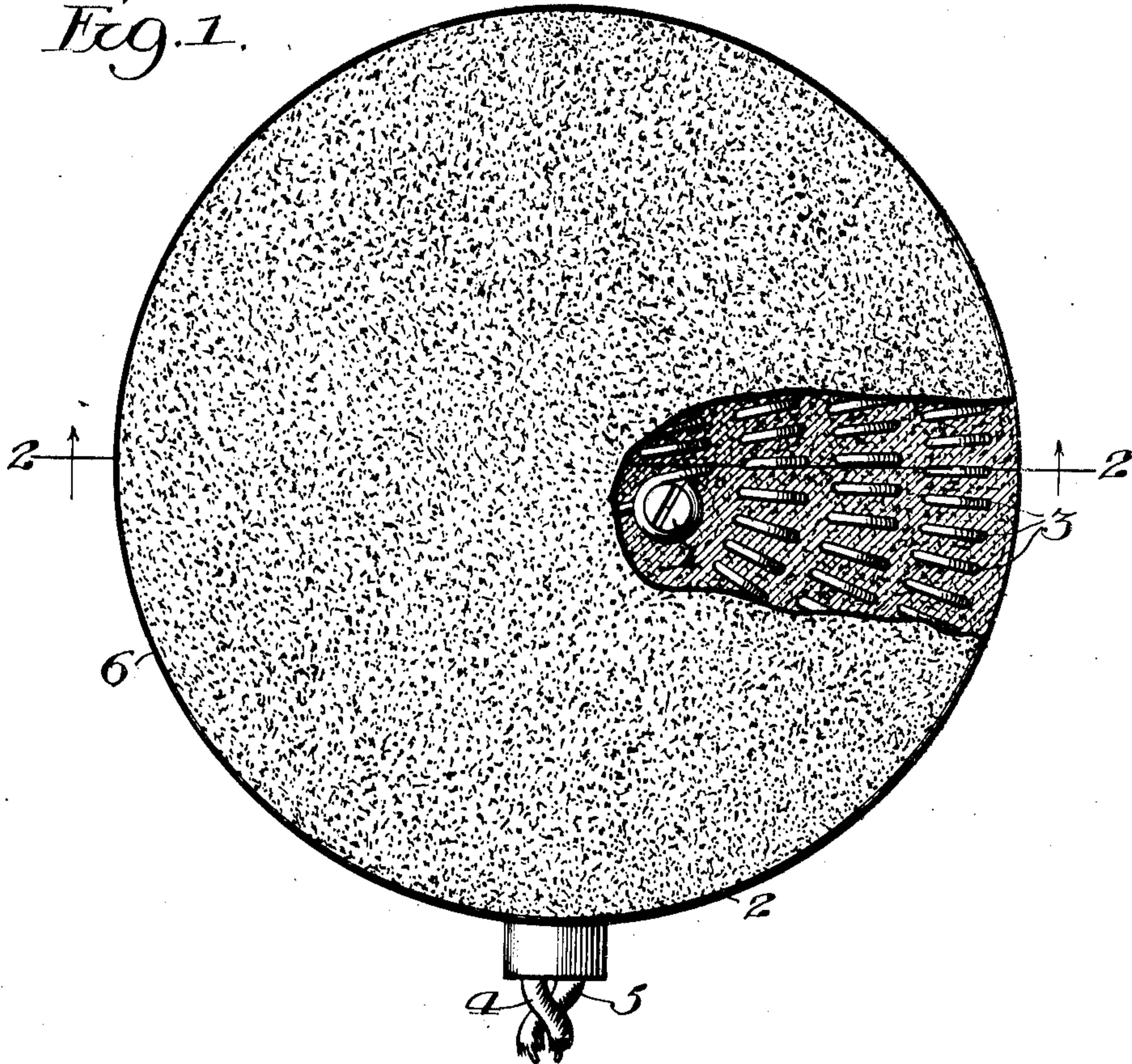


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ELECTRIC HEATER.  
APPLICATION FILED MAY 4, 1909.

