

(No Model.)

T. A. EDISON.
THERMO ELECTRIC BATTERY.

No. 434,587.

Patented Aug. 19, 1890.

FIG. 1.

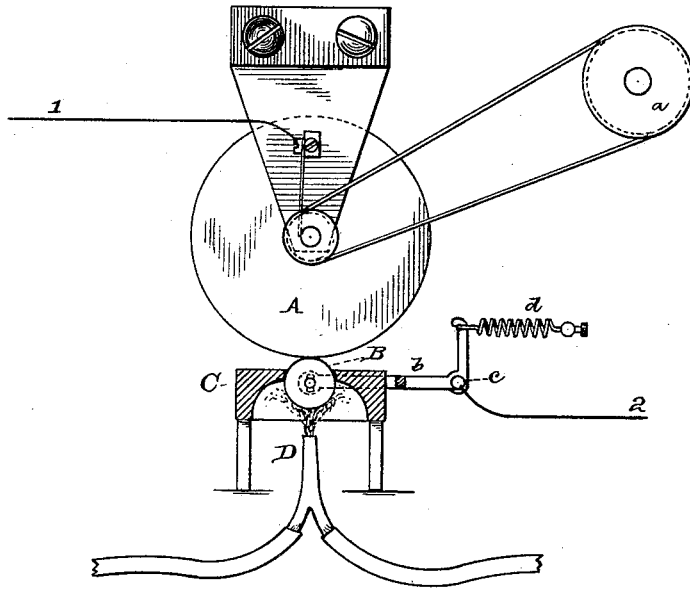
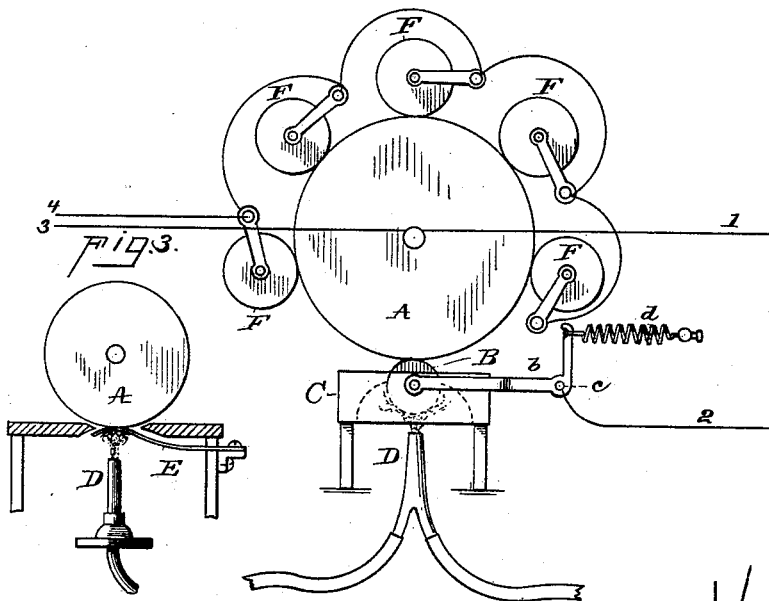


FIG. 2.



ATTEST:
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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

THERMO-ELECTRIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 434,587, dated August 19, 1890.

Application filed January 30, 1888. Serial No. 262,430. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Thermo-Electric Batteries, (Case No. 753,) of which the following is a specification.

The object I have in view is to produce a more efficient thermo-electric couple or battery, or one having a higher electro-motive force than has heretofore been obtained in thermo-electric batteries. This I accomplish by maintaining the two thermo-electric metals at widely different temperatures at their points of contact. To do this, I rotate or otherwise move one or each of the metals so that they will have a traveling contact, one metal only being heated directly, and the other receiving heat by conduction at the point of contact. The moving of the cooler metal brings constantly new portions of the metal into contact with the heated metal, while other portions of the cooler metal are kept cool by the surrounding air or other cooling medium, and thus a widely-different temperature of the two metals is maintained, and a more efficient couple produced.

