

No. 636,203.

Patented Oct. 31, 1899.

H. HELBERGER.
ELECTRIC RESISTANCE.

(Application filed Apr. 19, 1898.)

(No Model.)

Fig. 2.

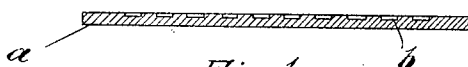


Fig. 1.

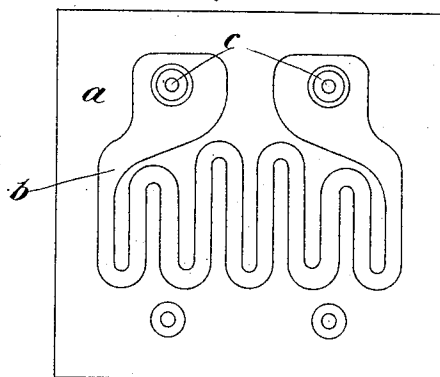
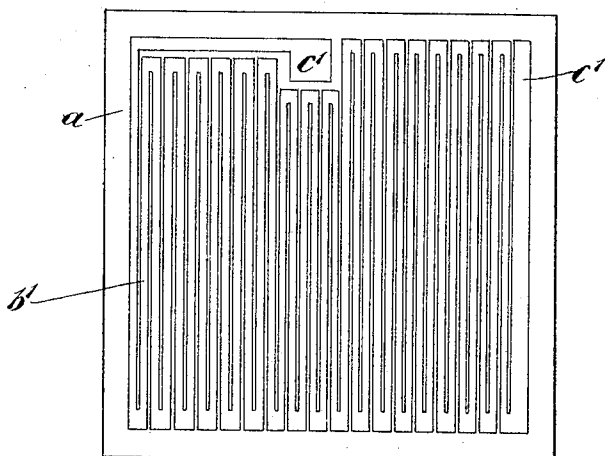


Fig. 3.



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UNITED STATES PATENT OFFICE.

HUGO HELBERGER, OF THALKIRCHEN, GERMANY.

ELECTRIC RESISTANCE.

SPECIFICATION forming part of Letters Patent No. 636,203, dated October 31, 1899.

Application filed April 19, 1898. Serial No. 678,110. (No model.)

To all whom it may concern:

Be it known that I, HUGO HELBERGER, a subject of the King of Prussia, German Emperor, residing at Thalkirchen, near Munich, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Electric Resistances of Metal Foil, (for which I have applied for a patent in Germany, dated October 22, 1897, and in England, dated December 4, 1897, No. 28,721,) of which the following is a specification.

This invention relates to an improved electric resistance which, in addition to solidity, simplicity of construction, and smallest space occupied, offers the advantages of a high electric resistance and possesses the greatest possible capacity of radiating heat.

This resistance may be utilized advantageously for electric heating apparatus, as well as for other devices, such as rheostats for measuring apparatus, dynamo-machines, and the like.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a face view or plan of a resistance constructed according to my invention. Fig. 2 is a cross-section thereof, and Fig. 3 is a plan of another form of construction.

The improved resistance consists of a non-conducting backing or supporting-plate *a* and a facing *b* or *b'* of thin metal foil pressed into the backing or supporting-plate. This facing may be made in different shapes to present a short or long path for the current, the ends of the facing, as indicated at *c c'*, being adapted for connection in any suitable manner with the electric circuit in which the resistance is to be included.

The manufacture of these resistances is as follows: A metallic film *b* or *b'*—such as is manufactured by gold-beaters as so-called “gold-leaf,” “silver-leaf,” “platinum-leaf,” or “alloy-leaf”—is applied to a non-conducting supporting-plate or backing *a*, consisting of board made of an incombustible material, such as asbestos, if the resistance is exposed to high temperatures, or of ordinary paste-board, if the resistance develops only a small amount of heat, and then pressed by means of a high pressure and a stamp of any suitable construction into the said board, exactly in the same manner as gold letters are imprinted by bookbinders into book-covers. The metal layer is firmly pressed on the corresponding places into the board, and the other superfluous metal can easily be removed. According to the stamp employed a coherent extremely-thin metallic layer is thus formed upon the board, which, in connection with binding-posts, may suitably be used as an electric resistance.

I claim—

1. An electric resistance consisting of a non-conducting backing or supporting-plate, and a facing of metallic foil impressed upon or into the supporting-plate.

2. An electrical resistance consisting of a backing and a facing of thin metal foil pressed into said backing.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HUGO HELBERGER.

Witnesses:

EDUARD SATTLER,
EMIL HENZEL.