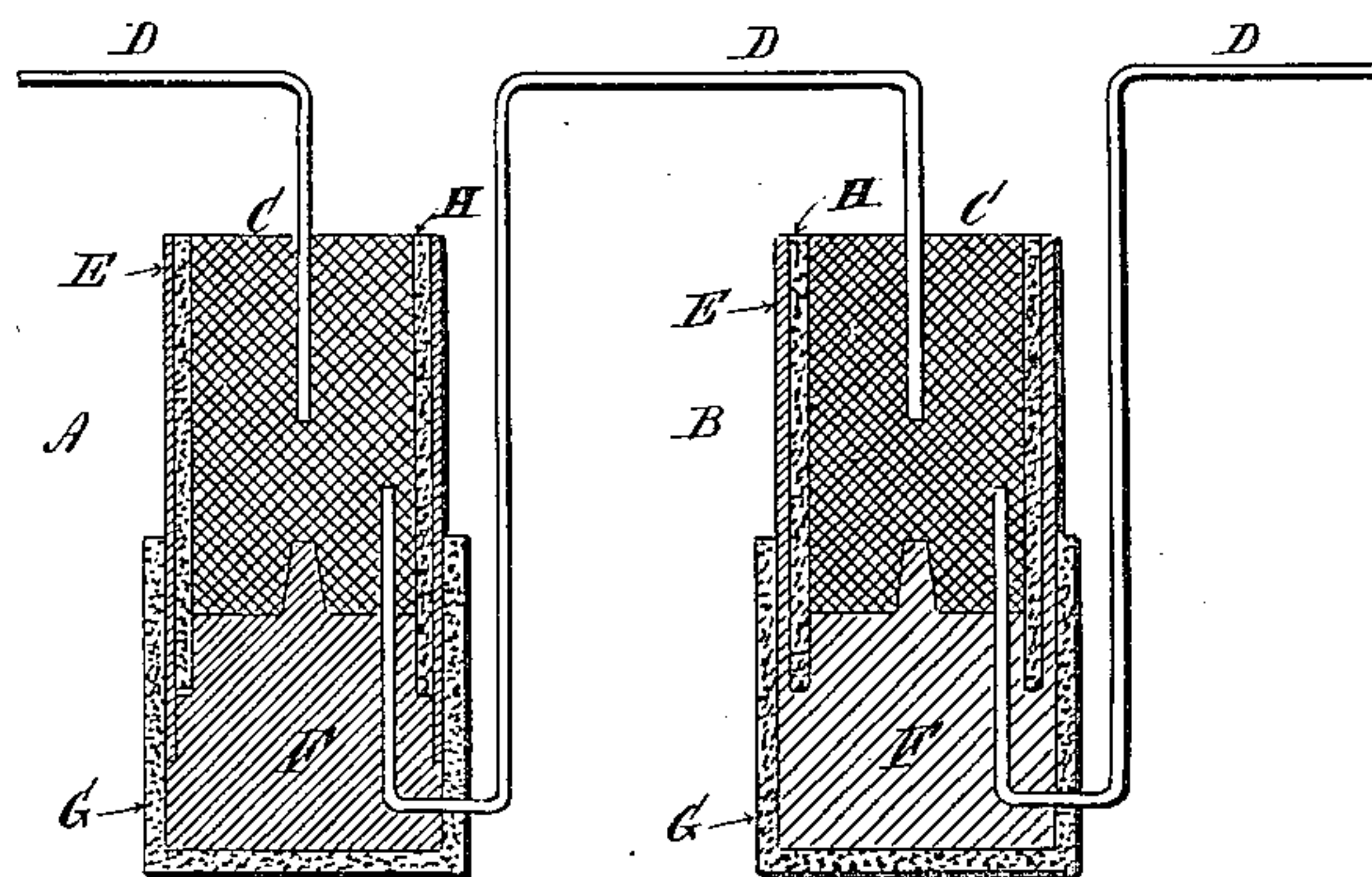


(No Model.)

