April 9, 1968 F. J. SCHUESSLER 3,376,636

SHAVING HEAD FOR ELECTRIC DRY SHAVER

Filed Nov. 28, 1966 5 Sheets-Sheet 1

Fig. 1.

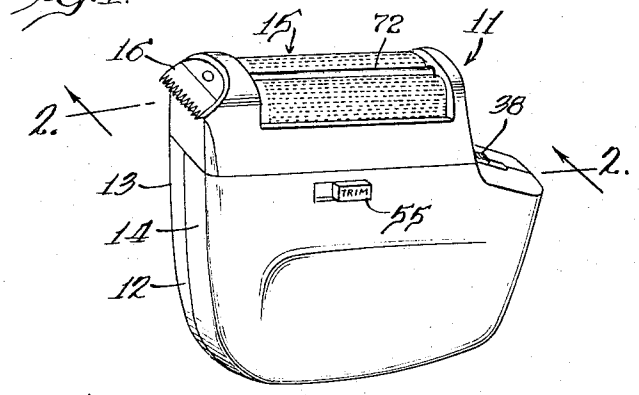


Fig. 3.

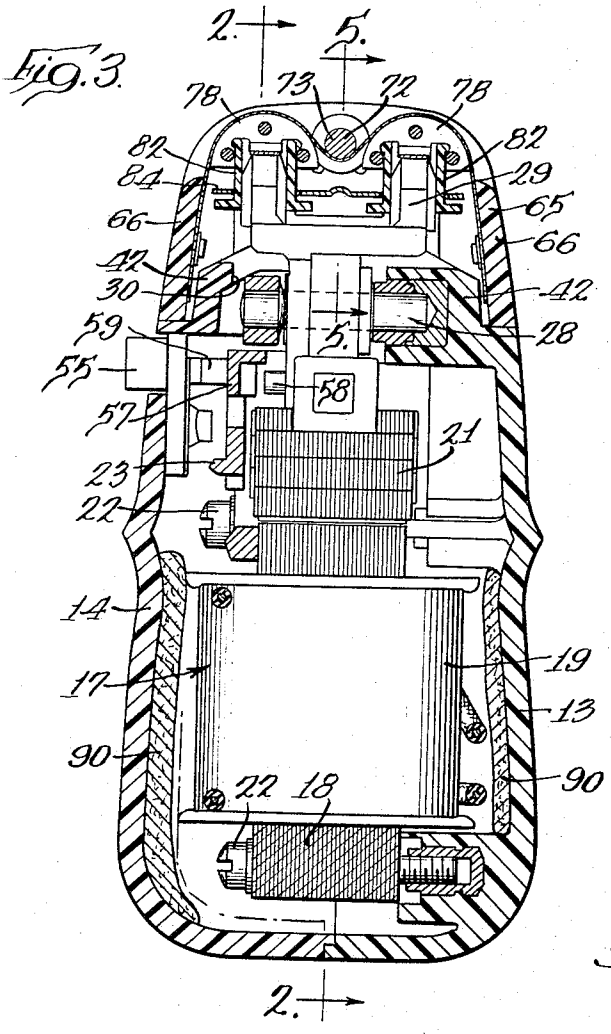
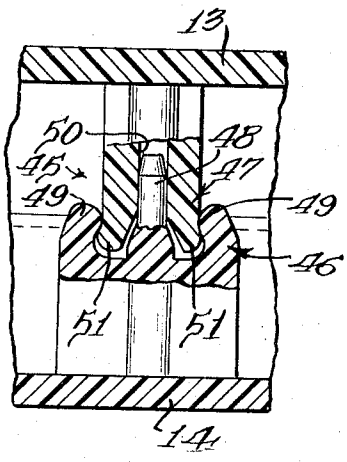


Fig. 4.



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SHAVING HEAD FOR ELECTRIC DRY SHAVER

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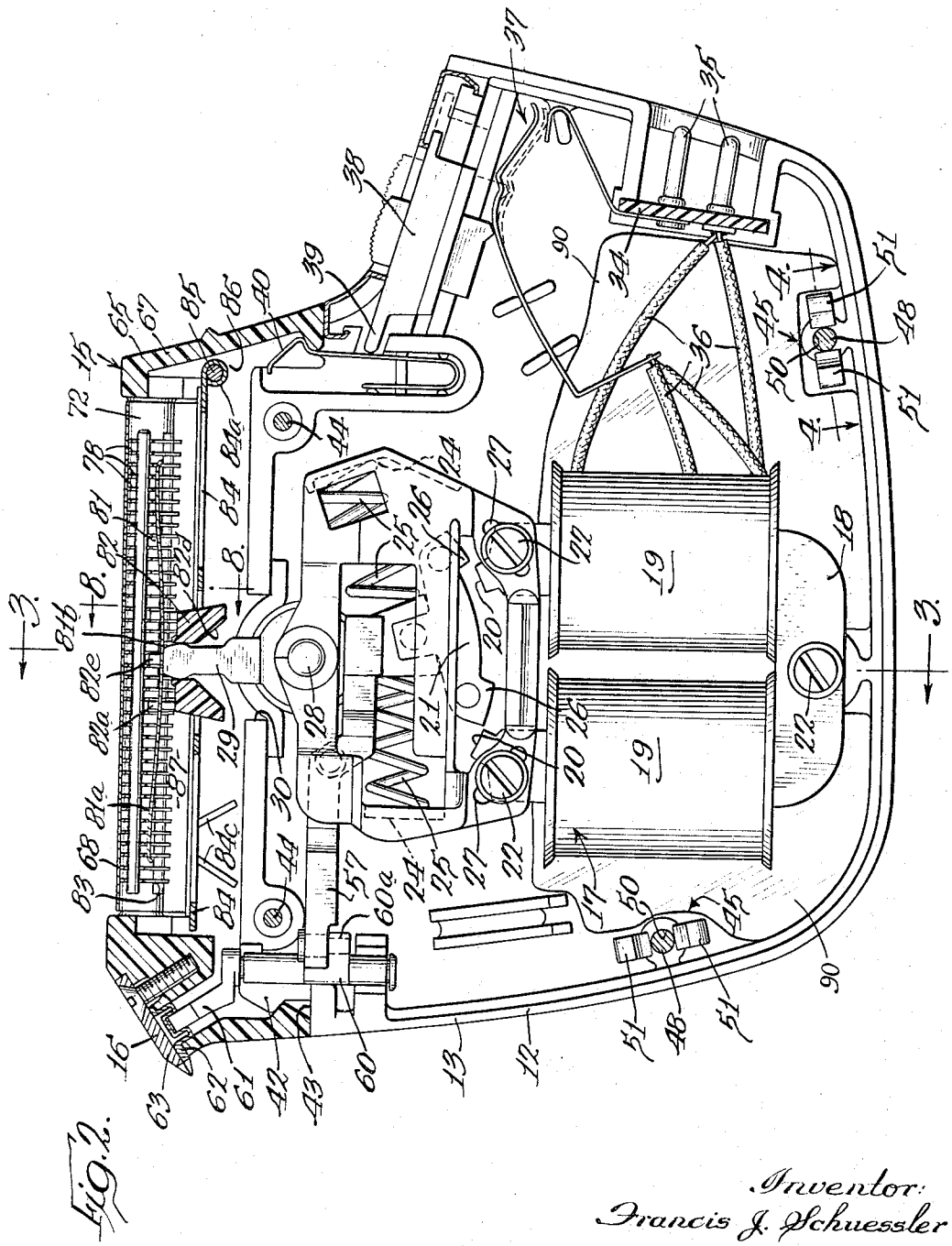

