

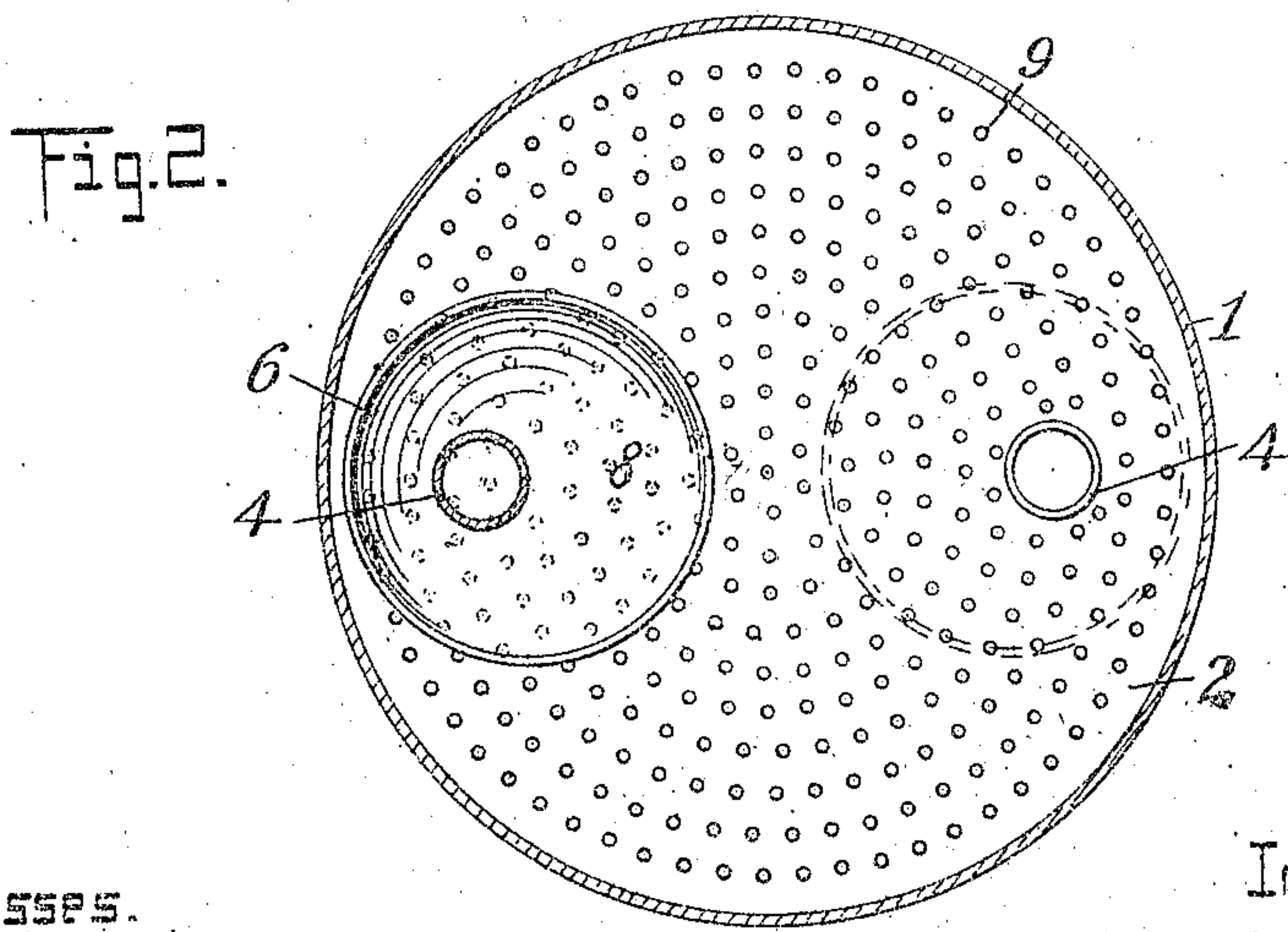
