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(54) **MOTORISED HAIR STYLING IRON**

MOTORISIERTES HAARSTYLINGGERÄT

FER À COIFFER MOTORISÉ

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Description

Technical field

[0001] The present invention relates to hair styling irons, particularly electric appliances for hair curling or straightening, having one member motor driven to rotate or vibrate.

Background of the Invention

[0002] One type of known hand-held electric hair curling or straightening iron use two jaws or arms, at least one of which is heated, with the other cooperating to hold hair in contact with the first, and being moveable from an open position allowing the insertion of hair to a closed position to put the hair in contact with the heater.

[0003] Some of the drawbacks with the prior art hair irons are that the processing results can be variable, if the operation is performed too fast, the processing time is too short and, therefore, the hair is not properly formatted, while moving too slowly can damage the hair by overheating. Operation of these irons requires the user to carefully manipulate the two jaws. A new user unfamiliar with the iron may have difficulty in accurately controlling the hair-gripping forces that vary with the clamping pressure between the heating body and hair. As a tool with opposing smooth and hard clamping faces is drawn through the hair any variation in the user's hold on the tool produces a variable contact pressure that can cause discomfort, as the hair is pulled unevenly. The resulting treatment of a lock of hair may also produce an uneven appearance.

[0004] One way in which this issue has been addressed in old hair irons is by providing one of the jaws with a brush or comb for gripping the hair, however such a brush or comb makes the tool less compact and can restrict the manner in which the tool can be used for different operations, such as curling and straightening.

[0005] EP 1 698 249 describes a hair iron having a "buffer member" which is located in between two opposing steel plates to allow hair passing through the steel plates to be straightened. EP 1 991 083 describes a hair styling tool including a body, a cylinder extending from the body, wherein the cylinder is rotatable relative to the body by means of a motor.

[0006] It will be understood that there is a need to provide a hair styling iron capable of readily being used by new users to achieve hair shaping of good quality, durability, and with uniform appearance throughout the hair, while being easy to use and convenient. The apparatus should be capable of ensuring a good thermal transfer between the heated part of the apparatus and hair, while ensuring the protection thereof and with greater reliability in operation. The apparatus should be capable of ensuring a good contact pressure between the means of shaping and hair during treatment. The device should have a simple and compact structure that can be manufactured

for a low cost. It is an object of the present invention to address the above needs or more generally to provide an improved electric hair iron.

Disclosure of the Invention

[0007] According to one aspect of the present invention there is provided a hair styling iron in accordance with claim 1, the iron comprising:

a pair of elongate jaws, each jaw having proximal and distal parts;
a hinge connecting the proximal parts of the jaws for movement between a closed position in which the jaws are adjacent for grasping hair therebetween and an open position in which the jaws are spaced apart;
motorised means for rotating at least one of the jaws;
heating means for heating at least one of the jaws;
the distal parts of the jaws having complementary hair-engaging surfaces configure to hold and engage hair therebetween, and wherein
two elastomeric ribs extend along one of the hair-engaging surfaces.

[0008] With the jaws closed, the substantially cylindrical hair-engaging surface and concave hair-engaging surface are adjacent and oppose one another in a generally parallel configuration.

[0009] The proximal parts may be at longitudinal ends of the jaws or, for instance, at positions intermediate the longitudinal ends.

[0010] The pair of jaws comprises first and second jaws, the first jaw includes a barrel having a first longitudinal axis and a substantially cylindrical hair-engaging surface, the motorised means comprises a rotary motor which rotates the barrel about the first longitudinal axis and wherein

the one of the hair-engaging surfaces comprises a concave hair-engaging surface formed on the second jaw.

[0011] The two elastomeric ribs are disposed adjacent opposing longitudinal edges of the concave hair-engaging surface and project beyond the concave hair-engaging surface.

[0012] Preferably each of the elastomeric ribs is linear and extends generally parallel to a longitudinal axis of the jaw on which it is disposed. Optionally the at least one elastomeric rib may be curvilinear.