FIG. 2.

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SHAVING HEAD FOR ELECTRIC DRY SHAVER

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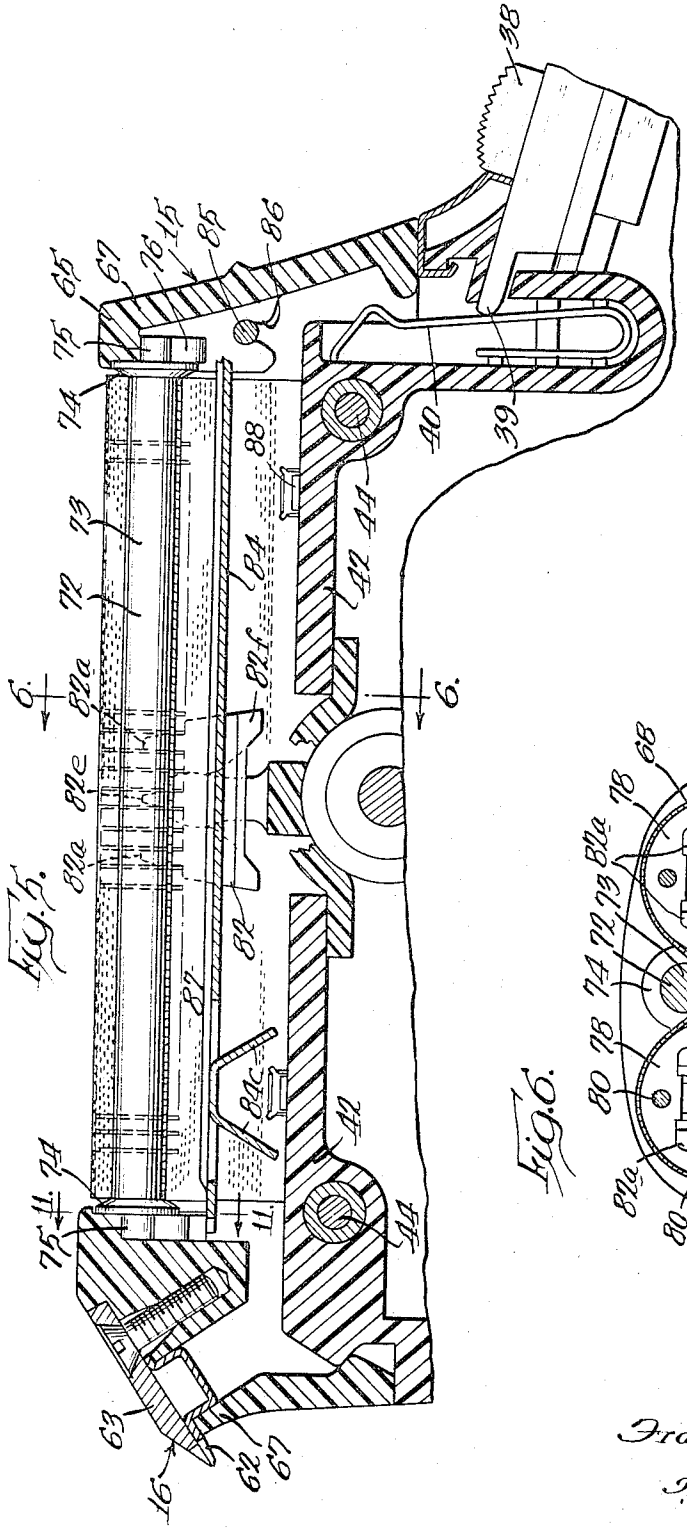

Fig. 5.

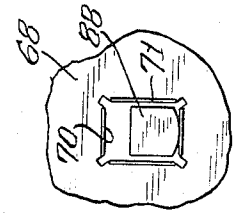

Fig. 9.

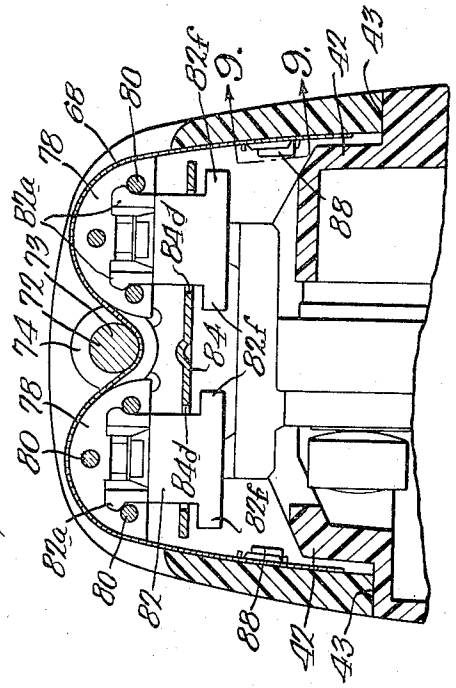

Fig. 6.

