

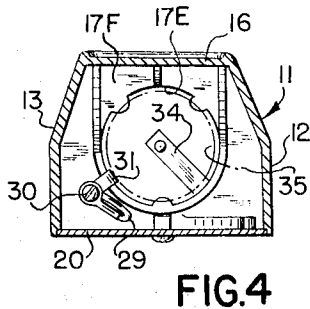
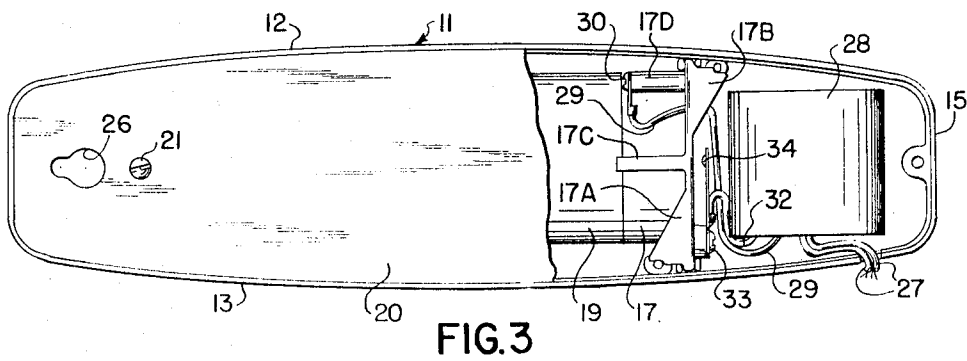
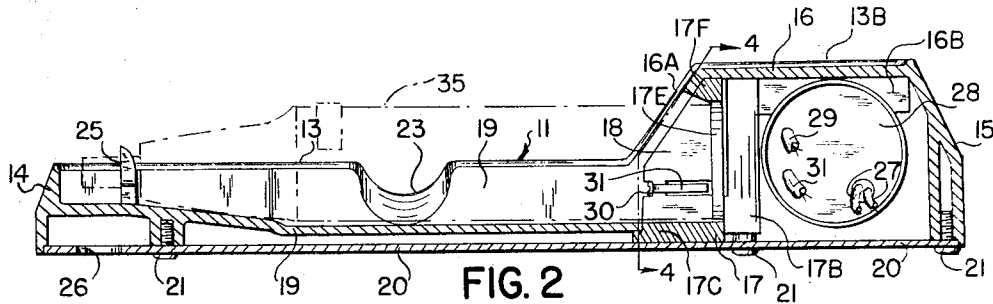
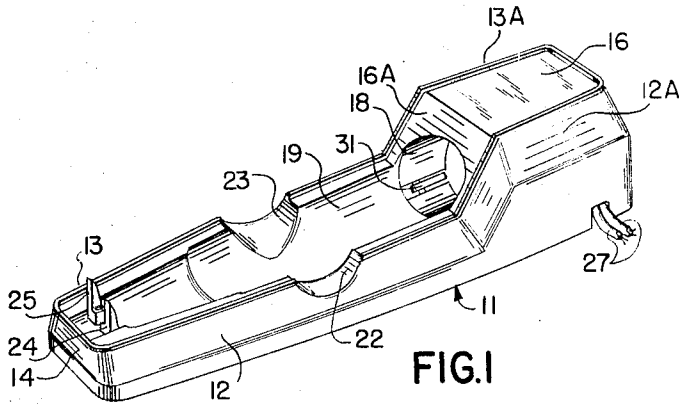
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HOLDER FOR BATTERY-OPERATED DRIVING UNIT

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3,293,528  
**HOLDER FOR BATTERY-OPERATED  
 DRIVING UNIT**

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Our invention relates to holding devices for holding battery operated driving units used for actuating toothbrushes and the like.

An object of our invention is to provide an improved holding device particularly adapted for holding a driving unit, such as used for a power-operated toothbrush.

Another object is the provision of a holder for such a driving unit which is adapted to be used in both horizontal and vertical positions.

Another object is the provision for a compact and efficiently arranged structure of a holder for a power-driven unit of the character described.

Another object is the provision of a unique arrangement of parts in such a holder giving improved results in a satisfactory and useful manner.