[0013] Preferably each of the elastomeric ribs is linear and extends substantially parallel to a surface of the barrel in the closed position.

[0014] Preferably the hair-engaging surfaces are metal surfaces, each of the elastomeric ribs has a substantially constant cross-section throughout its length, and protrudes from the one of the hair-engaging surfaces by a substantially constant dimension throughout its length.

[0015] Preferably each of the two elastomeric ribs has

a convex outer surface protruding from the one of the hair-engaging surfaces. Optionally, the outer surface of the rib may protrude from the one of the hair-engaging surfaces only when the heating portion is at an elevated temperature, due to thermal expansion, and may otherwise be flush or recessed below the one of the hair-engaging surfaces.

[0016] Preferably the convex outer surface of each of the elastomeric ribs has a substantially constant radius of curvature.

[0017] Each of the elastomeric ribs may be bonded to the one of the hair-engaging surfaces. Alternatively, each of the elastomeric ribs may be formed on a strip received in an elongate slot in the one of the hair-engaging surfaces.

[0018] Each jaw may have an elongate heating portion. Preferably the heating portion has a longitudinally extending plane of symmetry and each elastomeric rib is located substantially symmetrically relative to the plane of symmetry. For instance, where two ribs are provided, they may be disposed either side of the plane.

[0019] Preferably the width of each of the elastomeric ribs is between 2% and 20% of the width of the one of the hair-engaging surfaces. Preferably each of the elastomeric ribs has a hardness between 30 Shore A and 50 Shore D. Preferably the at least one elastomeric rib is formed from a silicon rubber.

[0020] Optionally, both elongate heating portions may have substantially the same form with respective each of the elastomeric ribs.

[0021] This invention provides hair iron which is particularly effective in use with the above-described method. The iron may be economically constructed and has an overall simple design which minimizes manufacturing costs and maximizes performance, allowing the user to draw the tool through the hair with a generally constant hair-gripping force.

Brief Description of the Drawings

[0022] Preferred forms of the present invention will now be described by way of example with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of a hair styling iron out of the scope of the present invention shown in an open position;

Figure 2 is an end view of the iron of Fig. 1 in a closed position;

Figure 3 is a side view corresponding to Fig. 2;

Figure 4 is an enlarged fragmentary cross section through the second jaw of the iron of Fig. 1;

Figure 5 is a perspective view of a hair styling iron according to an embodiment of the invention, shown in an open position, and

Figure 6 is an enlarged fragmentary cross section through the second jaw of the iron of Fig. 5.

Description of the Preferred Embodiments

[0023] Referring to the drawings, Fig. 1 illustrates a hand held electric hair iron out of the scope of the present invention having first and second elongate jaws 10, 11 joined at respective proximal parts disposed near their longitudinal ends by a transverse hinge 12, shown in an open position. Both jaws 10, 11 are of hollow construction, with the first jaw 10 including a barrel 14 disposed at its outer end and a coaxial handle section 15 at its inner end. The barrel 14 has a first longitudinal axis 13 and a substantially cylindrical hair-engaging surface 16.

[0024] In the iron illustrated, the barrel 14 is heated by an internally enclosed resistive element (not shown). Further, the barrel 14 is motor-driven to rotate about the longitudinal axis 13, or to vibrate, either generally omnidirectionally or linearly or rotationally along/about an axis. Motorised hair irons having a jaw driven to rotate or vibrate are known from the prior art, and it will be understood that this can be achieved in a number of different ways. Power may be supplied to the heating element and motor via a power cord 17 (shown partially cut away).

[0025] The second jaw 11 has a distal part with a concave hair-engaging surface 19 which is elongate and part-cylindrical. The concave hair-engaging surface 19 is complementary to the surface 16 of the barrel 14, and with the jaws 10, 11 closed the hair-engaging surfaces 16, 19 are adjacent and oppose one another in a generally parallel configuration.

