

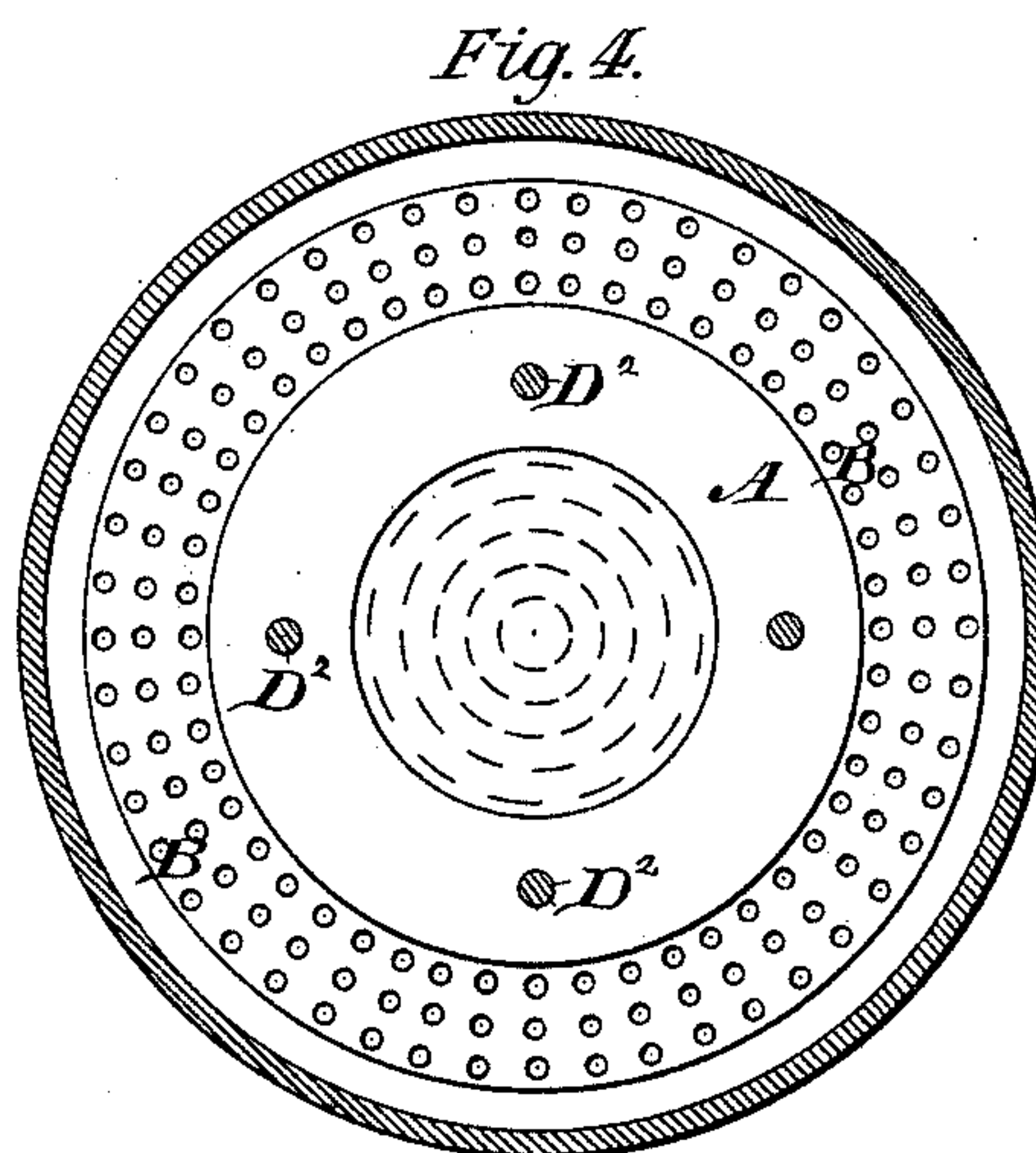
