

Nov. 8, 1966

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3,283,352

WATER POWERED CLEANING DEVICE

Filed June 28, 1965

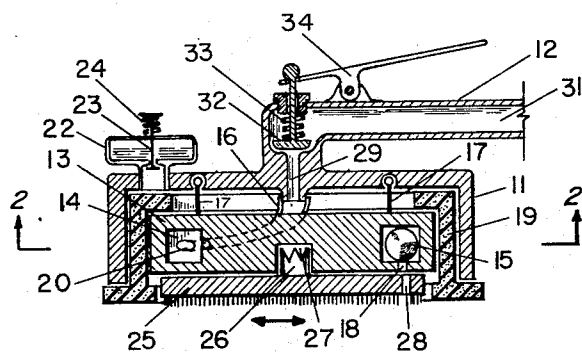


Fig 1

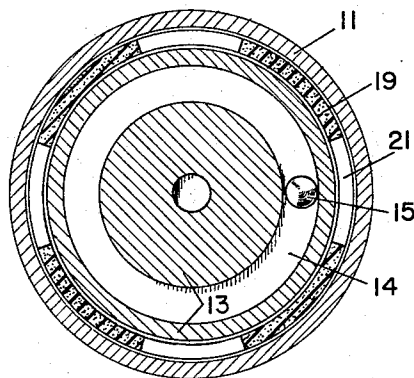


Fig 2

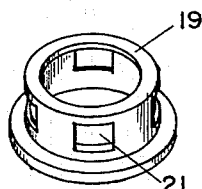


Fig 3

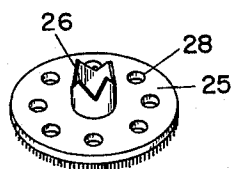


Fig 4

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## WATER POWERED CLEANING DEVICE

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Filed June 28, 1965, Ser. No. 467,586

12 Claims. (Cl. 15—22)

The present invention relates to cleaning devices operated by water power and, more particularly, to an improved cleaning mechanism which can be held in the hand of the user and readily manipulated for washing items such as vehicles, dishes, scouring pots and similar utensils, as well as for cleaning and/or massaging the human body.

In the field of water powered cleaning devices, it has been the general practice to employ brushes which either have a rotary motion or no motion at all, to perform the function of scrubbing an article to be cleaned. Although such devices have served the purpose, they have not proved entirely satisfactory under all conditions of service for the reasons that considerable difficulty has been experienced in effectively cleaning the item being scrubbed, that water would splash about from the rotating type brushes, and excessive manual motion is required in the still type brush for scrubbing purposes.

The general purpose of this invention is to provide an improved water powered cleaning device which possesses none of the aforescribed disadvantages. To attain this the present invention contemplates a water powered vibrational member and brush attachment arrangement which provides short jerky motions for effective cleaning action and minimum splashing of water. Among other things, vibrational damping means are also introduced between the vibration member and the handle of the device to provide smoother handling operation. The device with the proper brush or wash pad attachments also has utility for cleansing the human body and simultaneously providing a massaging effect.

An object of the present invention is the provision of a cleaning device of the type described of simple and economical construction and which produces an effective cleaning action.

Another object is to provide a water powered cleaning device which avoids excessive splashing of the water emerging from the device.

A further object of the invention is the provision of a water powered device which transfers short jerky motions to a cleaning brush and allows water to emerge therefrom.

Other objects, advantages and capabilities of the present invention will become apparent from the following detail description, taken in conjunction with the accompanying drawings illustrating a preferred embodiment of the invention.

In the drawings:

FIGURE 1 shows a section view of a preferred embodiment of the invention.

FIGURE 2 is a section view of the device taken on the line 2—2 of FIGURE 1.

FIGURE 3 illustrates a perspective view of a resilient member 19 shown in FIGURE 1.

FIGURE 4 shows a perspective view of a brush attachment 25 shown in FIGURE 1.

Referring now to the drawings, there is shown in FIGURES 1—4, which illustrate one embodiment of the instant invention, a circular frame 11 integral with a tubular handle 12 extending upwardly therefrom and adapted to terminate in any suitable manner so as to connect with a hose, faucet or any other like device having a water passageway. Loosely mounted in the frame is a cylindrical housing 13 made of a rigid material such as plastic or metal and having a ball raceway 14 in which a ball 15 of

metal or other suitable material is adapted to just fit freely and travel in an orbital path under the impetus of a stream of water fed tangentially into the raceway at opening 20 positioned midway of the raceway wall.

The water is introduced through the opening 20 by flexible tubing and nozzle 16 integral with housing 13 converting the fluid into the form of pressurized water to form a high velocity jet stream for driving the ball 15 about the raceway. The housing 13 is loosely connected to the frame 11 by means of most any suitable attachment such as the flexible ball and socket combination 17 shown in FIGURE 1. If desired, a spring might be employed to connect housing 13 to the handle 12. Drain holes 18 are provided for in the floor of the raceway allowing water to flow therethrough as will hereinafter be explained in detail.

Interposed between the frame 11 and cylindrical housing 13 is a resilient member 19 of fibrous plastics, foam rubber, metal wire or similar material one form of which is illustrated in FIGURE 3 wherein cut-out portions 21 of the member 19 provide for additional resiliency where the member is fabricated from a less elastic material. Resilient member 19 is mainly utilized for isolation purposes, when the device is operational, so as to minimize on the frame 11 and thus handle 12 the vibration motion imparted to cylindrical housing 13, however, if desired, resilient member 19 may simultaneously be employed as a soap pad, the soap being discharged through member 19 by way of a manual soap dispenser 22 which is operated upon to dispense the fluid soap by pressing a plunger 23 against a spring 24, the spring normally biasing the plunger to close the spout of the dispenser.

