ABSTRACT

There is provided with a power tool a housing having a motor mounted therein for driving a work element mounted below the bottom of the housing for working on a workpiece. The power tool has first and second handles extending from opposite sides thereof, with at least one handle having either or both an enlarged portion and an enhanced gripping portion to facilitate control over the tool. The gripping portion may have an enhanced texture surface, such as an elastomer surface, for an operator to grip the tool. In another form, the power tool may include a switch movable between a first position wherein the power tool is in active state and a second position wherein the power tool is in a de-active state. A lock may be connected to the power tool and movable between a release position wherein the switch is freely movable between its first and second positions and a lock position wherein the switch is locked in the second position so that the power tool can remain in the active state without assistance from an operator. The power tool may also include a recess for retaining an accessory to be used in connection therewith.
POWER TOOL AND METHOD OF OPERATING SAME

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of pending application No. 29/162,046, filed Jun. 7, 2002, which is hereby incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

This invention relates generally to a power tool and, more particularly, to an electrically-powered polisher capable of rotating a pad to polish a workpiece.

The tool industry offers a variety of power tools for performing work on various types of workpieces. One common shortcoming, however, is that the power tools do not offer handles with enhanced gripping surfaces for an operator to use to grip the tool. For example, many power tools, such as polishers, are used outdoors in hot climates where operation of the tool often causes the operator to sweat, and possibly even involve operation of the tool in damp environments, such as, for example, near a recently washed vehicle. This often results in the operator having a difficult time in gripping and/or controlling the power tool due to a lack of enhanced gripping surfaces.

In addition, current power tool configurations may force the operator to continually hold a trigger in the “on” position in order to activate the power tool. This forces the operator to expend more energy while operating the tool and can result in making the operator sweat more, thereby, complicate the already difficult task of maintaining a firm grip on the power tool.

Furthermore, the use of accessories in conjunction with the operation of the power tool may also be necessary. For example, power tools tend to leave residual particles from the workpiece or from substances used on the workpiece that could be picked up at the time of operation. It would be advantageous if the accessories were readily available or proximate to the power tool itself. This would promote maintaining a clean and obstacle free work environment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a power tool embodying features of the present invention;

FIG. 2 is a front elevational view of the power tool of FIG. 1;

FIG. 3 is a left side elevational view of the power tool of FIG. 1;

FIG. 4 is a plan view of the power tool of FIG. 1;

FIG. 5 is a bottom view of the power tool of FIG. 1;

FIG. 6 is an exploded view of the power tool of FIG. 1;

FIG. 7 is a cross-sectional view of the power tool of FIG. 1 taken along line 7-7 in FIG. 2;

FIG. 8 is a cross-sectional view of the power tool of FIG. 1 taken along line 8-8 in FIG. 3;

FIG. 9 is a partial perspective view of an alternate power tool embodying features of the present invention; and

FIG. 10 is a partial exploded view of the power tool of FIG. 9.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. 1-8, there is illustrated a power tool 20 embodying features of the present invention for working (e.g., waxing, buffing, polishing, etc.) on a workpiece. The power tool 20 includes a housing 22, first and second handles 24 and 26, respectively, connected to the housing 22, and a work element, such as a pad 28, for working on a desired workpiece, such as the body of an automobile or hull of a boat. The power tool 20 includes a symmetrical design about a vertical reference plane (not shown) extending centrally from the forward end of the tool 20a to a rearward end 20b (see FIGS. 3 and 4). The cross-section illustrated in FIG. 7 is taken along the vertical reference plane.

In a preferred embodiment, the tool 20 has a clamshell design with a first clamshell member 20c and a second clamshell member 20d which, when connected to each other, define a parting line 20e which extends in the vertical reference plane about which the tool 20 is generally symmetrical, as shown in FIGS. 4 and 6. As further illustrated in FIG. 6, the clamshell members 20c and 20d are secured together by a number of screws 21 which are recessed into bores defined by second clamshell member 20d and thread into internally threaded bores or post members 21a defined by first clamshell member 20c. The clamshell members 20c and 20d can be made of any suitably lightweight material and, in a preferred embodiment, are molded plastic parts.

