

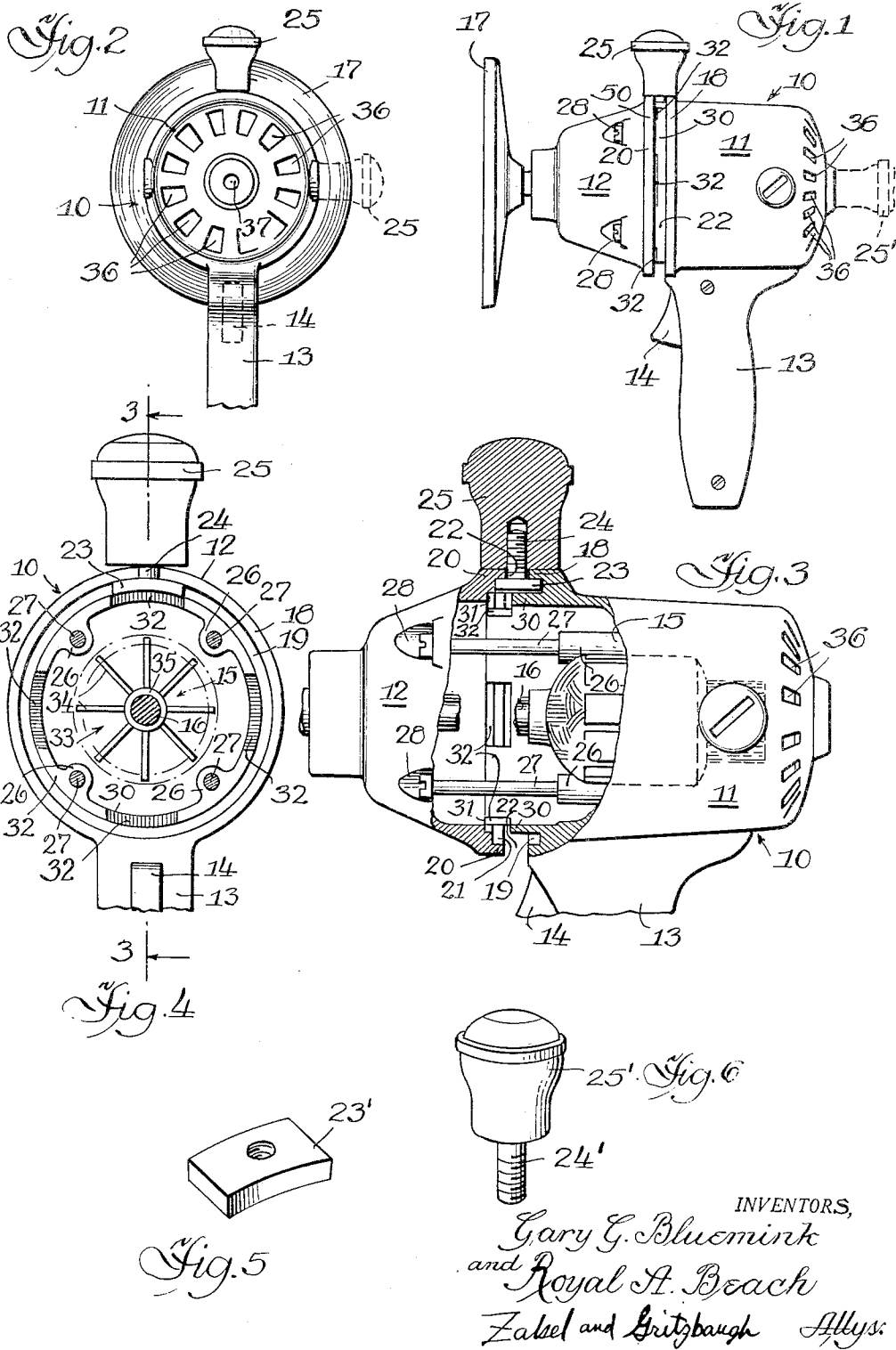
July 4, 1950

G. G. BLUEMINK ET AL

2,513,271

HOUSING FOR PORTABLE MOTOR DRIVEN TOOLS

Filed June 30, 1948



INVENTORS,
Gary G. Bluemink
and Royal A. Beach
Zabel and Britzbaugh Atty's.