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SHAVING HEAD FOR ELECTRIC DRY SHAVER

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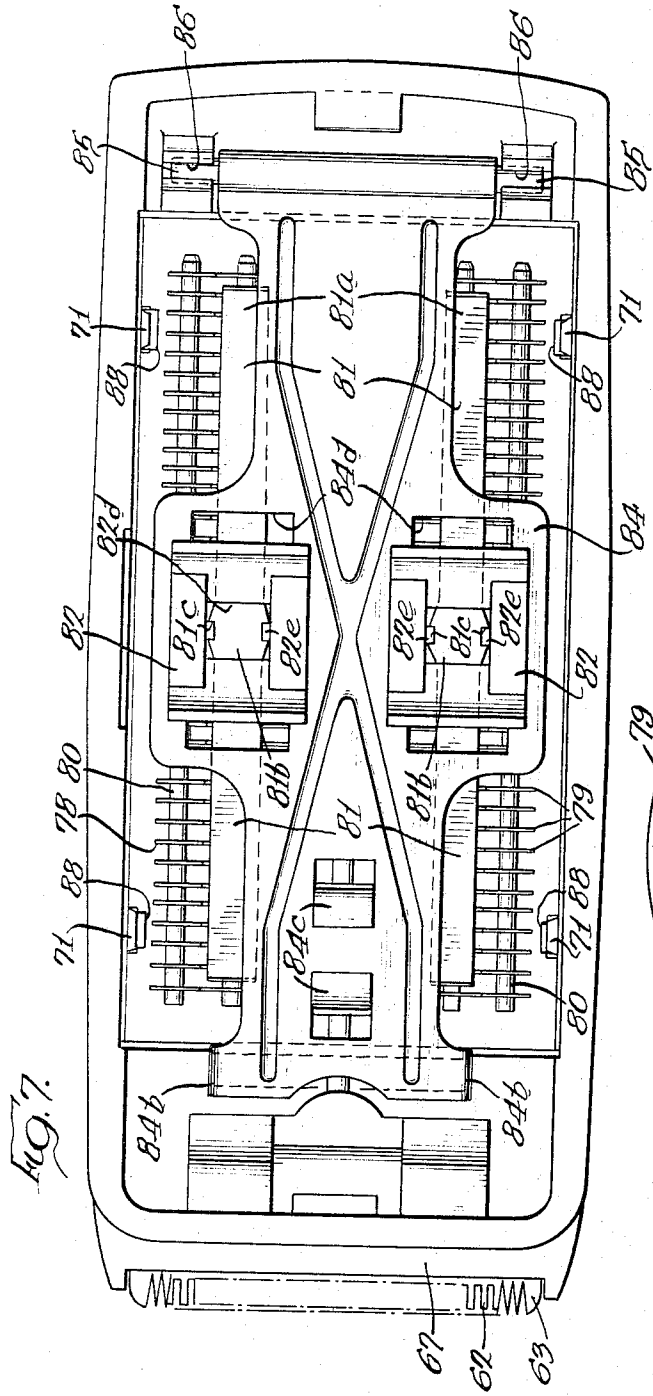

Fig. 7.

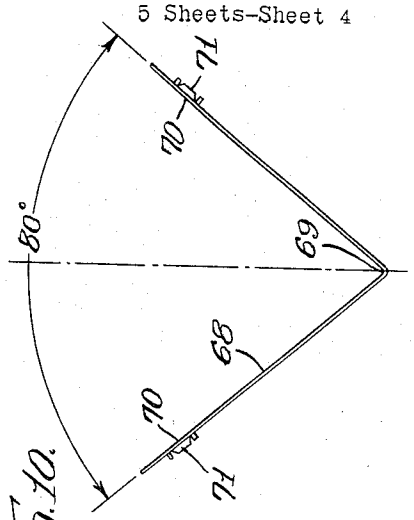

Fig. 10.

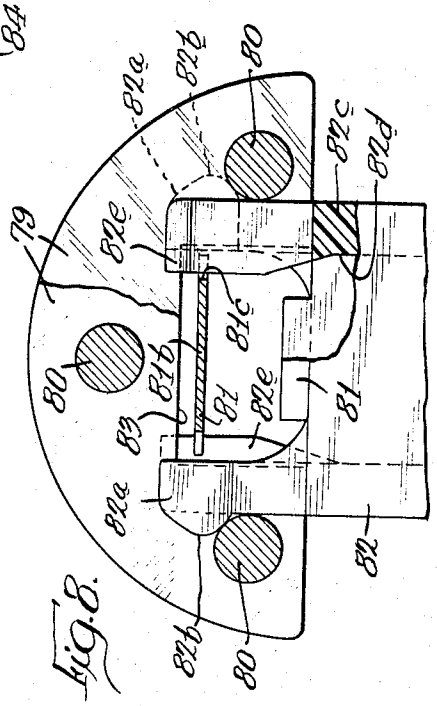

Fig. 8.

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Fig. 11.

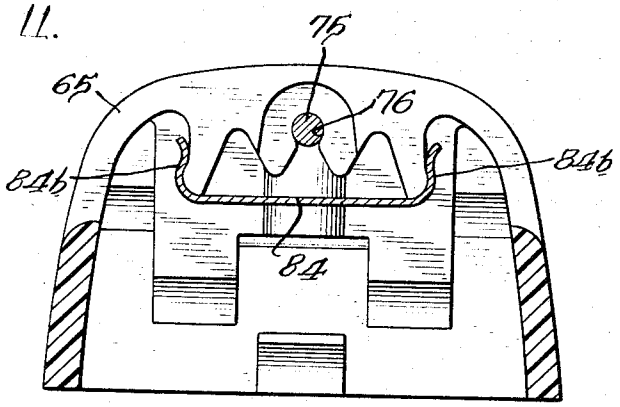
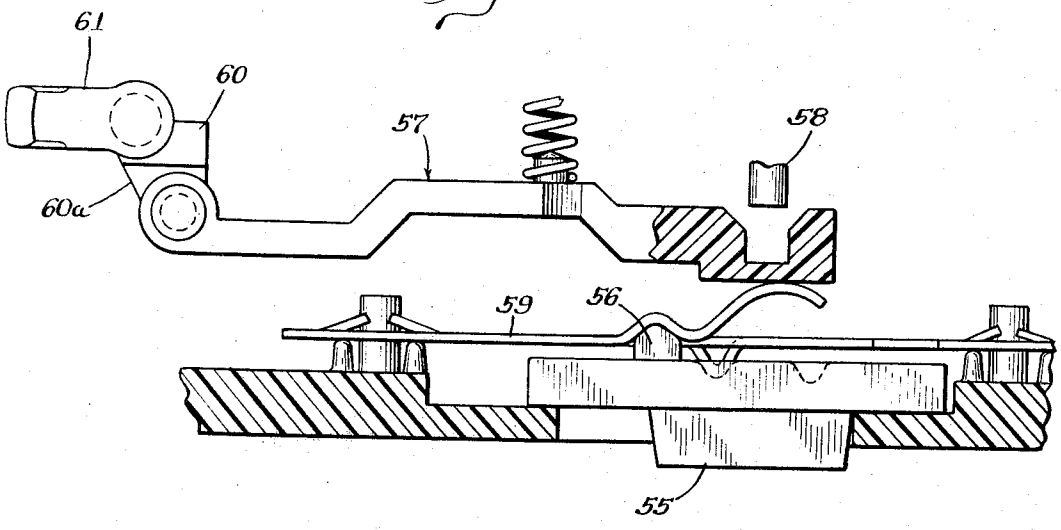