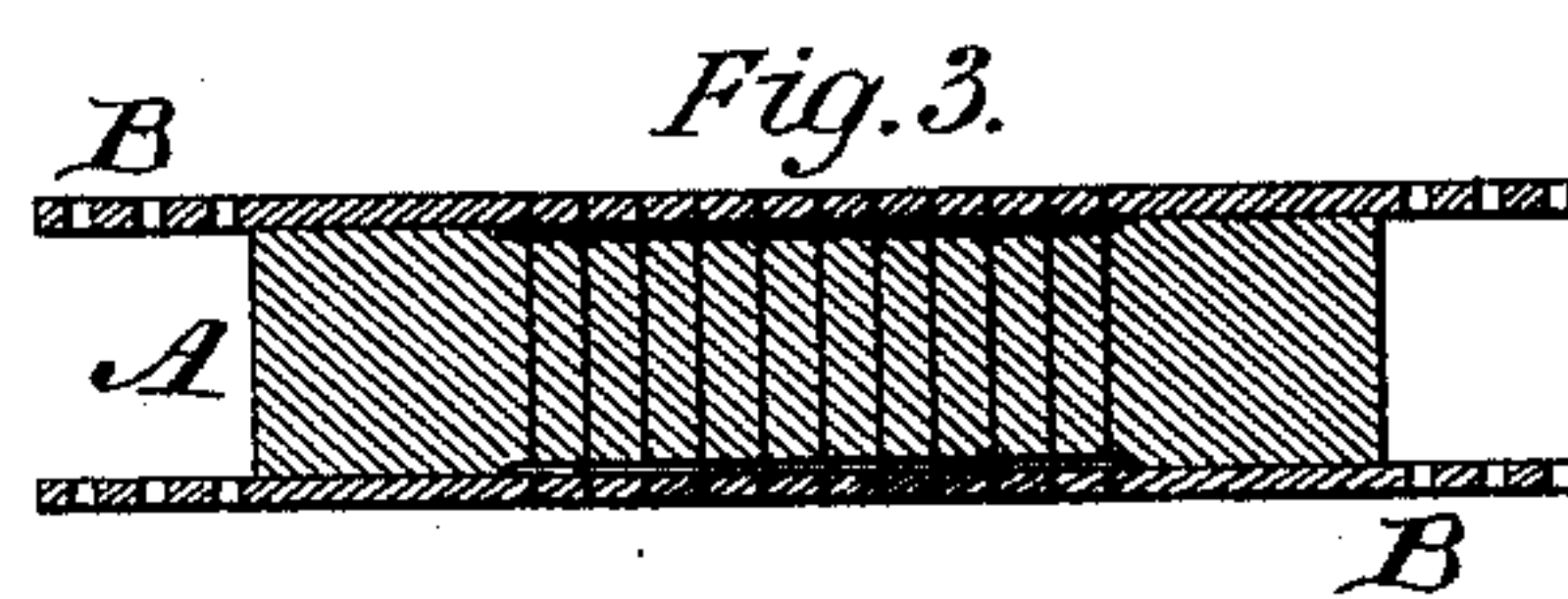
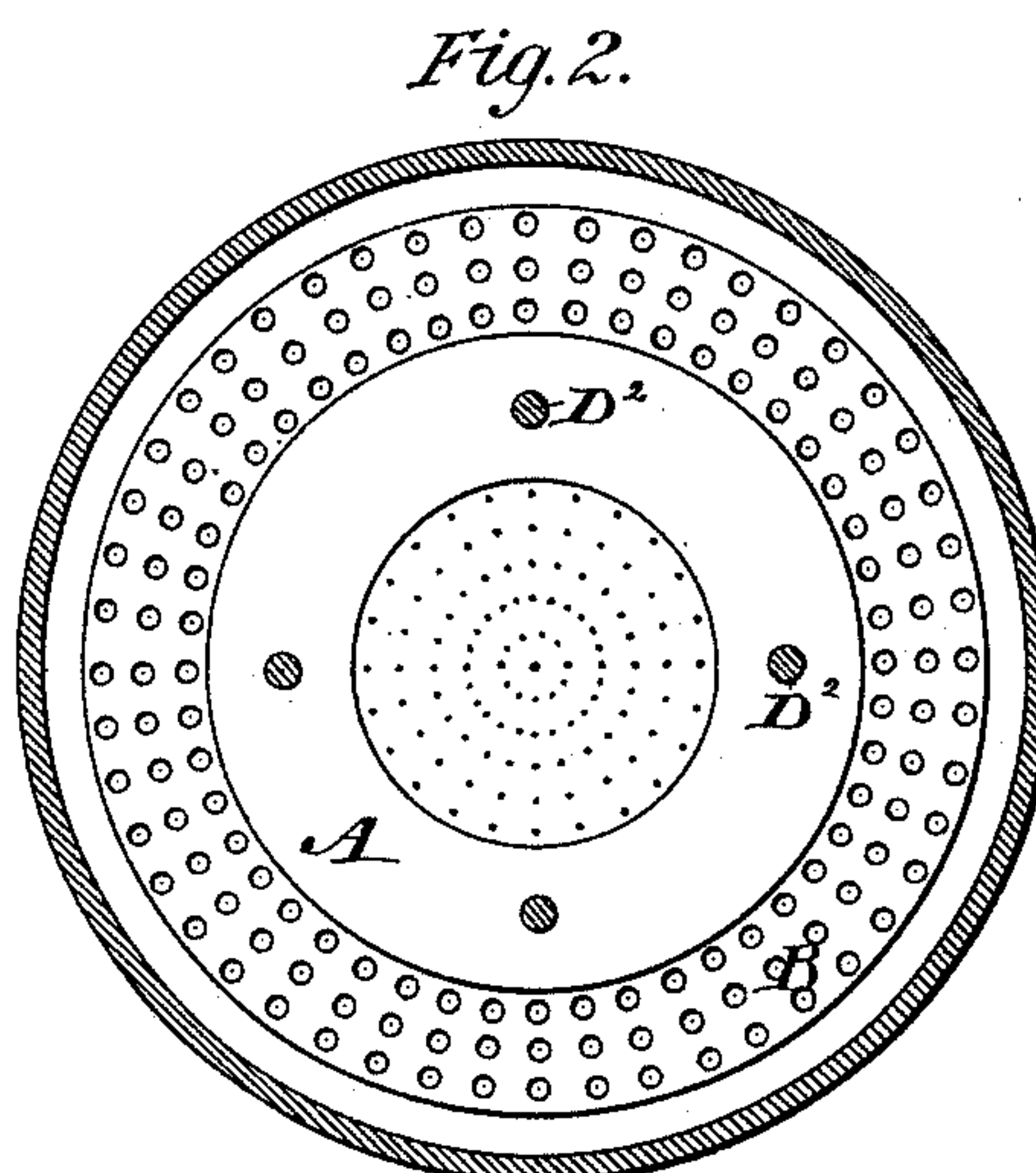
