

FIG. 2

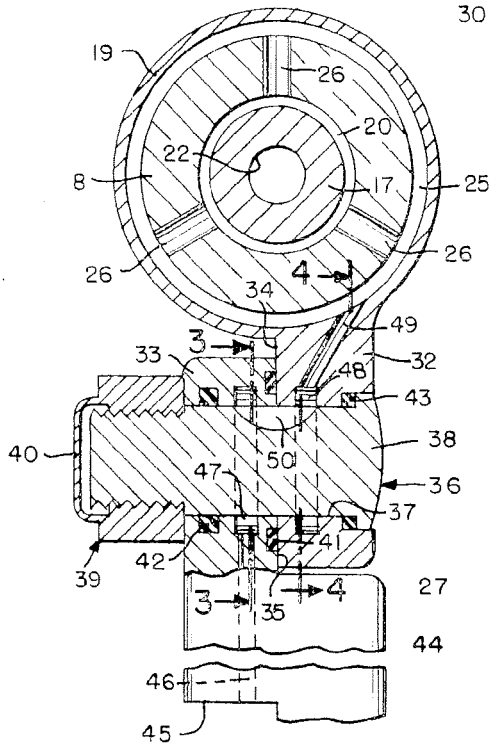


FIG. 3

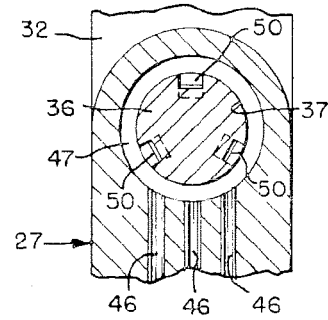


FIG. 4

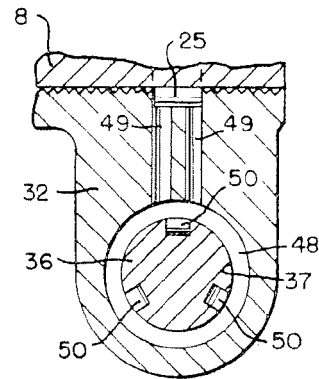
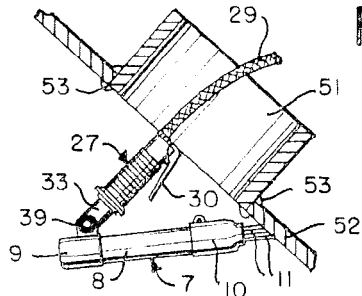


FIG. 5



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DESCALING DEVICE

BACKGROUND OF THE INVENTION

Field of the invention relates to devices for removing rust, scale, slag, paint, cement and the like from containers, tanks, boilers, etc., which are so constructed as to have areas which are difficult of access, and for removing such materials from grooves and corners and from bolts and nuts etc.

SUMMARY OF THE INVENTION

The invention relates to a descaling device operated by compressed air and having a barrel assembly including a main barrel with a mouthpiece at its outer end and a thimblelike supporting member at its rear end. Also within its rear end there is a conventional compressed air cylinder and piston which reciprocates rapidly when in operation to exert a hammering action against an intermediate or anvil member which transmits the hammer forces to the work engaging tool or tools, usually in the form of chisels and especially a group of small chisels of equal length which engage the work.

The handle having a pistol-type grip and through which the compressed air is fed to the air cylinder within the barrel assembly by means of a compressed air hose attached to the outer end of the handle is pivoted to the thimblelike support for the barrel assembly by means of a special mounting which permits the handle to be swung from the rearward position approximately parallel to the axis of the barrel assembly to a position at right angles thereto and then forward to a position more or less approaching parallelism with the barrel assembly. In this position the tool can be brought with considerably facility and with the use of only one hand into operative engagement with work areas which are difficult of access and impossible to clean with customary devices of this kind. The conveying of the air under pressure through the handle and into the air cylinder within the barrel assembly presents a considerable problem, and this problem has been solved by the present invention by the special mounting which has been provided and which includes the necessary air passages, these passages not only serving to properly convey the compressed air, but also being capable of manufacture according to ordinary methods of manufacture and without requiring special equipment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view of the descaling device in side elevation with certain parts broken away and shown in central vertical section, and also showing the handle in different positions shown in broken lines.