Another object is the provision of such a holder for a driving unit which is adapted to hold such a driving unit in a convenient and accessible position and also in a position for ready recharging of the battery of such a battery operated driving unit.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a perspective view of our improved holder;

FIGURE 2 is a longitudinal sectional view of our improved holder;

FIGURE 3 is a bottom view, partially cut away, of our improved holder; and

FIGURE 4 is a cross-sectional view taken through the line 4-4 of FIGURE 2.

Our holder has an elongated portion having an arcuate inner wall along which extends side wall 12 and 13 spaced apart and generally parallel to each other. The walls 12 and 13 and 19 of the elongated portion together form a cradle or supporting portion adapted to accommodate a driving unit as shown in broken lines in FIGURE 2 and denoted by the reference character 35. The driving unit may be generally of the kind shown and described in copending U.S. patent application Serial No. 298,849 of Marcellus I. Fillweber and in Design Patent No. 197,699 issued March 17, 1964. This unit 35 has a generally cylindrical body portion which at one end and at the axis thereof has an electrical contact member. Extending around the body near the same end is an annular electrical contact member. These contact members are in electrical connection with a battery within the body of the unit 35 in such manner that upon the supply of electrical energy to these contact members, the battery in the unit is charged.

Extending from the other end of the unit 35 is a shank or shaft which is recurrently moved through a cycle for actuating a toothbrush or the like which may be connected to the shank or shaft in the well-known manner. As the unit 35 itself is not a part of the present invention, it is shown only in broken lines and is referred to for purposes of illustrating the nature and function of the holding device herein shown and described.

Our holding device generally is a molded plastic body, denoted generally by the reference character 11 and having the general shape and contour illustrated in the draw-

ing. At one end of the elongated portion of the holder 11, the walls 12 and 13 are enlarged and such enlarged portions are denoted by the reference characters 12A and 13A, respectively. The ends of the enlarged side walls 12A and 13A are closed by the end wall 15. At the opposite end of the holder, the walls 12 and 13 are closed by the end wall 14. It is seen that the side of the holder is open when the holder is in the horizontal position shown in FIGURES 1 and 2. When the holder is in a vertical position, with the lower end uppermost and the larger end lowermost, then the open side is on a lateral side of the holder rather than uppermost. The aligned edges of the respective walls 12, 13, 14 and 15, which edges are horizontal in the views of FIGURES 1 and 2, are closed by a cover plate 20 which is secured to the body of the holder by screws 21 extending into lugs provided therefor. It is seen that the cover plate 20 has a keyhole slot 26 provided therein, as shown in FIGURES 2 and 3. This slot 26 is to permit the holder to be hung on a peg, hook or the like extending from a wall so that the holder may be suspended in a vertical position, if desired, with the plate 20 next adjacent the wall.

The two side walls 12 and 13 are provided with aligned notches 22 and 23 which extend downwardly, in the views of FIGURES 1 and 2, below the axis of the unit 35 positioned on the holder. These notches 22 and 23 are for accommodating the fingers of a user gripping the unit 35 upon placing the unit 25 in and out of position upon the holder. The upper portion of the enlarged end is closed by a top wall 16, that is, a wall which is uppermost when the holder is in the horizontal position. The wall 16 has a short inclined portion 16A directed toward the smaller end of the holder. Extending inwardly of the wall 16 there is a rib portion 16B having a concave annular edge directed inwardly of the holder as seen in FIGURE 2.

Near the smaller end of the holder, there are a pair of gripping fingers 24 and 25 protruding from the elongated portion and generally parallel to each other. The sides of these fingers 24 and 25 directed toward the larger end of the holder are sloping in a gradual curve so as to provide a camming surface which may be engaged by the end of a unit 35 when it is being placed within the holder to a location between the walls 12 and 13. These camming surfaces of the fingers 24 and 25 tend to urge or move such a driving unit toward the larger end of the holder as the unit is positioned in the holder. The fingers 24 and 25 are somewhat resilient and are so dimensioned and shaped as to resiliently grip the actuating shank or shaft extending from the driving unit 35 and thus to aid in securing the driving unit 35 in position. The resiliency may be overcome and the unit 35 removed from the holder and the actuating shank or shaft forced outwardly from the grip imposed thereon by the fingers 24 and 25.