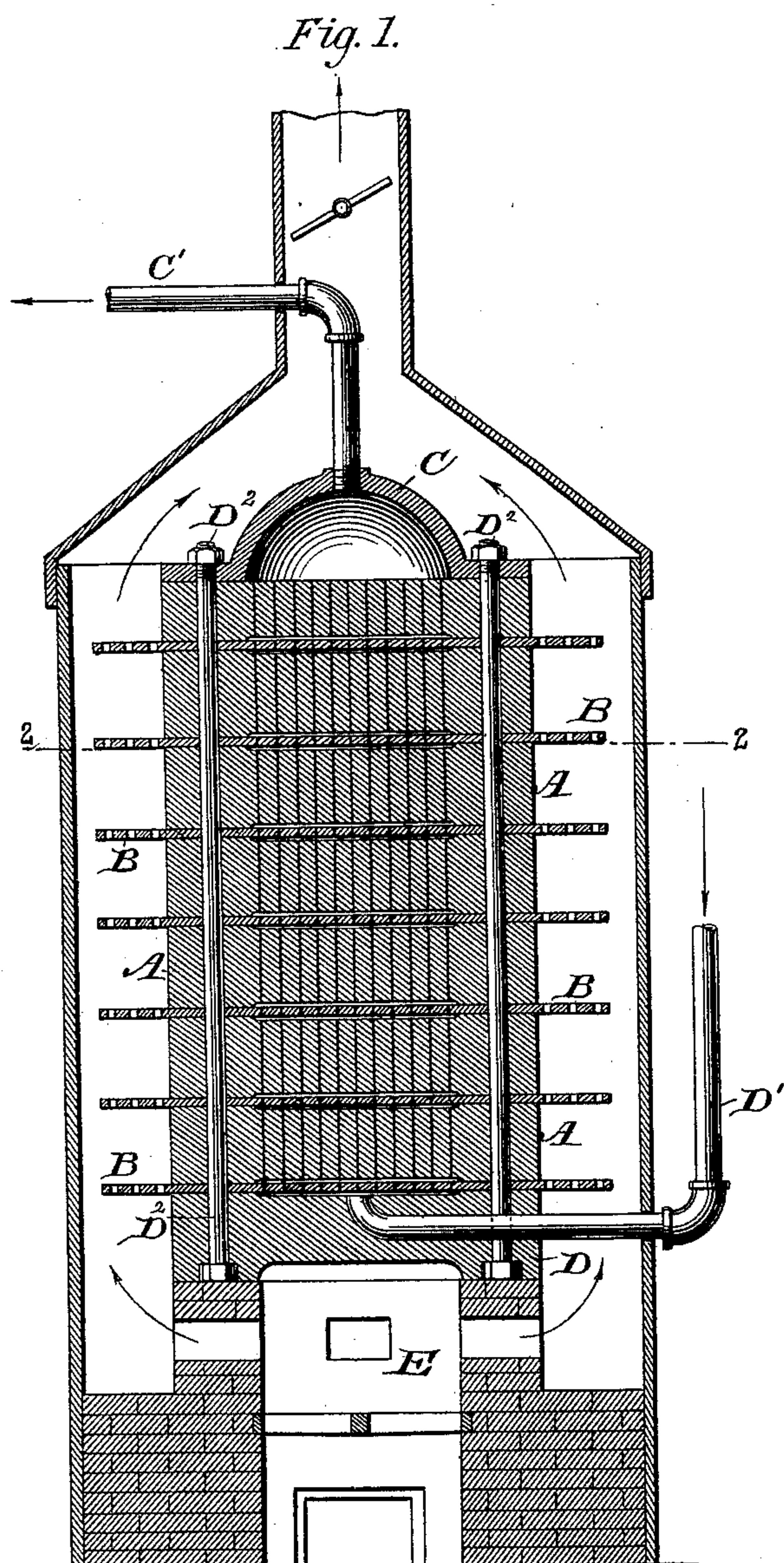
(No Model.)

