E. C. WEBSTER & H. GRUENHAGEN.

ELECTRIC HEATING STOPPER FOR LIQUID CONTAINERS.

APPLICATION FILED APR. 30, 1914.

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FIG. 1.

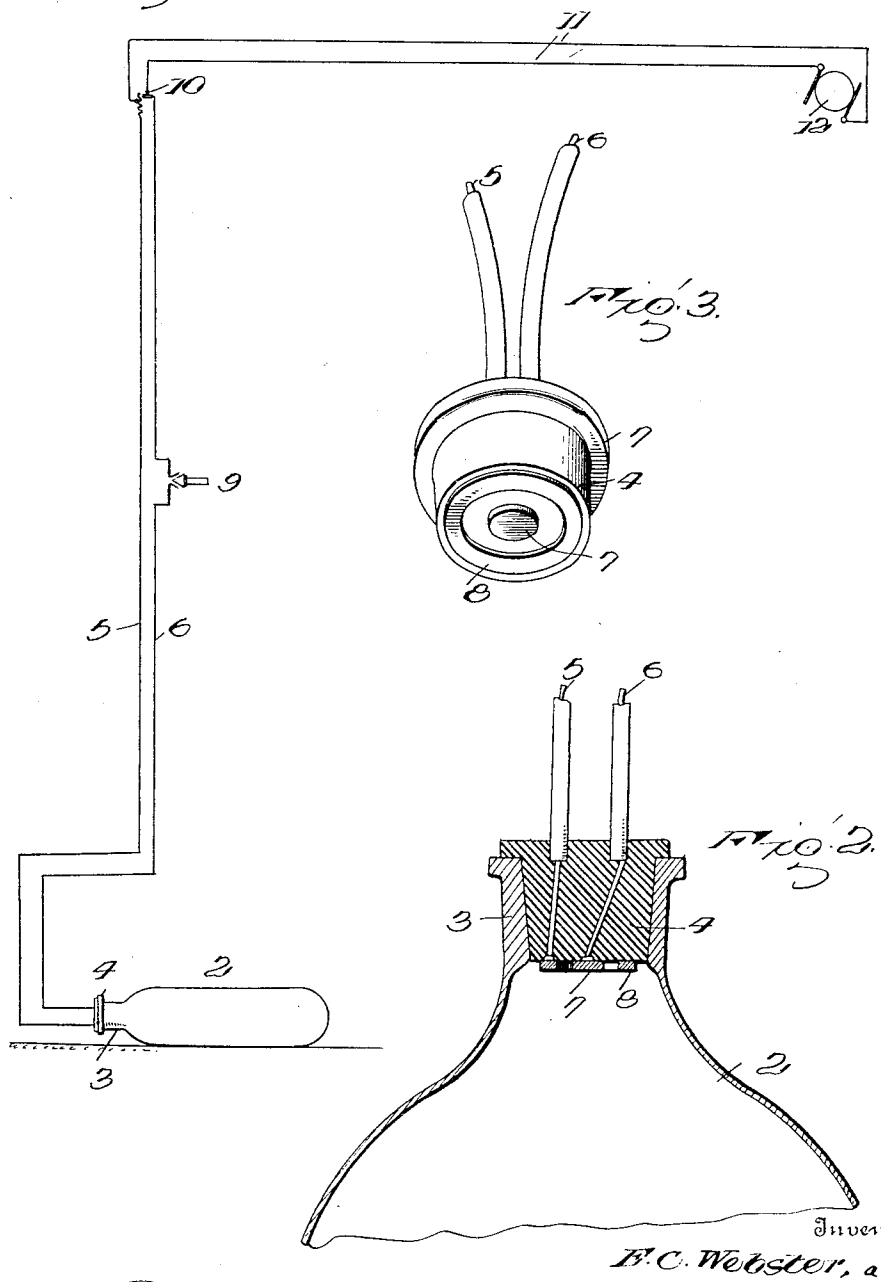


FIG. 3.

FIG. 2.

Inventors
E. C. Webster, and
H. Gruenhagen

Witnesses
W. T. Woodson.

By Hanson, Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ERNEST C. WEBSTER AND HENRY GRUENHAGEN, OF OAKLAND, CALIFORNIA.

ELECTRIC HEATING-STOPPER FOR LIQUID-CONTAINERS.

1,133,346. Specification of Letters Patent. Patented Mar. 30, 1915.

Application filed April 30, 1914. Serial No. 835,554.