Within the larger end of the holder there is a socket or sleeve member 17. This socket member 17 has a generally cylindrical opening 18 therein which accommodates the larger or base end of the driving unit 35. It is noted that the inclined portion 16A of the wall 16 and an upper wall 17F of the socket member 17 are inclined to accommodate the tilting of the body of the unit 35 as it is placed into position within the opening 18 of the socket member 17. To aid in the mounting of the socket member 17, there are provided wing portions 17A and 17B, as better seen in FIGURE 3, these portions extending in opposite directions. Next adjacent to the cover plate 20, the socket member 17 is provided with a longitudinally extending rib portion 17C. Extending longitudinally of the socket member 17 near the wing portion 17B is a post portion 17D. Within the socket member 17 is a round opening 17E in axial alignment with the cylindrical opening 18 of the holder. Preferably the socket member

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17 with its portions 17A, 17B, 17C, 17D and 17F are made of one molded plastic part. The socket member 17 is held in position, such as by screws 21.

Secured by a screw 30 to the end of the post portion 17D is a resilient metal finger 31 providing an electrical contact terminal extending along the side of the recess 18. This finger 31 is inclined toward the axis of the cylindrical opening 18 as it extends away from the screw 30 toward the larger end of the holder and is resilient so as to give or yield as the electrical contact member along the side wall of the driving unit 35 is moved axially into the round opening 17E of the socket member 17. Thus, the terminal finger 31 is inclined to make and maintain an electrical engagement with one of the electrical contacts of the driving unit 35, while it is held in the holder, such as illustrated in FIGURE 2.

There is another electrical contact finger 34 which has a button or contact point in axial alignment with the cylindrical opening 18 and the round opening 17E of the socket member 17. The position of the button on the contact finger 34 is such that it is in alignment with and engages the terminal contact member centrally located on the end of the driving unit 35 in its position within the holder, such as shown in FIGURE 2. The finger 34 includes a resilient leaf spring which is adapted to resiliently urge the button thereof axially into good electrical engagement with the central terminal on the end of the driving unit 35. The button on the finger 34 and the spring carrying the same are of electrical conducting material as is the finger 31.

Extending into the holder are a pair of lead-in wires 27 which are adapted to be connected to a suitable source of electrical current, as for example, to usually available house current. These wires 27 are connected to a battery-charging device or rectifier 28 which is supported within the larger end of the unit and next adjacent to the rib 16B. Extending from the battery-charging device 28 is a wire 29 which is connected by means of the screw 30 with the contact finger 31 whereby the contact finger 31 is in electrical connection with the battery-charging device 28. A wire 32 extends from the battery-charging device 28 and is connected by a screw 33 to the terminal finger 34 whereby the battery-charging device 28 is in electrical connection with the terminal finger 34. Thus, when a driving unit 35 is in position whereby its terminals are in electrical engagement with the fingers 31 and 34, respectively, the battery charging device is in electrical connection with the battery within the driving unit 35. Thus, a driving unit 35 held by the holder with its body extending along the elongated portion and its axis thereof coinciding with the axis of the socket member 17 so as to interengage the terminals of the driving unit with the fingers 31 and 34 of our holder has its battery recharged as required. The battery is of the type that is recharged only as and when such recharging is required.

As is seen, our holder is so constructed as to readily accommodate the driving unit for an actuated device such as a toothbrush either in a horizontal or a vertical position. When the driving unit is held by our holder, the electrical contacts are so arranged that a good electrical connection is assured and maintained by the charging device in the holder and the battery in the driving unit. The holder is both convenient in use and efficient in its operation. By reason of the construction and shape, the driving unit may be readily placed in position and taken from position with a minimum of effort and at the same time the unit, when in position, is firmly held and the electrical connections properly maintained.

The present disclosure includes that contained in the appended claims, as well as that of the foregoing description.