Fig. 12.



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United States Patent Office

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3,376,636

SHAVING HEAD FOR ELECTRIC DRY SHAVER

Francis J. Schuessler, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill., a corporation of Illinois

Filed Nov. 28, 1966, Ser. No. 597,376
21 Claims. (Cl. 30—34.1)

ABSTRACT OF THE DISCLOSURE

A shaving head for an electric dry shaver having a single flexible shearing comb supported by a head frame with a central bar and including a pair of reciprocating cutters supported in said shaving head by means of a hingeable cutter support.

Background of the invention

It is well known in the electric dry shaving art to provide a shaving head having a thin flexible perforated comb which is supported in shearing engagement with a reciprocating cutter made of a plurality of spaced parallel blades. The commercial shavers embodying this principle have utilized a single arch or semicylindrical comb which is supported on a cutter of generally the same shape. The cutter is conventionally connected to the drive arm of the shaver motor so that when the supporting means for the comb and the comb are removed from the shaver for cleaning purposes, the cutter remains assembled to the motor drive arm.

Summary of the invention

The invention relates to a dual shaving head having a pair of spaced cutters mounted for reciprocation in parallel relationship in shearing engagement with a single continuous flexible comb. The comb is supported in an open frame having a center supporting bar around which the comb is folded so that in its assembled position on the frame, it assumes a more or less inverted W-shaped configuration. The center support bar around which the comb is folded is snapped into assembled relationship to the plastic head frame and includes a pair of conical locating or positioning portions which secure the comb against displacement lengthwise of the support rod and space the comb from the end walls of the head frame. The flexible comb is provided with a centrally extending bend so that it is preformed to a V-shape. This bend cooperates with the supported rod to assure that the comb will assume its proper configuration and that it will not slide back and forth depending on the amount of pressure applied to either one of the adjacent head portions.

To support the two cutter members which are made up of spaced parallel cutting blades secured together by parallel supporting rods, there is provided a cutter support which is hinged to the plastic head frame so that in its assembled position, it forms with the comb an enclosure for the cutters and when pivoted to its opened position, permits access to the cutters for cleaning purposes. The cutters are loosely secured to the support plate by means of driving blocks which are designed to transmit the force from the motor drive arm into reciprocating movement of the cutters. A spring for biasing each cutter into engagement with the comb is received between the drive block and the cutter and is engaged by the end of the motor drive arm to accomplish this biasing function.

Accordingly, it is an object of the present invention to provide an improved drive shaver having a dual shaving head with a flexible comb member.

It is a further object of the present invention to provide an improved shaving head wherein a single continuous perforated foil comb is supported for engagement by a pair of spaced reciprocating cutters.

It is still a further object of the present invention to provide an improved head having means for mounting a pair of shaving cutters within a head enclosure so that the support may be opened to permit cleaning of the cutters.

It is another object of the present invention to provide a shaving head having improved cutter biasing and cutter retaining means whereby the cutters may be made readily available for cleaning while still connected in assembled relation to the shaving head.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

Brief description of the drawings

For a better understanding of the present invention, reference may be had to the accompanying drawings in which:

FIG. 1 is a perspective view of a shaver embodying my invention;

FIG. 2 is an enlarged perspective view taken substantially on line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken substantially on line 3—3 of FIG. 2;

FIG. 4 is an enlarged fragmentary sectional view taken on line 4—4 of FIG. 2;

FIG. 5 is an enlarged fragmentary sectional view taken on line 5—5 of FIG. 3;

FIG. 6 is a sectional view taken substantially on line 6—6 of FIG. 5;

FIG. 7 is a bottom plan view of the shaving head shown disassembled from the shaver of FIG. 1;

FIG. 8 is a sectional view of the cutter and drive block taken substantially along line 8—8 of FIG. 2;

FIG. 9 is a fragmentary view of the mounting connection between the comb and the head frame taken on line 9—9 of FIG. 6;

FIG. 10 is an end view of the comb shown in its formed condition prior to assembly to the shaving head;

FIG. 11 is a fragmentary sectional view on line 11—11 of FIG. 5; and,

FIG. 12 is a plan view of the drive linkage between the motor and long hair clipper.

Description of the preferred embodiment

There is shown in the drawings a shaver designated generally by reference numeral 11. The shaver 11 is made up of a housing or body portion 12 which includes a pair of cup-shaped housing members 13 and 14 which have walls abutting together on a common central plane as is evident in FIGS. 1 and 3. Received on the top of the housing 12 is a shaving head 15 which includes a long hair clipper 16 mounted at one end thereof.

Mounted within the housing 12 is a vibrator type electric motor 17. The motor 17 includes a U-shaped laminated field 18 having coils 19 received on each leg thereof. The U-shaped field 18 has a pair of spaced pole faces 20 adjacent to which is mounted a laminated armature 21. The assembly screws 22 secure the field 18 to the housing member 13 as is best shown in FIGS. 2 and 3. The upper two screws 22 also assemble the frame 23 in position on the top of the U-shaped field 18. The purpose of the frame 23 is to provide a pair of spring seats 24 against which the armature biasing springs 25 are seated. The laminated portion of the armature 21 is provided with salient poles 26 which are, in their rest positions, positioned closely adjacent to the field pole faces 20.

