(No Model.)

J. D. CULP.

ELECTRICAL BRUSH.

No. 336,897. Patented Mar. 2, 1886.

FIG. 1.

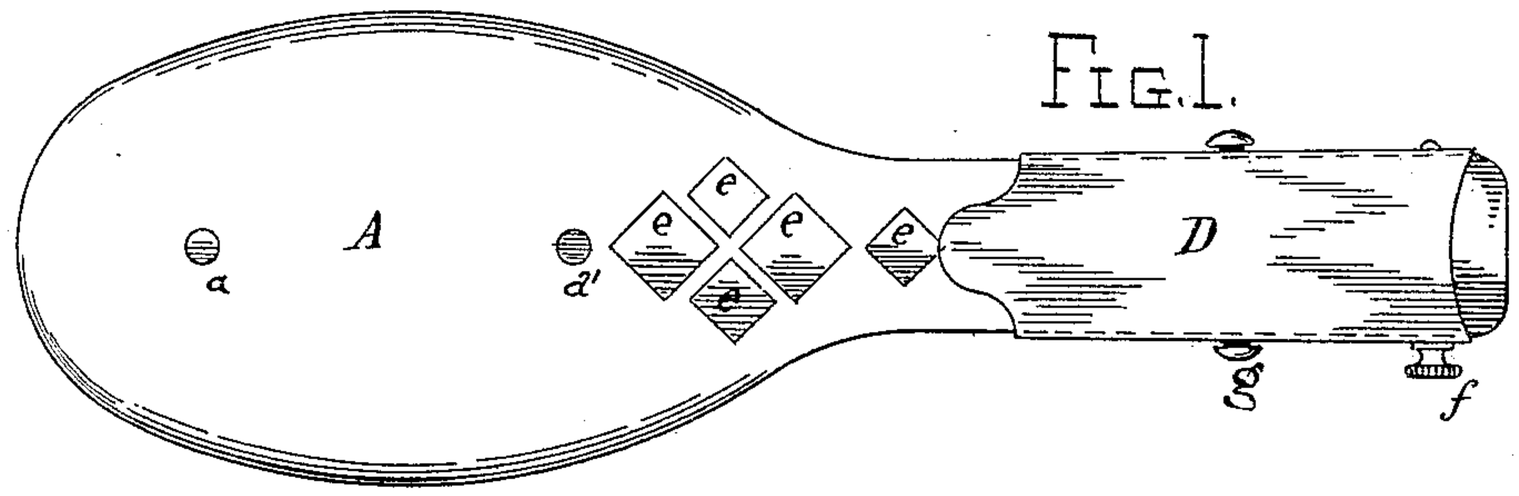


FIG. 2.

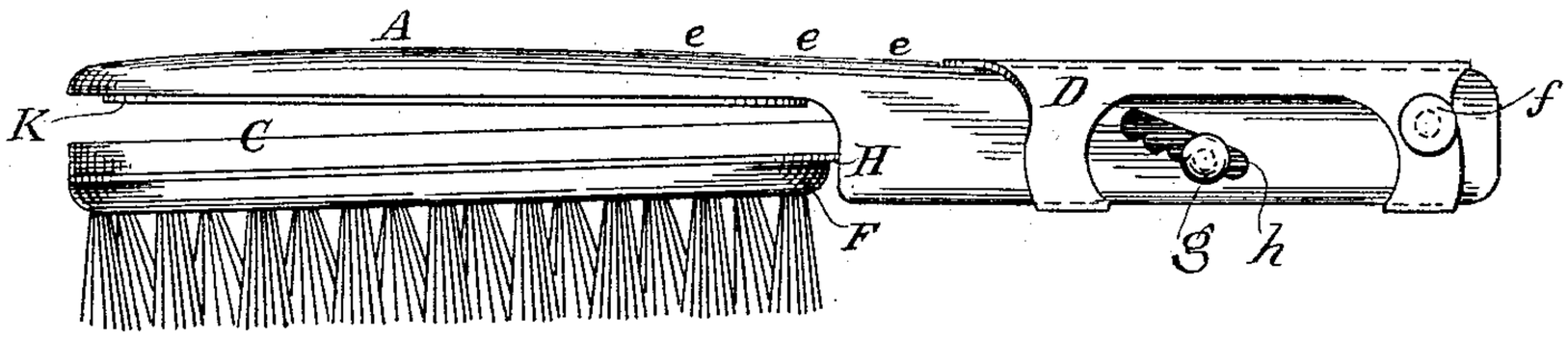


FIG. 3.