As illustrated in FIGS. 1-4, the housing 22 is generally cylindrical in shape and includes a front portion 22a, rear portion 22b, top portion 22c, bottom portion 22d (FIG. 7), and first and second side portions 22e-f, respectively. Collectively the housing portions 22a-f define an internal cavity 30 within which at least a portion of motor 32 is disposed (see FIG. 7). The first handle 24 extends from the upper rear portion 22b of housing 22 and the second handle 26 extends from the upper front portion 22a of housing 22. In addition, the bottom portion 22d of housing 22 is generally flat and the upper portion 22c forms a slightly convex arcuate surface. Furthermore, the edges of the housing 20 are generally arcuate to facilitate a generally smooth transition from one housing portion to another. For example, the edge between rear portion 22b and bottom portion 22d is rounded as illustrated in FIG. 7.

The upper portion 22c of housing 22 also includes a raised arcuate rim or wall portion 22g near the rear of the housing which defines a vent or passage to the cavity 30, such as the elongated slot opening 22h illustrated in FIG. 1. The wall portion 22g curves along the periphery of the top surface 22c so that it remains flush with the rear housing portion 22b (see FIG. 3) and has gusset members 22i and 22j extending forward from the ends of the wall portion 22g. In a preferred embodiment, the gusset members 22i and 22j each have two parallel gusset walls which taper downward to the top surface 22c of housing 22 as they extend toward the front 20a of the tool 20.
[0020] As mentioned above, and illustrated in FIGS. 6, 7 and 8, the housing portions 22a-f define a cavity within which motor 32 is disposed. The motor 32 is secured to the housing 22 using a mounting plate 34 and is supported and/or aligned laterally by ribs 22e which extend from the inner surface of at least one of the housing portions 22a-g. As illustrated, several of the ribs 22e include an arcuate edge that complements the body of the motor 32. The mounting plate 34 includes a generally flat and rectangular plate structure 34c having a circular upward wall 34d, a centrally located hub portion 34c (FIG. 7) and tabs 34d and 34e which extend outward from opposing side portions of the plate 34a.

[0021] The circular wall 34d of mounting plate 34 extends upward from the plate structure 34a and forms an annular wall about a fan (not shown) which is positioned therein and driven by the motor shaft 32a in order to circulate air through, and cool, the motor 32. The annular wall 34b includes notches 34c to assist in the circulation of air through the tool 20. For example, as illustrated in FIGS. 6, 7 and 8, the motor 32 rests on the upper edge of the circular wall 34 and rotates the fan located therein in order to draw air through the vent 22b located in upper housing portion 22c, down through holes in the top of the motor 32, out the notches 34c of the mounting plate 34, and eventually out of the cavity 30 via passages 22h located in the lower half of first and second side portions 22e and 22f (see FIGS. 1-3). The circulation of air cools the motor 32 during operation, which aids in preventing the overheating of motor 32.

[0022] The hub portion 34c of mounting plate 34 extends upward and downward from the center of the plate structure 34a and defines a bore through which the motor shaft 32a is disposed and a socket within which bearing 36 is nested. As illustrated in FIG. 8, the motor output shaft 32a passes through the bearing 36 and bore of the hub portion 34c. The bearing 36 assists the motor in operating more efficiently by aligning and guiding the rotational operation of the output shaft 32a and reducing the frictional forces encountered thereby. As will be discussed in further detail below, a portion of the hub 34c extending below the plate structure 34a helps to align the motor 32 with the bottom 22d of housing 22 and helps make the plate 34 within cavity 30.

[0023] The tabs 34d and 34e of mounting plate 34 define bores into which elongate screws or bolts (not shown) are thread in order to mount and secure the motor 32 to the mounting plate 34. More particularly, the threaded bolts are fed through tab structures 32b and 32c (see FIGS. 6-7), which are located adjacent the top of the motor 32 and aligned with the mounting plate tabs 34d and 34e, and are thread into the mounting plate tabs 34a-d. In the embodiment illustrated in FIG. 7, the motor tab structures 32b and 32c have recessed portions into which the bolt heads are nested, and the mounting plate tabs 34d and 34e have recessed portions into which nuts are nested. Preferably, the recesses of the mounting plate tabs 34a-f and 34c will be complimentary in shape to the nuts in order to prevent the nuts from rotating while nested therein to assist in tightening the elongate bolts.