To precisely adjust the rest position of the salient poles 26, the frame 23 is formed with elongated holes 27 through which the assembly screws 22 extend. Thus, it is

possible to position the frame **23** to obtain the proper relationship between the pole faces **20** and the armature poles **26** before tightening the screws **22**. The upper end of the frame **23** is received on the armature supporting pin **28** which is received in a bushing molded integrally with the housing member **13**, as best shown in FIG. 3. Suitable bearing means are provided to journal the armature **21** for oscillatory movement on the pin **28**. Extending upwardly from the armature **21** is the bifurcated drive lever **29**. The upper wall of the housing **12** is provided with an opening **30** through which the drive lever **29** extends.

Mounted between the adjacent housing members **13** and **14** is a terminal block **34** which is provided with terminal pins **35** adapted to be connected to a suitable plug connector on a power cord. Suitable lead wires **36** are provided to interconnect the terminal pins **35** to the motor **17** through a switch designated generally as **37**. The details of the switch **37** are disclosed and claimed in a copending application entitled Electric Shaver Having Combined Switch and Head Removal Actuator filed concurrently with this application in the name of James H. Andrews. The switch **37** includes a switch actuator **38** which may be positioned in three alternative positions. In the position furthermost to the right as shown in dotted lines in FIG. 2, the circuit to the motor **17** is closed. In the position shown in solid lines in FIG. 2, the motor circuit is opened. There is a third position shown in FIG. 5 in which the actuator is moved completely to the left in which position, extension **39** on the actuator engages a head latch **40** deflecting it out of retaining engagement with the shaving head **15** thereby permitting its removal from the housing **12**.

In accordance with the present invention, there is provided a novel means for securing the housing members **13** and **14** in assembled relation. Since it is desirable from an asthetic standpoint to hide or obscure the assembly means, there are provided two types of assembly means for the housing **12**. At the top of the housing, there is an upwardly projecting wall **42** which extends into the shaving head **15** as is shown in FIGS. 3, 4, and 5. Surrounding the projecting wall **42** is a ledge **43** against which the lower edge of the shaving head **15** is seated. Positioned above the ledge **43** and extending through the upwardly projecting wall **42** are spaced assembly screws **44**. As is conventional practice in assembling such housings, one of the housing members **14** is provided with clearance holes so that the screws **44** may extend into threaded holes in the adjacent housing member **13**. It should be appreciated that the recessed heads of the screws **44** are covered and obscured by the lower edge of the shaving head **15**.

To secure together the lower portions of the adjacent housing members **13** and **14**, sets of integrally molded projections **45**, as shown in FIG. 4, are provided. Each of the sets of assembly projections **45** is made up of a three-pronged member **46** on the housing half **14** and a two-pronged projection **47** on the housing member **13**. The three-pronged projection **46** is formed with a central locating pin **48** and two outer retaining nibs **49**. The two-pronged projection **47** is formed with a central cylindrical recess **50** and a pair of outwardly extending abutments **51**. The purpose of the locating pin **48** is to guide the retaining projections into engagement and to locate them against lateral displacement. Accordingly, the locating pin **48** extends well beyond the retaining nibs **49** and is tapered at its outer end so that it engages and guides the parts together as it is received in the recess **50**. As the parts move together, the retaining nibs **49** move behind the abutments **51** thereby locking the housing members **13** and **14** against separating movement. As is evident from the view of the parts in FIG. 2, the abutments **51** are positioned at diametrically opposite positions with respect to the pin **48**. By having the retaining nibs **49** and the abutments **51** positioned so that they may flex in a common plane, it is possible to obtain good interference and retaining forces

while still having the parts readily disassemblable. It should be appreciated that the pin **48** and the recess **50** perform no retaining function as far as the separating forces are concerned. The pin **48** and the recess **50** simply guide and prevent the retaining nibs **49** and the abutments **51** from being displaced laterally out of retaining engagement. This provides a simple integrally molded assembly means which retains the lower portion of the housing members **13** and **14** assembled securely together in a manner in which the assembly means are completely hidden from view.

Positioned on the side of the housing **12** is an actuating button **55** which controls the operation of the long hair clipper **16**. The details of the control and the linkage between the motor **17** and the clipper **16** are disclosed and claimed in a copending application entitled Dry Shaver With Clutch for Long Hair Clipping Attachment, filed concurrently with this application in the name of Rundzaitis. The instant embodiment differs from the disclosure of the Rundazitis application in that the clipper **16** is mounted on the head **15** and is removable from the housing **12**, while in the Rundzaitis application the clipper is mounted on an integral portion of the housing. The button **55** is provided with a cam portion **56** which, when the button **55** is moved to the left as shown in FIGS. 1 and 12, deflects a camming spring **59** causing a clipper drive arm **57** to be displaced inwardly into driven engagement with a pin **58** extending sidewardly from the armature **21** as is best shown in FIGS. 3 and 12. The link **57** is reciprocated lengthwise by virtue of the engagement of the pin **58** in a recess in link **57** thereby creating an oscillatory movement in the bell crank **60** which is journalled between the housing members **13** and **14** and oscillates about a vertical axis. The bell crank **60** includes a sidewardly extending arm **60***a* which is pivotally connected to the end of link **57**. Extending upwardly and outwardly from the top of the bell crank **60** is a clipper drive member **61**. The drive member **61** extends into a drive opening in a movable cutter **62** which is mounted in spring biased shearing engagement with a comb blade **63**. When the head **15** is disassembled from the housing **12**, the drive member **61** is merely disengaged from its drive opening in the cutter **62** permitting the connection to be broken as the head is removed.

The shaving head **15** includes a plastic head frame **65** which has side walls **66** and end walls **67**. The side walls **66** and end walls **67** form a rectangular frame having a central opening within which is mounted a perforated comb **68**. The comb **68** is made of a thin flexible material, preferably stainless steel having a thickness of approximately .002 inch. Prior to assembling the comb **68** to the head frame **65**, it is formed with a centrally extending bend **69**, as shown in FIG. 10, so that it assumes a somewhat V-shape. The radius of curvature of the bend **69** is on the order of $\frac{1}{32}$ of an inch. Adjacent the edges of the comb **68** extending parallel to the bend **69** there are provided several mounting holes **70**. Adjacent these holes, the material of the comb **68** is bent inwardly to form flanges **71** for the purpose to be explained below.

