

3 Sheets—Sheet 1.

No. 428,540.

Patented May 20, 1890.



**WITNESSES:**

F. L. Ourand.  
A. L. Morsell.

*INVENTOR*

Robert E. Williams,  
by James Caggar & Co.  
Attorneys

(No Model.)

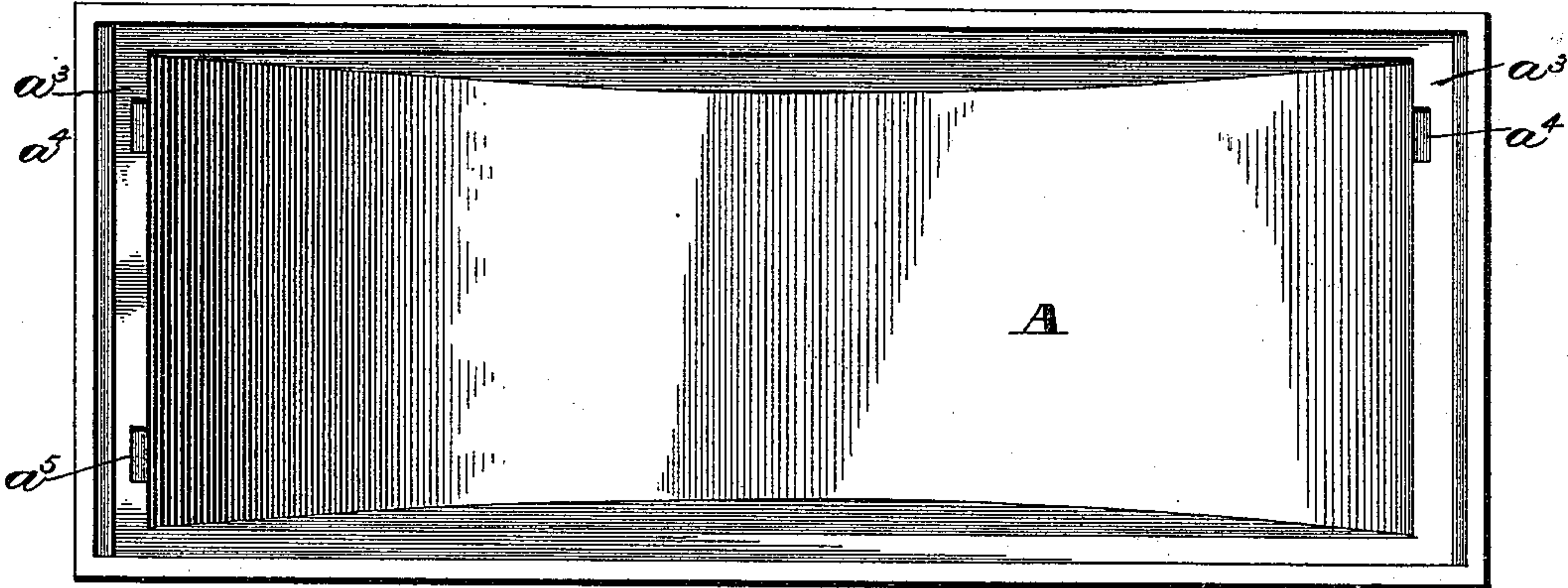
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ELECTRIC BATH BRUSH.