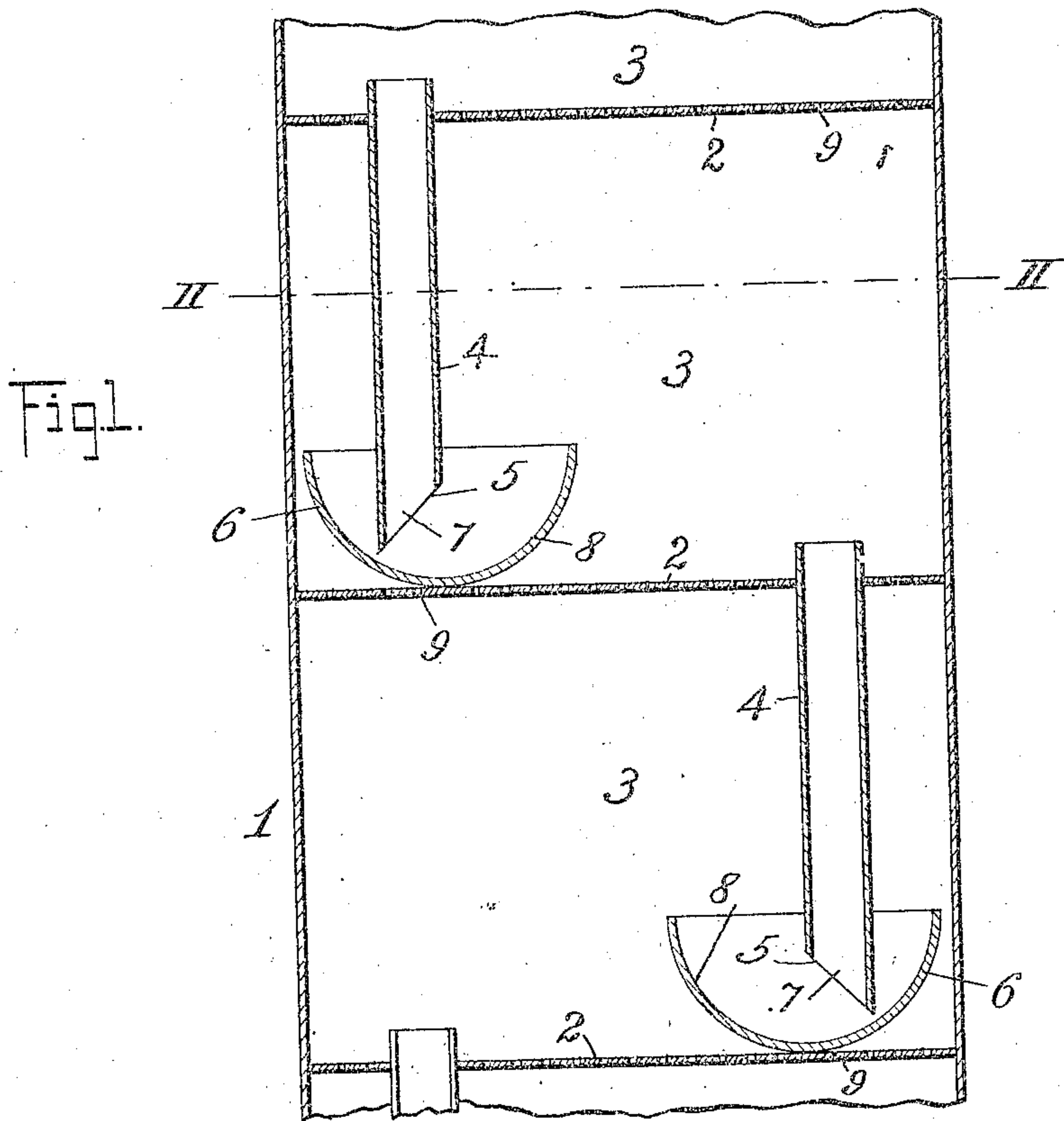
No. 822,573.