[0024] The motor 32 and mounting plate 34 are secured to the housing 22 by sliding at least a portion of the mounting plate 34 into a slot defined by the inner surface of at least one of the housing portions 22a-g. As illustrated in FIG. 6, and in a preferred embodiment, the corners of plate structure 34a are inserted into slots 22m defined by the lower most rib 22e extending from the inner surfaces of first and second side portions 22c-f and the inner surface of bottom portion 22d. The bottom portion 22d further defines a circular opening within which the portion of hub 34c extending down below the plate structure 34a is disposed. Thus, this portion of hub 34c and the opening in the bottom portion 22d help align and maintain the motor 32 and mounting plate 34 in their desired location within the cavity 30 of the housing 22. In addition, the slot and insert configuration between the housing 22 and the mounting plate 34 help prevent the motor 32 from rotating once in position so that maximum torque may be supplied to a work element, such as pad 28. In alternate embodiments, the plate structure 34a and bottom portion 22d may have additional openings aligned with one another for assisting in the circulation of air over the motor 32.

[0025] Extending downward below the housing 22 is an arcuate shield or skirt member 40, which forms an annular wall about the exposed end of the motor shaft 32a and at least a portion of counterweight 38 (see FIG. 8). The shield 40 is connected to the lower portion 22d of housing 22 and, in a preferred embodiment, is made integral therewith.

[0026] The motor 32 is mechanically connected to the pad assembly 28 to drive it in an orbital path below the housing 22. More particularly, the motor output shaft 32a extends through the bottom portion 22d of housing 22 and is threaded into a first threaded bore 38f defined by the counterweight 38. As illustrated in FIGS. 6-8, the counterweight 38 is connected to the pad assembly 28 by a bolt, such as left handed bolt 42, which threads into a second threaded bore 38h in the counterweight 38. The second counterweight bore 38h is parallel to, and located generally adjacent to, the first counterweight bore 38f. Thus, rotation of the output shaft 32a results in a corresponding rotation in the counterweight 38 and the pad assembly 28 connected thereto.

[0027] As further illustrated in FIGS. 6-8, the pad assembly 28 preferably consists of a pad support 44, a first pad 28a, a second pad 28b, and a third pad 28c. The pads 28a-c are overlaid and connected to one another and to the pad support 44 by an adhesive (not shown) and, preferably, include a closed polyethylene pad, an ether foam pad, and a closed micro-cell polyethylene pad, respectively. The preferred pads 28a-c have a thickness of ¼", ¾" and ¼" respectively. In alternate embodiments, however, various types and sizes of pads may be used. For example, varying combinations of the above mentioned pads may be used in either a two pad configuration or in a single pad configuration, rather than a three pad coil configuration.

[0028] The pad support 44 has a generally planar disc portion 44a supporting a circular hub portion 44b extending upward from the center of the disc and an annular wall 44c extending upward from the disc portion 44a intermediate the edge of the disc portion 44a and hub portion 44b. A plurality of gusset members extend along the sides of the hub portion 44b down to the disc portion 44a (see FIG. 6). As mentioned above, the annular wall 44c is positioned intermediate the outer perimeter of the disc 44a and the hub portion 44b and is preferably located about two-thirds of the radial distance from the center of the disc 44a toward the perimeter of the
Thus, the counterweight 38 rotates within the annular wall 44c of the pad support 44, and the annular wall 44c remains under cover of the shield 40. With such a configuration, the skirt member 40 and the annular wall 44c of the pad support 44 combine to prevent, or at least hinder, direct access to the counterweight 38.

The hub portion 44b of pad support 44 defines a hollow center region that houses bearings 46a-b and spacer 48. The bolt 42 extends through the central openings in the bearings 46a-b and the spacer 48 and is threaded into the second bore 38b of the counterweight 38. The first pad 28a, the second pad 28b and the third pad 28c also have central openings or passageways through which the bolt 42 passes in order to be threaded into the counterweight 38. The end of bolt 42 includes an enlarged head to secure the pad support 44, bearings 46a-b and spacer 48, to the tool 20. During operation, the pad assembly 28 will orbitally rotate about the z-axis of the tool (defined by output shaft 32a) when the motor 32 drives the shaft 32a and the counterweight 38.