Although this invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that

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numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

What is claimed is:

1. A holder for holding a battery-powered driving unit for a toothbrush or the like, said driving unit having an elongated body, the body having a first end portion and a second end portion, said first end portion having a first electric contact member on the end wall thereof and a second electric contact member on the side wall thereof for providing electrical connection with a battery carried by the unit for charging the battery, said unit having an actuating shank extending axially thereof from said second end portion of the body for attachment to a toothbrush or the like, said holder comprising the combination of an elongated portion having an open side through which a said unit may be laterally moved to engage said elongated portion, said elongated portion having side walls extending generally parallel to each other to embrace therebetween a said unit extended along said elongated portion, a socket portion at one end of said elongated portion having a recess adapted to accommodate therein said first end portion of a unit extended along said elongated portion of the holder, the axis of said socket portion being parallel to and spaced from said side walls, a pair of spaced fingers carried by said elongated portion and extending therefrom at an axial distance from said socket portion and adapted to embrace the actuating shank of a said unit extended along said elongated portion and held by said holder, a first electric terminal member carried by said holder in said socket portion adjacent the axis thereof in position for electrical engagement with the said first electric contact member of a said unit held by said holder, a second electric terminal member carried by said holder in said socket portion adjacent a side thereof in position for electrical engagement with said second electric contact member of a said unit held by said holder, and battery charging means carried by said holder and in electrical connection with said terminal members to provide for charging the battery of a said unit held by said holder.

2. A holder as claimed in claim 1 and in which said fingers have inclined camming surfaces on the side thereof directed toward said socket portion for cammingly guiding a said unit as it is moved toward said elongated portion toward said socket portion and toward said first electrical terminal member.

3. A holder as claimed in claim 1 and in which said side walls of the elongated portion intermediate the ends thereof have notches formed therein and extending substantially beyond said axis to accommodate the fingers of a person gripping the said unit being placed in and out of said holder.

4. A holder for a battery-operated power unit adapted to actuate a toothbrush or the like, said unit having an actuating shank at one end for coupling with a said toothbrush or the like, said unit having electrical elements adjacent the opposite end connected to the battery in the unit for electrical connection with electrical charging means, said holder comprising an open-sided elongated cradle support for supporting a said unit, resilient clip means carried by the holder adjacent a first end adapted to resiliently grip the actuating shank of a said unit positioned in a cradle support, said holder having a socket adjacent an opposite end thereof adapted to receive an end portion of said unit at said opposite end of the unit the axis of said socket being disposed along and substantially parallel to and spaced from said cradle support, spring contact means carried by said holder adjacent said socket in position to engage said electrical elements, respectively, of a said unit positioned in said cradle support having its said end portion in said socket, and electrical battery-charging means carried by said holder electrically connected to said spring contact means for energizing the battery of a unit posi-

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tioned in said cradle support and having its said end portion in said socket.

5. A holder as claimed in claim 4 and including camming means carried by said holder engageable by a said unit being positioned in said cradle support for cammingly guiding said end portion of the unit into said socket.

6. A holder as defined in claim 4 and in which said cradle support has finger-accommodating notches on opposite sides thereof providing access through the notches to a said unit in said cradle support.

7. A device for supporting in position for ready access a battery-operated driving unit having electrical contacts connected to the battery to provide electrical connection therewith in the charging of the battery, and for providing means for applying a charging current to said contacts while the unit is supported by said device comprising in combination a body having an elongated wall having a generally semi-cylindrical cavity, said body being adapted to accommodate partially within the concavity of the wall a said unit disposed along said wall to position the axis of the unit generally coinciding with the axis of said concavity, said body having an enlarged end portion provided with a socket having an axis disposed generally coinciding with the axis of said concavity, battery-charging means carried by said enlarged end including a rectifier and contact means adapted to make electrical connection with the contacts of a said unit positioned in said device for charging the battery thereof, and means carried by the holder at a distance from said enlarged end portion for detachably

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engaging a said unit for holding the same in a said device.

8. A device as claimed in claim 7 and including means carried by the device for urging a said unit positioned along said concave elongated wall inwardly of said socket toward said contact means.

9. A device as claimed in claim 7 in which said concave elongated wall extends along the side thereof to a plane substantially coinciding with said axis of said concavity, and in which said wall is notched on opposite sides a substantial distance from said plane.

10. A device as claimed in claim 7 and in which the said enlarged end portion of the body encloses said rectifier and said contact means are adjacent said socket, and in which said concave elongated wall extends around substantially half of the circumference of said socket projected along said body.

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