UNITED STATES PATENT OFFICE

2,513,271

HOUSING FOR PORTABLE MOTOR DRIVEN TOOLS

Gary G. Bluemink and Royal A. Beach, Racine,
Wis., assignors, by mesne assignments, to Cum-
mins Business Machines Corporation, Chi-
cago, Ill., a corporation of Illinois

Application June 30, 1948, Serial No. 36,195

12 Claims. (Cl. 172—36)

1

This invention relates to improvements in housings for portable motor driven tools.

Portable motor driven tools, such as sanders, drills, grinders, etc. are frequently provided with two handles, one for each hand, particularly where the operation of the tool requires the work contacting portion to be manually held or pressed against the work. On large, heavy motor driven tools it is often necessary to dispose the handles radially opposite from each other in order to secure symmetrical weight distribution. However, with smaller tools, it is frequently more convenient to have the handles disposed radially at an angle of say 90 or 120 degrees. Where one of the handles is designed specifically for carrying the weight of the tool and for controlling the operation thereof, as by a switch, and the other one of the handles is designed primarily to permit the operator's other hand to serve primarily as a guide or to steady the tool, this asymmetrical arrangement necessitates two models of each size of tool to be constructed, one model for right handed people, and one for left handed people.

Furthermore, in doing different kinds of work, it would be advantageous to have a tool in which the angular position of the handles is adjustable. Thus, where heavier pressure is desired, the handles could be adjusted to the 180 degree position, where symmetry of pressure distribution is more important. For lighter work, the 90 degree position would be more convenient. Furthermore, this adjustable feature would facilitate the operation of the tool where space is limited.

It is an object of my invention to provide a housing for a portable motor driven tool which housing has two handles, the angular position of which is adjustable.

It is a further object of our invention to provide a motor housing which is comparatively simple in design and capable of being economically manufactured, and which includes a handle, the angular position of which may be adjusted.

It is a still further object of our invention to provide an improved motor housing construction which provides both means for mounting an adjustable handle, and also provides an air vent for the motor. In this connection, tools of this type are generally provided with cooling means, such as a blower disposed within the motor housing, together with intake and outlet vents by means of which a stream of air may be drawn across the motor windings by the blower. One of the difficulties in designing a housing for such a tool resides in the fact that for safety reasons, the vents

2

should be of limited area, or, in the alternative, they should be protected by a guard. This is particularly important with respect to the outlet vent which is generally located at that point in the housing which is directly opposite the blades of the blower. In the present invention, I have provided a housing construction which embodies an overhanging annular portion which serves the double purpose of a guard for the outlet vent and also as a mounting means for the adjustable handle.

Other objects, features and advantages will become apparent as the description proceeds.

With reference now to the drawings, in which like reference numerals denote like parts,

Fig. 1 is an elevation of a portable motor driven tool embodying this invention;

Fig. 2 is an end view of the tool shown in Fig. 1, the broken lines indicating a changed position of one of the handles;

Fig. 3 is an enlarged elevation of a portion of the tool, a part of the housing being broken away to show certain parts in section, the section being taken along line 3—3 of Fig. 4;

Fig. 4 is an end view of certain of the parts shown in Fig. 3, the housing cap being removed;

Fig. 5 is a detailed perspective view of a modified form of shoe; and

Fig. 6 is a similar view of a modified form of knob which cooperates with the shoe of Fig. 5 to provide an adjustable auxiliary handle.

In the figures the tool is designated generally by the reference numeral 10. The main portion of the tool comprises a two-part housing, one part being referred to as shell 11, and the other part being referred to as cap 12. A main handle 13 is suitably secured to the shell 11, and includes a trigger switch 14 for controlling the operation of a motor 15 which is disposed within the shell, as shown diagrammatically in Figs. 3 and 4. The motor includes an armature shaft 16 which is suitably journaled in the rear portion of shell 11 and in the front portion of cap 12, the armature shaft extending through the cap and carrying a sanding disk 17.