[0026] In Figs 1-3, an elastomeric rib 20 extends centrally along the concave hair-engaging surface 19 from which it projects. The exposed face 21 of the rib 20 may have a smooth convex form, such as a constant radius of curvature. The elastomeric rib 20 may be located in a linear slot in the plate 22. A central plane 23 extends longitudinally and bisects the jaws 10, 11. The elastomeric rib 20 may be located at the trough of the concave face 19, such that it is also bisected by the plane 23. In the iron illustrated, the rib 20 protrudes from the concave face by a substantially constant dimension throughout its length (of between 0.1mm and 1mm). The longitudinal ends of the rib 20 are spaced apart from the longitudinal ends of the plate 22.

[0027] The basic structure of the jaws 10, 11 may be a moulded polymeric construction forming the handle portions 15, while the barrel 14 and plate 22 are of metal such as chromium steel, and their respective faces 16, 19 are polished.

[0028] An embodiment of the second jaw according to the present invention is shown in Figs 5 and 6, in which a pair of parallel, generally coextensive, elastomeric ribs 20a are provided, each disposed adjacent opposing longitudinal edges of the hair-engaging surface 19, such that their exposed faces 21a project beyond the surface 19. The ribs 20a are disposed symmetrically on opposing sides of the central plane 23.

[0029] In preferred embodiments the width of the rib 20, 20a is between 2% and 20% of the width of the con-

cave face 19, most preferably between 5% and 10% of the width of the face 19. Ribs 20, 20a of silicon rubber having a hardness of 40 Shore A has been found to provide good performance, but satisfactory performance can be obtained with a hardness between 30 Shore A and 50 Shore D.

[0030] In use, a lock of hair is wound in a loop about the elongate barrel 14, the user grasping the jaws to clamp the lock of hair between the faces 16, 19. In this manner the hair is pressed against the rib(s) 20, 20a while it is softened by the application of heat. The user then draws the iron along the lock of hair to form the hair, and the or each elastomeric rib allows the hair-gripping force to be more readily maintained at a constant level.

[0031] Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope of the appended claims.

Claims

1. A hair styling iron, comprising:

a pair of elongate jaws comprising first and second jaws (10, 11), each jaw (10, 11) having proximal and distal parts, the distal parts of the jaws (10, 11) having complementary hair-engaging surfaces (16, 19) configured to hold and engage hair therebetween, one of the hair-engaging surfaces (16, 19) comprising a concave hair-engaging surface (19) formed on the second jaw (11), the first jaw (10) including a barrel (14) having a first longitudinal axis (13) and a substantially cylindrical hair-engaging surface (16);

a hinge (12) connecting the proximal parts of the jaws (10, 11) for movement between a closed position in which the jaws (10, 11) are adjacent for grasping hair therebetween and an open position in which the jaws (10, 11) are spaced apart;

motorised means for rotating at least one of the jaws (10, 11), the motorised means comprising a rotary motor which rotates the barrel (14) about the first longitudinal axis (13);

heating means for heating at least one of the jaws (10, 11); and

two elastomeric ribs (20a) extending along one of the hair-engaging surfaces (16, 19) and disposed adjacent opposing longitudinal edges of the concave hair-engaging surface (19) and projecting beyond the concave hair-engaging surface (19);

wherein with the jaws (10, 11) closed the substantially cylindrical hair-engaging surface (16) and concave hair-engaging surface (19) are adjacent and

oppose one another in a generally parallel configuration.

2. The iron of claim 1 wherein each of the elastomeric ribs (20a) is linear and extends generally parallel to a longitudinal axis of the jaw (10, 11) on which it is disposed.

3. The iron of claim 2 wherein each of the two elastomeric ribs (20a) extend substantially parallel to a surface of the barrel (14) in the closed position.