Beneath the cylindrical housing 13 is a disk shaped brush attachment 25 the bottom of which might have attached thereto in a permanent or detachable manner a wire brush, an abrasive pad, bristle, steel wool, a disposable soap pad, etc., any one of which latter items might be readily secured to the bottom of the attachment by most any conventional means such as clips. The brush attachment contains a split stem 26 adapted to be inserted in an aperture 27 in housing 13 for frictional registration therein allowing a variety of brushes to be readily employed with the device. The brush attachment is provided with several openings 28 as an outlet for the water passing through drain holes 18 from raceway 14. Should a soap pad be employed at the bottom of attachment 25, it may be desirable to direct the out-flow of water from drain holes 18 to an area about the perimeter of the soap pad, rather than directly through it, so as to avoid unnecessary washing out of the soap element from the soap pad.

The driving fluid is supplied to the nozzle 16 by way of an opening 29 in frame 11 connecting the nozzle intake to the passageway 31 defined by the inner circumference of tubular handle 29. In case it should be desired to prevent the fluid from driving ball 15 about the raceway 14 a valve 32 is positioned above opening 29 normally biased by spring 33 to force the valve against the opening, and an arm 34 is tied to the valve stem for lifting the valve away from the opening and against spring 33 when the arm is pressed against the tubular handle.

In operation when water is provided to pass through the passageway 31 from a faucet or similar outlet, and valve 32 is raised above the opening 29, the nozzle 16 will convert the water in the form of high velocity jet which is discharged through opening 20 tangentially to the raceway to drive the steel ball 15 into a spinning motion around the raceway. The centrifugal force produced by the rotating ball generates a vibrating motion in the cylindrical housing 13, and therefore simultaneously in the brush attachment 25. After the kinetic energy in the

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high velocity water jet is spent, it is discharged by gravity through drain holes 18 in the floor of the raceway and thence through openings 28 in the brush attachment. Most of the vibratory motion generated in cylindrical housing 13 is not transferred to handle 12 due to the dampening effect of resilient member 19.

Where it is desired to use the present invention for washing automobiles and it is convenient to extend the length of handle 12 for reaching most parts of the vehicle, the valve 32, shown in FIGURE 1, could be readily inserted at a point displaced from opening 29 to be adjacent where the handle 12 would be manipulated. Provisions could also be made to attach a detergent holder at the same area for dispensing soap into the stream of water. If desired, it might also be convenient to provide further valve means to direct the water into a path which would by-pass the raceway for those instances where one wishes to rinse same area with a forceful stream of water.

The present invention, when a proper scrub pad is inserted therein, might be further utilized as a body massaging device whereby the device could be hooked up to the faucet of a conventional bathtub. Another use of the present invention could be for cleansing and scouring pots and similar utensils.

It should be understood, of course, that the foregoing disclosure relates to only preferred embodiments of the invention and that numerous modifications or alterations may be made therein without departing from the spirit and the scope of the invention, it is desired, therefore, that only such limitations be placed on the invention as are imposed by the prior art and as set forth in the appended claims.

What is claimed is:

1. A water powered cleaning device comprising a handle, a housing, means for attaching the housing to said handle, a cleaning element fixedly attached to said housing, a circular raceway located in said housing, a ball adapted to roll in said circular raceway, an inlet opening into said raceway, means for supplying water through said inlet into the raceway to drive the ball about the raceway, and outlet means for discharging the water from the raceway in said housing which water is to be employed with the cleaning element for cleaning purposes.

2. In a water powered cleaning device such as described in claim 1, wherein said means for attaching the housing to said handle is flexible.

3. In a water powered cleaning device as described in claim 1, wherein said means for supplying water comprises a valve.

4. In a water powered cleaning device as described in claim 1, wherein said cleaning element is a brush detachable from said housing.

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5. A water powered cleaning device comprising a frame, a housing, flexible means for attaching the housing to said frame, a cleaning element attached to said housing, a circular raceway located in said housing, a ball adapted to roll in said circular raceway, valve means for supplying water through a nozzle inlet tangentially into said raceway to drive the ball about the raceway, and outlet means for discharging the water from the raceway in said housing.

6. In a water powered cleaning device such as described in claim 5 wherein said cleaning element is a brush detachable from said housing.

7. In a water powered cleaning device such as described in claim 5 where said ball is made of metal.

8. A water powered cleaning device comprising a frame, a housing, flexible means for attaching the housing to said frame, a detachable cleaning element fixedly secured to said housing, a circular raceway located in said housing, a ball adapted to roll in said circular raceway, a nozzle integral with said housing and having an opening for feeding water tangentially into the raceway, a flexible tube connected to the nozzle for supplying water thereto, valve means for supply water through said nozzle means into the raceway for driving the ball thereabout to vibrate the housing and impart a vibratory motion to the cleaning element, outlet means comprising a plurality of apertures for discharging the water from the raceway in said housing to an area about said cleaning element to be employed with the cleaning element for cleaning purposes.

9. In a water powered cleaning device as described in claim 5 wherein said cleaning element is a soap pad detachable from said housing.

10. In a water powered cleaning device as described in claim 1 wherein said cleaning element is a soap pad detachable from said housing.

11. In a water powered cleaning device as described in claim 8 wherein said cleaning element is a brush.

12. In a water powered cleaning device as described in claim 8 wherein said cleaning element is a disposable soap pad.

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