The shell 11 is provided with an annular flange 18 which projects forwardly, and provides an undercut portion 19. An annular flange 20 on cap 12 projects rearwardly and provides a similar undercut portion 21. The edges of flanges 18 and 20 are spaced from each other and form a slot 22. A shoe 23 is disposed beneath the flanges, the side portions of the shoe extending into the undercut portions 19 and 21. The shoe is curved as shown in Fig. 4 to correspond with

3

the curvature of the peripheral undercut portions.

A screw threaded member 24 is non-rotatably secured to the shoe and extends outwardly through the slot 22. A knob 25, which forms an auxiliary handle is screw threaded on to the member 24. By tightening up on the knob, the flanges 18 and 20 will be firmly gripped between the base of the knob and the shoe 23, thus fixing the angular position of the knob 25 with respect to the handle 13. The angular position of the knob can readily be changed merely by loosening the knob and shifting the whole assembly comprising the knob, the shoe and the screw threaded member to the desired position.

The two housing portions are held together by means of screws 27, the heads 28 of which bear against the cap 12, and the threaded ends of which take into lugs 26 formed in shell 11.

The shell is extended beneath the flanges 18 and 20 to form a substantially cylindrical web portion 30, the edge of which abuts against an annular shoulder 31 formed on the cap 12. The parts are held in abutting relationship by the screws 27. The web portion 30 is provided with notches 32 which form outlet vents. As shown in Fig. 4, a blower 33 is mounted on the armature shaft 16 and is disposed in substantially the same axial plane as the notches 32. The blower comprises a series of radially disposed blades 34 which extend outwardly from a hub 35, the hub being suitably secured to the armature shaft. Inlet vents 36 are provided at the rear of shell 11. Rotation of the blower with the armature shaft causes air to be expelled through the notches 32 and causes air to be drawn in through the inlet vents 36. Thus the stream of cool air is caused to pass across the motor windings. The notches 32 which form the outlet vents are guarded by the annular flange 20 on cap 12. The depth and the radial extent of the notches may be varied in accordance with the volume of air desired for cooling purposes, but there will be no exposed opening into the interior of the motor other than that provided by the slot 22, the width of which is comparatively small. We have found it preferable, however, to provide notches of a depth which approximates the overhang of the flange 20. Thus, as shown in Fig. 1, the outlet vents provided by the notches are almost completely guarded by the outlet flange. This reduces the likelihood of damaging the blades of the blower by the inadvertent insertion of a tool through the notches. The width of the slot 22 is sufficiently small that it precludes the possibility of insertion of the operator's fingers.

The present invention has been shown in connection with a portable sander, but it is obvious that it can be applied to other types of portable tools. As shown in Fig. 2 in solid lines, the knob 25 is oppositely disposed from the main handle 13. In broken lines there is shown a changed position of the knob, which position would be suitable for a left handed person. Furthermore, it will be observed that when in the dotted line position, the portable sander could better be pushed into a corner when sanding a floor, than when the knob is in the solid line position. The same adaptability with respect to space requirements will be apparent when the invention is applied to tools other than a sander.

A modified form of adjustable handle is shown in Figs. 5 and 6 in which the screw threaded member 24' is secured to the knob 25' and threaded into the shoe 23', instead of vice versa, as

4

shown in Figs. 3 and 4. The rear end of the housing is provided with a tapped bore 37, as shown in Fig. 2, which is adapted to receive the threaded member 24'. Thus, in a situation where the application of extremely heavy pressure is desired, the knob 25' may be mounted at the rear end of the motor housing in axial alignment with the sanding disk, as shown in dotted lines in Fig. 1.

Although we have shown only a preferred embodiment of our invention, it will be apparent that various modifications and changes can be made therein without departing from the spirit of our invention as defined in the appended claims.

We claim:

1. In a portable motor driven tool, a substantially cylindrical housing, a pair of cylindrical flanges carried exteriorly of said housing and facing each other to define an annular slot having undercut portions, a main handle for said housing, and an auxiliary handle for said housing, said auxiliary handle having means extending into said slot, said means being slidably confined in said slot by said annular flanges, whereby the angular position of said auxiliary handle may be shifted.

