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TOOLS FOR ROUGHENING SURFACES

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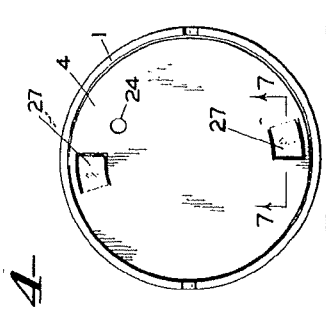

Fig. 4

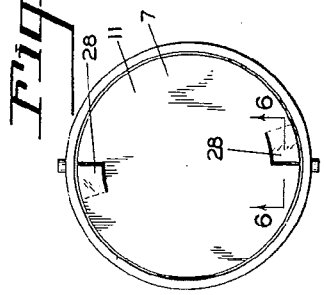

Fig. 5

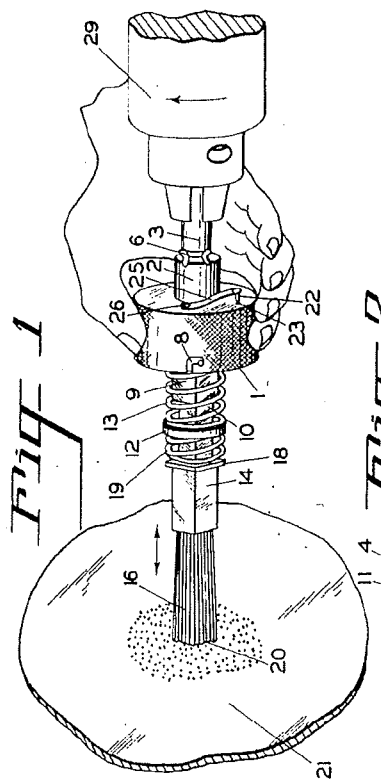

Fig. 1

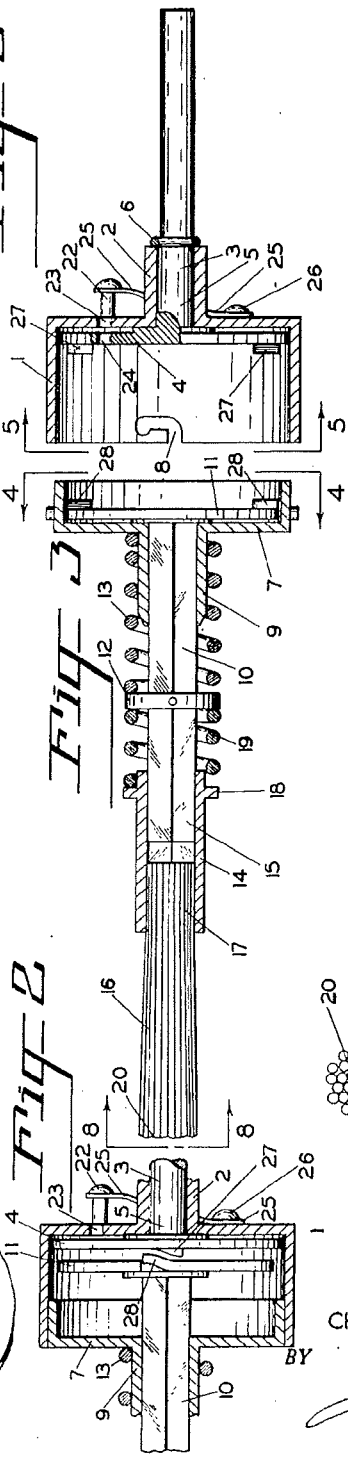

Fig. 2

Fig. 3

Fig. 7

Fig. 6

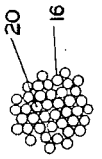

Fig. 8

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TOOLS FOR ROUGHENING SURFACES

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3 Claims. (Cl. 15—22)

My invention relates to tools for roughening surfaces, and is particularly adapted for roughening surfaces on which it is desired to bind a filling material, such as in dents in automobile bodies and the like.

The primary object of the invention is to provide a roughening device or tool that can be inserted in small places and that will stipple or roughen the surfaces of such places by a reciprocating motion.

Another object of the invention is to provide a simple roughening device that can be used as a chipping tool for chipping carbon out of cylinders or off piston heads. This tool is adapted to be operated by a hand power drill press.

These and other incidental objects will be apparent in the drawings, specification and claims.

Referring to the drawings:

Figure 1 illustrates my new and improved tool for roughening surfaces operating against a surface to be roughened, part of the hand power drill chuck being shown associated therewith for operating the same.

Figure 2 is a fragmentary sectional view, taken through the body of the tool, illustrating the driving mechanism in operating position.

Figure 3 is a transverse longitudinal section of the tool, this view is also an exploded view of the tool.

Figure 4 is an end view, taken on line 4—4 of Figure 3.

Figure 5 is an end view, taken on line 5—5 of Figure 3.

Figure 6 is a fragmentary sectional view, taken on line 6—6 of Figure 4 of the driven oscillating cam.

Figure 7 is a fragmentary sectional view, taken on line 7—7 of Figure 5 of the oppositely disposed driving cam for oscillating the tip of the tool.

Figure 8 is an end view, taken on line 8—8 of Figure 3 of the chipping or roughening end of the tool.

