

No. 829,808.

PATENTED AUG. 28, 1906

F. F. SHIPP.
ELECTRICAL WATER HEATER.
APPLICATION FILED SEPT. 12, 1904.

2 SHEETS—SHEET 1.

Fig. I.

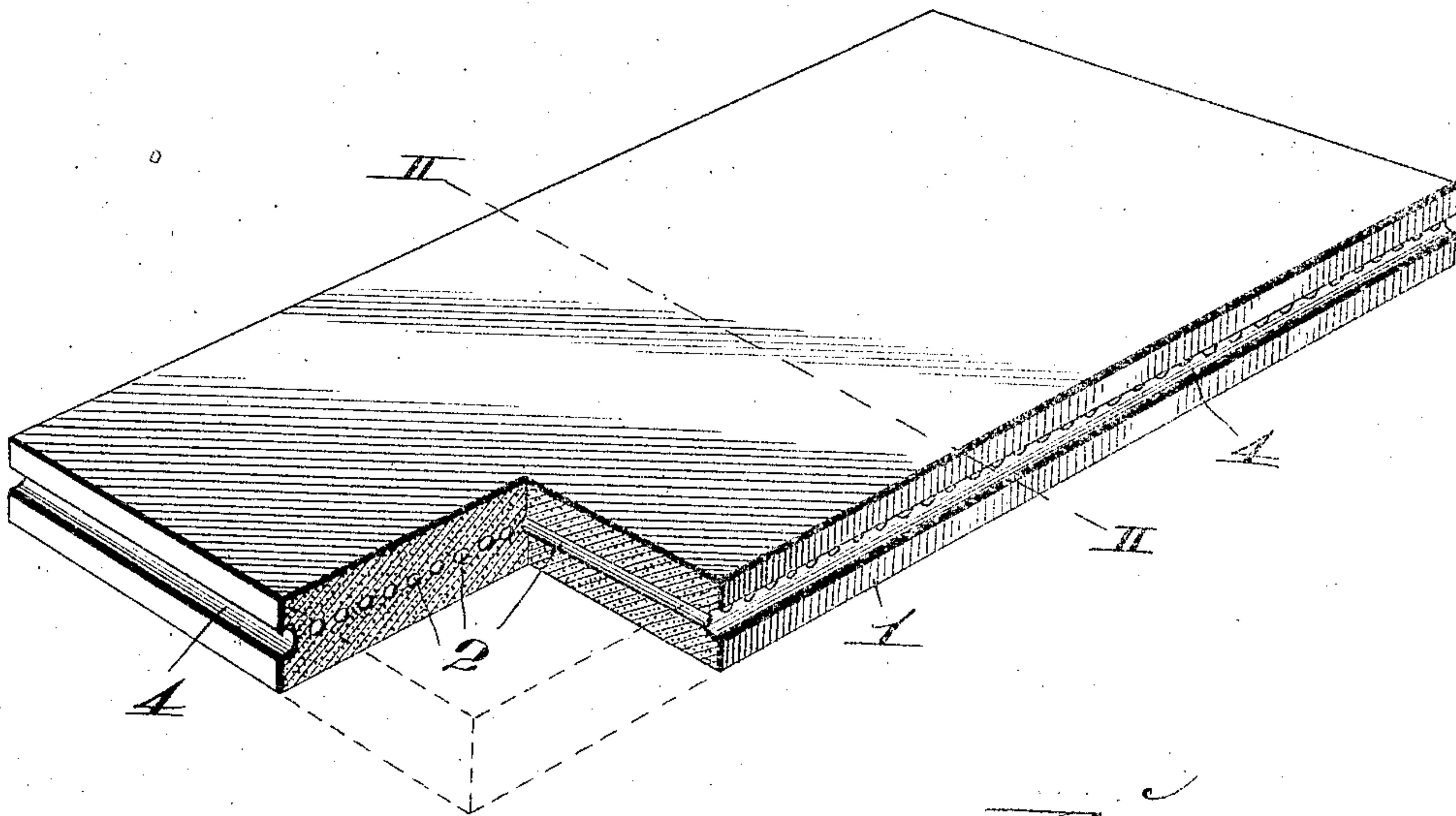


Fig. III.