To all whom it may concern:

Be it known that we, ERNEST C. WEBSTER and HENRY GRUENHAGEN, citizens of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Electric Heating-Stoppers for Liquid-Containers, of which the following is a specification.

Our invention relates to heating appliances.

The primary object of our invention is the provision of a stopper for a liquid container, said stopper being provided with positive and negative electrodes whereby the liquid within the container when in contact with the stopper will provide a passage for current through the liquid to thereby cause the liquid to be heated.

A further object of the invention is the provision of a very simple appliance of this character adapted to be readily attached to an ordinary electric light socket of a house lighting system or to any other easily accessible source of electricity.

Our invention is illustrated in the accompanying drawings wherein:

Figure 1 is a diagrammatic view showing our stopper applied to a liquid container and connected in an electric lighting circuit. Fig. 2 is a fragmentary sectional view of the heating stopper applied to a container. Fig. 3 is a perspective view of the stopper.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to these figures and particularly to Fig. 2, it will be seen that the container 2 may be of any suitable character and may be made of rubber, metal or any other suitable material and of any desired shape. This container is shown as formed with the neck 3.

The stopper comprises the plug portion 4 which is made of non-conducting material. Passing through the stopper are the conducting wires 5 and 6, and disposed upon the under face of the stopper are the electrodes 7 and 8. The electrode 8 as illustrated is annular in form and surrounds the centrally disposed electrode 7. These electrodes are preferably of carbon though they may be made of any other suitable material. The electrodes are spaced from each other as shown and insulated from one another by suitable insulation material and by the material forming the stopper. The wires 5 and 6 extend out through the stopper or plug and are, of course, to be surrounded by insulation. One of the wires 5 or 6 is broken at one point and a switch 9 is disposed in this gap and is adapted to close this gap. The switch may be of any suitable form and the switch member *per se* forms no part of our invention. The wires 5 and 6 are extended into a plug 10 of any suitable or ordinary character which is adapted to be connected to electric light socket. This plug is adapted to be connected in an electric circuit, the wires of which are designated 11 in Fig. 1, these wires being connected to any suitable source of energy 12.

The operation of our invention will be readily seen. When there is no liquid in the container, the circuit between the electrodes 7 and 8 is of course interrupted and no current can pass. When, however, there is liquid in the container and the liquid comes in contact with these electrodes, it will be obvious that a current will pass through the liquid from one electrode to another thereby closing a circuit and thus the liquid will be heated. When the liquid is heated to a sufficient degree, the switch may be operated to break the circuit, and if the liquid again grows cool it may be heated to the proper degree by applying the current from the switch. It is obvious also that a predetermined amount of current might be sent through the electrodes and through the water so as to keep a gentle heat in the liquid at all times. In order to heat the liquid it is not necessary that the container be entirely filled as it is obvious that the container may be turned upside down to fill that portion surrounding the plug.

Our invention is particularly adapted to water bags and hospital use as the patient or nurse can regulate the heat with the utmost nicety and thus maintain the desired temperature for long periods at a time whereas by the present method of using hot water bags, the bag must be emptied after the water or other liquid used therein is cooled and filled with fresh hot water or other liquid. Thus when the water bag is first applied to the patient it is usually too hot and after a relatively short time it is liable to become too cold and therefore lose its beneficial effect.

It will be noted that by the construction of the electrodes in our device, overheating can not take place and no current passes from one electrode to the other to thereby create any heat unless the liquid is in electrical contact with both electrodes.

It is to be understood that the invention is applicable to all kinds of vessels or containers for holding liquids, such as bottles or flasks holding beverages, bottles for heating milk or other liquid food and containers of any character or type wherein a stopper is used, the stopper being provided with heating electrodes as described.

What we claim is:

1. An electric heating stopper for liquid containers including a body of insulating material, conductor wires extended through the body, and spaced heating elements disposed upon the inner face of the stopper and connected to the wires, the heating elements extending but a slight distance from such face of the stopper.

2. An electric heating stopper for liquid containers including a body of insulating material, electric conductors leading through the stopper to the inner face thereof, and heating elements secured to the inner face of the stopper and to the conductors, one heating element including a relatively thin disk of carbon and the other a relatively thin ring of carbon surrounding and spaced from the disk.

In testimony whereof we affix our signatures in presence of two witnesses.

ERNEST C. WEBSTER. [L. S.]
HENRY GRUENHAGEN. [L. S.]

Witnesses:
ROBERT M. FORD,
H. O. EDWARDS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."