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(54) **Device for conditioning hairy skin before shaving**

Vorrichtung zur Vorbereitung der Haut vor der Rasur

Dispositif pour le conditionnement de la peau avant le rasage

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EP-A- 0 397 638
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US-A- 4 502 217
US-A- 4 715 120

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Description

[0001] The invention relates to new devices used for conditioning hairy skin, especially facial skin, before shaving, according to the preamble of claim 1.

[0002] Most wet shaving instruments, including disposable shavers, are provided with means protecting the cutting edge of the razor blade from being damaged from the moment when the shaver is leaving the assembly machine in the factory until it gets to the user. Preferably, these means are protection caps attached over the front portion of the shaver head. Said head comprises a supporting part, at least one razor blade, which is sandwiched between said supporting part and a cover part. Such caps are used with the shaving instruments disclosed in the US 4,502,217 A and the EP 0 397 638 A although they are not mentioned in said publications.

[0003] Snapping means are known, suitable for easy removal of such protection caps whenever the shaver is to be used for shaving, but providing secure attachment for protection of the blade edge, when the shaver is not used. These protection caps can often be snapped on in two opposed positions in order to make the automatic assembly easier and are usually injection molded from thermoplastic material.

[0004] Additionally, devices are known which have the purpose to erect or otherwise comb or condition the hair prior to or during the shaving process. Such a specialized device, in no context with a shaver but fully independent in the form of a thimble, is known from the GB 921,105 A. Further, the shaving instruments disclosed in the publications mentioned above have some features for this purpose on their guard bar.

[0005] The thimble-like device has problems with its lifetime, one should not forget how abrasive hairy skin is, and it has problems with the convenience of its use. A finger has to be inserted in the recess, but if the finger or the recess is not dry, the grip is not sufficient for an easy use. Additionally, the device must be properly cleaned and dried on its inside as well as on its outside each time after use.

[0006] The other devices may only be used during shaving, because the guard bars with the conditioning features are only some Millimeters in front of the cutting edge, making it impossible to use the devices independently from a shaving operation.

[0007] Therefore, there is a need for a device which is to use easy and independently from shaving without the problems mentioned above.

[0008] This aims are reached by a device according to the characterizing part of claim 1. The dependent claims define various embodiments and details of the invention.

[0009] The invention proposes to provide profile features on a protection cap, suitable for conditioning the skin prior to shaving. Therefore, such a "conditioning & protection cap" has, according to the invention, a double purpose: to be used as a skin and hair conditioning device and to protect and shield the razor blade.

[0010] Said profile features according to the invention are provided to cause the skin and the underlying tissue to be kneaded and gently massaged. As the conditioning device is drawn over the skin, said profile features cause swiftly passing creases and waves on the surface. Thus, the hair of the beard is lifted up, adjusted, freed and prepared for the shaving act following the conditioning. The treatment provided by said profile features during said conditioning enables the razor blade edge to cut the hair close to the skin surface during said subsequent shaving act resulting in a closer shave.

[0011] Furthermore, said conditioning exercises and stimulates the facial muscles and the muscles associated with the hair follicles and, in addition, enhances the blood circulation.

[0012] When attached to the front portion of the shaver, the "conditioning & protection cap" must be attached with sufficient restraint to permit conditioning without disturbing vibrations or wavering.

[0013] The costs for said device are extremely low, since said profile features can either be directly provided in the appropriate surface areas of the injection mold used for manufacturing the protection cap, or said profile features are formed in a separate part, which is riveted, snapped, glued, ultrasonically welded or otherwise attached onto a base part.

[0014] When said profile features are formed in a separate part, said part could optionally be made from a material selected solely for the conditioning purpose. The conditioning device could be made of materials ranging from soft rubberlike to rigid substances and/or could be coated or surface treated, which for example affects friction.

[0015] When the shape of the "conditioning & protection cap" allows it to be attached over the shaver head in two opposed positions, a choice of two different profile features could be provided on the opposed sides.

[0016] The profile features provided on the cap according to the invention, have a certain similarity to features normally used on guard bars of one-way shavers, but the choice of characteristics of said profile features, in an inventive step, take advantage of the fact, that there is no razor blade edge in immediate vicinity of said profile features.

[0017] The absence of said razor blade edge allows to choose such profile features solely for their maximum efficiency for the conditioning treatment prior to the shaving act.

[0018] In the known shavers, guard bars are arranged close to and parallel with razor blade edges. The purpose of the guard bar is to stretch the skin in order to prevent the formation of swiftly forming creases or waves when the shaver under light pressure is drawn over the skin. If the convex top of such creases or waves is formed in the space between the guard bar and the razor blade edge, nicking (minute cuts) easily occurs.

[0019] Such surface profiles on guard bars of shavers

must be limited in profile depth in order to avoid nicking. A type of profile found on most guard bars consists of a number of small steps arranged parallel with and in immediate vicinity to the razor blade edge. The razor blade is clamped against a supporting base part by means of a cover part, the front end of which is arranged parallel with and in immediate vicinity of the blade edge. The exact location of the razor blade edge relative guard bar and cover, which, during shaving are in contact with the skin, provides the "shaving geometry". Ideally, the bar stretches the skin ahead of the edge, while the cover should glide easily over the skin surface and not contribute to promoting skin formations prone to nicking. Such profiles are of limited efficiency for lifting up and adjusting hair in front of an approaching razor blade edge. Shaving "against the grain", which may help freeing some hair in "problem regions" (the location varies from person to person) is considered a substantial risk for nicking.

[0020] The cap of the invention, which has profile features provided on its surface, is used for the conditioning, when it is attached over the front portion of the shaver head, for the purpose of shielding the blade edge.

[0021] Since the razor blade edge is shielded during conditioning, one can, without risk nicking, push harder and more vigorously than in normal shaving as well as move in arbitrary directions, in order to lift up and adjust the hair. Furthermore, the profile features for conditioning provided on the cap can be designed, for example, to comprise features with greater profile height, such profiles having wave shaped steps, teeth, calottes or the like. Conditioning also provides advantages when applied prior to shaving longer face or body hair.

