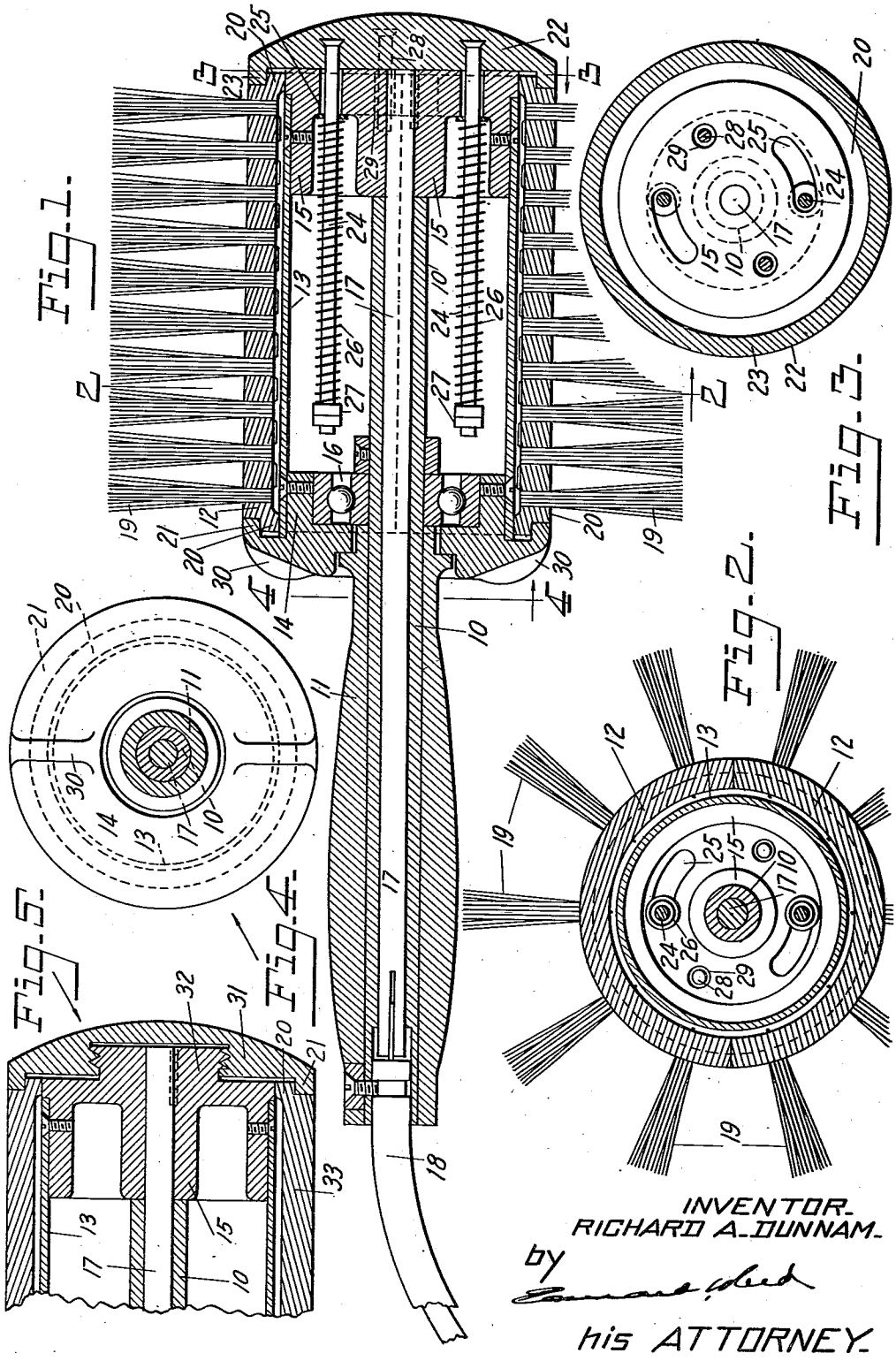
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PORTABLE ROTARY BRUSH

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PORTABLE ROTARY BRUSH

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This invention relates to a portable rotary brush or the like and one object of the invention is to provide such a device which will be simple in construction, of light weight and easily manipulated while rotating.

A further object of the invention is to provide simple and efficient means for rotatably mounting a brush head on a non-rotatable support and for rotating the same with relation thereto.

A further object of the invention is to provide such a device in which the brush may be quickly and easily mounted on or removed from the support.

A further object of the invention is to provide a rotary hair brush of such a character that it will have no parts which are liable to catch and pull the hair during the brushing operation.

Other objects of the invention may appear as the device is described in detail.

