from each other), and an inner shaving unit 43 positioned between the two spaced-apart units 42 and 42', in a manner having its upper shearing face 44 located at a point below the upper shearing faces 45 and 45' of the shaving units 42 and 42'. These units may be secured to the base portion 41 by any suitable means, but preferably by screw-threaded elements 48, so that either one of these units can be easily removed, replaced or rearranged.

The base portion 41 is provided with an end section 49. This end section 49 is provided with a longitudinal opening 51 having an elongated slot 52 (see Fig. 6).

The upper handle portion 5' is provided with extensions 53. Each of these extensions 53 is provided with a screw-threaded opening for receiving a screw-threaded element 54. This element 54 is provided with a longitudinal extension 55 and with a slotted head-portion 56.

In the course of assembling my shaving implement; the coil spring 57 is placed within the opening 51 having its end portion 58 slidably placed into position within the slot 52 as indicated by numeral 52'. The assembled shearing section arrow D is then placed on top of the upper portion 5' of the handle 5, in an open position. The screw-element 54 is then placed through the opening of the extension 53 having its smooth extension 55 positioned directly into the opening 51 (through the spring 57) see dotted lines 57', and secured rotatably within the screw-threaded opening of the extension 53 and held therein in desired position by frictional engagement of the head portion 56 against the wall portion 59 of the extension 53; thus the smooth extension 55 acts as a means for holding the spring 57 in desired position and also as a hingeable support for the shaving section indicated by arrow D. It will be seen that the end portion 61, of the spring 57, rests upon the flange 8 in a manner whereby the tension of the spring 57 holds the shaving section arrow D in an open non-shaving position.

The shaving section indicated by arrow D may be closed or brought back into shaving position by moving the extension 62 of the base section 41 towards the extensions 62' of the handle portion 5'. During the hingeable movement of such shearing section arrow D the actuating elements 63 will enter and pass the through openings 64 elements 63 will enter and pass through openings 64 of the base section 41 and then through the slots or openings 65 of the stationary shearing members and then be lodged within the openings 66 of the inner movable shearing members 67. The extension 62 of the base section 41 will then be brought into alignment with the extensions 62' of the handle portion 5', so that the hook 68 of the spring element 69 will engage the inner wall portion 71 of the opening 72 and hold the shaving section arrow D in a closed normal position for shaving purposes (see arrow E Fig. 14).

It will be noted, that the through openings 64 and 65 are larger in size than that of the openings 66, so that when the cable-cord 6 is pulled out of the handle casing 5 and the plug 73 is connected to a source of power, and the starter 74 is moved towards the proper direction, the motor 5a will then be put into motion and will rotate the element 75', the eccentric pin 76 will then move within the slot 15 moving or swinging the member arrow B into alternating opposite directions, thereby pivoting the pivotal members arrow C upon their portions 18', within the openings 11 and 11' of the washers 9 and 9', thus moving the flange portions 24 into alternating opposite directions, causing the actuating elements 63 to move (freely) within the large openings 64 and 65 and move or oscillate the inner movable shearing members 67 of the shearing units for shaving purposes. The hair, sheared while shaving, will fall upon the non-punctured floor F of the partition 7, so that such floor F while covering the motor compartment 38 also serves as a receptacle blocking and positively preventing the entrance of such sheared hair into the said motor compartment. The cone-shaped washers 27 will, due to the alternate movements of the actuating set S while shaving, shake the hair away from the joints between the portions 18' and the washer openings 9 and 9'.

Pressing upon the element or knob 81, which extends outwardly through an opening 82, will move the hook 68 of the spring element 69 away from the inner wall portion 71 of the opening 72, thereby permitting the shearing section arrow D to spring or move into open non-shaving position by the tension power of the coil spring 57 (as shown in Fig. 1); thus sheared hair may be removed from the partition 7, or from the shearing units, such open position may also be utilized for the removal or replacement of parts.

It is naturally understood that models of my shaving implement may vary in style, shape or size, and may be made with as many shearing units as may be desired. The disclosures herein are for illustrative purposes only and not for limitations.

