

(No Model.)

A. F. GAIENNIE.  
SEPARATOR.

No. 567,894.

Patented Sept. 15, 1896.

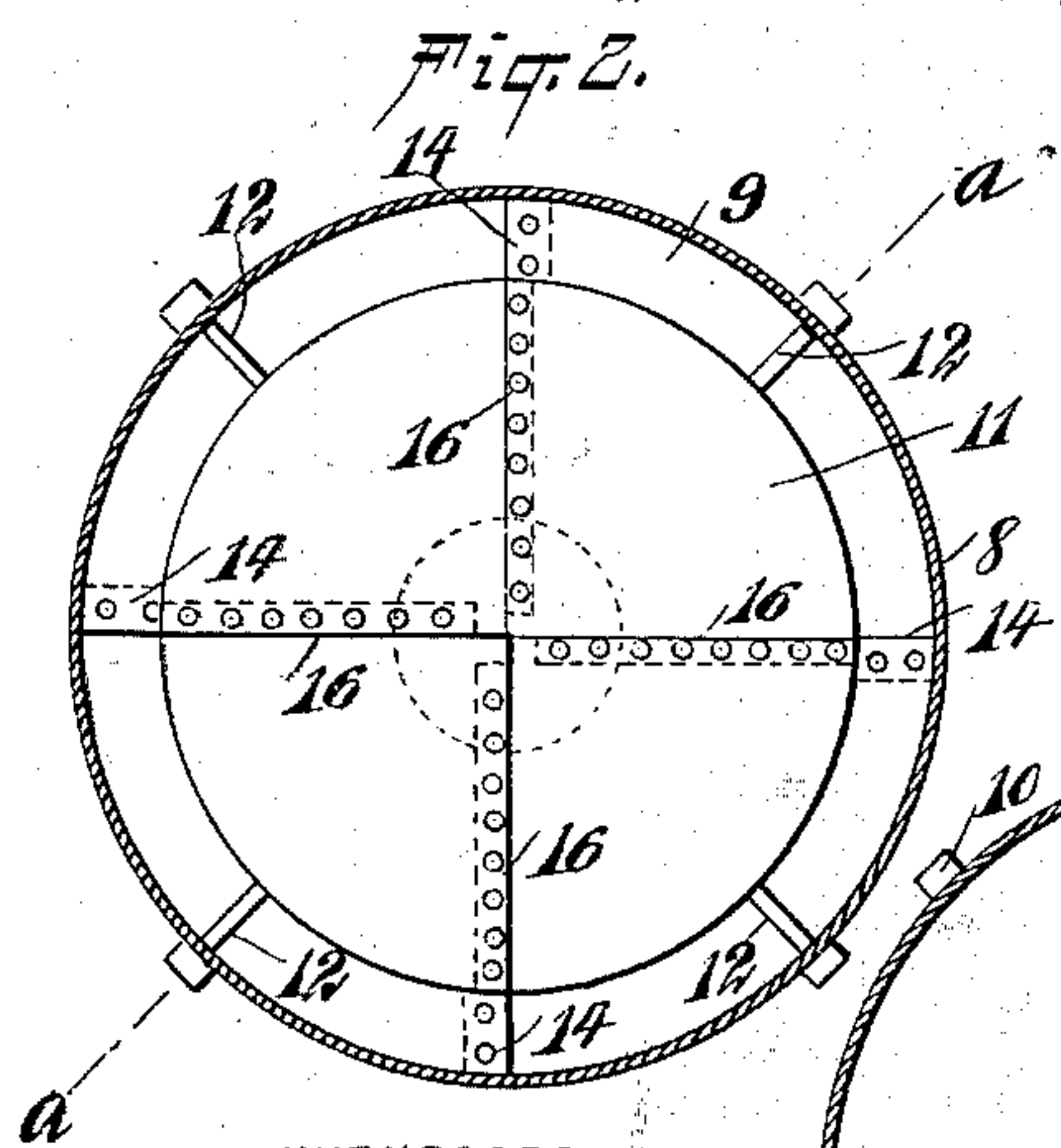