[0022] Thus, the conditioning profile on said cap according to the invention, when attached to the front end of the shaver head and shielding the blade, lends confidence to treat "problem regions" and to move "against the grain" until one has freed the hair to be shaved.

[0023] US A 4,502,217 discloses a shaving instrument comprising a guard bar in front of a razor blade edge. The guard bar, on its surface area intended for coming into contact with the skin, is provided with small projections, having, for example, file-type or rasp-type teeth with sharp edges. Such teeth are formed by plastic deformation and displacement of portions of the surface area of the guard bar. The length of the sharp edges vary between 0.3 and 1.0 mm, projecting from the surface of the guard bar between 0.03 and 0.12 mm. Such limitations in size are obviously provided to avoid excessive undulation and irritation of the skin. However, it is mentioned in the description, that the instrument can also be used without a blade either for massaging the facial skin or for adjusting the hairs of a beard prior to shaving.

[0024] The invention disclosed in the present application, proposes to provide a protection cap for the razor blade edge with conditioning features such as parallel steps or ridges, wave shaped profiles, file-type or rasp-type teeth, calottes or the like. Said features are provided on at least that part of said cap, located in a region in contact with the face when the shaver (with the cap shielding the blade) is guided over the skin in the same way as typical during shaving.

[0025] Since all these features are formed by injection molding, one can select the comer and edge radii. This allows substantial undulation, while avoiding irritation of the skin during conditioning.

[0026] Electrical shavers with vibrating cutting elements are known. Some of such shavers can be used for dry or wet shaving. The present invention relates to "classical" wet shavers without any parts which are moving or vibrating by electrical or mechanical means.

[0027] The invention is explained in more detail in connection with the accompanying drawings which show preferred embodiments of the invention. In the drawings,

Fig. 1 shows a shaver according to the invention with its cap removed,
Fig. 2 shows a cap provided with conditioning profiles, according to the invention, usable with the shaver of Fig. 1,
Fig. 3 shows, schematically, the cap of Fig. 2, securely attached over the front portion of the shaver head of Fig. 1, while being drawn over the skin,
Fig. 4 shows a cap according to the invention similar to the cap shown in Fig. 2 but with wave-like profile features,
Fig. 5 shows still an other cap similar to the cap of Fig. 4, but with teeth-like profile features,
Fig. 6 shows a conditioning device according to the invention, where the profile features are formed on a separate part which is connected with a protection cap,
Fig. 7 shows lentil-formed profile features according to the invention in perspective view and cross section,
Fig. 8 shows still an other embodiment of profile features in top view and cross section and
Figs. 9 and 10 show an other arrangement of the profile features of Fig. 8.

[0028] As mentioned above, applicable to all embodiments, moldmaking techniques for injection molding allow to choose suitable radii of the edges and corners. Such radii, preferably in a size of 0.02 to 0.3 mm are not depicted realistically in the drawings. The distance between steps or ridges preferably varies from 0.2 to 1.0 mm, and the pitch of waves or teeth preferably from 1.0 to 3.0 mm.

[0029] Fig. 1 comprises a shaver with a head 1, a handle 2 and a cover part 3. A razor blade 5 is firmly clamped between a supporting part 29 and a cover part 3. A guard bar 6 is provided in front of the edge 5' of the razor blade 5. A cap 4 is shown at a small distance from the shaver in a position, which corresponds to its position some mo-

ments after having been taken off from the shaver or some moments prior to its mounting on the shaver.

[0030] The cap 4, shown also in Fig. 2 in perspective view, fits, preferably, over the front portion of the shaver and shields the cutting edge 5' of the razor blade 5 and the guard bar 6, and is snapped on by means of bumps 15a, which engage corresponding means 3a and 1a provided on cover part 3 and supporting part 29. Cap 4 has, preferably on its foremost part 33, profile features 7 according to the invention, which are used for massaging the skin and/or adjusting the hairs, when treated with these profile features. The profile features 7, shown in Figs. 1 and 2 only schematically, consist of multiple steps or ridges 14, located in a region oriented and arranged parallel to the cutting edge, when the cap is mounted on the shaver.

[0031] The orientation of the profile features 7 is defined by the intersection line between the front plane 13 and one of the side planes 15.

[0032] Due to the symmetry of the rear region 30 of the cap 4, two such profile features 7, 7' can be provided, either identical in shape and structure, or different. This allows the user to choose, according to his personal experience, between two conditioning features with different characteristics. Depending on how the cap 4 is mounted on the shaving instrument, the one or the other of such features is used for conditioning.

[0033] During conditioning the shaving instrument is moved along the skin similar to the movements during actual shaving, but with the cap 4 securely attached over its place on the front portion of the shaver head as it is shown in Fig. 3. From this figure it is easy to see, that the handling of the device according to the invention corresponds essentially to the handling of a shaver during actual shaving. Since the blade edge is shielded during conditioning, one can move with confidence in arbitrary directions or even "against the grain"

[0034] Fig. 4 shows a cap with ridges similar to the ridges of the cap according to Fig. 2. A difference is, that the ridges 18 and 19 according to Fig. 4 are not rectilinear but undulated, intended to amplify the massaging and hair-lifting effect. The ridges 19 undulate in planes parallel to the side planes 15, the ridges 18 undulate in planes parallel to front plane 13. The ridges 18 are shown in top view on the side figure to Fig. 4.

[0035] Another preferred embodiment of profile features 7 and/or 7' is shown in Fig. 5, comprising rows 8, 9, 10 of teeth 11 with edges 12, the rows 8 to 10 oriented parallel to the cutting edge of the razor blade when the cap 4 is mounted on a shaver. The length of each individual tooth 11 is preferably about 0,5 to 1,5mm.

[0036] Preferably, the space between the teeth is 0.5 to 2.0mm, the rows are arranged with a stepheight of 0.3 to 1.5mm substantially corresponding to the height of the teeth. The front-most teeth 21 and the rear-most teeth 22 of Fig. 5 protrude from the surfaces 13 and 15, respectively.

[0037] All edges 12 have preferably small radii between 0.03 and 0.15 mm. A side figure to Fig. 5 shows a front view of a part of some of the teeth 11 with their ridges 12.

