

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number:

0 284 690
A2

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: 87310394.9

(51) Int. Cl.4: **A45D 20/12**

(22) Date of filing: 25.11.87

(30) Priority: 30.03.87 US 31847
21.10.87 EP 87309285

(43) Date of publication of application:
05.10.88 Bulletin 88/40

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

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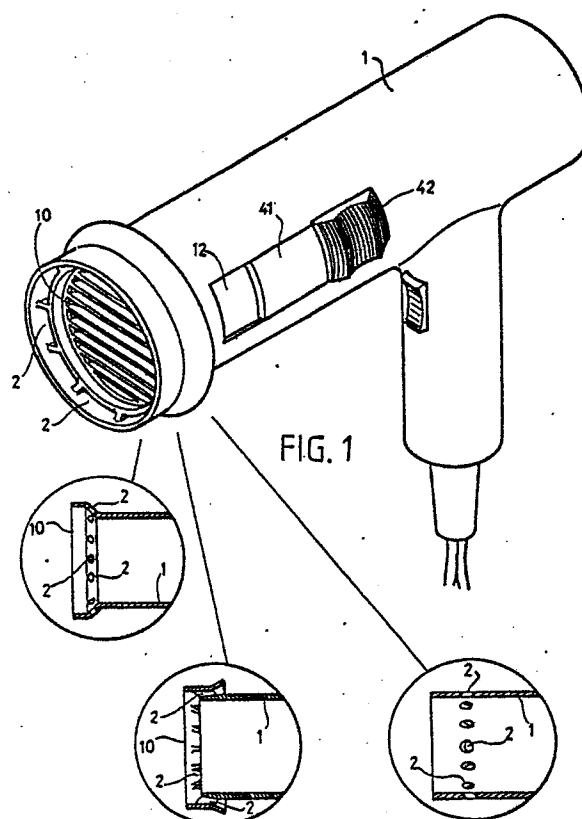
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(54) Hair dryer.

(57) This is an improved structural design for a hair dryer. Its feature is that on the housing wall near the blowing opening rim of the hair dryer, make the exhaust holes to blow out an air flow. They are in an opposite direction and inclining to the out blowing air flow. When a blowing opening of a dryer is blocked, they produce an outflow function. They improve the phenomenon of overheating or burning out an electric heater in case a blowing opening of a dryer is blocked. One step ahead, an alternative design is to make limited pressure flaps on the outer part of exhaust holes. When the pressure inside the exhaust holes becomes excessively pressured by a blocked or half-blocked blowing opening, the flaps may be pushed open. When over-loaded, the highly pressured air flow may be released through the exhaust holes.

One more step ahead, it may be designed to have an adjustable mixing flow air-window at the same time. By applying the siphoning effect, it may inhale the outer cool air and blow it into the back section of the air blow blades of a hair dryer enabling to adjust the heated air flow temperature by a mixing method.

It is different from a traditional method of adjusting heat producing volume of an electric heating wire.



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It is different from a traditional method of adjusting heat producing volume of an electric heating wire.

Background of the Inventor:

A traditional hair dryer, while an air flow blows through an electric heating wire, if its blowing opening is blocked, a highly heated air flow accumulates inside of a housing, causes burning out of the whole electric heater or destroy an electric heating wire. Even if the blowing opening is less partially blocked, the temperature of the electric heating wire still goes up, the small amount of out-blowing air flow carries most of the heat. So that, the temperature of the air flow may rise suddenly, causing the accidental burning of the hair of the skin.

The control of the air flow volume and the change of the electric heat producing volume of an ordinary hair dryer are conducted simultaneously by a switch. It cannot supply the temperature adjustment under the constant air flow.

In fact, the temperature adjustment under the constant air flow is most needed when we use a hair dryer.

Summary of the Invention

To eliminate the above stated defect, this improvement on a hair dryer supplies one kind of a dryer that has multiple exhaust holes with height differential on the air blowing opening. In case a blowing opening is blocked, the exhaust holes perform, leading the air function and mitigate the eclectic heat wire from rapid rising temperature. Thus it can prolong the useful life of an electric heat wire. One step ahead, a sliding cover controls the size of a mixing air flow window on the dryer housing at the back portion of the blowing blades and by applying siphoning effect, it inhales outer air, mixes removing hot air flow inside. By intermingling, the air flow temperature adjustment can be made under the same air flow volume.

Brief Description of the Drawings:

Figure 1. A solid view of a hair dryer of this invention.

Figure 2. A front view of a hair dryer of this invention.

Figure 3. A sectional view on  -  of Figure 2.

Figure 4. A solid view of an exhaust pipe cap of a hair dryer of this invention.

Figure 5. A sectional view of an exhaust pipe cap of a hair dryer of this invention.

Figure 6. An implementation example of a multiple cornered cap of a hair dryer for this invention.

Figure 7. A sectional view of two layered annular shaped exhaust holes of a hair dryer for this invention.

Figure 8. A sectional view of A-A in the Figure 8.

Figure 9. A solid view of a ripple shaped blowing opening of a hair dryer for this invention.

Figure 10. An assembling sectional view of a ripple shaped blowing opening of a hair dryer for this invention.

Figure 11. The first sectional view of an exhaust cap with reducing opening to be assembled on a hair dryer with a reducing blowing opening for this invention.

Figure 12. The second sectional view of an exhaust cap with reducing opening to be assembled on a hair dryer with a reducing blowing opening for this invention.

Figure 13. A solid view of direct cuttings on the blowing opening rim intended to work as exhaust holes for a hair dryer of this invention.

Figure 14. By selecting the position of a blow focusing cap (exhaust cap), the blowing function of a hair dryer may be selected among the unadjusted temperature focused blowing, the adjusted temperature focused blowing and the wide spread blowing without a cap.

Figure 15. A blow focusing cap as shown in the Figure 14 blocks exhaust holes. It is the implementation example of the unadjusted temperature focused blowing.

Figure 16. A blow focusing cap as shown in the Figure 14 is attached to a hair dryer on the position that exhaust holes can be exposed and provides the exhausting air flow function.

Figure 17. One step ahead, on the blow focusing cap as shown in the Figure 14, make windows so that exhaust holes can be exposed through.

Figure 18. On a blow focusing cap as shown in the Figure 14 and a paralleled column shaped blowing opening, position fixing protruding points and an indented annular groove are made separately for fixing the position.

Figure 19. On a blow focusing cap, several windows are made to correspond exhaust holes. By turning a blow focusing cap, it can be adjusted to pose as the passages or coverage on exhaust holes.

Figure 20. Is a three dimensional view of another embodiment of the invention;

Figure 21. Is a top plan view of Figure 20;

Figure 22. Is a side elevation on Figure 20;

Figure 23. Is a side elevation showing the hair dryer of Figure 20 in a folded configuration, and

Figure 24. Is a side elevation showing the hair dryer of Figure 20 attached to a wall.

Figure 25. Shows an exploded three dimensional view of another embodiment, and

Figure 26. Is a bottom plan view of Fig. 25.

DETAILED DESCRIPTION OF THE INVENTION.

As shown in Figure 1, multiple exhaust holes 2 are made on the rim wall around the blowing opening 10 of a housing 1 of a hair dryer of this invention.

The total opening area of these exhaust holes areas must be at least larger than half of the blowing opening 10 area.

The opening directions of the exhaust holes 2 are in opposite direction and inclining to the air flow out-blowing direction. Their structures may be as the three enlarged sectional views of practical examples shown in Fig.1. Namely, on the housing wall, drill forward inclining exhaust holes 2; or on the housing tube variation part of the blowing open-

ing 10, make two tube sections to have a differential; at the jointed part, make opposite direction inclining exhaust holes 2, allowing the exhaust holes 2 to lead easily the air flow that is led out in an opposite direction. With this, when the blowing opening 10 is blocked, part of the air flow may be led out through the exhaust holes 2. When the blowing opening 10 is completely blocked, the leading function of the exhaust holes 2 may lower the possibility of an electric heat wire from over heated destruction.

These exhaust holes 2 may be made on the blowing opening 10 cover body that is attached to a hair dryer. The cover body has one of the above stated various structures.

As shown in Fig. 2, the above stated exhaust holes 2 may have limited pressure flaps 3 on the outer housing. While flaps are not pushed by the air flow, the exhaust holes 2 remain covered. When casting a housing, make a flange at the back part of each exhaust hole 2, corresponding to the limited pressure flaps 3. The flange is used to fix the limited pressure flap 3 with a twisting spring.

Thus the pushing pressure on the exhaust hole 2 from the inside air flow exceeds a certain pressure, then the flap is pushed open and leads out the highly pressured air flow.

The limited pressure flaps 3 as stated above, one step ahead, may be controlled by twisting spring or other mechanical spring plate, enabling the limited pressure flaps to raise to certain degrees and then open completely and automatically.

On the housing 1 of this invention, at the pipe body behind the wind blades, make on horizontal or vertical mixing flow opening 12, as shown in Figure 1,2,3. On the pipe body of the two corresponding sides of this mixing flow opening 12, make gradually indenting inward grooves. The grooves are V-shaped, oblong rails, corresponding to each other by protrusions and indents. This allows an adjustable window 4 to be snapped into and make side movement. As shown in Figure 3, an adjustable window 4 may consist of a snapping plate 41 and a pushing base 42. After it is snapped onto the mixing flow opening 12, the pushing base 42 is located near the pistol-grip, making it easy to push while operating. After the snapping plate 41 is snapped in, its end and the front rim end of the adjustable window 4 have a proper differential. Thus, while exhausting, the reverse flow of the heated air does not in a direct collision with an out-blow, heated flow.

This adjustable window 4 may adjust the opening size of the mixing flow opening 12. When blowing the wind, by siphoning effect, the air flow inside the pipe inhales the outer air, mixing inner heated air flow, changing the blowing temperature, enabling to control the blowing temperature of a

hair dryer using an adjustable window 4 under the constant blowing speed. It eliminates to change the running speed of the blowing motor and the heating volume. It enables to make the unsectioned temperature control. It is the specific feature.

This invention, one step ahead, an exhaust pipe cap 5 having exhaust windows 52 may be mounted on it. This supplies a complete hair dryer and produce an exhaust function, shown as Figure 4 and Figure 5. The mounting end of this exhaust pipe, only a short portion of it, has an outer annular 51 with knurls on it. There are many oblong shaped exhaust windows 52 on the front section. The outer rim of the blowing opening of a hair dryer are threaded and the inner rim of the exhaust pipe cap 5 are threaded correspondingly. Thus the exhaust pipe cap 5 may be screwed on the end of the blowing opening. It also enables the exhaust windows 52 to move amount and change covering a blowing opening position. the variations for the uncovered opening area may be gained.

This exhaust pipe cap 5 may have multiple open sleeves enabling it to be mounted directly on the complete outer pipe of the blowing opening.

The small section of the pipe end of a hair dryer of the above invention may be made to contract inward for a smaller diameter, having a certain differential between the exhaust pipe 5, enabling to lead out the opposite hot air flow while exhausting.

As shown in Fig.6, the mounting end of the exhaust pipe cap 5, one step ahead, may have multiple angle shaped pipe or multiple angle, arc shape pipe 7. When it is mounted on the blowing opening 10 of the complete, round shaped blowing pipe 1, the protruding part of each angle becomes an exhausting hole. When the end of the pipe cap 7 is blocked, the air flow is exhausted through the gap of protruding apart of each angel to the outside of the blowing pipe 1.

As shown in Fig.7,8, the mounting method of the multiple angle shaped pipe cap may be made as two layers annular exhaust cap 8. The inner angular 81 mounts on the blowing opening 10 of the hair dryer. Between the inner annular 81 and the outer annular, there are more than three supporting plates which form into more than three exhaust holes.

As shown in Fig.9,10, the above mentioned blowing opening of a hair dryer which applies the mounting connection method and exhausting flow function, may have another design. The pipe body of a blowing opening 10 may be a multiple-angel shaped end having uneven waves. As it gradually extends backward, it becomes a complete round, annular pipe. Its exhausting cap may be a complete annular pipe 811. The inner diameter of the annular pipe cap 811 may reduce gradually toward

its end. When it is mounted on an uneven waves shaped blowing opening body 10, it caps about 1/2 length of the uneven waves shape. When the annular pipe cap 811 is blocked, the heated air flow may be led out smoothly through the gap created by the indented part of the blowing opening 10.