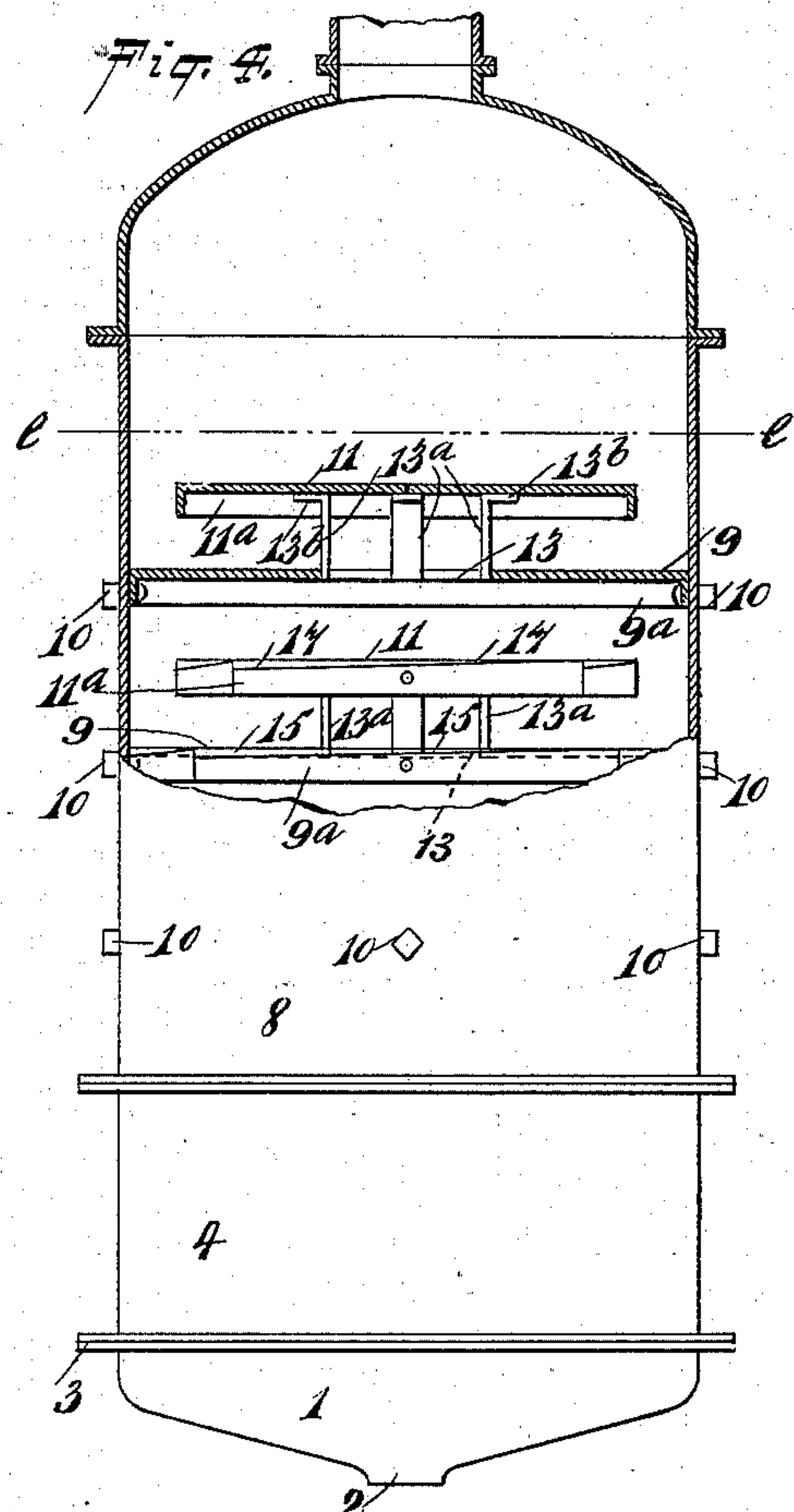
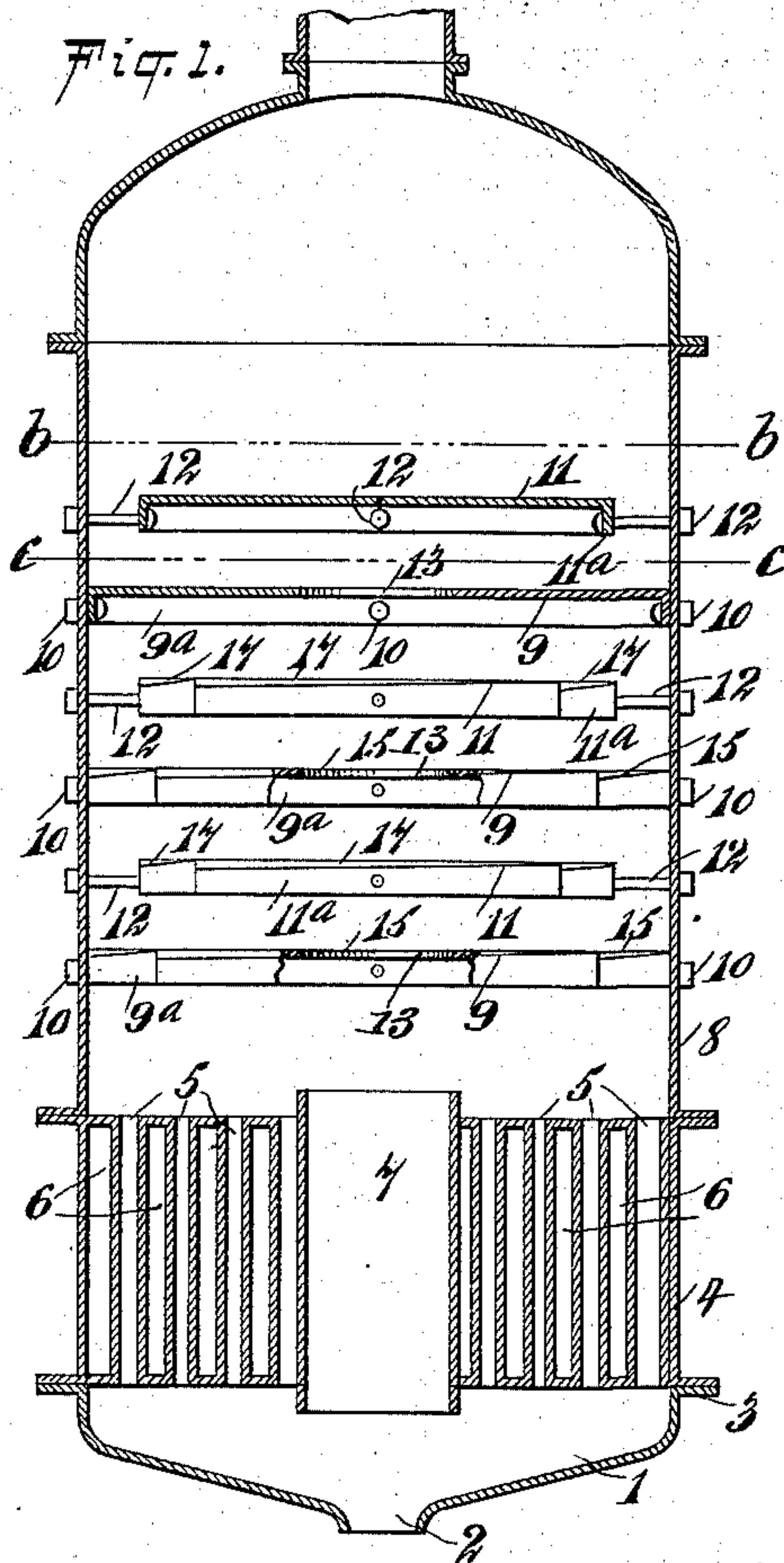