In carrying out my invention I prefer to produce the movement at the contact of the metals by constructing the cooler metal as a disk or wheel which is rotated by any suitable motor—such as an electric motor—receiving the current from the battery itself. The heated metal may also be a disk or wheel maintained in contact with the cooler metal by spring-pressure and rotated by it; or this heated metal may be a plate against which the cooler-disk rubs in its movement. The rotating cooler disk or wheel may have one or more other disks or wheels riding upon it or plates rubbing on it, which assist the cooling of the cooler metal, and at the same time produce a useful electro-motive force at their points of contact with the cooler metal.

In the accompanying drawings, forming a part hereof, Figure 1 is a side elevation and partial section of the thermo-electric couple or battery embodying my invention. Fig. 2 is a side elevation of a modification of the battery, and Fig. 3 is a side elevation and partial section of a further modification.

A is a disk of any suitable metal—say, for example, of iron. This disk is mounted in bearings, so as to be capable of rotation, and is rotated by any suitable motive power applied to the wheel *a*. Bearing against one side of the disk A is a smaller disk B, of any suitable metal—say, for instance, of copper. This disk B is mounted upon an arm *b*, pivoted at the point *c*, and having attached thereto a spring *d*, which acts to press the disk B constantly against the disk A. A shield C of fire-brick incloses the disk B, except on one side, where it projects through a slot in the shield to press against the disk A. Heat is applied to the disk B within the shield C by any suitable means, a burner D being shown for that purpose. The shield C prevents the direct radiation of the heat from the burner D to the disk A, so that the disk A is heated only by conduction from the disk B. The disk A being rotated, its contact with the disk B will be changed constantly to new points on the periphery of the disk A, and hence the two metals will be maintained at widely-different temperatures at their points of contact, the disk A being cooled by the surrounding air or other medium. Circuit-connections 1 and 2 are maintained with the disk A by a spring bearing on its shaft, with the disk B at the pivot of the arm *b*.

Instead of having the heated metal a rotating disk it may be a stationary plate E, as shown in Fig. 3. One or more other copper disks or plates F not directly heated may ride or bear upon the disk A. These will serve to assist the cooling of the disk A, and will produce an electro-motive force which is much lower of course than that produced between the disks A and B; but it may be utilized through suitable circuit-connections 3 4, as shown.

It is evident that any suitable thermo-electric metals may be employed in the construction of my improved couple or battery, and that the principle described is capable of being embodied in many forms, differing in detail from the construction specifically shown and described without departing from the spirit and scope of my invention.

What I claim is—

1. A thermo-electric couple or battery wherein a moving contact is maintained between

the two metals which touch each other at a single point, substantially as set forth.

2. In a thermo-electric couple or battery, the combination of two metals having a moving contact, with a source of heat acting on one of such metals, the other metal being heated only by conduction at the point of contact, substantially as set forth.

3. In a thermo-electric couple or battery, the combination, with one thermo-electric substance maintained at a low temperature, of a second thermo-electric substance in contact therewith and artificially heated, substantially as set forth.

4. In a thermo-electric couple or battery, the combination, with a directly-heated metal, of a metal heated only by conduction from the first metal at its point of contact therewith, the latter metal being constructed as a rotating disk or wheel, substantially as set forth.

5. In a thermo-electric couple or battery, the combination of the two metals constructed as disks or wheels located in contact at one point and rotated continuously, a source of heat heating one of such disks or wheels, and

a spring pressing such disks or wheels constantly together, substantially as set forth.

6. In a thermo-electric battery, the combination of the two metals maintained in moving contact with each other, a source of heat heating one of such metals, the other being heated by conduction at the point of contact, and one or more other metallic bodies maintained in moving contact with the cooler metal and heated only by conduction therefrom, substantially as set forth.

7. In a thermo-electric battery, the combination, with a heated metal, of a rotating cooler metal having a traveling contact with the heated metal and heated by conduction therefrom at the point of contact, and one or more metallic bodies riding or rubbing on the rotating cooler body, and heated only by conduction from such rotating body, substantially as set forth.

This specification signed and witnessed this 21st day of January, 1888.

THOS. A. EDISON.

Witnesses:

WILLIAM PELZER,
E. C. ROWLAND.