

April 21, 1942.

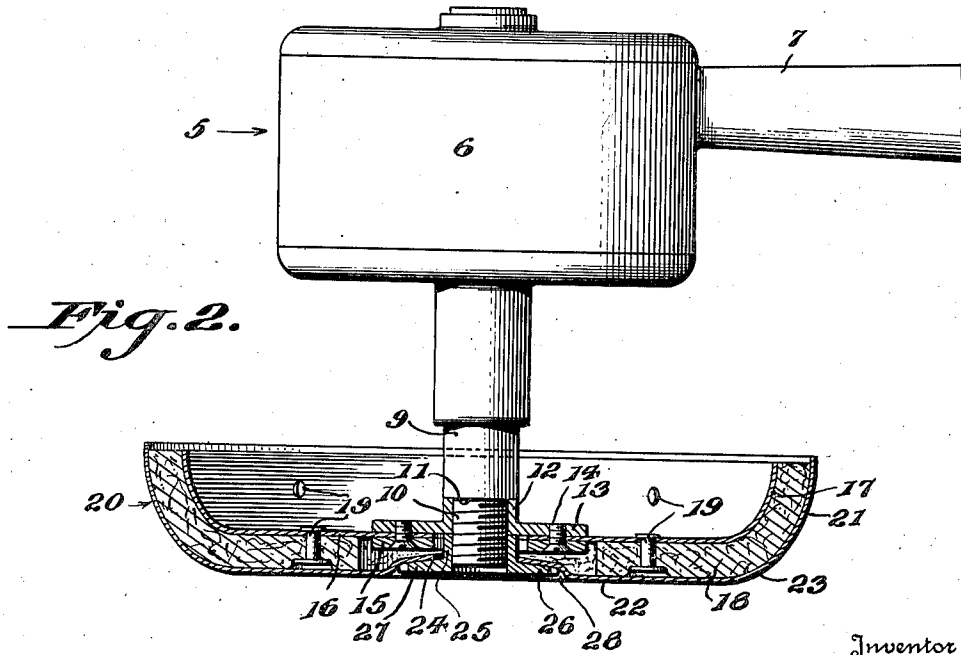
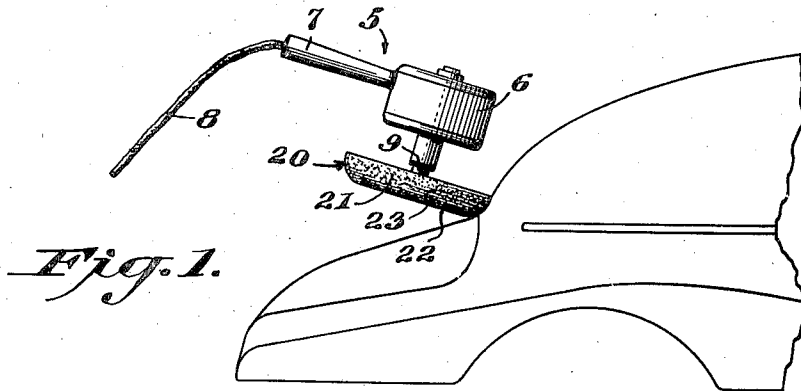
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2,280,149

POWER OPERATED HAND TOOL

Filed Feb. 4, 1941

2 Sheets-Sheet 1



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Fig. 3.