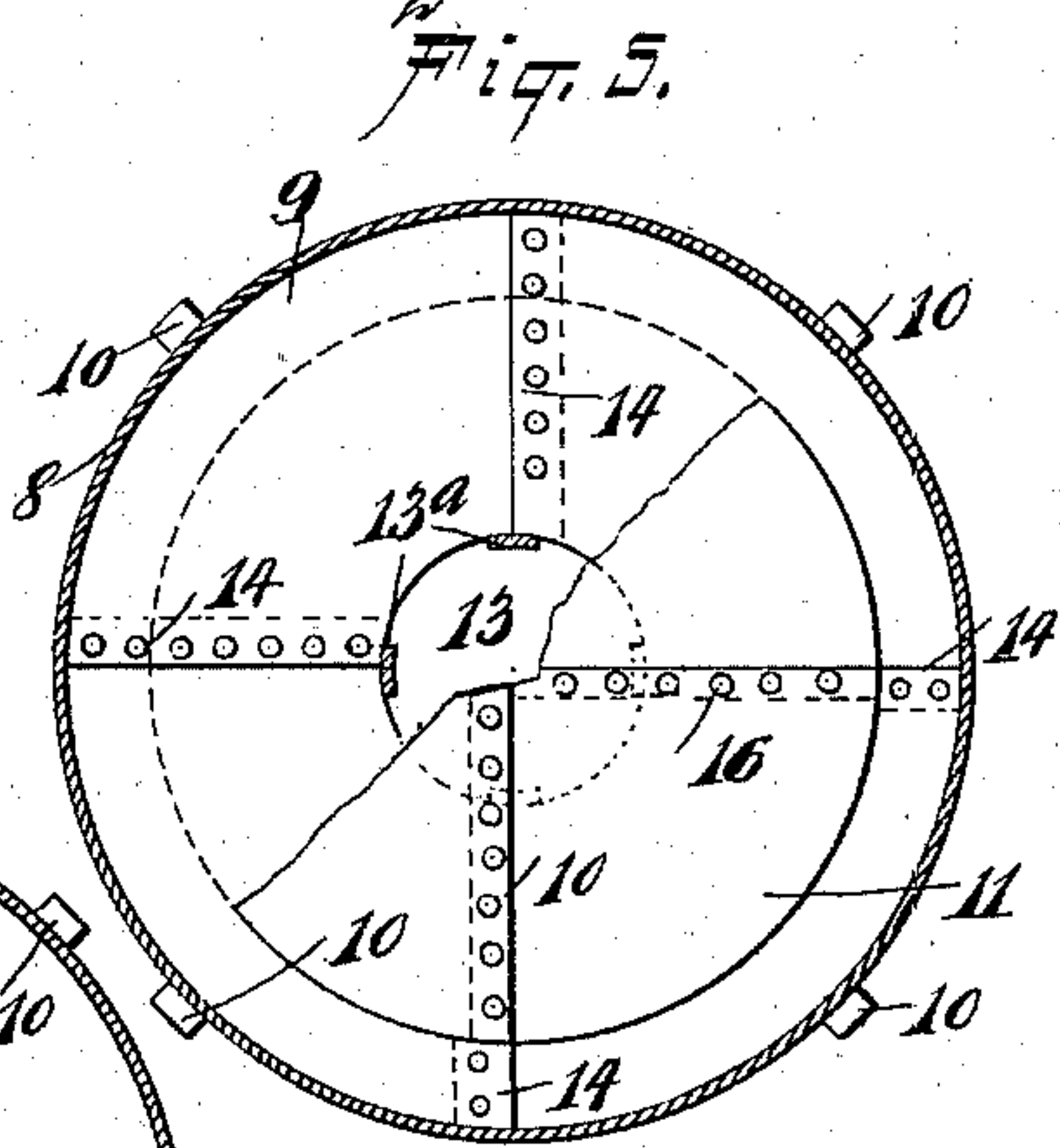
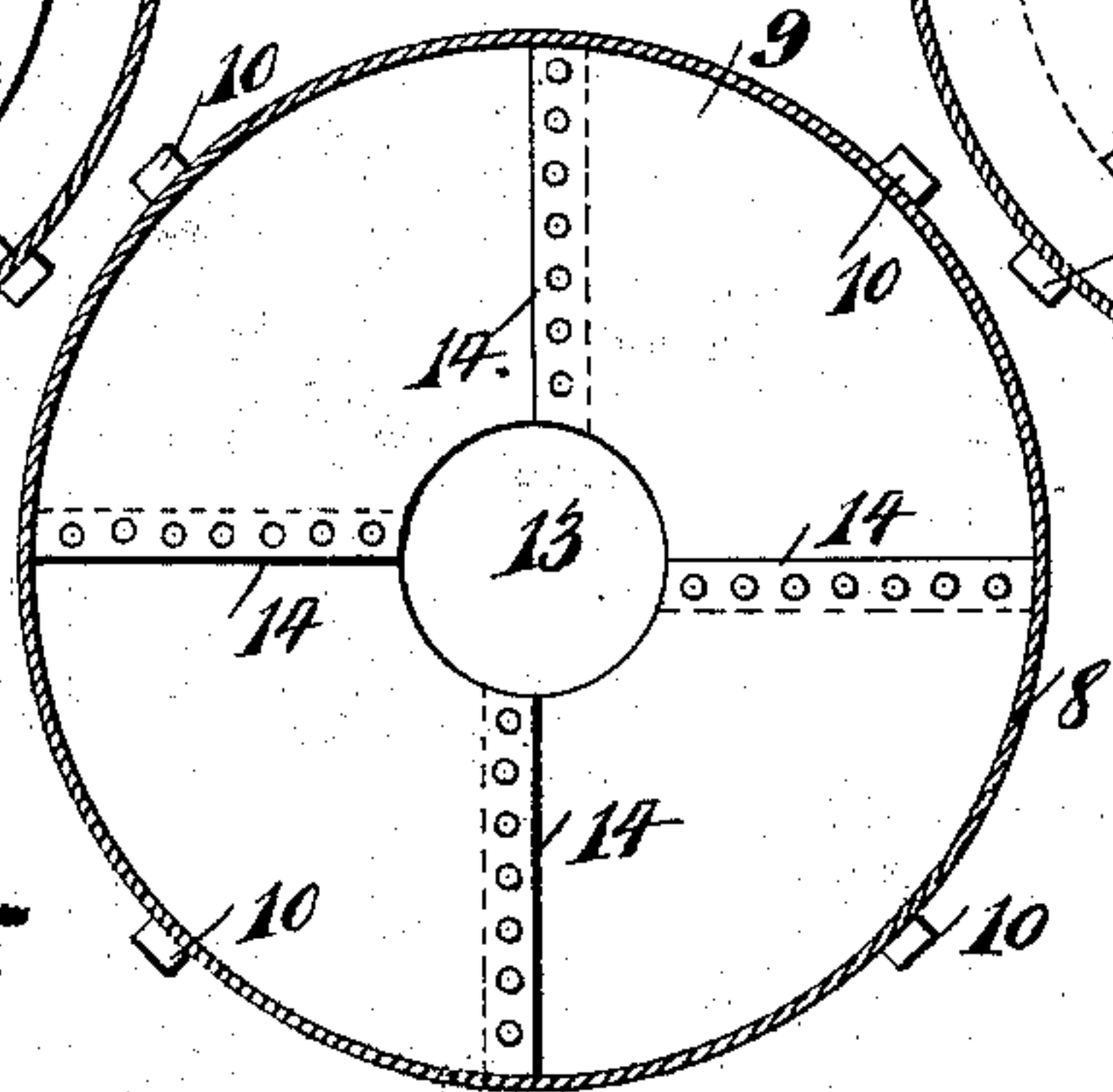