The shaped of this uneven waves blowing opening 10 may have a triangle, square, or more than five angles shaped waves.

As shown in Figure 11 and 12, the above stated various exhausting cap 8, or exhausting pipe cap 5, or ordinary blowing opening cap may be made to have a gradually reduced opening end size which corresponds to a gradually reducing size of a blowing opening 10.

When an exhausting cap is blocked, the heated air flow is reversely led out more easily.

The improvement of an hair dryer, one step further, includes at least one set of cuttings 101 at the blowing opening of a hair dryer. From these cuttings, in case the blowing opening is blocked, the heated air flow can be exhausted, as shown in the Figure 13. In the figure, the side exhaust cuttings 101, even at the deepest part, are designed, like a traditional hair dryer, to avoid a heating wire from being touched (the extension of a blowing opening). When a blowing opening is blocked, the heated air flow may be exhausted through side cuttings 101. Before it is completely blocked, when the opening begins to be blocked, part of the heated air flow starts to flow out. Thus, it prevents the air flow at the blowing opening from over heating. It avoids blowing over heated air toward an object, such as scorching the hair.

One step ahead, this invention, by selecting the position of a blow focussing cap, can have the blowing functions with unadjusted temperature focused blowing, adjusted temperature focused blowing and wide spread blowing without a cap. Its implementation example is shown in the Figure 14.

In the Figure, on the side wall of the end section of a paralleled column shaped opening 141 of a hair dryer (includes a round or multiple-sided shape), at least one set of exhaust holes 142, opening from inside toward outside, in the reverse direction to the air flow blowing, are made.

A blow focusing cap 143 is made to fit on the paralleled column shaped blowing opening 141.

This blow focusing cap 143 has a blowing passage 144 which tapering toward the exhaust mouth. With this design, the heated wind at the exhaust mouth can be concentrated and strengthened. It also can slide to move around the column shaped structure 141 that is in parallel to a blowing opening.

Its overlapping side wall length is deep enough to cover up exhaust holes 142.

While a blow focusing cap 143 is taken off, a

blowing opening blows the wide spread heated wind directly.

If a blow focusing cap 143 is placed on the exhaust holes 142 of the end section side wall of a paralleled column shaped blowing opening 141 of a hair dryer, it produces unadjusted temperature concentrated wind as shown in the Figure 15.

A blow focusing cap 143 is placed on the position allowing exhaust holes 142 to be exposed. If blowing opening is blocked, exhaust holes 142 may induct exhaustion, thus preventing the skin from being hurt by overheated blowing.

This design, one step ahead, can be designed to have windows 170 allowing the exposure of exhaust holes 142 which are made on a paralleled column 141 where a blow focusing cap 143 and a blowing opening meet as shown in the Figure 17.

When the windows 170 are positioned to allow the exhaust holes 142 to be exposed, it provides exhaust function. While on the position to cover up, it provides unadjusted temperature concentrated blowing function. If the cap is taken off, it provides the wide spread blowing function.

The above stated blow focusing cap 143, one step ahead, may have an additional position fixing annular indented groove 180 as shown in the Figure 18. Several protruding points 181 that fit into the groove are made on the paralleled column shaped blowing opening 141.

When the protruding points 181 are snapped into the position fixing annular indented groove 180 of a blow focusing cap 143, it provides the temperature adjustable blow focusing function position than has the temperature adjustable blow concentration and exhaust function.

When it snaps on to the deepest position, exhaust holes 142 are blocked and poses as the unadjusted temperature blow concentration situation.

The position of the above stated position fixing annular indented groove 180 and indented points 181 can be exchanged. The annular indented groove (or indented, blind hole) can be made on the outer surface of a paralleled column shaped section of a blowing opening of hair dryer and protruding points can be made on the inner side of a blow focusing cap.

Except this, windows 190 can be made around the blow focusing cap 143 as shown in the Figure 19. Exhaust hole 142 are made on the end section of a blowing opening of a hair dryer. Windows and holes can be adjusted to show a pierce through position or a blocked position. Thus, it provides the selection either adjusted temperature blow concentration or unadjusted temperature blow concentration.

Summing up, this design, applying the protecting side cutting exhaust holes or openings that are

made around the hair dryer blowing opening, can avoid burning up the heating wire which may cause danger, burn or scorch and object by the rising air blow temperature, when the blowing opening is completely or partially blocked.

Figure 20 shows a hair dryer in accordance with the invention comprising a body portion at 202 which is linked to a pod portion 203 by a pair of links 205 which are pivotally connected between the body and pod portions. The hair dryer is shown in a folded condition in solid lines and the pod portion can be swung to a further configuration 203 prime in which it is contiguous with the body portion at 202. In this latter configuration, air is sucked through slots 206 by a blower 212, heated by a heater 201 and emitted as heated air stream from nozzle 200 which is threaded onto the body portion 202 and can be screwed and unscrewed on the body portion to cover up apertures 209 to an adjustable degree in a manner similar to that shown in Figure 4. The arrangement is such that ambient air can be sucked into the heated air stream through apertures 209 by the "Venturi" effect in normal use when the blowing opening of nozzle 200 is unobstructed; whereas when the blowing opening is obstructed, air sucked into the dryer and heated by heater 201 is expelled through apertures 209 to ensure that the heating element does not overheat.

A key hole shaped aperture 204 is provided in pod portion 203 and its purpose is described below.

Figures 21 and 22 illustrate the configuration shown in chain dotted lines in Figure 20 in which the body portion 202 and pod portion 203 are contiguous and also illustrate the complementarily curved mating surfaces 208 and 207 of the body and pod portions respectively.

The links 205 can be swung relative to body portion 202 to release pod portion 203 from the mating configuration shown in Figs. 21 and 22, the pod portion 203 can then be rotated anti-clockwise by approximately 180° and the links 205 swung anti-clockwise by approximately 90° to reach the further configuration shown in Figure 24. In this configuration the key hole shaped aperture shown in Figure 20 engages a projection (not shown) in wall surface 210 and enables the body portion 202 of the hair dryer to be supported at surface 208 from the outer surface of pod portion 203 in a downwardly inclined configuration. In this configuration, the hair dryer can be used to dry hair when mounted on a bathroom for example.

In the configuration shown in Figs. 21 and 22 on the other hand, the hair dryer can conveniently be hand held.

If desired, the intermediate configuration shown in solid lines in Figure 20 can be altered by rotat-

ing pod portion 203 and swinging the links 205 so that the body portion 202 rests on top of pod portion 203. In this configuration the pod portion can be rested on a horizontal surface such as a table (not shown) and can be inclined upwardly to dry the hair of someone seated near the supporting surface.

It will be understood that the invention includes the following features, singly or in combination:

1. The feature that on the housing wall near the blowing opening rim of a dryer, or on the pipe cap attached to the blowing opening, makes at least one exhaust holes or opening for the air flow to exhaust from these side ways. In case the blowing opening is blocked, the over-heating air flow may be exhausted through it and avoid overheating the heating wire or destroying it.

2. The improved structure of a hair dryer as stated in the Feature 1, its alternative exhaust holes structure may be designed to drill the exhaust holes that are bending forward directly on the pipe wall; or on the pipe diameter variation part of the blowing opening position, make tow pipe sections to have a differential, and at the jointed apart, make opposite direction inclining exhaust holes, allowing the exhaust holes to lead easily the air flow that is led out in an opposite direction.

3. The improvement on a hair dryer as stated in the Patent Feature 1, on the housing wall of the exhaust holes, limited pressure flaps may be installed. While flaps are not pushed by the air flow, the exhaust holes remain covered. When casting a housing, make a flange at the back part of each exhaust hole, corresponding to the limited pressure flaps. The flange is used to fix the limited pressure flap with a twisting spring. Thus the pushing pressure on the exhaust hole from the inside air flow exceed a certain pressure, the flap is pushed open and leads out the highly pressured air flow.

The limited pressure flaps as stated above, one step ahead, may be controlled by twisting spring or other mechanical spring plate enabling the limited pressure flaps to raise to certain degrees and then open completely and automatically.

4. The specific feature of the improved structure for a hair dryer as stated in Feature 1, is that on the housing, at the pipe body behind the wind blades, make one horizontal or vertical mixing flow opening. On the pipe body of the two corresponding sides of this mixing flow opening, make gradually indenting inward grooves. The grooves are V-shaped, oblong rails, corresponding to each other by protrusions and indents. This allows an adjustable window to be snapped into and make side movement. An adjustable window may consist of a snapping plate and a pushing base.

After it is snapped onto the mixing flow opening, there is a certain height differential between

the snapping plate and the front adjustable window rim, allowing the opposite direction air flow to be led into easily.

This adjustable window may adjust the opening size of the mixing flow opening. When blowing the wind, by siphoning effect, the air flow inside the pipe inhales the outer air, mixing with the inner heated air flow, changing the blowing temperature, enabling to control the blowing temperature of a hair dryer using an adjustable window index the constant blowing speed.

5. The specific feature of the improved structural design for a hair dryer as stated in the Feature 1 is that an exhaust pipe cap having exhaust windows may be mounted on it. This supplies a complete hair dryer and produces an exhaust function.

The mounting end of this exhaust pipe has a short section of an annular with knurls on it. There are many oblong shaped exhaust windows on the front section. The outer rim of the blowing opening of a hair dryer is threaded and the inner rim of the exhaust pipe cap is threaded correspondingly. Thus the exhaust pipe cap may be screwed on the end of the blowing opening. It also enables the exhaust windows to move around and change the covering area of the blowing opening. The variation for uncovered opening are maybe made.

This exhaust pipe cap may have multiple open sleeves enabling to be mounted directly on the complete outer pipe of the blowing opening.

6. The improved structural design of a hair dryer as stated in the Feature 5, its exhaust pipe cap may have multiple angled protruding part. When it is mounted on the blowing opening, the protruding part of each angle becomes an exhaust-hole.

7. The improved structural design of a hair dryer as stated in the Feature 5, its exhaust pipe cap, one step ahead, may have two layers of annular bodies, where it snaps at the blowing opening. The inner and outer annular are set apart by supporting plates and form several gaps, which perform as exhaust holes.

8. The improved structural design of a hair dryer as stated in the Feature 1, its specific feature is that the pipe body of the blowing opening may be a multiple-angle shaped end having uneven waves. As it gradually extends backward, it becomes a complete round pipe and unable to mount a complete annular pipe cap. The inner diameter of the annular pipe cap may reduce gradually toward its ends. When it is mounted on the blowing opening, it caps only about 1/2 length of the uneven waves shaped end.

9. The improved structural design of a hair dryer as stated in the Features 1,5, and 8, if the blowing opening is round, it may reduce the size

gradually. An exhausting pipe cap or ordinary blowing opening cap may be made to have a gradually reduced opening size.

10. The improved structure of a hair dryer as stated in the Feature 1, one step ahead, includes, at least one set of side cuttings around the blowing opening of a hair dryer. From these cuttings, in case the blowing opening is blocked, the heated air blow can be exhausted.

11. A device to gain control by adjusting the position of the blow focusing cap:

Without blow focusing cap, the blowing opening directly blows out wide spread heated wind.

By placing a blow focusing cap, it covers exhaust holes on the end section of a paralleled column shaped blowing opening of a hair dryer. At this time, it is unadjusted temperature concentrated blow.

A blow focusing cap is placed on the position allowing exhaust holes to be exposed. If blowing opening is blocked, exhaust holes may induct exhaustion, thus preventing the skin from being hurt by overheated blowing.

The main design of a hair dryer and a blow focusing cap that have three functions includes:

On the side wall of the end section of a paralleled column shaped opening of a hair dryer (includes a round or multiple-sided shape), at least one set of exhaust holes, opening from inside toward outside, in the reverse direction to the air flow blowing, are made.

A blow focusing cap is made to fit on the paralleled column shaped blowing opening.

This blow focusing cap has a blowing passage which tapering toward the exhaust mouth. With this design, the heated wind at the exhaust mouth can be concentrated and strengthened.

It also can slide to move around the blowing column shaped structure that is parallel to a blowing opening. Its overlapping side wall length is deep enough to cover up exhaust holes.