The two outer shearing units 45 and 45' are spaced away from each other to an extent permitting the skin of the face being shaved to bulge therebetween. The center shearing unit 44 is positioned, between the said two spaced apart units, with its upper shearing face at a point below the upper shearing faces of the said two other units; so that while shaving, the central shearing face can shear the hair directly at the peak portion of the bulge, where the hair are separated from each other, and therefore individually outstanding, and best suited for shaving purposes; thus the central lower shearing face can cut the hair closer to the skin than the two higher shearing faces of the two outer units. It will therefore be seen that the central lower shearing face of my structure accomplishes an important function in the process of shaving and is therefore one of the main objects of my invention. It can thus be seen, that an object of this invention is to provide means whereby a portion of the skin, of the face being shaved, may be formed into a bulge portion while shaving, and to provide shearing means positioned directly against such bulge portion for shearing the hair at the peak portion of the bulge.

It is therefore understood that, if desired, units may be shaped or formed in a manner whereby when placed against the skin of the face for shaving purposes a portion of such skin will be formed into a bulge portion wherein the peak portion of such bulge will face a shearing face for shearing the hair off such peak portion. For example, in a manner as illustrated in Fig. 13, wherein the two units *a* and *b* are secured to the base section 41 by screw-threaded means 48, and having the meeting portions *c* and *d*, of their shearing faces *e* and *f*, arched or curved to an extent forming a central concaved shearing section arrow R for the skin of the face being shaved to bulge therein and having its hair sheared off by facing

shearing means located within such concaved shearing section.

Or, if desired, the shearing section arrow D may be constructed in a manner, for example, as illustrated in Fig. 8, wherein the two outer units L and L' are spaced away from each other and a third central unit is positioned therebetween, at a point below the upper outer faces of the two spaced apart units, thereby forming a spaced recessed section for the skin of the face being shaved to bulge therein. It will be seen that the two outer units are not provided with shearing means. They are only for the purpose of enabling a portion of the skin of the face being shaved to be formed into a bulge. It is only the floor portion of the recessed section which is provided with shearing means, as indicated by letter K, and it is this shearing means K which faces the peak portion of the bulge to shear the hair directly at the peak of such bulge.

As above pointed out, it is the peak portion of the bulge where the hair to be shaved are separated from each other and individually outstanding, and are therefore best suited for shearing purposes. It is these separated hair that can easily be cut close to the skin for the purpose of obtaining a close or clean shave. It is therefore evident that this form of structure, which can be utilized to great advantage, is a very important feature of my invention.

It is of course understood that the outer units L and L' may be made of any suitable material, and be shaped or formed in any desirable style, constructed either of hollow material or of solid material, or be portions of the handle structure. The disclosures herein are for illustrative purposes only and not for limitations.

The units are secured to the base portion 41 by screw elements 48. If desired the side portions of the base section 41 may be bent upwardly to form flanges *a'* thereby providing additional means to hold the units firmly in proper alignment and to prevent rocking of such units while shaving.

The handle 5 may, if so desired, be provided with only two hingeable or pivotal shearing units *m* and *m'* (constructed in a manner as illustrated in Fig. 7). These shearing sections *m* and *m'* are provided with chambers having open end portions and, when in normal shaving position, have their open end portions covered by the wall portions W, which extend above the seat W' located below the open end portions of the shearing sections, in the same manner as the wall portions W'' cover the open end portions of the shearing units 44, 45 and 45' when the shaving section indicated by arrow D is placed in closed normal shaving position (see Fig. 14), thereby preventing the escape of sheared hair through the end portions of the chambers while shaving. It is naturally understood that by pivoting the shearing sections *m* and *m'* sidewardly, as indicated by the dotted lines O, the shearing sections will then be moved out of normal shearing position, away from the wall portions W, thereby uncovering their open end portions and enabling the removal of sheared hair from the shearing chambers.

It is naturally understood that when the shaving section indicated by arrow D will be in a closed normal shaving position, as shown in Fig. 14, the open end portions of the shearing chambers will then be covered by the wall portions W'', which act as closure elements for such end portions, thereby preventing the escape of sheared hair from the shearing chambers while shaving (see Fig. 14); and when the shearing section arrow D will be in an open non-shaving position, as shown in Fig. 1, the shearing sections 44, 45 and 45' will then be moved out of normal shaving position, away from the wall portion W'', thereby uncovering their open end portions and enabling the removal of sheared hair from their shearing chambers.

With respect to my closure means, it is naturally immaterial how the closure elements are constructed, or the type of closure elements used; it is the functions of

the structure of the herein invention which is of importance, the variation of structure is immaterial. As hereinabove stated, the disclosures herein are for illustrative purposes only and not for limitation purposes.

