

Feb. 15, 1927.

1,617,838

C. H. FENNELL
ROTARY POLISHING DEVICE

Filed Sept. 22, 1924

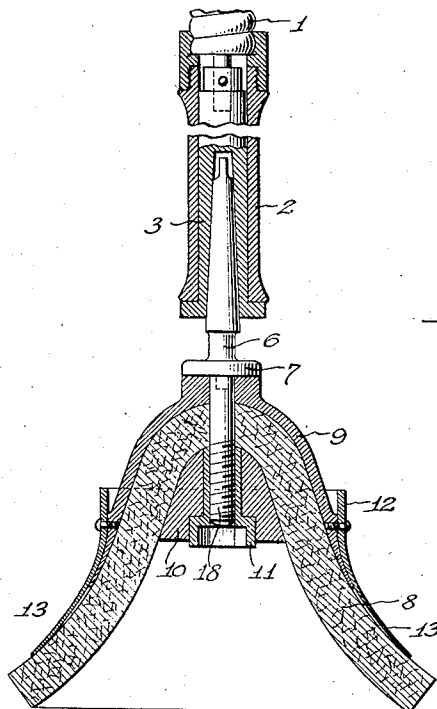


Fig. 1.

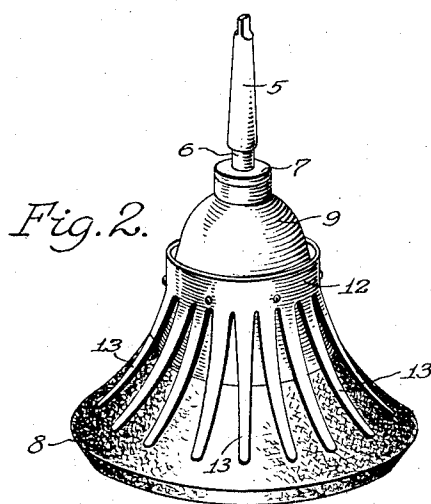


Fig. 2.

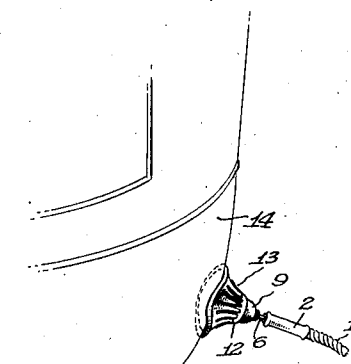


Fig. 3.

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ROTARY POLISHING DEVICE.

Application filed September 22, 1924. Serial No. 738,979.

This invention has reference to the polishing or buffing of painted irregular surfaces and more particularly to the finishing of the paint coatings of automobile bodies, wherein it is very desirable that the surface of the coatings should be frictionally reduced to an even surface having a fine degree of smoothness and freedom from surface defects in order that a suitable and durable finish on such automobile bodies may be effectively built up and finally finished. The nature of this work usually demands hand treatment, whereby the paint coats are tediously rubbed down to secure the required surface, the application of ordinary mechanical means as often employed in the treatment of flat surfaces not being always feasible or fully effectual, due to the curves and uneven surfaces presented by an automobile body for such treatment.

It is, therefore, the object of this invention to provide a device especially adapted to this work which may be utilized in the polishing, buffing or rubbing down of primary, intermediate or final paint coats of an automobile body, or in buffing or polishing metal bodies to take out scratches before painting, and by means of which the time and labor required to perform such work is materially reduced and the quality and consistency of the work throughout a paint job is improved, so that a very fine and even finish may be obtained without the expenditure of the same amount of labor as is required with the ordinary method of hand finishing.

A further object is to provide for such purposes a rotary device having a hollow cup or bell shaped working part of heavy felt or similar material adapted to offer a resistance to expansion or distortion, or yieldingly reinforced to provide a resistance against the expanding or distorting of the said working part, whereby such part may be expanded by contact with the work, but will tend to assume its normal shape thereby conforming with the contour of the work to which it is applied; a still further object being to provide, in connection with a cup or bell shaped rotary wheel of felt, or other suitable material or materials, an annular flexible sleeve embracing the outer surfaces of the said wheel and yieldingly resisting the expanding of the said wheel when applied to the work.

Still further objects subsidiary to or resulting from the aforesaid objects, or from the construction or operation of the invention as it may be carried into effect, will become apparent as the said invention is hereinafter further disclosed.

In carrying the said invention into effect, I may mount upon the outer end of the rotating part of a flexible shaft, the stationary part of which is provided with a suitable grip or handle, a piece of felt, fiber or similar flexible material of bell or flared shape, the mouth of which extends forwardly and outwardly from the end of the said rotary shaft, and the center of which is secured thereto by suitable clamping means, together with a resilient member such as a collar or sleeve provided with spring fingers and secured around the inner end of the said wheel with the said fingers pressing against the outer surface of the said wheel and extending forwardly towards the rim thereof, whereby such fingers tend to contract on the said bell and yieldingly resist the outward movement or expansion of the said bell mouth.

All of which is more particularly described and ascertained hereinafter, by way of example, having reference to the accompanying drawing, wherein—

Figure 1 is a vertical section of my improved polishing or buffing device attached to the end of a flexible shaft, part of which is shown;

Figure 2 is a perspective view of the polishing device removed from the shaft; and

Figure 3 is a fragmentary detail view illustrating the application of the device in the treatment of the paint surface of an automobile body.

Similar characters of reference indicate similar parts in the several figures of the drawing.

