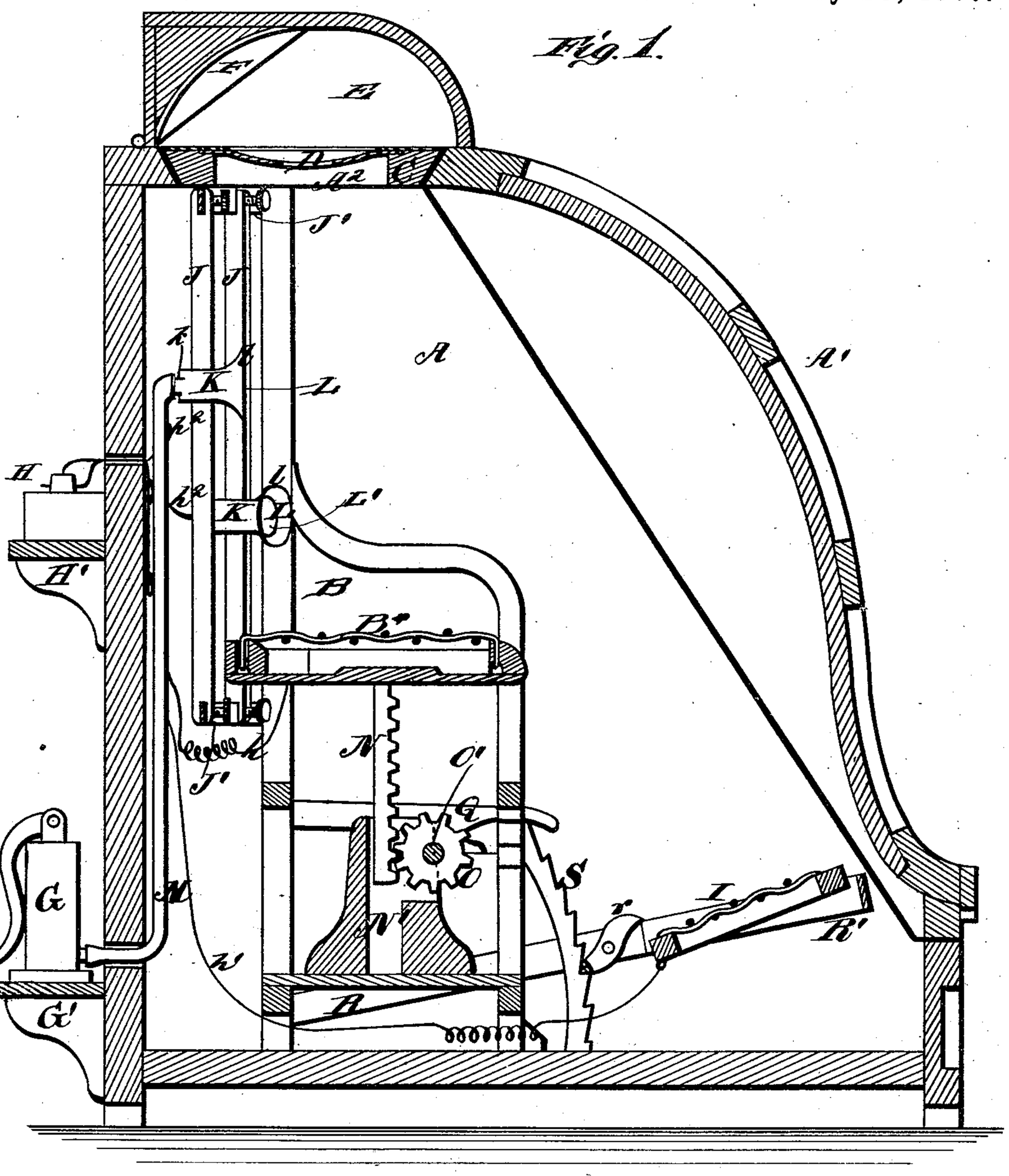
2 Sheets—Sheet 1.

W. D. HUFFMAN & S. W. HUFF.

PNEUMO ELECTRIC BATH.

No. 191,432. Patented May 29, 1877.

Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 2.