4. The iron of any one of claims 1-3 wherein the hair-engaging surfaces (16, 19) are metal surfaces, each of the elastomeric ribs (20a) has a substantially constant cross-section throughout its length, and protrudes from the one of the hair-engaging surfaces (16, 19) by a substantially constant dimension throughout its length.

5. The iron of claim 4 wherein the substantially constant dimension is between 0.1 mm and 2 mm.

6. The iron of claim 5 wherein each of the two elastomeric ribs (20a) has a convex outer surface (21a) protruding from the one of the hair-engaging surfaces (16, 19).

7. The iron of claim 6 wherein the convex outer surface (21a) of each of the two elastomeric ribs (20a) has a substantially constant radius of curvature.

8. The iron of any one of claims 1-7 wherein each of the two elastomeric ribs (20a) is bonded to the one of the hair-engaging surfaces (16, 19).

9. The iron of any one of claims 1-7 wherein each of the two elastomeric ribs (20a) is formed on a strip received in an elongate slot in the one of the hair-engaging surfaces (16, 19).

10. The iron of any one of claims 1-9 wherein each jaw (10, 11) has an elongate heating portion.

11. The iron of claim 10 wherein the heating portion has a longitudinally extending plane of symmetry (23) and each elastomeric rib (20a) is located substantially symmetrically relative to the plane of symmetry (23).

12. The iron of claim 11 wherein the hair-engaging surfaces (16, 19) are polished metal surfaces.

13. The iron of claim 12 wherein the width of each of the two elastomeric ribs (20a) is between 2% and 20% of the width of the one of the hair-engaging surfaces (16, 19).

14. The iron of claim 13 wherein each of the two elastomeric ribs (20a) has a hardness between 30 Shore A and 50 Shore D.
15. The iron of any one of claims 1-14 wherein each of the two elastomeric ribs (20a) is formed from a silicon rubber.

Patentansprüche

1. Haarstyling-Brennschere, die umfasst:

ein Paar länglicher Klemmbacken, die eine erste und eine zweite Klemmbacke (10, 11) umfassen, wobei jede Klemmbacke (10, 11) proximale und distale Teile aufweist, wobei die distalen Teile der Klemmbacken (10, 11) sich ergänzende haareingreifende Oberflächen (16, 19) aufweisen, die konfiguriert werden, um Haare zwischen diesen zu halten und zu greifen, wobei eine der haareingreifenden Oberflächen (16, 19) eine auf der zweiten Klemmbacke (11) ausgebildete konkave haareingreifende Oberfläche (19) umfasst, wobei die erste Klemmbacke (10) einen Zylinder (14) mit einer ersten Längsachse (13) und einer im Wesentlichen zylindrischen haareingreifenden Oberfläche (16) aufweist; ein Scharnier (12), das die proximalen Teile dieser Klemmbacken (10, 11) für eine Bewegung zwischen einer geschlossenen Stellung, in der die Klemmbacken (10, 11) zum Greifen von Haar zwischen diesen benachbart sind und einer offenen Stellung verbindet, in der die Klemmbacken (10, 11) voneinander entfernt sind; ein motorisiertes Mittel zum Drehen mindestens einer der Klemmbacken (10, 11), wobei das motorisierte Mittel einen Drehmotor umfasst, der den Zylinder (14) um die erste Längsachse (13) dreht; ein Heizmittel zum Heizen mindestens einer der Klemmbacken (10, 11); und zwei elastomere Rippen (20a), die sich entlang einer der haareingreifenden Oberflächen (16, 19) erstrecken und benachbart zu entgegengesetzten Längskanten der konkaven haareingreifenden Oberfläche (19) angeordnet sind und über die konkave haareingreifende Oberfläche (19) hinaus hervorstehen;

wobei mit den geschlossenen Klemmbacken (10, 11) die im Wesentlichen zylindrische haareingreifende Oberfläche (16) und konkave haareingreifende Oberfläche (19) benachbart sind und sich in einer allgemein parallelen Konfiguration miteinander gegenüberliegen.