[0038] The profile features 7, 7' can be formed either by an injection molding process or by subsequent forming, e.g. coining or the like.

[0039] When used in connection with one-way shavers, the conditioning features can be made from a material, e.g. polystyrene, polypropylene, having a lifetime corresponding at least to the useful lifetime of the razor blade edge. This means, that the provision of two different features on one device provide the user with a conditioning device which outlasts the razor blade edge, even if the user prefers only one side. Provided, the conditioning features are formed directly into the protection cap, the costs are zero except for the tooling.

[0040] Fig. 6 shows, in a perspective view and in a cross section, a further variation of the invention. The profile features 7, 7' are formed on a separate part 16, which part can be mounted on a cap. In Fig. 6, this separate part 16 is riveted to a cap 17. The separate part 16 itself has at least one protrusion 23 which fits in a corresponding hole of the cap and is plastically deformed during the riveting procedure. The protrusion and the hole are both formed during the injection molding of the respective parts.

[0041] This embodiment has the advantage that the separate part 16, including the profile features, can be produced from a material which is especially suitable for the conditioning procedure. The profile features on the separate part 16 can, of course, have the shape of the profile features shown in Figs. 4 and/or 5.

[0042] Fig. 7 shows, in a perspective view and in a cross-sectional view according to the dash-dotted-line, profile features consisting of a plurality of substantially spherical calottes 20 arranged in rows, offset patterns or the like on an essentially plane 31 part of a conditioning device.

[0043] Each calotte projects preferably 0.2 to 0.7 mm from the surrounding plane and includes, at its base, an angle α of 15° to 90°, more preferably of 40° to 60° with said plane. Preferably, the calottes cover of about 20 % to about 70 % of the total area constituting said profile features, but the packing density can be increased to the maximum, where all the adjacent calottes are in contact with one another.

[0044] Figs. 8 to 10 show profile features similar to the profile features of Fig. 7 but consisting of a plurality of elongated calottes 32. Their geometrical relations with the surrounding plane 31 and their degree of packing density are substantially as described above, under Fig. 7. Preferably, the length of each elongated calotte is between 0.3 to 2 mm, more preferably between 0.5 to 1.5 mm. It is of course, possible to vary the form of such calottes, for example to give them more the form of ellipsoid-calottes.

[0045] The shown embodiments differ in the pattern of arrangement of said elongated calottes on said plane:

Fig. 8 shows, in a perspective view and in a cross-sectional view according to the dash-dotted-line, a zi-zag-pattern, Fig. 9 in a perspective view an aligned pattern with offset-configuration of the calottes and Fig. 10 in an perspective view, an aligned pattern with aligned calottes.

Claims

1. Device, comprising a razor and a cap (4) which is mountable on the razor to protect the blade, **characterized in that** at least a part of the surface of the cap (4) comprises profile features (7, 7'), as elongated or waved ridges (14, 18, 19) or file-type or rasp-type teeth (11, 22), spherical or elongated calottes (20, 32), or other small projections, which profile features serve for the treatment of the skin and/or the hairs, especially in the region of the human face and especially prior to a shaving operation,

2. Device according to claim 1 **characterized in that** said profile features (7, 7') are formed on a separate part (16) which is mounted on said cap, preferably by riveting, gluing, welding or the like.

3. Device according to claim 1, **characterized in that** two different profile features (7, 7') are provided symmetrically on said cap (4).

4. Device according to claim 1, **characterized in that** said profile features (7, 7') consist of at least three rows (8, 9, 10) of teeth (11) with edges (12), each row and said edges extending essentially parallel to the cutting edge (5') of the razor blade (5) when the cap is mounted on the shaver.

5. Device according to claim 4, **characterized in that** the length of each individual tooth edge (12) is preferably about 0,5 to 1,0 mm and whereby the teeth (11) within each row (8, 9, 10) have a spacing of preferably about 1,0 mm.

6. Device according to claim 1, **characterized in that** said profile features (7, 7') consist of parallel steps.

7. Device according to claim 1, **characterized in that** said profile features (7, 7') consist of parallel ridges (14).

8. Device according to claim 1, **characterized in that** said profile features (7, 7') consist of wave shaped profiles (18, 19).

9. Device according to claim 8, **characterized in that** the plane of the waves of the wave shaped profiles (18) is parallel to a side plane (15) of said cap (4).

10. Device according to claim 8, **characterized in that** the plane of the waves of the wave shaped profiles (19) is parallel to a front plane (13) of said cap (4).

11. Device according to claim 1, **characterized in that** said calottes (20, 32) project about 0.2 to 0.7 mm from a surrounding plane (31) and include, at their base, an angle (α) of 15° to 90°, preferably from 40° to 60° with said plane (31).

12. Device according to claim 1 or 11, **characterized in that** said calottes (20, 32) cover of about 20 % to about 70 % of the total area constituting said profile features (7, 7').

Patentansprüche

1. Vorrichtung, umfassend ein Rasiergerät und eine Kappe (4), die auf das Rasiergerät aufsetzbar ist, um die Rasierklinge zu schützen, **dadurch gekennzeichnet, daß** zumindest ein Teil der Oberfläche der Kappe (4) Profilelemente (7, 7'), wie längliche oder gewellte Kanten (14, 18, 19) oder feilenartige oder raspelartige Zähne (11, 22) sphärische oder längliche Kalotten (20, 32) oder andere kleine Vorsprünge aufweist, welche Profilelemente zur Behandlung der Haut und/oder der Haare, speziell im Bereich des menschlichen Gesichtes, und ganz speziell vor einer Rasur, dienen.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** die Profilelemente (7, 7') auf einem eigenen Teil (16) vorgesehen sind, der auf der Kappe montiert wird, bevorzugt durch Nieten, Kleben, Schweißen od. ähnl..

3. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** zwei unterschiedliche Profilelemente (7,7') symmetrisch auf der Kappe (4) vorgesehen sind.

4. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** die Profilelemente (7, 7') aus zumindest drei Reihen (8, 9, 10), von Zähnen (11) mit Kanten (12) bestehen, wobei jede Reihe und die Kanten im wesentlichen parallel zur Schneide (5') der Rasierklinge (5) verlaufen, wenn die Kappe am Rasiergerät montiert ist.

5. Vorrichtung nach Anspruch 4, **dadurch gekennzeichnet, daß** die Länge jeder individuellen Zahnkante (12) vorzugsweise etwa 0,5 bis 1,0 mm beträgt und daß die Zähne (11) innerhalb jeder Reihe (8, 9, 10) einen Abstand von bevorzugt etwa 1,0 mm voneinander aufweisen.

6. Vorrichtung nach Anspruch 1, **dadurch gekenn-**

zeichnet, daß die Profilelemente (7, 7') aus parallelen Stufen bestehen.

7. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** die Profilelemente (7, 7') aus parallelen Graten bestehen.

8. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** die Profilelemente (7, 7') aus wellenförmigen Profilen (18, 19) bestehen.

9. Vorrichtung nach Anspruch 8, **dadurch gekennzeichnet, daß** die Ebene der Wellen der wellenförmigen Profile (18) parallel zu einer Seitenebene (15) der Kappe (4) verläuft.

10. Vorrichtung nach Anspruch 8, **dadurch gekennzeichnet, daß** die Ebene der Wellen der wellenförmigen Profile 19 parallel zu einer Frontebene (13) der Kappe (4) verläuft.

11. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** die Kalotten (20, 32) etwa 0,2 bis 0,7 mm über die sie umgebende Ebene (31) vorstehen und an ihrer Basis einen Winkel α von 15 bis 19°, bevorzugt von 40 bis 60° mit der Ebene (31) einschließen.

12. Vorrichtung nach Anspruch 1 oder 11, **dadurch gekennzeichnet, daß** die Kalotten (20, 32) zwischen etwa 20 bis etwa 70 % der Gesamtfläche bedecken, auf der die Profilelemente (7, 7') ausgebildet sind.

Revendications

1. Dispositif, comprenant un rasoir et un capot (4) apte à être monté sur le rasoir pour protéger la lame, **caractérisé par le fait qu'**au moins une partie de la surface du capot (4) comprend des éléments profilés (7, 7'), en forme d'arêtes allongées ou ondulées (14, 18, 19) ou de dents de type lime ou de type râpe (11, 22), de calottes sphériques ou allongées (20, 32), ou d'autres petites saillies, ces éléments profilés servant au traitement de la peau et/ou des poils, spécialement dans la région du visage humain et spécialement avant l'opération de rasage.

2. Dispositif selon la revendication 1, **caractérisé par le fait que** les éléments profilés (7, 7') sont formés sur une partie séparée (16) qui est montée sur le capot, de préférence par rivetage, collage, soudage ou autre.

3. Dispositif selon la revendication 1, **caractérisé par le fait que** deux éléments profilés différents (7, 7') sont placés de façon symétrique sur le capot (4).

4. Dispositif selon la revendication 1, dans lequel les éléments profilés (7, 7') sont constitués par au moins trois rangées (8, 9, 10) de dents (11) à arêtes (12), chaque rangée et les arêtes s'étendant sensiblement parallèlement à l'arête de coupe (5') de la lame de rasoir (5) lorsque le capot est monté sur le rasoir.

5. Dispositif selon la revendication 4, **caractérisé par le fait que** la longueur de chaque arête de dent individuelle (12) est de préférence d'environ 0,5 à 1,0 mm et ainsi les dents (11) dans chaque rangée (8, 9, 10) présentent un espacement de préférence d'environ 1,0 mm.

6. Dispositif selon la revendication 1, **caractérisé par le fait que** les éléments profilés (7, 7') sont formés en gradins parallèles.

7. Dispositif selon la revendication 1, **caractérisé par le fait que** les éléments profilés (7, 7') sont formés en arêtes parallèles (14).

8. Dispositif selon la revendication 1, **caractérisé par le fait que** les éléments profilés (7, 7') présentent des profilés ondulés (18, 19).

9. Dispositif selon la revendication 8, **caractérisé par le fait que** le plan des ondulations des profilés ondulés (18) est parallèle à un plan latéral (15) du capot (4).

10. Dispositif selon la revendication 8, **caractérisé par le fait que** le plan des ondulations des profilés ondulés (19) est parallèle à un plan frontal (13) du capot (4).

11. Dispositif selon la revendication 1, **caractérisé par le fait que** les calottes (20, 32) font saillie d'environ 0,2 à 0,7 mm d'un plan environnant (31) et présentent, à leur base, un angle (alpha) de 15 degrés à 90 degrés, de préférence de 40 degrés à 60 degré par rapport au dit plan (31).

12. Dispositif l'une des revendications 1 et 11, **caractérisé par le fait que** les calottes (20, 32) couvrent environ 20 % à environ 70 % de la totalité de la zone constituant les éléments profilés (7, 7').