2 Sheets—Sheet 1.

E. GILLET.
STEAM BOILER.

No. 414,207.

Patented Nov. 5, 1889.



WITNESSES:

Raymond A. Barnes.
Edward C. Davidson.

INVENTOR

Etienne Gillet

BY

Baldwin, Davidson & Wright
ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

E. GILLET.
STEAM BOILER.

No. 414,207.

Patented Nov. 5, 1889.

Fig. 5.

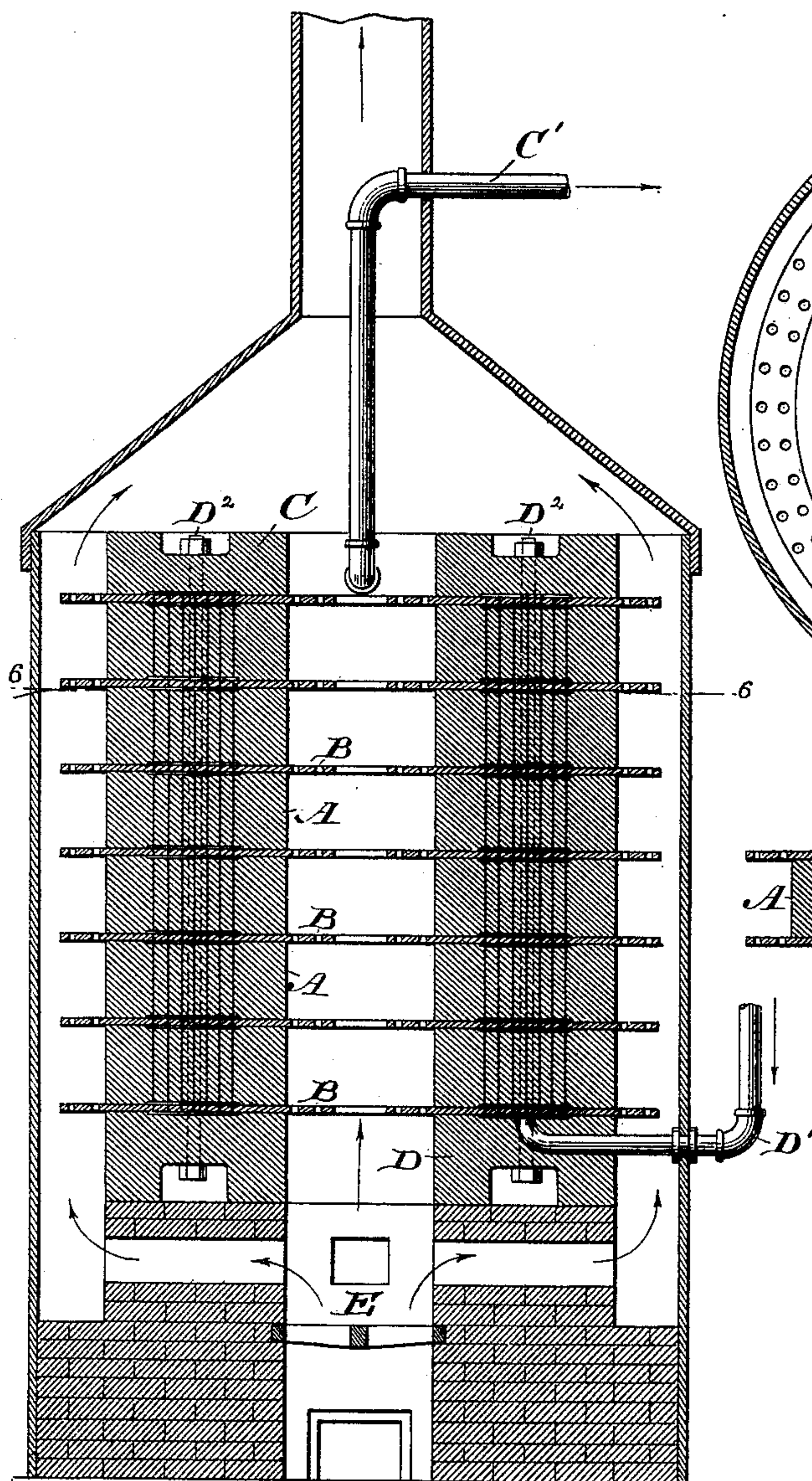


Fig. 6.