FIG. 2 is a vertical section taken on line 2-2 of FIG. 1;

FIG. 3 is a vertical detailed section taken on line 3-3 of FIG. 2;

FIG. 4 is a similar section taken on line 4-4 of FIG. 2; and

FIG. 5 is a diagrammatical view showing the application of the device to an interior surface which is difficult of access.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to FIG. 1 the descaling device has a barrel assembly indicated generally by numeral 7. This assembly includes a barrel 8 having a thimblelike support 9 at its rear end and a mouthpiece 10 at its front end. A group or plurality of tools in the form of chisels 11 project from the mouthpiece 10 into engagement with the rough surface of a workpiece 12. Chisels of this type are usually referred to as needles because of their slender elongated construction and the rear ends of these needles are shown at 13 and are in engagement with the front end of an anvil member 14. The needles 13 extend through a plurality of apertures in a needle holder 15 which slides within barrel 8 and is urged rearwardly by means of a long helical compression spring 16. The rear ends of needles 13 usually are provided with small heads (not shown) to retain them in position in support 15.

In operative relation to the head of anvil 14 is a piston 17, this piston having a head 18 which operates within the cylinder chamber 19 for the compressed air.

The construction and operation of piston 17 are conventional. That is to say air under pressure supplied to the space 20 flows through cross opening 21 in piston 17 and on a longitudinal passage 22 in the piston to the air chamber 19 when the piston is pushed backwardly by means of helical spring 16 acting through anvil 14. Then when the piston 17 is forced forwardly by the air pressure the air is exhausted through passages 22 and 21 into a space 23 and exhaust openings 24.

Even though the operation of piston 17 is conventional, the means for supplying the air under pressure is considered to be novel. Such means includes a circular groove 25 on the interior of the thimblelike support 9 and three radial short passages 25 which connect groove 25 with the space 20 (see FIGS. 1 and 2).

The novel air supply passages also include those in the special mounting for the handle of the descaling device which is indicated generally by numeral 27. This handle has a central piston grip portion 28 and at its outer end there is a connection for a compressed air hose 29. Near the outer end of handle 27 is a control valve which is actuated by a pivoted handle 30 and this valve turns on and shuts off the supply of air from hose 29 to an air passage (not shown) which extends lengthwise of the handle.

Handle 27 is connected to thimblelike support 9 by means of a special mounting indicated generally by numeral 31 and shown in detail in FIGS. 2, 3 and 4. This mounting comprises a lateral extension 32 which projects from one side of the thimblelike support 9 and a somewhat similar extension 33 which projects from the inner end of handle 27. Projection 32 has a flat face 34 which desirably is on the centerline of member 9, and extension 33 has a similar flat face 35 which is approximately on the centerline of handle 27.

A pivot pin 36 extends through a crosswise bore 37 which is common to the two extensions 32 and 33. Pin 36 is machined to fit closely the surface of bore 37 and has a head 38 at one end and a nut 39 at the opposite end which is applied to a screw thread on this end of the pivot pin. Nut 39 desirably is provided with a cap portion 40 to protect the hands of the operator from the sharp screw thread. Nut 39 is set up sufficiently to maintain the flat surfaces 34 and 35 on the respective extensions in close sealing engagement with one another and yet permit the pivoting movement of the handle. A suitable seal 41 is advantageously arranged in a circular groove in one of the extensions. A somewhat similar air seal 42 is advantageously mounted in a circular groove in the cylindrical surface of bore 37 on the end thereof towards nut 39. Also a seal 43 is placed under the periphery of head 38.

Handle extension 33 is part of a cylindrical member 44 which is mounted on the inner end of handle 27 in any suitable manner and has a flat end surface 45 on the portion thereof which is in line with extension 33.

