

P. W. PARKER.
VACUUM CLEANING DEVICE.
APPLICATION FILED MAR. 22, 1911.

1,007,888.

Patented Nov. 7, 1911.

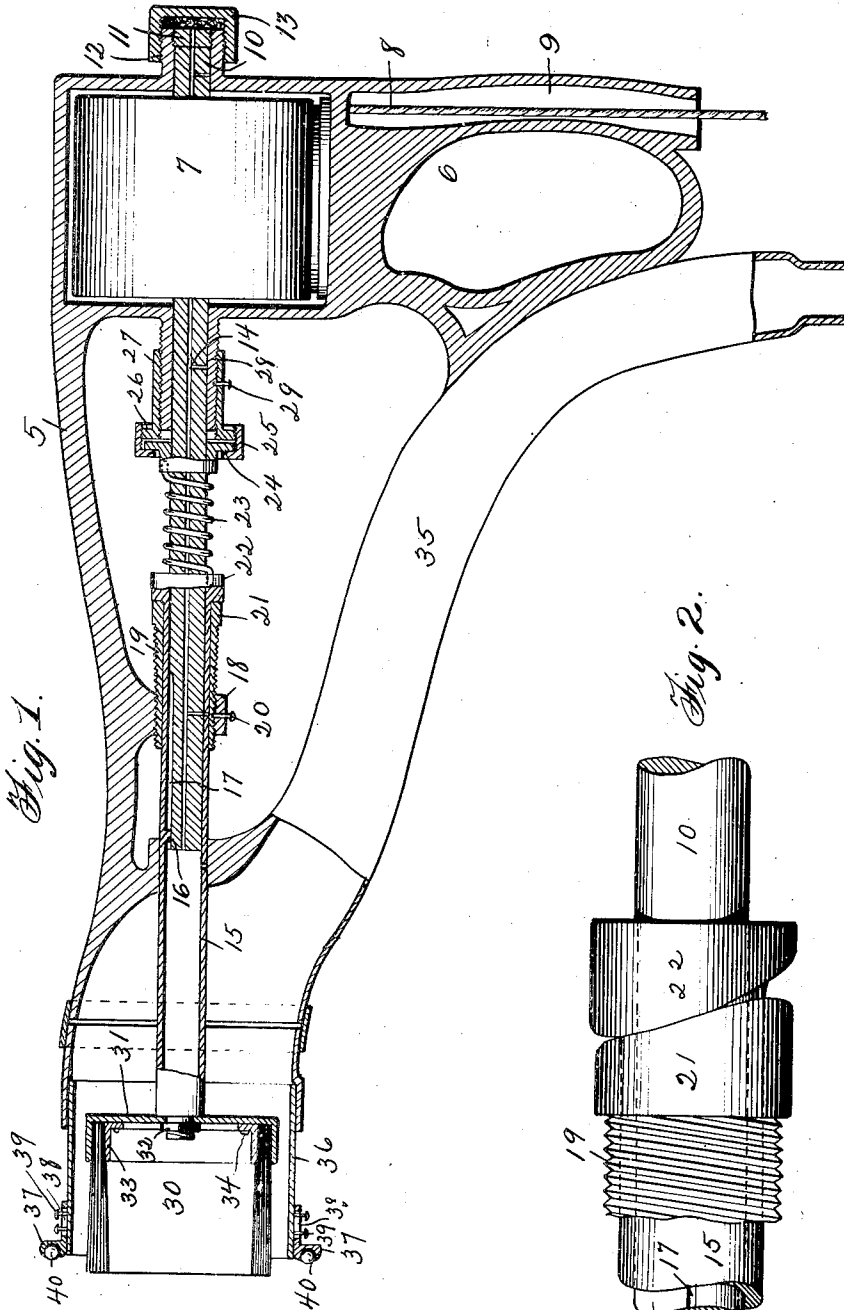


Fig. 1.

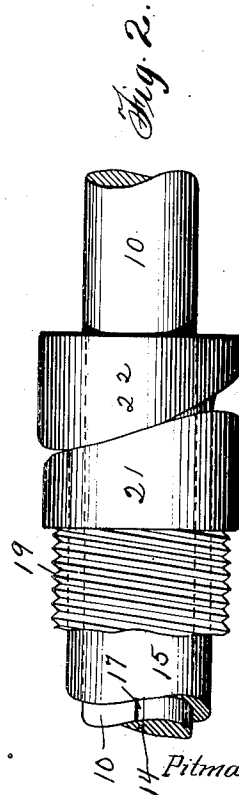


Fig. 2.

