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(54) Power tool

(57) A power sander (2) has a housing (4) supporting a mounting platen (6) for supporting a sanding head for oscillatory orbital motion of the platen (6) and sanding head relative to the housing. The housing has side surfaces, a curved front surface (14) containing an on/off switch (16) for switching electrical power to a motor in the housing, a curved upper surface (20) and a generally saddle shaped graspable surface (22) located between the front surface and upper surface. For ergonomic handling of the sander by a user, the saddle shaped graspable surface has a concave upper portion (24) and concave side portions (26) arranged on opposite sides of the upper portion.

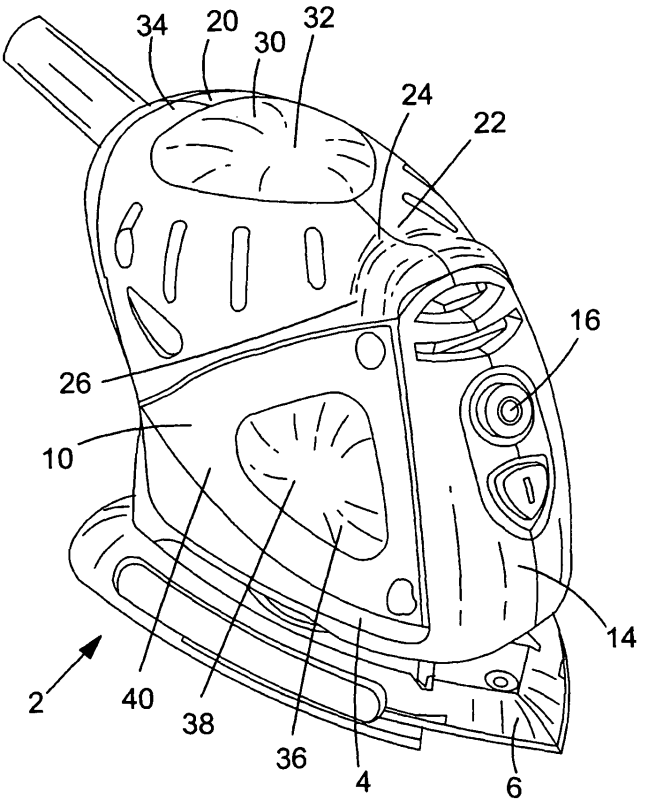

FIG.1

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Description

[0001] The present invention relates to power tools, and relates particularly, but not exclusively, to power sanders.

[0002] Known power tools, such as power drills in which a drill bit is rotated by an output shaft which is in turn rotated by means of an electric motor, generate significant amounts of vibration, which can under certain circumstances limit the length of time during which the tool can be used continuously. In addition, the housing of such tools is generally made from a durable plastics material on which it can be difficult for a user of the tool to maintain a grip when the tool is in use for a sustained period. This generally limits the degree of comfort and ease with which a user can handle the tool.

[0003] Preferred embodiments of the present invention seek to provide a power tool which is easier and more comfortable to use.

[0004] According to the present invention, there is provided a power tool comprising:-

a housing defining at least one handle portion having a graspable surface having first and second concave portions and a third concave portion between said first and second concave portions; and
a motor located in the housing for actuating a working member of the tool.

[0005] By providing a housing defining at least one handle portion having a graspable surface having first and second concave portions and a third concave portion between said first and second concave portions, this provides the advantage of making the power tool easier and more comfortable for the user.

[0006] The power tool may further comprise a platen mounted to said housing on a side thereof remote from at least one said handle portion.

[0007] The platen may include a narrower portion at a forward end thereof.

[0008] In the case where the power tool is a sander, this provides the advantage of enabling more accurate sanding operations to be carried out.

[0009] The platen may taper inwardly in a longitudinal direction of the tool.

[0010] The graspable surface may be generally saddle shaped.

[0011] A majority of the housing as measured in a longitudinal direction may be disposed in use over the platen.

[0012] Approximately two thirds of said housing as measured in said longitudinal direction may be disposed in use over said platen.

[0013] Substantially all of said housing as measured in a direction transverse to said longitudinal direction may be disposed in use over said platen.

[0014] The housing may further define a curved forward surface, and the tool may further comprise a motor on/off switch disposed on said curved forward surface.

[0015] At least one said first and/or said second concave portion may have a radius of curvature of 5mm to 40mm.

[0016] At least one said first and/or said second concave portion may have a radius of curvature of 5mm to 15mm.

[0017] At least one said first and/or said second concave portion may have a radius of curvature of 8mm to 12mm.

[0018] Said third concave portion may have a radius of curvature of 5mm to 40mm.

[0019] Said third concave portion may have a radius of curvature of 15mm to 30mm.

[0020] Said third concave portion may have a radius of curvature of 20mm to 25mm.

[0021] The tool may be a power sander.

[0022] According to another aspect of the present invention, there is provided a power tool comprising:-

a housing defining a forward surface and an upper surface, and a notch defined in said upper surface rearwardly of said forward surface;
a platen moveably mounted to said housing; and
a motor located in the housing for causing oscillatory movement of the platen relative to the housing;
wherein a majority of the housing as measured in a longitudinal direction of the tool and a direction transverse to said longitudinal direction is disposed over said platen in use.

[0023] The upper surface may be curved downwardly in a rearward direction from an upper edge of said forward surface to define a recessed surface area and then curved upwardly rearwardly from said recessed surface area to define said notch.

[0024] The forward surface may be curved.

[0025] Substantially all of said portion of said housing disposed over said platen in use as measured in the longitudinal direction may be also disposed over said platen in use as measured in a direction transverse thereto.

[0026] At least one said first and/or said second concave portion may have a radius of curvature of 5mm to 40mm.

[0027] At least one said first and/or said second concave portion may have a radius of curvature of 5mm to 15mm.

[0028] At least one said first and/or said second concave portion may have a radius of curvature of 8mm to 12mm.

[0029] Said third concave portion may have a radius of curvature of 5mm to 40mm.

[0030] Said third concave portion may have a radius of curvature of 15mm to 30mm.

[0031] Said third concave portion may have a radius of curvature of 20mm to 25mm.

[0032] The tool may be a power sander.

[0033] According to a further aspect of the present in-

vention, there is provided a power tool comprising:-

a housing having side surfaces below an upper surface to form a graspable handle portion;
a platen mounted to said housing, wherein a majority of said housing as measured in a longitudinal direction of the tool and in a direction transverse to said longitudinal direction is disposed over said platen in use;
a motor located in the housing for causing oscillatory movement of said platen relative to the housing; and
at least one chamber containing at least one gel material protruding from each said side surface.

[0034] The tool may further comprise a third chamber containing a gel material disposed on said upper surface.

[0035] Preferred embodiments of the invention will now be described, by way of example only and not in any limitative sense, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of a power sander embodying the present invention;
Figure 2 is a top view of the sander of Figure 1;
Figure 3 is a rear view of the sander of Figure 1;
Figure 4 is a front view of the sander of Figure 1;
Figure 5 is a left side view of the sander of Figure 1;
Figure 6 is a right side view of the sander of Figure 1;
Figure 7 is a detailed rear view of a top surface of the sander of Figure 1;
Figure 8 is a detailed side view of the surface of Figure 7;
Figure 9A is an exploded perspective view of the housing and gripping portion of the sander of Figure 1 from the right side;
Figure 9B is an exploded perspective view of the housing and gripping portion of the sander of Figure 1 from the left side;
Figure 10 is a side cross sectional view of part of the sander of Figure 1;
Figure 11 is a view, corresponding to Figure 10, of a sander of a second embodiment of the present invention;
Figure 12 is a perspective view of a mounting platen and sanding shoe of the sander of Figure 10; and
Figure 13 is a perspective view of the mounting platen and sanding shoe of Figure 10, showing the attachment side of the mounting platen;

[0036] Referring to Figures 1 to 9, a power sander 2 has a housing 4 supporting a mounting platen 6 for supporting a sanding head 8 (Figure 10) for oscillatory orbital motion of the platen 6 and sanding head 8 relative to the housing 4. The housing 4 has side surfaces 10, 12, a curved front surface 14 containing an on/off switch 16 for switching electrical power to a motor 18 (Figure 10) in the housing 4, a curved upper surface 20 and a generally saddle shaped graspable surface 22 located between the front surface 14 and upper surface 20. The graspable surface 22 has a concave upper portion 24 and concave side portions 26, 28 arranged on opposite sides of the upper portion 24.

