

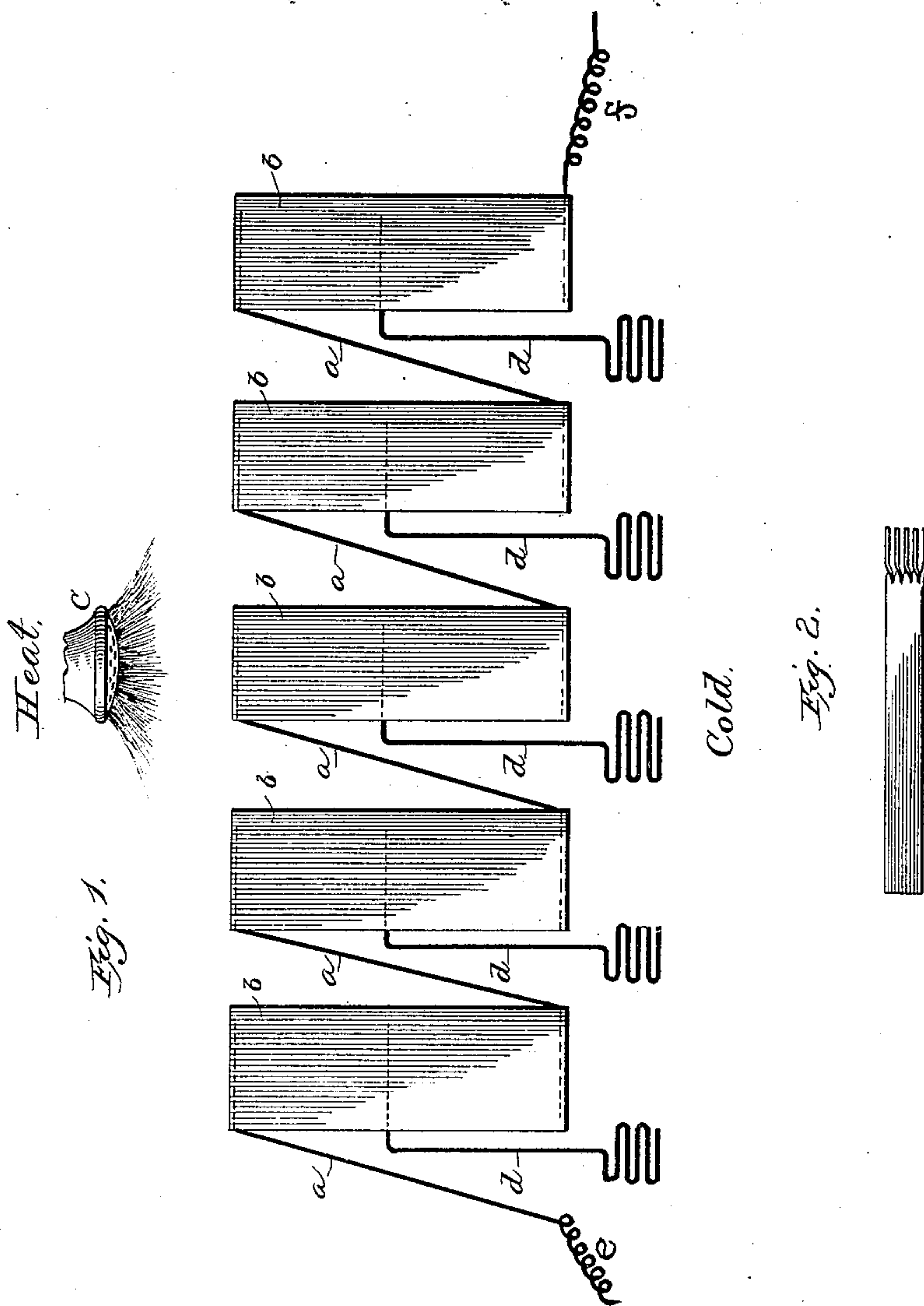
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(No Model.)

H. B. COX.
THERMO ELECTRIC BATTERY.

No. 434,427.