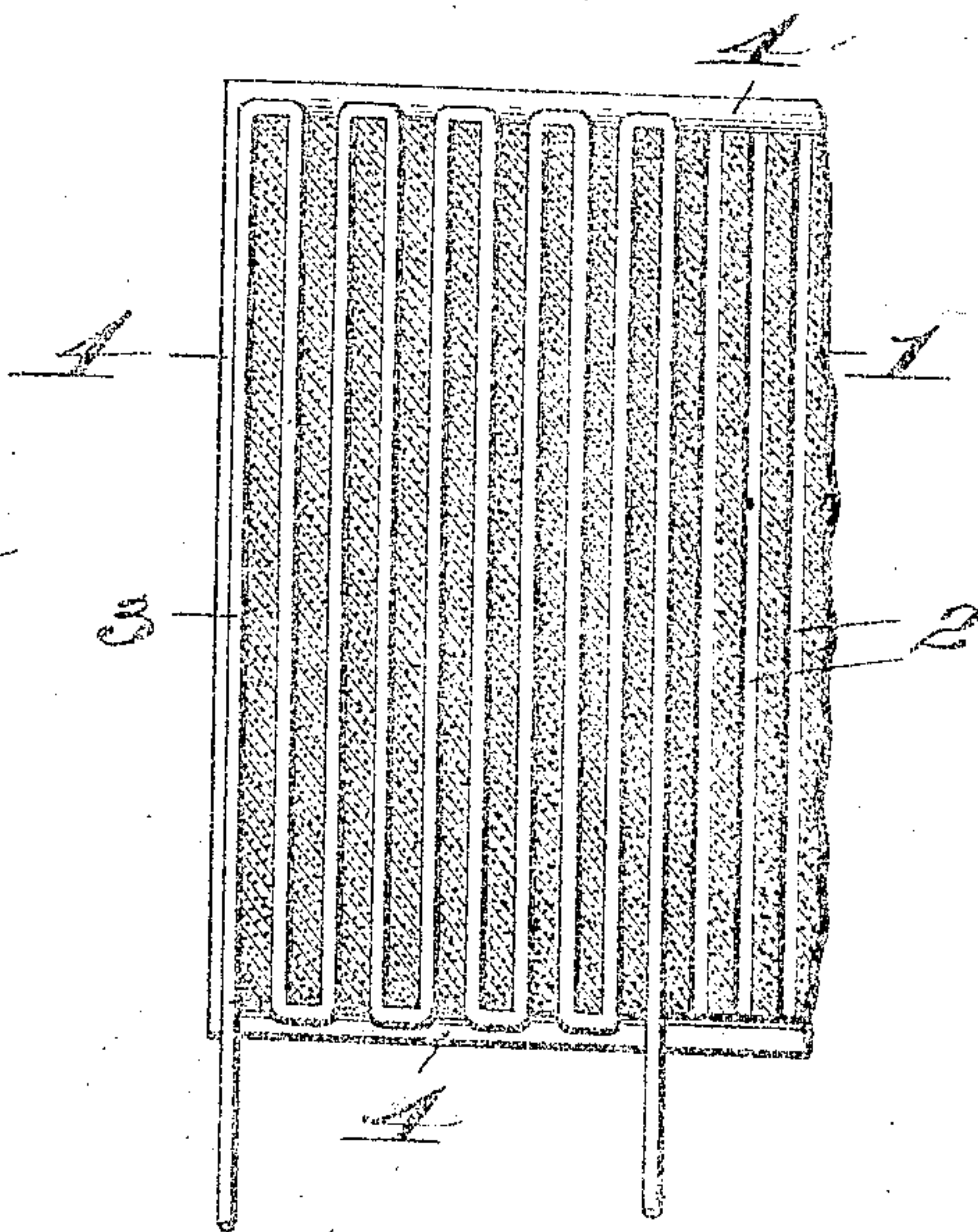
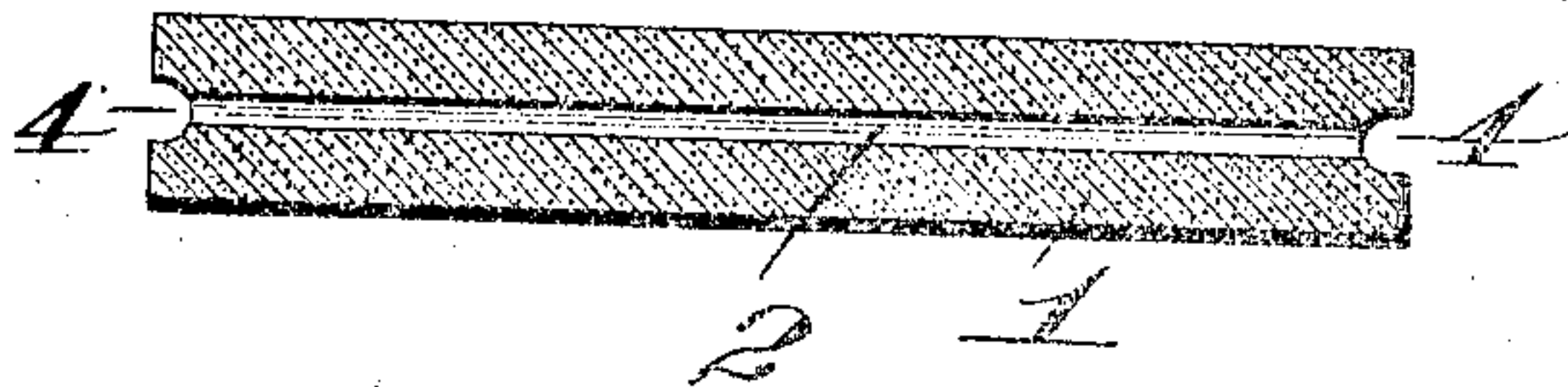


