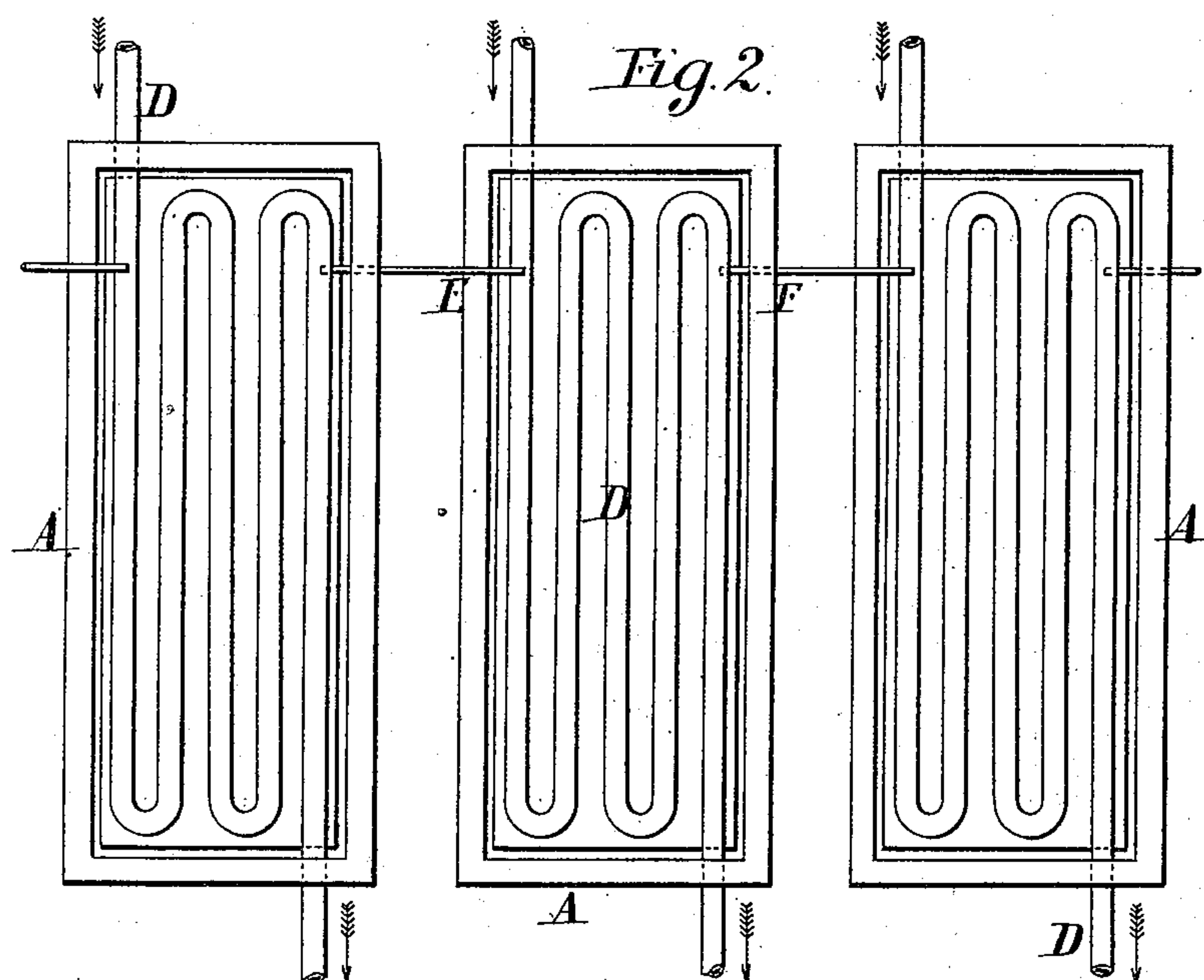
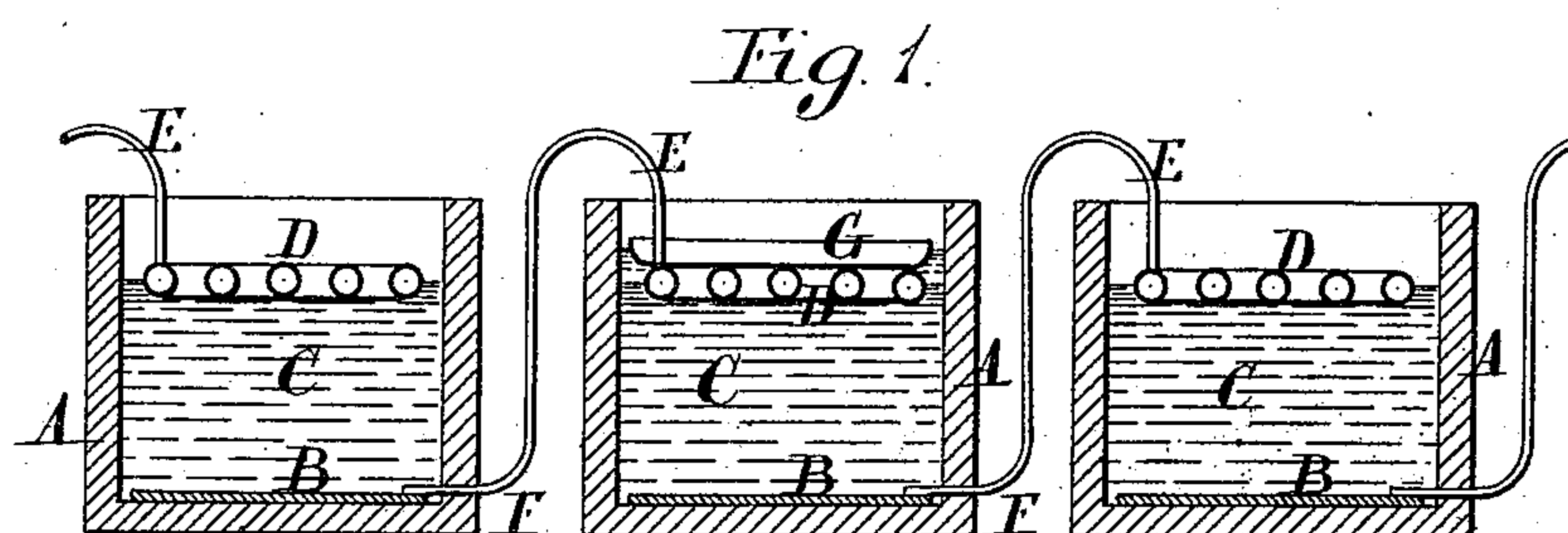