[0037] For ergonomic handling of the sander by a user, the saddle shaped graspable surface 22 has a concaved upper portion 24 having a radius of curvature of about 23mm, and side portions having radii of curvature of about 10mm.

[0038] The upper surface 20 of the housing 4 is defined by a blister pack 30, defining a gel-containing chamber 32 containing vibration absorbing gel formed from a semi solid silicone rubber or polyurethane material and protruding from an aperture in a clamping plate 34. Similarly, each side surface 10, 12 is defined by a blister pack 36, defining a gel-containing chamber 38 protruding through an aperture in clamping plate 40. It can therefore be seen that the external surface of the sander 2 to be gripped by a user is defined by the gel-containing chambers 32, 38 of blister packs 30, 36 respectively, and the clamping plates 34, 40, so that the amount of vibration transmitted to a user's hand is reduced by means of the gel material contained in the blister packs 30, 36.

[0039] As shown in greater detail in Figures 9A and 9B, the blister pack 36 forming part of side surface 10 is formed from a pair of flexible sheets 46 of polyurethane material defining gel-containing chamber 38 and sealed together at a peripheral portion 48 surrounding the gel-containing chamber 38. The peripheral portion contains no vibration absorbing gel material and is pierced by a series of apertures 44 which correspond in position to apertures 42 on the part of housing 4 to which the blister pack 36 is to be mounted, and to pins 43 moulded onto the rear surface of clamping plate 40. The blister pack 36 is mounted to the housing 4 by passing the pins 43 of clamping plate 40 through the corresponding apertures 44 in the peripheral portion of blister pack 36, and then inserting the pins 43 into the corresponding apertures 42 on the housing 4. In particular, the blister pack 36 is located on the pins 43 of clamping plate 40, and the pins of the clamping plate 40 are then located in the apertures 42 on the housing. The pins 43 and apertures 42, 44 are irregularly spaced, which minimises the risk of incorrect location of the clamping plate 40, blister pack 36 and housing 4 relative to each other.

[0040] The pins 43 on clamping plate 40 are of such length that when the blister pack 36 is located on the pins and the clamping plate 40 is mounted to the housing 4 by locating the pins in apertures 42 on the housing 4, the pins protrude from the inner wall of the housing 4 to a depth of approximately 3 mm. The clamping plate 40 is then sealed to the housing 4 by a technique known to persons skilled in the art as "hot staking" in which a heated mandrel is applied to the protruding ends of the pins, which melts the protruding ends so that they are widened in a generally circular arrangement and fix the pins to the housing 4 in a manner similar to that of a rivet. Alternatively, the distal ends of the pins can be heated by means

of ultrasound. The clamping plate 40 is then sealed to the housing and prevents removal of the clamping plate 40 from the housing 4, and the gel-containing chamber 38 of blister pack 36 protrudes through the aperture 45 of clamping plate 40 to define part of side surface 10, while removal of the blister pack 36 is prevented because the pins pass through the apertures 44 in the blister pack 36.

[0041] Similarly, the blister pack 36 forming part of opposite side surface 12 and the blister pack 30 forming part of upper surface 20 are secured to the housing in a similar manner by means of heat or ultrasound.

[0042] Figure 10 shows a drive unit including the electric motor 18 and first drive shaft 50. A fan 52 mounted on shaft 50 is arranged to draw air in from mouth 54 of the drive unit as shown by arrow A (Figure11), and direct it through extractor duct 56 to outlet 58, as shown by arrow B. Bearing 60 is eccentrically located radially in respect to shaft 50, and a second drive shaft 62 rotates about the axis of bearing 60. Mounting platen 6 is fixed to the housing 4 by means of four flexible rubber legs 64. The mounting platen 6 is substantially flat, and the legs 64 extend from a common major surface of the platen 6 (the upper surface as shown in Figure 10), directed into the body of the housing 4. The flexible legs 64 extending from the mounting platen 6 are permanently fixed at their housing end to the housing 4, i.e. they are not removable in use by the operator. They are attached to the housing 4 by means of clamping flanges 66 of the housing 4. The flexible legs 64 are attached at their mounting platen end to the mounting platen 6 by passing through apertures in hollow projecting portions 68 that extend in the direction of the flexible legs 64 from the upper surface of the mounting platen 6. The flexible legs 64 are provided at their mounting platen 6 end with an internally screw threaded hollow recess for attachment to a securing screw. The manner in which this securement to the mounting platen is effected is described in more detail below with reference to Figure 11.

[0043] The mounting platen 6 surrounds the second drive shaft 62, and is spaced radially therefrom. This means that the mounting platen 6 itself is not directly driven by either of the drive shafts.

[0044] In Figure 10 a first sanding platen, which is a random orbit sanding head 8, is secured next to the mounting platen 6 onto the drive shaft 62. Securement of the random orbit sanding head 8 is achieved by a bolt 70 and washer 72. The bolt 70 passes through an aperture in the sanding head 8, through aperture 74 in the mounting platen (see Figures 12 and 13), and over the driving spindle of the second drive shaft 62. The sanding platen 8 is located in a parallel plane to the mounting platen 6, but is spaced from it, so that there is no contact between the facing surfaces of the mounting platen 6 and the sanding shoe 8. Therefore free rotation of the sanding platen 8 is permitted about the bearing axis 60, and the platen 8 exhibits a random orbit.

[0045] A brake pad 76 is provided on the under-surface of the mounting platen 6. The brake pad 76 comprises a resilient member 78 in the form of a ring formed from a synthetic rubber resilient material, and an abrasion resistant contact layer 80 comprising polytetrafluoroethylene (PTFE) filed with carbon fibre or glass for increased abrasion resistance. The arrangement of the layers is such that when the sanding platen 8 is secured in place onto the drive 62 then the resilient ring 78 is under compression so that a resultant load is put by the filled PTFE layer 80 onto a reaction surface part 82 of the underlying upper surface of the sanding platen 8. The purpose of this brake 76 is two-fold: first, in use, the brake acts as a speed limiter, operating in particular to prevent scratches when the unit is placed on and taken off the work surface, and secondly when the unit is switched off, the stop time is very much reduced compared to a non-braked tool. In operation the drive shaft 50 is typically driven at a rotational speed of 12000rpm, which is too fast a speed for rotation of the sanding platen 8. The brake pad 76 limits the rotational speed of the platen to an acceptable operating speed, typically around 1200 rpm, or 10% of the rotational speed of the motor.

[0046] Figure 11 shows the drive unit of the hand tool with an orbital sanding platen 84 mounted in place of the random orbit platen of Figure 10. Also Figures 12 and 13 are perspective views of the mounting platen 8 (which is common to both Figures 10 and 11) and the sanding platen 84 (which is shown in Figure 11, but not in Figure 10).

[0047] Figures 12 and 13 show in more detail features of the mounting platen 8, which remains on the housing when the platens 84 and 8 are interchanged. From these Figures it can be seen that the mounting platen 8 is generally a blunt shoe shape, and is substantially flat, with a peripheral lip 86 extending downwards towards the sanding shoe 84. The large central aperture 74, allowing it to be positioned around the second drive shaft, radially distant therefrom, so there is no direct contact between the mounting platen 6 and the second drive shaft 62, can also be clearly seen in these Figures, as can the four hollow right cylindrical portions 88, integrally formed with the surface of the mounting platen 8, and projecting into the body of the housing 4 i.e. upwards as shown in the Figures. An inner lip 90 extends downwards around most of the central aperture 74, and joins to the outer peripheral lip 92 of the mounting platen 6 at two points 94 on one short side of the mounting platen 8.

[0048] In line with the upwardly directed projections 88, and projecting in the other direction, from the opposite surface of the mounting platen 6 are four hollow, generally cylindrical pin shaped coupling members 96. The pin-shaped coupling members 96 are also integrally formed with the mounting platen 8. The substantially flat mounting platen with its projecting portions 88 and 96 are preferably integrally injection moulded from polymeric material or diecast zinc.

[0049] The four coupling pins 96, provided on the opposite surface of the mounting platen 6 from the flexible

legs 64, in corresponding positions, i.e. vertically aligned with the legs 64 as shown in Figures 12 and 13 have a dual function; the pins 96 secure the legs 64 in place, and couple with an orbital sanding head 84, in use, to prevent free rotation of that sanding head (Figures 11 to 13).