PATENTED JUNE 5, 1906.

J. J. BRENNAN.

STILL.

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Witnesses.

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UNITED STATES PATENT OFFICE.

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STILL.

No. 822,573.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN J. BRENNAN, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Stills, of which the following is a specification.

My invention relates to improvements in the means for controlling the passage of liquid containing solid substances from one chamber to another of the successive chambers of a still, with a view to preventing the settling of solid substances in such manner as to clog up or close the passages for the liquid.

The invention consists in the parts and combinations thereof hereinafter set forth and claimed.

In order to make the invention more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect without limiting my improvements to the particular construction which for the sake of illustration I have delineated.

In said drawings, Figure 1 is a vertical sectional view of so much of a distilling apparatus as is necessary for the understanding of my invention, the same embodying my improvements. Fig. 2 is a horizontal section on line II of Fig. 1.

Referring to the drawings, 1 indicates the casing of a still of any usual or preferred construction. Only a portion of such still is illustrated, comprising two of the successive chambers for treating the liquid, any desired number of which chambers may be embodied in the still.

2 indicates the horizontal bottoms or diaphragms united with the casing 1 and separating the still into successive chambers 3.

4 indicates liquid-conducting pipes through which the liquid under treatment passes downward from chamber to chamber, such pipes passing through and being supported by the diaphragms 2, there being one pipe under ordinary conditions for each diaphragm. I may here state, however, that my invention is not necessarily limited to a construction like that illustrated, in which only one of the discharge or conducting pipes 4 passes through each diaphragm from chamber to chamber. The delivery-opening of each of the pipes 4 is arranged at or toward one side, so that the flow of the liquid therefrom

will be more or less lateral, and this is conveniently effected by cutting off the end of each pipe on an angle, as shown at 5. At the lower end of each of the discharge-pipes 4 is arranged a receiving or overflow cup 6, which is deep enough to include within it the opening 7 of the discharge-pipe—that is to say, when the cup is full of liquid all parts of the opening 7 will be below the surface of the liquid, the arrangement being in the nature of a fluid-trap. The cups 6 are hemispherical in shape, as shown, or are substantially so, to cause any settling of the solids in the liquids to take place within a small space at the center of the bottom of the cup and to furnish an inclined wall 8, leading upward from such center in a direction away from the opening 7 to the top of the cup. The cups 6 are attached to the diaphragms 2 by riveting, soldering, or in any other suitable manner and are arranged eccentrically of the discharge-pipes 4, so that said pipes are toward the sides of the cups and have their delivery-openings 7 toward the center and major portions of the cups, as clearly shown in the drawings. The hemispherical shape of the cup has the advantage not only of causing the liquid to flow out rapidly, taking with it any sediment or solid matter which might otherwise collect in the cup, but also has the largest receptive capacity with the minimum of contact upon the separating perforated diaphragm, leaving the largest possible surface for perforations for the passage of steam or other heating medium. Each of the diaphragms 2 is formed with a considerable number of perforations 9 for the upward passage of steam or other fluid for heating the liquid in a known manner.

In their arrangement the pipes 4 are alternated, the upper pipe being, for instance, at the left hand of its chamber 3 and the next lower pipe at the right hand of its chamber 4, and so on successively, this arrangement having advantages, but not being essential to those features of my improvements which are concerned with the arrangement of the discharge-opening of the pipe and the shape and arrangement of the receiving-cup.

In the still that is constructed according to my improvements the hemispherical-shaped cup prevents the clogging of the cup by the solid matter in suspension in the liquid. The forming of a more or less lateral discharge-

opening at the lower end of the pipe 4, as by cutting off the lower end of the pipe on an angle or otherwise, causes the liquid as it leaves the pipe to swirl against the side of the cup opposite to the opening and loosen and wash out any solid matter which might otherwise have a tendency to accumulate. The improved shape of the cup giving it a small area in contact with the diaphragm, leaves a materially larger area for the perforations 9, through which may pass the steam or other heating means, thus promoting the process of distillation in proportion to the size of the still.

15 What I claim is—

1. In a still, the combination with the casing, of perforated diaphragms forming successive chambers, discharge-pipes leading from one chamber to another, and receiving-cups inclosing the lower ends of the discharge-pipes, the discharge-pipes having lateral openings at their lower ends to cause the washing out of solid material from the cups, and the cups having outwardly and upwardly inclined sides facing such lateral openings of the pipes, substantially as set forth.

2. In a still, the combination of a casing, perforated diaphragms forming successive chambers for the treatment of liquid, discharge-pipes leading from one chamber to another, and receiving-cups inclosing the lower ends of the pipes, each cup having an inclined side, 8, along which solid matter is

adapted to be forced by the stream of discharged liquid, to and over the edge of the cup, and the pipes having lateral discharge-openings facing the said inclined sides 8, substantially as set forth. 35

3. In a still wherein the product of distillation is delivered from one chamber to another, a liquid-seal consisting of the combination with a discharge-pipe, of a substantially hemispherical cup arranged to cover the discharge-opening of the pipes and situated eccentrically of the pipe, substantially as and 45 for the purposes described.

4. In a still, the combination of a casing, diaphragms separating the space within the casing into successive chambers and having means for the passage of steam or equivalent fluid for the treatment of the liquid, discharge-pipes leading from one chamber to another, said discharge-pipes having lateral discharge-openings, and hemispherical receiving-cups inclosing the lower ends of the said pipes, the cups being arranged eccentrically of the pipes with the lateral discharge-openings of the pipes directed toward those sides of the cups which are farthest away from the pipes, substantially as set forth. 60

In testimony whereof I affix my signature in presence of two witnesses.

JOHN J. BRENNAN.

Witnesses:

C. MARTIN,
A. M. MASON.