2. A portable tool as defined in claim 1, in which said housing is a two part housing, one of said flanges being mounted on one housing part and the other of said flanges being mounted on the other housing part, and means to secure said housing parts to each other.

3. A portable tool as defined in claim 1, in which the bottom of said slot is closed by a web portion, a blower within said housing substantially opposite said web portion, said web portion being perforated to provide an outlet for the air stream of said blower.

4. A housing for a portable tool comprising a shell member and a cap member, each being provided with abutting portions, and each being provided with exterior annular flanges which extend toward each other, the edges of said flanges being spaced from each other to form a slot, and each flange providing an undercut portion, a shoe slidably mounted in said undercut portions and confined therein by said flanges, a threaded member secured in said shoe and extending outwardly through said slot, and a knob threaded on to said threaded member and adapted to be tightened up into engagement with said flanges to fix the peripheral position of said knob with respect to said housing.

5. A housing for a portable tool having a shaft disposed interiorly of said housing and air propelling means mounted on said shaft, said housing comprising a shell member and a cap member, each being provided with exterior annular flanges which extend toward each other and located in substantially the same plane as said air propelling means, the edges of said flanges being spaced from each other to form a slot, and each flange providing an undercut portion communicating with said slot, a shoe slidably mounted in said undercut portions and confined therein by said flanges, a threaded member secured in said shoe and extending outwardly through said slot, a knob threaded on to said threaded member and adapted to be tightened up into engagement with said flanges to fix the peripheral position of said knob with respect to said housing, said shell member and said cap member each being provided with abutting portions, at least one of said abutting portions constitut-

5

ing a web portion having an opening to provide an outlet vent adjacent said air propelling means.

6. A housing as defined in claim 5 in which one of said flanges overhangs at least the major portion of the opening provided in said web portion.

7. In a portable motor driven tool, the combination of a substantially cylindrical housing and air propelling means disposed within said housing, said housing being provided with inlet and outlet vents and said outlet vents being in the form of peripherally arranged openings disposed in substantially the same plane as said air propelling means, an exterior annular flange on said housing forming a guard for said outlet vents, a second exterior annular flange on said housing disposed opposite to said first flange and providing therewith an annular slot having annular undercut portions, and an adjustable handle slidably mounted in said slot and interlocking with said flanges.

8. The combination as claimed in claim 7 in which said adjustable handle comprises a shoe portion disposed in said slot, a knob portion disposed exteriorly of said flanges, and a screw-threaded member secured to one of said portions and engaging the other of said portions.

9. The combination as claimed in claim 8 in which the rear end of said housing is provided with a tapped bore, and in which said screw-threaded member is secured to said knob portion whereby said knob portion may oppositely be mounted directly on the rear end of said housing.

10. A portable tool comprising a cylindrical housing having front and rear sections with abutting end portions rigidly secured together and coacting to form an outwardly opening groove extending circumferentially of the hous-

6

ing, and a handle having means extending into said groove operative to secure the handle in various positions of adjustment circumferentially of the housing.

11. A portable tool comprising a cylindrical housing having front and rear sections with abutting end portions rigidly secured together and coacting to form an outwardly opening groove extending circumferentially of the housing, and a handle having means extending into said groove operative to secure the handle in various positions of adjustment circumferentially of the housing, said abutting end portions of the housing further coacting to form air outlet openings for the passage of air outwardly from the housing through said groove.

12. A portable tool comprising a cylindrical housing having forward and rear sections with abutting end portions rigidly secured together and annular portions offset radially outward from said abutting end portions and spaced apart in a direction longitudinally in the housing to form an outwardly opening slot extending circumferentially of the housing, and a handle adjustably mounted in said slot.

GARY G. BLUEMINK.
ROYAL A. BEACH.

REFERENCES CITED

30 The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
700,642	Hanford	May 20, 1902
1,539,069	Brockett	May 26, 1923
1,596,013	Gebhardt	Aug. 17, 1926
2,123,222	Albertson	July 12, 1938