Fig. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 567,894, dated September 15, 1896.

Application filed December 30, 1895. Serial No. 573,789. (No model.)

*To all whom it may concern:*

Be it known that I, ALPHONSE FLORESTAN GAIENNIE, of La Fourche, in the parish of La Fourche and State of Louisiana, have invented a new and Improved Separator, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in separators, and particularly to that class of separators employed in connection with vacuum-pans and similar evaporating devices for separating and collecting the vapors and minute particles of liquid carried thereby; and the object of the invention is to provide a device of this character of a simple and inexpensive construction, which shall be adapted to effect a substantially perfect separation of the liquid from the vapors, the device being also adapted for separating oil and grease from exhaust-steam.

The invention consists in certain novel features of the construction, combination, and arrangement of the various parts of the improved separator, whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use than prior devices of its class, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a section taken vertically through the axis of a separator constructed in accordance with my invention, the section being in the plane indicated by the line *a a* in Fig. 2. Fig. 2 is a transverse section taken through the separator in the plane indicated by the line *b b* in Fig. 1. Fig. 3 is a section similar to Fig. 2, but taken in the plane indicated by the line *c c* in Fig. 1. Fig. 4 is a view somewhat similar to Fig. 1, but having the lower part of the separator shown in elevation, this view being designed to illustrate a modified form of the invention; and Fig. 5 is a section taken transversely through the separator in the plane indicated by the line *e e* in Fig. 4.

