

No. 848,254.

PATENTED MAR. 26, 1907.

H. D. LANGTON.
COIL FOR STEAM GENERATORS.

APPLICATION FILED NOV. 7, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

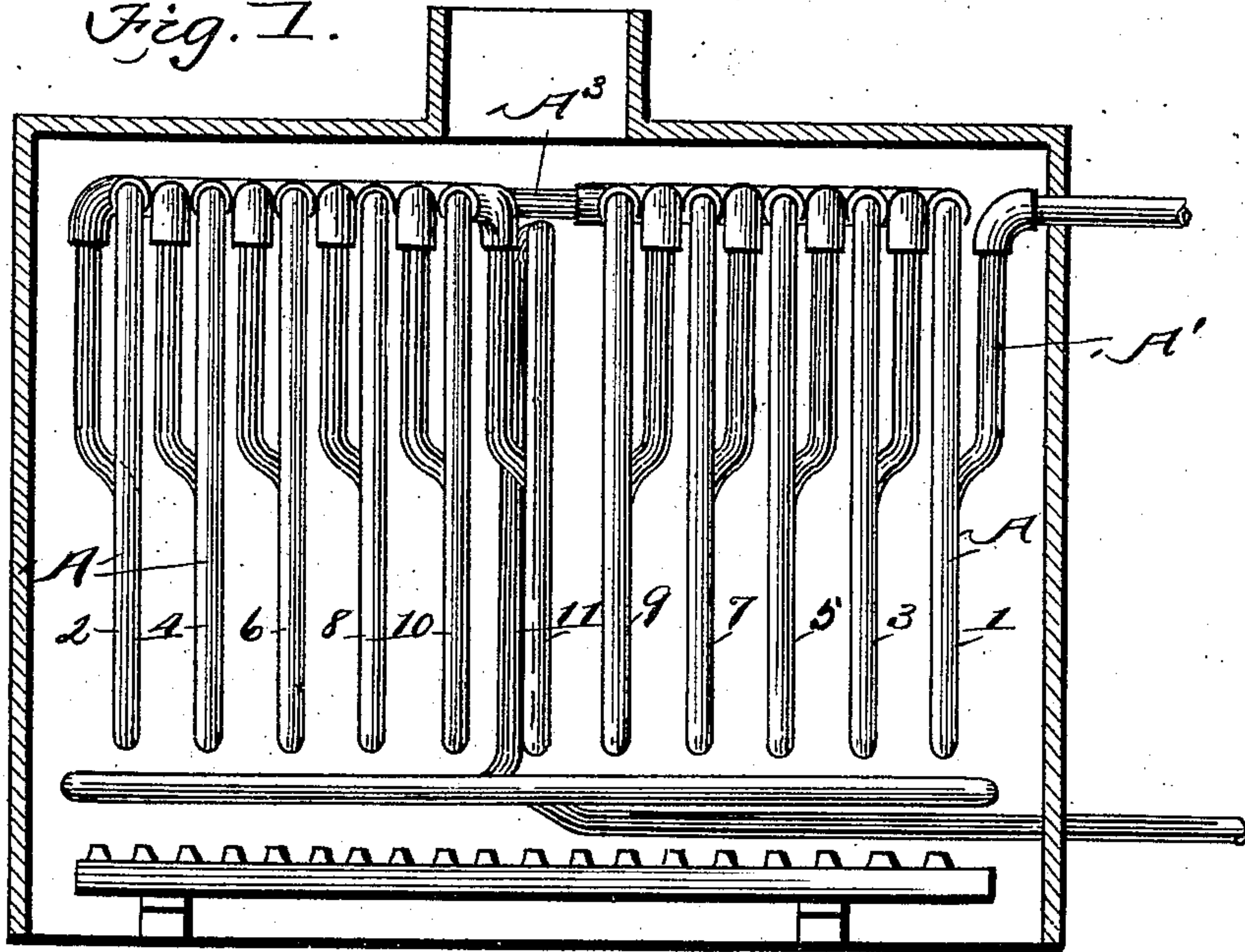
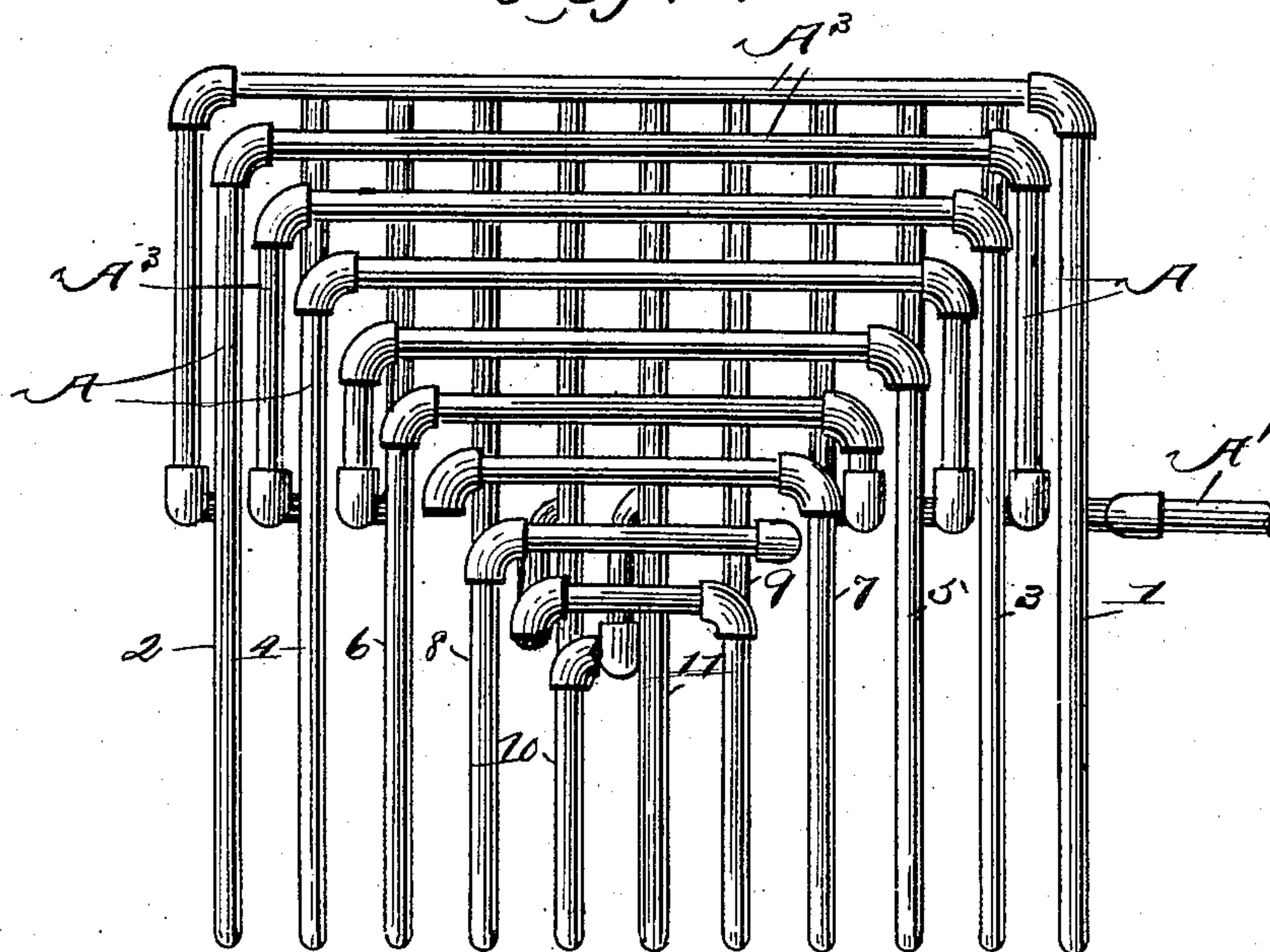