[0050] Each coupling pin 96 is an integrally formed part shaped as a hollow cylinder. The pin member 96 contains a radially directed flange 98 extending partially into the hollow of the pin member 96, to act as a stop member for a separate externally screw threaded headed bolt member 100 (see Figures 10 and 11). The externally screw threaded bolt member 100 passes through the hollow central pin member 96, and is shaped and sized to slide into the hollow pin member until its head abuts the internal stop flange 98, and then screw into inner hollow screw threaded cylindrical recesses at the mounting platen end of the flexible legs 64. By this screw threaded bolt member 100 the flexible legs 64 are therefore secured to the mounting platen.

[0051] As best seen in Figure 11, each pin member 96 is located between part of the peripheral lip 86 and the inner lip 90 of the mounting platen 6. The pin member 96 of the coupling means acts to couple to the orbital sanding shoe 84 to prevent its free rotation.

[0052] As shown in Figure 11, when mounted on the drive unit, the orbital sanding shoe 84 is secured to the spindle of second drive shaft 62 by means of the same nut 70 and washer 72 used to secure the random orbit sanding platen 8 of Figure 10. The orbital sanding shoe 84 is substantially flat, and is provided, on its upper major surface in the orientation shown in the Figure, with coupling means 92 shaped to cooperate with the coupling means 96 of the mounting platen 6. The coupling means 92 each comprise a hollow right-cylindrical stub, projecting upwards from the surface of the sanding shoe 84. The hollow right cylindrical projection 92 is shaped so that it provides a recess into which the pin member 96 of the mounting platen fits. One side of the cylindrical projection 92 on the sanding shoe 84 fits between the peripheral lip 86 of the mounting platen 6 and the outer surface of the pin member 96 of the mounting platen 6; and the opposite side of the cylindrical projection 92 on the sanding shoe 84 fits between the inner lip 90 of the mounting platen 6 and the opposite outer surface of the pin member 96 of the mounting platen 6.

[0053] By means of the co-operating coupling means 96 and 92, the sanding shoe 84 and mounting platen 6 are therefore securely located substantially to prevent relative movement between the mounting platen 6 and the sanding shoe 84 in a plane perpendicular to the axis of the bearing 60. Relative movement parallel to the axis of the bearing 60 is, of course, prevented by the nut 70 and washer 72 attachment.

[0054] In operation, when the motor is switched on and the drive shafts 50 and 62 turn, since the sanding shoe 84 is prevented from rotation relative to the mounting platen 6, and the mounting platen 6 is fixed relative to the housing 4 by means of legs 64, then free rotation of the sanding shoe 84 around the bearing 60 axis is prevented. The flexibility in the legs 64, however, allows the sanding platen 84 to follow the rotating motion of the eccentric spindle itself driven by the first drive shaft 50. Therefore the sanding shoe 84 is allowed to oscillate within a fixed orbit due to the flexibility of the legs 64.

[0055] In order to ensure that the sanding shoe 84 is always located the correct way round on the mounting platen 6, the coupling means 96 and 92 are non uniformly spaced over the surface of the mounting platen 6 and the sanding platen 84, those on one lateral side of the platens (the right as shown in Figures 12 and 13) being further apart from each other than those on the other lateral side of the platens (the left as shown in the Figures).

[0056] It will be appreciated by persons skilled in the art that the above embodiments have been described by way of example only, and not in any limitative sense, and that various alterations and modifications are possible without departure from the scope of the invention as defined by the appended claims.

Claims

1. A power tool comprising:-

   a housing defining at least one handle portion having a graspable surface having first and second concave portions and a third concave portion between said first and second concave portions; and
   a motor located in the housing for actuating a working member of the tool.

2. A power tool according to any one of the preceding claims, wherein the graspable surface is generally saddle shaped.

3. A power tool according to claim 1 or 2, further comprising a platen mounted to said housing on a side thereof remote from at least one said handle portion.

4. A power tool according to claim 3, wherein the platen includes a narrower portion at a forward end thereof.

5. A power tool according to claim 3 or 4, wherein the platen tapers inwardly in a longitudinal direction of the tool.

6. A power tool according to any one of claims 3 to 5, wherein a majority of the housing as measured in a longitudinal direction is disposed in use over the platen.

7. A power tool according to claim 6, wherein approximately two thirds of said housing as measured in

said longitudinal direction is disposed in use over said platen.

8. A power tool according to any one of claims 3 to 7, wherein substantially all of said housing as measured in a direction transverse to said longitudinal direction is disposed in use over said platen.

9. A power tool according to any one of the preceding claims, wherein the housing further defines a curved forward surface, and the tool further comprises a motor on/off switch disposed on said curved forward surface.

10. A power tool according to any one of the preceding claims, wherein at least one said first and/or said second concave portion has a radius of curvature of 5mm to 40mm.

11. A power tool according to claim 10, wherein at least one said first and/or said second concave portion has a radius of curvature of 5mm to 15mm.

12. A power tool according to claim 11, wherein at least one said first and/or said second concave portion has a radius of curvature of 8mm to 12mm.

13. A power tool according to any one of the preceding claims, wherein said third concave portion has a radius of curvature of 5mm to 40mm.

14. A power tool according to claim 13, wherein said third concave portion has a radius of curvature of 15mm to 30mm.

15. A power tool according to claim 14, wherein said third concave portion has a radius of curvature of 20mm to 25mm.

16. A power tool according to any one of the preceding claims, wherein the tool is a power sander.

17. A power tool comprising:-

a housing defining a forward surface and an upper surface, and a notch defined in said upper surface rearwardly of said forward surface;
a platen moveably mounted to said housing; and
a motor located in the housing for causing oscillatory movement of the platen relative to the housing;
wherein a majority of the housing as measured in a longitudinal direction of the tool and a direction transverse to said longitudinal direction is disposed over said platen in use.

18. A power tool according to claim 17, wherein the upper surface is curved downwardly in a rearward direction from an upper edge of said forward surface to define a recessed surface area and then curved upwardly rearwardly from said recessed surface area to define said notch.

19. A power tool according to claim 17 or 18, wherein the forward surface is curved.

20. A power tool according to any one of claims 17 to 19, wherein substantially all of said portion of said housing disposed over said platen in use as measured in the longitudinal direction is also disposed over said platen in use as measured in a direction transverse thereto.

21. A power tool according to any one of claims 17 to 20, wherein at least one said first and/or said second concave portion has a radius of curvature of 5mm to 40mm.

22. A power tool according to claim 21, wherein at least one said first and/or said second concave portion has a radius of curvature of 5mm to 15mm.

23. A power tool according to claim 22, wherein at least one said first and/or said second concave portion has a radius of curvature of 8mm to 12mm.

24. A power tool according to any one of claims 17 to 23, wherein said third concave portion has a radius of curvature of 5mm to 40mm.

25. A power tool according to claim 24, wherein said third concave portion has a radius of curvature of 15mm to 30mm.

26. A power tool according to claim 25, wherein said third concave portion has a radius of curvature of 20mm to 25mm.

27. A power tool according to any one of claims 17 to 26, wherein the tool is a power sander.

28. A power tool comprising:-

a housing having side surfaces below an upper surface to form a graspable handle portion;
a platen mounted to said housing, wherein a majority of said housing as measured in a longitudinal direction of the tool and in a direction transverse to said longitudinal direction is disposed over said platen in use;
a motor located in the housing for causing oscillatory movement of said platen relative to the housing; and
at least one chamber containing at least one gel material protruding from each said side surface.

29. A power tool according to claim 28, further comprising a third chamber containing a gel material disposed on said upper surface.

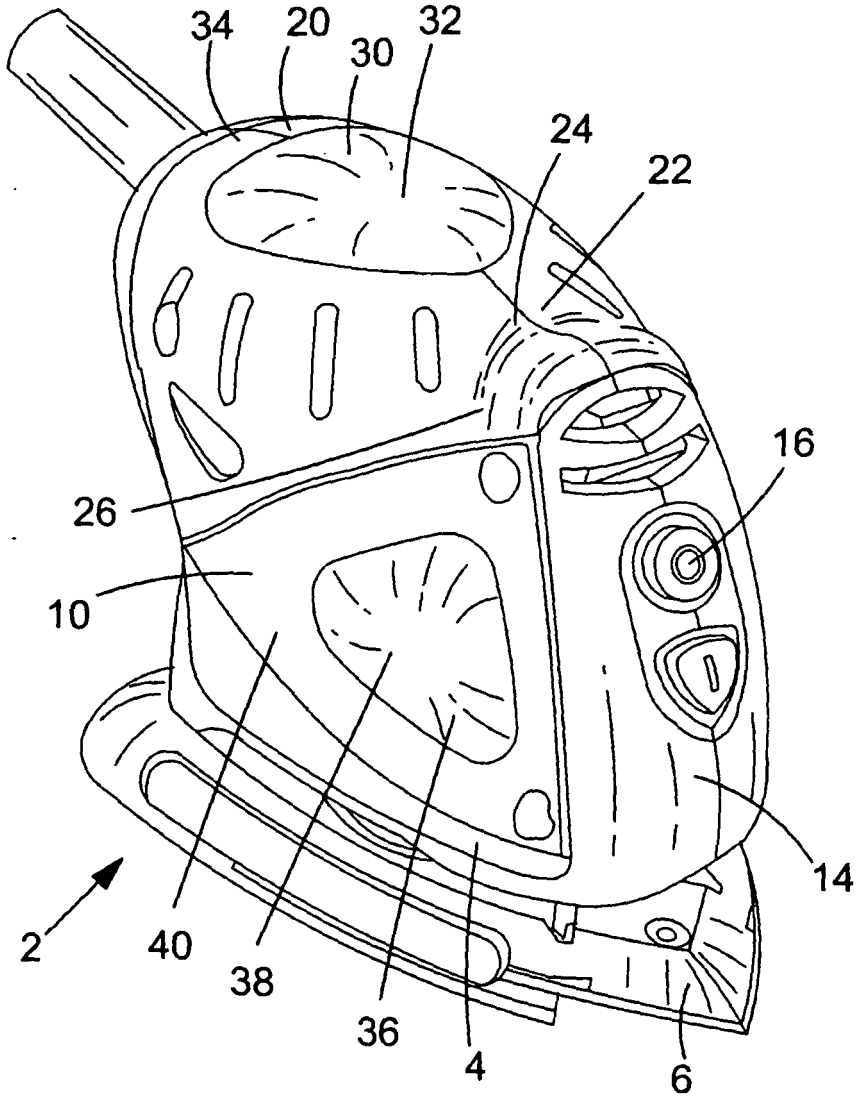

FIG.1

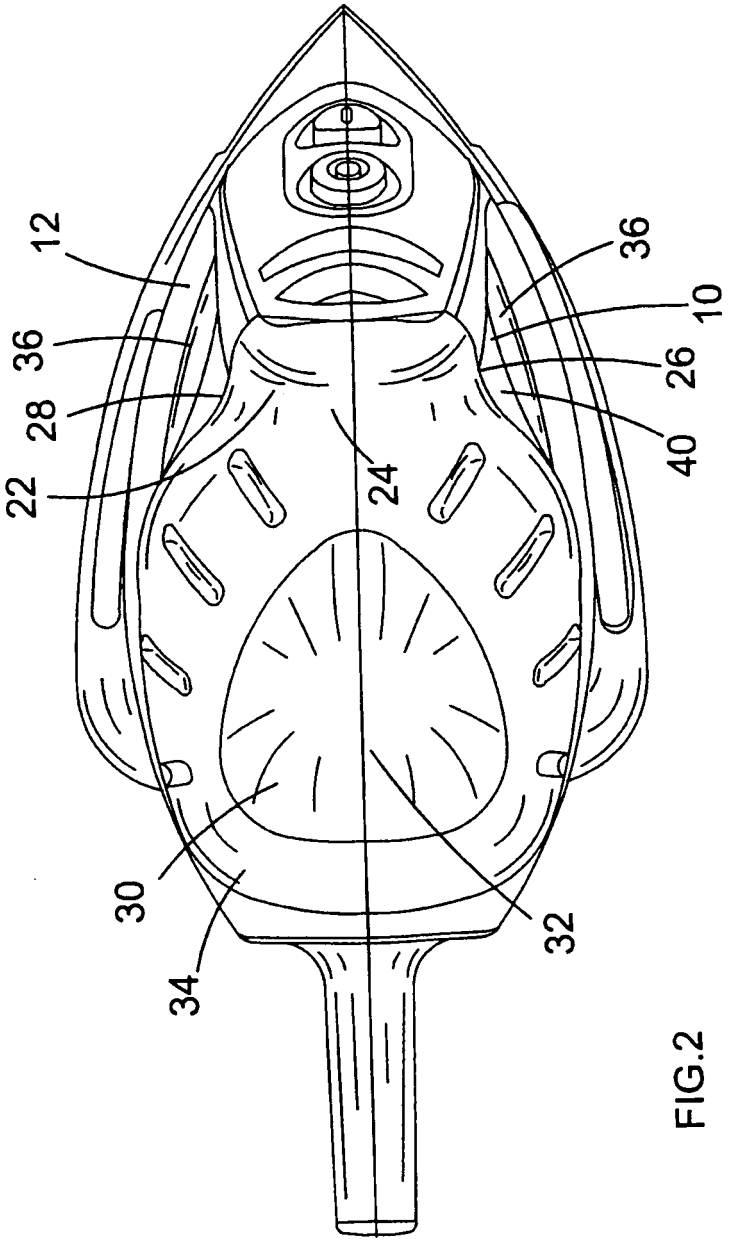

FIG.2

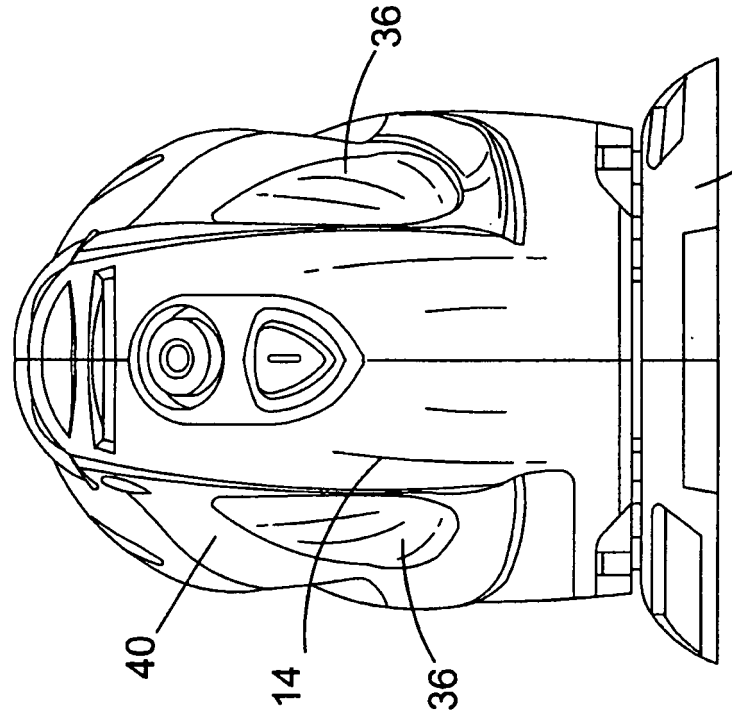

FIG.4

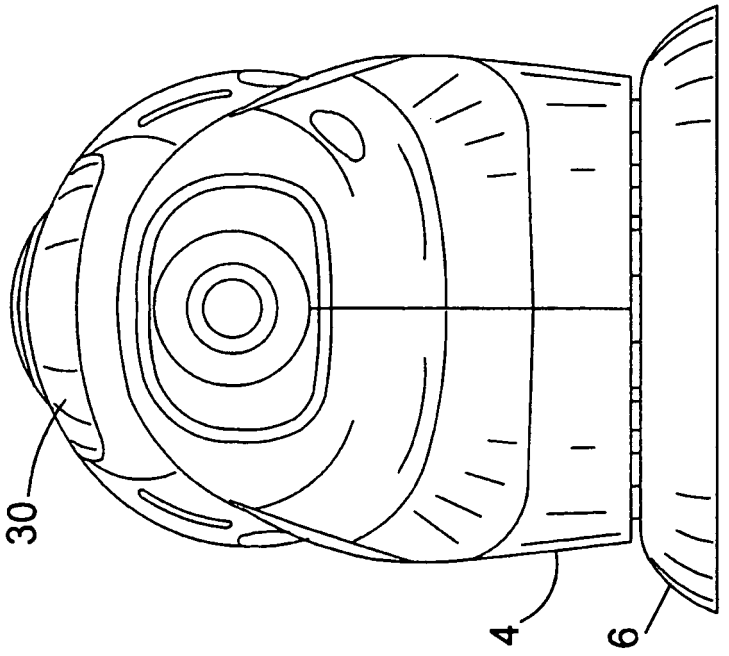

FIG.3

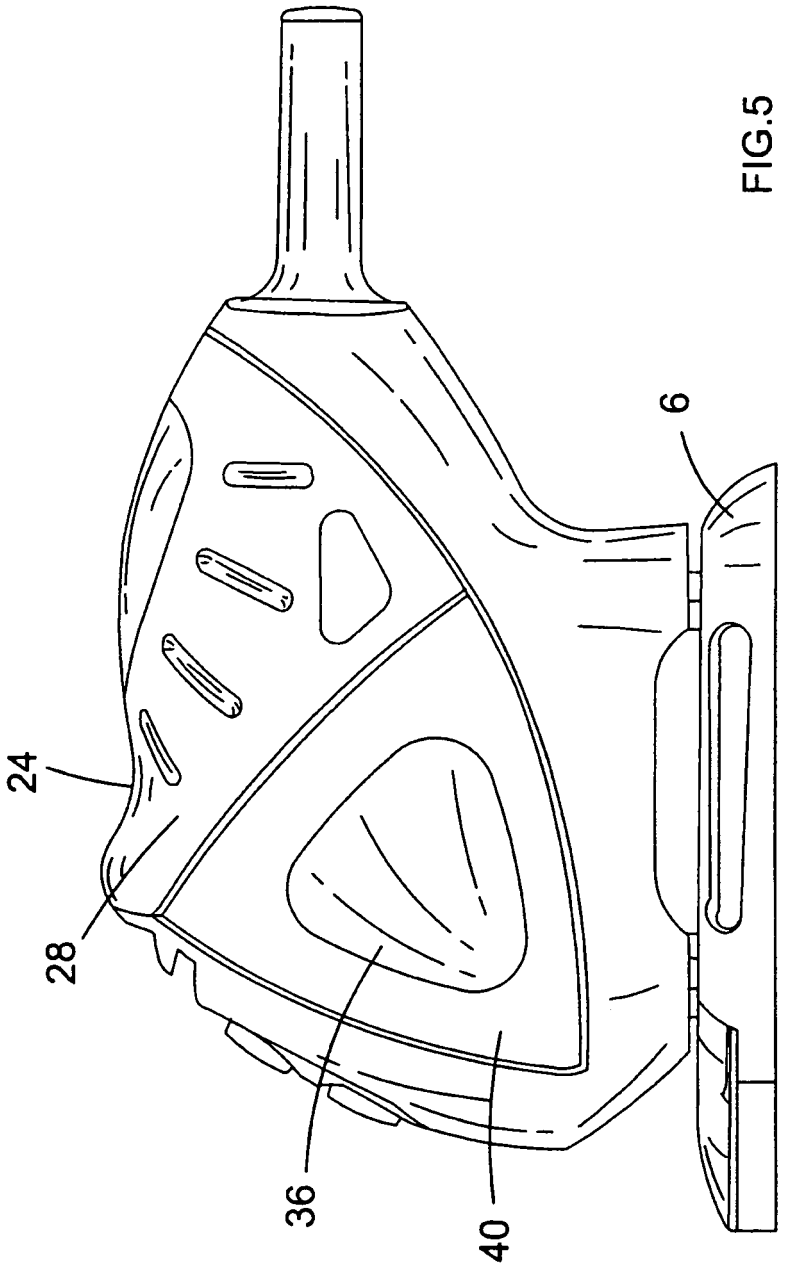

FIG.5

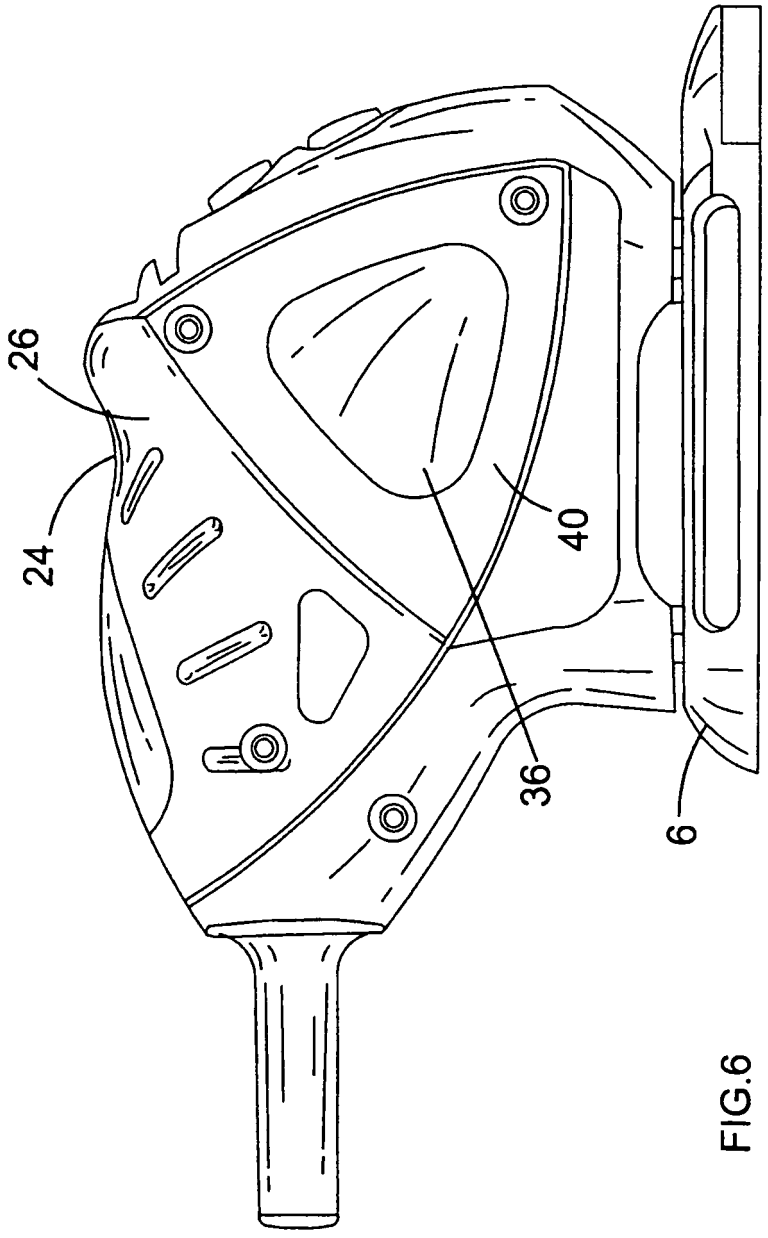

FIG.6

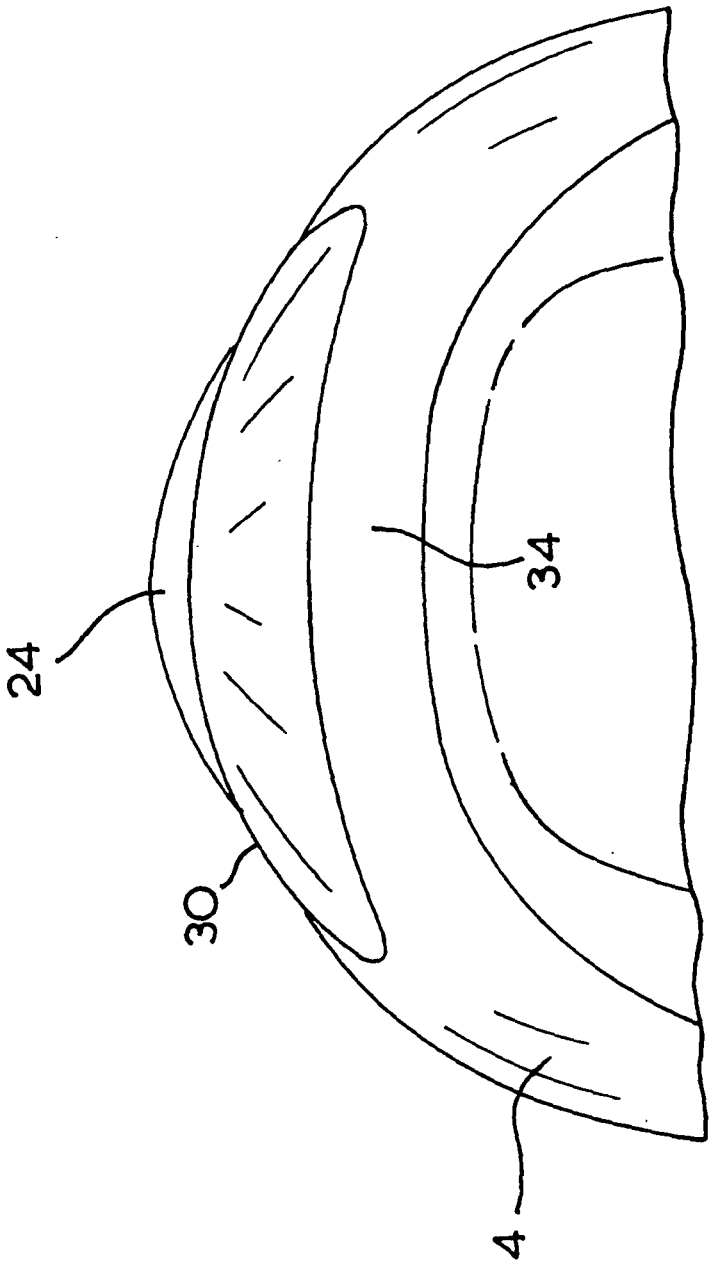

FIG. 7