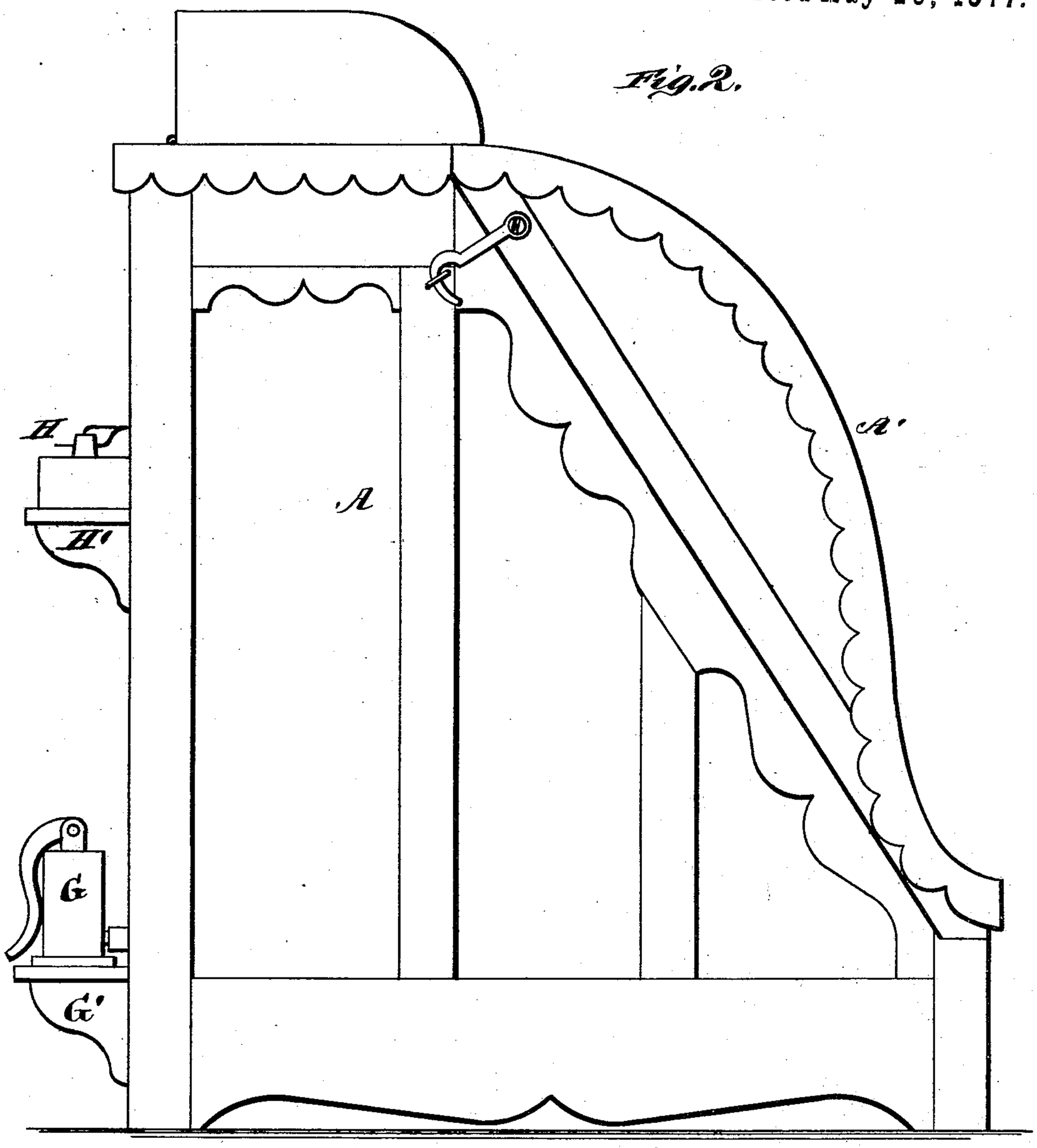

Fig. 3.

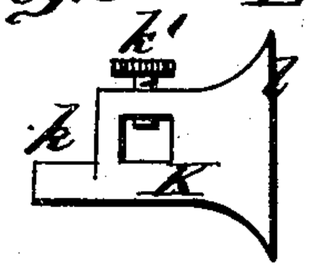

Fig. 4.

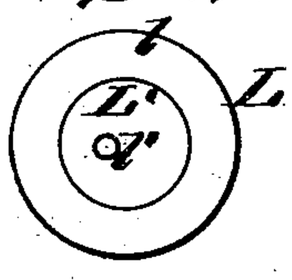

Fig. 5.

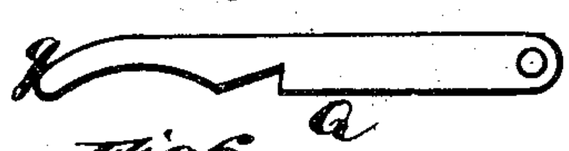

Fig. 6.

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IMPROVEMENT IN PNEUMO-ELECTRIC BATHS.

Specification forming part of Letters Patent No. **191,432,** dated May 29, 1877; application filed March 17, 1877.

To all whom it may concern:

Be it known that we, WILLIAM D. HUFFMAN and SANFORD W. HUFF, of Sigourney, in the county of Keokuk and State of Iowa, have invented a new and valuable Improvement in Pneumo-Electric Baths; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a central vertical section of our electric bath, and Fig. 2 is a side view of the same. Figs. 3, 4, 5, and 6 are detail views thereof.

The object of this invention is to provide a convenient apparatus for the application of the therapeutical effects of electricity, vapor, and vacuum. To accomplish this object we employ a vapor-bath with electrical and air-exhausting attachments and other appurtenances, substantially as hereinafter set forth.

In the accompanying drawings, A designates the casing of our vapor-bath, the front of which is provided with a large door or removable part, A^1, through which access is had to the patient's chair B, which is placed within said casing. The patient's head passes up through an opening, A^2, in the top of said casing, the sides of said opening being beveled to support a correspondingly-beveled square frame, C, the central opening of which is provided with a centrally-perforated diaphragm, D, which sits close about the patient's neck and prevents the escape of air around the same. E designates a head piece or cover, hinged to the top of said casing, and provided on the inner side with an inclined cushion, F, which serves as a rest for the patient's head while undergoing treatment. When the apparatus is not in use said head-piece E is turned down upon the top of said casing and becomes a mere cover.

To the back of said casing we attach an air-pump, G, resting on shelf or bracket G′, and a galvanic battery, H, resting on bracket H′. Said battery is connected by wires *h h′*, running from its opposite poles, to wire seat B′ of chair B, and to wire foot-rest I, so that the patient's body completes the circuit. The back of said chair B is provided with vertical laterally-movable bars J, which are held at top and bottom to curved cross-plates J′ J′ by clamping-screws or any equivalent fastening devices. On these bars we clamp, by means of screws, prismatically-perforated blocks K, which expand in front, so as to form cups L. Said cups consist each of a flaring non-conducting rim, *l*, and a central metallic disk or electrode, L′, perforated at *l′*, as shown in detail in Fig. 4. From said electrode a passage extends rearward through non-conducting block K, and a cylindrical prolongation, *k*, of the same, which prolongation serves for the attachment of a flexible tube, M, which extends to air-pump G. Each cup L has one of these tubes. From said electrodes wires h^2 extend to battery H through said non-conducting blocks K. By means of set-screws, one of which (marked *k′*) is shown in Fig. 3, said cups may be clamped at any point upon said bars J, so as to be applied to any part of the patient's back, the adjustment of the individual cups being independent of one another. By means of the above-described devices the curative effects of electricity and vacuum are applied, in combination, through each of the cups. One or more of them may be disconnected from the air-pump, at will, by slipping its tube M off prolongation *k*. The said air-pump will then partly exhaust the air from the interior of said casing A.

Seat B′ may be adjusted upward or downward by means of a vertical rack, N, which supports said seat, and a pinion, O, gearing therewith. Said rack works up and down in a hollow block or pedestal, N′. Said pinion is carried by a shaft, O′, which is journaled in bearings fixed to the side rungs of chair B, and turned by hand-crank P. Q designates a pawl pivoted to the side of chair B, which drops into engagement with a ratchet, P′, on said shaft O′, and locks it when adjusted, as above described. This pawl will rise automatically out of adjustment when said shaft O′ is turned, so as to adjust the said seat upward, but must be raised by hand to allow said seat to descend. The front end of said

pawl is shaped into a handle, *q*, and works up and down in a vertical guide or staple, attached to the side of said chair.

Foot-rest I is pivoted in the bent front part R′ of a metal frame, R, which is pivoted at its rear ends to the rear legs of chair B, and provided on its inside with two pawls, *r r*, which are adapted to engage with fixed segmental racks S, secured to said chair. Its pivoted attachment enables said frame to be raised and lowered at will, and it may be locked in any position by means of said pawls or dogs *r r*, and said racks S.

The above-described adjustments of said seat and foot-rest enable said seat B to conform to persons of different sizes, so that all may be comfortably seated.

Vapor may be introduced into the casing or cabinet A in any convenient manner, and the rarefaction produced by the action of the exhausting-pump will prevent the patient from being injured or incommoded by an excess of heat. The exhaust-cups hereinbefore described may all be used together, or only any one or more of them. By means of the devices hereinbefore described the blood is drawn to the surface of the patient's body, either wholly or in any part or parts, and under such circumstances the electricity is applied to said surface, as stated.

The combined exhaust-cups and electrodes may be of any convenient shape, so as to fit any part of the patient's body to which it is designed to apply them. More than one battery may be used, and also more than one air-pump. Various other changes may be made without departing from the spirit of our invention.

What we claim as new, and desire to secure by Letters Patent, is—

1. In combination with a battery and an air-exhausting apparatus, the chair B, laterally-movable bars J, curved cross-plates J′, perforated blocks K, adjustable on said bars, and provided with cups L, having non-conducting rims *l*, and the central perforated electrode L′ and air-tube M, substantially as and for the purpose set forth.

2. The perforated block K having an extension, *k*, and cups L with non-conducting rims *l*, and central perforated electrode L′, substantially as and for the purpose set forth.

3. A casing or cabinet for a vapor-bath, provided at the top with a detachable frame, having a perforated flexible diaphragm, in combination with a hinged head-rest, substantially as and for the purpose set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

WILLIAM DAVIS HUFFMAN.
SANFORD WILLIAMS HUFF.

Witnesses for W. D. HUFFMAN:
H. H. HUBBARD,
A. J. FISHBACK.

Witnesses for S. W. HUFF:
JOS. THOMPSON,
R. L. DONNELL.