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

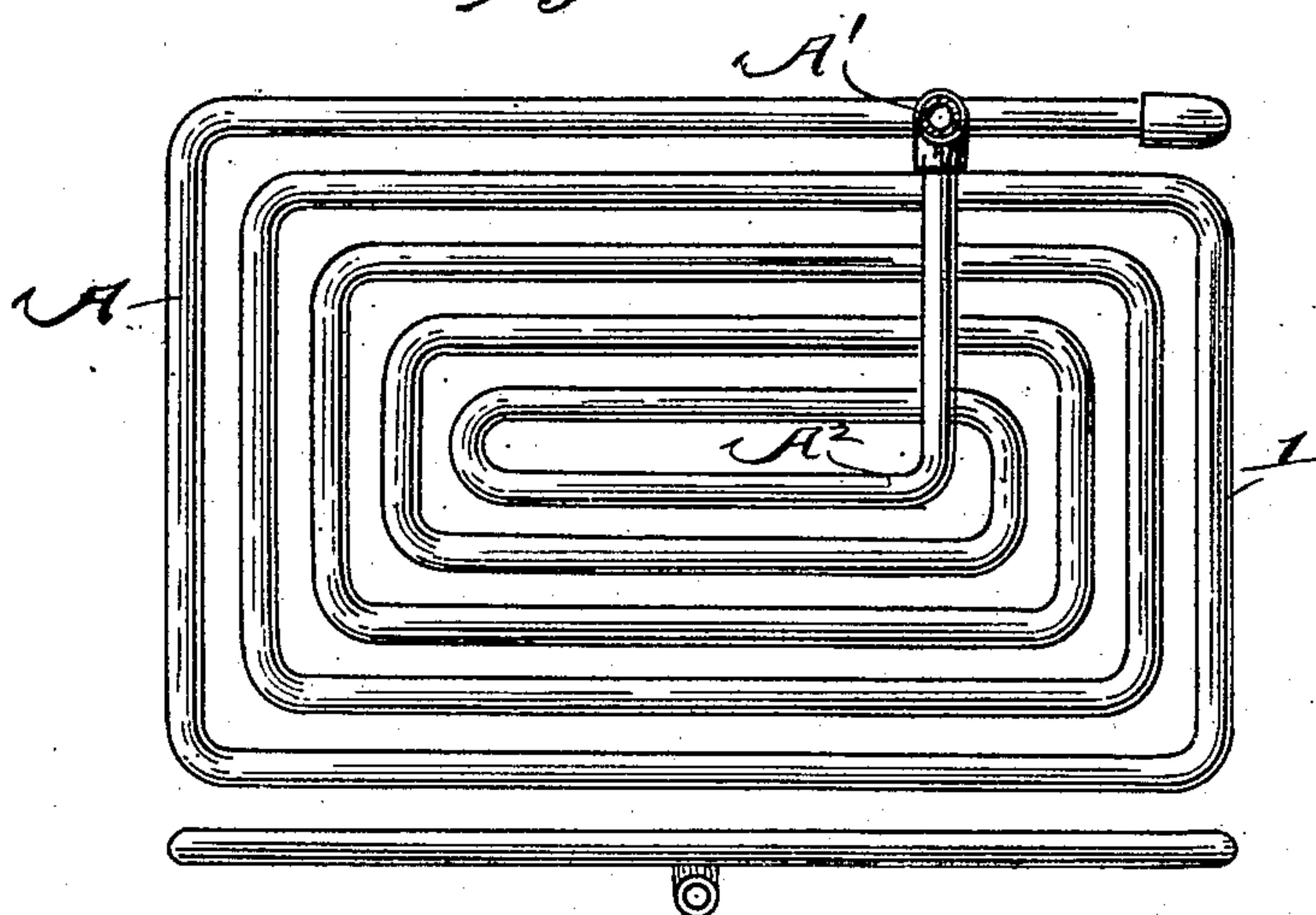


Fig. 4.