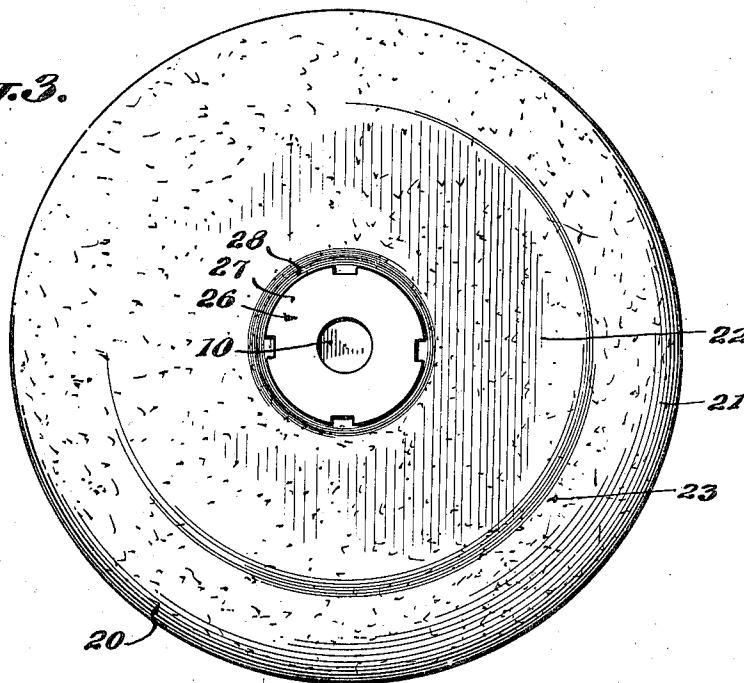
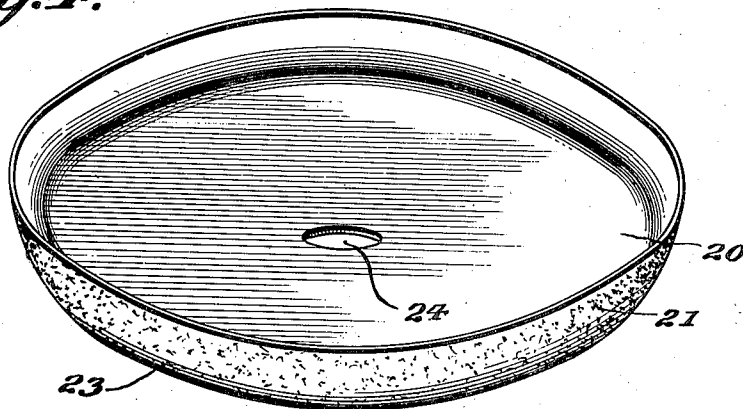


Fig. 4.



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UNITED STATES PATENT OFFICE

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POWER OPERATED HAND TOOL

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Application February 4, 1941, Serial No. 377,394

1 Claim. (Cl. 51—197)

My invention relates to the art of preparing and finishing surfaces and more particularly to improvements in power operated hand tools for surface working.

While not limited in its application and use it may be said that my invention has been particularly designed for utilization in automobile body building and repair plants where the work must not only be of a high quality but must be performed with care and despatch. Heretofore it has been the usual custom and practice among body builders and repairers to sand their product by hand, principally for the reason that mechanical expedients available, due partly to the character of the work, have failed to obtain the perfection of hand work.

To provide a power operated tool or device which will to a large extent simulate hand work and reduce the labor and skill necessary in hand work and the time interval to complete a given task with equal and even better results, is one of the principal objects of the present invention.

Another object of my invention is to provide a device which will be utilizable not only on smooth and relatively flat surfaces but also on curved surfaces and in and around sharp corners without danger of scratching or otherwise marring the work.

A further object of my invention is to provide a device of the above described character wherein the work surfacing element is so constructed and arranged whereby the same may be readily replaced when desired.

A special object of my invention is to provide a device of the above described character so constructed and arranged whereby work surfacing elements, for instance, abrading members of different textures, may be interchangeably used in connection therewith for obtaining a desired finish on the work.

An important object of my invention is to provide a device of the character described which is simple in construction, durable in use, efficient in operation and economical in manufacture.

Other objects and advantages will be apparent from the following description, appended claim and annexed drawings.

Referring to the drawings wherein like reference characters designated like parts throughout the several views:

Figure 1 is a side elevation of my invention depicting the method of operation in surfacing a curved portion of an automobile body.

Figure 2 is a side elevation, partly in section,

of a power operated tool having my invention applied thereto.

Figure 3 is a plan view of my invention as applied to the tool.

Figure 4 is a perspective view of my novel surfacing element or member.

In practicing my invention, as illustrated in the drawings, I provide a power operated tool 5 equipped with a motor 6 having a handle 7 and through which extends an electric conduit 8 for supplying the motor with current. The motor is provided with a drive shaft 9 having its outer end fashioned with a circumferentially reduced threaded section 10 defining a shoulder 11, at its jointure with said shaft. Threadedly connected to the section 10 and in engagement with the shoulder 11 is a collar 12, the latter being formed with an outwardly disposed circumferentially flange 13 having secured thereto, by means of screws 14, a ring 15.

