F. J. TONGUE.

Galvanic Pile for Medical Purposes.

No. 209,632. Patented Nov. 5, 1878.

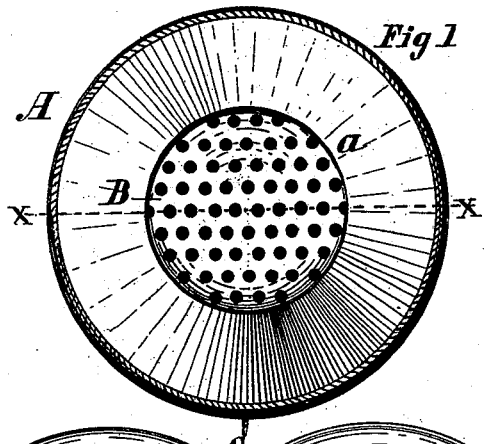

Fig 1

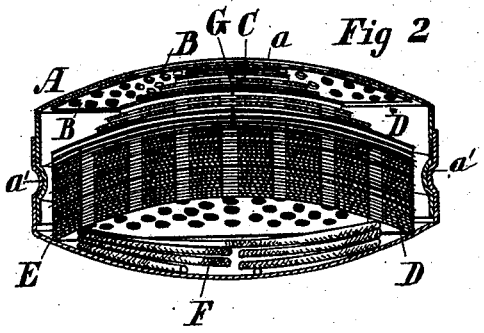

Fig 2

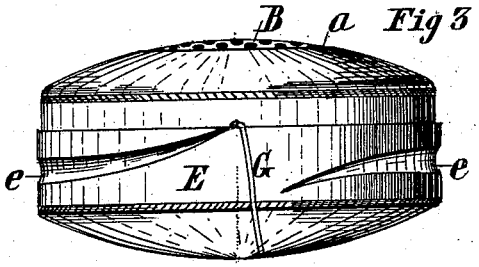

Fig 3

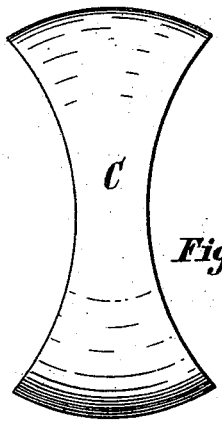

Fig 5

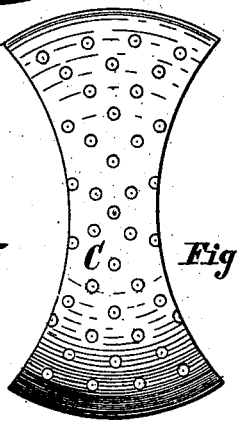

Fig 4

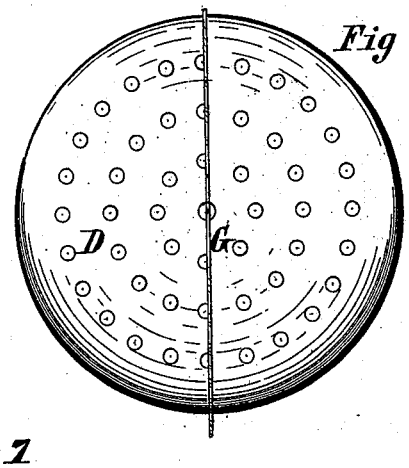

Fig 6

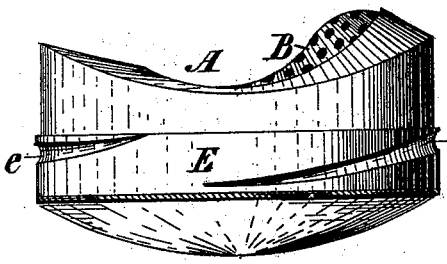

Fig 7

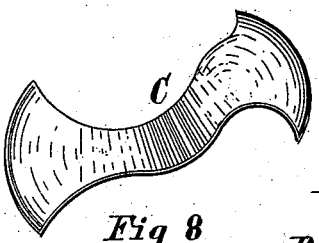

Fig 8

Witnesses

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FRANCES J. TONGUE, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GALVANIC PILES FOR MEDICAL PURPOSES.

Specification forming part of Letters Patent No. **209,632**, dated November 5, 1878; application filed September 13, 1878.

To all whom it may concern:

Be it known that I, FRANCES J. TONGUE, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Galvanic Piles for Medical Purposes, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of a pad or pile embodying my improvement; Fig. 2, a vertical section of the same, taken on the line *x x*, Fig. 1; Fig. 3, a side elevation of the same; Fig. 4, a plan view of one of the lower plates composing the pile; Fig. 5, a similar view of the under plate; Fig. 6, a plan view of one of the circular plates composing the upper section of the pile; Fig. 7, a side elevation of a pad adapted in form for application to a special part of the body, and Fig. 8 a perspective view of one of the plates composing the lower section of the same.