For the purpose of supporting the central portion of the comb **68**, there is provided a comb support bar **72** which extends across the center portion of the head frame **68** and has its ends mounted on the end walls **67**. The support bar **72** is formed with a central portion **73** which has a larger radius of curvature than the bend **69** in the comb **68**. The central portion **73** extends axially a sufficient length to accommodate the length of the bent portion **69** of the comb **68**. At the ends of the central portion **73**, the bar **62** is provided with conical portions **74** which serve to target or position the comb against the central portion **73** and at the same time, space the comb **68** inwardly from the end walls **67** of the head frame **65**.

The comb support bar is further provided with mounting portions **75** which extend outwardly from the conical

portions 74. In order to secure the support bar 72 to the head frame 65 by means of the mounting portion 75, the end walls 67 are formed with downwardly facing slots 76 which are enlarged at their upper terminal ends to receive with a slight interference fit the mounting portions 75. The entrance of each slot 76 is of reduced width so that the walls defining the slot 76 must be spread slightly to accommodate the mounting portion 75 as it is snapped upwardly into assembled position to the head frame 65. In this assembled positon, the reduced width of the slot at the downwardly facing mouth retains the mounting portions of the bar 75 seated therein at the upper terminal end of the slots 76. As is evident from an inspection of FIG. 5, the support bar 72 in its assembled position has the outer faces of the conical portions 74 seated against the adjacent end walls 67 so that the inner faces of the conical portions 74 locate the comb 68 in very precise spaced relation with respect to the end walls 67. The conical portions serve to restrain the comb against movement lengthwise of the support bar 72 during the shaving operation.

The shaving head 15 is also provided with a pair of cutters 78. Each of the cutters 78 is made up of a plurality of semicircular cutting plates 79, the shape of which is best shown in FIG. 8. The cutting plates are mounted in parallel, closely spaced relation by three parallel assembly rods 80 which extend through suitable openings in the plates 79 with sufficient material interference to retain the plates in spaced relation on the rods 80. The curved outer surfaces of the cutting plates 79 form a semicylindrical surface which when the two cutters 78 are assembled to head 15, support the comb 68 in the form of two semicylindrical curved shearing areas, as is best shown in FIG. 6.

In order to spring bias the cutters 78 into shearing engagement with the comb 68, there are provided elongated springs 81 which are bowed so that the outer ends 81*a* engage the cutting plates 79 while the central portions 81*b* of the two springs are positioned to be engaged by the end of the motor drive arm or lever 29. In this arrangement, as is best shown in FIG. 2, the drive arm 29 deflects the springs 81 thereby urging the cutters 78 resiliently against the comb 68.

For the purpose of converting the oscillating motion of the drive arm 29 into reciprocating motion of the cutters 78, a drive block 82 is provided for each of the cutters. Each drive block 82 is formed of a suitable resilient plastic bearing material such as nylon and includes upwardly extending mounting projections 82*a* which are provided with outwardly extending protuberances 82*b* which engage the assembly rods 80 as shown in FIG. 8 and retain the drive block 82 securely assembled to the cutter 78. It should be appreciated that as the drive block 82 is assembled upwardly against the bottom of the cutter 78, the mounting projections 82*a* are deflected inwardly until the protuberances 82*b* snap over the tops of the assembly rods 80. In the assembled position shown in FIG. 8, the drive block 82 has a body portion 82*c* which is seated against the lower edges of the cutting plates 79 thereby assuring a rigid assembly between the cutter 78 and the drive block 82. The drive block 82 is formed with an upwardly extending drive arm opening 82*d* into which the drive arm 29 is received for establishing the driving connection between the motor 17 and the cutters 78. The opening 82*d* is flared outwardly at its lower end so that the drive arm may be properly guided into driving relation with the drive block 82 when the head 15 is assembled to the shaver even though the cutter 78 may be initially slightly misaligned with respect to the drive arm 29.

As was mentioned above, when the head is assembled to the housing 12, the end of the drive arm 29 extends upwardly through the opening 82*d* into engagement with the spring 81. The spring 81 extends between the mounting projections 82*a* on the drive lever which is received in the clearance openings 83 formed in the lower edge of each of the cutting plates 79. It may be seen that the springs 81 are thereby trapped between the drive block 82 and the plates 79 of the cutter 78. In order to restrict the springs 81 against lengthwise displacement with respect to the cutter 78, the springs are formed with opposed notches 81*c* which are received on small projecting walls 82*e* formed in the opening 82*d* in the drive block 82 as is best shown in FIG. 7. This provides a simple and effective means of biasing the cutters 78 against the comb 68 with no separate assembly operations necessary other than fitting the spring 81 and the drive block 82 into engagement with the cutter 78.

One of the problems encountered in connection with electric dry shavers is that of cleaning and disposing of the beard clippings or hair chips as they are sometimes called. These small particles of clipped hair tend to build up in the area of the co-acting shearing members and must be disposed of before the build-up becomes so great as to interfere with the operation of the moving parts. To provide access to the cutters 78 within the shaving head 15, there is a cutter support 84 which is pivoted or hingeably connected to the head frame 65 by means of a pin 85 which is snapped into assembled engagement with one of the end walls 67 by having the ends of the pin 85 received in downwardly facing slots 86 which slots are narrower at their mouths so as to retain the ends of hinge pin 85 seated against the upper terminal ends of the slots 86 as is best shown in FIG. 5. The cutter support 84 is preferably a simple stamped sheet metal part having a formed end 84*a* which extends around and secures the support 84 to the hinge pin 85. At the end of the support 84 remote from the pin 85, there are a pair of upwardly formed ears 84*b* which snap into engagement with under-cut portions of the head frame 65 for the purpose of retaining the support 84 in its horizontal or closed position with respect to the head frame 65. In the assembled position, the cutter support 84 forms along with the comb 68 and the head frame 65 an enclosure 87 within which the two cutters 78 are received.

For the purpose of opening the enclosure 87 to provide access to the cutters 78, the cutter support 84 is formed with downwardly punched ears 84*c*, best shown in FIGS. 2, 5, and 7. The ears 84*c* provide a handle which may be gripped by the fingers to pull the cutter support 84 downwardly pivoting it about the pin 85 after the ears 84*b* have been snapped out of engagement with the complementary portions of the head frame 65. The cutter support 84 may be pivoted downwardly to such an extent that it is substantially at right angles to the comb support bar 72, thus providing easy access to the cutters 78 for cleaning purposes.