(No Model.)

V. RIATTI.  
ELECTRIC BATTERY.

No. 470,260.

Patented Mar. 8, 1892.



Witnesses:-  
J. A. Rutherford  
J. H. Daly

Inventor:  
Vincenzo Riatti.  
By James L. Norris  
Attorney

# UNITED STATES PATENT OFFICE.

VINCENZO RIATTI, OF MILAN, ITALY, ASSIGNOR TO JULIAN GOLDSMID, OF LONDON, ENGLAND.

## ELECTRIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 470,260, dated March 8, 1892.

Application filed June 9, 1891. Serial No. 395,697. (No model.)

*To all whom it may concern:*

Be it known that I, VINCENZO RIATTI, a subject of the King of Italy, residing at Campo Lodigiano, Milan, in the Kingdom of Italy, have invented new and useful Improvements in Thermo-Electric Apparatus, of which the following is a specification.

This invention relates to apparatus for converting heat into electricity, constructed and arranged as follows: A vessel, preferably of rectangular form, made of material such as wood, which is a bad conductor of heat and electricity, and having on its bottom an electrical conductor, such as a plate or a number of connected pieces of metal, is charged to a certain depth with a saline solution, rendering it conductive of electricity, preferably solution of a salt of the metal which occupies the bottom of the vessel. The upper part of the liquid is heated by steam or hot gases passed through horizontal tubes, which are just submerged in the liquid. A conducting plate or body may also be placed in contact within the upper part of the liquid. The tubes (when they are of conducting material) or the conducting-body in the upper part of the liquid being connected in circuit by suitable conductors, when heat is applied at the upper part of the liquid a current of electricity is transmitted through this circuit. A number of vessels, arranged as above described, each constituting a thermo-electric cell, may be connected in parallel or in series, according as electricity is required in greater or less quantity or tension. The conductors and the solution may be so selected that whatever electric current they produce without heating shall reinforce the thermo-electric current. Thus, for instance, the upper conductor may be copper, the lower conductor lead, and the liquid a solution of nitrate of lead.

Figure 1 of the accompanying drawings is a section, and Fig 2 is a plan, showing three thermo-electric cells, according to this invention, connected in series.

Each cell consists of a vessel A, which may be of wood, having on its bottom a plate B of conducting material. It is charged with saline solution C, in which are immersed at the top of the liquid-tubes D, having steam or hot gases passed through them, so as to heat the upper layer of the liquid C. The tubes D are not necessarily of conducting material. A plate, tray, or other suitable piece of conducting material, as shown at G, may be placed in contact with the liquid, the conductor E being in that case connected to it and not to the tubes. Conductors E and F, connected, respectively, to the tubes D, and the plates B being externally connected in circuit, an electrical current will pass through the circuit. A number of cells may be connected parallel, all the conductors E joining one main conductor and all the conductors F joining another; or, as shown in the drawings, the conductor F of one cell may join the conductor E of the next, thus connecting the cells in series. Although the tubes D are shown in each case as being continuous and bent, obviously they may be otherwise formed and arranged so long as they serve to heat the upper layer of the liquid.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

A thermo-electric cell consisting of a vessel made of material which is a bad conductor of heat and electricity, charged with liquid capable of conducting electricity, and having an electrical conductor at the bottom and a heating and conducting body at the top of the liquid, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 14th day of May, A. D. 1891.

VINCENZO RIATTI.

Witnesses:

LUIGI VERGANI,  
FRANCISCO CEREDA.