

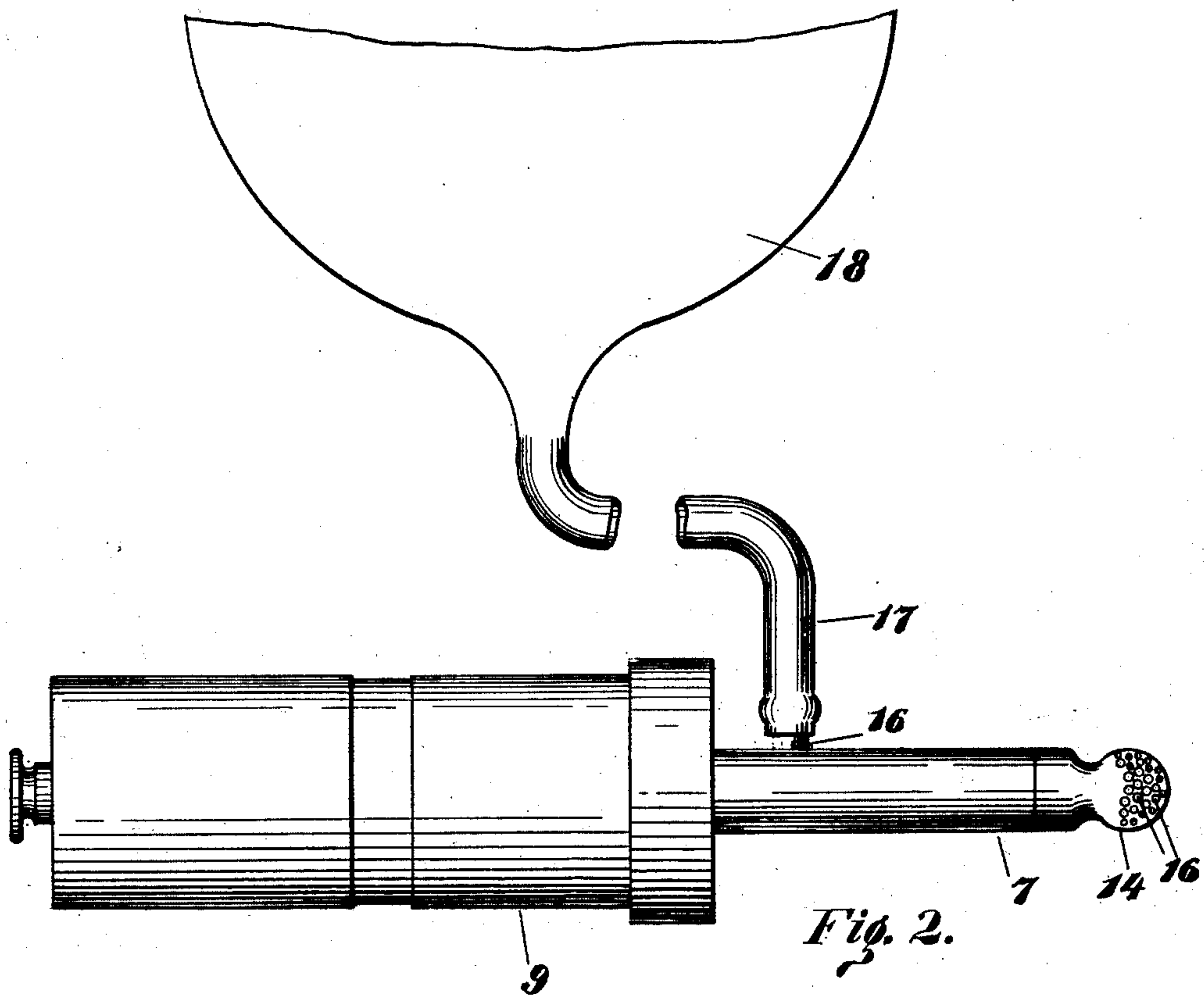
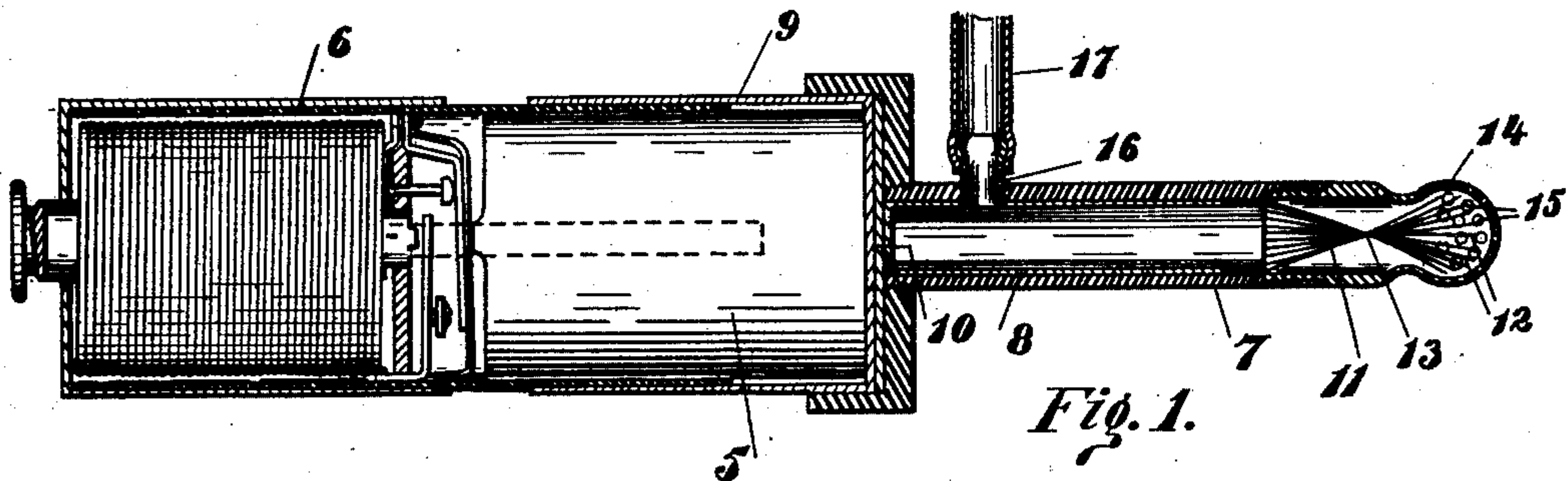
No. 717,035.