Fig. II.



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2 SHEETS—SHEET 2.

Fig. IV.

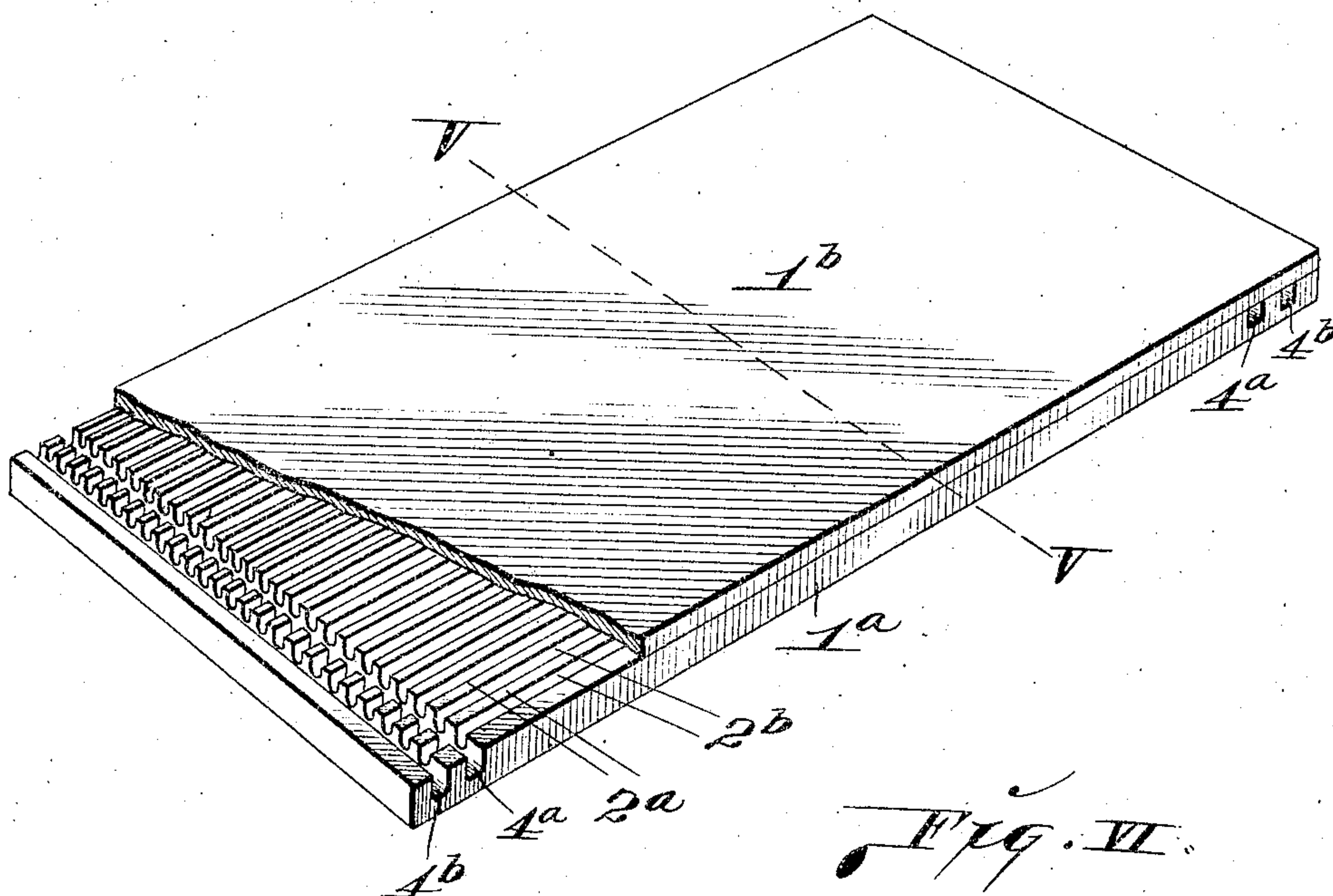


Fig. VI.