From this surface 45 a plurality of air passages in the form of drilled holes 46 extend into the extension 33 and communicate with a circular groove 47 formed in the portion of bore 37 which is within extension 33 and spaced somewhat from the flat engaging surfaces 34 and 35 of the two extensions 32 and 33. The inner ends of the drilled holes 46 communicate with the air passage previously referred to but not shown which extends throughout the length of handle 27.

A circular groove 48 which is similar to groove 47 is similarly arranged surrounding the portion of bore 37 which is within extension 32. From circular groove 48 a pair of drilled holes 49 extend angularly upward within extension 32 and the shell of thimblelike member 9 and communicate with circular groove 25 previously referred to. In order to connect the two circular grooves 39 and 48 in the respective extensions 33 and 32 a plurality (three being shown) of lengthwise slots 50 are formed in the cylindrical surface of pivot pin 36. These may easily be made by means of a milling cutter.

With this arrangement the desired flow of air from the hose 29 is provided for in all positions of handle 27. The air from hose 29 flows through the lengthwise passage (not shown) in handle 27 thence to the three drilled holes 46 to the circular groove 47. From this groove the air flows through the three semicircular channels 50 to circular groove 48 and thence through the two drilled holes 49 into circular groove 25 in the thimblelike support 9 and then through the three radial passages 26 to space 20 and the compressed air cylinder 19.

Referring to FIG. 5, even with handle 27 in the position here shown the descaling device 7 may be inserted through the opening 51 in the wall 52 of an otherwise inaccessible chamber. Opening 51 being in the form of a collar which is welded as indicated at 53 to the interior of wall 52, the descaling tool can be easily manipulated to apply the tools 11 thereof in the vicinity of the weld 53 as well as to other nearby interior surfaces of wall 52.

It will be understood that a single or several larger tools can be used in place of the needles 11 if desired.

In the manufacture of the device all of the drilled holes can be drilled without difficulty even those which are angularly placed such as the holes 49 shown in FIGS. 2 and 4. These holes can be drilled through the open end of bore 37 at its intersection with the flat face 34 before the parts are assembled.

I claim:

1. In an air-operated descaling device, comprising a barrel assembly, at least one work engaging tool mounted therein for limited sliding movement, a compressed air cylinder at the rear end of the barrel assembly having a piston reciprocable therein by the air pressure for driving said tool, an air supply passage formed in said barrel assembly for supplying the air to

said cylinder, and an operating handle for the descaling device having an air passage therethrough and including a connection at its outer end for an air supply hose, and the handle also having a manually operated air control valve, the improvement in combination therewith which comprises a pivotal mounting between the outer end portion of said barrel assembly and the inner end of said handle which permits the handle to be swung about said mounting from a position extending rearwardly and substantially parallel with the barrel to a position extending forwardly with respect to the barrel and at a small angle thereto and means within said pivotal mounting for conveying air from the passage in said operating handle to said air supply passage in the barrel assembly.

2. An air-operated descaling device according to claim 1 in which the pivotal mounting includes a lateral extension projecting from one side of the barrel assembly, an extension projecting lengthwise from the inner end of the handle, said extensions having flat interengaging surfaces and a common crosswise bore, a pivot pin closely fitting said bore having a head on one end and a nut threaded on the opposite end for clamping said faces in airtight swinging engagement, the air passage in said handle communicating with a circular groove in said handle extension and surrounding the pivot pin, an air passage in the lateral extension on the barrel assembly connecting at its inner end with the circular air passage within the barrel assembly and connecting at its opposite end with a second circular groove in said lateral extension and surrounding the pivot pin, and at least one air passage formed in the surface of said pivot pin and interconnecting said two circular grooves.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,571, 874 Dated March 23, 1971

Inventor(s) Paul Von Arx

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

	<u>Reads</u>	<u>Should Read</u>
Page [11]		
Item [73]	Assignee Von Avx AG	Assignee Von Arx AG
Col. 1		
Line 32	considerably	considerable
Col. 1		
Line 38	siderably	siderable

Signed and sealed this 10th day of August 1971.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents