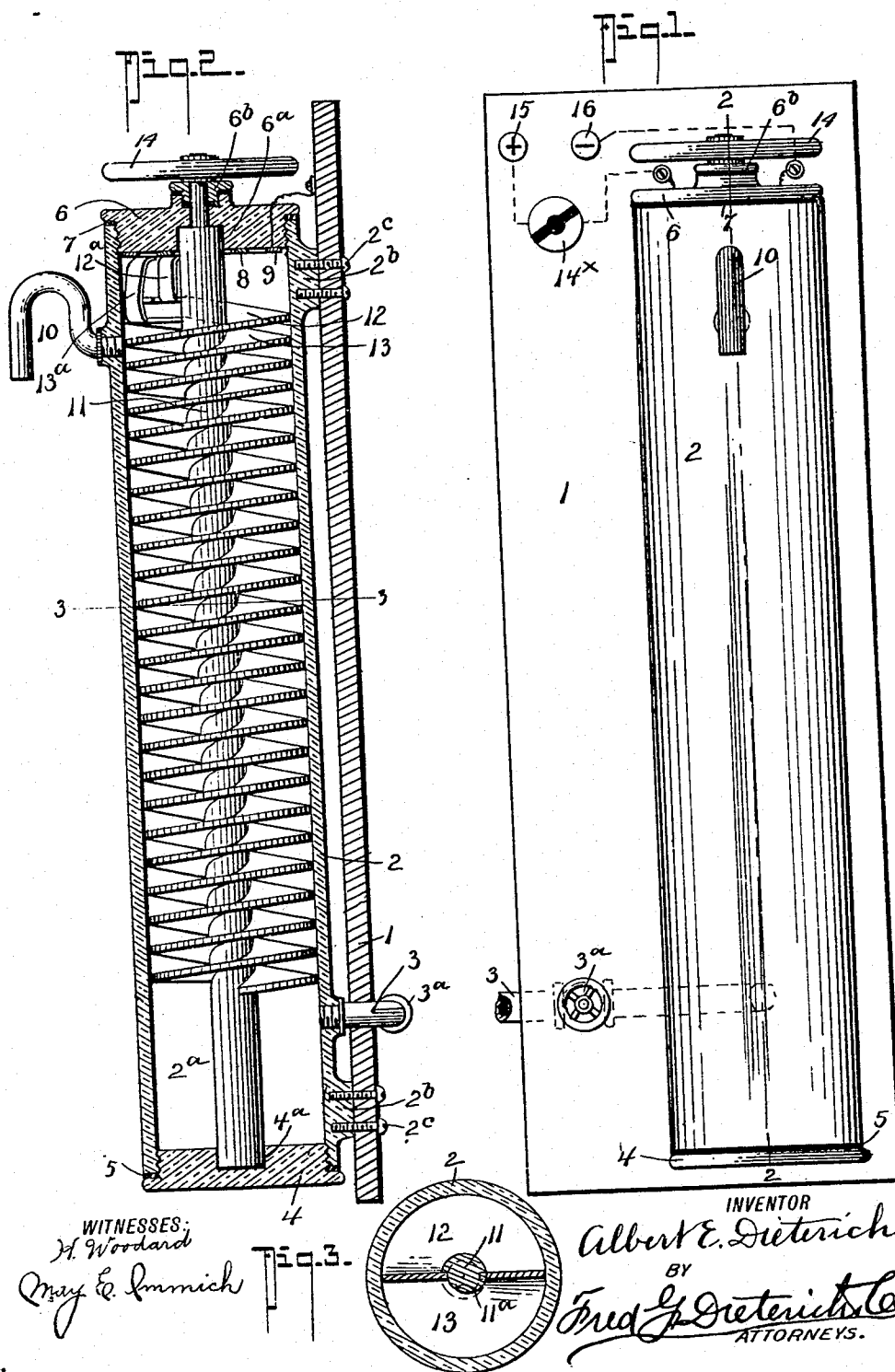


No. 823,671.

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A. E. DIETERICH.
ELECTRIC WATER PURIFIER.
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ELECTRIC WATER-PURIFIER.

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To all whom it may concern:

Be it known that I, ALBERT E. DIETERICH, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Electric Water-Purifiers, of which the following is a specification.

