(No Model.)

S. C. KRAM.

THERMO ELECTRICAL PAD.

No. 310,140. Patented Dec. 30, 1884.

Fig. 1.

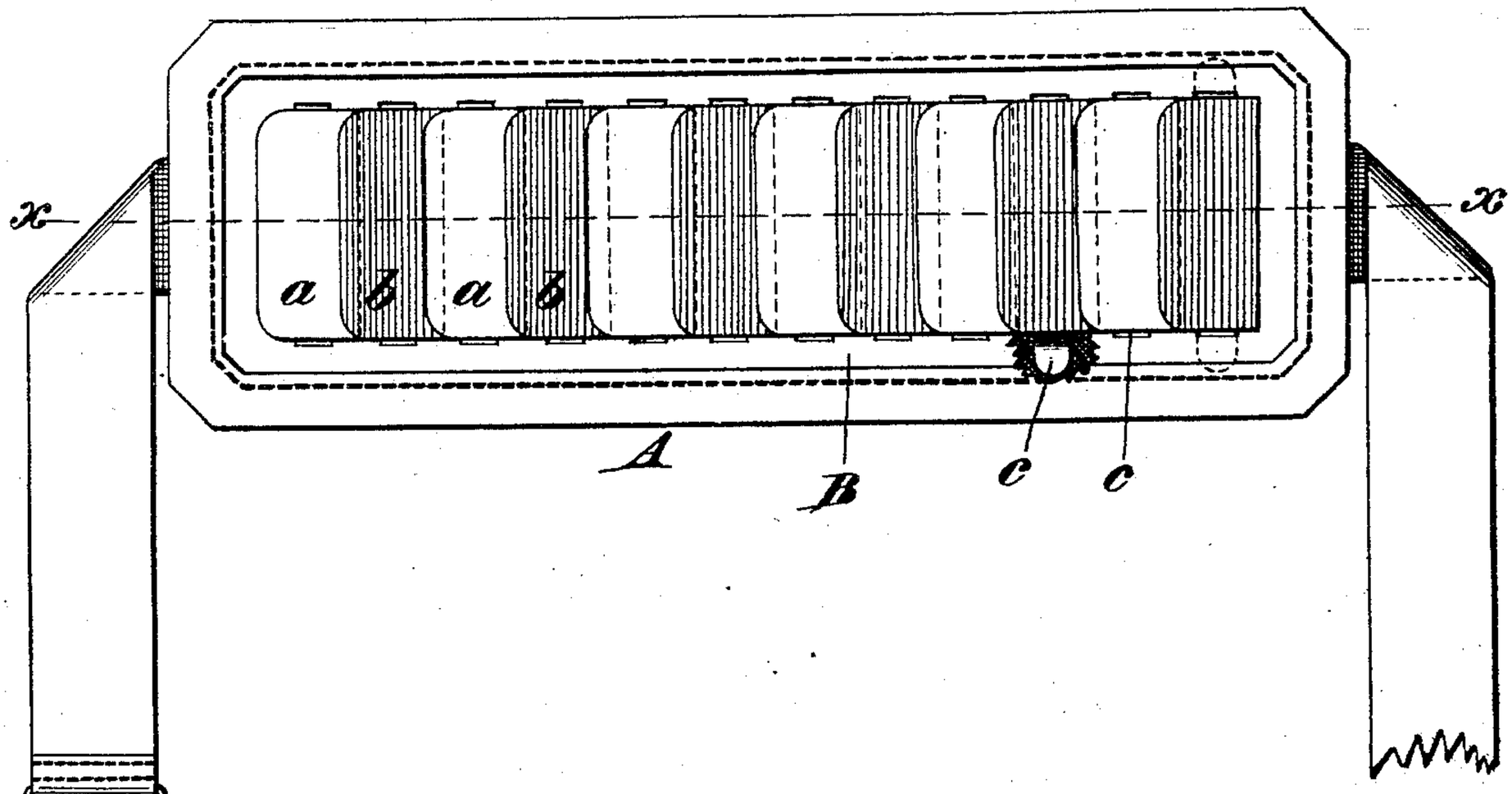


Fig. 2.