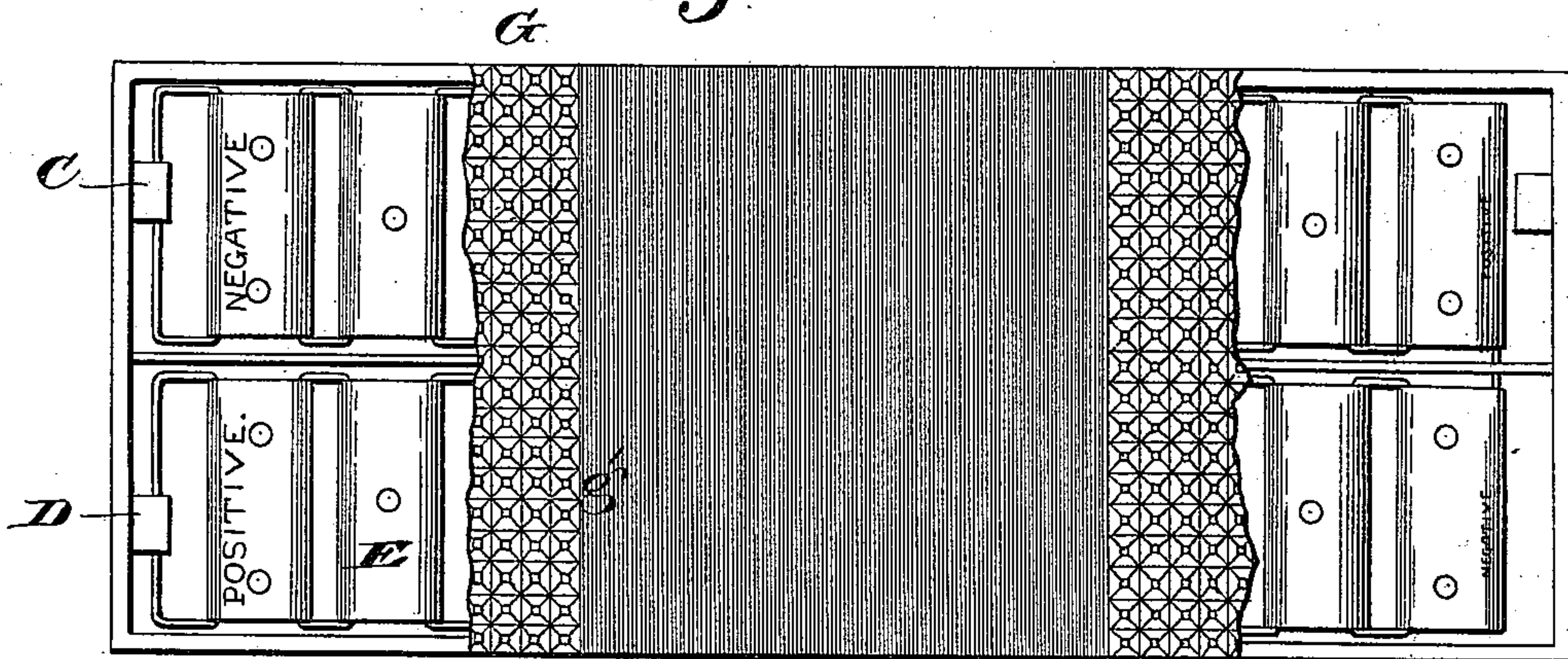
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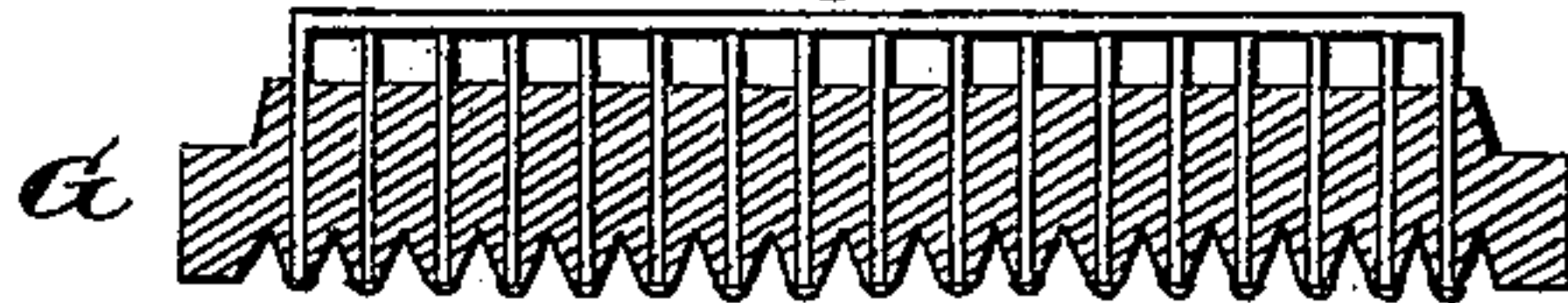
*Fig. 3.*



*Fig. 4.*



*Fig. 9*



WITNESSES:  
F. L. Ourand,  
A. L. Morsell.