Interposed between the flange 13 and ring 15 is the central portion of a cup-shaped disk 16 formed with a centrally disposed opening through which the outer end of the section 10 of the shaft 9 extends. The outer margin of the disk 16 is flared to define a convex periphery 17 and secured to said disk and overlying its radial and peripheral faces is a pad 18, the latter being preferably constructed of felt or the like and secured to the disk by means of rivets 19.

Embracing the pad 18 and disk 16 is an acetalbuliform abrasive or sanding element or member 20, the latter being constructed of emery cloth, sand paper or the like. The peripheral face 21 of the member 20 is of a semi-convex configuration in transverse section and merges with the radial face 22 by means of an incurvated portion 23, while the radial face is relatively flat and formed with a centrally disposed opening 24 through which extends the shank 25 of a nut 26 tightly threaded on the section 10. The outer end of the nut is fashioned with a relatively wide circumferential flange 27 for overlying the outer face of the member 20 adjacent the opening 24 and when said nut is disposed in tightened relation with the shaft 9 the flange deforms the radial face of the member 20 immediately marginating the opening 24 and forms a recess 28 therein whereby the outer radial face of the flange is disposed an appreciable distance inwardly of the outer face of the member 20 as clearly illustrated in Figure 2 of the drawings, thereby precluding contact of the nut with the work surface when the radial face of the member is operated over said work surface.

In shops where small surfacing machines are now employed as standard tools, there are a great variety of operations which it is desired to carry out, particularly on such articles as automobile bodies. These operations include the removal of small rust spots, paint, dirt, grease and the like, the smoothing down of surface spots on the body for repainting or refinishing, the grinding down of welds and the like, and, due to the shape of these bodies it has been extremely difficult to operate on the various types of surfaces, which are both convex and concave, with a single machine or device. In the past it has been necessary, for example, to work on the large relatively flat or slightly curved surfaces of a body with a large pad and abrasive disk and to then substitute for this tool a solid or cup wheel, a pneumatic wheel, or a long narrow cone to carry on other operations, such as the smoothing down of inwardly curved surfaces, touching up the corners of window or door openings and the like. This substitution requires the stocking of a large variety of different tools and the loss of time whenever a shift was made from one operation to another. My invention is designed to carry out substantially all of these operations and is so constructed that almost any type of surface can be satisfactorily operated upon with an abrasive disk or member.

One illustration of the work performed by my invention is illustrated in Figure 1 of the drawings wherein it is depicted as operating within an inwardly curved surface formed between a pair of outwardly curved surfaces of the rear deck of an automobile body and with the peripheral face of the member 20 disposed in engagement with the inwardly curved surface to bring the abrasive fully in operative engagement therewith.

It is to be understood that the disk 16 is constructed with a certain degree of flexibility to permit yielding of the member 20 during certain of the aforementioned operations. Furthermore, it is to be also understood that while I have shown and described the element 20 as being constructed of abrasive material, the same may be constructed of any suitable polishing material

whereby the work surfaces may be given a high polish.

Without further elaboration the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and sub-combinations.

It is obvious that the invention is not confined to the herein described use therefor as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described as the same is only illustrative of the principles of operation, which are capable of extended application in various forms, and that the invention comprehends all construction within the scope of the appended claim.

What I claim is:

In a tool, a collar internally screw threaded for threading on a power shaft with the latter protruding from said collar, an annular flange integral with the sleeve at one end thereof, a disc abutting said flange and having a centrally located opening to permit the shaft to extend beyond said disc, a ring engaging said disc and secured thereto and to said flange, said disc including a convex periphery, a pad covering said disc and secured thereto and conforming to the contour of the latter and provided with an opening exposing said ring, shaft and a portion of the flange, an abrasive sheet covering said pad conforming to the contour thereof and having an opening, and a nut including an internally threaded collar threaded on the shaft against the flange and extending through the opening of the sheet, and an annular flange overlying a portion of the sheet about the opening thereof and forcing said portion of the sheet inwardly of the opening of the pad and located within the opening of the pad to prevent contact thereof with an object engaged by said sheet during the dressing thereof.

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