The same is true with respect to the other portions or features of this invention. For example, if desired the shearing section may be so constructed whereby only the stationary shearing element may be hinged or pivoted out of its normal shaving position to a non-shaving position for various desirable purposes.

In the ordinary razor-head the tensioning device 84 (Fig. 8) is installed within the block 85, of the stationary shearing member, for engaging the under face of the block 86 of the inner movable shearing member, forcing such inner member upwardly for frictional engagement between the shearing faces of the movable and stationary shearing members for hair cutting purposes. Such a structure requires actuating elements of a certain length for oscillating the movable shearing member located within the stationary shearing member. From an engineering point of view it is a well known fact that, in a structure of this kind, the longer the distance between the pivotal point of the actuating elements and the point of engagement of the end porions of such actuating element, when engaging the inner shearing member for oscillating same, the greater is the strain upon the motor to perform such oscillating operation. Occasional motor stoppage while shaving is therefore a frequent occurrence. Such occurrences are naturally annoying to the user while shaving, in which case the user must resort to a service station to "repair" his shaver, a matter which is quite costly.

My herein invention completely eliminates the above-mentioned objectionable features. I install the tensioning device 84 into the floor portion or block 91 (Figs. 9 and 10) of the inner movable shearing member 92 (not into the stationary shearing member) thereby eliminating the necessity of providing my stationary shearing member with a heavily built floor portion or block 85. I provide the floor portion 91, of the movable shearing member 92, with through openings 93 having a lower restricted opening 93'. A ball 94 and a spring 95 are then positioned loosely within the opening 93, a screw-threaded nut 96 is then positioned within the screw-threaded upper end portion of the opening 93, so that by rotating the nut 96, into desired direction, such nut will press against the spring 95 which in turn will press against the ball 94 of which a portion will then protrude from the restricted opening 93'. I then place this inner movable shearing member into my stationary shearing member which comprises a shell 92' having side flanges 92'' and a comparatively thin floor element 97. This floor element 97 is provided with flange portions 97' formed to overlie and tightly engage the side flanges 92'', thereby holding firmly the shell 92' in desired position. When my stationary shearing member is placed into position within my stationary shearing member, the ball 94 will then ride within the recessed or channeled portion 94', of the floor 97, and will cause the spring 95 to press against the nut 96, which in turn will force the outer shearing face of the inner movable member to engage, frictionally, the under shearing face of the stationary shearing member for hair cutting purposes. Thus completing the structure of my operable shearing unit wherein the stationary shearing member is provided with a floor of minimum thickness.

It will thus be seen, that by reducing to a minimum the floor thickness of the stationary shearing member, I greatly reduce the distance between the pivotal point of the actuating elements and the point of engagement of the upper end portions of such actuating elements when engaging the inner movable shearing member for oscillating same; thereby reducing the strain upon the motor and improving its operable function. The fact that the strain of operation upon the motor is being reduced to a minimum will naturally enable such motor to operate more efficiently, thereby providing the user with greater and more efficient performance during the process of shaving. This of course will add greatly to the popularity of the shaving instrument.

With respect to the abovementioned tensioning device, it may be pointed out that by moving or turning the nut 96 into opposite direction will reduce the spring tension upon the ball 94'. Thus enabling the adjustment of the spring tension to desired degree.

If desired the nut 96 may be eliminated, and the opening 93 may be provided with a floor portion 93'' to support the spring 95, and when the ball is inserted, a die (not shown) may strike against the under face of the block 91, forming a circular cut or groove 91' in such under face, and bend or shape the edge portion of the opening 93 into a restricted opening 91'' for holding the ball 94 in desired position.

It will be seen that the central opening 66, of the movable shearing member, is provided with an enlarged end portion 66'. This enlarged end portion forms a leader for the top portion of the actuating element S to easily find its way into the main opening 66 for operable purposes.