INVENTOR:  
Robert E. Williams,  
by J. Louis Daggner & Co.,  
Attorneys.



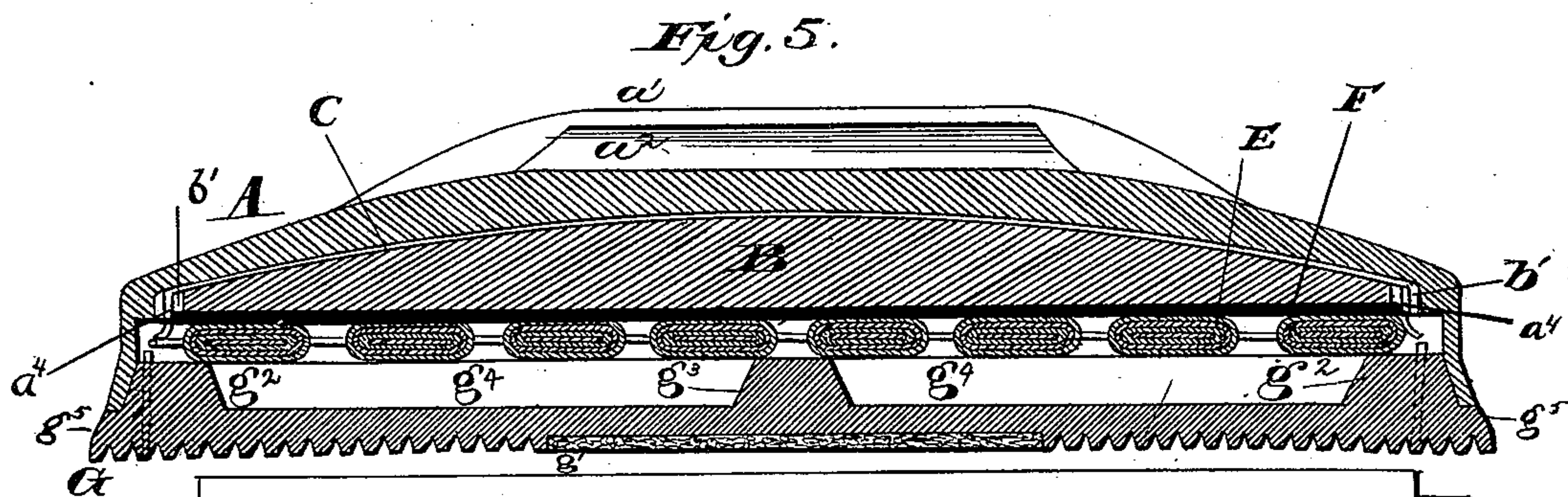