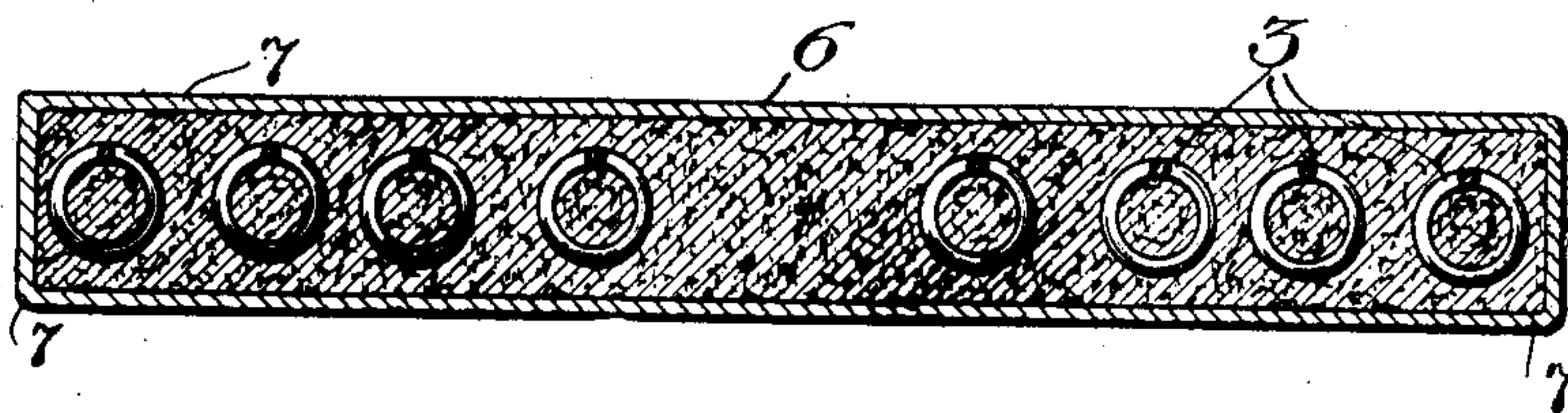
997,194.

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*Fig. 1.*



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

BERTRAND G. JAMIESON AND CARL A. KELLER, OF CHICAGO, ILLINOIS.

ELECTRIC HEATER.

997,194.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed May 4, 1909. Serial No. 493,866.

*To all whom it may concern:*

Be it known that we, BERTRAND G. JAMIESON and CARL A. KELLER, citizens of the United States, residing at Chicago, in the  
5 county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Heaters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of  
10 this specification.

Our invention relates to heating devices or electric heaters, and is designed, in particular, to provide coverings for the conductors of said heaters or heating conductors,  
15 which covering shall not be susceptible to heat, and which covering, in its preferred form, is impervious to moisture. To this end, we provide a hydraulic cement product as an envelop for the conductors which are  
20 heated, which covering, being of cement, is capable of withstanding heat to a larger extent than is ordinarily attainable.

We will describe our invention more in detail by reference to the accompanying  
25 drawing, which illustrates one form of carrying out the invention, and in which—

Figure 1 is a top view, partly in section, of the heating device, and Fig. 2 is a vertical sectional view thereof.  
30

In our invention, we provide two terminals, 1 and 2, which are united in the construction shown by means of a coiled conductor 3, which is continuous throughout  
35 its length between the terminals 1 and 2, and which is laid in an envelop to be described hereinafter. The terminals 1 and 2 are connected to a source of current by means of the wires 4 and 5. In order to  
40 embed these conductors in a medium which is not susceptible to heat and moisture, and which will retain its form, even though subjected to abnormal heat, we provide a cement covering 6, which, in its preferred

form, envelops the convolutions of the coil 45 3, and not only maintains the integrity of said coils, but also properly insulates them. Said envelop 6 is constructed in a manner to exclude moisture therefrom, and at the same time, said envelop is coated on its exposed surfaces with a waterproofing compound 7 which will prevent lateral incursion of moisture. The advantages of thus  
50 using the cement compound, which is not influenced by heat, and which, at the same time, is impervious to moisture, will be apparent. It will of course be seen that the cement covering will have many applications for surrounding and embedding conductors susceptible to great heat variations,  
55 and in this form, our cement covering is especially applicable. 60

While we have herein shown and particularly described the preferred embodiment of our invention, we do not limit ourselves to the precise construction and arrangement as herein set forth, but  
65

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—  
70

An electric heater comprising a body portion of water-proofed cement, and a heat-producing element completely embedded therein, said element comprising a spirally  
75 arranged coiled conductor having the convolutions of the coil and the windings of the spiral substantially spaced apart from each other to afford spaces for the cement whereby the conductor throughout its extent is inclosed by said cement. 80

In witness whereof, we hereunto subscribe our names this 23d day of April, A. D., 1909.

BERTRAND G. JAMIESON.

CARL A. KELLER.

Witnesses:

JEAN ELLIOTT,  
MAX W. ZABEL.