2. Brennschere nach Anspruch 1, wobei jede der elastomeren Rippen (20a) linear ist und sich allgemein parallel zu einer Längsachse der Klemmbacke (10, 11) erstreckt, auf der sie angeordnet wird.
3. Brennschere nach Anspruch 2, wobei sich jede der beiden elastomeren Rippen (20a) im Wesentlichen parallel zu einer Oberfläche des Zylinders (14) in der geschlossenen Stellung erstreckt.
4. Brennschere nach Anspruch 1 bis 3, wobei die haareingreifenden Oberflächen (16, 19) metallische Oberflächen sind, wobei jede der elastomeren Rippen (20a) einen im Wesentlichen gleichbleibenden Querschnitt über seine ganze Länge aufweist und von der einen der haareingreifenden Oberflächen (16, 19) durch eine im Wesentlichen gleichbleibende Abmessung über seine ganze Länge vorsteht.
5. Brennschere nach Anspruch 4, wobei die im Wesentlichen gleichbleibende Abmessung zwischen 0,1 mm und 2 mm ist.
6. Brennschere nach Anspruch 5, wobei jede der beiden elastomeren Rippen (20a) eine konvexe Außenoberfläche (21a) aufweist, die von der einen der haareingreifenden Oberflächen (16, 19) vorsteht.
7. Brennschere nach Anspruch 6, wobei die konvexe Außenoberfläche (21a) jeder der beiden elastomeren Rippen (20a) einen im Wesentlichen gleichbleibenden Krümmungsradius aufweist.
8. Brennschere nach Anspruch 1 bis 7, wobei jede der beiden elastomeren Rippen (20a) mit der einen der haareingreifenden Oberflächen (16, 19) verbunden wird.
9. Brennschere nach Anspruch 1 bis 7, wobei jede der beiden elastomeren Rippen (20a) auf einer Leiste ausgebildet wird, die in einem länglichen Schlitz in der einen der haareingreifenden Oberflächen (16, 19) aufgenommen wird.
10. Brennschere nach Anspruch 1 bis 9, wobei jede Klemmbacke (10, 11) einen länglichen Heizabschnitt aufweist.
11. Brennschere nach Anspruch 10, wobei der Heizabschnitt eine sich längs erstreckende Symmetrieebene (23) aufweist und jede elastomere Rippe (20a) im Wesentlichen symmetrisch bezogen auf die Symmetrieebene (23) angeordnet wird.
12. Brennschere nach Anspruch 11, wobei die haareingreifenden Oberflächen (16, 19) polierte Metalloberflächen sind.

13. Brennschere nach Anspruch 12, wobei die Breite jeder der beiden elastomeren Rippen (20a) zwischen 2 % und 20 % der Breite der einen der haareingreifenden Oberflächen (16, 19) liegt.
14. Brennschere nach Anspruch 13, wobei jede der beiden elastomeren Rippen (20a) eine Härte zwischen 30 Shore A und 50 Shore D aufweist.
15. Brennschere nach Anspruch 1 bis 14, wobei jede der beiden elastomeren Rippen (20a) aus einem Silikongummi gebildet wird.