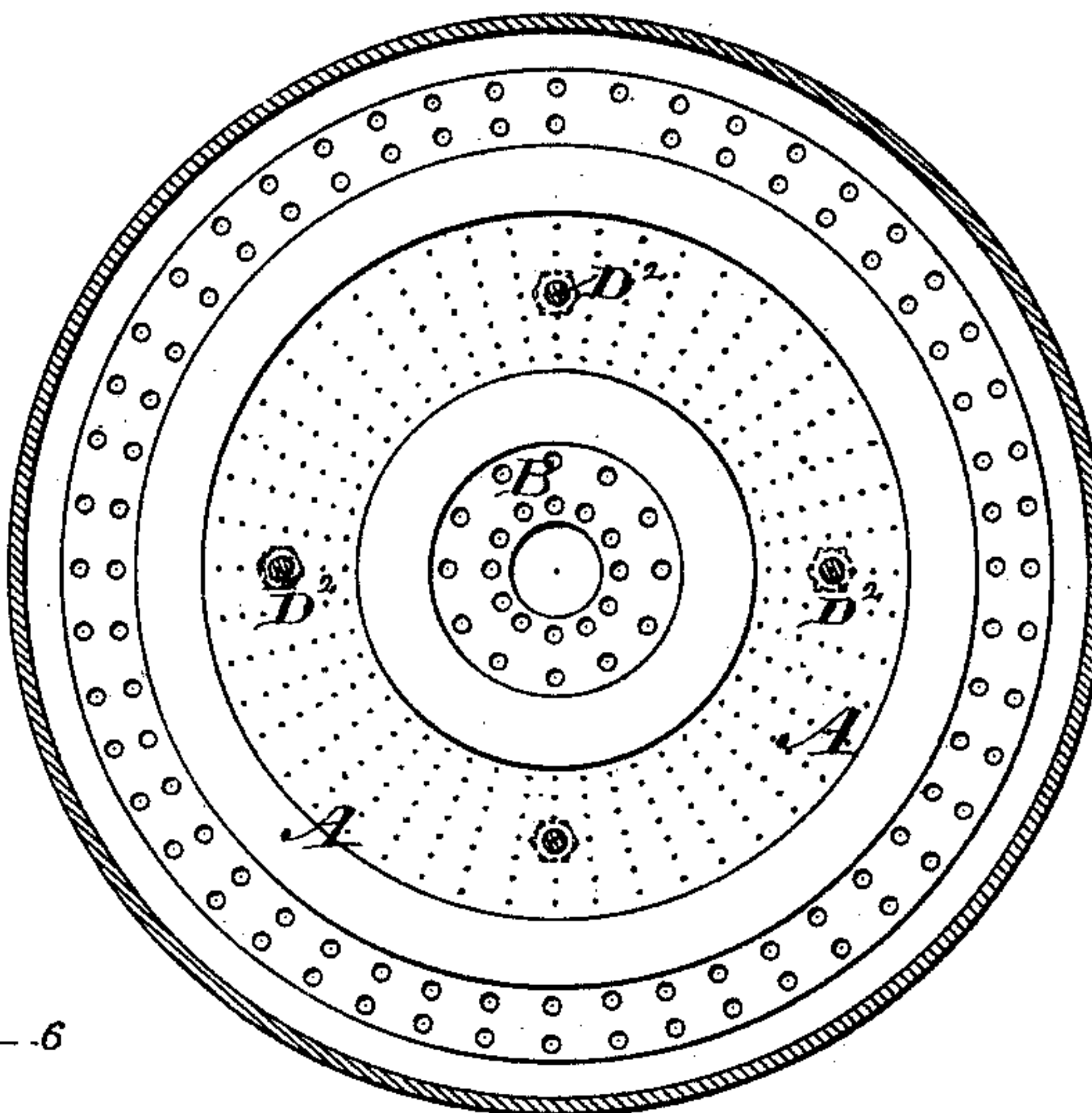
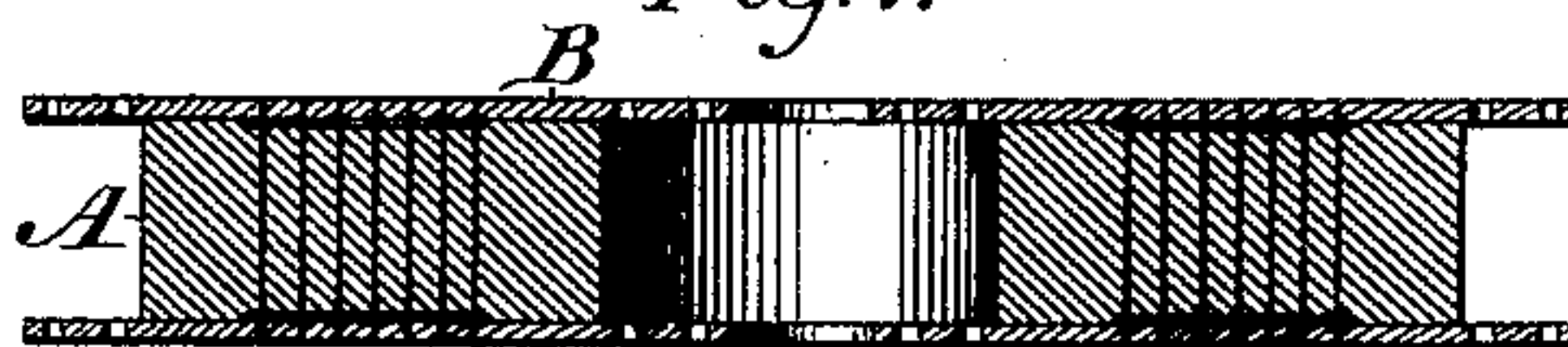


Fig. 7.



WITNESSES:

Raymond F. Barnes
Edmund C. Davidson

INVENTOR

Etienne Gillet
BY
Ralph Davidson & Wright
ATTORNEYS

UNITED STATES PATENT OFFICE.

ETIENNE GILLET, OF NEW YORK, N. Y., ASSIGNOR TO ELIZABETH ALINE GILLET, OF SAME PLACE.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 414,207, dated November 5, 1889.

Application filed January 9, 1889. Serial No. 295,816. (No model.)

To all whom it may concern:

Be it known that I, ETIENNE GILLET, a citizen of the United States, residing in the city of New York, have invented certain new and
5 useful Improvements in Steam - Boilers, of which the following is a specification.

The object of my invention is to effect the generation of steam in the briefest possible time and with a minimum expenditure of
10 coal, and as incidental to the construction or method of operation of my improved boiler I dispense with water-gages, manometers, safety-valves, and other appliances, thereby
15 further increasing the facility and economy with which the engine may be operated, and in addition to all these advantages boilers constructed according to my invention are non-explosive. Skilled attendance is there-
fore not required.