My invention relates to certain new and useful improvements in electrical water-purifying apparatus in which water is purified by electrolytic action in the presence of aluminium electrodes.

In its generic nature my invention includes a casing, a pair of aluminium electrodes held therein in the form of a spiral screw and means for rotating said screw at times to eject the precipitate, and means for rendering the electrodes electrically charged.

Primarily, my invention seeks to provide a device of this character of a very simple and effective construction, which can be easily and cheaply manufactured, and in which the parts can be readily assembled or detached from one another for purposes of repair or cleaning, and in which means are provided for ejecting the precipitate from the apparatus without removing the electrodes.

In its more detailed nature the invention comprises certain novel construction, combination, and arrangement of parts, all of which will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a face view of my invention. Fig. 2 is a vertical longitudinal section thereof on line 2-2 of Fig. 1, the electrodes being shown in elevation. Fig. 3 is a detailed cross-section taken substantially on the line 3-3 of Fig. 2.

Referring now to the accompanying drawings, in which like numerals of reference indicate like parts in all of the figures, 1 designates a base of any suitable material upon which the outer casing 2 is mounted by means of lugs 2^b and screws 2^c, as shown. The casing 2 is screw-threaded at its upper and lower ends to receive the caps 6 and 4, respectively, which are held water-tight on the casing by means of the washers 7 and 5, respectively, and each of the caps 6 and 4 is provided with seats 6^a and 4^a, respectively, to receive the central stem 11, of vitreous or other insulating material, which stem 11 is provided with the double spiral electrodes 12 and 13,

respectively, which electrodes are preferably constructed of aluminium or an alloy of aluminium and magnesium and are spaced sufficiently apart to permit passage of the water through the casing from end to end in the spiral passages between the electrodes. In practice I may place the electrodes 12 and 13 closer together at the top or outlet end of the casing 2 than at the bottom for a purpose presently understood. The electrodes do not run the entire length of the casing, but terminate short of the ends thereof to provide an upper chamber between the electrodes and the cap 6 and a lower chamber 2^a for a purpose presently understood.

The electrodes 12 and 13 have contact-brushes 12^a 13^a, which contact with the contact-rings 8 and 9, respectively, to which the positive and negative terminals 15 and 16 connect, a cut-out switch 14^x being provided for the usual purpose.

3 designates the inlet-spout pipe, which has a control-valve 3^a and communicates with the casing 2 just below the lower end of the electrodes 12 and 13, while an outlet-spout or pipe 10 is provided near the upper end of the casing to permit water being withdrawn from the apparatus.

The central stem 11 of the electrodes has a continuation which passes through a gland 6^b in the cap 6 and receives a turn-wheel 14, as shown.

So far as described the manner in which my invention operates will be best explained as follows: The water enters through the pipe 3, fills the chamber 2^a and passes up through the casing in a spiral direction between the electrodes 12 and 13 and out through the outlet-spout 10. As the water passes between electrodes 12 and 13 the same will be under the influence of the electric current, and the impurities will be precipitated out, as well understood in the art, the precipitate will accumulate in the chamber 2^a, but can be removed at any time by simply removing the cap 4. Should any precipitate accumulate on the electrodes, it is only necessary to turn the core or stem 11 by means of the hand-wheel 14, and the impurities will be "unscrewed" and ejected into the chamber 2^a, from which they can be removed in the usual manner.

As before mentioned, in practice I may space the electrodes closer together at the top and gradually separate them toward the bot-

tom until they are spaced apart their greatest distance at the inlet end of the apparatus, for this reason, namely, that as the water enters the apparatus through the pipe 3 it is in an impure state, and hence a good conductor of electricity. The electric current will pass easily between the positive and negative electrodes; but as the water becomes purified its conductivity decreases in proportion to the removal of the impurities therein, it being well understood that chemically-pure water is practically non-conductive. Now as the water is purer and purer toward the top or outlet end of the apparatus the conductivity decreases proportionately, and therefore it may be of advantage to place the electrodes closer together at the outlet end of the apparatus. This, however, I do not consider as an essential adjustment of the electrodes in my apparatus, as it may be found advisable to space the same an equal distance apart throughout the entire length.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation, and numerous advantages of my invention will be readily understood by those skilled in the art to which it appertains.