Revendications

1. Fer à coiffer, comprenant :

une paire de mâchoires allongées comprenant une première et une seconde mâchoires (10, 11), chaque mâchoire (10, 11) présentant des parties proximale et distale, les parties distales des mâchoires (10, 11) présentant des surfaces de prise des cheveux complémentaires (16, 19) configurées afin de maintenir et de prendre les cheveux entre elles, une des surfaces de prise des cheveux (16, 19) comprenant une surface de prise de cheveux concave (19) formée sur la seconde mâchoire (11), la première mâchoire (10) incluant un cylindre (14) présentant un premier axe longitudinal (13) et une surface de prise de cheveux sensiblement cylindrique (16) ;
une articulation (12) reliant les parties proximales des mâchoires (10, 11) pour un mouvement entre une position fermée dans laquelle les mâchoires (10, 11) sont adjacentes afin de saisir des cheveux entre elles et une position ouverte dans laquelle les mâchoires (10, 11) sont espacées ;
un moyen motorisé permettant de faire tourner au moins une des mâchoires (10, 11), le moyen motorisé comprenant un moteur rotatif qui fait tourner le cylindre (14) autour du premier axe longitudinal (13) ;
un moyen chauffant permettant de chauffer au moins une des mâchoires (10, 11) ; et
deux nervures élastomères (20a) s'étendant le long d'une des surfaces de prise de cheveux (16, 19) et disposées de manière adjacente à des bords longitudinaux opposés de la surface de prise de cheveux concave (19) et se projetant au-delà de la surface de prise de cheveux concave (19) ;

dans lequel avec les mâchoires (10, 11) fermées la surface de prise de cheveux sensiblement cylindrique (16) et la surface de prise de cheveux concave (19) sont adjacentes et s'opposent l'une à l'autre

dans une configuration généralement parallèle.

2. Fer selon la revendication 1, dans lequel chacune des nervures élastomères (20a) est linéaire et s'étend généralement de manière parallèle à un axe longitudinal de la mâchoire (10, 11) sur laquelle elle est disposée.
3. Fer selon la revendication 2, dans lequel chacune des deux nervures élastomères (20a) s'étendent sensiblement de manière parallèle à une surface du cylindre (14) dans la position fermée.
4. Fer selon l'une quelconque des revendications 1 à 3, dans lequel les surfaces de prise de cheveux (16, 19) sont des surfaces métalliques, chacune des nervures élastomères (20a) présente une section transversale sensiblement constante sur toute sa longueur, et ressort de l'une des surfaces de prise de cheveux (16, 19) par une dimension sensiblement constante sur toute sa longueur.
5. Fer selon la revendication 4, dans lequel la dimension sensiblement constante est comprise entre 0,1 mm et 2 mm.
6. Fer selon la revendication 5, dans lequel chacune des deux nervures élastomères (20a) présente une surface extérieure convexe (21a) saillant de l'une des surfaces de prise des cheveux (16, 19).
7. Fer selon la revendication 6, dans lequel la surface extérieure convexe (21a) de chacune des deux nervures élastomères (20a) présente un rayon de courbure sensiblement constant.
8. Fer selon l'une quelconque des revendications 1 à 7, dans lequel chacune des deux nervures élastomères (20a) est liée à l'une des surfaces de prise de cheveux (16, 19).
9. Fer selon l'une quelconque des revendications 1 à 7, dans lequel chacune des deux nervures élastomères (20a) est formée sur une bande reçue dans une fente allongée dans l'une des surfaces de prise de cheveux (16, 19).
10. Fer selon l'une quelconque des revendications 1 à 9, dans lequel chaque mâchoire (10, 11) présente une partie chauffante allongée.
11. Fer selon la revendication 10, dans lequel la partie de chauffage présente un plan de symétrie (23) s'étendant de manière longitudinale et chaque nervure élastomère (20a) est située sensiblement de manière symétrique relativement au plan de symétrie (23).

12. Fer selon la revendication 11, dans lequel les surfaces de prise de cheveux (16, 19) sont des surfaces métalliques polies.
13. Fer selon la revendication 12, dans lequel la largeur de chacune des deux nervures élastomères (20a) est comprise entre 2 % et 20 % de la largeur de l'une des surfaces de prise de cheveux (16, 19). 5
14. Fer selon la revendication 13, dans lequel chacune des deux nervures élastomères (20a) présente une dureté comprise entre 30 Shore A et 50 Shore D. 10
15. Fer selon l'une quelconque des revendications 1 à 14, dans lequel chacune des deux nervures élastomères (20a) est formée à partir de caoutchouc de silicone. 15

