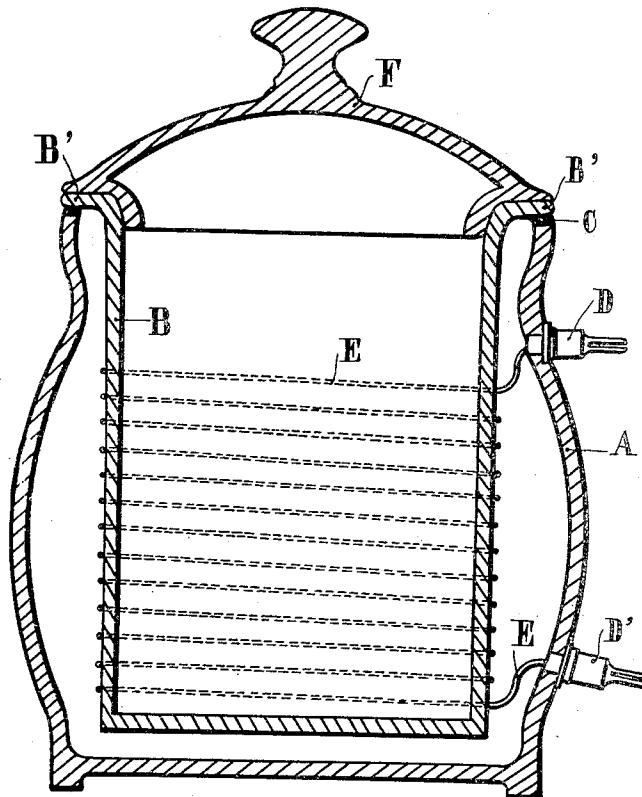


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ELECTRICAL HEATING APPARATUS.
APPLICATION FILED JUNE 30, 1920.

1,378,256.

Patented May 17, 1921.



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ELECTRICAL HEATING APPARATUS.

1,378,256.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MAURICE RENÉ MALHOMME, citizen of the Republic of France, resident of Paris, Seine, France, (post-office address 9 Rue Félix Ziem,) have invented a new and useful Electrical Heating Apparatus, which improvements are fully set forth in the following specification.

The present invention relates to electrical heating apparatus, and more particularly to apparatus of the type comprising inner and outer elements or members, the former of which is in the nature of a receptacle to contain the substance or material to be heated, and an intermediate resistance element which is connected and arranged to heat the aforesaid inner member or receptacle.

Apparatus of the character indicated are constructed, for the most part, of metal, but are sometimes made of porcelain, glass or other ceramic or vitreous insulating material. The metal implements do not readily lend themselves to decoration, and moreover they can only be cleaned with considerable difficulty, so that they are unsuitable for use in medical and chemical laboratories. Their cost of construction is high, and their consumption of electricity is excessive.

On the other hand, the porcelain or glass heaters, as heretofore constructed, have likewise proven unsatisfactory, in that they are usually unable to withstand the rises in temperature without cracking. This is due to the fact that they ordinarily comprise two layers or shells of ceramic or vitreous material which are in actual or approximate contact with each other and which expand differently under the action of the heat generated by the interposed resistance element.

It is the object of this invention to provide an improved heater, constructed either partly or wholly of ceramic or vitreous material, which is so designed that a space is formed between both the side walls and the bottom walls of the inner and outer receptacles; such space constituting a dead-air chamber which not only tends to preserve the heat of the inner receptacle and permits the free expansion of the latter, but which also acts to produce, in effect, an air cushion that absorbs the shocks incidental to expansion, thereby avoiding cracking. The outer receptacle may be given any desired shape and may receive any suitable decoration.

An embodiment of the invention is illustrated in the accompanying drawing, the single figure of which represents a vertical sectional view of the improved heater.

Referring more particularly to said drawing, A indicates the outer receptacle which, as stated above, may have any desired shape and may be decorated or ornamented in any desired manner; and B indicates the inner receptacle. The latter is provided at its top with an out-turned lateral flange B' which rests upon the upper edge of the outer receptacle A and by means of which it is suspended therefrom; a layer C of cement being applied between the said flange and the edge of the outer receptacle to form an hermetic seal or joint. The inner receptacle is so proportioned with respect to the outer as to leave an appreciable space not only between the side walls of the two, but also between their bottoms, as shown; and it is this space, which, of course, is filled with air, that constitutes the dead-air chamber previously mentioned.

The outer receptacle A is provided with two contacts D, D', to which are connected the ends of a resistance wire E. The latter is wound spirally around the inner receptacle B in such a manner as to space its successive turns from one another; and to facilitate the winding and maintain the turns thereof in place, the surface of the receptacle may, if desired, be formed with small grooves to receive the wire. The implement may be completed by the provision of a suitable cover F.

In use, the inner receptacle is filled with the material or substance to be heated, and the resistance element connected with a source of current by means of the contacts D, D', whereupon the heat generated by the passage of the current through the resistance wire E will act upon the surface of the said receptacle, with which it is in immediate contact, to heat the same. The implement may thus be utilized for heating or even cooking solid or liquid food, for preparing infusions, and for sterilizing purposes etc., and it may also be used for burning scent, in which case, however, the cover F would have to be perforated.

It is to be observed that the flange B' of the inner receptacle rests upon the upper edge of the outer receptacle, and that although the cement layer C is interposed

between these parts, yet the two receptacles are actually not connected together, the purpose of the cement being merely to form a tight seal or joint. This is of importance because it enables the two receptacles to expand freely, and to different extents or in different ways, without danger of either of them breaking.

Furthermore, it should be noted that the interior space or chamber provided between the receptacles extends not only around the side wall of the inner receptacle, but also beneath its bottom, and that such space or chamber is entirely filled with air, the air tending to preserve its heat and, hence, to keep the contents of the inner receptacle hot.

I claim as my invention:—

1. An electric heater, comprising nested inner and outer receptacles of ceramic material, and an interposed resistance element wound around the inner receptacle; said receptacles having an hermetic seal between their upper edges, and the inner receptacle having both its side and its bottom walls spaced from those of the outer receptacle to form a dead-air chamber which extends

entirely around and beneath the said inner receptacle.

2. An electric heater, comprising an outer receptacle of ceramic material, an inner receptacle of ceramic material disposed therein and having an out-turned flange at its upper end which rests upon the upper edge of the outer receptacle, a layer of cement between said flange and edge to form an hermetic seal between the same, the flange and cement forming the sole support for the inner receptacle and the sole connection between the two receptacles, and a resistance element connected to heat the inner receptacle; said inner receptacle having both its side and its bottom walls spaced from those of the outer receptacle to form a dead-air chamber which extends entirely around and beneath the said inner receptacle.

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

MAURICE RENÉ MALHOMME.

Witnesses:

ALPHONSE NICOLAS,
CLEMENT S. EDWARDS.