Patented Aug. 19, 1890.



Witnesses:

John Enders Jr.
H. E. Peck

Inventor,
Harry B. Cox,
per *[Signature]*
Attorney.

UNITED STATES PATENT OFFICE.

HARRY BARRINGER COX, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO
THE ELECTRIC GENERATOR COMPANY, OF PORTLAND, MAINE.

THERMO-ELECTRIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 434,427, dated August 19, 1890.

Application filed March 6, 1889. Renewed December 23, 1889. Serial No. 334,743. (No model.)

To all whom it may concern:

Be it known that I, HARRY BARRINGER COX, of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Thermo-Electric Batteries; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in thermo-electric generators.

It is a well-known law that if two unlike metals are joined together and either heat or cold be applied at or near the junctions an electro-motive force is set up or generated. By practical experiment I have found that the best results are obtained when the length of metal in circuit is as short as possible, and the fall in the thermic potential is as great as possible. In the ordinary thermo-pile this result cannot be practically attained.

With these facts in view, the object of my invention is to produce in a thermo-electric circuit as pronounced a fall in heat potential as possible, and to produce as large a movement of heat within the circuit as possible.

The object of all previous thermo-couples has been to maintain a difference of temperature at the junctions. The object of my invention is to maintain, or rather produce, a fall in the thermic potential within the circuit.

These objects are accomplished by, and my invention consists in, certain novel features of construction, and in combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is an elevation of the improved thermo-pile. Fig. 2 is an elevation of a strip before being united with the larger element.

Each thermo-couple consists of two elements *a* *b*, composed of unlike metals joined together in a suitable manner. In forming a pile any number of these couples are em-

ployed. The strips *a* extend from one end of one large element *b* to the opposite end of the next adjoining element *b*, and heat is applied from any suitable source, as *c*, to the junctions at corresponding ends of the elements. The opposite corresponding junctions are to be kept at as low temperature as possible. A conducting or radiating strip *d*, of good conducting metal, is connected with and extends from said elements *b*, between the portions of the same exposed to heat and cold, toward the source of cold.

In connecting and constructing the parts the ends of the metal strips *a* and *d* are slit, perforated, or bent, as shown in Fig. 2, in such manner that the metal composing the element *b* can be cast around and make a firm connection therewith. The metal composing the element *b* is also cast around and thus joined to the conducting or radiating strip or strips *d*. The positions of the strips *d* may be varied to suit the pile.

The object of the strips *d* is to produce as great a fall in thermic potential between the junctions as possible.

It should be observed that the conductors or radiators *d* are connected between the junctions and extend out into the atmosphere. This prevents them from not only attaining the same temperature as the element *b*, but in fact reduces the temperature of said element, and tends to very materially lower the temperature between the junctions, and thus produces the object sought for—i. e., a pronounced fall in thermic potential.

The opposite poles of the pile are indicated by the reference-letters *e* and *f*.

It is evident that various changes might be made in the form, arrangement, and connection of the parts without departing from the spirit and scope of my invention; hence I do not wish to limit myself to the construction shown.

What I claim is—

1. In thermo-couples, a conductor or radiator placed within the circuit of the same to produce a fall in thermic potential, substantially as described.

2. A thermo-couple provided with a conductor or radiator connected between the hot

and cold junctions of the couple and extending outwardly into the atmosphere.

3. A thermo-pile provided with a radiator or conductor connected between the hot and cold junctions of the pile to produce a maximum fall in thermic potential, substantially as set forth.

4. A thermo-electric generator comprising a series of couples, each composed of two dissimilar elements cast together at their adjoining ends, and a conductor cast or connected with one of the elements within its length, for the purpose set forth.

5. A thermo-electric generator composed of

alternate elements of unlike metals joined together at their opposite ends, every alternate element having a conductor connected to the element between its junctions with the adjoining elements and extending in the direction of the junction to be kept cool, for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HARRY BARRINGER COX.

Witnesses:

D. C. Cox,

J. BETTS SMITH.