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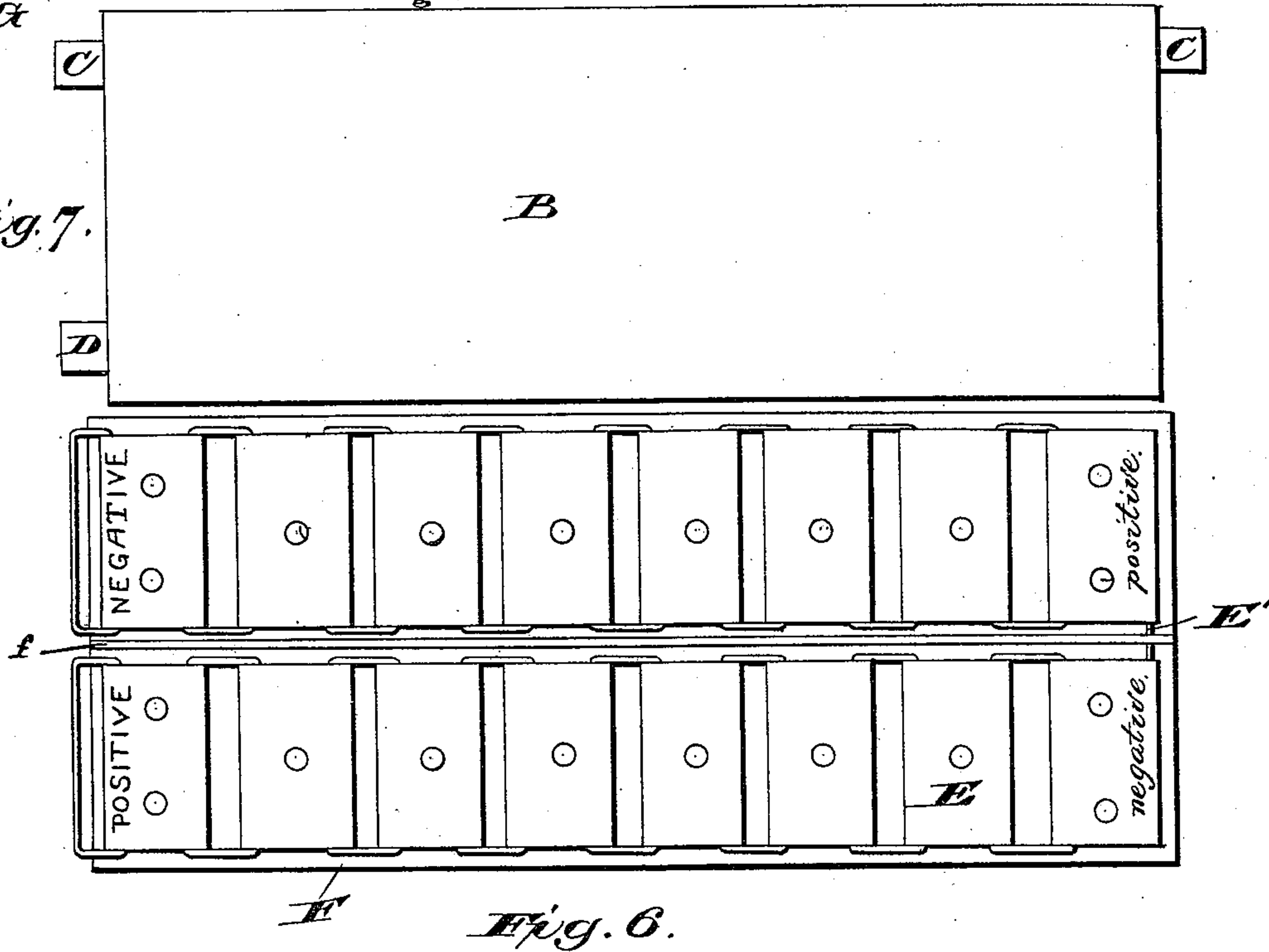