For maintenance purposes, at least one small opening or notch 44d may be defined by the annular wall 44c of the pad support 44 so that a hand tool or other instrument can be inserted into the interior region between the pad support 44 and the skirt member 40 to prevent the counterweight 38 from rotating while the bolt 42 is being unscrewed and removed film the counterweight 38. This enables the pad assembly 28 to be removed from the tool 20 for access to the counterweight 38 and other internal components (e.g., the motor shaft 32a, bearing 46a, etc.). Such access may be required to repair or replace parts, including the counterweight 38 and pad assembly 28 or those parts internal thereto.

The counterweight 38 includes a first horizontal portion 38c, which defines bores 38a and 38b of the counterweight 38. More particularly, the first horizontal portion 38c is generally rectangular in shape and cross-section and has bores 38a-b disposed therein between first and second ends of the structure. The first bore 38a is internally threaded for receiving the motor output shaft 32a and has a sleeve or collar extending upward from the top surface of the horizontal portion 38c in order to increase the length of the bore 38a. The second bore 38b is internally threaded for receiving the bolt 42 connecting the pad assembly 28 to the tool 20 and has a sleeve or collar extending downward from the bottom surface of the horizontal portion 38c in order to increase the length of the bore 38b. The lengthened bores 38a and 38b increase the amount of the shaft 32a and bolt 42 disposed therein, which subsequently strengthens the mechanical connection made between the counterweight 38 and shaft 32a and between counterweight 38 and bolt 42.

A second horizontal portion 38e is connected to the first horizontal portion 38c via a generally vertical interconnecting portion 38d. More particularly, the interconnecting portion 38d connects the second horizontal portion 38e such that it is generally parallel to the first horizontal portion 38c. Collectively, the connecting portion 38d and second horizontal portion 38e form a generally L-shaped structure having a central opening 38f (FIG. 6) that generally divides the connecting portion 38d and second horizontal portion 38e into two parallel legs which allows for a desired reduction in counterweight mass.

A first end member 38g extends from the second horizontal portion 38e on the end opposite the interconnecting portion 38d. The first end member 38g is accurately shaped about the end of the second horizontal portion 38e, with the end of the second horizontal portion 38e being connected to the inner curved surface of the end member 38g and the end member 38g having a generally rectangular cross-section at any given point there along. The radius of curvature of the end portion 38g preferably corresponds to that of the annular wall 44c of pad support 44 so that the end member 38g can rotate within the annular wall 44c without interference by the wall 44c.

A second end member 38h is connected to the first horizontal portion 38c on the side opposite the interconnecting member 38d. Thus, the first and second end members 38g and 38h are located on opposite sides of the counterweight 38. The second end member 38h is generally rectangular in shape and is generally centered off of the end of the first horizontal portion 38c. This configuration allows the counterweight 38 to be made out of less material, but yet supply a sufficient amount of revolutions per minute (RPMs) to orbit the pad assembly 28 as desired.

As illustrated in FIGS. 1 and 3-6, the first handle 24 includes a pair of elongated members 24a and 24b which project outward from the rear portion 22d of the housing 22 near the top thereof. This shape provides an operator with a plurality of locations to facilitate an effective grip to maintain control over the tool 20. More particularly, the first and second side members 24a and 24b connect along the parting line 20e to form the handle 24. The side portions 24a and 24b are secured together by screws 21 or other fasteners which are inserted into recessed bores located in the right side portion 24b of handle 24. The first handle 24 has a longitudinal axis that is generally perpendicular to the z-axis and within the vertical reference plane discussed above. In a preferred embodiment, the handle 24 has a generally oval-shaped cross-section at any given point and a distal end 24c which is enlarged with respect to the remainder of the handle 24. In addition, the upper surface of the handle 24d is generally flat compared to the remainder of the contour, which, as shown by the lower surface 24e is generally arcuate to provide the operator with a more comfortable grip and to account for the differing hand sizes of operators.