In the accompanying drawing Fig. 1 is a longitudinal section taken centrally through a brush embodying my invention; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is a section taken on the line 3—3 of Fig. 1; Fig. 4 is a section taken on the line 4—4 of Fig. 1; and Fig. 5 is a sectional view of a portion of a brush embodying a modified form of the invention.

In this drawing I have illustrated one embodiment of the invention and have shown the same as designed primarily as a hair brush. It will be understood, however, that by changing the character and arrangement of the bristles, or by substituting for the bristles other projecting elements, the device may be used for various brushing operations or for similar operations, such as massaging.

The brush head is rotatably mounted upon a non-rotatable support which is provided with a hand grip by means of which the device as a whole may be supported and manipulated while the brush head rotates on the support. In the particular construction here illustrated the support is shown as a tubular member 10 provided on one end portion thereof with a handle 11. The brush head, which is shown at 12, may be rotatably mounted on this support in any suitable manner but preferably it is mounted on a suitable frame which in turn is rotatably mounted upon the support. In the present instance, this frame comprises a cylindrical body portion 13 and end members 14 and 15. The frame may be mounted on the support and connected with the rotating means in any suitable manner and in the arrangement shown the end member 14 is rotatably mounted on the tubular support 10, preferably by means of an anti-friction bearing 16. The end member 15 of the frame is rigidly connected with and supported by the inner end of a shaft 17 which is rotatably mounted in the tubular support 10 and which constitutes the rotating means for the frame and brush head. The shaft 17 may be connected with any suitable actuating device or source of power but preferably it is connected with a source of power, such as a motor, mounted independently of the device itself and for that purpose the shaft 17 is here shown as provided with a flexible shaft extension 18, by means of which it may be connected with the motor.

The brush head 12 may be of any suitable character and its construction and shape will depend in part upon the character of the frame on which it is mounted. In the present instance, it is cylindrical in form and fits snugly about the cylindrical frame and, as here shown, it is provided with relatively long bristles 19 of such a character and so spaced as to adapt the brush for the brushing of hair. In order that the brush head may be readily cleaned or another brush head substituted therefor means are provided for detachably securing the brush head to the rotatable frame. In the arrangement shown in Figs. 1 and 2 the brush head is divided longitudinal into two parts, each substantially semi-circular in cross section, and means are provided for detachably securing the two parts in their assembled relation on the frame. This securing means may take various forms but as here shown the ends of the two parts of the brush head are of reduced thickness to provide the head with longitudinally extending flanges 20. The end member 14 of the frame is provided with an annular retaining member 21 adapted to overlie the adjacent portions 20 of the two parts of the brush head, this annular member being in the present instance formed by providing the end member 14 with an annular recess into which the adjacent parts 20 of the brush head extend. The frame is provided at its other end with a second retaining device which is here shown in the form of a cap 22 having an annular portion or flange 23 adapted to overlap the adjacent portions of the two parts of the brush head. This retaining device 22 is movable with relation to the frame so that it may be moved out of engagement with the brush head to permit the two parts of the latter to be separated and removed from the frame. In the present construction it is connected with the frame by a plurality of rods 24 which are rigidly secured at their outer ends to the retaining device 22 and which extend through the openings

25 in the end member 15 of the frame. Springs 26 are coiled about the respective rods 24 and confined between the end member and suitable stops, such as nuts 27, on the inner ends of the rods, so that the action of the springs tends to move the retaining device into, and to retain the same in, its operative position in engagement with the brush head. The retaining device 22 and its connecting rods 25 are capable of a limited rotary movement with relation to the frame, the openings 25 in the end member 15 being here shown in the form of arcuate slots to permit of this rotary movement. Means are also provided for holding the retaining device 22 in its outer or inoperative position while the brush head is being removed from or placed on the frame and for this purpose the retaining device has secured thereto one or more short rods or pins 28 of such a length that when the retaining device is in its operative position they will extend into openings 29 in the end member 15, but when the retaining device is moved to its inoperative position they will be withdrawn from the openings 29 and may be moved out of line with those openings by a slight rotary movement of the retaining device and will thus engage a solid part of the end member of the frame and will hold the retaining device in its inoperative position. This movement may be imparted to the retaining device in any suitable manner, as by grasping the handle 11 in one hand and the brush head in the other hand and exerting a longitudinal thrust on the brush head which will move the same lengthwise of the frame and thus force the retaining device 22 to its inoperative position, a slight rotary movement being then imparted to the brush head with relation to the frame to lock the retaining device in its inoperative position, the frame being held against rotation during this movement by means of finger pieces 30 on the end member 14. The movement thus imparted to the retaining device will space the same such a distance from the retaining member 21 that the two parts of the brush head may be separated and removed between the retaining devices. When the brush head has been replaced upon the frame and engaged with the retaining device 21 a slight rotary movement imparted to the retaining device 22 will bring the pins 28 into line with their openings and the springs will move the retaining device to its operative position, thereby attaching the brush head to the frame for rotation therewith.