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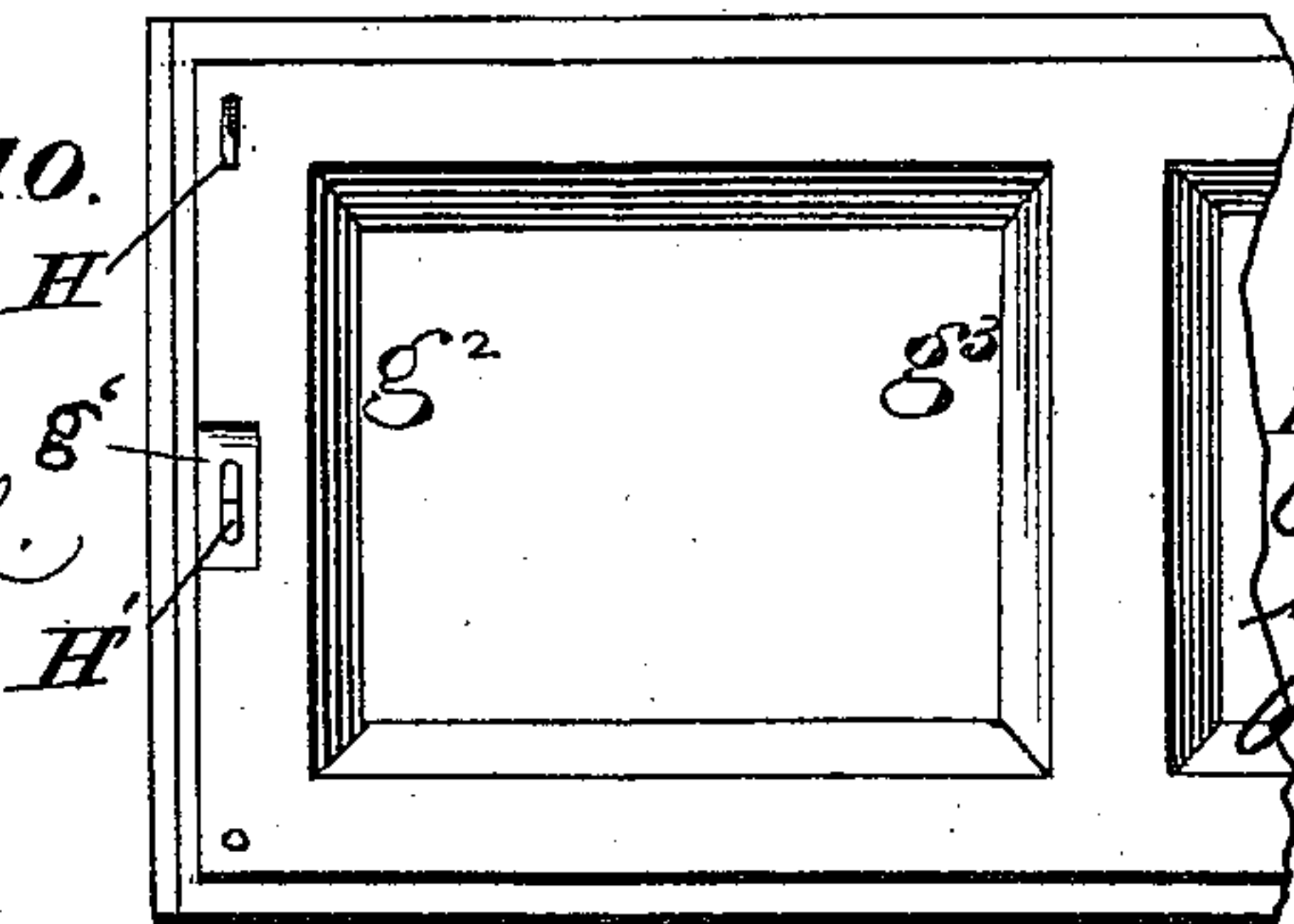