The enlarged end 24c allows the operator to "feel" the end of the handle without the need to visually locate it. This allows the operator to focus more on the workpiece rather than requiring the operator to break visual contact with the workpiece to determine the location of the end of the handle 24. For example, the enlarged end 24c provides the handle with a structural end stop for an operator to feel. Furthermore, the enlarged end 24c can also assist an operator in drawing the tool 20 backward when working on a workpiece.

Internally, the first and second side portions 24a-b of handle 24 include a plurality of ribs 24f which both strengthen the handle 24 and support the recesses and threaded posts into which screws 21 are inserted and thread. Furthermore, the handle 24 and the rear portion 22b of housing 22 define a socket within which actuator 50 is disposed. In the embodiment illustrated in FIGS. 6 and 7, the actuator 50 includes a trigger member 52, which is generally rectangular in shape and cross-section and has a generally hollow interior.
The trigger 52 has an inward concave lower surface 52a which is to be engaged for actuation by at least one of an operator’s fingers. Located on opposite side walls of the Trigger 52 are guidegears 52b (FIG. 6) which are inserted into complimentary bores defined by posts 22a extending inward from the inner surfaces of the clamshell members 20c and 20d of tool 20. Thus, the trigger 52 is able to pivot about the axis defined by the guidegears 52b. Furthermore, located within the trigger 52 is a pedestal 52c having a recessed upper surface within which an end of spring 54 is nested. The pedestal 52c further includes a centrally located post 52d which extends upward from the center region of the recessed upper surface of pedestal 52c and is used to actuate pushbutton 56. More particularly, the other end of spring 54 is positioned over the button of pushbutton switch 56 like a sleeve. The pushbutton switch is mounted in the first handle 24 above the end of the trigger 52 having post member 52d, with the spring 54 biasing the trigger 52 (and post 52d) out of engagement with the switch 56. In the embodiment illustrated, switch 56 consists of a pushbutton switch which is a push-on-push-off type switch, such as pushbutton switch model No. J188B manufactured by Judco Manufacturing Inc. of Harbor City, Calif. The switch 56 regulates power supplied to the motor 32 and is movable between an active position, or “on” state, to allow power to the motor 32 and a de-active position, or “off” state, to prohibit power to the motor 32.

The switch 56 is actuated between active and de-active positions via the post 52d of trigger 52. More particularly, when the trigger 52 is squeezed by the operator, it pivots about the axis defined by the guidegears 52b. This drives the post 52d towards the pushbutton switch 56 and compresses the spring 54 between the body of the pushbutton switch 56 and the pedestal 52c. As a result, the post 52d is pressed into contact with the pushbutton switch 56. Thus, the operator may activate or deactivate the tool 20 by pivoting or squeezing the trigger 52. Once released, the spring 54 returns the trigger 52 to its biased position out of engagement with the switch 56.

In alternate embodiments, however, other types of actuators 50, with alternate features, may be used. For example, the actuator 50 may include a momentary switch and/or a locking momentary switch which can be temporarily locked in the “on” position. In one embodiment, a locking momentary pushbutton switch, such as pushbutton switch HELI KP-D1 manufactured by Changzhou Create Electric Appliance Co. Ltd. of Changzhou, China, may be used. To accommodate such an actuator, one of the side portions 24a-b of first handle 24 may define an opening, such as aperture 24g illustrated in FIGS. 1 and 3-4, through which a lock member is disposed for selectively locking the momentary switch to the “on” position. In a preferred embodiment, the operator may lock the actuator into the “on” position by pivoting the trigger 52 into the “on” position, depressing a locking pushbutton switch disposed in aperture 24g to lock the trigger in the “on” position, and releasing the trigger 52. The locking pushbutton prevents the trigger 52 from being fully returned to its biased “off” position, thereby temporarily locking the actuator 50 in the “on” position. The trigger 52 may then be deactivated by pivoting (or squeezing) the trigger again toward the “on” position until the spring activated lock pushbutton disengages the trigger so that the trigger may be returned to its biased “off” position. In yet other embodiments, other actuators and actuator features may be incorporated into the tool 20 as are known in the art.

