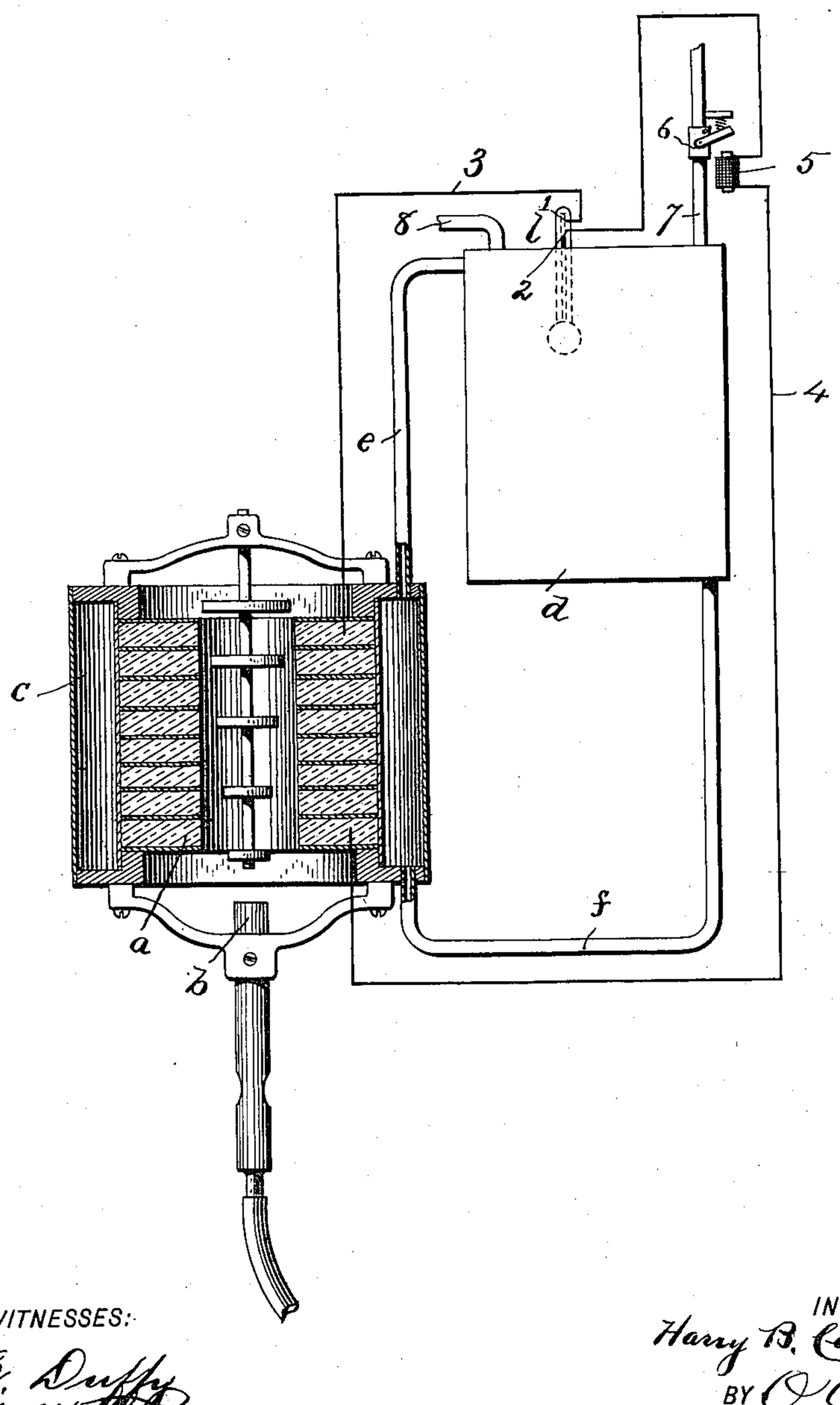
(No Model.)

H. B. COX.

RADIATING AND SUPPLY SYSTEM FOR THERMO-ELECTRIC GENERATORS.

No. 528,924. Patented Nov. 13, 1894.



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HARRY BARRINGER COX, OF HARTFORD, CONNECTICUT.

RADIATING AND SUPPLY SYSTEM FOR THERMO-ELECTRIC GENERATORS.

SPECIFICATION forming part of Letters Patent No. 528,924, dated November 13, 1894.

Application filed February 27, 1894. Serial No. 501,676. (No model.)

To all whom it may concern:

Be it known that I, HARRY BARRINGER COX, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Radiating and Supply Systems for Thermo-Electric Generators; 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 drawing, and to the letters and figures of reference marked thereon, which forms part of this specification.

This invention relates to certain improvements in thermo electric generators.

The object of the invention is to provide for the employment of a liquid cooling and radiating medium for maintaining the surfaces of the generator at a different temperature.

A further object of the invention is to provide an improved method of maintaining the liquid cooling medium comparatively cool and of renewing the same.

The invention consists in the improved method, and in certain novel features of construction, and in combinations of parts more fully and particularly described hereinafter and pointed out in the claims.