*Fig. 7.*



*Fig. 10.*

WITNESSES:  
J. L. Ourand.  
A. L. Morsell.



INVENTOR:  
Robert Williams,  
by James J. Rogers,  
Attorneys.



# UNITED STATES PATENT OFFICE.

ROBERT E. WILLIAMS, OF DALLAS, TEXAS, ASSIGNOR OF ONE-HALF TO  
WILBUR F. SHOOK, OF SAME PLACE.

## ELECTRIC BATH-BRUSH.

SPECIFICATION forming part of Letters Patent No. 428,540, dated May 20, 1890.

Application filed February 26, 1890. Serial No. 341,843. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT E. WILLIAMS, a citizen of the United States, and a resident of Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Electric Brushes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to  
10 which it appertains to make and use the same.

My invention has relation to improvements in electric brushes, designed for bath, toilet, and medical use.

The object of the invention is to provide a  
15 device of this character which shall be exceedingly effective in its operation and at the same time simple in construction, combining lightness with durability, and securing the best results medicinally to the user.

20 A further object consists in providing a construction whereby the entire brush may be dismantled, so as to obtain access to the interior when necessary, and to permit of the brush being used as an ordinary bath-brush  
25 by simply removing the batteries.

With these and other objects in view the invention consists in the improved construction and combination of parts, as hereinafter more fully pointed out and described.

30 In the accompanying drawings, Figure 1 is a perspective view of the complete device. Fig. 2 is a cross-sectional view on the line  $x$   $x$ , Fig. 1. Fig. 3 is an inverted plan of the top of the brush. Fig. 4 is a plan view of the bottom of the complete device, the corners being broken away. Fig. 5 is a longitudinal vertical section. Fig. 6 is an inverted plan of the battery, with its rubber cloth cover, showing the latter provided with a central  
40 ridge, which separates the two sections of the battery. Fig. 7 is a plan view of the under side of the wooden filling. Fig. 8 is a plan of the upper side of the same. Fig. 9 is a view of a modification, showing the brush made with bristles. Fig. 8<sup>a</sup> is a sectional  
45 view, in inverted plan, of one end of the brush. Fig. 8<sup>b</sup> is a similar view of the opposite end. Fig. 10 is a plan view of a section of the brush. Fig. 11 is a cross-sectional view on  
50 line  $y$   $y$ , Fig. 8<sup>a</sup>; and Fig. 12 is a cross-sectional view on the line  $z$   $z$ , Fig. 8<sup>b</sup>.

Like letters of reference refer to like parts throughout the several views.

Referring to the drawings, the letter A indicates the top of the brush, composed of  
55 hard rubber or any other suitable material—as, for instance, metal lined with a non-conducting substance. This top portion is provided with longitudinal side cavities  $a$   $a$ , which afford convenient hand-holds, and is  
60 also provided with inwardly-extending flanges  $a'$   $a'$ , forming spaces  $a^2$   $a^2$  between the under side of the same and the top portion.

From Fig. 3 of the drawings it will be seen that the top of the brush has its under side  
65 hollowed or recessed, so as to lessen the weight and at the same time economize material. This recessed portion is provided with side and end meeting flanges, which form a rectangular ridge  $a^3$ .  
70

A filling-block B is adapted to be fitted in the upper part of the hollowed-out portion of the top A, so as to present its lower surface flush with the rectangular ridge of said top. The upper side of this block is convex  
75 or rounded, so as to fit snugly in the concavity of the recess, while its side edges are slightly beveled, as illustrated at  $b$   $b$ , so as to register with corresponding bevels of the sides of the rectangular ridge  $a^3$ . These registering bevels of course permit of the ready  
80 removal of the filling-block when desired. The bottom of the filling-block on one side is recessed longitudinally at  $b^2$  to receive a strap of white metal C, the ends of said strap  
85 fitting into notches  $a^4$  in opposite ends of the rectangular ridge  $a^3$  and corresponding notches  $b'$  in the ends of the filling-block and extending downwardly at right angles to the countersunk portion thereof. One end also  
90 of the filling-block is provided with a copper strap D, which, however, merely extends along the upper side of the block in a countersunk portion thereof for a short distance, and its outer end is bent at right angles and fits  
95 into a notch  $a^5$  in the end of the rectangular ridge and a registering notch  $b^3$  in the end of the filling-block.

The letter E indicates the battery, and F a rubber cover or top therefor, said cover occupying a position intermediate the battery  
100 and the under side of the wooden filling, and



provided with a central ridge  $f$ , which serves to separate the two sides of the battery. It will be seen, however, that the belt consists of two side sections separated by the central ridge of the rubber-cloth cover. At one end these side sections are connected by a transverse copper rod  $E'$ , which passes through a perforation in said central ridge, thus making a continuous circuit. I have indicated the respective ends of the two side sections thus connected by printing on one in small letters the word "positive" and on the end plate of the other in small letters the word "negative."