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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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Application filed March 22, 1911. Serial No. 616,192.

To all whom it may concern:

Be it known that I, PITMAN W. PARKER, a citizen of the United States of America, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Vacuum Cleaning Devices, of which the following is a specification.

This invention relates to a cleaning device and has for its object, the provision of a device of this character constructed in such manner as to exercise a combined abrasive and vacuum cleaning effect.

Primarily the object of the invention is to provide a structure adapted to act upon the surface of stone, cement, plaster or other like surfaces, heretofore acted upon by sand-blast apparatus, and serving, if desired, to impart both a rotative and a striking action to a brush acting upon said surface, said brush being disposed in the mouth of a vacuum tube, whereby the particles dislodged are drawn into said tube and thence to a suitable receptacle in the manner common to vacuum cleaning devices.

A further object of the invention is to provide a device of the character above set forth, that is in the nature of a hand tool and may be readily brought into contact with the surfaces to be acted upon and may be caused to enter various nooks and crannies found in such surfaces.

A further object of the invention is the provision of a device of the character above set forth in which the brush may have both a rotative and a reciprocative action or may have only a rotative action without such reciprocation.

A further object of the invention is the provision of a device of the character above set forth in which bearings, adapted to act against the surface being treated, are provided, said bearings preventing the vacuum tube from coming in contact with such surface and injuring the same.

Further objects and advantages of the invention will be set forth in the detailed description which now follows:

In the accompanying drawing, Figure 1 is a view in vertical section of a tool constructed in accordance with the invention, and Fig. 2 is a view partly in side elevation and partly in section of the cams of said tool.

Like numerals designate corresponding parts in both of the figures of the drawing.

Referring to the drawing, the numeral 5 designates a frame which is constructed to form a hand-hold opening 6. Disposed in this frame is an electric motor 7 to which current is supplied through a flexible cord 8 that leads through a channel 9 formed in the frame adjacent the hand-hold opening. The motor serves to drive a shaft 10 which has a thrust bearing against a screw 11 that is threaded into a tubular extension 12 of the frame 5. Threaded upon the extension 12 is a cap nut 13 that serves to force grease through an opening 14 of shaft 10 to the various bearings of said shaft. The forward end of the shaft 10 is slidably mounted in a tubular shaft 15, this tubular shaft carrying a key 16 that engages in a longitudinally extending keyway 17.

Threaded into an extension 18 of the frame 5 is a sleeve 19, this sleeve being adapted to be locked in any adjusted position by a locking pin 20. The sleeve 19 carries at its end a cam 21 which, if desired, may be caused to coact with a cam 22 that encircles the shaft 15 at the end of said shaft. One end of a coiled spring 23 is connected to the cam 22 and the opposite end of said spring is connected to a collar 24. A nut 25 embraces this collar, said nut being threaded upon a flange 26 of a sleeve 27, this latter sleeve being in turn threaded upon an extension 28 of the frame and is adapted to be bound at any adjusted position thereon by a locking pin 29.

Upon its forward end, the shaft 15 carries an annular brush 30. This brush is made preferably of stiff wire or fiber though it may be made of other material, the brush comprising a cup-like body portion 31 that is secured upon the end of the tubular shaft 15 by a nut 32. A ring-like binding member 33 clamps the fibers and holds them in stiff and rigid alinement, this ring-like member being secured in position by screws 34. The detailed structure of this brush may be greatly varied without departure from the invention, since it is the mechanism for imparting movement to the brush that more particularly comprises the present improvements. A vacuum tube 35 leads from a point adjacent the brush downwardly and rearwardly and is adapted to have secured upon its lower end the suction tube of any vacuum creating apparatus, not shown and forming no part of the present invention.

The vacuum tube is made in two parts, the forward part being flexibly connected to the rear part by a band 35^a of rubber or other flexible material. While I have shown this particular means flexibly connecting the forward part of the vacuum tube to the rear part thereof, it is to be understood that the invention contemplates, broadly, any flexible connection between these two portions.

A cylindrical member 36 is telescopically mounted upon the forward end of the tube 35 and may be advanced or retracted to cause the brush to project more or less from the mouth thereof. Gages or guides 37 are slotted at 38 and are adapted to be bound in positions of limited longitudinal adjustment by means of screws 39. These gages carry ball rollers 40 which serve to bear against the surface being acted upon and hold the cylindrical member 36 out of actual direct contact with such surface.