Referring to the accompanying drawing, which shows a sectional view of the thermo-electric generator and the liquid circulating and radiating supply system, *a*, is a thermo electric generator of any suitable or desirable construction with heating means, such as a burner *b*, for applying heat to the inner surfaces of the generator.

c, is a water jacket surrounding the generator to keep the outer surface thereof cool and thereby maintain a fall in thermic potential within circuit.

d, indicates any suitable liquid cooling means, such as a radiator tank, arranged at any cool location, such as the ground or in a tank of cold liquid or at a place where exposed to cold air.

Suitable connections are so arranged that the cooling liquid will circulate from the water jacket of the generator through said radiating tank and back to the jacket. This can be accomplished by the pipe *e*, connected to the upper ends of the jacket and the radiator tank, and the pipe *f*, connected to the lower ends of said jacket and tank.

It will be observed that as the liquid in the jacket becomes heated it rises through the pipe *e*, to the radiator tank where it is cooled off and then drops through pipe *f*, into the liquid jacket. The liquid in the jacket is thus maintained at about an even relatively cool temperature by the circulation.

8, is a discharge or overflow from the top of the radiator tank.

In order to prevent unnecessary waste of liquid a constant supply of fresh liquid is not allowed to flow into the liquid jacket with a constant waste discharged therefrom and suitable means is provided to supply fresh cold water or other cooling liquid into the circulating body of liquid when said body becomes so unduly heated as not to accomplish the purpose intended of producing a fall in thermic potential. To this end a suitable pulsating or intermittent liquid supply is provided which automatically discharges fresh cold liquid into the circulating system as the heat thereof rises above a certain point. Referring to this mechanism, 1, indicates a suitable thermometer arranged in contact with the circulating cooling liquid. This thermometer 1, preferably is located in the cooling tank *d*, with its upper portion extending to the exterior thereof, and provided with the normally separated contact points 1, 2, projecting into the interior of the thermometer so that when the mercury of the thermometer rises to a certain point by reason of the heat of the cooling liquid, the two points 1, 2, will be electrically connected.

3, is the electrical connection from one pole to the thermo electric generator *a*, to the contact point 1.

4, indicates the electrical connection from the opposite pole of the thermo-electric generator to the contact point 2. One side of the complete circuit thus formed is provided with the electro magnetic mechanism 5, for controlling the valve 6, arranged in and controlling the fresh liquid supply pipe 7, preferably opening into the radiator tank *d*. This valve is normally maintained closed to shut off the supply of liquid preferably, although not necessarily, by means of a spring.

The electro magnetic controlling mechanism of the valve is so arranged that when the contact points 1, 2, are electrically connected and the circuit is closed through the generator, the electro magnetic valve mechanism 5, is energized and the valve opened permitting fresh liquid to flow into the radiator tank until the circulating liquid is sufficiently cooled to permit the thermometer to electrically disengage the points 1, and 2, when a circuit will be broken and the valve closed. A pulsating supply is thus provided which only supplies fresh liquid into the circulating medium when the liquid therein becomes unduly heated and which is immediately shut off when the liquid becomes cool. All waste of liquid is thus avoided and yet the circulating body is maintained comparatively cool.

It is evident that this invention is not confined to employment with a constantly circulating body, but if desired where liquid is plentiful the circulating system of tank *d*, and pipe *e* and *f*, can be dispensed with and the liquid supply pipe opened directly into the liquid jacket. In such a construction the valve is located and controlled in practically the same way and the thermometer would be located in the liquid jacket as in this tank *d*.

It is evident that various changes might be made in the forms, arrangements and constructions of parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact construction herein set forth, but consider myself entitled to all such changes as fall within the spirit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A thermo-electric generator having a heat controlled pulsating controlling means for the liquid supply for the liquid cooling chamber of the generator, substantially as described.

2. A thermo-electric generator having its liquid cooling chamber provided with controlling means for the liquid supply thereto controlled by the temperature of the cooling medium, substantially as described.

3. A thermo electric generator having a circuit for its liquid cooling medium, a liquid supply into said circuit having a valve normally closed, an electro magnetic mechanism controlling said valve, a circuit including the generator and said electro magnetic mechanism and a heat operated circuit closer controlling said circuit and controlled by the temperature of said circulating medium, substantially as described.

4. A thermo electric generator having a surrounding jacket to receive the liquid cooling medium, a circulating system for said medium in which the same can be cooled, a liquid supply for said system provided with an electrically controlled valve, a circuit from the generator including said valve, and a heat controlled circuit closer so that when the liquid in the circulating system becomes heated to a certain degree the circuit will be closed and valve operated to admit cool liquid, substantially as described.

5. The herein described mode of maintaining and cooling the liquid cooling medium of a thermo-electric generator which consists in providing an automatic pulsating cool liquid supply controlled by the temperature of the liquid in the generator, substantially as described.

6. In a thermo electric generator, the combination of a cooling liquid chamber, a valve controlled supply therefor, controlling means for said valve, a circuit including said means and the generator, and a heat controlled circuit closer operated by the temperature of the liquid of said chamber and controlling said circuit, substantially as described.

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

HARRY BARRINGER COX.

Witnesses:
CHAS. M. JOSLYN,
E. HENRY HYDE, Jr.