The opposite end plates of the batteries, indicated one by the word "negative" in capitals and the other "positive," likewise in capitals, are not connected, but simply have the bails or loops projecting therefrom, the loop from the positive plate fitting over the end of the copper strap  $D$  and the loop from the negative plate fitting over the white-metal strap  $C$ , as clearly seen by reference to the broken-away portion of Fig. 4 of the drawings.

The letter  $G$  indicates the brush proper or lower portion. This brush is made, preferably, of soft rubber corrugated upon its outer face and slightly curved, so as to allow the electrodes hereinafter referred to to come in contact with the body. The corrugations or teeth  $g$  (which of course may be made round instead of as shown in the drawings) are broken away at the middle, leaving a square space  $g'$ , which may be filled with a suitable felt material. This is intended to hold water, like a sponge, thus enabling a person to take a good bath, even though but a pan of water is used, thus presenting a great advantage over the ordinary bath-brush.

The upper face of the brush proper is provided with an upwardly-extending rectangular ridge  $g^2$ , connected by a transverse central ridge  $g^3$ , thus forming depressions  $g^4$   $g^4$ , which have the effect of materially lessening the weight. The rectangular ridge just referred to is so arranged as to leave the side edges and ends of the brush or lower portion projecting outwardly therefrom, the latter or ends projecting a greater distance than the former, which edges—that is, the side edges—as will be seen, are flush with the under edges of the top portion  $A$  of the brush. By thus having the end edges projecting, as described, and shown at  $g^5$   $g^5$ , I form convenient hand-holds for removing the brush when necessary. The brush of course, by reason of its elastic nature, will remain firmly within the top until pulled out of position therein. It will also be noticed that the ends of this rectangular ridge are beveled, in order to register with the beveled ends of the top of the brush, so as to permit of the easy withdrawal of said brush.

Suitably arranged at each end of the brush are electrodes  $H$   $H'$  and  $H^2$   $H^3$ . Electrode  $H$  extends transversely over a portion of the lower corrugated face of the brush, and its

outer end is bent at right angles and extends up through the brush, so as to come in contact with the copper strap  $D$ , which holds the positive end of the battery, as shown in Fig. 5 of the drawings. The inner end of this electrode is also bent at right angles and passes up through the rubber brush into a notch  $g^6$  in the end of the rectangular ridge, where it connects with the upwardly-bent end of the corresponding electrode  $H'$ , which latter is arranged in a similar manner to its companion  $H$ , excepting that the outer end is simply bent down and embedded in the rubber, and not extending through so as to present a point of contact.

The electrodes  $H^2$  and  $H^3$  are entirely similar to those just described, having their inner ends bent at right angles and extending through the brush into a notch  $g^7$  in the opposite end of the rectangular ridge, where they connect. Electrode  $H^3$  in this case, which is diagonally opposite to electrode  $H$ , is the one which has its outer end bent downwardly at right angles, passing entirely through the rubber brush, and connecting with the white-metal strap  $C$  at the positive end of the battery. It is of course obvious that, if desired, these opposite electrodes  $H$ ,  $H'$ ,  $H^2$ , and  $H^3$ , respectively, may be made in a single piece; but this would be disadvantageous, inasmuch as it would have a tendency to stiffen the ends of the brush and prevent said ends from being bent transversely, so as to conform to the shape of the portion of the body to which the brush may be applied. By dividing the electrodes, however, and connecting the inner ends within the notches  $g^6$  and  $g^7$  the flexibility of the brush is not interfered with, and its free bending at its center may be consequently readily accomplished.

It will thus be readily seen that when a current of electricity is induced in the battery the positive end thereof will cause the positive electric current to flow from said end to the electrode  $H$ , and from thence to its companion electrode  $H'$ , the complete electrical connection being attained by means of the copper strap  $D$  and the bent contacting end of the electrode  $H$ .

The electrical current in the negative end of the battery is caused to flow from said end to the white-metal strap  $C$  through the medium of the connecting link or bail, and by this strap is conducted to the opposite end thereof, which end, as will be clearly seen, connects with the contacting bent end of the electrode  $H^3$ , which latter conducts the current to its companion electrode  $H^2$ . In this manner the opposite ends of the brush are positively and negatively electrically energized.