As illustrated in FIGS. 6 and 7, the rear portion 24c of handle 24 includes a power cord 58 for supplying power to the tool 20 (i.e., for supplying power to the apparatus from a power supply external to the power tool). Preferably, the power cord 58 has two conductive and shielded wires 58a and 58b and an outer insulator jacket 58c (e.g., a double insulation wiring configuration). The rear handle portion 24c is made up of side portions 24a and 24b includes two semi-circular notches 60 located on each side portion 24a-b which cooperate to form a strain relief 61 for the power cord 58. More particularly, the notches 60 form a rounded collar about a flange portion 58d of the insulator jacket 58c (see FIG. 7). This helps to prevent the power cord 58 from being separated from the handle 24 and power tool 20. The preferred strain relief 61 also includes a clamp mechanism, such as block 60c, which has a curved bottom surface and bores located on opposite ends. The power cord 58 rests ill a curved cradle 60d and the block 60c is fastened down over the power cord 58 via screws 60f to clamp the power cord 58 in the cradle 60d, with the curved surface of the block 60c engaging and compressing the outer jacket 58c in order to provide additional strain relief for the power cord 58.

One end of the power cord 58 includes an electrical connector, such as male plug member 58e, which can be connected to various types of power supplies, either directly or via an extension cord (not shown). On the other end of the power cord 58, wire 58a is connected to electronic circuitry located within the tool 20, such as a terminal of full wave rectifier 62, which is connected to the inner surface of clamshell member 20c via screw 62a. The other wire, wire 58b, is connected to a terminal of the pushbutton switch 56. A second terminal of the pushbutton switch 56 is electrically connected by a wire to a second terminal on the rectifier 62, and additional wiring electrically connects third and fourth terminals on the rectifier 62 to first and second terminals on motor 32 in order to complete the electrical circuit between the power supply, rectifier 62, motor 32 and actuator 50. Thus, when the tool 20 is connected to a power supply and actuator 50 is placed into the “on” position, power will be supplied to the motor 32 in order to drive the work element 28 connected to the tool 20. When the actuator 50 is placed into the “off” position, no power will be supplied to the motor 32, and the apparatus 20 will remain in an inoperative or de-active state.

In the alternate embodiment discussed above using the HELI KP-D1 switch, both wires 58a-b may be connected to input terminals of the switch and output wires from the switch may be connected to the rectifier 62. Additional wires from the rectifier would then be electrically connected to the motor 32 in order to complete the electrical circuit between the power supply, rectifier 62, motor 32 and actuator 50. Thus allowing the tool 20 to be operated with a momentary on pushbutton switch rather than a push on-push off type switch. As mentioned above, it should be understood that alternate actuators and wiring schemes may be used in order to operate the power tool 20.

As illustrated in FIGS. 1-7, the second handle 26 has a generally block-shaped configuration which projects
outward from the front portion 22a of the housing 22 near the top thereof in order to provide the operator with a forward handle to facilitate an effective grip to help maintain control over the tool 20. More particularly, the first and second side portion is 26a and 26b (see FIG. 6) connect along the parting line 20c to form the second handle 26. The side portions 26a-b are secured together by at least one of the screws 21 connecting the clamshell members 20c-d, which again are inserted into recessed bores located in the right side portion 26b of handle 26 and thread into threaded post members extending from the left side portion 26a of handle 26. The second handle 26 has a longitudinal axis that is generally perpendicular to both the x-axis and the longitudinal axis of the first handle 24. In a preferred embodiment, the handle 24 has a generally rectangular cross-section and a distal end portion 26c which is enlarged with respect to the remainder of the handle 26. In addition, the upper surface of the handle 26d is generally flat or planar (see FIGS. 3 and 7) while the lower surface 26e is convexly curved to provide an operator with a more comfortable grip. The second handle 26 is wider and shorter than the first handle 24 and is most often gripped with an operator’s palm and/or fingers wrapped around the front or distal end portion 26c of the handle 26 rather than around the sides of the handle, as is the case with respect to the rear handle 24.

[0045] In addition, the enlarged end portion 26c of handle 26 is wider and thicker than the remainder of handle 26, which provides the operator with more surface area to grip the tool 20. Thus, the enlarged end 26c helps facilitate a stronger grip and control over the tool 20. Furthermore, the enlarged end 26c can also assist the operator in directing the tool 20 forward and backwards, as well as side-to-side, when working on a workpiece. Like the first handle 24, the interior of the first and second side portions 26a and 26b of handle 26 include a plurality of ribs 26f, which both strengthen the handle 26 and support the recesses and threaded posts into which at least one of the screws 21 is thread.

[0046] As illustrated in FIGS. 1-6, both the first and second handles 24 and 26 have outer elastomer surfaced grips 64 to facilitate enhanced gripping for control over the tool 20. In a preferred embodiment, the elastomer grips 64 are provided on the upper surfaces 24d and 26d of handles 24 and 26 to facilitate enhanced gripping control over the power tool 20. The elastomer grip is preferably added by way of an injection overmolding process. More particularly, the handles 24 and 26 are preferably formed by a plastic injection molding process, which is later followed by injection of a grip layer material to form grip 64. A preferred material for the elastomer grip 64 is an elastomer/plastic blend, such as, for example, SANTOPRENE, which is a product of Advanced Elastomer Systems, L.P. of Akron, Ohio. The overmolded grip may be formed with a smooth outer surface or with a textured outer surface and provides a non-slip rubber (or rubber-like) gripping surface for the operator’s hand to grasp. Preferably, the operator will grip the top surface 24d of the first handle 24 with his or her palm and wrap his or her thumb off to one side of the handle 24 and fingers off to the other side of the handle 24. In contrast, the operator will preferably grip the top surface 26d of the second handle 26 with his or her palm and wrap his or her fingers around the forward end 26c of the handle 26, leaving his or her thumb off to the side of the handle 26. In alternate embodiments, additional portions of the handles 24 and 26 (or the entire surface of the handles) may be covered with an elastomer overmolding. For example, an overmolded grip portion may be included on the lower surface 24c of first handle 24. Furthermore, in yet other embodiments, only one of the handles 24 or 26 may include the elastomer grip 64.

[0047] It should be understood that other materials may be used for the overmolding portions. For example, other thermal plastic elastomers or elastomer/plastic blends, such as rubber, nylon, butyl, EPDM, poly-trans-pentenamer, natural rubber, butadiene rubber, SBR, ethylene-vinyl acetate rubber, acrylate rubber, chlorinated polyethylene, neoprene and nitrile rubber, may also be used for the overmolded grip 64. Another material which may be used for the overmolding is HERCUPRENE, which is manufactured by the J-Von Company of Loomiston, Mass.

[0048] It should also be understood that alternate embodiments of the apparatus 20 may be provided with no elastomer overmolding whatsoever. For example, the tool 20 may be provided with a simple smooth plastic handle, or a textured plastic handle, created from a plastic injection molding process. More particularly, the overmolding may be replaced with a textured surface, such as Rawal #MT-11605, a mold texturization process provided by Mold-Tech/Rawal of Carol Stream, Ill. Similarly, other mold texturization processes may be used to create a variety of textured surfaces.

[0049] Turning now to FIGS. 9-10, there is illustrated an alternate embodiment of tool 20 embodying features in accordance with the present invention. In this embodiment, the tool 20 includes an accessory 66, which can be stored on the tool 20 and used in conjunction therewith. For convenience, features of alternate embodiments illustrated in FIGS. 9-10 that correspond to features already discussed with respect to the embodiments of FIGS. 1-8 are identified using the same reference numeral in combination with an apostrophe (') merely to distinguish one embodiment from the other, but otherwise such features are similar.

[0050] More particularly, the tool in FIGS. 9-10, hereinafter 20', includes a recess, such as elongated slot 68 defined by handle 24', for receiving and maintaining an accessory, such as a brush like tool 66 illustrated therein. The slot 68 is preferably rectangular in shape and is deep enough to allow at least a majority of the brush 66 to be inserted therein. In the embodiment illustrated, the slot 68 is deep enough to allow the brush 66 to be fully inserted therein so that the top of the brush 66 is flush with, or recessed below, the upper handle surface 24d of tool 20'. The slot 68 may also include recessed groove portions 68a and 68b, which provide access to a portion of the brush 66 so that the operator may more easily remove the brush 66 from slot 68. The brush 66 is preferably of a shape that corresponds to a complimentary fashion to the slot 68 and includes a grippable feature, such as a groove 66a along its upper surface to further assist the operator in removing the brush 66 from slot 68. Extending out from the lower surface of the brush 66 are bristles 66b which may be used to sweep up or away residual particles of the workpiece or materials used on the workpiece, such as dry wax. The brush 66 may also be provided with a releasable locking mechanism, such as resilient shoulder 66c and bi-finger 66d, which may secure the brush 66 into slot 68 by filling the space created below corresponding ridge members 68c and 68d located in the slot 68. With such a configuration, the accessory may be moved
between a locked location on the tool 20 (see FIG. 9) and an unlocked position remote from the tool 20 (see FIG. 10) so that the accessory may be used in conjunction therewith. In alternate embodiments, an accessory item, may be located in the second handle 26 instead of, or in addition to, being located in the first handle 24.