In order that the cutters 78 may remain connected to the shaving head 15 during the cleaning operation, the drive blocks 82 serve to loosely connect the cutters 78 to the cutter support 84. As is best shown in FIGS. 3, 5, and 6, the cutter support 84 is provided with two spaced openings 84*d* through which the drive blocks 82 extend. The lower edge of the drive blocks 82 are provided with enlargements 82*f* which make the drive block of sufficient width so that it may not pass upwardly through the openings 84*d*. Thus, once the drive blocks 82 are assembled through the openings 84*d* into engagement with the cutters 78, the cutters are loosely assembled to the cutter support 84. As may be seen in FIGS. 2 and 7, the openings 84*d* in the cutter support 84 are of sufficient length to allow the cutters 78 to reciprocate without the drive blocks 82 engaging the ends of the openings 84*d*. Accordingly, there is provided a simple means for retaining the cutters 78 as an integral part of the shaving head 15 even while the cutter support 84 is swung to the open position for the purpose of exposing the cutters 78 for cleaning purposes.

For the purpose of reducing the noise produced by motor **17**, the inside of the housing **12** adjacent the field is lined with a suitable non-hardening putty like material **90** as is shown in FIG. 3. This material not only insulates the motor somewhat from the case but also dampens out vibrations which might otherwise occur at the plastic walls of the housing **12**.

Turning now to the structure of the comb **68** and the manner in which it is mounted on the head frame **65**, it has been indicated above that the comb **68** formed with a centrally extending bend **69** so that it assumes a substantially V-shape as shown in FIG. 10 with the angle defined by the comb being on the order of 90 degrees and the radius of the bend being approximately $\frac{1}{32}$ of an inch. The comb **68** is assembled to the head frame **65** by merely bending the outer edges downwardly from the position shown in FIG. 10 and inserting the comb upwardly into the head frame **65** so that the bend **69** rests against the comb support bar **72**. The side walls of the head frame **65** are formed with integrally molded inwardly extending projections **88** which are received in the comb openings **70** as is best shown in FIG. 9. As is evident from FIG. 9, the opening **70** is oversize in the direction toward the perforated shaving area thereby accommodating a certain amount of movement in the comb as it is applied to the face of the user.

It should be noted that the comb **68** may be simply and easily assembled to the head frame by merely inserting the preformed comb upwardly into the head frame where it is supported centrally on the bar **72** and along its parallel marginal edges on the side walls **66** by means of the mounting projections **88** which extend into the mounting openings **70**. In the assembled position, the comb assumes an inverted W-shaped contour with the rounded arches as is evident from FIGS. 3 and 6. The natural curvature of the comb **68** is substantially the same as the curvature assumed when the cutters **78** are swung into position on the support **84** and biased into engagement with the comb by means of the spring **81**. The prebending of the comb is desirable to assure the contour of the comb with its two arched surfaces.

It is important, however, that the radius of the bar **72** be greater than the radius of the bend **69** to assure accurate formation of the comb contour. It should be obvious that, from a manufacturing standpoint, it is easier to control the diameter of a bar such as the support bar **72** rather than to control the radius of the bend **69**. The shape and location of the arches of the comb **68** will then be determined by the comb support bar **72**. If the radius of the bend **69** is greater than the radius of the support bar **72**, it should be evident that a less controlled condition will exist since the radius of the bend will then control the shape of the arches.

Another important reason for preforming the comb **68** is the necessity for preserving the symmetry between the two arch-shaped shearing areas. It has been discovered that a continuous foil comb supported in the manner described above will be displaced under the support bar **72** during normal conditions of use so that one of the arches will become larger than the other if the comb **68** is not preformed with the transverse bend **69**. This displacement of the comb and change in shape of the arches creates problems in obtaining good shearing engagement between the cutters **78** and the comb **68**. The bend **69** provides a novel and inexpensive expedient for maintaining the desired symmetrical shape of the comb **68**. In addition, the bend **69** facilitates the shaping of the comb to the inverted W-shaped configuration for insertion into the head frame **65**.

While there has been shown and described a single embodiment of the invention, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention, and that it is intended by the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In an electric shaver of the type having a fixed perforated comb and a movable cutter included in a shaver head assembly, a housing enclosing an electric motor and supporting said assembly with said motor driving said cutter in shearing engagement with said comb, the improvement comprising a cutter support, a head frame providing an open box-like structure with said comb extending across a top opening therein, means pivotally connecting said cutter support to an inside wall of said frame, means loosely attaching said cutter to said support whereby said cutter may be reciprocated with respect to said head assembly, and means latching said support in a closed position with said cutter enclosed between said support and said comb.

2. The combination of claim **1** wherein said support has an opening formed therein, drive means for said cutter comprising a block having a central opening for receiving the end of a motor driven drive arm, said cutter comprising a plurality of cutter plates assembled on parallel support rods, resilient means on said block snapping into assembled engagement with said rods with said block extending through said opening in said support, the lower portion of said block being larger than said opening in said support whereby said block retains said cutter with respect to said support.

3. The combination of claim **1** wherein said support comprises an integrally formed stamped plate member, said latching means including formed projections on said member which are deflected as said member is moved to the closed position, latching abutments on said head frame which receive said projections to latch said support in the closed position.

4. A shaving head for a motor driven electric dry shaver comprising a plastic head frame having connected side walls and end walls forming a rectangular member with a large central opening, a foraminous comb of thin flexible material extending across said opening and secured to said side walls, a cutter including a plurality of spaced parallel cutting plates supported on a series of rods extending parallel to said side walls, a cutter support detachably secured to said head frame to form an enclosure with said comb and said head frame within which enclosure said cutter is received, said cutter being loosely connected to said cutter support whereby said cutter may be reciprocated in a direction parallel, to said side walls, cutter biasing means secured to said cutter for urging said cutter in shearing engagement with said comb, said flexible comb being unsupported intermediate said side walls so that said comb conforms to the shape of said cutter.

5. The shaving head of claim **4** wherein said cutter biasing means comprises an elongated spring extending parallel to said cutter and having the ends thereof engaging said cutter at its opposite ends, a drive block rigidly secured to said cutter and overlying the central bowed portion of said spring, said block being adapted to receive the end of an oscillating motor drive lever to cause said cutter to reciprocate along a line parallel to said side walls, said spring being positioned to be engaged and deflected by said drive lever to provide the biasing force for said cutter, and means on said driving block to retain said spring assembled to said cutter.