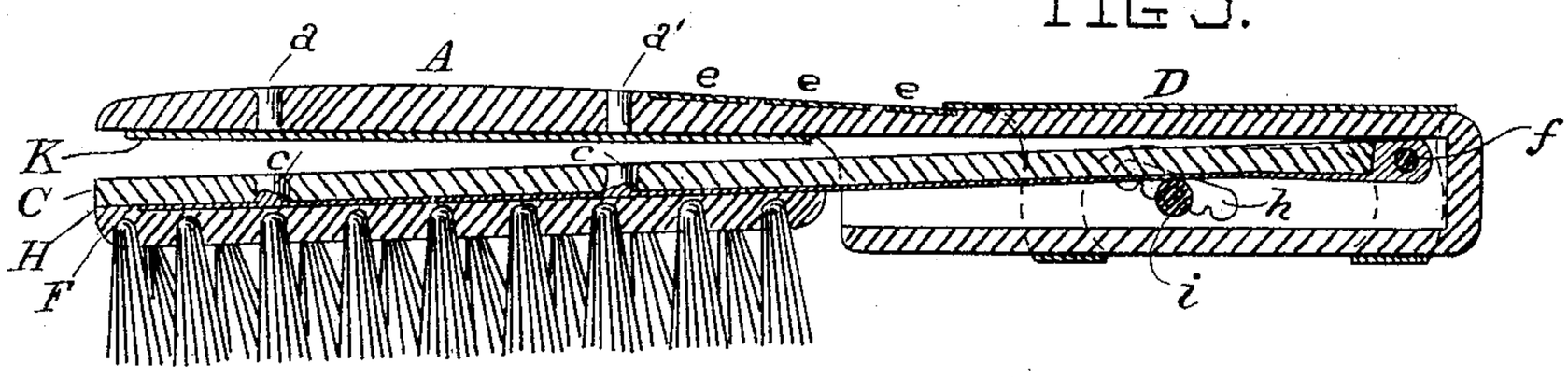


FIG. 5.

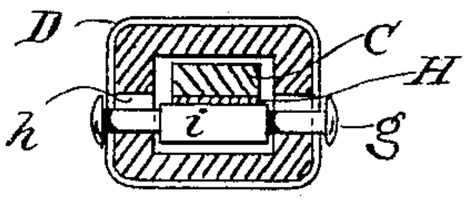


FIG. 4.

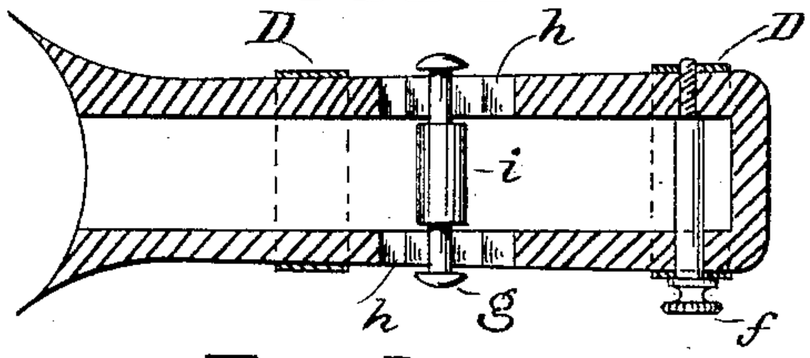
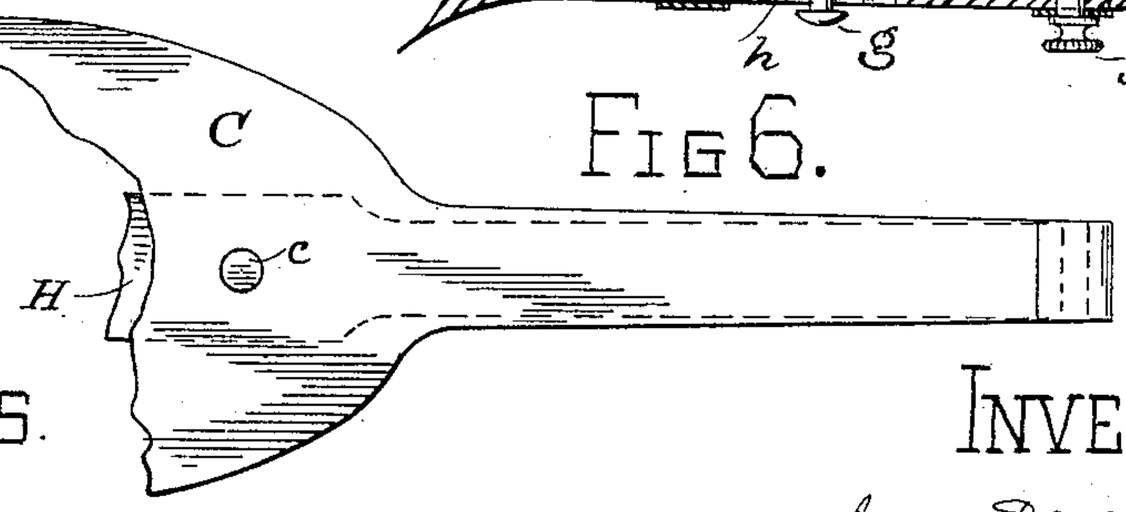