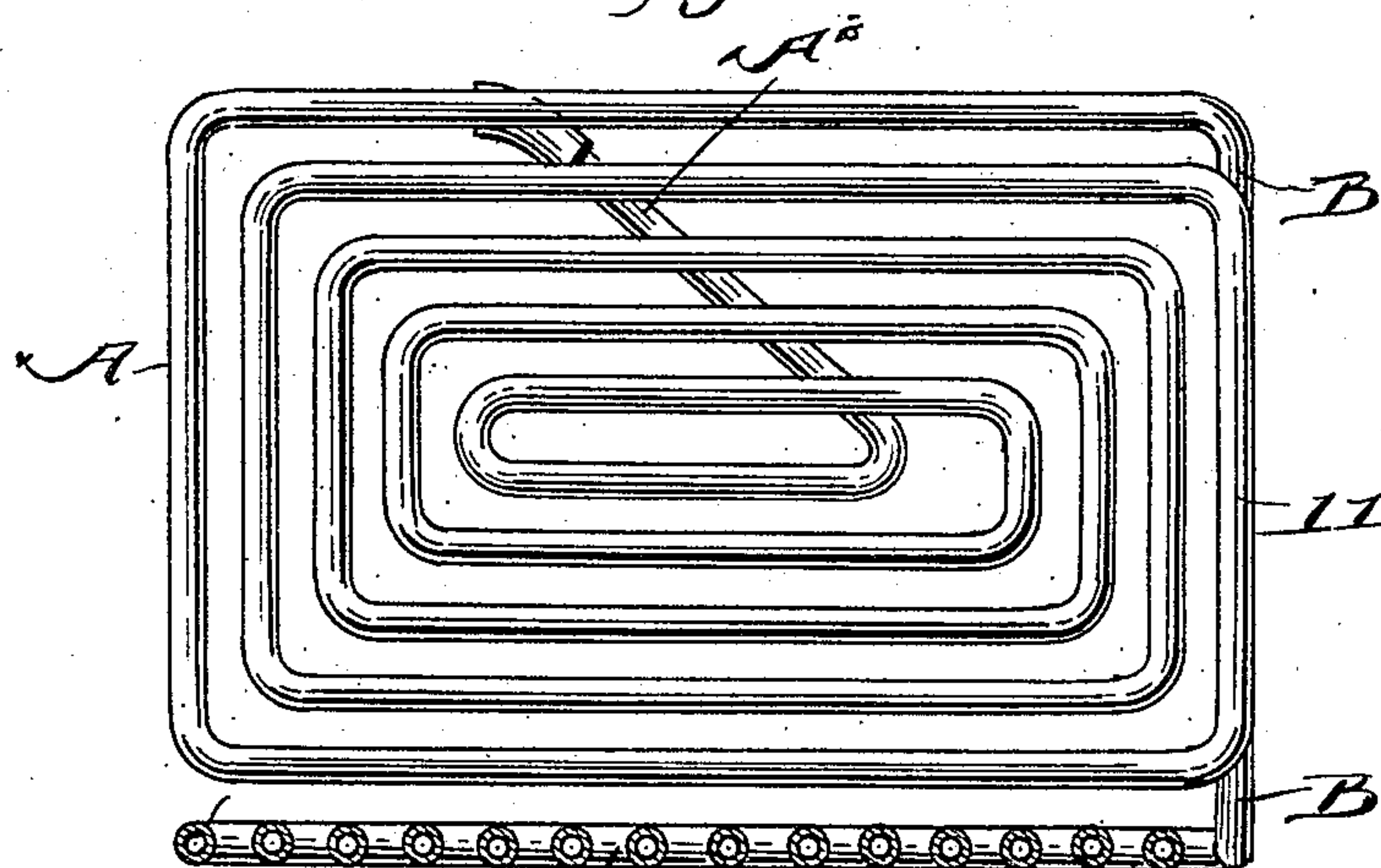