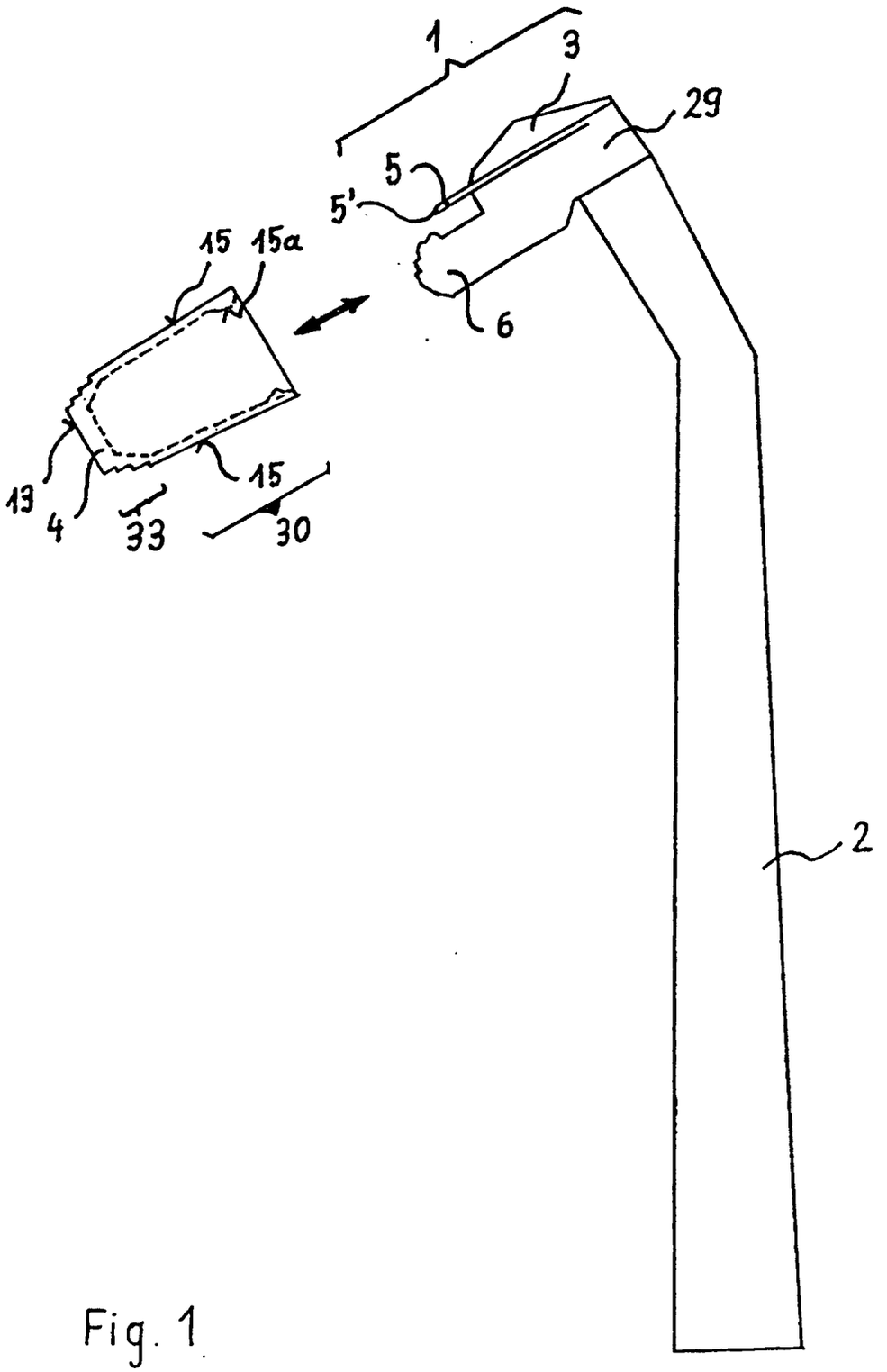


Fig. 1

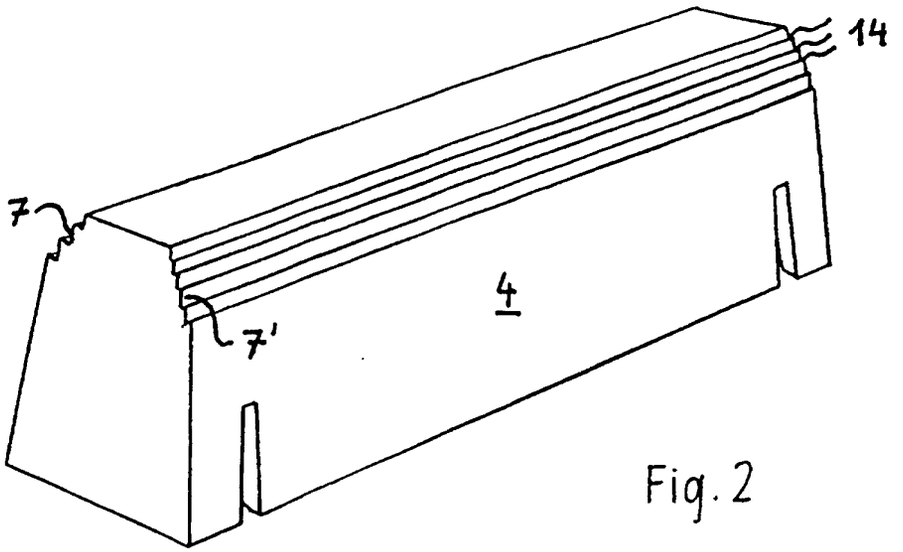


Fig. 2

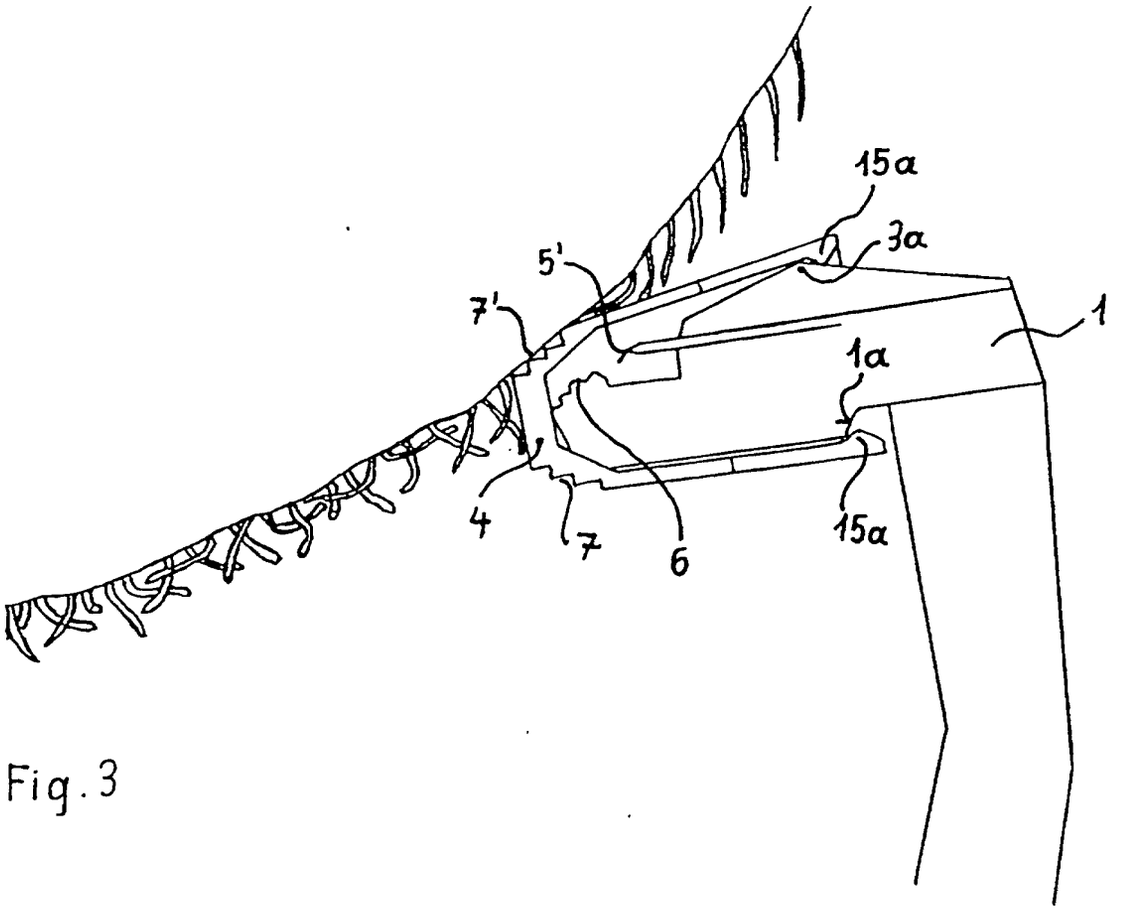


Fig. 3

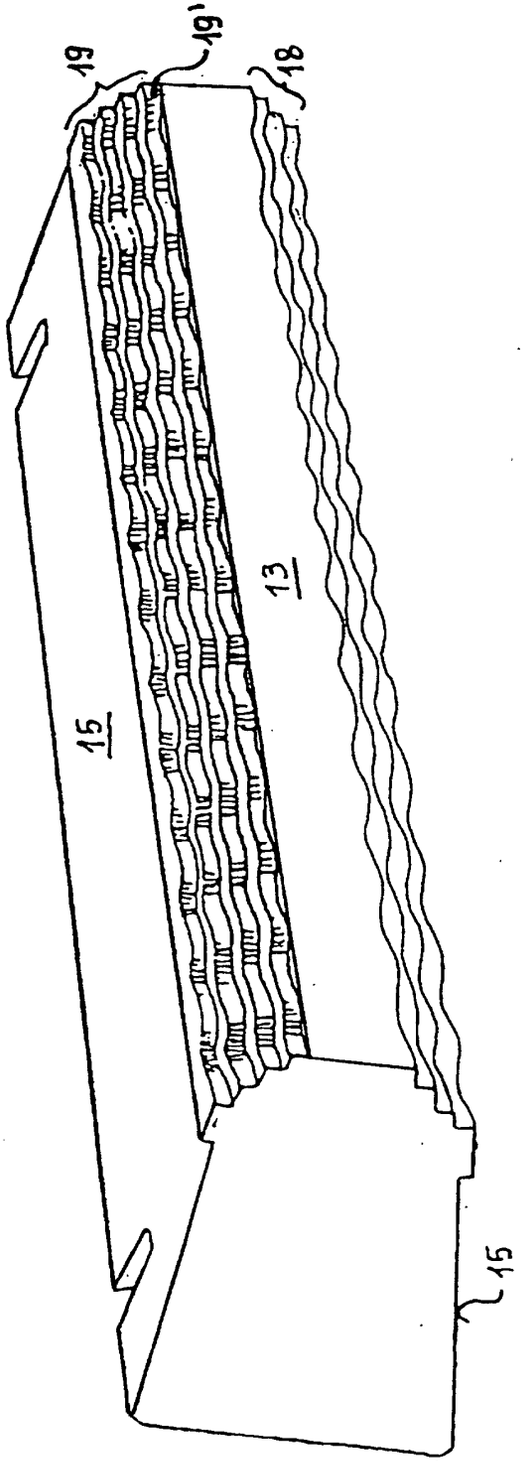
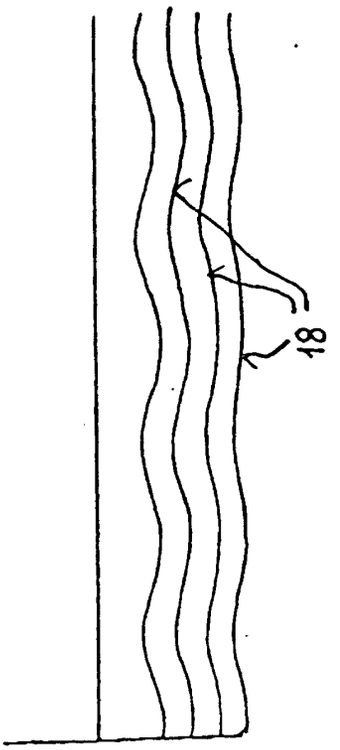
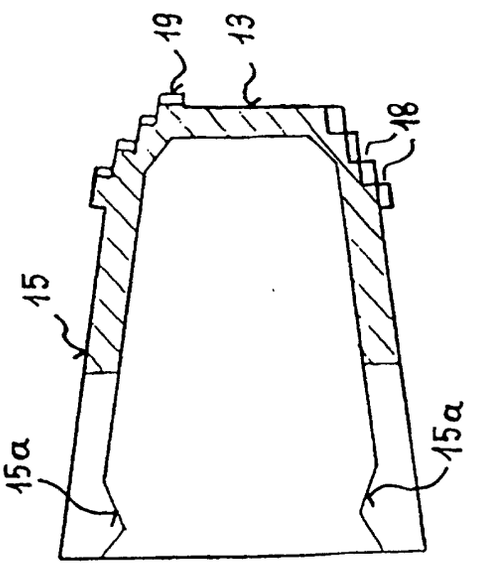


