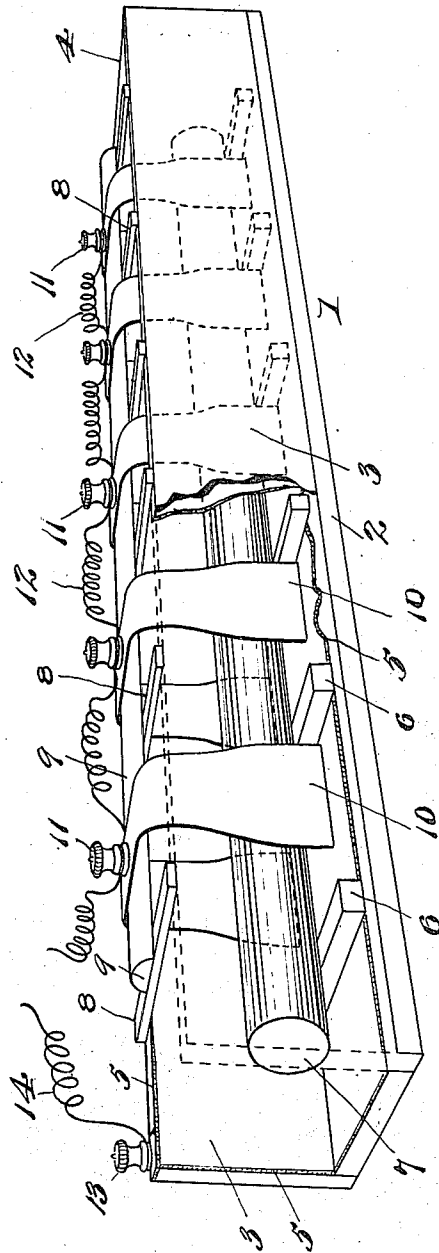


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 APPARATUS FOR THE ELECTRICAL TREATMENT OF LIQUIDS AND SEMILIQUIDS.
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Patented Mar. 28, 1911.



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APPARATUS FOR THE ELECTRICAL TREATMENT OF LIQUIDS AND SEMILIQUIDS.

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Specification of Letters Patent. Patented Mar. 28, 1911.

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To all whom it may concern:

Be it known that I, VIRGIL M. WRIGHT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Apparatus for the Electrical Treatment of Liquids and Semiliquids, of which the following is a specification.

10 The object of my invention is the provision of an improved apparatus by means of which any liquid, or semi-liquid substance or composition, such as cider, grape juice, tomato pulp, etc., may effectively be sub-
15 jected to the action of an electric current for the purpose of destroying animal and vegetable organisms therein, the presence of which occasions fermentation, and also for
20 changing in a degree the chemical composition of the substance or liquid.

With this end in view, my invention consists in certain novelties of construction and combinations of parts as herein set forth and claimed.

25 The accompanying drawing illustrates an example of the physical embodiment of the invention constructed according to the best method of procedure I have so far devised for the purpose.

30 The figure of the drawing forming part of this application shows in perspective the improved apparatus, part of one side thereof being broken away to disclose part of the interior and certain details of construction.

35 The numeral 1 designates a box in this instance of wood, but other suitable material may be used, having a bottom 2, vertical sides 3, 3, and an end 4, said box preferably being of a trough shape, as shown, and of
40 any suitable dimensions, the size being determined by the character and quantity of the substance or liquid to be treated.

The interior surfaces of the bottom, the sides, the top edges of the sides, and in some
45 instances the end, are lined or covered with aluminum, preferably sheet aluminum 5, which is a relatively good conductor of electricity. Across the bottom interior surface of the trough and disposed at regular inter-
50 vals are baffle bars or plates of slate 6, said material being a relatively poor conductor or non-conductor of electricity. A round bar of carbon 7 extends the entire length of the trough, centrally disposed as shown and
55 resting upon the slate baffle bars.

The numeral 8 designates bars of wood

fiber placed crosswise of the trough and resting upon the upper edges of the sides; 9, a half round bar of vulcanized or hard rubber disposed centrally of the trough, extending
60 longitudinally thereof in line with the carbon bar 7, and supported by the bars of wood fiber; 10, electrodes of aluminum, each being of an inverted U shape with the ends wider than the central portion, supported by
65 the half round hard rubber bar 9 so that the extreme ends are some distance above the bottom of the trough and the inner surfaces only in contact with the centrally disposed round carbon bar; 11, brass binding posts
70 secured to the central portions of the aluminum electrodes; 12, wires or conductors uniting the binding posts; 13, a binding post upon the top edge of a side of the trough; and 14 is a wire conductor. The electrical
75 conductors obviously are to be connected with any suitable source of electrical energy, such as, for example, an electrical generator not shown.