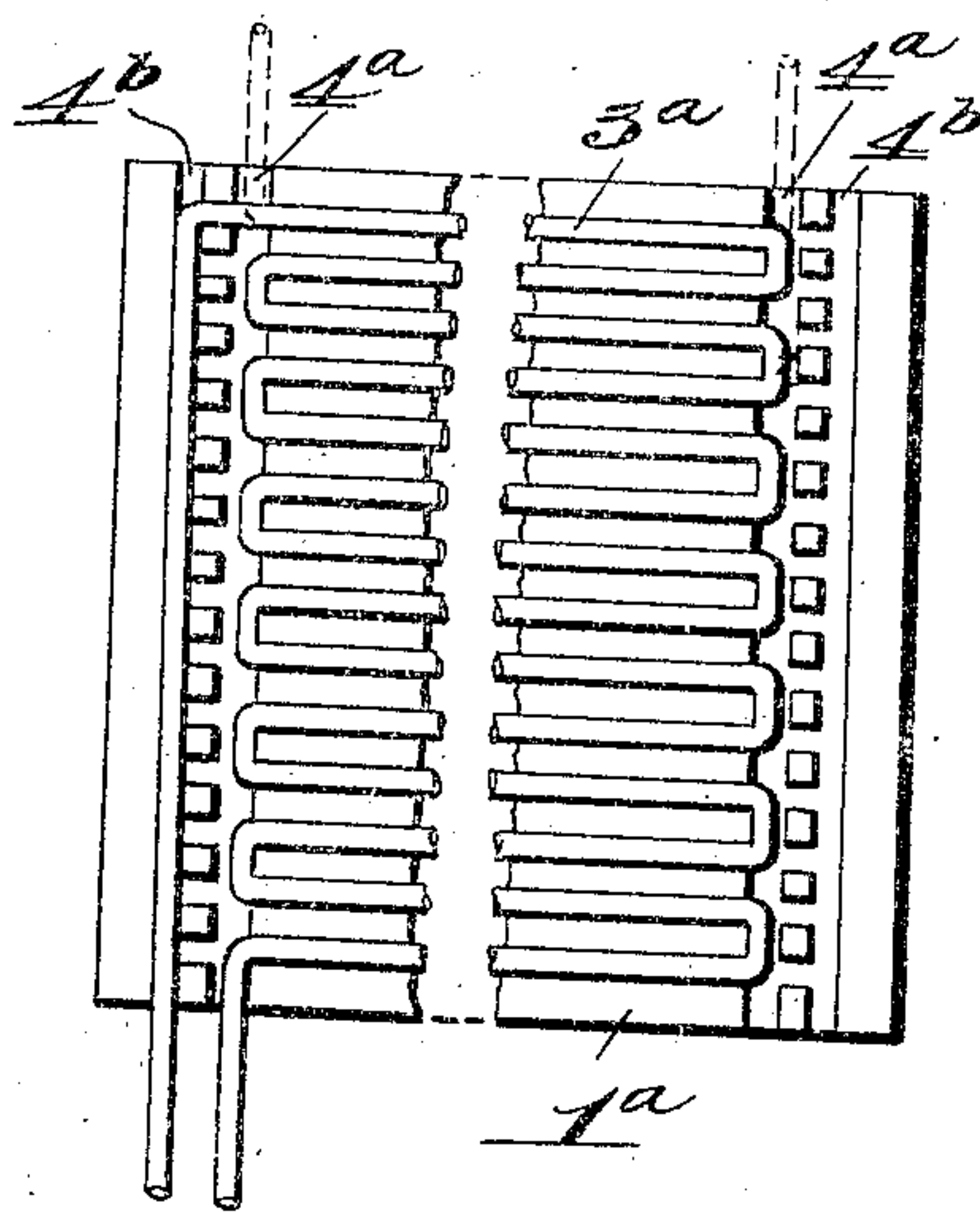
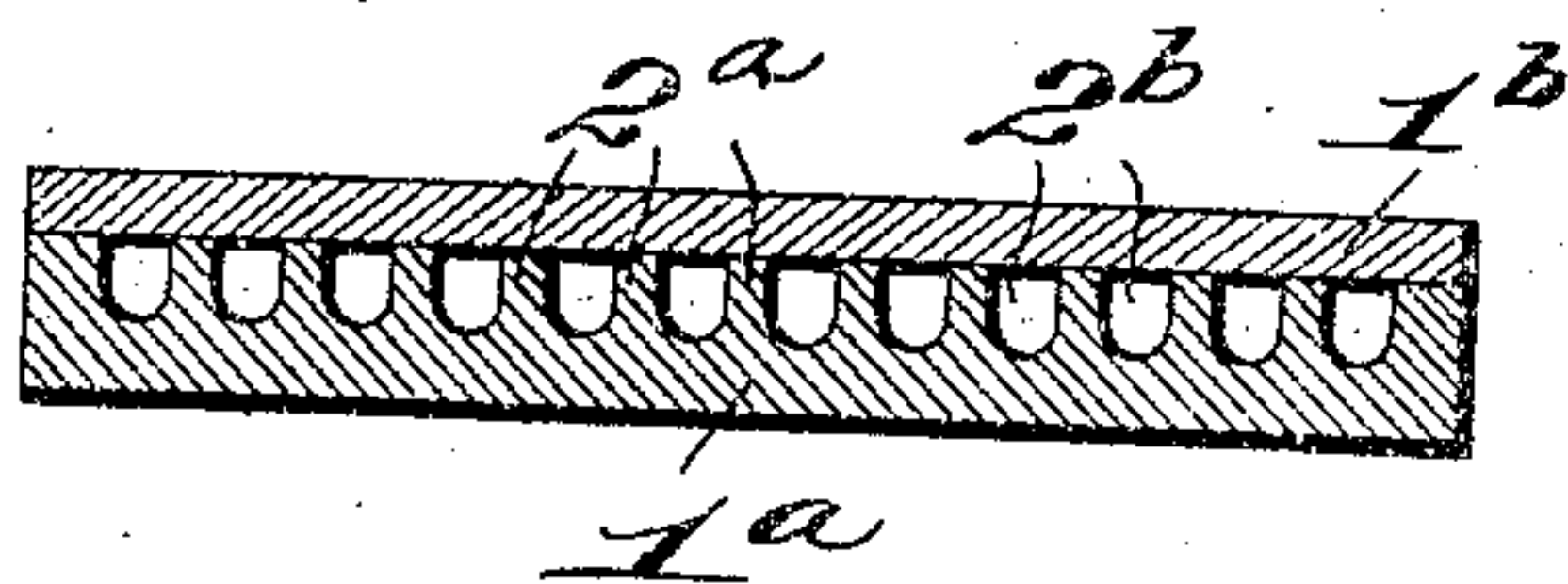


Fig. V.



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UNITED STATES PATENT OFFICE.

FREDERIC F. SHIPP, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ELECTRICAL HEATING & MANUFACTURING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION.

ELECTRICAL WATER-HEATER.

No. 829,808.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed September 12, 1904. Serial No. 224,152.

To all whom it may concern:

Be it known that I, FREDERIC F. SHIPP, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Electrical Water-Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an electrical water-heater which is designed to be placed in a receptacle in the water to be heated; and it consists of a main body in the form of a slab or slabs and a heating-coil moving through passage-ways through the medium of which when an electrical current is present in said coil it is imparted to said body to be radiated and heat the surrounding water.