As shown in Fig. 9 of the drawings, I have illustrated the brush as provided with bristles, which of course may be employed, if preferred, and consists of fine wires passing through the center of the corrugations.

From the foregoing description the operation, construction, and advantages of my im-



proved electric brush will be readily understood without requiring further explanation.

What I claim, and desire to secure by Letters Patent of the United States, is—

5 1. In a bath-brush, the combination, with a lower flexible plate having its under side corrugated, of a top portion having a concaved under side in which the flexible plate is fitted and provided with the side hand-holds and  
10 the inwardly-extending flanges, substantially as set forth.

2. In a bath-brush, the combination, with a lower flexible plate having its under side corrugated and its upper side provided with a  
15 rectangular ridge somewhat removed from the edges of the plate and connected by a transverse ridge, the ends of said plate being extended a greater distance than the sides and beveled, of a top portion having its under side  
20 hollowed or recessed, the edges thereof resting upon the extended sides and ends of the lower flexible plate, and the end edges being beveled to register with the beveled ends of the lower plate, substantially as set forth.

25 3. In an electric brush, the combination of a top or upper portion having its under side hollowed or recessed, a galvanic battery consisting of side sections fitted in said recessed portion, a cover for said battery, having a central ridge separating the side sections, a copper  
30 rod connecting the positive and negative ends of the battery, a flexible brush fitting in the recess of the upper portion and bearing against the battery, electrodes arranged at  
35 opposite ends of the brush, and means for connecting said electrodes with the ends of the belt, designated as the "positive" and "negative" ends, substantially as set forth.

4. In an electric brush, the combination of  
40 a top or upper portion having its under side hollowed or recessed, a filling-block fitted in the upper portion of said recess, a white-metal strap countersunk in the upper face of said block, extending the length thereof and  
45 having its ends bent downwardly, a copper strap secured only at one end of the upper surface of the block and having its end bent downwardly, a galvanic battery consisting of side sections fitted in the recessed portion,  
50 said side sections having loops or bails extending from corresponding ends, a cover for said battery, having a central ridge, a copper rod connecting the positive and negative ends of the battery, a flexible brush fitting  
55 in the recess of the upper portion, electrodes

arranged at opposite ends of the brush, and each set thereof connected at its inner ends upon the upper face of the brush, and one of said electrodes of each set having its outer end bent at right angles and protruding  
60 through the brush, one contacting with the positive pole of the battery and the other with the negative pole thereof, substantially as set forth.

5. In an electric brush, the combination of  
65 a top or upper portion having its under side provided with a concaved recess, said recessed portion provided with a rectangular ridge, the side edges of said ridge being beveled, a filling-block having its upper side convex to  
70 register with the concavity of the upper portion, and its lower side flat and flush with the rectangular ridge, the side edges of the block being beveled to register with the beveled side edges of said ridge, a white-metal strap  
75 countersunk in the upper face of the filling-block, extending the length thereof and having its ends bent downwardly and passing into registering notches in the ends of the  
80 filling-block and opposite ends of the rectangular ridge, a copper strap secured only at one end of the upper surface of the block and having its ends bent downwardly and passing into registering notches in the end of  
85 the block and the corresponding end of the rectangular ridge, a galvanic battery consisting of side sections, said side sections having loops or bails extending from corresponding ends and engaging the downwardly-bent ends  
90 of the white-metal strap and the bent end of the copper strap, a copper rod connecting the positive and negative ends of the battery, a flexible brush, electrodes arranged at opposite ends of the brush, and means for connect-  
95 ing said electrodes with the ends of the battery, designated as the "positive" and "negative" ends, substantially as set forth.

6. The combination, with a bath-brush having its under side corrugated and provided with a depression, of felt material embedded  
100 in said depressed portion, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ROBERT E. WILLIAMS.

Witnesses:

F. L. RANDLE,  
I. G. RANDLE.