June 7, 1949. G. KRYL 2,472,161

VACUUM-ACTUATED ABRADING DEVICE

Filed Sept. 13, 1945

Fig. 1.

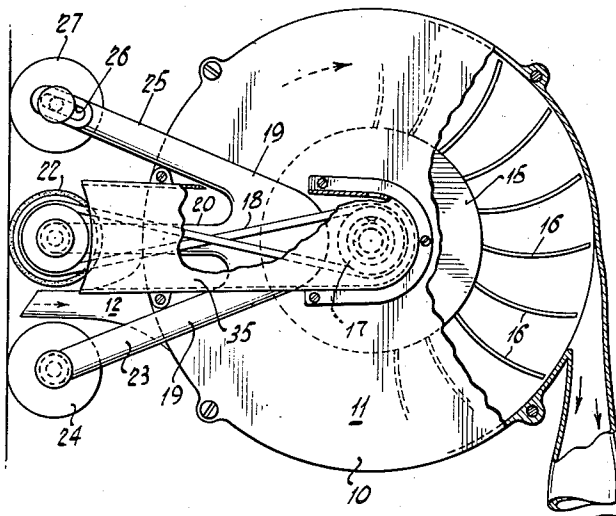


Fig. 2.

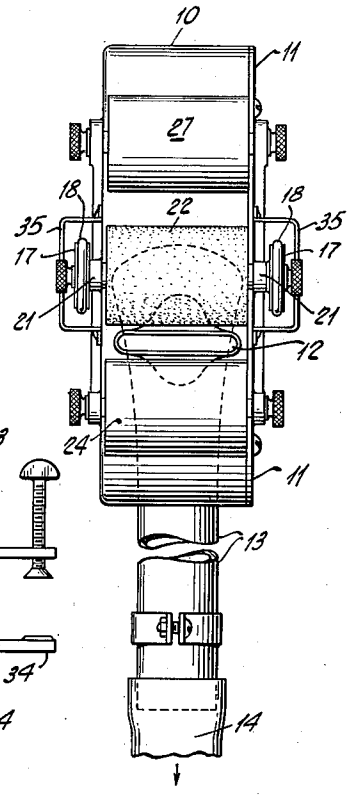
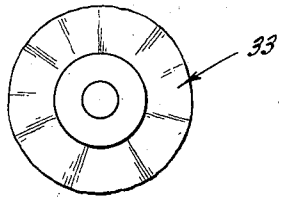


Fig. 5.



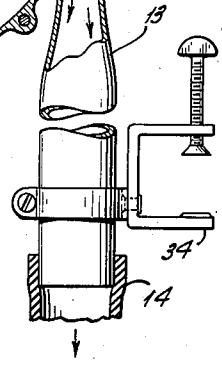


Fig. 3.

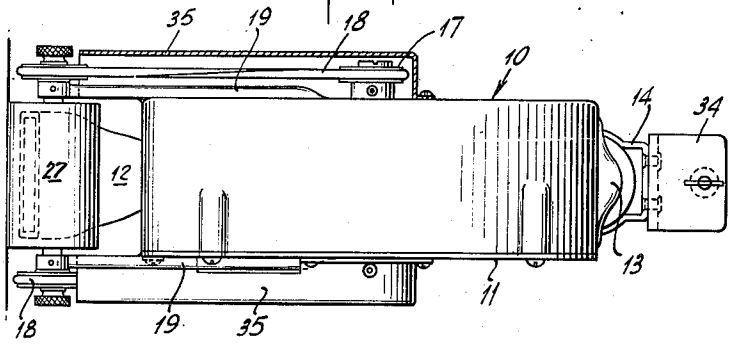
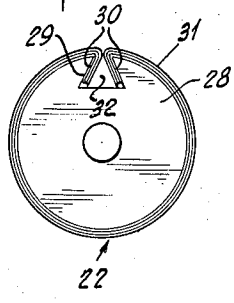


Fig. 4.



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VACUUM-ACTUATED ABRADING DEVICE

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Application September 13, 1945, Serial No. 616,001

1 Claim. (Cl. 51—176)

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This invention relates generally to attachments for vacuum-producing devices such as vacuum cleaners, and especially to a vacuum-actuated motor designed for driving utilitarian rotary elements.

One of the objects of the present invention is to provide a simple, effective, relatively inexpensive and handy apparatus which may be readily secured to the vacuum hose of a vacuum cleaner and operated by the vacuum created by the vacuum cleaner.

Another object of this invention is the provision of a vacuum-actuated motor provided with an intake and a handle-forming outlet, the latter adapted to be associated with the hose of the vacuum cleaner, and wherein the rotor of the motor is employed for driving an exchangeable or replaceable rotary element in the form of abrasive, polishing or other types of rollers.

A further object of this invention is to provide in conjunction with the rotary element driven by the motor, combination guiding and positioning means for that element when the device is employed for treating walls or other flat surfaces.

A further object of this invention is to provide in combination with a vacuum-actuated motor for driving a rotary element suitable means for attaching the entire device to an existing support whereby the rotary element may be employed for sharpening, polishing or otherwise treating various articles.