Referring more specifically to the drawings:

My new and improved roughening tool consists of a cylindrical body 1. Journalled within the hub 2 of this body is a shaft 3. A disk 4 is formed on the inner end 5 of the shaft 3. This disk may be formed integral with the shaft, or it may be removable therefrom.

A locking ring 6 maintains the shaft within the hub 2. A removable cap 7 is adapted to fit inside the body 1 and is locked therein by the bayonet joint 8. A square hub 9 forms part of the cap 7 and is adapted to receive the square shaft 10.

Located on the inner end of the shaft 10 is a disk 11. This disk may form part of the shaft or be secured thereto by any suitable means. An adjustable collar 12 is fixedly secured to the shaft 10 at the desired location.

A spring 13 has one of its ends bearing against this collar and its opposite end against the cap 7, as best illustrated in Figure 3. This holds the disk 11 in the position shown in this figure. A socket 14 is removably mounted to the end 15 of the shaft 10. This socket has stiff wires 16 embedded and secured therein at 17. This socket has a shoulder 18 formed thereon which is adapted to receive one end of the spring 19, whose opposite end bears against the collar 12. This gives a resilient connection between the socket 14 and the shaft 10 in the operation of the tool. The ends 20 of the wires 16 are adapted to contact the surface 21 of whatever the tool is operating against, referring to Figure 1.

A pin 22 is adapted to enter the openings 23 of the cylinder 1 and the opening 24 of the disk 4 when it is desired to prevent rotation between the cylinder and the disk 4. This pin is secured to a spring 25, which is secured to the cylinder by the pin 26. When it is desired to keep the locking pin 22 out of the holes 23 and 24, the spring 25 is rotated slightly about its holding pin 26.

Pressed out of the disk 4 are cams 27. Also pressed out of the disk 11 are cam followers 28. These cams and followers could be of any other design other than I illustrate in my drawings, although this structure is admirably adapted for the use intended, making it economical to manufacture my new and improved roughening tool. The tool is operated by an electric hand drill whose chuck end is illustrated at 29 in Figure 1.

I will now describe the operation of my new and improved roughening tool. The end of the shaft 3 is inserted within the chuck 29 of the power drill. The operator grasps the cylinder 1, as illustrated in Figure 1, to prevent rotation thereof and places the end 20 of the wires 16 against the surface 21 of the object to be roughened, chipped or cleansed of carbon deposits. The operator then presses the electric hand drill and cylinder 1 toward the work, compressing the springs 13 and 19 and forcing the shaft 10 into the cylinder 1 until the cam followers 28 intercept the path of the cams 27.

As the disk 4 is revolved by the electric drill, the cams 27 engage the cam followers 28 of the disk 11 and, due to the fact that the disk 11 is being held against rotation by the hand of the operator, the cams 27 will ride up on to the cam followers 28, driving the shaft 10 towards the surface 21. When the cams 27 and followers 28 drop off of their high points, the pressure of the tool against the work will urge the disk 11 toward the disk 4 until the cams and followers again separate the disk 11 from the disk 4, imparting a hammering action to the shaft 10, to the socket 14 and the wires 16, their tips 20 hammering against the surface 21 of the object being roughened.

In the event it is desirable to rotate the wires 16 and their tips 20, the locking pin 22 is caused to register with the holes 23 of the cylinder 1 and the hole 24 of the disk 4 by swinging the spring 25 until the pin 22 registers with the said holes. This will cause the whole tool to rotate giving a rotating movement to the tip 20 of the tool.

By designing my new and improved roughening tool as just described, the same is light of weight and effective in its hammering or roughening operation, also it is economical to build the same and simple to operate from an ordinary electric hand drill.

What is claimed is:

1. An attachment for power drills for roughening surfaces, comprising a housing, a shaft journaled in said housing and having an end portion projecting therefrom for mounting in a drill chuck, said shaft being fixed against axial movement thereof with respect to the housing, a disk having spaced cams thereon and mounted on said shaft within said housing, a second shaft slidably and non-rotatively mounted in said housing, cam means on said second shaft and engageable with the cams of said disk for intermittently driving said second shaft axially, a tool on said second shaft and including means for roughening surfaces upon impact or rotary engagement with such surfaces, spring means around said second shaft and biasing said cam means away from said disk, said housing having an aperture therein, said disk having a socket alignable with said aperture, and a pin attached to said housing and removably insertable in said aperture and socket to drive said housing and second shaft with the first shaft,

2. An attachment for power drills as defined in claim 1 wherein said pin is carried by a leaf spring that is pivotally mounted on said housing and biases said pin toward said housing.

3. A power drill attachment for impact or rotary tools comprising a housing, a first shaft journaled in said housing and having an end portion projecting therefrom for mounting in a drill chuck, said shaft being fixed against axial movement thereof with respect to the housing, first cam means on said shaft disposed within said housing, a second tool-supporting shaft slidably and non-rotatively mounted in said housing, second cam means on the second shaft and engageable with the first cam means as the first shaft is rotated to cause reciprocation of the second shaft with respect to the housing, spring means engaging the second shaft and normally urging the first and second cam means out of engagement, and means mounted on said housing and selectively engageable with said first cam means to drive said housing and said second shaft with said first shaft.

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