In the present type electric shavers the cable-cord 6 of the shaver is an element not permanently attached to the shaving implement. Such cable-cord is provided with a plug for connection with the implement. Such plug is provided with metallic portions for frictional engagement with metallic elements of the implement, for the flow of electric current to operate the motor within the handle 5. These metallic portions and metallic element are of a fine gauge and in time become worn or bent out of shape (especially so when handled roughly by a layman), in which case the frictional engagement between such metallic portions and metallic elements is occasionally disrupted, thereby disrupting the flow of electric current to the motor. Each time when the metallic portions touch the metallic elements the electric current flows to the motor (which in turn operates the shearing section), and each time the connection between the metallic portions and the metallic elements becomes disrupted, the flow of electric current ceases to run into the motor, and such motor in turn ceases to operate the shearing section. Such occasional interruptions of the operation of the shearing section while shaving is naturally very annoying and very objectionable to the user, who must resort to service stations and undergo costly repair expense.

My present invention solves the above problem and completely eliminates the above-mentioned objectionable feature. The handle of my structure is provided with the usual compartment *a*1 for housing the motor 5*a* and in addition a cable reel structure. The cable-cord 6 is permanently attached to suitable motor connections located within the handle and can be pulled out from the compartment, through the opening 6', to the desired length for shaving purposes. The cable-cord is spring biased to be retracted into the compartment by a spring reel, not shown, to wind itself up within the compartment in the manner indicated by 6*a*. A control button 6'' is provided for controlling the retraction of the cable-cord. The elimination of removable connections between the cable-cord 6 and the handle 5 of the shaving implement, will naturally minimize interruptions of the flow of electric current into the motor, thereby preventing occasional stoppage of the shearing section while shaving. In addition thereto, the comfort of having the cable cord 6 ever-ready, located within the handle, for immediate use, will add greatly to the popularity of such shaving implement, to an extent whereby it may become an indispensable item with the user.

It is naturally understood that various changes in form of structure, or modifications (even though not men-

tioned or disclosed herein), may be resorted to without departing from the spirit of this invention.

From the above it is evident that my present invention teaches an entirely new form of structure in the art of making electrically operated shaving implements. The novel form, or manner, in which my shaving implement is constructed, the new combination of parts and sections, combined in a new and heretofore unknown manner, provides a shaving instrument constructed on an entirely new principle. The manner in which provision is made for the protection of the motor, and also for the protection of the cable-cord, establishes an entirely new and modern principle in the construction of electric shavers. It creates an electrically operated shearing device of a new and unique design, provided with practical and outstanding features, performing new functions unknown heretofore, capable of performing its shaving operations to the fullest extent of its structural shearing ability, rendering a complete, clean and precise shave in a comfortable and pleasing manner to the user. It will therefore be seen that my invention, herein illustrated and described, provides a practical and useful shaving-implement, of a novel structure and patentable nature, solving the most vexing problems in the electric razor industry. It can be utilized to great advantage by the user.

It will therefore be seen, that I have invented and perfected a shaving-implement provided with a removably mounted shearing section of a new and unique design and structure, a shaving-implement which is practical, useful, and although I have shown certain preferred forms or illustrations in order to explain and describe the novelty of my invention, yet, by showing such structure, I do not, by any means, limit myself to these structures, nor to the terms used in describing same, as they are for illustrative purposes only. Various suggestions and changes of structure may be resorted to, and I desire it to be understood that I have same in mind when showing and describing this invention, and seek protection by Letters Patent. And although I have mentioned in describing this invention of what material certain parts may be made, how they may be formed, shaped or styled and how they may be assembled, yet I desire it to be understood that this structure, or parts thereof, may be made of any suitable material, and shaped, formed, styled or arranged in any desirable manner, and assembled in any convenient way so that the parts may be easily taken apart, removed, cleaned, replaced and reassembled, and that various changes in detail may be resorted to without departing from the spirit of this invention.

I claim:

1. A shaving implement comprising a handle and a shearing section and a partition member, said shearing section comprising removable shearing members positioned within stationary shearing members, said partition member comprising a floor having facing side walls extending therefrom, two of said facing side walls each provided with an opening, an actuating set having spaced openings within its base portion, pivotal members, each of said pivotal members having two end portions, one of said two end portions provided with a non-circular shoulder having an enlarged outer wall portion, the other of said two end portions provided with a slot forming two spaced apart flange sections, each of said flange sections provided with an opening, a swing member having an elongated slot and two upright flange portions each provided with a non-circular opening, said swing member positioned underneath said partition member in a manner whereby the openings of said upright flanges are placed in alignment with openings in the said facing side walls thereby forming two sets of aligned openings, one of said pivotal members positioned within one of said two sets of aligned openings and another of said pivotal members positioned within the other of said two sets of aligned openings, the non-circular opening of each of said upright flange portions resting upon the non-circular shoulder of its respective pivotal member and held against displacement by its immediate enlarged outer walls, said actuating set positioned within said slots of the said pivotal members, an individual element positioned through the openings of said flange sections of each of the said pivotal members and said actuating set forming a firmly combined structure of said pivotal members and said actuating set and the said swing member and securing such structure into desired position to the partition member, a motor within said handle, said motor provided with an extension, said extension adapted to be positioned within said elongated slot for operating said swing member to move the actuating elements into alternate motion for oscillating said movable shearing members for shaving purposes.