M. MESTERN.
THERMO ELECTRIC ELEMENT.

No. 511,245.

Patented Dec. 19, 1893.



Witnesses:
J. A. Pollock
R. W. Gardner

Inventor:
Max Mestern
By his Attorney
E. N. Dinkens

UNITED STATES PATENT OFFICE.

MAX MESTERN, OF TURIN, ITALY, ASSIGNOR TO THE THERMO-ELECTRIC COMPANY, OF WEST VIRGINIA.

THERMO-ELECTRIC ELEMENT.

SPECIFICATION forming part of Letters Patent No. 511,245, dated December 19, 1893.

Application filed April 9, 1889. Serial No. 306,582. (No model.)

To all whom it may concern:

Be it known that I, MAX MESTERN, of Turin, Kingdom of Italy, have invented a new and useful Improvement in Thermo-Electric Elements, of which the following is a full, true, and exact description, reference being had to the accompanying drawing.

This invention relates to an improved thermo-electric element, designed by the application of heat at one end to generate a considerable current of electricity. By it a high tension can be obtained, while, at the same time, an element is made which is practically indestructible.

In my drawing I have shown two such elements arranged side by side, slightly different in construction, but working on the same principle. The drawing shows the elements in section. The element A consists of a back portion C generally cylindrical in shape, which consists of an alloy of antimony and zinc, as generally used, in the proportion of six parts of antimony to four parts of zinc. The part F is of cast iron. An insulating asbestos sleeve H is employed to insulate the part C from the external casing E. This casing is in contact with the asbestos sleeve H and serves to protect the same. It is, of course, not essential for the electrical operation of the device. As shown in the element A it slips around the outside of F. This again is protected by the exterior asbestos casing G, which is non-essential but preferable. The zinc cylinder is preferably cast directly within the asbestos and upon the iron, and they may be provided with re-entering parts as shown to insure greater surface contact. The conductor D is likewise cast into both the iron and zinc alloy as shown. This alternately connects the iron and zinc of the successive elements when arranged in the battery. This conductor is made of an alloy of nickel known in the trade as nickeline, though nickel itself may be employed, but is not so advantageous on account of its higher cost. The outside casing E in the element B is shown as cast in one piece within the block F. This is a mere matter of detail construction. It is advis-

able that the upper surface of the block F shall be thoroughly clean before casting the zinc alloy upon it.

The insertion of the body containing nickel I believe to be important in the generation of electricity. Of course the heat is applied to the lower asbestos protected end. The elements can be arranged in any suitable way.

It is not essential that the entire conductor D shall be of one piece of metal, though I prefer it as shown. I prefer to have the external protectors G in order to protect the elements from the flame, which is to some extent a conductor.

It is obvious that the size of the various parts may be varied,—the electric generative parts being principally the surfaces in contact.

The object of the block F of non-fusible metal is to protect the zinc alloy from fusion. This block should be of considerable thickness and entirely protect and cover the end of the electricity-generating body.

The form of element lettered B is shown simply for the purpose of illustrating another method of combining the casing and the block.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A thermo-electric element which consists of a block of iron in contact with a block of an alloy of zinc and antimony, and entirely covering and protecting said alloy and conductors for conveying the generated electricity, substantially as described.

2. The combination of a block of iron in contact with a block or surface of an alloy of zinc and antimony, and a body of nickeline or nickel compound entering into the alloy of antimony and zinc and forming a conductor conveying the electricity generated, substantially as described.

3. The combination of an iron block F and block C in contact with and protected by block F and composed of an alloy of antimony and zinc, and an insulating body H surrounding the zinc alloy, and suitable electric connections, the whole forming a thermo-electric element, substantially as described.

4. The combination of a body of metal F,

a dissimilar body of metal C, protected by infusible block F and an exterior asbestos protector G, substantially as described.

5 The combination of the iron block F, the zinc alloy block C, in contact therewith the insulator H, the external casing E, and the asbestos protector G, substantially as described.

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

MAX MESTERN.

Witnesses:

H. COUTANT,
ANTHONY GREF.