12. As a further step, Feature 11, can be designed to have windows, allowing exhaust holes which are made on a paralleled column where a blow focusing cap and a blowing opening meet as shown in the Figure 17.

When the windows are positioned to allow the exhaust holes to be exposed, it provides exhaust function. While on the position to cover up, it provides unadjusted temperature concentrated blowing function. If the cap is taken off, it provides wide spread blowing function.

13. The blow focusing cap that is stated in the Feature 12, one step ahead, an additional position fixing annular indented groove can be made.

Several protruding points that fit into the groove are made on the paralleled column shaped blowing opening.

When the protruding points are snapped into the position fixing annular indented groove of a blow focusing cap, it provides the temperature adjustable blow focusing function position that has the temperature adjustable blow concentration and exhaust function.

When it snaps on to the deepest position, exhaust holes are blocked and poses as unadjusted temperature blow concentration situation.

The position of the above stated position fixing annular indented groove and indented pints can be exchanged. The annular indented groove (or indented, blind hole) can be made on the inner side of a blow focusing cap.

14. A hair dryer that has an adjustable blow focusing cap as stated in the Feature 11, one step ahead, may have the following specific feature:

Windows can be made around the blow focusing cap. Exhaust holes are made on the end section of a blowing opening of a hair dryer. Windows can be added round the blow focusing cap. Exhaust holes are made on the end section of a blowing opening of a hair dryer. Windows and holes can be adjusted to show a pierce through position or a blocked position. Thus, it provides selection either adjusted temperature blow focusing or unadjusted temperature blow focusing.

The hair dryer, shown in Figures 25 and 27 has a handle 103 which can be pivoted between the right-angled configuration as shown in which the dryer can be hand-held and an acute angled configuration in which the dryer handle can support the dryer from a horizontal surface (e.g. a table) or a vertical surface (e.g. a wall).

A round or polygon pipe-shape head 101 consists of two pieces or is monoshaped, both sides of the head with extension shaft 102 which can be put inside of bending pod 103 with both ends in shape of round, straightly appear  shape and lateral appear  shape, of which both round shapes 104 wrapped in between tow centre shafts 102, provided the shafts as the centre for adjustable wrench; the shaft 102 against the bending pod 103, with their fastened style including: the shaft with thread hole 105, the screw adjust and angle setting are controlled by the larger cap-shape screw 106 on two round ends of bending pod, or the shaft 102 embodiment has many indented section arc 116 which shape the indented section 117 with the end of round shape 104 on the bending pod, to offer the spring press coupling and make up a steady phase with the number of indented cut in the shaft alike, at least including store position, parallel position and the angle of cling;

the pipe-shape skull 101, fan open end 107 between the shaft bottom with 90° difference, there has a T-shape hang-nail hole 108; the interior of the pipe-shape skull appear total empty, and one of

its ends is the fan-in open 107, the other end of it is the exhaust 109, both are separately put inside of the protection net 110, in which is equipped with the drive motor 111, to drive the fan leaf, and the heat-proof 113 to be coiled by electrical heat-coil 112 near the end of exhaust 109, there has a temperature regulating release 114 in shape of round in line, the release 114 between the fan exhausted direction is vertical or from inwards to outwards to become slope holes against the direction of the fan, in order to reduce leakage of hot winds during normal conditions.

This is an improved structural design for a hair dryer. Its feature is that on the housing wall near the blowing opening rim of the hair dryer, make the exhaust holes to blow out an air flow. They are in an opposite direction and inclining to the out blowing air flow. When a blowing opening of a dryer is blocked, they produce an outflow function. They improve the phenomenon of overheating or burning out an electric heater in case a blowing opening of a dryer is blocked. One step ahead, an alternative design is to make limited pressure flaps on the outer part of exhaust holes. When the pressure inside the exhaust holes becomes excessively pressured by a blocked or half-blocked blowing opening, the flaps may be pushed open. When over-loaded, the highly pressured air flow may be released through the exhaust holes.

One more step ahead, it may be designed to have an adjustable mixing flow air-window at the same time. By applying the siphoning effect, it may inhale the outer cool air and blow it into the back section of the air blow blades of a hair dryer enabling to adjust the heated air flow temperature by a mixing method.

It is different from a tradition method of adjusting heat producing volume of an electric heating wire.

It will be seen that the embodiment of Figures 25 and 26 has the following features:

A kind of hairdryer facilitated with the functions of manual, parallel, cling and temperature regulating release with the main structure as follows:

a round or polygon pip-shape skull can be consisted of two pieces or monoshaped, both sides of the skull with extension shaft which can be put inside of bending pod with both ends in shape of round, straightly appear  shape and lateral appear  shape, of which both round shapes wrapped in between two centre shafts, provided the shafts against the bending pod, with their fastened style including: the shaft with thread hole, the screw adjust and angle setting are controlled by the larger cap-shape screw on two round ends of bending pod, or the shaft embodiment has many indented section arc which shape the indented section with the end of round shape on the bending

pod, to offer the spring press coupling and make up a steady phase with the number of indented cut in the shaft alike, at least including store position, parallel position and the angle of cling;

the pipe-shape skull, fan open end between the shaft bottom with 90° difference, there has a T-shape hang-nail hole; the interior of the pipe-shape skull appear total empty, and one of its ends is the fan-in open, the other end of it is the exhaust, both are separately put inside of the protection net, in which is equipped with the drive motor, to drive the fan leaf, and the heat-proof to be coiled by electrical heat-coil near the end of exhaust, there has a temperature regulating release in shape of round in line the release between the fan exhausted direction is vertical or from inwards to outwards to become slope holes against the direction of the fan, in order to reduce leakage of hot winds during normal condition.

power lin;

conducting cover for collecting flow, so as to increase the fan pressure and temperature;

the switch equipped with onto the pipe-shape skull or power wires;

Dimension 1 of patent applied, the pod of the hair dryer facilitated with manual, parallel, cling and equipped with temperature regulating release, can be made of metal plate or plastics. Its characteristics are as such that the said plate-shape materials appear close two-stick shape pod, and the pod each with shaft hole which is to be coupling with two pieces of centre shaft on the end of the hair dryer embodiment. These two pieces of shaft hole wrapped into the centre shaft, which will be the centre for adjusting wrench the angle of centre. The way of fastening between the centre shaft with thread hole, can be screw adjusting and setting angle by the larger cap-shape screw on the end of the two-stick pod, instead of the bending pod made of thread materials.

Dimension 1 of patent applied, the pod of the hair dryer facilitated with the functions of manual, parallel, cling and temperature regulating release, with the further characteristics as such, to have the foldable handle with bendable structure, and its lateral end of the foldable handle can be made into a shorter and shift parallel foot. The shift parallel foot with a centre hole can be coupling with the shaft to swing at the end of handle, and to use the handle to swing the parallel foot, and let it get the same shaft direction as that of the handle and make the handle to be bent with between the pipe-shape skull of the hair dryer, and furthermore, to wrench the said parallel pod to be crossed relationship with the handle. Besides, the lateral of bending connect near the handle equipped with T-shape nail-hole for cling to produce a steady phase with the lateral and cross shape parallel pod of the said

handle.

Dimension 1-3 of patent applied, the aforesaid pod uniquely used on the hair dryer.

Dimension 1 of patent applied, the aforesaid temperature regulating release uniquely used on the hair dryer.

Claims

1. A hair dryer comprising an electric heating element (201) and a blower (212) located within a housing means (1; 141; 202) and arranged to generate a heated air stream, the housing means terminating in a blowing opening (10) from which the heated air stream is emitted in use of the hair dryer, characterised by at least one aperture (2; 3; 52; 101; 142; 209) which is located downstream of the heating element (201), said aperture being open at least when the blowing opening (10) is obstructed so as to enable said heated air stream to flow through said aperture out of the hair dryer thereby protect the heating element against overheating.

2. A hair dryer as claimed in claim 1 wherein said at least one aperture (2; 3; 52; 101; 142; 209), is normally open and is so located and dimensioned that in normal use, when the blowing opening (10) is not obstructed, ambient air is drawn into the heated air stream through said at least one aperture.

3. A hair dryer as claimed in claim 2 wherein said at least one aperture (2; 3; 52; 101; 142; 209) is adjustable so as to control the amount of ambient air drawn through it into the heated air stream, thereby to control the temperature of the heated air stream emitted from the blowing opening (10).

4. A hair dryer as claimed in any preceding claim wherein said housing means (1; 141; 202) carries a shroud (7,8) and a plurality of said apertures are circumferentially distributed in a generally annular region between a tubular wall of said housing means (1; 41; 202) and a tubular wall (81) of the shroud.

5. A hair dryer as claimed in claim 4 wherein said shroud (7,8) fits round said tubular wall (81) and said apertures are defined by corrugations in said tubular wall (81) and/or in said shroud (7,8).

6. A hair dryer as claimed in claim 3 wherein said housing means (1; 141; 202) carries a mouth portion (200,143) which defines the blowing opening (10) and cooperates with the housing means (1; 141; 202) to define said at least one aperture (2; 3; 52; 101; 142; 200) the mouth portion being rotatable with respect to the housing means to vary the size of said aperture.

7. A hair dryer as claimed in claim 6 wherein said mouth portion (200; 143) is threaded onto said housing means (1; 141; 202) and can be screwed or unscrewed to vary the size of said at least one aperture (2; 3; 52; 101 142; 200).

8. A hair dryer as claimed in claim 6 or claim 7 wherein said mouth portion (200; 143) has at least one opening (170) formed in on side wall thereof and can be rotated to that said opening registers with an opening (142) in said housing means, said registered openings, defining said at least one aperture (142).

9. A hair dryer as claimed in claim 1 wherein said at least one aperture (3) is normally closed and is provided with valve means which opens when the blowing opening (10) is obstructed.

10. A hair dryer as claimed in claim 1 or claim 2 wherein said blowing opening (10) has at least one portion (101) cut out if its mouth, which cut-out portion defines said at least one aperture (101).

11. A hair dryer as claimed in any of claims 1 to 5 wherein said blowing opening (10) is defined by a detachable mouth portion (143) which can be slid longitudinally on the housing means (141).

12. A hair dryer as claimed in claim 11 wherein said detachable mouth portion (143) can be longitudinally slid between a first position (Figure 15) in which at least one opening (142) in a sidewall of the housing means (141) can be covered or uncovered by rotating said detachable mouth portion and a second position in which said at least one opening is always uncovered.

13. A hair dryer as claimed in claim 11 or claim 12 wherein said mouth portion (143) is snap fitted onto the housing means (141).

14. A hair dryer as claimed in any preceding claim, comprising a pod portion (203) pivotally mounted on one end of a link (205) which is in turn pivotally mounted at its other end on a main body portion (202) of the hair dryer, the linked body and pod portions having a first configuration (Figure 21, Figure 22) in which they are contiguous and a second configuration (Figure 24) in which the pod portion is adapted to be mounted on a fixed surface (210) and to support the body portion in a predetermined orientation relative to said surface.

15. A hair dryer as claimed in claim 14 wherein said first configuration (Figure 21; Figure 22) said body portion (202) and pod portion (203) mate at respective complementarily curved surfaces (208,207).

16. A hair dryer as claimed in claim 14 or 15 wherein said pod portion (203) has a keyhole shaped aperture (204) in a wall thereof to adapt it for wall mounting.

17. A hair dryer comprising a pod portion (203) pivotally mounted on one end of a link (205) which is in turn pivotally mounted at its other end

on a main body portion (202) of the hair dryer, the linked body and pod portions having a first configuration (Figure 21, Figure 22) in which they are configuration (Figure 24) in which the pod portion is adapted to be mounted on a fixed surface (210) and to support the body portion in a predetermined orientation relative to said surface.