In use the trough is supported in an inclined position, the closed end being higher than the open end. The inclination should be such that the liquid, cider, or the like, or semiliquid, tomato pulp or the like, will flow under the action of gravity from the closed
85 end to the open end of the trough. When the liquid or semi-liquid is introduced at the closed end it is retained or held back and rises, owing to the presence of the baffle bars or plates, and comes into contact with the
90 ends of the electrodes, completing the electrical circuit, or, in other words, closing it. The electrical current passes through the liquid successively as said liquid closes the circuit through the several electrodes in
95 traversing the length of the trough. The round carbon bar has been found to be an important or essential element in the construction of the apparatus. It not only maintains the electrodes in substantially
100 fixed positions and prevents swaying whereby they would come in contact with the charged sides of the trough and short circuit, but also effects an increased efficiency, as has been actually demonstrated by tests
105 with the bar present and also removed from the trough.

The effect upon the liquid or semi-liquid treated is the destruction of animal and vegetable organisms which occasion fermentation, and the causing of certain chemical
110 reactions which in a degree advantageously

change the character of the liquid or semi-liquid.

My apparatus is especially adapted for the electrical treatment of cider, and tomato pulp in the manufacture of catsup.

When cider has reached a stage of fermentation which renders it palatable and is then subjected to the action of electricity by my apparatus, fermentation is retarded or stopped and certain chemical reactions occasioned whereby it retains for a long period of time the same character it possessed at the time of treatment.

Catsup made from tomato pulp electrically treated by my apparatus retains its normal character from at least twelve to eighteen months, and obviates the use of benzoate of soda, sulfid of lime, salicylic acid or other so-called preservatives in its manufacture.

What I claim is:

1. An apparatus for the purpose specified comprising in combination a box with its interior surface lined with aluminum, a series of slate baffle bars located upon the bottom of the box, a carbon bar supported by the slate baffle bars, a series of wood fiber bars supported upon the top edges of the box, a hard rubber bar supported by the wood fiber bars, aluminum electrodes supported by the hard rubber bar, each electrode being of an inverted U shape with its free ends located at opposite sides of and in contact with the said carbon bar, binding posts in connection with the electrodes, a binding post in connection with the aluminum lining of the box, and suitable electrical conductors in connection with the binding posts.
2. An apparatus for the purpose specified comprising in combination a trough-shaped box with its interior lined with aluminum, a series of non-conductive baffle bars upon the bottom of the box, a centrally disposed carbon bar supported by the baffle bars, aluminum electrodes engaging the carbon bar and suitably supported with their ends normally out of contact with the aluminum lining of the box, means for insulating said electrodes, and electrical conductors in connection with the electrodes and the lining of the box.
3. An apparatus for the purpose specified comprising in combination a trough-shaped box having its interior surface lined with

metal constituting an electrical conductor, a series of non-conductive baffle bars at the bottom of the box, aluminum electrodes with their ends located within the box, means for insulating the electrodes, a conductive element in the box located between the ends of the electrodes and in contact therewith and supported by the baffle bars, and suitable electrical conductors in connection with the lining of the box and the electrodes.

4. An apparatus for the electrical treatment of liquids and semi-liquids comprising a trough-shaped box lined with conductive metal, non-conductive baffle bars in the trough, a longitudinally disposed conductive bar supported on the baffle bars, inverted U-shaped electrodes in contact with the said longitudinally disposed bar, means for insulating the electrodes, and suitable electrical conductors in connection with the lining of the trough and the electrodes.

5. An apparatus for the electrical treatment of liquids and semi-liquids comprising a trough-shaped vessel the inner surface of which is of conductive material, a series of electrodes suspended in the vessel with their ends normally out of contact with the inner surface of the vessel, means for insulating said electrodes from the vessel, a series of non-conductive baffle bars extending crosswise of the vessel one bar being disposed between two adjacent electrodes, a conductive bar disposed longitudinally of the vessel and in contact with the baffle bars and electrodes, and suitable electrical conductors in connection with the electrodes and the inner surface of the vessel.

6. The combination with a vessel having a conductive metallic inner surface, of a carbon bar longitudinally disposed within said vessel, means for insulating said bar from the inner surface of the vessel, a series of electrodes insulated from the vessel and in contact with said carbon bar, a series of bars within the vessel for baffling the liquid while moving longitudinally of the vessel, and suitable electrical conductors in connection with the inner surface of the vessel and the electrodes.

In testimony whereof I affix my signature in presence of two witnesses.

VIRGIL M. WRIGHT.

Witnesses:

S. M. PARKS,
JOHN S. JIRA.