2. A shaving implement comprising a handle and a shearing section, said shearing section comprising a stationary shearing member and a cooperating movable shearing member, hingeable means securing said shearing section to said handle for hinging said shearing section out of normal shaving position into a non-shaving position, means for holding said movable shearing member in a non-movable position while the said shearing section is being hinged out of said normal shaving position, a spring element associated with said hingeable means for holding said shearing section in said non-shaving position, said shearing section adapted to be hinged back into normal shaving position, and means for holding said shearing section within said normal shaving position.

3. A shaving implement comprising a handle and a shearing section, said shearing section comprising a hollow stationary shearing member and a movable shearing member operable within the said hollow stationary shearing member, said shearing section secured to a portion of said handle by means of a pivotal member for swinging said shearing section out of normal shaving position into a non-shaving position, means for holding said movable shearing member in a non-movable position within said hollow stationary shearing member while the said shearing section is being swung out of said normal shaving position, a spring element associated with said pivotal member for holding said shearing section in said non-shaving position, said shearing section adapted to be swung back into normal shaving position, and a snap-hook for holding said shearing section in said normal shaving position.

4. A shaving implement comprising a handle having a motor compartment housing a motor therein and having a non-punctured plate and actuating elements and a removable shearing section, said non-punctured plate having upwardly projecting wall portions, said plate covering the said motor compartment, said actuating elements carried by said upwardly projecting wall portions, said shearing section mounted upon the said handle in position for shaving purposes having operable connection with the said actuating elements, said shearing section provided with at least one chamber having open end portions, means covering the said open end portions when said shearing section is in normal shaving position, said non-punctured plate underlying the said shearing section forming a non-perforated receptacle to have hair sheared by said shearing section stored thereon, means extending from said motor engaging a portion of said actuating elements for moving such elements to operate the said shearing section when the said motor is in motion, and means for holding said shearing section upon the said handle in normal shaving position.

5. A shaving implement comprising a handle having two facing upright wall portions and a shearing device positioned between said two wall portions, said device comprising a stationary shearing member and a movable

shearing member each provided with a centrally located opening through their respective floor portions, said movable shearing member positioned within said stationary shearing member, said members provided with chambers having open end portions, said open end portions covered by said upright wall portions, a motor within said handle, a partition member between said motor and said shearing device, said partition member having a completely closed floor, an actuating element disposed above said closed floor, the upper end portion of said actuating element extending through the opening of said stationary shearing member and engaging the opening of said movable shearing member for oscillating said movable member while said shearing device is in normal shaving position, means for operating said actuating element, said shearing device adapted to be moved out of said normal shaving position moving said open end portions away from said wall portions and uncovering said actuating element, said shearing device adapted to be replaced into normal shaving position between the said upright wall portions.

6. A shaving implement comprising a handle having two facing upright wall portions and a shearing device positioned between said two wall portions, said device comprising a stationary shearing member and a movable shearing member each provided with a centrally located opening through their respective floor portions, said movable shearing member situated within the said stationary shearing member, said members provided with chambers having open end portions, a motor within said handle, a partition member between said motor and said shearing device, said partition member having a completely closed floor, an actuating element disposed above said closed floor, the upper end portion of said actuating element extending through the opening of said stationary shearing member and engaging the inner wall portion of the opening of said movable shearing member for oscillating said movable member while said shearing device is in normal shaving position, means for operating said actuating element, said upright wall portions covering the said open end portions of said shearing device, said shearing device secured to its position by hingeable means, said device adapted to be hinged out of its normal shaving position into a non-shaving position away from said two wall portions uncovering the said actuating element and the said open end portions, spring means associated with said hingeable means, said spring means holding said shearing device in said non-shaving position, said shearing device adapted to be reverted back into normal shaving position between the said two upright wall portions, and a catch-hook for holding said shearing device in said normal shaving position.