FIG. 6.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES DARIUS CULP, OF SAN FELIPE, CALIFORNIA.

ELECTRICAL BRUSH.

SPECIFICATION forming part of Letters Patent No. 336,897, dated March 2, 1886.

Application filed May 1, 1885. Serial No. 164,096. (No model.)

To all whom it may concern:

Be it known that I, JAMES DARIUS CULP, a citizen of the United States, residing at San Felipe, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Electrical Brushes, of which the following specification is a full, clear, and exact description.

This invention relates to brushes, particularly the hair or flesh brush commonly used for toilet purposes; and it consists in combining with the brush an electrical apparatus or generator adapted to be operated automatically in using the brush to give a succession of discharges. The apparatus or generator is so connected with the bristles or rubbing portion of the brush that an electric current will be discharged onto or from the hair or skin of the user.

It also consists in combining with a brush an electrical apparatus for the production and exhibition of electrical sparks, either as a matter of amusement or diversion, or as giving a visible indication of the generation of electricity.

It is preferred to employ an electrophorus as the electrical apparatus or generator, and the combination of it with the brush (as well as certain other particular combinations and arrangements of parts to be hereinafter set forth) is considered a special feature of novelty; but it is not intended to limit the invention wholly thereto, since the broad combinations can evidently be carried out with other known or suitable appliances.

In applying the electrophorus to the brush the back or stock of the latter is made in two parts hinged to each other, and the inducing-plate of insulating material and the movable induced plate of metal are attached to the respective parts. The rubbing portion of the brush is placed in electrical connection with the metallic sole or form under the inducing-plate, so that the bristles or their substitute are included in the circuit between the electrophorus and the ground and act to transmit the electricity which passes between them. The electrodes for the exhibition of sparks are placed, preferably, on the outside of the brush-back, and are included in the circuit through which the induced plate discharges.

In using the brush the induced metal plate is alternately brought in contact with the inducing-plate and sole and removed therefrom.

The following is a description of what is considered the best mode of applying the principle of the invention, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a top view of a common hair or toilet brush constructed in accordance with the invention; Fig. 2, a side view; Fig. 3, a longitudinal section; Fig. 4, a partial view in horizontal section; Fig. 5, a cross-section through the handle, and Fig. 6 a partial view in plan.

The rubbing portion of the brush consists, as shown, of bristles set or drawn in the usual way by wire into the block F, although it may be made of any other suitable materials and in other ways.

On the back of the block F, covering more or less of its surface, is a metal plate or coating, H, which forms the sole or ground conductor of the electrophorus. As shown, (see Fig. 6,) it is of less width than the brush, and (see Fig. 2) of less length, so that it may be covered at the edges, and thus not mar the appearance. It might, however, evidently be larger or smaller, if desired. It is in electrical connection with the bristles through the wire which holds the tufts in place, or otherwise.

Above the sole or conductor H is the plate C, of insulating material, (preferably of hard rubber,) which forms the inducing-plate of the electrophorus. Pins or rivets *c*, of metal, extend from the sole H to the surface of the inducing-plate C.

While the block F may be made of any common or suitable material, it is preferred to make it of insulating material, (say hard rubber,) the same as the plate C. The reason for this lies both in the neater appearance which the brush has, and also in the fact that it increases the capacity of the electrophorus, probably by mutual induction between it, the sole, and the induced plate.

The induced plate K, of metal, is fastened on the face of the back plate, A, which forms the outer part of the brush back or stock, and

has at one end a hollow handle made in one piece with the back plate, or otherwise attached thereto.