I claim—

1. In a purifier of the class described, the combination with a casing having a water-inlet and a water-outlet, of a double spiral member mounted within said casing to form double spiral water-passages therein, and means for connecting said double spiral member to the terminals of an electric circuit, substantially as shown and described.

2. In a purifier of the class described, the combination with a casing having a water-inlet and a water-outlet, of a double spiral member mounted within said casing to form double spiral water-passages therein, means for connecting said double spiral member to the terminals of an electric circuit, and means for rotating said double spiral member, substantially as shown and described.

3. An apparatus of the class described, comprising in combination with a casing having a water-receiving chamber at one end and a water-outlet at the other end, of a rod mounted in said casing, a pair of electrodes arranged spirally around said rod and carried thereby, to form spiral water-passages between the electrodes from one end of the casing to the other, and means for connecting said electrodes to an electric circuit.

4. An apparatus of the class described, comprising in combination with a tubular casing, of removable closure-caps for each end of said casing, said caps having bearing portions, a rod held in said bearing portions, a pair of spiral electrodes carried by said rod, means exterior of the casing for turning said rod, means for connecting said electrodes with the electric circuit, said casing having a

water-inlet at the bottom and a water-outlet at the top and having a collection-chamber at the bottom to receive deposited sediment, substantially as shown and described.

5. An apparatus of the class described, comprising a tubular casing having a water-inlet at one end and a water-outlet at the other end, a rod centrally mounted within said casing, a pair of spiral electrodes carried by said rod and spaced a gradual increasing distance apart from one end to the other end of the rod, said spiral electrodes forming a spiral water-passage from one end of the casing to the other, and means for connecting said electrodes to an electric circuit.

6. An apparatus of the class described, comprising a tubular casing having a water-inlet at one end and a water-outlet at the other end, a rod centrally mounted within said casing, a pair of spiral electrodes carried by said rod and spaced a gradual increasing distance apart from one another from one end to the other end of the rod, said spiral electrodes forming a spiral water-passage from one end of the casing to the other, means for connecting said electrodes to an electric circuit, and means for rotating said rod and said electrodes, substantially as shown and described.

7. An apparatus of the class described, comprising a tubular casing having a water-inlet at one end and a water-outlet at the other end, a rod centrally mounted within said casing, a pair of spiral electrodes carried by said rod and spaced a gradual increasing distance apart from one another from one end to the other end of the rod, said spiral electrodes forming a spiral water-passage from one end of the casing to the other, means for connecting said electrodes to an electric circuit, and means for rotating said rod and said electrodes to discharge sediment collected on the electrodes, said casing having a chamber below said electrodes to receive said discharged sediment, substantially as shown and described.

8. A purifier of the class described, comprising an open-ended cylindrical casing, closure-plugs for each end of said casing, said closure-plugs being formed with bearing portions, a rod held in said bearing portions between said closure-plugs, a pair of spiral electrodes held on said rod and in engagement with the walls of said casing to form spiral water-passages from one end of the casing to the other, said casing extending beyond said electrodes to form a collection-chamber, a water-inlet for said casing at one end thereof, and a water-outlet for said casing at the other end thereof, a pair of contact-plates carried by one of said closure members, contact-brushes carried by said electrodes for engaging said contact-plates, and means for connecting said contact-plates with an electric circuit.

9. A purifier of the class described, comprising an open-ended cylindrical casing, closure-plugs for each end of said casing, said closure-plugs being formed with bearing portions, a rod held in said bearing portions between said closure-plugs, a pair of spiral electrodes held on said rod and in engagement with the walls of said casing to form spiral water-passages from one end of the casing to the other, said casing extending beyond said electrodes to form a collection-chamber, a water-inlet for said casing at one end thereof, and a water-outlet for said casing at the other end thereof, a pair of contact-plates carried by one of said closure members, contact-brushes carried by said electrodes for engaging said contact-plates, means for connecting said contact-plates with an electric circuit, said rod having a portion projecting through one of said closure-plugs, and a hand-wheel connected to said extended portion of the rod for turning the rod and the electrodes, substantially as shown and described.

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Witnesses:

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