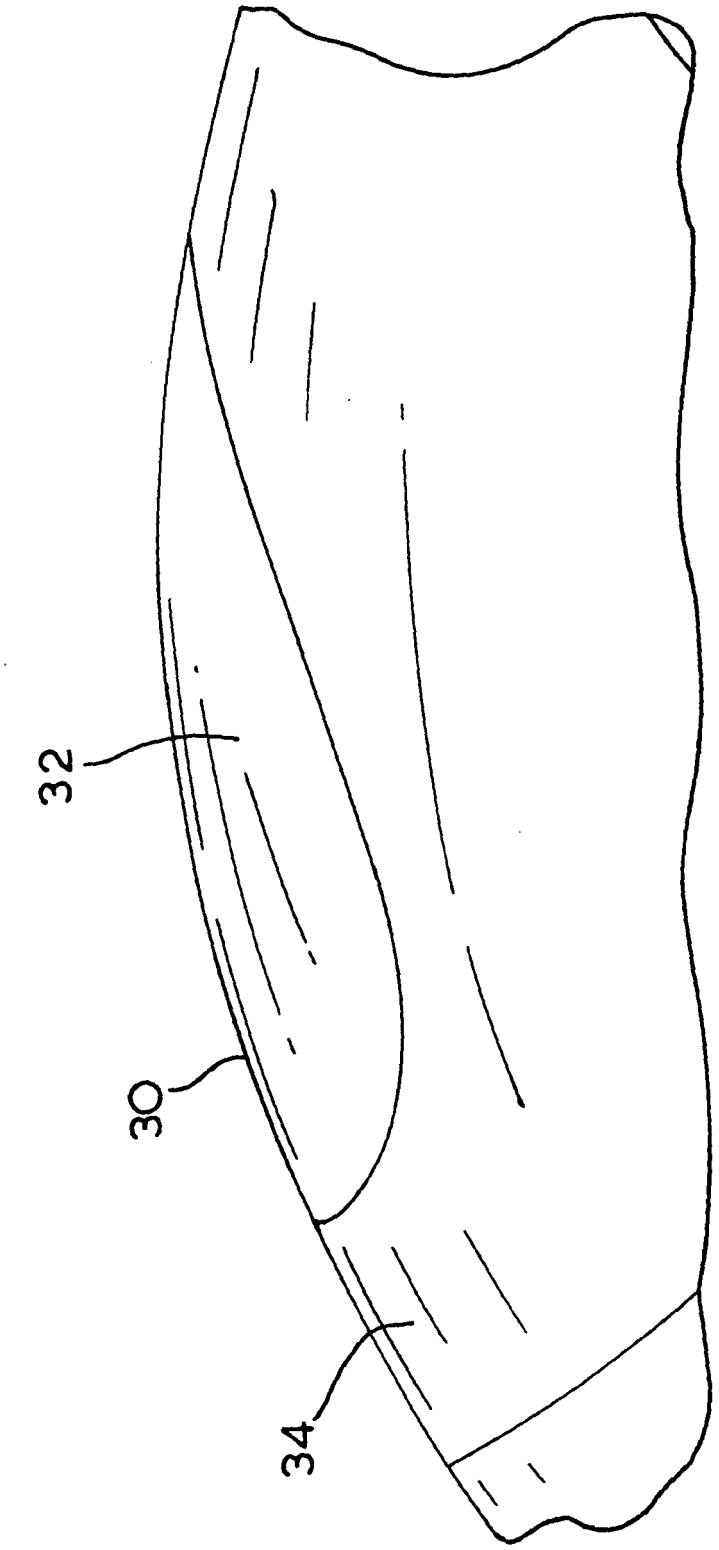

FIG. 8

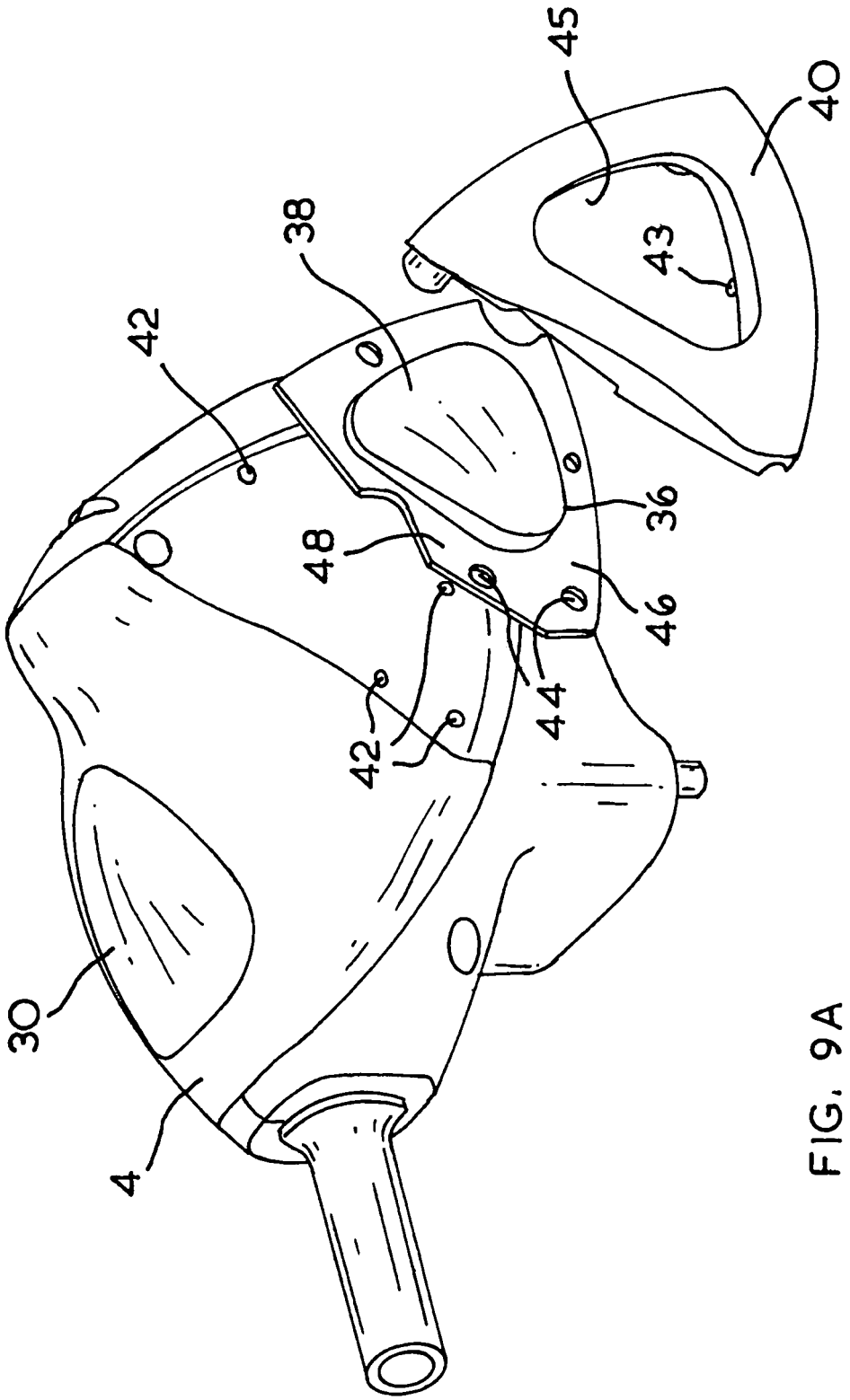

FIG. 9A

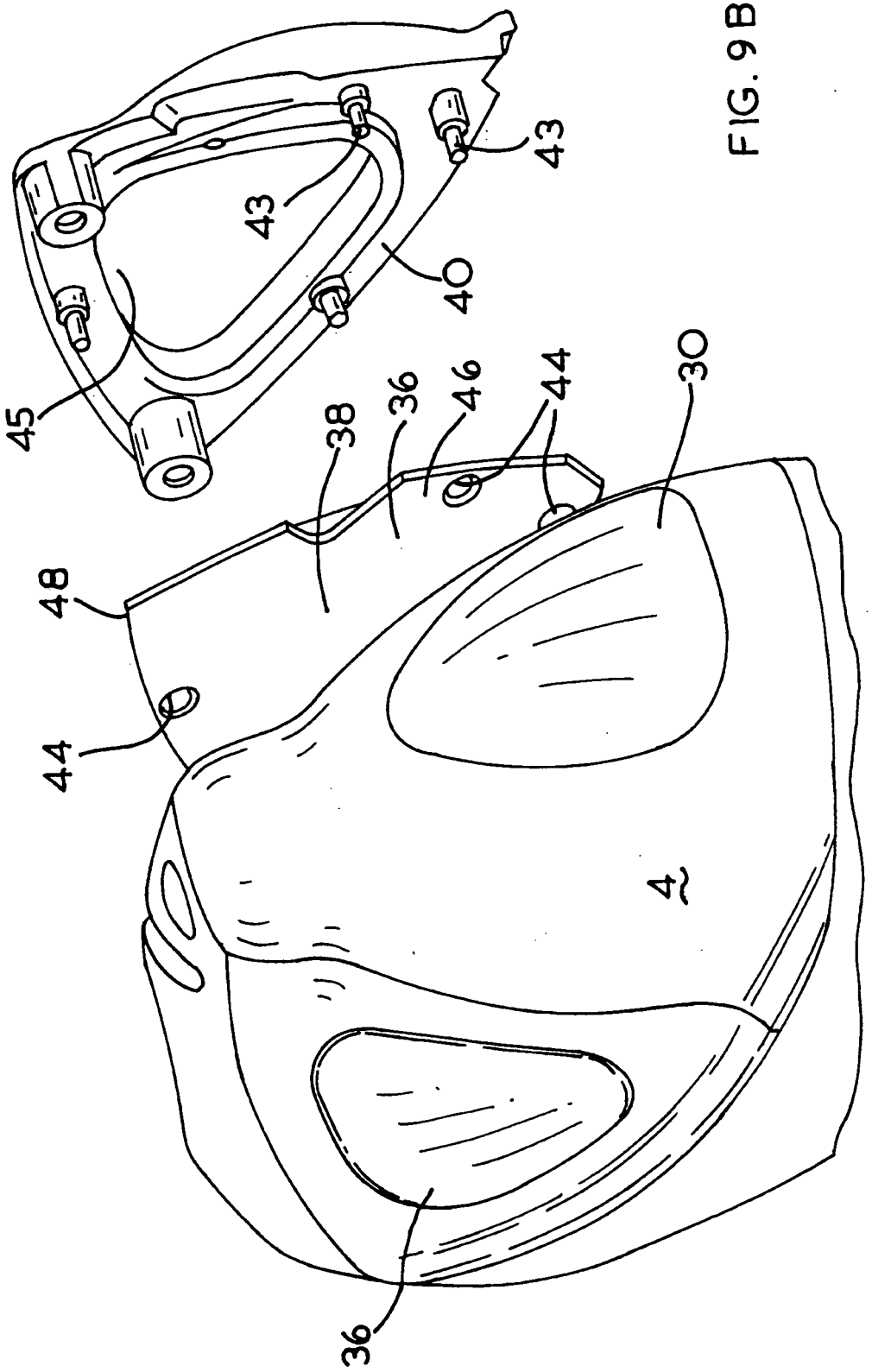

FIG. 9B

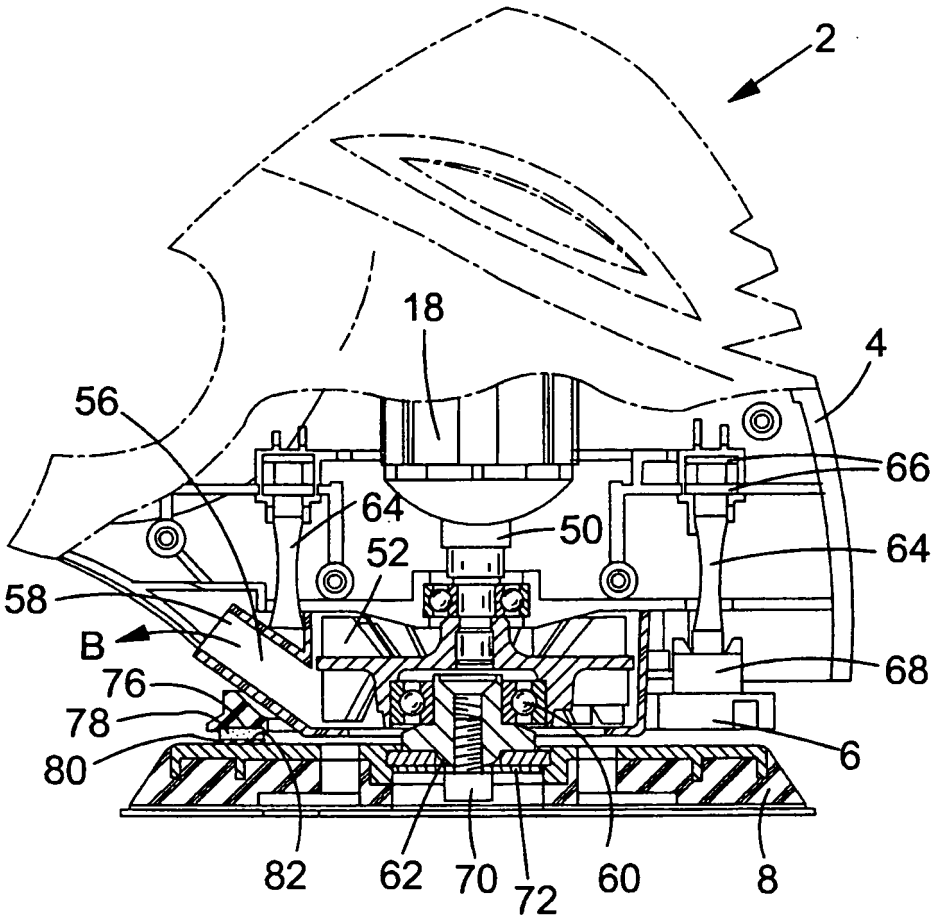

FIG.10

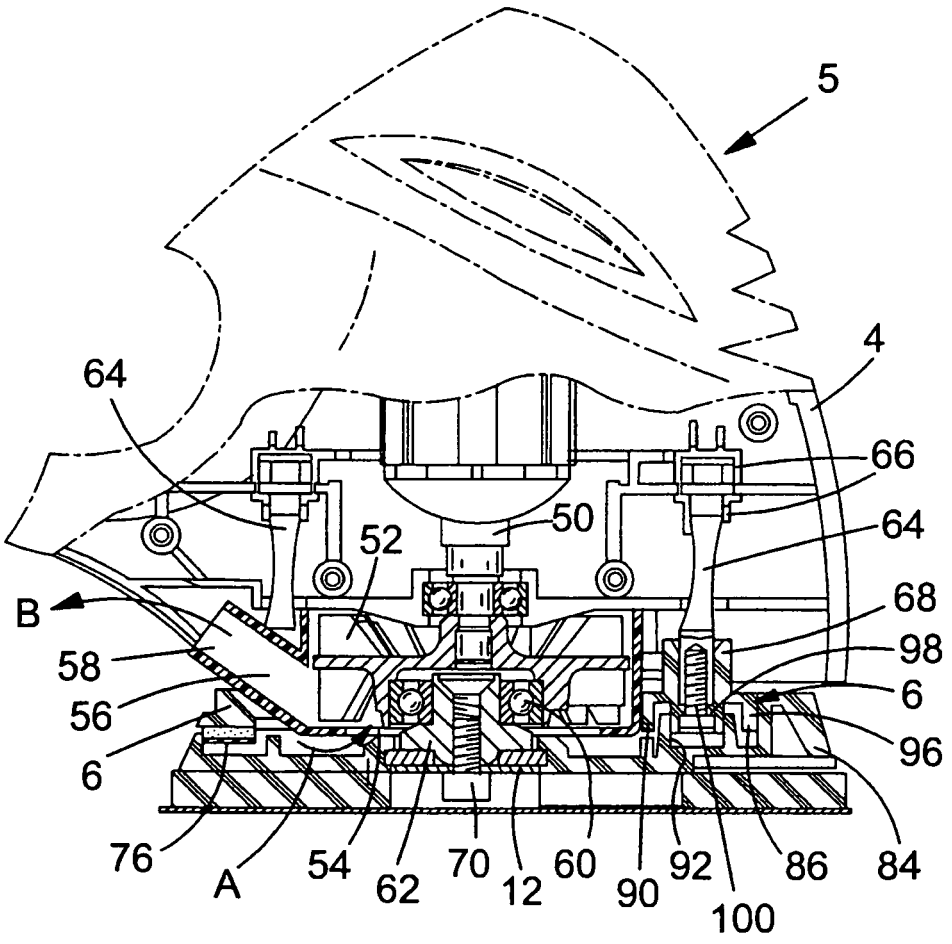

FIG.11

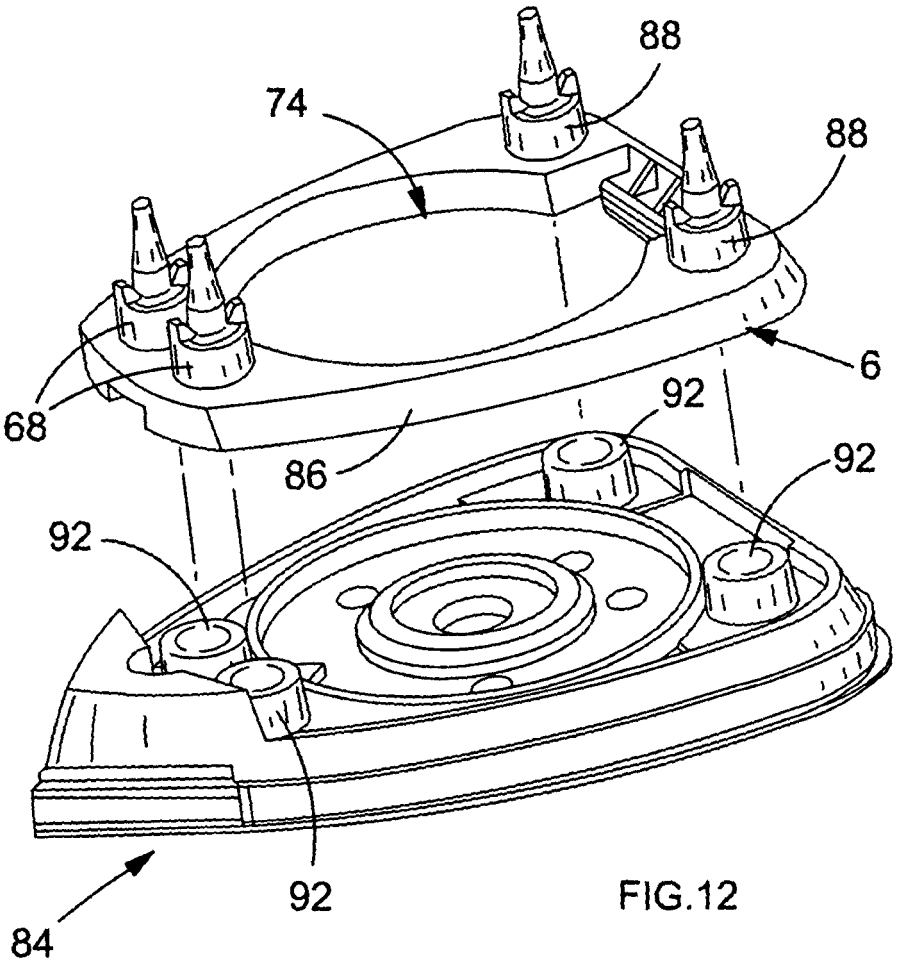

FIG.12

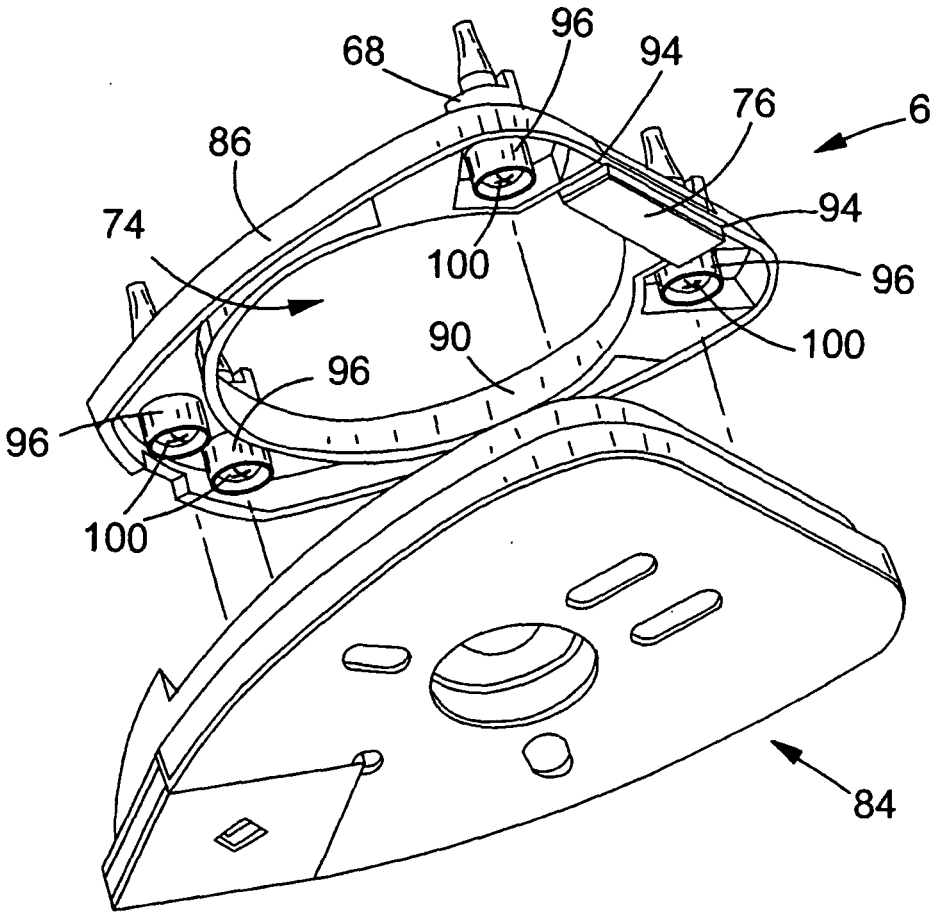

FIG.13

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29 July 2005	Rilliard, A

CATEGORY OF CITED DOCUMENTS

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EUROPEAN SEARCH REPORT

Application Number
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Place of search	Date of completion of the search	Examiner
The Hague	29 July 2005	Rilliard, A

CATEGORY OF CITED DOCUMENTS

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& : member of the same patent family, corresponding document

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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LACK OF UNITY OF INVENTION SHEET B

Application Number
EP 04 25 4013

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-27

   A power tool with a housing defining concave portions for an efficient grasping by the user.

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2. claims: 28,29

   A power tool with a housing on which gel material is used to dampen the vibrations transmitted to the user's hands.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 4013

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