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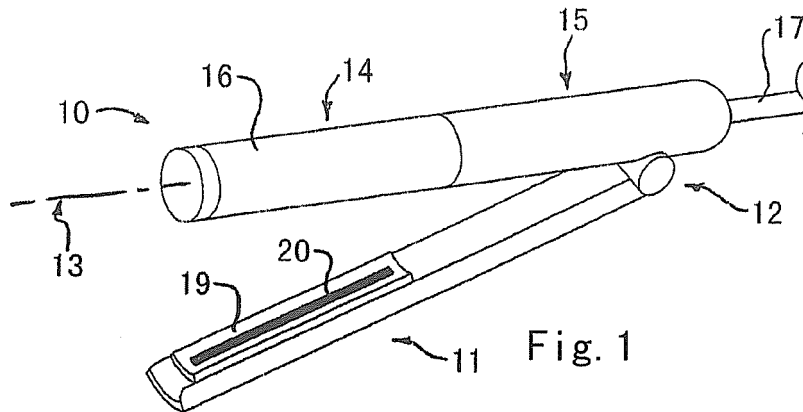


Fig. 1

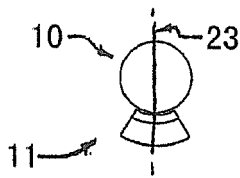


Fig. 2

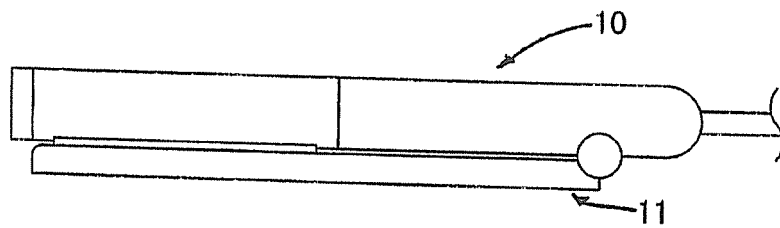


Fig. 3

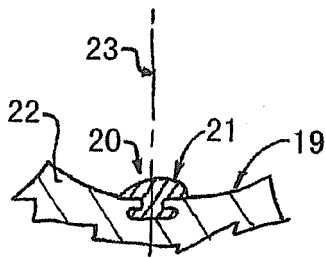


Fig. 4

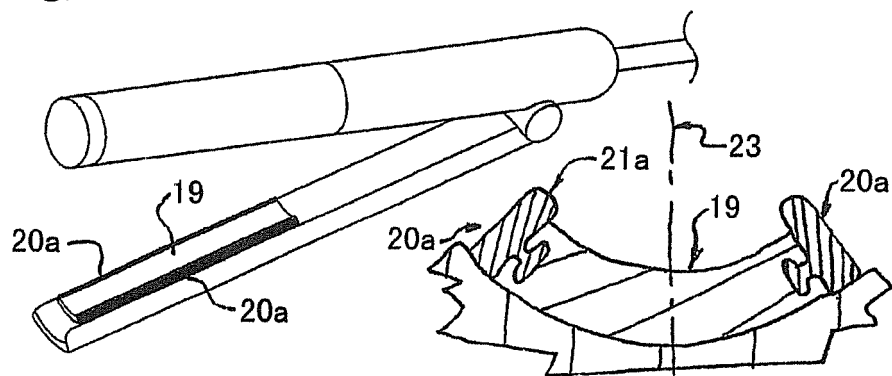


FIG. 5

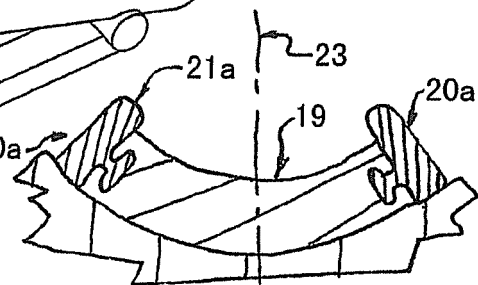


Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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