18. A hair dryer characterised by a handle (103) in the form of a wire loop folded or metal plate ends (117) of the loop or plate being attached to the body (101) of the hair dryer at a common pivot axis and the handle having means (102) defining at least two stable configurations of the hair dryer body (101) and handle (103), the hair dryer being adapted for wall or horizontal surface mounting in one configuration and for hand holding in another configuration

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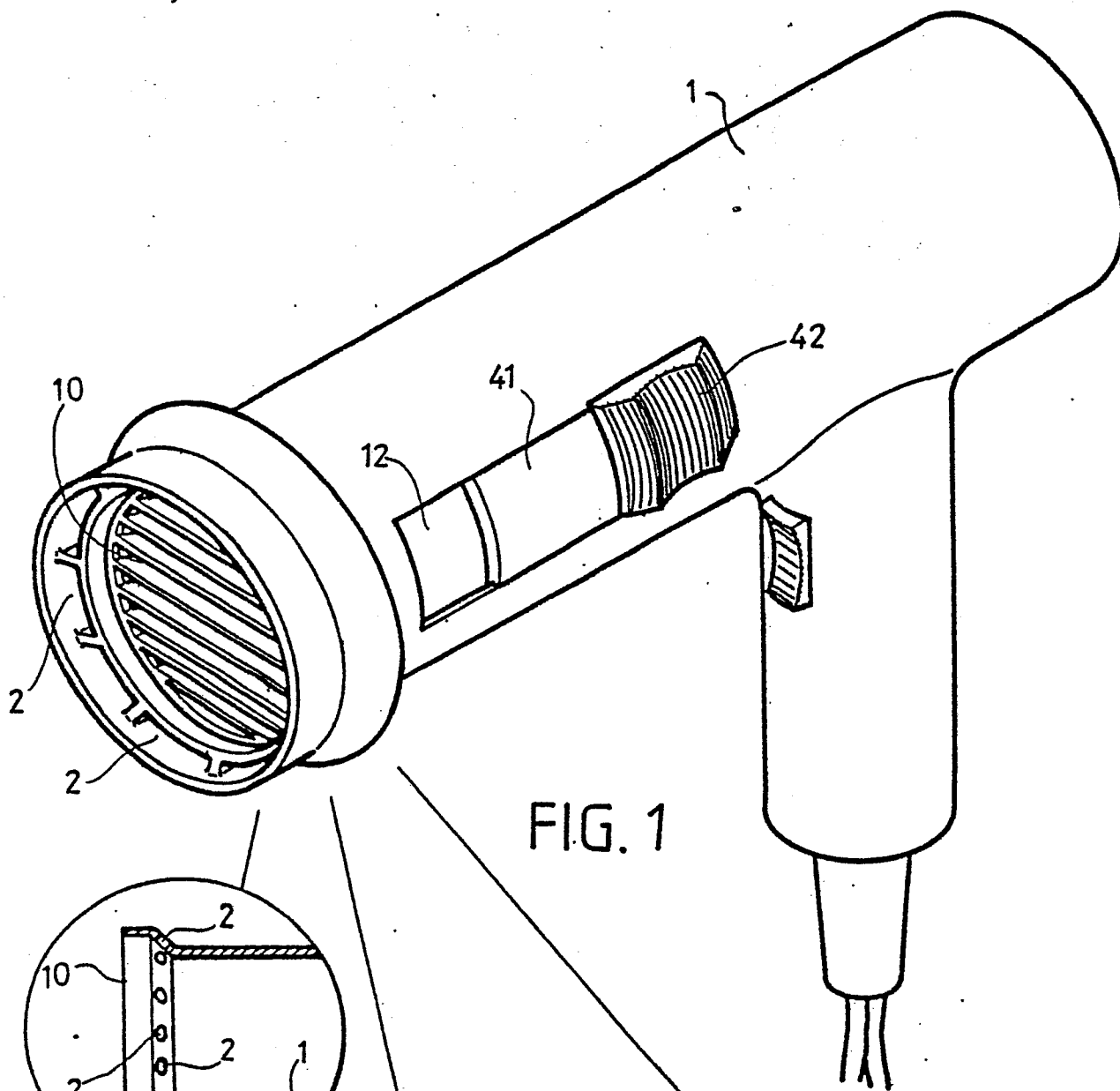
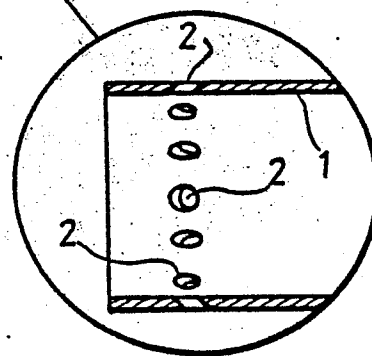
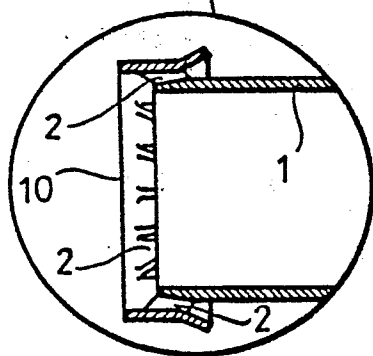
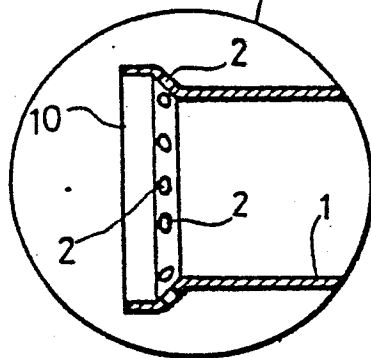
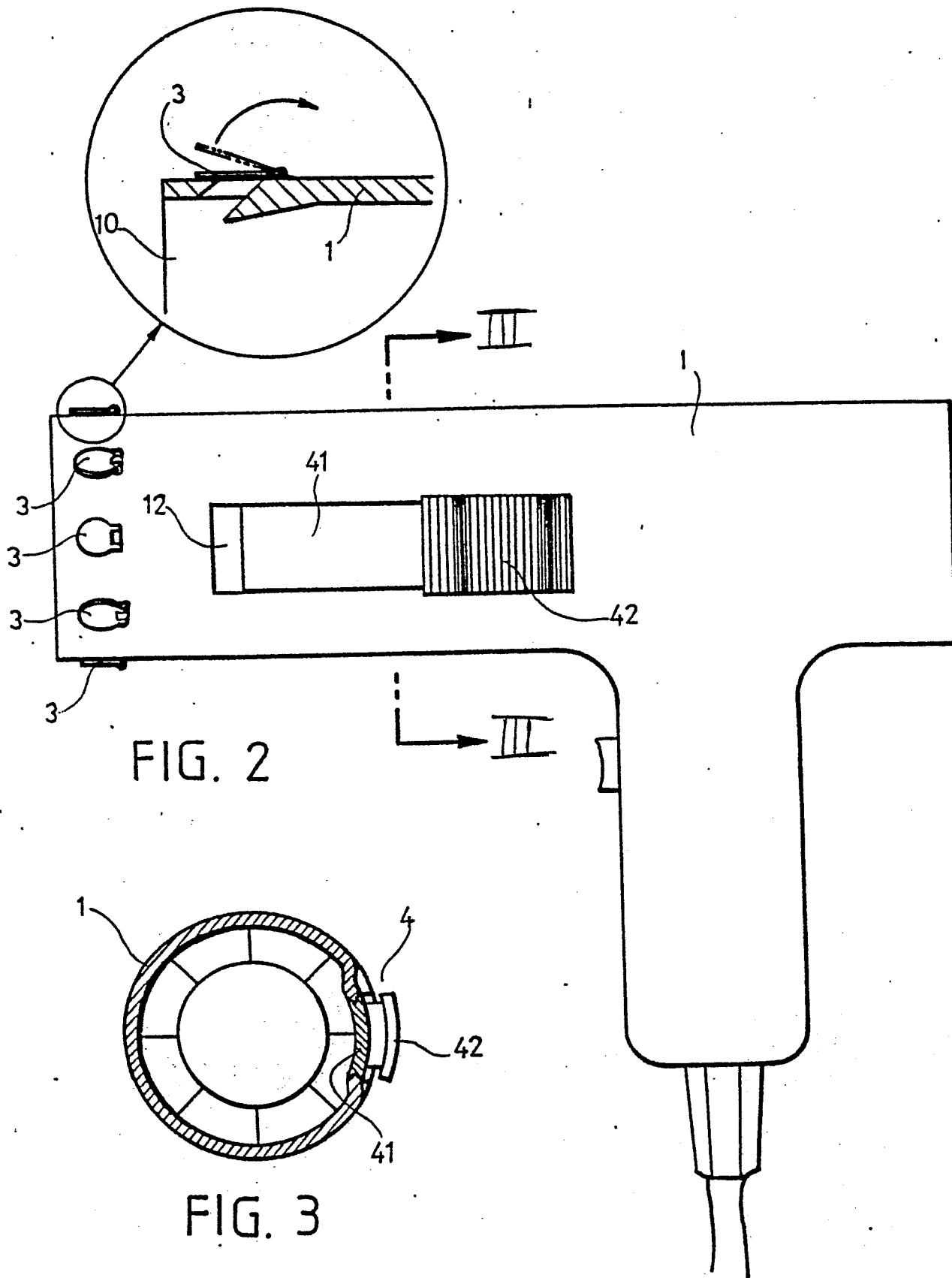


FIG. 1





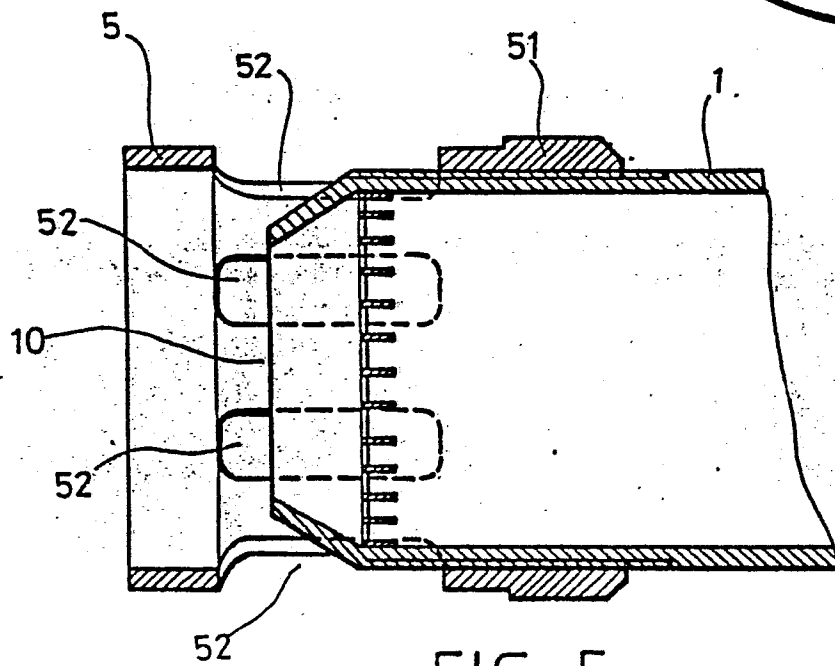
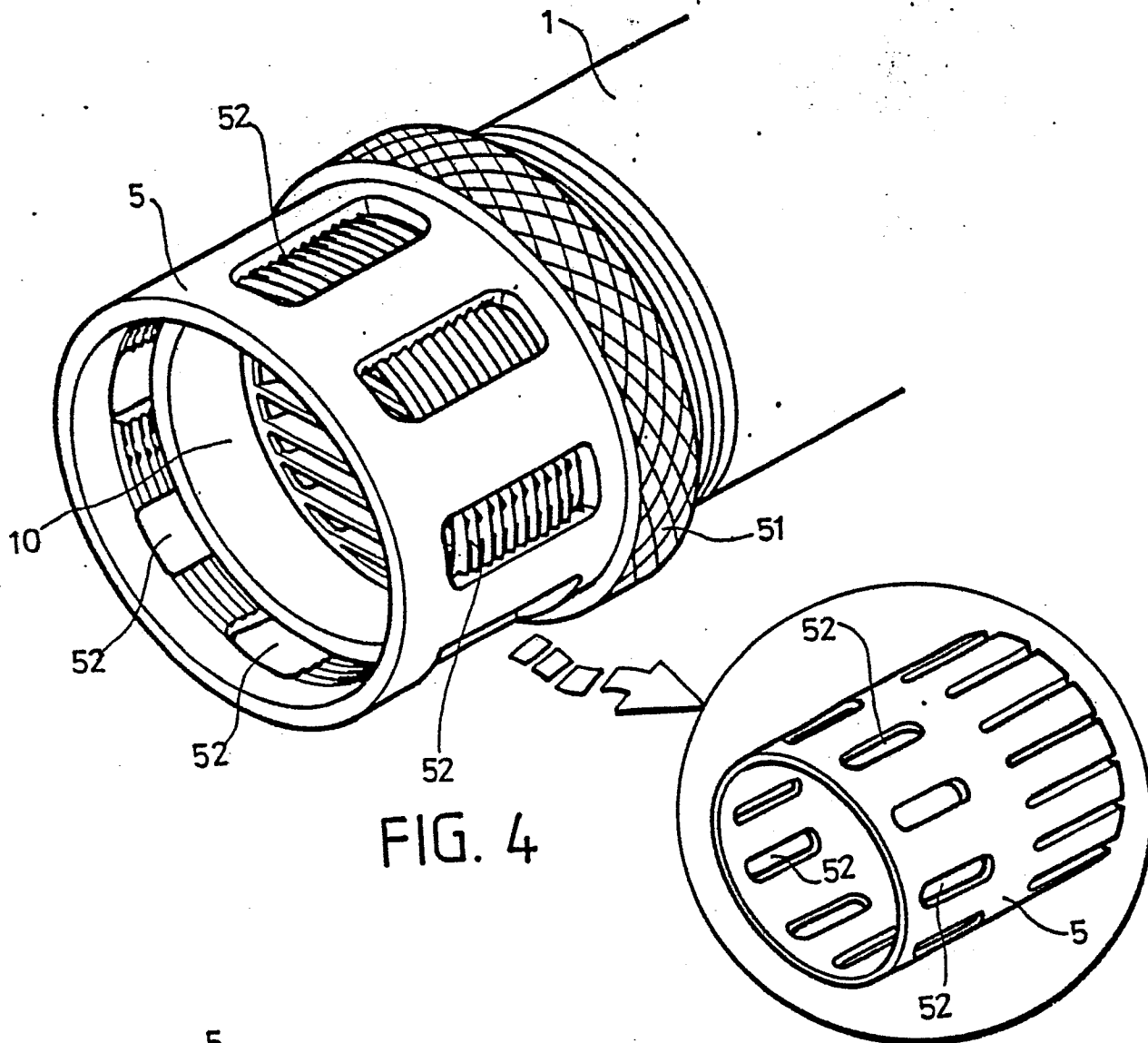