7. A shaving implement comprising a handle and a shearing section, said handle having two facing upright wall portions and a recessed section between said wall portions, said recessed section forming a seat for said shearing section, said shearing section having a tubular opening, said opening having a slot, a tensioning spring having extending wire sections, said spring positioned within said tubular opening having one of said wire sections positioned within said slot and the other of said wire sections positioned upon a portion of said recessed section, means from one of said wall portions extending through said spring into said tubular opening for securing said shearing section to said seat and providing pivotal means for said shearing section, said tensioning spring causing said shearing section to be retained in an open non-shaving position, said shearing section adapted to be moved into said seat and be held therein in normal shaving position for shaving purposes.

8. A shaving implement comprising a handle and a shearing section, said handle having two facing upright wall portions and a recessed section between said wall portions, said recessed section forming a seat for said shearing section, said shearing section having a rear portion, each end portion of said rear portion having a tubular opening, each of said openings having a slot, a tensioning spring having two extending wire sections positioned within each of said tubular openings, each of said tensioning springs having one of said wire sections positioned within the slot of its tubular opening and the other of said wire sections positioned against a portion of said recessed section, each of said upright wall portions having an opening, each of said openings having an element positioned therethrough and located within one of said springs within said tubular opening holding said shearing section secured to said seat and providing pivotal means for said shearing section upon said seat, said end sections of said tensioning spring holding said shearing section in an open non-shaving position, said shearing section adapted to be hinged into said seat and be held therein in normal shaving position for shaving purposes.

9. A shaving implement comprising a handle and a shearing section, said handle having two facing upright wall portions and a recessed section between said wall portions, said recessed section forming a seat for said shearing section, said shearing section comprising a base portion having shearing units secured thereto for shaving purposes, said base portion provided with a tubular opening, said opening having a slot, at least one of said wall portions having an opening, a tensioning spring having two extending wire sections, said spring positioned within said tubular opening having one of its wire sections positioned within said slot and the other of its wire sections positioned against a portion of said recessed section, an element carried by said opening of said wall portion, said element having its end portion positioned within said spring connecting said base portion to said seat and providing hingeable means for said base portion, said tensioning spring causing said base portion to be retained in an open non-shaving position, said base portion adapted to be moved into said seat, and locking means for holding said shearing units in normal shaving position for shaving purposes.

10. A shaving implement comprising a handle and a shearing section, said handle having two facing upright wall portions and a recessed section between said wall portions, said recessed section forming a seat for said shearing section, said shearing section comprising a base portion for having shearing units secured thereto for shaving purposes, said base portion having a rear end section, said end section having a longitudinal opening, said opening having a slot disposed longitudinally of said opening, a tensioning spring, said spring having projecting wire sections, said spring positioned within said longitudinal opening having one of said wire sections slidably positioned within said slot and the other of said wire sections positioned against a portion of said recessed section, means from one of said wall portions extending through said spring into said longitudinal opening for connecting said base portion to said seat and providing hingeable means for said base portion, said tensioning spring causing said wire section to retain said base portion in an open non-shaving position, said base portion adapted to be hinged into said seat, and fastening means for holding said shearing units in normal shaving position for shaving purposes.

11. A shaving implement comprising a handle and a shearing section, said handle having two facing upright wall portions and a recessed section between said wall portions, said recessed section forming a seat for said shearing section, said shearing section comprising a base portion for having shearing units secured thereto for shaving purposes, said base portion having a rear end section, the end portions of said rear end section each having a longitudinal opening, each of said openings having a slot, said wall portions each having a through opening in alignment with said longitudinal openings, tensioning springs, each end portion of each of said springs hav-

ing a projecting wire section, one of said springs positioned within each of said longitudinal openings, one projecting wire section of each of said springs slidably positioned within the slot of its longitudinal opening and the other projecting wire section of said springs positioned against portions of said recessed section, elements positioned within said openings of said wall portions, the end portions of said elements positioned through said springs into said longitudinal openings for securing said base portion to said seat and providing hingeable means for said base portion, said tensioning springs causing said projecting wire sections to hold said base portion in an open non-shaving position, said base portion adapted to be hinged into said seat, and a snap-hook for holding said shearing units in normal shaving position for shaving purposes.