The use of electricity as a remedial agent is now well known and quite generally practiced. Many devices and appliances have been devised to apply electricity in one form or another to the human body for this purpose, among which may be mentioned galvanic pads of different shapes and construction.

My invention relates to improvements in the last-mentioned device; and consists in various special devices and combinations of devices employed in making up the galvanic pile and pad, all of which will be hereinafter more fully described, and distinctly pointed out in the claims.

In the drawings, A represents a case of sheet metal, and preferably of cylindrical form. In the bottom of this case an aperture, *a*, is cut, and upon the outer rim or edge a spiral groove or screw-thread, *a'*, is provided. This case is intended to hold the galvanic pile, and the plates composing the same are adapted to fit therein.

The bottom of the case is preferably dish-shaped, and first within it is placed a cylindrical plate, B, fitting the bottom of the case. Above this plate B is placed a series of plates, C, similar to the plate B, except that they are cut away on opposite sides, so as to give them the form shown in Figs. 4 and 5 of the drawings. The width of these plates is gradually increased with each successive plate until finally a full circular disk like the plate B is again reached. A succession of disk-shaped plates, D, follows, arranged above the plates C, as shown in Fig. 2 of the drawings.

In the drawings I have shown a pile composed of nine of the smaller or cut-away plates and twenty-four circular plates; but, of course, I do not limit my invention to these or any other particular numbers of the respective plates, though the pile shown in the drawings is sufficient to produce a strong galvanic current.

It will be understood, of course, that the plates composing the pile are alternately zinc and copper, as in an ordinary galvanic pile. The case may be either copper or zinc, and is provided with a cover, E, which also has a screw-groove, *e*, by means of which it is securely held to the case when turned upon the latter.

The opening *a* in the bottom of the case is for the purpose of exposing a portion of the perforated plate B at the place where the pad is applied to the person, and is necessary when this plate B is used. This plate may, however, be dispensed with, in which case the bottom must be perforated, and the aperture *a* is then not required. I prefer, however, to use the perforated plate B, as this construction renders the cleansing of the device more convenient.

In the drawings the plates, or some of them at least, are shown perforated. This construction may be employed or not, as may be desired, and the plates may be all perforated or a part of them perforated. I prefer, however, to construct the pile with perforated plates, as I think a better circulation of the current is then obtained. At the back of the plates, and between them and the cover, a spring, F, is arranged, which assists in holding the plates in place, although it is not indispensable. I also place between the plates, for the first ten or twelve of the series, a thread or a copper wire, G, though the pile may be used without either. The plates are to be made of different shapes, so as to adapt the pad for application to different parts of the body; but they must always incline or slope away from the surface to which they are to be applied.

In Fig. 7 of the drawings a pad is shown shaped on the lower side for application to the eye, the cut-away plates C being bent for this purpose in the form shown in Fig. 8 of the drawings. This is a form of the pad which I have extensively used in the treatment of various affections of the eye, and with extremely satisfactory results, and I have devised this improved pad for this special application, although it will be readily seen that it is not limited to it alone.

The pile is charged in any usual way. I use a solution of salt and water, with which I wet the plates, and then shake them as dry as possible, when they are put in the case and fastened by the cover, which may be secured by a screw-fastening, as desired, or by any other suitable device. The pile thus prepared will operate to generate a current from four to six hours, the strength of which is dependent upon the number of plates employed, and whether they are perforated or not. The graduation of the plates described above concentrates the current to the part to which the pad is directly applied.

In applying the pad to the body I prefer to cover it with thin muslin or other similar material to prevent the breaking of the skin.

The plates may be cleaned by separating the copper from the zinc, when the former are allowed to stand in a solution of salt-water and very strong acid-vinegar, in about equal parts, until they are perfectly bright, when they should be taken out, washed in clear water, and dried over a hot fire, so as to dry them quickly and without discoloration.

The zinc plates are cleaned by pouring boiling water over them, in which they are permitted to remain from three to five minutes, when they are to be taken out and dried the same as the copper plates. The case with a removable cover permits the removal and replacement of the plates with great facility, so that there is no difficulty in keeping the instrument dry and clean, ready for efficient action whenever required.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a galvanic pad for medical application, the series of cut-away plates C, gradually increasing in size, in combination with the upper series of disk-plates, D, substantially as described.

2. In a galvanic pad, the case A, provided with a removable cover, in combination with the plates composing the pile, arranged loosely within the former, and thereby held in place to form the pile, substantially as described.

3. The case A, provided with an aperture, *a*, in its bottom, in combination with the perforated disk-plate B, plates C and D, and cover E, substantially as described.

4. The case A, in combination with the plates C and D, composing the pile, the spring F, and cover E, secured to the case by a detachable fastening, substantially as described.

FRANCES J. TONGUE.

Witnesses:
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W. C. CORLIES.