FIG. 5

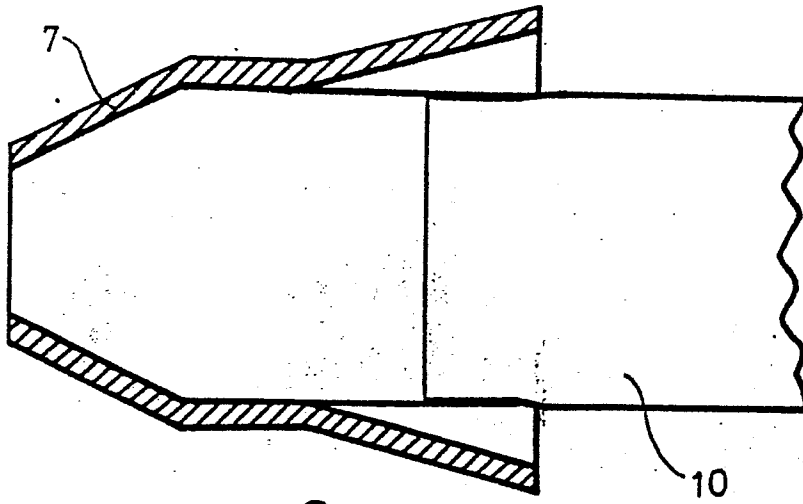


FIG. 6

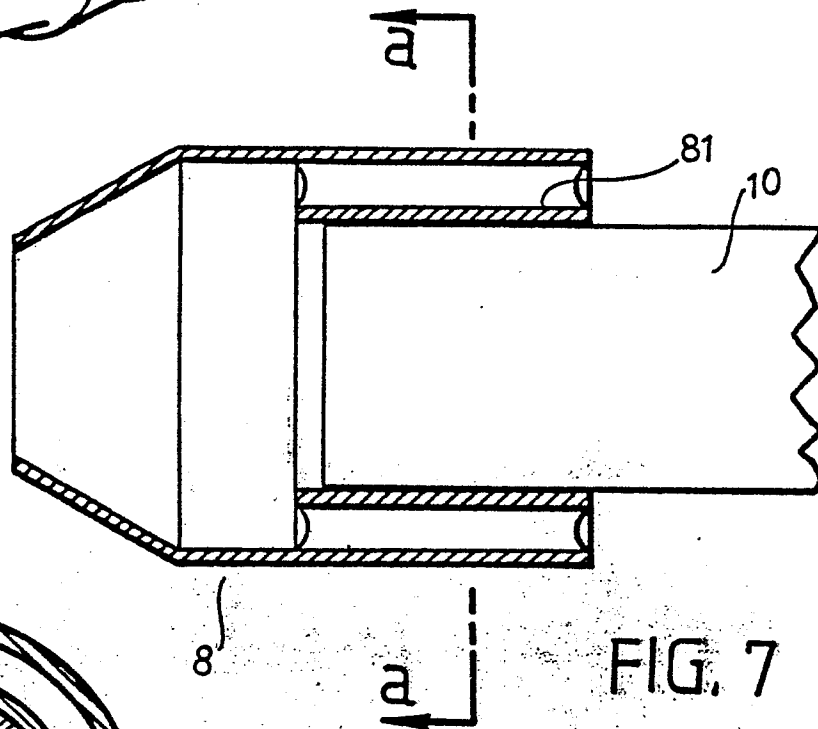
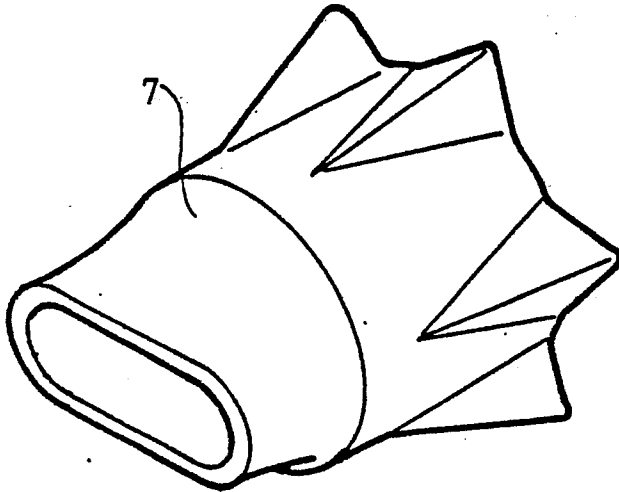
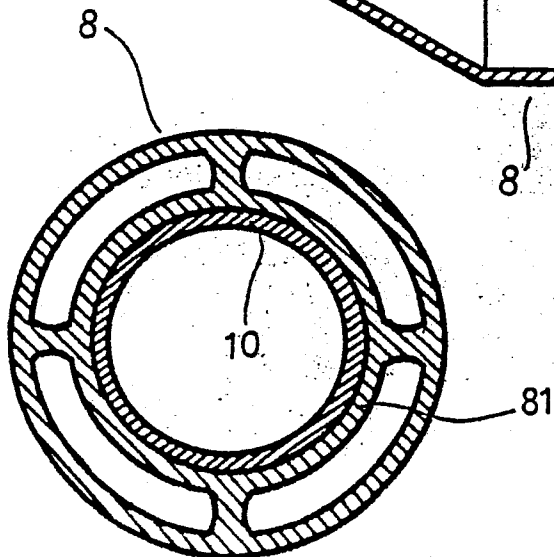