It will be obvious that the retaining devices may take various forms and in Fig. 5 I have shown a slightly modified form of the brush in which the movable retaining device is shown at 31 as having screw threaded connection with a boss 32 projecting from the end member 15, whereby it may be moved lengthwise of the frame to cause it to engage or disengage the brush head. The retaining member 31 may of course be entirely removed from the supporting frame and this permits of the brush head 33 being formed as a one piece cylinder which may be slipped lengthwise onto and off of the frame 13 after the retaining device has been removed.

It will be noted that in both forms of the device the parts 21 and 23 of the retaining devices are flush with the outer surface of the brush head and fit snugly against the ends of the brush head, and that the retaining members themselves are of a smooth continuous form, so that the revolving structure has no part, opening or crack which would tend to catch the hair and pull the same while the device is in use. The device as a whole is relatively small and compact in form and may be made of very light material, such as an aluminum alloy or a phenol condensation product. Thus it can be very easily manipulated without tiring the operator. Further, the device comprises a relatively small number of parts and these are of such a character that the device can be produced at a relatively low cost, largely by casting.

While I have shown and described one embodiment of my invention I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a portable rotary brush, a support, a frame rotatably mounted on said support, a brush head mounted on said frame for rotation therewith, and divided longitudinally into a plurality of separable parts, said frame having at one end thereof an annular retaining member to engage the adjacent ends of the several parts of said brush head, a retaining device mounted at the other end of said frame and having an annular portion movable into and out of engagement with the adjacent ends of said parts of said brush head, spring means for connecting said retaining device with said frame, said spring means and said retaining device being capable of a limited rotary movement with relation to said frame, said retaining device having an element to engage one part of said frame and hold said retaining device normally against rotation with relation thereto and to engage another part of said frame when said retaining device has been rotated and hold the latter in an inoperative position with relation to said parts of said brush head, and means for rotating said frame.

2. In a portable rotary brush, a rotatable frame comprising spaced end members, means for rotating said frame, a brush head removably mounted on said frame for rotation therewith, devices carried by said frame to retain said brush head thereon, at least one of said devices being movable relative to said frame, and a spring arranged between said end members and resiliently connecting said movable device with said frame to hold said device normally in retaining engagement with said brush head.

3. In a portable rotary brush, a rotatable frame comprising spaced end members, means for rotating said frame, a brush head removably mounted on said frame for rotation therewith and comprising a plurality of axially divided separable parts, devices carried by said frame to retain said brush head thereon, at least one of said devices being movable lengthwise of said frame, a rod secured to said movable device, extending through the adjacent end member and having a part forming an abutment, and a spring confined between said abutment and said end member.

4. In a portable rotary brush comprising a rotatable element and means for rotating the same, a hollow brush head removably mounted on said rotatable element for rotation therewith, devices carried by said element and engaging said brush head to retain the latter on said element, at least one of said devices having a part which is movable with relation to said element, and yieldable means acting on said movable part to hold the same normally in retaining engagement with said brush head.

5. In a portable rotary brush comprising a rotatable element and means for rotating the same, a hollow brush head removably mounted on said rotatable element for rotation therewith, devices carried by said element and engaging said brush head to retain the latter on said element, at least one of said devices having a part which is movable with relation to said element, and yieldable means arranged within said element and acting on said movable device to move the latter to and hold the same normally in retaining engagement with said brush head.

6. In a portable rotary brush comprising a rotatable element and means for rotating the same, a hollow brush head removably mounted on said rotatable element for rotation therewith, devices carried by said element and engaging said brush head to retain the latter on said element, at least one of said devices being movable with relation to said element into and out of retaining relation to said brush head and also being rotatable with relation to said element, yieldable means for moving said device to retaining position, and means controlled by the rotation of said device to hold the same in releasing position.

7. In a portable rotary brush comprising a rotatable element and means for rotating the same, a hollow brush head removably mounted on said rotatable element for rotation therewith and comprising a plurality of axially divided separable parts, said element having a flange overlapping one end of said brush head, a member supported by said element for movement axially thereof and having a flange overlapping the other end of said brush head, and yieldable means for holding said members in said overlapping position, said member being rotatable with relation to said element when moved from said overlapping position, said member and said element having parts arranged to be brought into cooperating relation by the rotation of said member to hold the latter against movement by said yieldable means.

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