The operation of the device is as follows: When it is desired to impart both a reciprocatory and a rotary movement to the brush 30, the sleeve 19 is turned, after the locking pin 20 has been released, to bring the cam 21 into the path of movement of cam 22. The action of cam 22 against cam 21 will then, in conjunction with spring 23, impart a reciprocatory movement to the tubular shaft 15 and consequently to the brush. At the same time, rotation will be imparted to this tubular shaft and the brush, by reason of the fact that the key 16 engages in the groove 17 of shaft 10, which latter shaft has rotation imparted thereto by the motor 7. If it be desired to impart only rotation to the brush, the sleeve 19 may be screwed into the extension 18 until the cam 21 no longer engages cam 22. At this time, no reciprocation of the brush will take place, but the brush will be mounted for a limited yielding longitudinal movement by reason of the presence of the spring 23. The nut 25 engaging collar 24, permits rotation of this collar and yet holds the spring in proper longitudinal position, which longitudinal position may be varied by releasing the locking pin 29 and screwing the sleeve 27 upon the extension 28.

The present invention is particularly adapted for use in cleaning stone, cement, plaster or like surfaces where a slight abrasive action is desired. The rotation of the brush, combined with the striking action arising from its reciprocation, readily loosen those particles that it is desired to dislodge and these particles are sucked into the tube 35 and drawn away, as will be readily understood. By combining the elements herein shown and described, in a portable hand tool, I am enabled to advantageously reach otherwise inaccessible portions of the surface to be cleaned.

From the foregoing description, it will be

seen that simple and efficient means are herein provided for accomplishing the objects of the invention, but while the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction set forth, but includes within its purview such changes as may be made within the scope of the appended claims.

Having described my invention, what I claim is:

1. In a device of the character described, the combination with a vacuum tube, of a brush mounted at the mouth of said tube, and power means for imparting constant rotative and reciprocatory movement to said brush.

2. In a device of the character described, the combination with a portable frame member adapted to be held in the hand, of a rotative shaft mounted therein, means for imparting rotation to said shaft, a second shaft slidably mounted with relation to the first named shaft and driven therefrom, a brush carried by said second shaft, a fixed cam member, and a cam member mounted upon the second shaft and co-acting with the first named cam member to impart longitudinal reciprocation to said second shaft and to said brush.

3. In a device of the character described, the combination with a portable frame adapted to be held in the hand, of a motor mounted therein, a shaft driven from said motor, a second shaft having sliding engagement with the first named shaft and rotating therewith, cam members for imparting longitudinal movement to the last named shaft, a brush mounted upon said shaft, and a vacuum tube in the mouth of which said brush is disposed.

4. In a device of the character described, the combination with a portable frame adapted to be held in the hand, of a motor mounted therein, a shaft driven from said motor, a second shaft having sliding engagement with the first named shaft and rotating therewith, cam members for imparting longitudinal movement to the last named shaft, a brush mounted upon said shaft, and a vacuum tube in the mouth of which said brush is disposed, one of said cam members being fixed and capable of longitudinal adjustment.

5. In a device of the character described, the combination with a portable frame adapted to be held in the hand, of a motor mounted therein, a shaft driven from said motor, a second shaft having sliding engagement with the first named shaft and rotating therewith, cam members for imparting longitudinal movement to the last named shaft, a brush mounted upon said shaft, a vacuum tube in the mouth of which said

brush is disposed, one of said cam members being fixed and capable of longitudinal adjustment, and a spring connection between the other of said cam members and the frame.

5 6. In a device of the character described, the combination with a portable frame adapted to be held in the hand, of a shaft mounted in said frame, a motor mounted in
10 said frame for driving said shaft, a hollow shaft having a feather key connection with the first named shaft, a cam member fixed upon said hollow shaft, a sleeve threaded
15 into a portion of the frame and surrounding said hollow shaft, said sleeve terminating in a cam member which co-acts with the first named cam member, a brush mounted
20 upon the end of the hollow shaft, and a vacuum tube in the mouth of which said brush is located.

7. In a device of the character described, the combination with a portable frame

adapted to be held in the hand, of a shaft mounted in said frame, a motor mounted in said frame for driving said shaft, a hollow
25 shaft having a feather key connection with the first named shaft, a cam member fixed upon said hollow shaft, a sleeve threaded into a portion of the frame and surrounding
30 said hollow shaft, said sleeve terminating in a cam member which co-acts with the first named cam member, a brush mounted upon the end of the hollow shaft, a vacuum
35 tube in the mouth of which said brush is located, a member capable of rotation but fixed against longitudinal movement, and a spring connection between said member and the cam that is carried by the hollow shaft.

In testimony whereof I affix my signature in presence of two witnesses.

PITMAN W. PARKER.

Witnesses:

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G. U. FRY.