FIG. 7



Sec: a-a FIG. 8

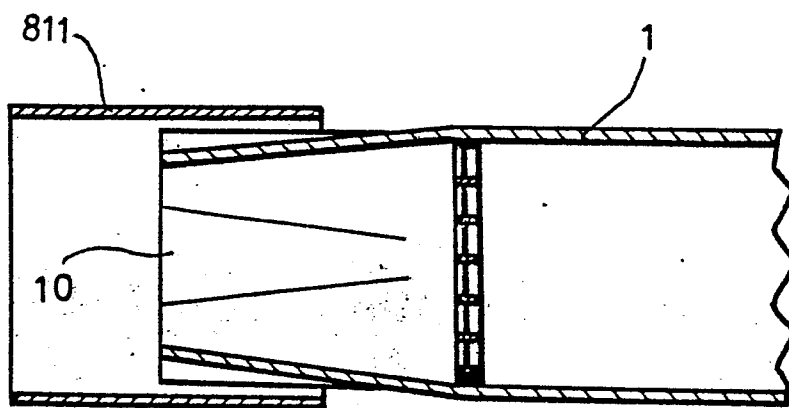
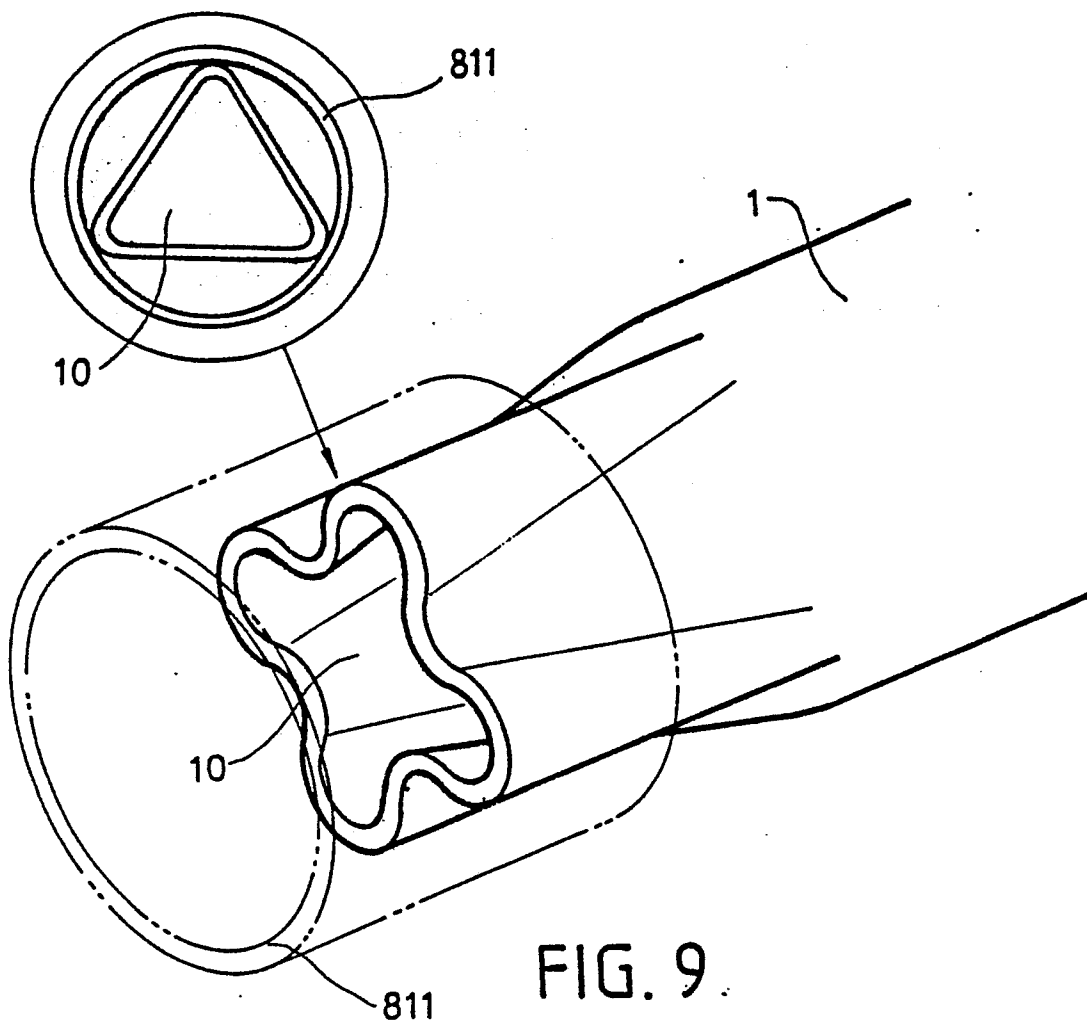
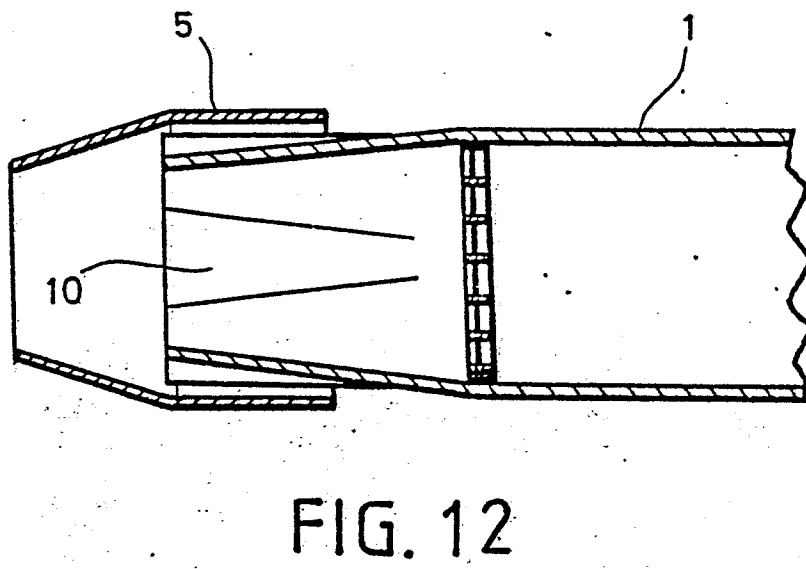
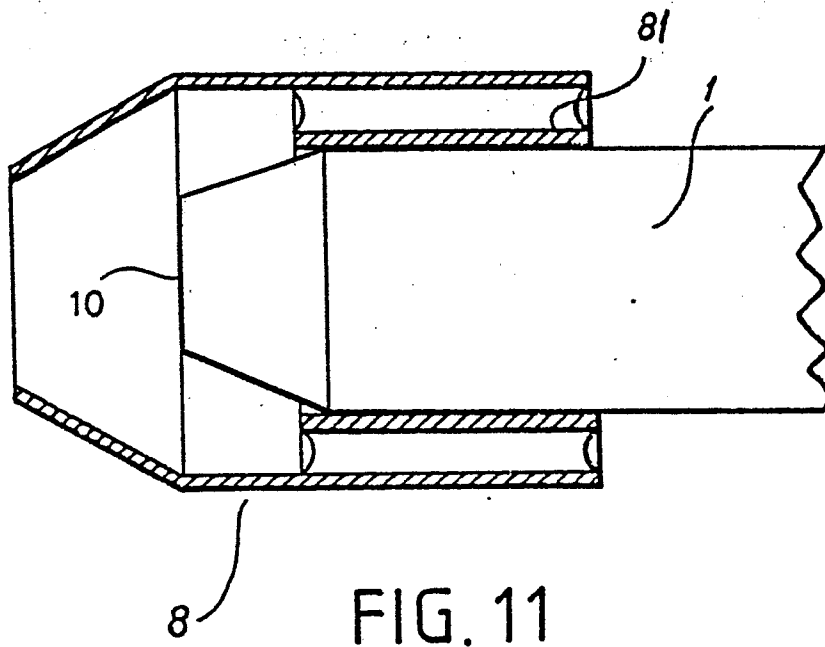
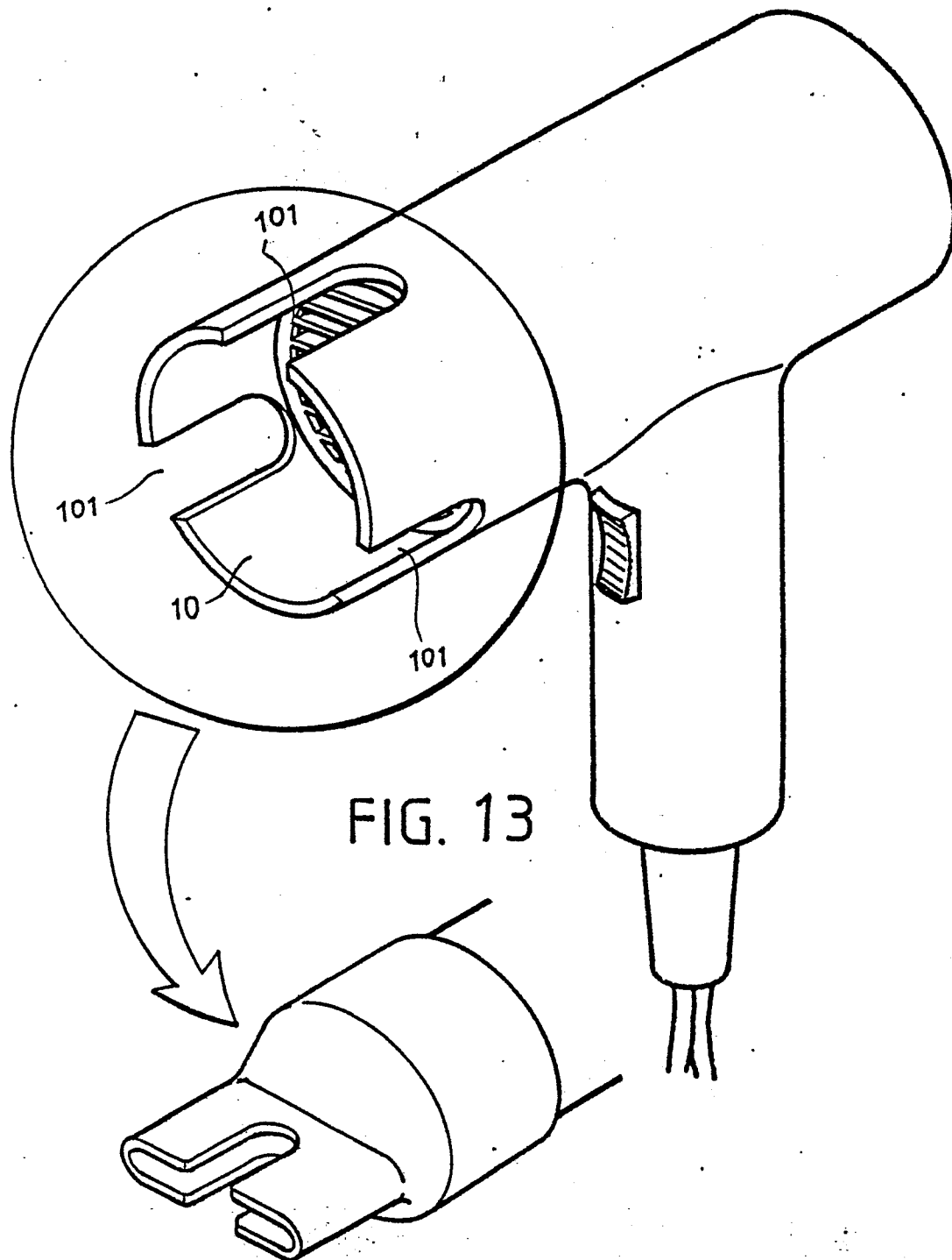
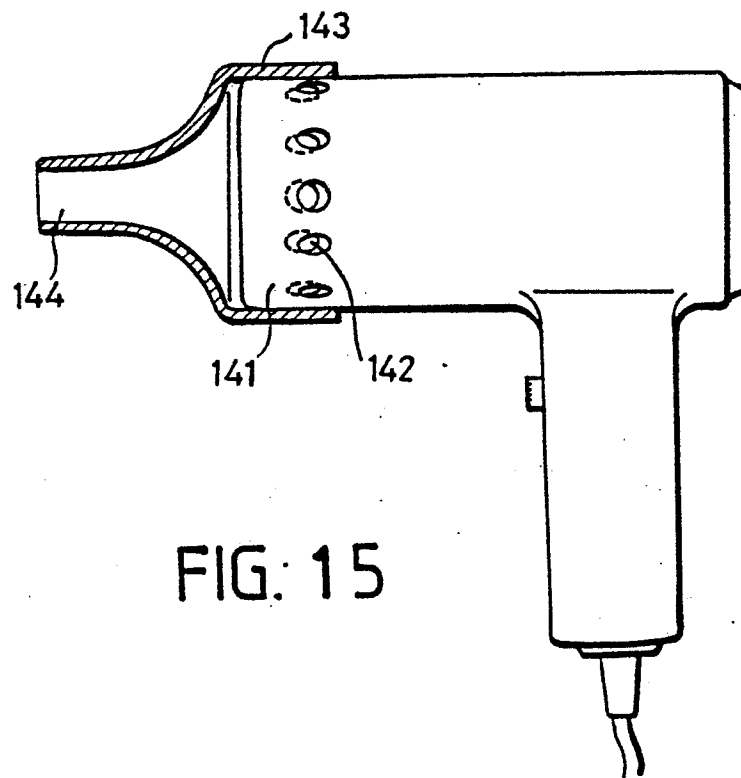
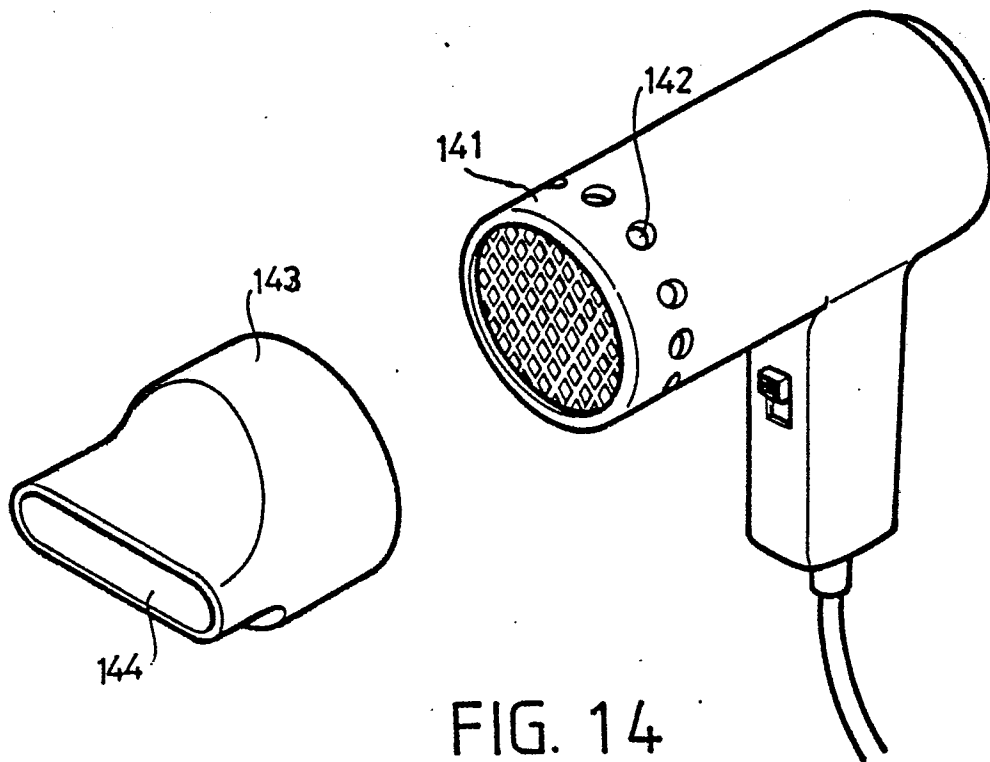