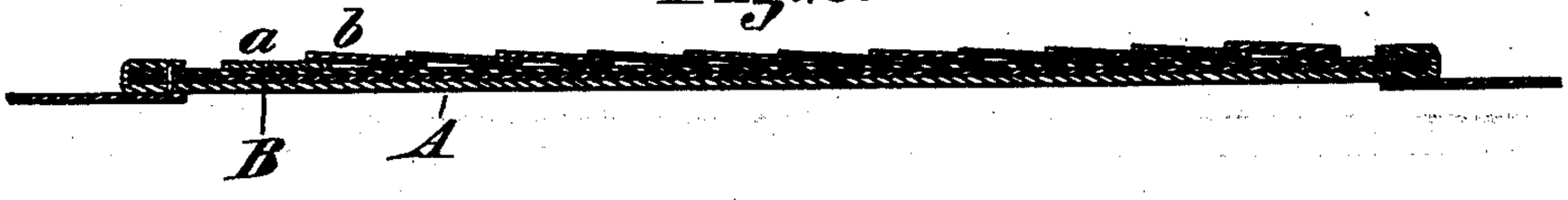
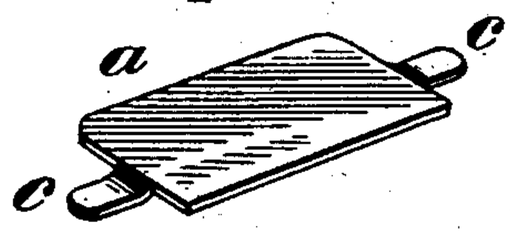


Fig. 3.



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UNITED STATES PATENT OFFICE.

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THERMO-ELECTRICAL PAD.

SPECIFICATION forming part of Letters Patent No. 310,140, dated December 30, 1884.

Application filed December 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, SCHUYLER C. KRAM, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Thermo-Electrical Pads, of which the following is a specification.

The object of my invention is the construction of a thermo-electrical pad adapted to be attached to some article of wearing-apparel so that it may be completely insulated on its base, and so constructed that when bent or curved it will still preserve the metallic contact between the metallic couples of all the series forming the pile, and also attach the metal plates to the pad, so that the liability of breakage of the pivoting-points is obviated, and yet connected so that each member of the series may be readily separated by a short bending of the pad and separately cleaned and any impurities which may become lodged therein removed, all of which will be fully set forth in the description of the accompanying drawings, in which—

Figure 1 is a plan view of my improvement. Fig. 2 is a longitudinal section on line *x x*, Fig. 1, and Fig. 3 is a detail view of the plates.

A represents the base of the pad, to which are attached alternate plates of copper and zinc. This base should be made of india-rubber or other suitable non-conducting material. The pad is made of two thicknesses, upon which the metal plates normally rest, the upper thickness of the pad being designated by the letter B. *a b* represent these metallic plates, one being of copper and the other of zinc. Each plate is provided with a shank or tenon, *c*, which is formed on the end of these plates, and is inserted in the base between the upper and lower thickness, as is shown in Fig. 1, part of the base being broken away to represent the position of one of the tenons in the pockets formed between the two thicknesses A and B of the base. These plates are secured to the pad by inserting the shank *c* into perforations at appropriate places in the material B. It is not necessary that these points should be round, but they should be sufficiently small in cross-section to allow each of the metal plates *a* or *b* to be turned on these bearing-points, so as to preserve the contact when a long curve is formed of the pad, and also to allow sufficient movement to form a complete separation of one plate from the next adjacent one, so as to be able to remove impurities which may be lodged between them. This mode of making and arranging the point *c* possesses decided advantages over a former method heretofore resorted to, which involves the insertion of prongs on the metal plates through both thicknesses of the material of the base or belt and clinching them down or making a short bend in the attaching-points, rendering them liable to break, which occurs with zinc or other brittle metals; making these plates lie loosely one upon the other allows the complete separation for cleaning. Thermo piles have also been constructed by soldering together the couples, say, of zinc and copper metals. This mode prevents the formation of a joint between the two couples, and also introduces the presence of a third metal, which is objectionable. I have shown the shank *c* bent slightly, so that it will not draw the upper thickness, B, of the base, between which and the lower thickness, A, it is inserted in the above-described manner.

Having thus described my invention, what I claim is—

A thermo-electric pile consisting of plates of dissimilar metal having end shanks, and a base or belt composed of two thicknesses of material, between which the shanks of the plates are seated, so as to turn or move therein and allow the overlapping edges of the plates to be separated, substantially as described.

In testimony whereof I have hereunto set my hand.

SCHUYLER C. KRAM.

Witnesses:
JNO. E. JONES,
A. GLUCHOWSKY.