6. The shaving head of claim **4** wherein there are two of said cutters carried by said cutter support within said enclosure, said cutting plates being semicircular and assembled on said rods to form a semicylindrical cutting surface on each cutter for shearing engagement with said comb, said cutters being mounted for reciprocating in spaced parallel relation, a comb support bar secured to said head frame and extending across said central opening between said cutters, said comb assuming an inverted W-shape in said head frame with the central portion extending below said support bar and said outer edges being secured to said side walls, the portions of said comb inter-

mediate said support bar and said outer edges assuming the semicylindrical shape of said cutting surface.

7. The shaving head of claim 4 including two of said cutters carried by said cutter support and received within said enclosure, said cutters being supported for reciprocating movement in spaced parallel relation in said opening, a comb support bar mounted on the end walls of said member and extending across said opening between said cutters, said comb being flexed beneath said bar to form two separate shearing areas each engaged by one of said cutters and spaced by said bar.

8. The shaving head of claim 7 wherein said support bar is cylindrical in shape in the central section engaging said comb, conical locating sections adjacent said central section of said bar to space said comb from the end walls of said head frame and secure said comb against lengthwise displacement as a consequence of the reciprocation of said cutters.

9. The shaving head of claim 7 wherein said comb is formed of flexible steel on the order of .002 inch in thickness, said comb being preformed with a central bend to form a V-shape prior to assembly to said head frame, said bend having a smaller radius of curvature than said bar.

10. A dual shaving head for an electric dry shaver comprising a head frame having side walls and end walls forming a rectangular frame member provided with a large central opening, a comb support bar having its ends mounted in said end walls and extending across the middle of said opening, a thin flexible perforated comb which is preformed with a central bend prior to its assembly to said head whereby said comb is V-shaped in its disassembled condition, means securing said comb to said side walls by the two outer edges which extend parallel to said bend, said comb being assembled to said head frame with said bend positioned below said support bar, said bend causing said comb to assume an inverted W-shaped configuration with the portions on either side of the support bar being substantially semi-cylindrical in shape.

11. The dual shaving head of claim 10 wherein said support bar is formed with a central portion for engagement with and for support of said comb, conical portions adjacent each end of said central portion to locate said comb and space it from said end walls, and mounting portions of reduced diameter at the ends of said bar received in recesses in said end walls for mounting said bar with respect to said frame.

12. The dual shaving head of claim 10 wherein said means securing said comb to said side walls includes projections on said side walls formed integrally with said head frame, openings in said comb through which said projections extend, said comb opening being bordered by turned up flange portions to prevent said comb from shearing off said projections.

13. The shaving head of claim 10 wherein said central bend in said comb has a smaller radius of curvature than the radius of curvature of said support bar.

14. The shaving head of claim 10 wherein said means securing said comb to said side walls provides a loose connection for the edges of said comb permitting a portion of said comb on one side of said bar to be deflected downwardly while the portion on the other side of said bar remains undeflected.

15. The shaving head of claim 10 wherein, each of said semi-cylindrical portions of said comb providing a separate independent shaving area on said head, a pair of movable cutters, spring means biasing one of said cutters into engagement with the inner surface of each of said semi-cylindrical portions, and said means securing said comb to said side walls providing a loose connection permitting each said portion of said comb to be deflected downwardly separately of each other under pressure against the face of the user.

16. In an electric dry shaver of the type having a pair of housing members abutting along a common plane to form an enclosure for a motor, a detachable shaving head, an improved assembly arrangement comprising portions of said housing members extending upwardly into said shaving head, screw threaded assembly means extending into both of said housing members to retain the members in assembled relation, said assembly means being hidden by said head but being accessible for disassembly when said head is removed, second assembly means on wall portions of said housing members at a point remote from said shaving head, said second assembly means including three pronged projections on one member engaging two pronged projections on the other member, a center locating projection in said three pronged projections extending into a corresponding recess positioned between said two projections of said two pronged projections, said two pronged projections engaging the two outer prongs of said three pronged projection in locking interference to retain said housing members together in abutting relation.

17. In an electric dry shaver, inner assembly means for retaining a pair of plastic housing members together comprising integrally molded projections extending from opposed wall portions of said housing members, one of said housing members having said projections arranged in sets of three aligned projections with the center projection being longer than the outer two and serving only to guide and align the projections, said outer two projections being positioned to receive and grip a pair of projections extending from the other of said housing members, and a guiding recess positioned between the projections of said pair to receive and guide said center projection, said outer two projections being flexible in order to snap into locking engagement with said pair of projections.

18. The combination of claim 17 wherein said center projection is a cylindrical member formed with a tapered outer end to guide it into engagement with said guiding recess which is also cylindrical to snugly receive said center projection, said center projection serving to prevent lateral displacement of said pair of projections out of alignment with said three aligned projections.

19. In an electric dry shaver of the type having a housing enclosing an electric motor, first driving means extending outside of said housing for engagement with a movable cutter in a detachable shaving head, the improvement comprising a detachable head frame providing an open box-like structure having a rectangular opening within which a perforated comb is mounted, said head frame being removably mounted on said housing in a position overlying said first driving means, a cutter mounted in shearing engagement with said comb and reciprocated by said driving means in a direction coinciding with the long dimension of said rectangular opening, a long hair trimmer supported on said head frame on a wall extending transverse to the direction of reciprocation of said cutter and having cutting teeth which extend outwardly of said head frame in a direction corresponding to the direction of reciprocation of said cutter, second driving means separate and spaced from said first driving means extending outside of said housing within said head frame and into driving engagement with said long hair trimmer.

20. The combination of claim 19 wherein said first drive means comprises a lever pivoted about a horizontal axis extending transversely to the direction of cutter reciprocation, said second drive means including a bell crank driven for oscillating movement about a vertical axis lying in a plane perpendicular to said horizontal axis, a trimming drive lever extending upwardly and radially from said bell crank into engagement with said long hair trimmer.

21. The combination of claim 20 wherein said first drive means lever and said trimming drive lever are positioned at horizontally spaced positions on a top wall of said housing, said head frame completely enclosing said

levers which automatically engage in driving relation said cutter and said long hair trimmer when said shaving head is assembled to said housing.

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