FIG. 10







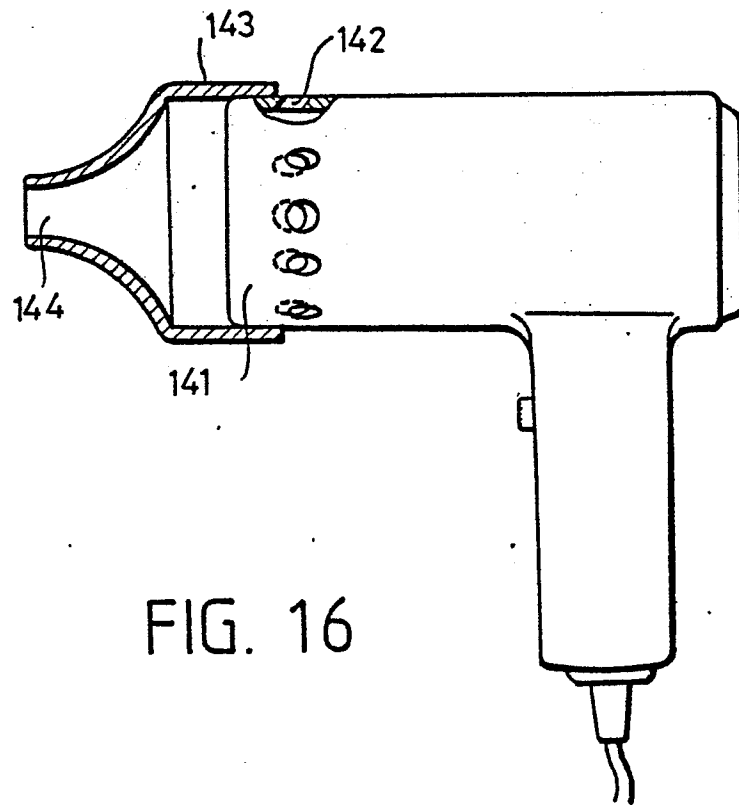


FIG. 16

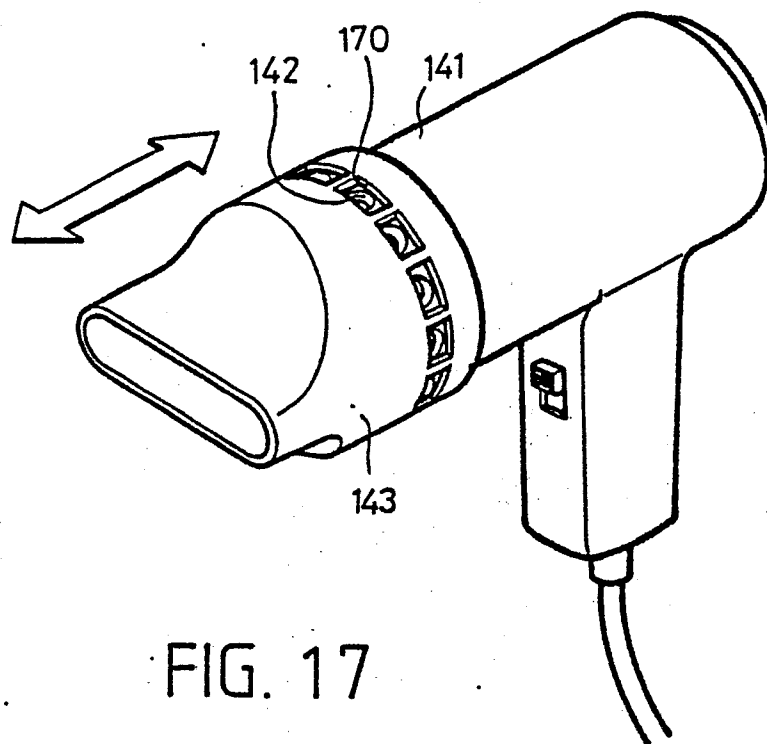
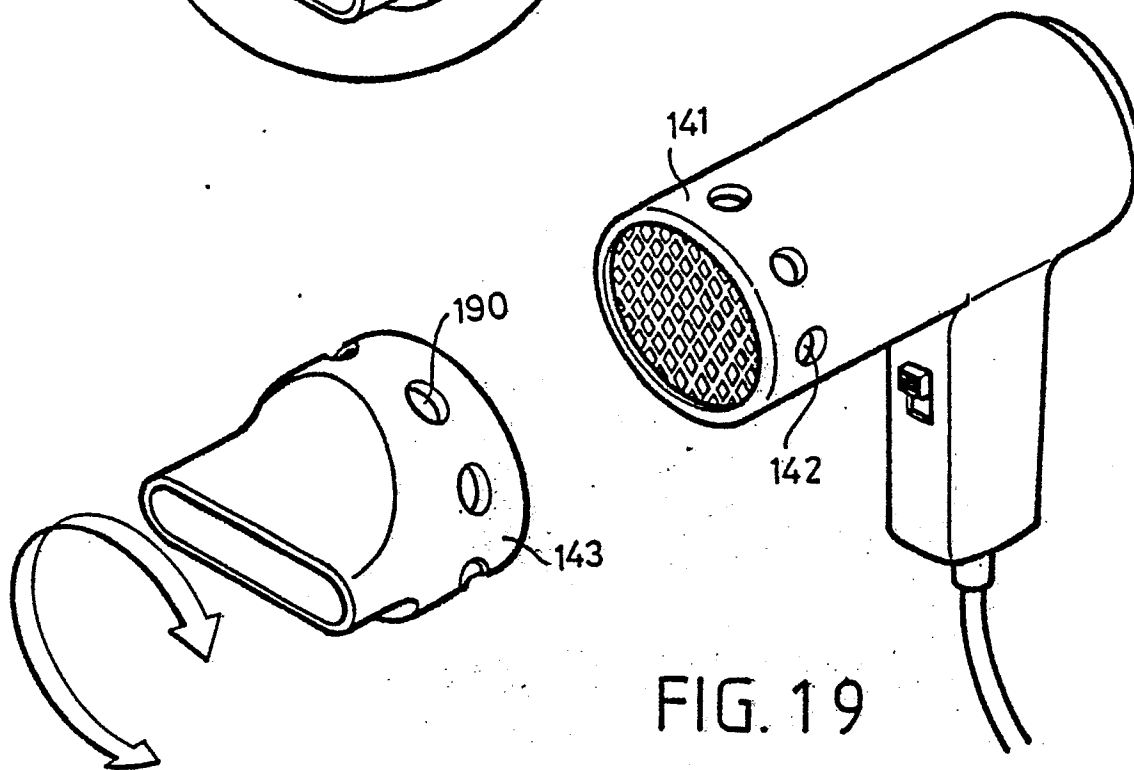
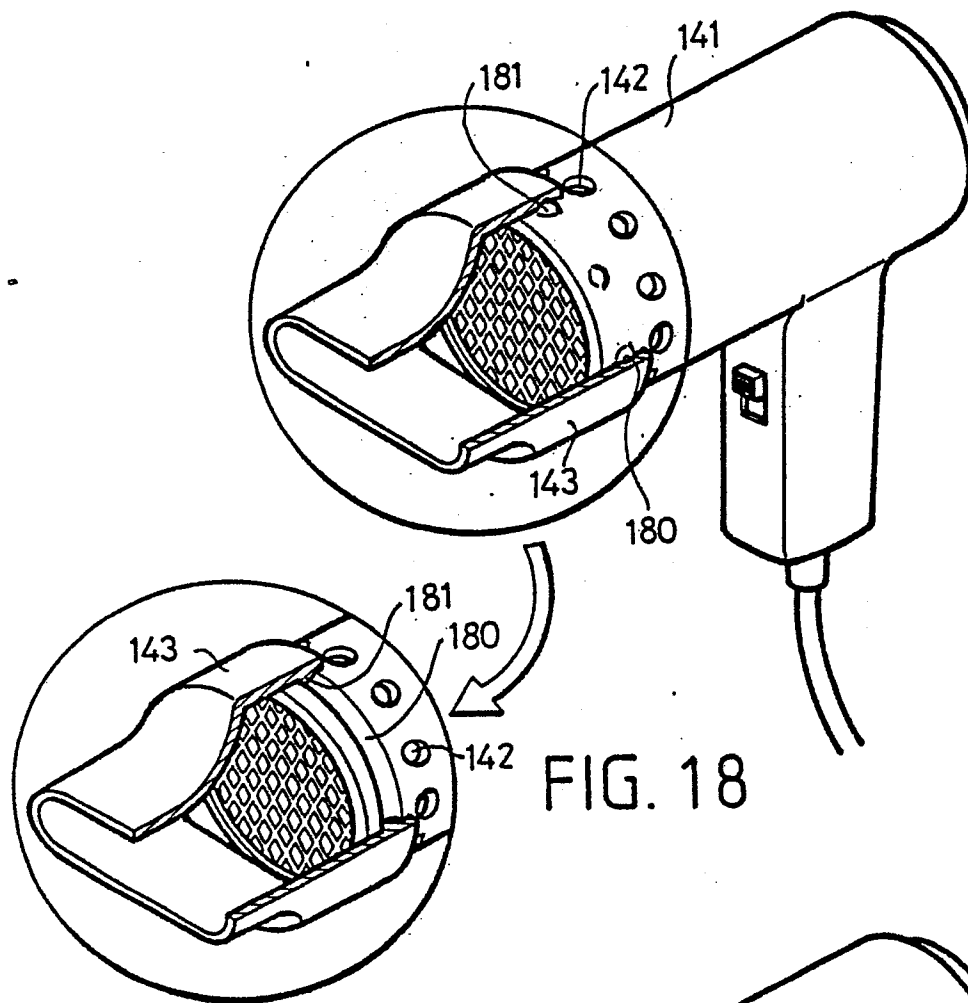
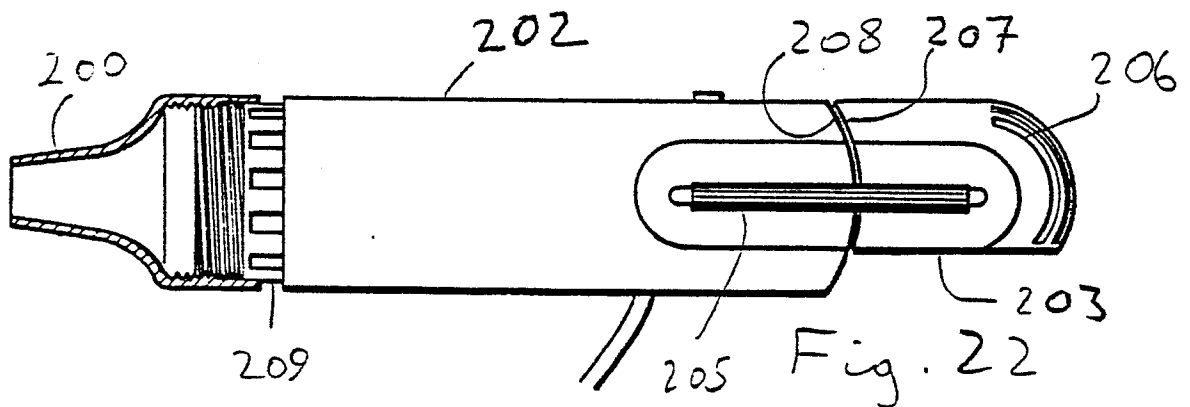
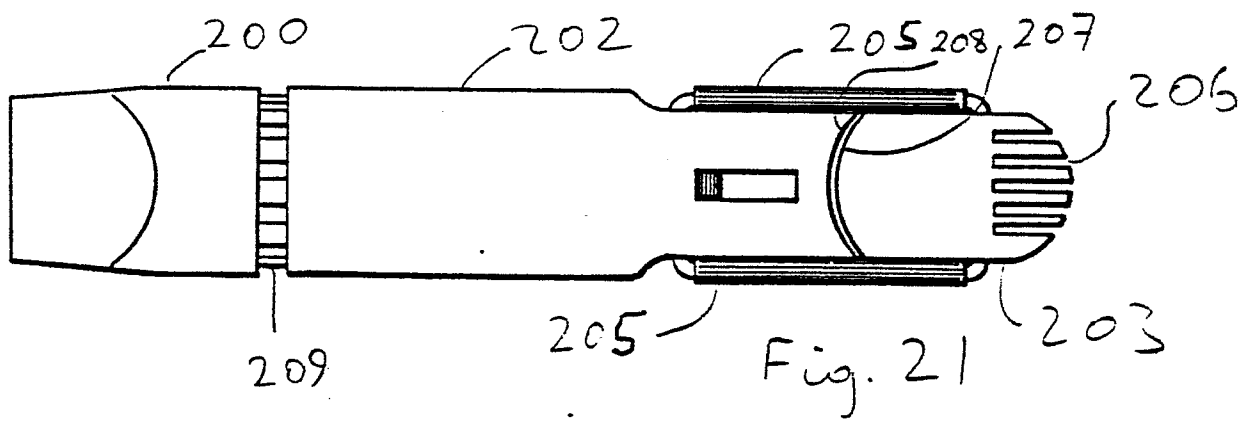
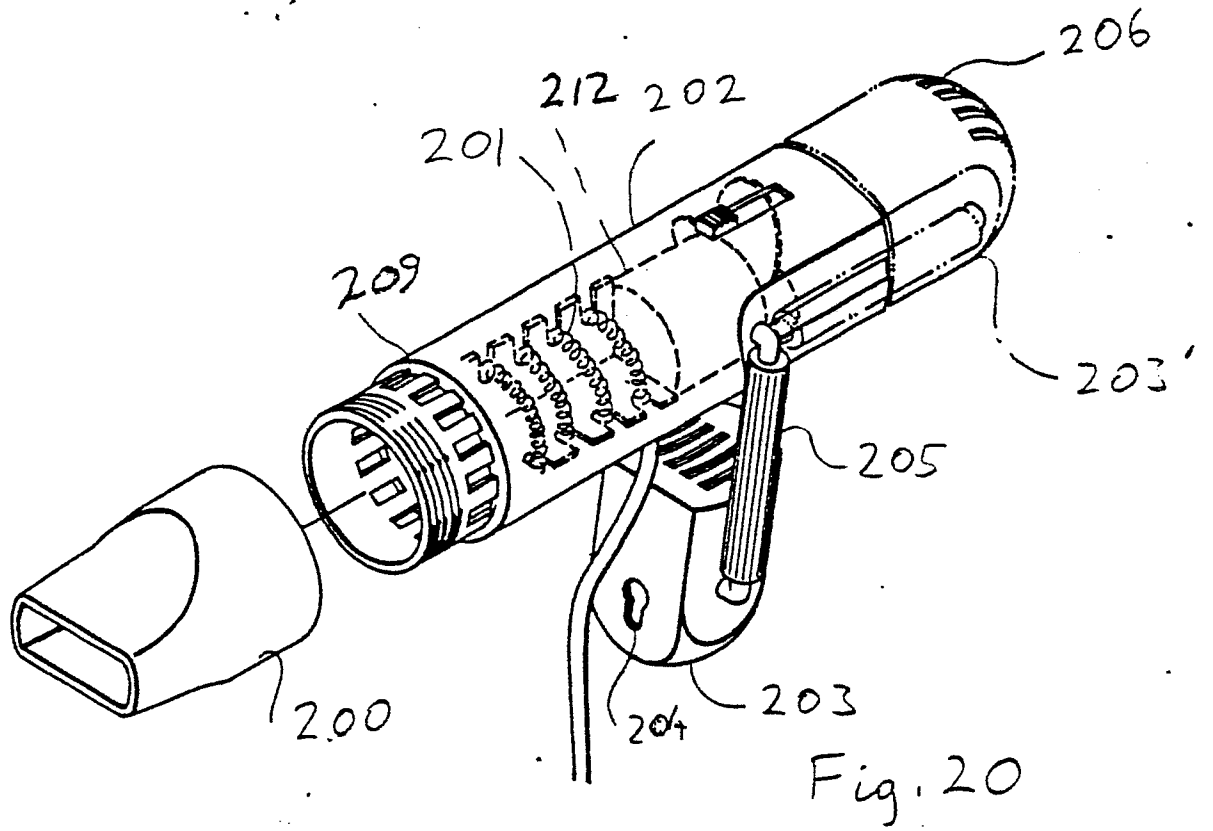
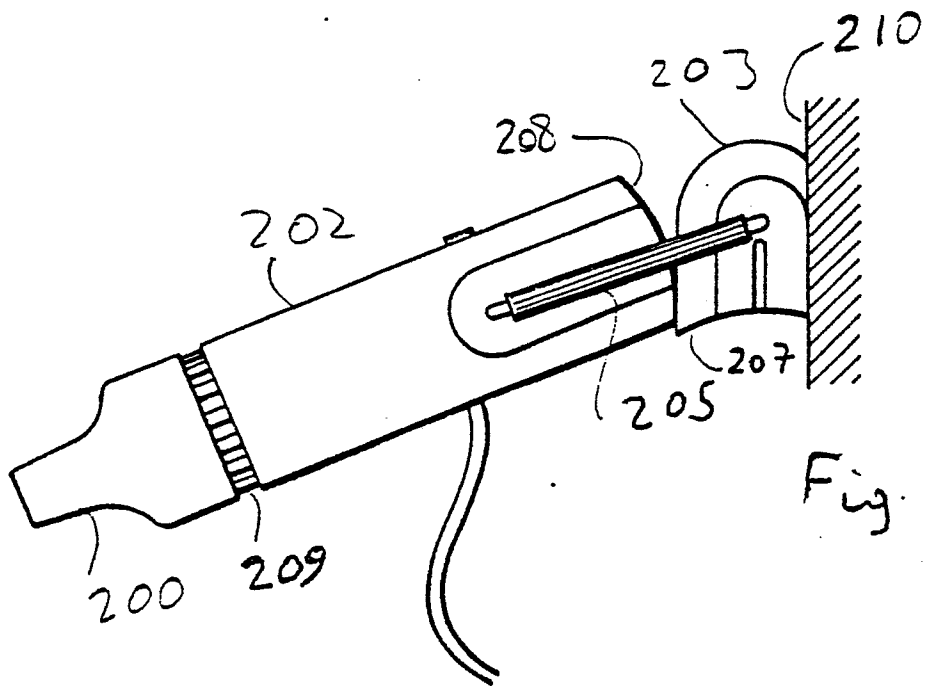
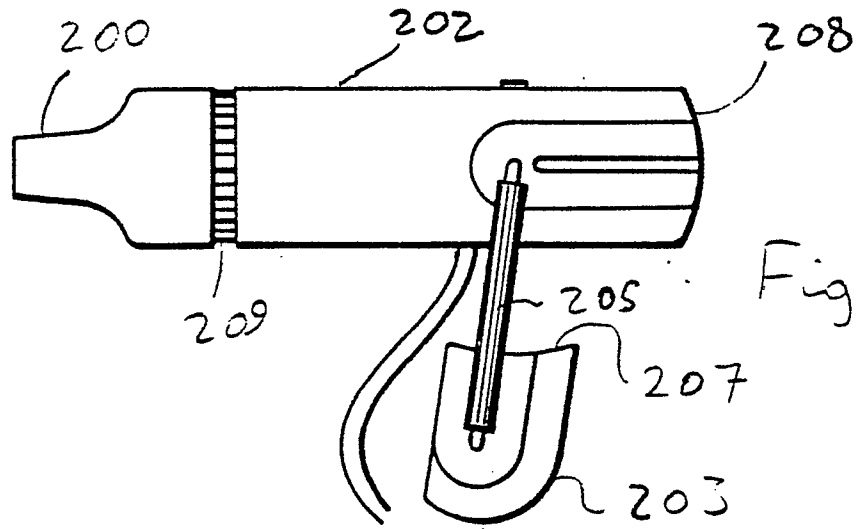


