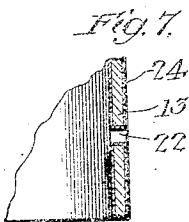
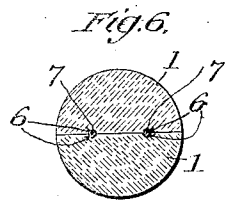
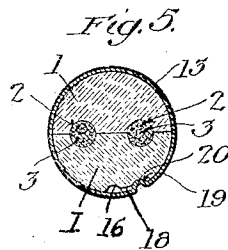
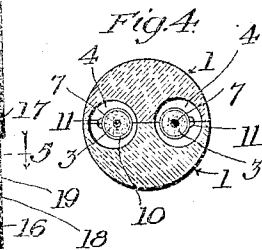
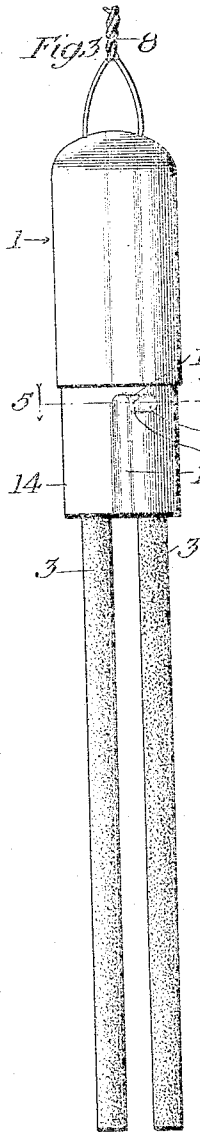
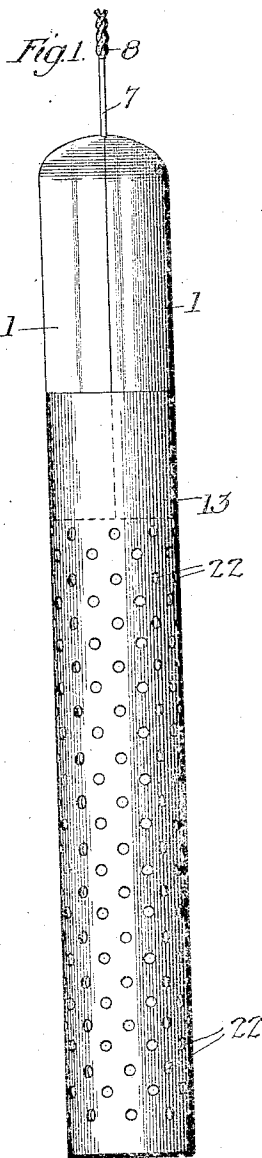
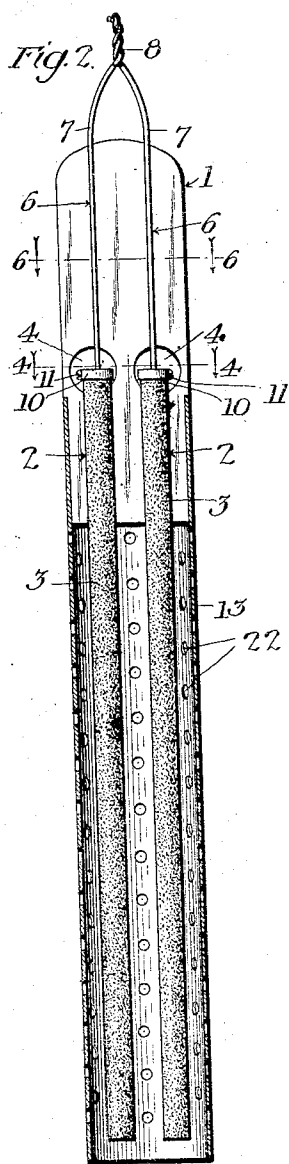


G. C. YOUNG.
IMMERSION HEATER.
APPLICATION FILED AUG. 9, 1910.

1,000,871.

Patented Aug. 15, 1911.



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UNITED STATES PATENT OFFICE.

GILBERT C. YOUNG, OF OCEANO, CALIFORNIA.

IMMERSION-HEATER.

1,000,871.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed August 9, 1910. Serial No. 576,421.

To all whom it may concern:

Be it known that I, GILBERT C. YOUNG, a citizen of the United States, residing at Oceano, in the county of San Luis Obispo and State of California, have invented a new and useful Immersion-Heater, of which the following is a specification.

This invention relates to devices adapted to be immersed in water or fluids for heating the same, for example, in heating small quantities of fluid in cups or receptacles, and the main object of the invention is to provide simple and efficient means for this purpose, in which the fluid itself is used as a resistance medium for generating the heat by the action of electric current, thereby dispensing with the use of coils or other resistance devices.

Other objects and advantages of the invention will appear hereinafter.

The accompanying drawings illustrate the invention, and referring thereto; Figure 1 is a side elevation of the device. Fig. 2 is a vertical section of the device on the plane of junction of the insulating members thereof. Fig. 3 is a side elevation at right angles to Fig. 1, the protecting casing for the electrodes being removed. Fig. 4 is a horizontal section on the line x^4-x^4 in Fig. 2. Fig. 5 is a horizontal section on the line x^5-x^5 in Fig. 3. Fig. 6 is a horizontal section on the line x^6-x^6 in Fig. 2. Fig. 7 is a detail section of the protecting casing for the electrodes.

The device comprises a body or supporting member of insulating material consisting of two semi-cylindrical members 1 formed on their inner or flat faces with longitudinal semi-cylindrical channels 2, so that when said members are placed together, with their flat faces in contact, they form a cylindrical body, and the channels 2 register to form two longitudinal cylindrical passages extending side by side within said body. Said passages receive and fit electrodes 3, preferably of carbon, which extend some distance beyond the outer end of the body members 1 and extend at their inner ends into chambers or enlargements 4 formed at the inner ends of the channels 2. The body members 1 are further provided on their inner or flat faces with longitudinal grooves 6 adapted to receive the conducting wires 7 which may be the usual insulated wires of a twisted cord indicated at 8. These wires are connected to the elec-

trodes in any suitable manner, for example, by means of terminal collars 10 on the inner ends of the electrodes 3, said wires extending into said collars and being secured therein by screws 11.

A casing 13 is provided which incloses the electrodes and is attached to the body members 2, said casing also serving to fasten said body members together. For this purpose the body members 1 are provided with reduced end portions 14, over which the casing 13 slips and fits, one of said body members having a bayonet slot or groove with a longitudinal portion 16, and a portion 17 extending circumferentially of the body member, said portion 17 having a depression 19 at its end with a raised or bridge portion 18 between said depression and the longitudinal portion 16 of the slot. The casing 13 is provided with an indentation or inwardly extending projection 20 adapted to engage in the aforesaid bayonet slot, so that by slipping the casing 13 longitudinally on the body member with its projection 20 running in the portion 16 of the slot until it reaches the inner end thereof and turning the casing on the body member so as to cause the projection 16 to ride over the bridge 18 and to snap into the depression 19, the casing 13 is securely held in position on the body member and at the same time locks the two parts of the body member together and holds the electrodes firmly in place therein. The said casing 13 is perforated as at 22 for passage of water through the casing and said casing is preferably enameled or coated with an insulating coating 24 resistant to the action of the fluid and of the current.

The enlargements 4 are for the purpose of receiving the connecting means 10 and 11 for the electrodes and are preferably offset somewhat to the outside, as shown, to provide room for the screws 11.

In using the device, the lower end thereof is immersed in the fluid to be heated and current being supplied to the device through wires 7, it passes between the electrodes 3 through the water or other fluid in which said electrodes are immersed, it being understood that the fluid will generally be a high resistance conductor, so that the passage of the current therethrough causes generation of considerable heat. I have found that the electrolytic action produced does not interfere with the general operation or effective-

ness of the device, such action being negligible, especially where alternate currents are used, but as the electrolytic action tends to spread some distance from the electrodes, I have found it necessary to coat the inclosing casing 13 with enamel, as above stated, in order to protect the same from such action. The purpose of said casing is primarily to protect the electrodes from breakage, and to protect the operator from contact with the electrodes, so that there is no danger of his receiving a shock. The perforations in said casing permit the free ingress and egress of the water, so that the heat generated in the body of water in the casing is freely imparted to the water outside of the casing.

What I claim is:

1. An immersion heater comprising a cylindrical body formed of two semi-cylindrical members of non-conducting material, each of said members having two parallel channels on its inner face, and two longitudinal grooves, electrodes extending in said channels, connecting wires extending in said grooves and connected to said electrodes, and a casing surrounding the electrodes and the adjacent end portion of the cylindrical body and holding said members of the cylindrical body together.

2. An immersion heater comprising a cylindrical body formed of two semi-cylindrical members of non-conducting material, each of said members having two parallel channels on its inner face, and two longitudinal grooves, electrodes extending in said channels, connecting wires extending in said grooves and connected to said electrodes, and a casing surrounding the electrodes and the adjacent end portion of the cylindrical body and holding said members of the cylindrical body together, said body member having a bayonet slot and said casing having an inwardly extending projection engaging in said bayonet slot.

3. An immersion heater comprising a cylindrical body formed of two semicylindrical members of non-conducting material, each of said members having two parallel channels on its inner face, and two longitudinal grooves, electrodes extending in said channels, connecting wires extending in said grooves and connected to said electrodes, and a casing surrounding the electrodes and the adjacent end portion of the cylindrical body, and holding said members of the cylindrical body together, said casing being of metal and having a coating of material resistant to electrolytic action.

4. An immersion heater comprising a cylindrical body formed of two semi-cylindrical members of non-conducting material, each of said members having two parallel channels on its inner face with enlargements at the inner ends of said channels and two longitudinal grooves communicating with said enlargements, electrodes extending in said channels, connecting wires extending in said grooves, means located in said enlargements connecting said wires to said electrodes, and a perforated casing surrounding the electrodes and the adjacent end portion of the cylindrical body and holding said members of the cylindrical body together.

5. An immersion heater comprising a cylindrical body formed of two semi-cylindrical members of non-conducting material, each of said members having two parallel channels on its inner face, and two longitudinal grooves, electrodes extending in said channels, connecting wires extending in said grooves and connected to said electrodes, and a perforated casing surrounding the electrodes and the adjacent end portion of the cylindrical body and holding said members of the cylindrical body together.

6. An immersion heater comprising a body formed of two members of non-conducting material, each of said members having two parallel channels on its inner face, and two longitudinal grooves, electrodes extending in said channels, connecting wires extending in said grooves and connected to said electrodes, and a casing surrounding the electrodes and the adjacent end portion of the body and holding said members of the body together.

7. An immersion heater comprising a body formed of two members of non-conducting material, each of said members having two parallel channels on its inner face, and two longitudinal grooves, electrodes extending in said channels, connecting wires extending in said grooves and connected to said electrodes, and a perforated casing surrounding the electrodes and the adjacent end portion of the body for holding said members of the body together.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 3rd day of August, 1910.

GILBERT C. YOUNG.

In presence of—

P. H. SHELTON,

FRANK L. A. GRAHAM.