12. A shaving implement comprising a handle and a shearing section, said handle having two facing upright wall portions and a recessed section between said wall portions, said recessed section forming a seat for said shearing section, said shearing section comprising a base portion for having shearing units secured thereto for shaving purposes, said base portion having a rear end section, the end portions of said rear end section each having a longitudinal opening, each of said openings having a slot disposed longitudinally of its opening, said wall portions each having a screw-threaded opening, tensioning springs, each of said springs having projecting wire sections, one of said wire sections of each of said springs forming a hook portion, one of said springs positioned loosely within each of said longitudinal openings having its hook portion positioned slidably within said slot and its wire section positioned against a portion of said recessed section, a screw-threaded element positioned rotatably within said screw-threaded opening having a portion thereof positioned through said spring within said longitudinal opening for connecting said base portion to said seat and providing pivotal means for said base portion, said tensioning springs causing said hook portions to press against portions of said rear end section above said slot for holding said base portion in an open non-shaving position, said base portion adapted to be hinged into said seat, and snap fastening means for holding said shearing units in normal shaving position for shaving purposes.

13. A shaving implement comprising a handle and a shearing section, said handle having two facing upright wall portions and a recessed section between said wall portions forming a seat for said shearing section, said wall portions and said shearing section having aligned openings, the opening of said shearing section having a slot, a tensioning spring having projecting wires, said spring positioned loosely within the opening of said shearing section having one of its projecting wires positioned within said slot, an element positioned tightly within the opening of one of said wall portions having its end section positioned loosely within said spring for connecting said shearing section to said seat, said spring tensioned by the position of its projecting wires, said tension causing said wires to move said shearing section into open non-shaving position, said shearing section adapted to be moved back into said seat, and a snap-lock for holding said shearing section in normal shaving position upon the said seat.

14. A shaving implement comprising a handle and a removable shearing section and a partition and actuating elements, said partition comprising an entirely non-punctured floor and upwardly extending flanged side wall portions, said flanged wall portions having openings for carrying the said actuating elements and for being secured to the said handle, said handle having a motor compartment, said non-punctured floor covering said motor compartment and underlying the said shearing section, said actuating elements situated above the said non-punctured floor having its upper end portions adapted to engage the said shearing section when such shearing section is placed upon the said handle in position for shaving purposes, means extending from the said motor compartment for engaging and moving the said actuating elements to operate the said shearing section for shaving purposes, said shearing section adapted to be removed from said handle and to become disengaged from the said actuating elements.

15. A shaving implement comprising a handle and a removable shearing section and a removable partition and actuating elements, said partition comprising a completely non-punctured floor and upwardly projecting side walls, said handle having a motor compartment for housing a motor and having a seat for said shearing section, said non-punctured floor overlying and covering the said motor compartment, said wall portions having openings for carrying the said actuating elements, said actuating elements being suspended above the said non-punctured floor having its upper end portions engaging the said removable shearing section when such shearing section is placed upon the said seat in position for shaving purposes, means extending from the said motor compartment engageable with the said actuating elements for operating the said shearing section for shaving purposes, said removable shearing section adapted to be removed from the said seat for the removal of the said partition from the said handle for the adjustment and replacement of parts carried by the wall portions of said partition.

16. A shaving implement comprising a handle having a motor compartment and a removable partition and a removable actuating element and a removable assembled shearing section, said partition comprising an entirely non-punctured floor having upwardly extending side wall portions, certain of said side wall portions having a flange portion, said side wall portions having means for carrying the said actuating element in spaced relation with respect to the said floor, said non-punctured floor covering the said compartment and underlying the said shearing section having the upper portion of said actuating element engaging the said assembled shearing section to operate said shearing section for shaving purposes, said flange portion provided with means for having said partition secured in its position to the said handle, said shearing section being removable as an assembled unit.

17. A structure as set forth in claim 16, wherein the said means within the said flange portion comprises openings adapted to be in alignment with screw-threaded openings of the said handle for having screw-threaded member positioned therein to secure the said partition to the said handle.

18. A structure as set forth in claim 16, wherein the said means within the said side wall portions comprises openings for having the lower end portions of the said actuating element positioned therein.

19. A structure as set forth in claim 18, including a cone-shaped washer carried by each of the said lower end portions to cover the joint between such lower end portions and their adjoining openings.

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