FIG. 17







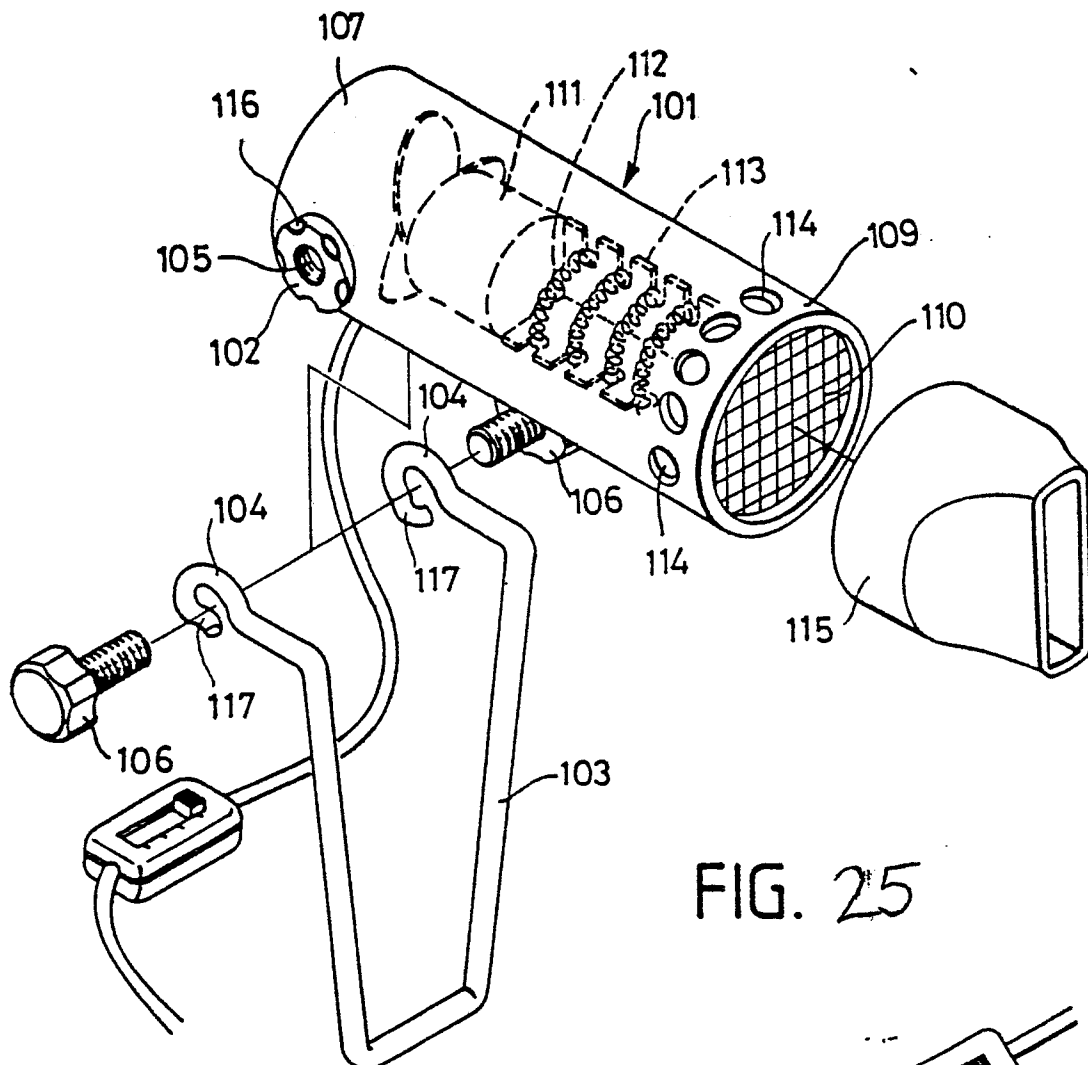


FIG. 25

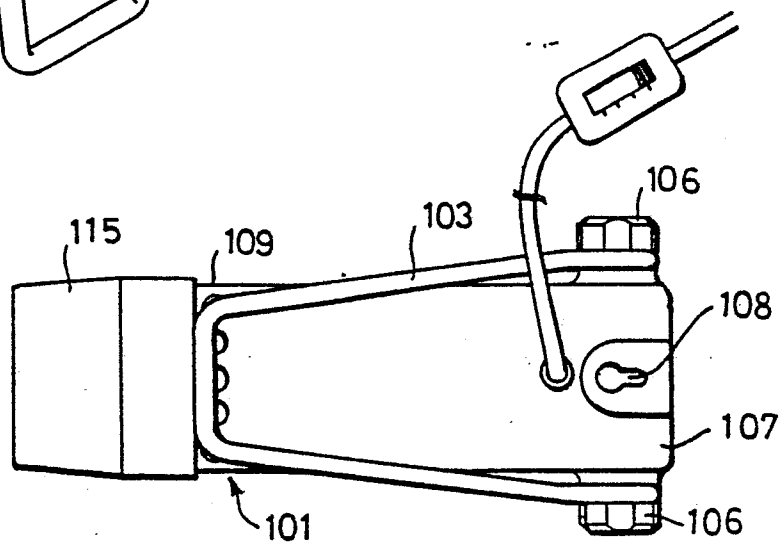


FIG. 26