Figure I is a perspective view of my heater with one of its corners cut out to show the heater at the location of the removed corner in both longitudinal and transverse section. Fig. II is a transverse section taken on line II II, Fig. I. Fig. III is a horizontal longitudinal section taken through one end of the heater with a portion of the coil laid therein. Fig. IV is a perspective view of a modification of my heater with a portion of the upper slab broken away. Fig. V is a vertical transverse section taken on line V V, Fig. IV. Fig. VI is a top view of the lower slab of the modified form of heater shown in Fig. IV with the heater-coil laid therein, the central portion of the slab and coil being broken out.

Referring first to Figs. I to III, inclusive, 1 designates the body of my heater, which is in the form of a single slab of porcelain, fire-clay, or other material that is a good conductor of heat and a non-conductor of electricity, so that the electrical wiring laid therein may not be subjected to loss of electrical current while the heat emanating therefrom is readily received by the body and diffused into the water that is to be heated. In the body 1 I produce a plurality of ducts 2, extending transversely therethrough from the side edges of the body, and in these ducts I lay an electrical conductor 3, that is woven to and fro in a devious course and in the form of a coil throughout the ducts, as seen in Fig. III. I thereby produce a coil of large surface throughout the extent of the heater, due to

the various folds thereof being laid close together, but insulated by the portions of the body of the heater between the folds, and as a consequence I am enabled to heat the heater-body to a high degree without loss of electrical energy.

Throughout the edge of the heater-body I form a channel 4, in which at the side edges of the body the return-bends of the coil are located, so that they are completely isolated from the extreme edges of the body, and as a consequence the body at the side edges by jutting beyond the return-bends of the coil form insulators, through the medium of which any metal or other conductor of electricity with which the heater may come in contact is held away from the coil, so that there can be no loss of electrical current, such as would occur if the coil were in contact with such conductor. The channels at the ends of the heater-body serve as conductors in which the terminals of the coil are laid, so that the coil may terminate at the opposite edge of the heater from that at which it passes from the heater-body in the endmost coil-duct 2.

In the modification illustrated in Figs. IV to VI, inclusive, the body of my heater consists of a lower slab 1^a and an upper slab 1^b. The upper slab is flat surfaced at both sides. The lower slab is provided with a plurality of longitudinally-extending ribs 2^a, that are spaced slightly apart to provide pockets 2^b between them, in which the coil 3^a is laid, the coil being woven to and fro, as seen in Fig. VI. In the bottom slab at each end are transverse channels 4^a and 4^b, the channels 4^a serving to receive the return-bends of the coil 3^a, as seen in Fig. VI. The channels 4^b serve to receive the terminals of the coil, so that said terminals may be carried transversely of the heater-body to lead away from the body at either side edge thereof, according to exigency.

I claim as my invention—

1. In a water-heater, the combination of a single-member body of heat-radiating material that is a non-conductor of electricity, and an electrical conductor-coil laid interior of said body, substantially as set forth.

2. In a water-heater, the combination of a single-member body of heat-radiating material that is non-conductor of electricity, and an electrical conductor-coil laid interior of

said body; said body being provided with a channel at its edge in which the return-bends of said conductor seat, substantially as set forth.

5 3. In an electrical water-heater, the combination of a single-member body provided with ducts extending centrally therethrough and of a material which is a conductor of heat and a non-conductor of electricity, and an
10 electrical conductor-coil laid in said ducts, substantially as set forth.

4. In an electric water-heater, the combination of a single-member solid body provided with a plurality of ducts extending
15 centrally therethrough and of material that is a conductor of heat and a non-conductor of electricity, and a single conductor-coil thread-

ed through said ducts throughout the extent of said body, substantially as set forth.

5. In an electric water-heater, the combination of a single-member solid body provided with a plurality of ducts extending centrally therethrough and of material that is a conductor of heat and a non-conductor of electricity, and a single conductor-coil thread-
25 ed through said ducts throughout the extent of said body; said body being provided at its edge with a channel in which the return-bends of said coil seat, substantially as set forth.

FREDERIC F. SHIPP.

In presence of—

M. P. SMITH,

BLANCHE HOGAN.