The foregoing and still further objects of the present invention will become more fully apparent from the ensuing description in combination with the accompanying drawings, wherein:

Fig. 1 is a side elevation of the device in accordance with the present invention;

Fig. 2 is an elevational view thereof as seen from its lower end or bottom;

Fig. 3 is a front elevational view of the device, showing one guard in longitudinal vertical section;

Fig. 4 is a detail side view of an abrasive roller employed in the device; and

Fig. 5 is a side view of a polishing roller also employable with the device.

Referring now more specifically to the figures, numeral 10 denotes a substantially hollow cylindrical casing, preferably with at least one of its sides removable, as indicated at 11, the casing being provided with an inlet 12 and a handle-forming outlet 13, which latter is adapted to be associated with a hose 14 leading from a

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vacuum cleaner or other low pressure-producing source.

Within casing 10 there is journaled a rotor 15 provided with a plurality of blades 16. The shaft of the rotor preferably extends through both sides of the casing for accommodating pulleys 17 adapted to receive belts 18.

Attached to the sides of the casing and extending from the latter are triple-pronged or three legged, fork-like brackets 19, although their shapes may be varied according to requirements. At the end of the middle prongs 20 of the brackets there are provided bearings 21 for journaling a removably mounted rotary element or member 22. The lower prong members 23 of the brackets removably journal a guide roller 24, while the upper prongs 25 of the brackets are provided at their end with adjusting slots 26 in which is secured the shaft of a roller 27, the latter also being exchangeable or removable. This roller 27 is shown in Fig. 2 to be of the same length as are rotary element or member 22 and guide roller 24. However, roller 27 may be very narrow and may be located centrally between prongs 25. Two or more spaced, narrow rollers may be substituted if so desired. Such suggested modifications being obvius, they are not illustrated. By the same token it is not essential that brackets 19 be equipped with the upper prong members 25, which latter, together with guide or positioning roller 27 may be omitted.

Each one of the rotatable elements supported by brackets 19 is removable and exchangeable. Rotary element 22 when in the form of an abrasive drum, as clearly seen in Fig. 4, may have circular sides 28 provided with inverted V-shaped grooves 29 for accommodating the ends 30 of an abrasive sheet 31, wound about the body of the cylindrical or rotary element 22 constituting a drum, and which ends are held in place by a wedge 32. The abrasive sheets 31 are obviously exchangeable and replaceable, as is the entire element 22. Instead of an abrasive element a polishing roller 33, similar to that shown in detail in Fig. 5, may be substituted.

Removably associated with the handle-forming outlet 13 of the device is a clamp 34 serving for attaching the device to an existing support.

It will be observed that inlet 12 is preferably located in near proximity to rotary element 22 and serves for disposing of any refuse caused by the abrasive action of that rotary element during operation. Obviously the inlet may be moved

to any other place relative to the housing, but the most advantageous position of the inlet is believed to be indicated in the drawing.

The crossed belts 18 transmitting power from the vacuum-actuated motor to rotary element 22 are preferably encased in side housings 35 to provide safety for the user of the device.

Operation

Rotor 15, being operated by the vacuum or low pressure within hose 14 which is attached to a vacuum cleaner hose or any other low pressure-producing source and, is caused to rotate, in the presently preferred embodiment of the invention, in clockwise direction, whereas the rotary element moves in opposite direction. When the device is to be used for sanding walls or other surfaces, adjustable positioning roller 27 is set to such a position as to provide the proper depth at which rotary element 22 is to operate in respect to the surface to be abraded. Outlet 13 serves as a convenient handle for the device, and by means of this handle-forming outlet the device can be moved to any desired position in respect to the surface to be treated.

When the device is to be used as a polisher or sharpener of articles, it is attached by means of clamp 34 to an existing support such as a table. Either both or one of the guide rollers 24 and 27 may be removed to provide full accessibility to rotary element 22. Any number of substitute rollers may be employed for various treatments of different articles.

While the accompanying drawing and the description cover but one form of the present invention, be it understood that changes and improvements may be incorporated therein to meet various conditions, without departing from the broad scope of the invention as defined in the annexed claim.

I claim:

In a fluid actuated surface abrading device, comprising a substantially cylindrical casing having one of its sides removable, said casing having its diametrical dimension more than twice its axial extent and axial bearings in the sides thereof, said casing also having an inlet and an outlet peripherally connected thereto, in combination with a bladed rotor operative within the casing and supported in the axial bearings by a shaft fixed in said rotor, said casing being supported in its upright position by a pair of triple-legged brackets secured to the sides of the casing, the lower ends of said bracket legs being provided with three pairs of horizontal bearings, each pair of bearings being in axial alignment with each other, said rotor shaft extending through and beyond its bearings, one pair of bracket leg bearings being located on an axial line intermediate the axial lines of the other pairs of bearings, in combination with an abrading roller having an axial shaft fixed therein and extending through and beyond the intermediately located pair of bearings, in further combination with a pair of guide rollers having axial shafts fixed therein and respectively occupying the other pairs of bearings, one pair of bearings being adjustable to locate the abrading roller into operative relation to the surface being abraded, the shaft of the abrading roller having a driven pulley on each end thereof, each rotor pulley being in a common plane with its corresponding abrading roller pulley thereby providing for a balanced driving effect between the driving and the driven pulleys.

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