20 In the accompanying drawings I have shown one form in which the principles of my invention may be embodied.

Figure 1 is a vertical section through one form of a boiler; Fig. 2, a transverse section
25 of the same on the line 2 2 of Fig. 1; Fig. 3, a detail view illustrating the plates of which the boiler is composed and the very flat or shallow water-chambers connected by minute perforations or apertures through the plates.
30 Fig. 4 is a transverse section illustrating the apertures in the plates in the form of very narrow slits or slots. Fig. 5 is a vertical longitudinal section of a boiler similar to Fig. 1, except that there is a central as well as an
35 exterior combustion-chamber. Fig. 6 is a transverse section of the same on the line 6 6 of Fig. 5; Fig. 7, a detail section of several plates of the boiler shown in Fig. 5.

The general type of boiler illustrated in
40 the drawings is similar to that shown in my United States application, Serial No. 273,639, filed May 11, 1888—that is, in both cases I have shown the boiler built of a series of plates, rings, or sections A B, the latter being sensi-
45 tive heat-conducting plates which project into the combustion-chamber and into the water-space of the boiler.

In my present invention the intervening
50 plates or sections A, instead of being rings that leave comparatively-large water-cham-

bers between the sensitive plates, are (Fig. 1) continuous plates, the water-chambers being formed by very slight concaves in the faces of the plates—say one millimeter or one two-hundredths of an inch in depth. The
55 sensitive plates B intervene between the sections A, so that exceedingly shallow or flat water-spaces are formed on each side of said plates, and the sections A and the plates B being formed with minute perforations or
60 pin-holes there is communication from the base of the boiler D to the top C. Water is admitted under pressure through pipe D' from a suitable reservoir or from a pump operated by steam generated in the boiler, as
65 usual. Steam is taken from the top of the boiler by a pipe C'.

E is the fire-box.

The products of combustion strike against the bottom or base of the boiler, and then
70 pass up laterally along and around its sides, over the sensitive plates B, and through perforations therein. The sensitive plates, as well as the rings A, by conduction carry the heat directly to the finely-divided or
75 laminated water within the boiler. The mass of metal composing the boiler receives or absorbs the heat from the products of combustion, and the minute quantity of broken or laminated water immediately bursts into
80 steam of the desired calculated pressure, according to the construction of the boiler and the amount of coal burned. The water constantly supplied at the base passes constantly out through the steam dome or pipe C' in the
85 form of steam.

Figs. 5, 6, and 7 show a boiler constructed according to the same principles; but the plates A B are in the form of annular rings, the water-chamber and minute perforations
90 for the passage of the water being formed therein as in Fig. 1; but of course the construction in Fig. 5 gives a central flue or combustion-chamber extending up through the stack of plates, as well as one around the
95 stack, as in Fig. 1. In this construction rods D², for clamping the sections together, extend down through the annular water or steam spaces of the boiler. Water is admitted at the base of the boiler, as above described,
100

and steam is now taken from the top section or casing C through a pipe C'.

Of course the supply of water is to be governed by any suitable automatic appliance, as is usual in steam-boilers.

The principle upon which this boiler operates is that the water therein is prevented from assuming a spheroidal form, or, in other words, forming into drops, but is, on the contrary, squeezed into flat layers of, say, one two-hundredths of an inch or less, and is also finely divided by the minute perforations through which it is forced. In other words, whatever may be the form which the water is caused to assume in the boiler, or, in other words, whatever may be the form or characteristics of the chambers or water-spaces within the boiler, the water is finely divided or laminated, and is prevented from assuming spheroidal forms. It is therefore readily converted into steam, and as there is but a minute quantity of water in the boiler at any one time it is absolutely inexplosive. The boiler illustrated, being of a solid construction, can stand a pressure of many hundred pounds, and, as above suggested, the metal serves to receive and store the heat acquired from the products of combustion.

I claim as my invention—

1. In a steam-boiler of the character described, the combination of parallel plates having flat or shallow spaces between them connected by minute perforations in the plates, substantially as set forth.

2. In a steam-boiler of the character described, the combination of the annular plates or flat rings having annular flat or shallow spaces between them connected by minute perforations in the plates, substantially as set forth.

3. In a steam-boiler of the character described, the combination of the parallel boiler-plates and interposed projecting heat-conducting plates, said plates having flat or shallow spaces between them connected by perforations, substantially as set forth.

4. A steam-boiler of the character described, in which the interior of the generating-chamber or interior space of the boiler is finely divided or broken up by an aggregation of perforated or apertured plates, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

ETIENNE GILLET.

Witnesses:

J. F. BENZIEUG,
LAVERRIERE.