Feb. 28, 1956 J. P. GREGOIRE 2,736,048

MOTOR DRIVEN BRUSH

Filed Sept. 3, 1953

Fig. 1.

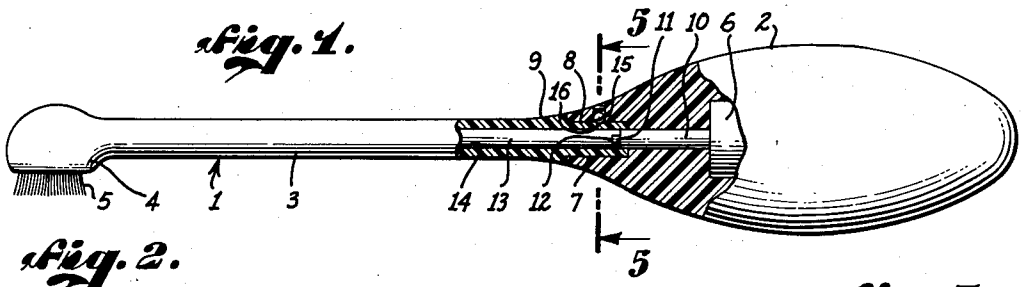


Fig. 2.

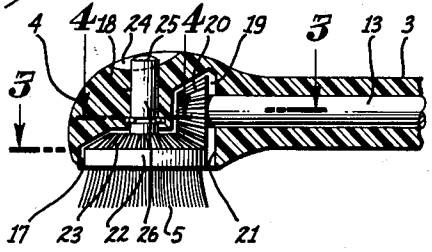


Fig. 3.

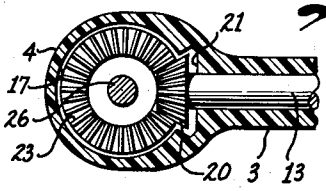


Fig. 4.

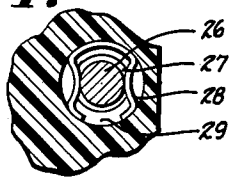
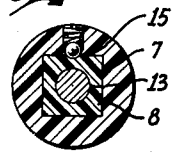


Fig. 5.



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MOTOR DRIVEN BRUSH

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1 Claim. (Cl. 15—28)

The invention relates to a motor driven brush suitable for use as a tooth brush or for other uses, wherein the brush is driven at slow speed by a small motor housed in a handle so that the brush device can be held in the hand.

While brushes of this type have been proposed, they are usually rather complicated in construction, and in some cases do not provide for ready replacement of the brush.

An object of the present invention is to simplify the construction of the motor driven brush device so that the assembly of the parts into a completed unit is facilitated. This is accomplished by molding the brush arm and its head in one piece and with two cavities, one of which serves as the gear chamber and the other as a bearing bore for the brush, the brush having thereon a spindle which is removably held in position by a snap coupling. In one form of the invention the head of the brush arm is provided with a depression to expose the brush spindle so that pressure can be applied to it to remove the brush.

A further feature relates to an improved snap-on coupling for the brush.

For further details of the invention, reference may be made to the drawings wherein Fig. 1 is a side view elevation, partly in section, of a motor driven brush according to the present invention.

Fig. 2 is an enlarged vertical sectional view of the brush of Fig. 1, with parts broken away.

Figs. 3 and 4 are sectional views on lines of the corresponding numbers in Fig. 2.

Fig. 5 is an enlarged sectional view on line 5—5 of Fig. 1.

The views in Figs. 3, 4, and 5 are in the direction of the respective arrows.

Referring in detail to the drawings, the motor driven brush **1** comprises a handle **2** having an arm **3** which terminates in a head **4** for the rotary brush **5**. The handle **2** houses a small slow speed electric motor **6** or motor and reduction gear, the motor having a cord not shown. The handle **2** has a square socket **7** for the square reduced neck **8** on the inner end **9** of the arm **3**. The motor **6** has a driven shaft **10** having a tongue **11** which slips into the groove **12** on shaft **13** which rotates in the cylindrical bearing bore **14** in arm **3**. Shafts **10** and **13** may be coupled or uncoupled by inserting neck **8** into or removing it from socket **7**. The square or non-circular contour of socket **7** and neck **8** prevent relative rotation of handle **2** and arm **3**. The neck **8** is removably held in socket **7** by a spring pressed ball **15** in the handle **2** and which engages a depression **16** in the neck **8**.

The arm **3** and its head **4** may be molded in one piece with two cavities, in addition to bearing bore **14**, one of these cavities forming a gear chamber **17** and the other forming a bearing bore **18**. Bearing bore **18** rotatably supports the shaft **26** of the brush **5**, both this bearing bore **18** and shaft **26** extending transversely of and on opposite sides of the shaft **13**. The gear chamber **17** has a conical portion **19** to house the driving gear **20** and merging with the chamber portion **19** and at right angles to it is a conical chamber portion **21** for the head

22 of brush **5**. The head **22** in Fig. 2 has the driven gear **23** on it. The bearing bore **18** at its inner end opens into the gear chamber portion **21** and its outer end has a depression **24** to expose the outer end **25** of the brush spindle **26**. As shown in Fig. 4, the spindle **26** has a snap coupling in the form of a recess **27** for a U-shaped snap pin **28** mounted in a cavity **29** around the bearing bore **18**. The snap pin **28** thus lies wholly within the boundary of cavity **29** and is concealed within the head **4**.

The assembly of the parts shown in Fig. 2 is facilitated as few operations are required. First the driving gear **20** is moved edgewise or transversely of its axis through the lower or open end of gear chamber **17** into position in its chamber **19** opposite shaft **13** and shaft **13** is inserted into arm **3** and its outer end is coupled to gear **20**, either with screw threads not shown or with cement, as both shaft **13** and gear **20** may be of plastic material. Then the snap pin **28** is inserted in its groove **29**, and the assembly is complete. The brush **5**, or another one similar to it may be inserted and removed at will in the head **4**, the brush head **22** and its gear **23** being insertible into position through the same open or lower end of gear chamber **17** through which gear **20** was edgewise moved into position for assembly on its shaft **13**. The unitary or one-piece head **4** thus has two bearing bores at right angles to each other, one for each shaft **13** and **26**, and it has one gear chamber **17** which serves for assembling the drive gear **20** into position on its shaft **13** and for insertion and removal of brush head **22** and its gear **23** for removable engagement with the snap pin **28** arranged in the bearing bore of shaft **26**.

Various modifications may be made in the invention without departing from the spirit of the following claim.

I claim:

In a motor driven tooth brush, an arm terminating in a head, said arm and head comprising a single piece of material, said head having a gear chamber, said arm having a shaft, a gear in said chamber for said shaft, said head having a bearing bore opening into said gear chamber, said bearing bore extending transversely of and to opposite sides of said shaft, a brush having a head having a spindle thereon rotatable in said bore, said brush head having a cooperating gear thereon fitting in said gear chamber, said head having a cavity opening into said bore, a snap pin concealed in said cavity and a cooperating groove on said spindle for removably supporting said brush in said head with said gears in engagement, said gear chamber having an opening at one side of said head, said first mentioned gear being movable edgewise through said opening into position opposite said shaft for assembly thereon, said brush head being insertible into and removable from said opening for coupling its said spindle with or uncoupling the same from said snap pin.

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