[0051] Although certain example methods and apparatus have been described herein, the scope of coverage of this patent is not limited thereto. On the contrary, this patent covers all methods, apparatus, and articles of manufacture fairly falling within the scope of the appended claims either literally or under the doctrine of equivalents.

What is claimed is:

1. A power tool for working on a workpiece comprising:
   a housing having front, rear and first and second side portions and top and bottom portions;
   a motor mounted in the housing;
   a work element for working on a workpiece being mounted below the bottom of the housing and being driven by the motor;
   a first handle being connected to the housing, extending from the rear portion of the housing and having a first gripping portion;
   a second handle being connected to the housing, extending from the front portion of the housing and having a second gripping portion; and
   one or both of the first and second gripping portions having an enhanced texture surface for an operator to grip the tool.

2. A power tool according to claim 1 wherein at least one of the first and second handles includes an enlarged portion to facilitate enhanced gripping.

3. A power tool according to claim 1 wherein the enhanced textured surface is an elastomer surface.

4. A power tool according to claim 3 wherein the elastomer surface is an elastomer injected overmolding.

5. A power tool according to claim 3 wherein the first handle includes an upper and lower surface, the lower surface being contoured to enhance gripping by an operator's hand.

6. A power tool according to claim 1 wherein the first and second handle have an upper and lower surface, the enhanced textured surface is located on the upper surface of at least one of the first and second handles.

7. A power tool according to claim 5 wherein the enhanced textured surface is an elastomer surface.

8. A power tool according to claim 6 wherein the elastomer surface is an elastomer injected overmolding.

9. A power tool according to claim 1 further comprising:
   a switch positioned adjacent the first handle and electrically connected to the motor, wherein the switch is movable between a first position wherein the power tool is in an active state and a second position wherein the power tool is in a de-active state; and a lock connected to the power tool and movable between a release position wherein the switch is freely movable between its first and second positions and a lock position wherein the switch is locked in the second position so that the power tool can remain in the active state without assistance from an operator.

10. A power tool according to claim 8 further comprising a power cord for electrically connecting the power tool to a power supply, wherein the power cord extends from a distal end of the first handle and is electrically connected to the motor.

11. A power tool according to claim 9 further comprising a strain relief connected to the distal end of the handle and the power cord, wherein the strain relief assists the power cord in retaining its electrical connection to the motor when pulled from a location on the cord remote from the power tool.

12. A power tool according to claim 8 wherein at least one of the first and second handles define a recess for retaining an accessory to be used in conjunction with the power tool.

13. A power tool according to claim 1 further comprising an accessory which is movable between a first position wherein the accessory is retained in the recess defined by the at least one of said first and second handles and a second position remote from the recess so that the accessory may be used to perform work on a workpiece.

14. A power tool according to claim 12 wherein the recess has a slot-like configuration.

15. A power tool according to claim 13 wherein the accessory is a brush-type tool which is capable of being moved between a retained position in the slot and a released position remote from the slot so that an operator may utilize the brush-type tool apart from the power tool to perform work on a workpiece.

16. An electrically-powered polisher having a pad and a motor to drive the pad, the polisher comprising:
   a housing for containing a motor to drive a pad located below the housing; and
   a handle connected to the housing defining a recess for retaining an accessory to be used in conjunction with the polisher.

17. An electrically-powered polisher according to claim 16 further comprising an accessory brush which is movable between a first position wherein the brush is retained in the recess defined by the handle and a second position remote from the opening so that the brush may be used to perform work on a workpiece.

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