Fig. 4





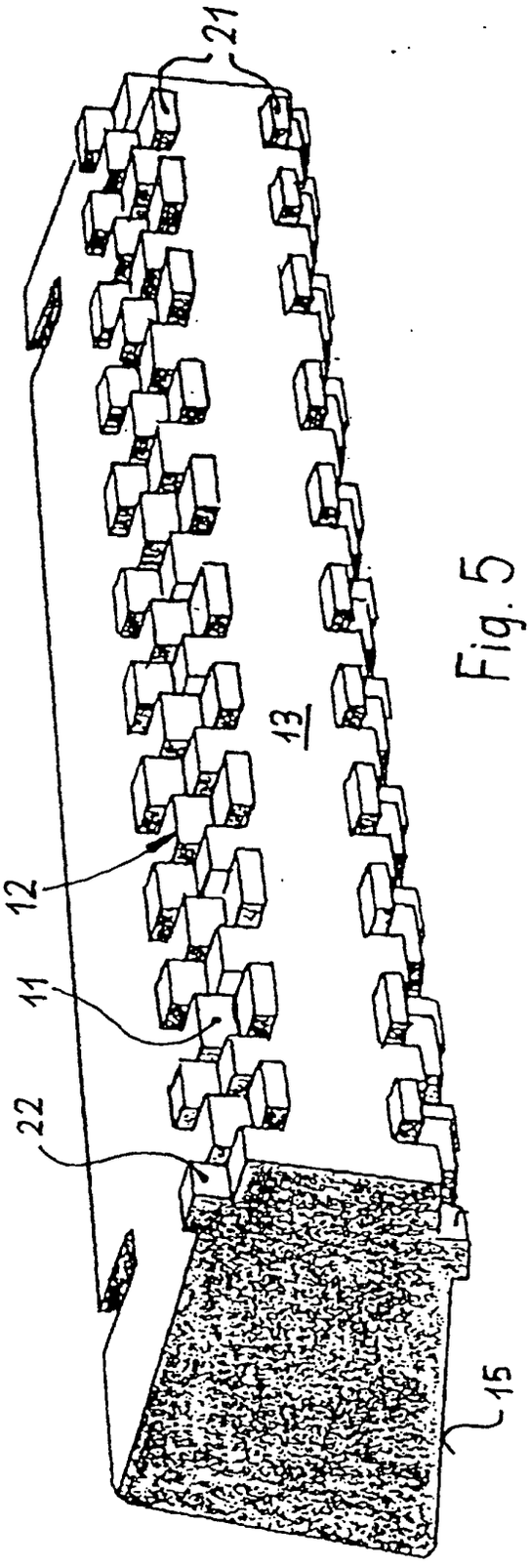
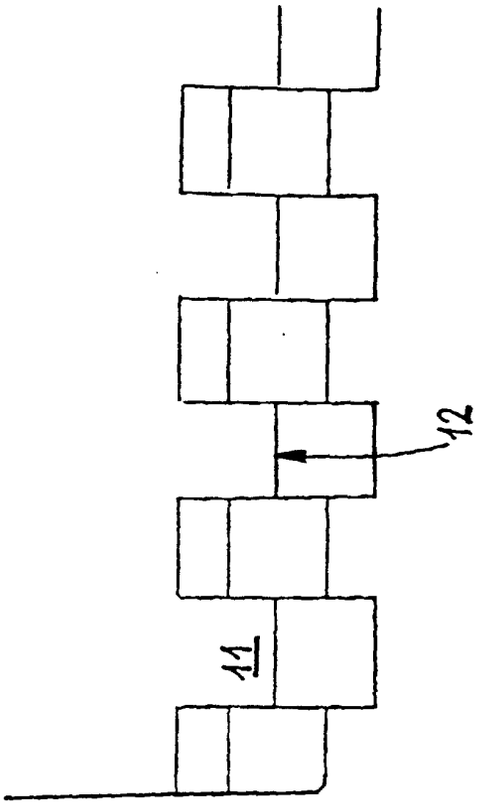
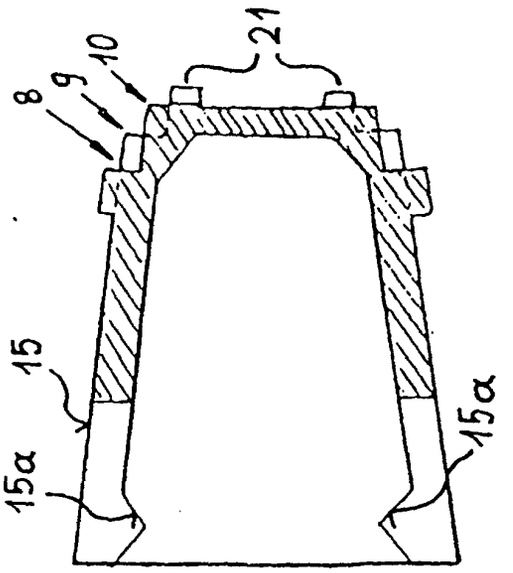