The rubbing portion of the brush, together with the inducing-plate and sole, is hinged to the induced plate and back plate by means of an extension of said inducing-plate and sole, which enters the hollow handle, and is connected therewith by the metal pin *f*, on which it is free to turn. The extent of the movement is regulated by an adjustable stop consisting of the headed pin *g* and the rubber sleeve *i*, surrounding its middle. The ends of the pin project through the inclined slots *h* in the sides of the handle, and rest in notches in the lower edges of said slots. The rubber sleeve makes contact with the extension of the sole, and serves as a cushion to reduce noise, and also as a spring to prevent the pin from escaping from the notches in which it may be placed. The higher the position of the pin *i* in the slots *h* the smaller will be the relative separation of the two parts of the brush. From the induced plate K pins or rivets *a a'*, of metal, extend to the outer surface of the brush-back. Adjacent to the pin *a'* are a series of small plates, *e*, of metal, which, with the pin *a'* and the conductor D, constitute the electrodes for the exhibition of sparks. The number of these electrodes in excess of two is not important; but it is preferred to have several arranged in a series in order to produce a succession of sparks. The conductor D (shown as a metal case cut away to form a recess for the stop-pin *i*) surrounds or is otherwise fastened to the brush-handle. It is in electrical connection through the pivot-pin *f* with the sole H of the electrophorus.

The object of making the conductor in the form shown is, that it may serve to strengthen the handle, and also to act as a contact-plate for establishing an electrical connection with the hand of the user. This connection is not essential, since there is also, when the brush is in use, a ground-connection through the bristles or rubbing part of the brush.

The two parts of the brush can be readily separated by removing the pivot-pin *f*. The inducing-plate C is then electrified by rubbing in the usual way, or by any suitable means. The parts are then put together again and the brush is ready for use. When the rubbing portion of the brush is against the hair or skin of the user, the pressure applied to the handle brings down the induced plate K. It therefore approaches and finally rests upon the plate C, which is electrified negatively, let it be supposed, (as it would be if hard rubber were the material.) In this movement the negative electricity in the plate K, being repelled by the similar charge of the inducing-plate, is discharged through one or both the pins *c* and the sole H into the body of the user, part of the charge passing by way of the bristles or rubbing portion of the brush and part by way of the pin *f* and conductor D On lifting the brush, after having rubbed it over the hair, the first movement lifts it away from the electrified inducing-plate C, whereupon the positive charge induced upon the surface of plate K by the action of said plate C is released from the latter's attraction and discharges through the pin *a'*, electrodes *e*, and conductor D, being manifested by a spark as it jumps across the intervening spaces. From the conductor D the charge passes through the ground, partly through the hand of the user, and partly through the pin *f*, sole H, and bristles. The operations of course are repeated so long as the brush is in use.

Modifications may be made in the details without departing from the spirit of the invention, and parts of the invention may be used separately.

It is believed that the construction of the electrophorus described embodies some new and patentable features; but with respect to them the right is reserved of obtaining a separate patent for the same. They are not essential to the present invention. Any electrophorus could be used with similar, although not, it is thought, with equal advantages.

Having now explained the principle of the invention and the best mode of applying the same, what I claim herein, and desire to secure by Letters Patent, is—

1. The combination of an electrical apparatus or generator with a brush having in the brush back or stock a reciprocatory part movable by the mechanical action of using the brush, for giving automatically a succession of discharges, substantially as described.

2. In combination with a brush, an electrical apparatus or generator in the back or stock of said brush, for giving a succession of discharges, and separate points or electrodes included in the discharging-circuit for causing a spark or a series of sparks when a discharge occurs, substantially as described.

3. In combination with the brush, an electrophorus, forming part of the brush-back, for giving a succession of discharges, substantially as described.

4. In combination with the brush, the electrophorus, arranged in the brush-back and having the inducing and induced plates connected with each other by a hinge or pivot, substantially as described.

5. The combination, with the bristles or rubbing portion of the brush, of the sole or ground conductor in electrical connection with said bristles or rubbing portion, the inducing-plate on said sole, and the movable induced plate, substantially as described.

6. The brush having the back in two parts hinged together, in combination with an electrical generator or electrophorus having the inducing means carried by one of said parts and the induced device by the other, substantially as described.

7. The brush having the back in two parts detachably connected and movable with refer-

ence to each other when connected, in combination with the electrophorus or electrical generator in said back, substantially as described.

8. The combination of the brush, the electrophorus in the back of said brush, and the separated points or electrodes included in the discharging-circuit of the electrophorus, substantially as described.

9. The combination, with the back or stock, of the electrophorus or electrical generator carried thereby and an exposed conductor on the brush-handle, the same being in electrical connection with the said generator, and serving to establish a ground-connection for the same through the hand of the user, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JAMES DARIUS CULP.

Witnesses:

PHILIP MAURO,

C. J. HEDRICK.