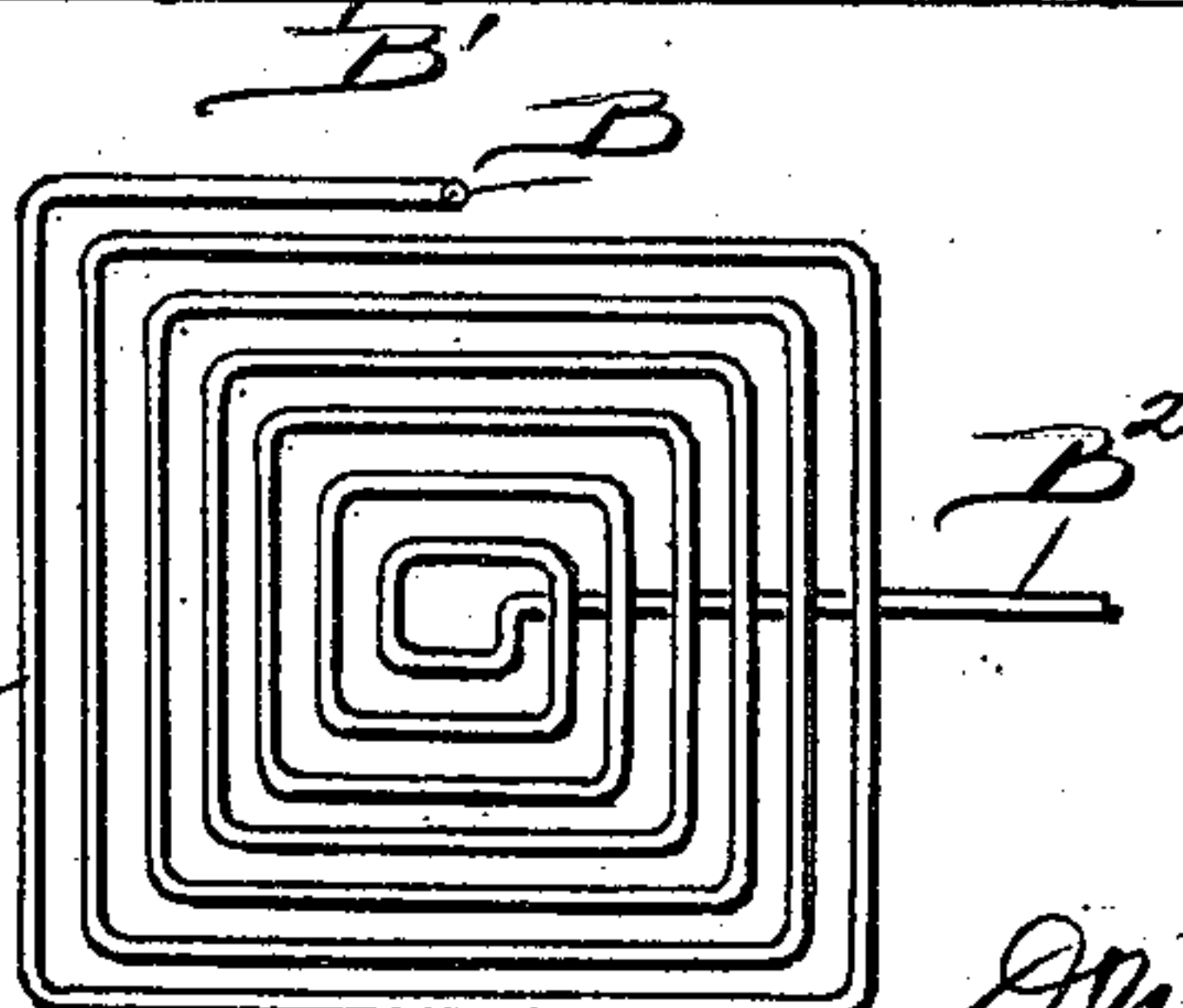


Fig. 5.



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UNITED STATES PATENT OFFICE.

HARRY D. LANGTON, OF CLEVELAND, OHIO.

COIL FOR STEAM-GENERATORS.

No. 848,254.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed November 7, 1906. Serial No. 342,389.

To all whom it may concern:

Be it known that I, HARRY D. LANGTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Coils for Steam-Generators, of which the following is a specification.

This invention relates to a generator and superheater for tubular steam-boilers; and the object of the invention is to economize space by arranging the coils in a very compact manner and also save fuel and increase the efficiency of the boiler by gradually bringing the water fed to the boiler to the hottest part of the boiler through a series of coils which comprise a number of traps in which the water is held, so that all of the water is turned into steam prior to its passage to a superheater arranged between the generator-tubes and the source of heat.

The invention consists of a plurality of vertically-arranged parallel coils, which coils are connected together, the water being fed centrally into each coil and taken from the top of each coil, the water from the upper portion of one coil being delivered to the center of another coil, and from the last coil the water is delivered to a superheater arranged horizontally below the above-mentioned coils, and from the superheater the water is taken through a pipe leading from the center of the superheater-coil.

In the drawings, Figure 1 is an elevation showing the ends of the coils, a casing being shown in section. Fig. 2 is a plan view of the coils, illustrating the manner of connecting one coil to another. Fig. 3 is an end elevation, parts in the rear being omitted for clearness of illustration. Fig. 4 is a central section, the rear parts being omitted, the central coil being in elevation, and the superheater being shown in cross-section. Fig. 5 is a plan view of the superheater on a greatly-reduced scale.

In constructing a steam boiler or generator of this kind I employ a number of coils A, each coil being considered a unit, and any number may be employed, according to the size of the generator to be made. Each unit A consists of a tubing coiled a number of times, and in Figs. 1 and 2 I have shown a device of this kind in which there are eleven units and have given each a separate numeral

from 1 to 11, inclusive, in the order in which the water or steam passes through them. Each of the units or coils A includes a large number of turns of pipe, whereby a number of traps are formed in each coil, and in Figs. 3 and 4 I have shown side views of two of these units, from which it will be noted that in passing through a coil the water will ascend five vertical pipes, thereby forming five traps in each coil. The first coil, to which the numeral 1 is applied, receives water from a feed-pipe A', which enters the coil centrally at A². The water after circulating through this coil is passed through a crossover-pipe A³, which leads from the upper rear end of the coil to the coil A, given the number 2, into which it enters at the center of the coil in substantially the same manner as the feed-pipe A' entered the first coil. The water is then passed through another crossover-pipe A³ back to a coil 3, which is adjacent to the first coil, and the water is thus passed successively through coils at opposite ends of the generator until the central coil 11 is reached, from which coil the steam is passed to a superheater B' through a pipe B, leading from the central coil A to the superheater-coil, and from this coil the steam is conveyed through a steam-pipe B², which leads from the center of the superheater-coil.

It will be obvious that the water delivered to the first coil will be brought successively through the various coils to the central portion of the generator and through the steam-pipe B² will be delivered from the center of the superheater. The water is therefore gradually led to the point of greatest heat and is drawn immediately from that point and conveyed to the place of use. It will also be obvious that water will be retained in the numerous traps formed by the coils A and held in said traps, so that all of the water will be converted into steam. After the coils have been supplied with water by a suitable hand-pump there will afterward be a sufficient amount of water in the generator to provide a sufficient amount of steam to start the engine, after which the supply can be continued by a mechanically-operated pump, so that it is not necessary to employ a hand-pump each time the engine is started. This latter is a feature of considerable importance when the generator is employed in connection with automobiles, launches, &c.

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

1. A steam-generator comprising a plurality of vertically-arranged coils, means for delivering a fluid to the center of one of the end coils and for successively passing the said fluid through coils arranged upon opposite sides of a central line, and a horizontally-arranged superheater adapted to receive steam from the central coil.

2. A device of the kind described, comprising a plurality of coils arranged vertically and parallel to each other, the end coils being connected together, a horizontally-arranged superheater-coil arranged below the vertical coils, a central coil adapted to discharge steam to said superheater, and means for alternately passing water or steam through the coils arranged upon opposite sides of the central coil.

3. A device of the kind described, comprising a generator formed of vertically-arranged end coils, a central coil midway the end coils and parallel thereto, intermediate coils ar-

ranged upon opposite sides of the central coil, means for feeding water into the center of an end coil, means for conveying water from said end coil to the opposite end coil, and means for conveying steam from the last-mentioned coil alternately to coils arranged upon opposite sides of the central coil and finally to the center of the said central coil, as and for the purpose set forth.

4. A device of the kind described, comprising a generator consisting of a plurality of vertical coils connected together, means for feeding water to the center of an end coil, and for passing the water successively through the remaining coils so that it gradually approaches the center of the generator, a horizontally-arranged superheater-coil, said coil being below the vertical coils, and means for conveying steam from the central coil of the generator and delivering the same to the superheater, as and for the purpose set forth.

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Witnesses:

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