Fig. 5





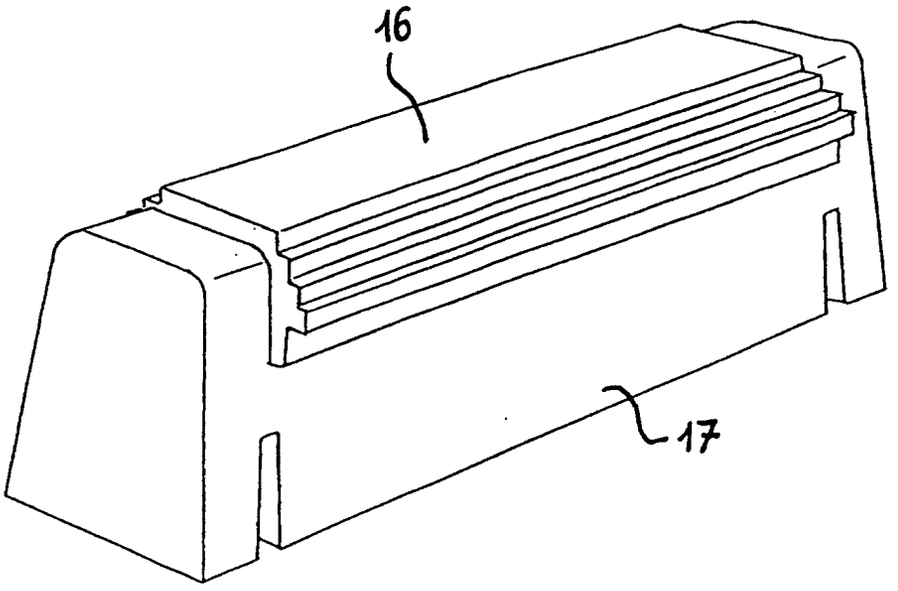
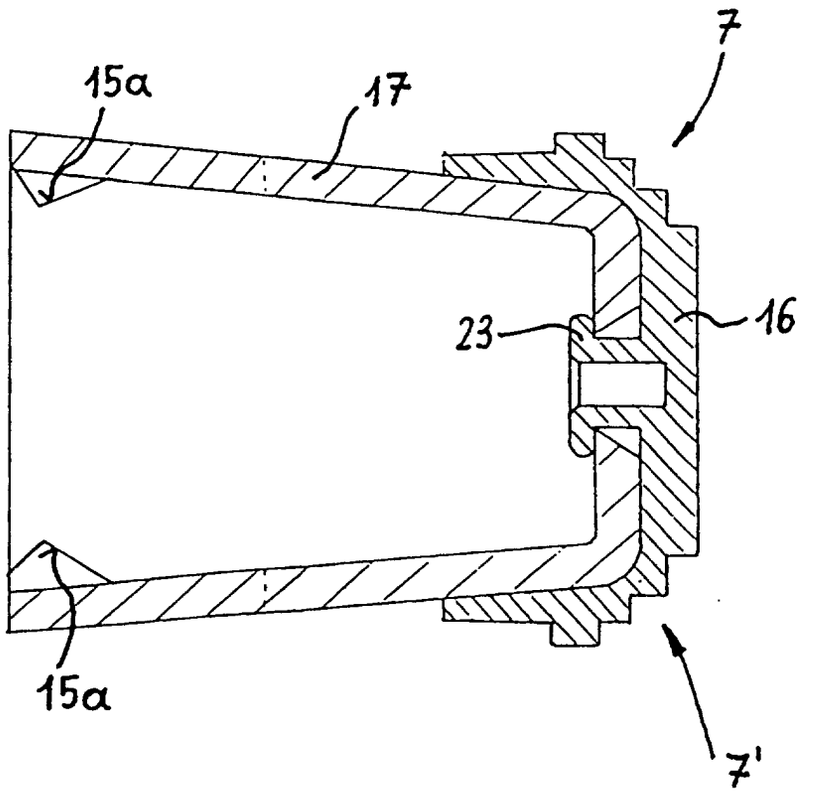


Fig. 6



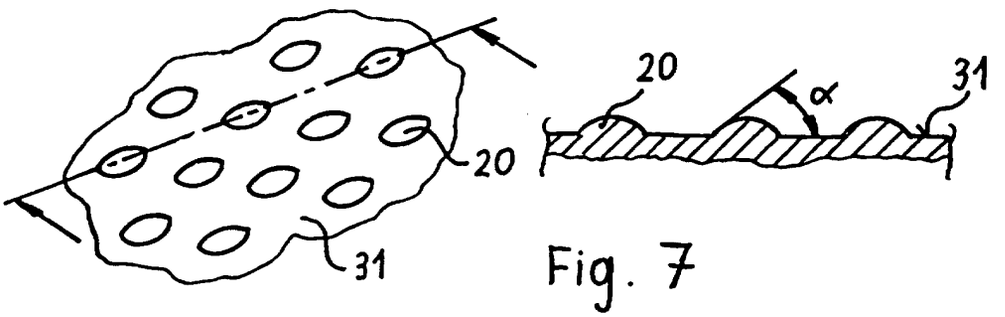


Fig. 7

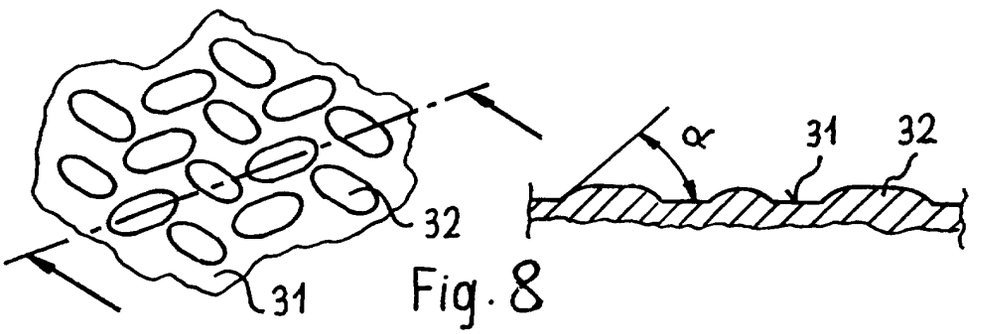


Fig. 8

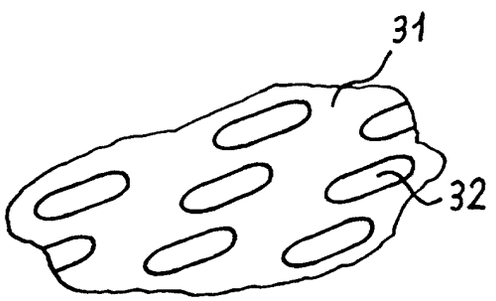


Fig. 9

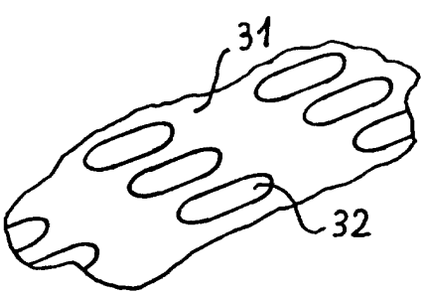


Fig. 10