To the end of the outer tube 1 of a flexible shaft is secured a handle or grip 2 which houses a socket 3 attached to the end of the rotary core 4 of the said shaft, this socket receiving the tapered stem 5 of an attachment 6. This attachment is provided, intermediate of its length, with an expanded flange or abutment 7 and a forwardly projecting threaded member 18 upon which is mounted a clup-shaped member or housing 9 which is shouldered against the flange 7 and is

adapted to receive a polishing or buffing wheel 8 in the form of a bell shaped piece of felt, or similar material suitable for the purposes for which it is to be used, and having a certain natural tendency to retain its shape, whereby resistance is offered to the distorting thereof when applied to work.

The flared mouth of the said wheel extends substantially beyond and diverges from the mouth of the housing, which housing forms a support for the central portion of the wheel, as will be seen from the drawing, so that a considerable portion of the said bell shaped wheel protrudes from said member 9, the said wheel being retained in the member 9 by securing means such as a head 10 provided with an internally threaded nut 11 adapted to be tightened upon the threaded member 18 of the extension 6, whereby the inner part of the said wheel may be firmly clamped in position so that it may be revolved by the rotary action of the core for the flexible shaft.

It will be noted that the flared mouth of the wheel extends forwardly of the securing means 10 and 11, so that such means may be said to be recessed into the wheel, the rim thereby effectively preventing contact of the said securing means with work to which the wheel may be applied.

As a reinforcement to the natural resiliency of the bell shaped wheel I may provide a collar 12 surrounding and secured to the outer face of the cupped member 9 and is provided with flexible fingers 13 arranged in spread relation against the outer surface of the flared portion of the bell shaped wheel extending from the said cupped member, whereby such fingers yieldingly resist the outward movement or expanding of the said flared portion of the wheel 8 so that such portion may be expanded by pressure internally or on the edges thereof either throughout its entire periphery or locally at one or more points in the periphery thereof, but will be returned to its normal shape by reason of the actuation of the fingers 13 upon the release of such expanding pressure. Therefore, if the mouth of the bell shaped wheel be pressed against an object, the rim of the said wheel will be distorted to accommodate itself to the intermediate contour of the article against which it is pressed, and if the wheel be rotated, the edges of the same will move in a path conforming to such contour either as a result of the resiliency of the wheel itself or the action of the resilient reinforcing fingers where such are provided.

In Figure 3 this feature is aptly illustrated by the showing of part of an automobile body 14 to which the device is applied, the distorting of the bell mouth of the wheel to conform with the curvature of the said body, being shown.

The device is intended to be used after

the application of a coat of paint to a structure such as the automobile body illustrated for the purpose of frictionally reducing the surface to the texture desired, or it may be applied to the surface for the purpose of preparing it for the reception of such a coat; or still further, it may be applied to the finishing coat for the purpose of obtaining the required finish. In the latter case it is particularly of benefit in securing matte or semi-matte effects.

It will be understood that such application of the wheel is effected while it is being rapidly rotated by the core of the flexible shaft, the mouth of the wheel being pressed against the surface of the work by means of the handle 2 and the wheel passed with a reciprocating, oscillating or rotating motion over such surface, during which movement of the said wheel it changes its configuration as the contour of the work changes in different parts over which the wheel is moved; and it will be also understood that the abrasive action of the wheel can be increased or diminished by varying the pressure thereof on the work, which also increases the surface of the wheel brought to bear upon the said work, and the wheel may be manipulated so as to bring a greater pressure to bear upon any particular portion of the rim thereof which may be desired for the purpose of causing the said rim to enter depressions in the work normally difficult of access or for other such reasons as may suggest themselves to the user.

It will be understood that the term "bell shaped" as used herein and in the claims and as applied to the wheel is simply used in a general sense and is intended to convey the idea that the wheel is hollow with the center depressed and the side walls thereof flared or diverging so that the inner edges of the said walls will be presented to the work. The said device is by no means limited to use on automobile bodies or painted work although it lends itself excellently to such use, but it will be appreciated that its field of utility is extensive. For instance, it may be used for the surfacing of putty coats on machine bases; also in the polishing of plate glass and marble, and for general smoothing, cleaning and polishing of surfaces.

This invention may be developed within the scope of the following claims without departing from the essential features of the invention, and it is desired that the specification and drawing be read as merely illustrative and not in a limiting sense, except as necessitated by the prior art.

What I claim is:—

1. In a surfacing device, a rotary member, a forwardly and outwardly flared wheel mounted on said member, and resilient means extending over the outer surface of

said wheel, said means yieldingly resisting the expanding of said wheel when applied to work and terminating substantially short of the periphery of said wheel.

5 2. In a surfacing device, a rotary member, a forwardly and outwardly flared wheel mounted on said member, and a plurality of flexible fingers extending over and resiliently embracing the outer flared end of said
10 wheel, said fingers terminating substantially short of the periphery of said wheel.

3. In a surfacing device, a rotary member, and a resilient bell-shaped wheel mounted on said member, the mouth thereof extending
15 substantially beyond the end of said member, yielding resisting means in the form of a collar carried by said member and having a plurality of spring fingers extending forwardly therefrom to points somewhat short
20 of the periphery of said wheel, said fingers yieldingly resisting the flexing of said wheel in use.

4. In a surfacing device, a rotary member, and a resilient bell-shaped wheel mounted

on said member, the mouth thereof extending 25 substantially beyond the end of said member, said rotary member being provided with a support from which the flared part of the wheel extends outwardly and forwardly, and securing means housed within 30 the depressed central portion of said wheel whereby the forwardly projecting marginal portions of said wheel afford a protection for said means.

5. As a new article of manufacture, a 35 hand polishing device for uneven surfaces, comprising a hand grip, rotary means extending therethrough, a forwardly and outwardly flared flexible concave wheel mounted on the end of said rotary means, and 40 resilient means yieldingly embracing said wheel, whereby the entire margin of said wheel may be applied to an uneven surface at one time and conform to the shape thereof. 45

In testimony whereof I affix my signature.

CHARLES H. FENNELL.