As shown in Figs. 1, 2, and 3, the separator consists of a substantially cylindrical shell, comprising a lower section 1, having an inclined bottom provided with a central opening 2, adapted for the admission of the vapors to the interior of the cylindrical shell, said lower section 1 being formed at its upper edge with a projecting annular flange 3 to receive a corresponding flange formed on the lower end of the next higher section 4 of the separator, this section 4 being formed with a series of passages 5 5, extending vertically through it and having between said passages chambers 6, adapted to receive water or the like, whereby the vapors passing through said passages 5 may be cooled, and at its central portion said section 4 is provided with a flue 7, which extends slightly above and below its top and bottom.

On the section 4 is secured the upper section 8 of the evaporator-shell, having a series of plates 9 9 extending across it, each of said plates being provided, as clearly seen in Fig. 1, with a depending annular flange at its rear, which flange is made to fit the interior surface of the section 8 of the shell and is secured thereto by means of bolts or rivets 10.

The several plates 9 are spaced apart, as seen in Fig. 1, and between them are arranged other plates 11 of circular form, but each of a diameter slightly smaller than the interior diameter of the section 8 of the shell, whereby an annular space is formed between the walls of the shell and the edges of said plates 11, and said plates 11 are formed about their edges with depending annular flanges 11<sup>a</sup>, from which extend bolts or rivets 12, passing through the walls of the section 8 of the shell for holding the said plates 11 in place therein. Each of the plates 9 is formed with a central opening 13, adapted to permit the passage of the vapors through it, and said plates 9 are each formed, as indicated clearly in Fig. 3, of four sections having their edges arranged to overlap, as indicated at 14, said sections being riveted together at their overlapped edges. The arrangement of the plates is such that one edge of each plate overlaps the edge of an adjacent plate and the opposite edge thereof lies under the edge of the next adjacent plate, so that the several plates are on their upper



surfaces slightly inclined from one of the overlapping portions 14 to the next overlapping portion 14, as clearly indicated at 15 in Fig. 1, whereby the liquid collecting on the upper surfaces of the said plate will flow down the same and be discharged at the lower portions of the inclined surfaces 15, as will be readily understood. The plates 11 are formed in a manner similar to the plates 9, each plate 11 being composed of four sections having overlapping portions 16 riveted together, whereby inclined surfaces 17 are formed on said plates 11, adapted to permit the liquid collecting on the upper surfaces of said plates to flow freely down the inclines and drop off the pendent flanges 11<sup>a</sup> onto the inclined surfaces 15 of the plates 9 below them. By this construction it will be seen that the vapors are caused in passing through the separator to follow a somewhat devious or circuitous path and to deposit the liquid carried in suspension upon the plates 11 and 9, whence said liquid flows downward to the lower portion of the separator, as will be readily understood. If desired, instead of making the plates 9 and 11 with inclined surfaces 17 and 15 on their upper sides, said plates may be made preferably flat and connected together by means of depending flanges formed on their adjacent edges.

From the above description of my invention it will be seen that the device is extremely simple and inexpensive in its construction and is well adapted for the purposes for which it is intended, and it will be obvious that considerable modification may be made without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the exact form and arrangement herein set forth. For example, in some cases it may be deemed desirable to employ the construction shown in Fig. 4, wherein the plates 11, instead of being supported by means of bolts or rivets 12 from the sides of the shell of the

separator, are supported on brackets 13<sup>a</sup>, projecting from and by preference formed integrally with the inner edges of the respective sections of the plates 9, each of the said brackets or extensions being bent vertically upward at its junction with the sections of the plates 9 and having its upper extremities bent at right angles and riveted or otherwise secured to the under side of the plates 11, as clearly seen at 13<sup>d</sup> in Fig. 4.

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

1. In a device of the character described, the combination of a cylindrical shell, a series of plates arranged therein and provided with depending flanges at their edges, said plates being arranged transversely across the shell and secured in place therein by means of rivets passing through the walls of the shell and through their flanges, said plates being spaced apart and formed with central perforations, and having at the edges of said central perforations upwardly-extending integral brackets, and other plates of less diameter than the interior diameter of the shell, alternating with and supported on the brackets of the first-mentioned plates, substantially as set forth.

2. In a device of the character described, the combination of a cylindrical shell, a series of circular plates secured at their edges to the shell and extending transversely across the same and provided with circular central perforations, and other circular plates of less diameter than the first-mentioned plates, also extending transversely across the shell and alternating with the first-named plates, said plates being each formed of a series of sector-shaped sections having their adjacent edges overlapped and secured together, substantially as set forth.

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Witnesses:

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