Patented Dec. 30, 1902.

I. E. SHAFFER.
THERAPEUTIC ELECTRICAL APPARATUS.

(Application filed Mar. 17, 1902.)

(No Model.)



WITNESSES:

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THERAPEUTIC ELECTRICAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 717,035, dated December 30, 1902.

Application filed March 17, 1902. Serial No. 98,618. (No model.)

To all whom it may concern:

Be it known that I, IRA E. SHAFFER, a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented a new and useful Therapeutic Electrical Apparatus, of which the following is a specification.

This invention relates to apparatus for applying the electric current medicinally by means of a flowing liquid charged with electricity and is designed as an improvement on my invention as disclosed in my application for Letters Patent of the United States filed November 27, 1901, Serial No. 83,944.

The object of my present invention is to provide for the more certain charging of the flowing liquid with the electric current.

I have found in practice that where water is flowing rapidly through a tube charged with electricity very little of the current will be imparted to the flowing liquid unless the liquid is broken in its passage and somewhat retarded. I find, further, that the charging of the flowing liquid is materially aided by providing a number of metallic points within the flowing liquid, so that the current may be discharged through the several parts of the flowing stream.

I accomplish the object of my invention by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a view of a longitudinal vertical section of the nozzle of a syringe constructed according to my invention and a side view of a battery and induction-coil applied thereto, the casing being in section; and Fig. 2 is a side view of the same and of a portion of the reservoir.

In the accompanying drawings similar numerals of reference refer to the same parts in each of the views, and I provide a battery 5, induction-coil 6, both of which may be conveniently arranged and disposed according to the uses to which the instrument is to be applied. The nozzle 7 is provided with an interior tube 8, composed of a conducting material, which is in contact with one of the terminals 9, as at 10, or in any convenient manner. Connected with the outer end of the tube 8 are a plurality of wires 11, the ends of which are spread apart, as shown at 12, and which preferably cross each other, as in-

dictated at 13. The wires are preferably so proportioned in length that the ends will extend within the spherical tip 14, having the discharge - orifices 15, and are preferably spread out so as to nearly fill the said tip.

I provide a short tube 16, as in my other application, with which may be connected the flexible tube 17 of a reservoir 18.

The operation is as follows: The liquid flows from the reservoir 18 through the tube 17 into the nozzle 7, passing through the tube 8. As the wires 11 are directed across the channel within the nozzle the water must pass through the mesh of wires and is retarded in its flow, as will be readily understood, and as it passes into the tip before being discharged through the orifices 15 the ends of the wires 11 will lie within the flowing liquid, and as they are pointing in the direction of the flowing liquid electricity will be discharged into the liquid without much resistance, as will be understood, and the full benefit of the same will be derived by the portions of the body with which the several streams come in contact.

It will be understood that I do not limit myself to the exact arrangement and construction of parts here disclosed, nor do I confine myself to a tube in connection with the wires, nor to the shape of the tip, nor to the kind or number of batteries I may use, nor do I limit myself to the use of wires.

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

1. A therapeutic electrical apparatus comprising means to convey a liquid to the part to be treated, and a plurality of metallic retarders mounted in the channel of the flowing liquid.

2. A therapeutic electrical apparatus comprising a syringe, a plurality of metallic retarders mounted in the nozzle thereof, said retarders being in electrical connection with a battery, as and for the purpose set forth.

3. A therapeutic electrical apparatus comprising a syringe, a plurality of wires crossing each other within the nozzle thereof, said wires being in electrical connection with a battery, and having one end free within said nozzle, as and for the purpose set forth.

4. A therapeutic electrical apparatus com-

prising a syringe, and a plurality of wires
crossing each other within the nozzle, one
end of said wires being in electrical connec-
tion with a battery, and the other ends being
5 free and projecting adjacent to the discharge-
orifices of the nozzle, as and for the purpose
set forth.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

IRA E. SHAFFER.

Witnesses:

GRAHAM MCADAM,
E. L. LIVINGSTONE.