

No. 793,732.

E. E. MORLAN.
DISTILLING APPARATUS.
APPLICATION FILED JUNE 11, 1904.

PATENTED JULY 4, 1905.

2 SHEETS—SHEET 1.

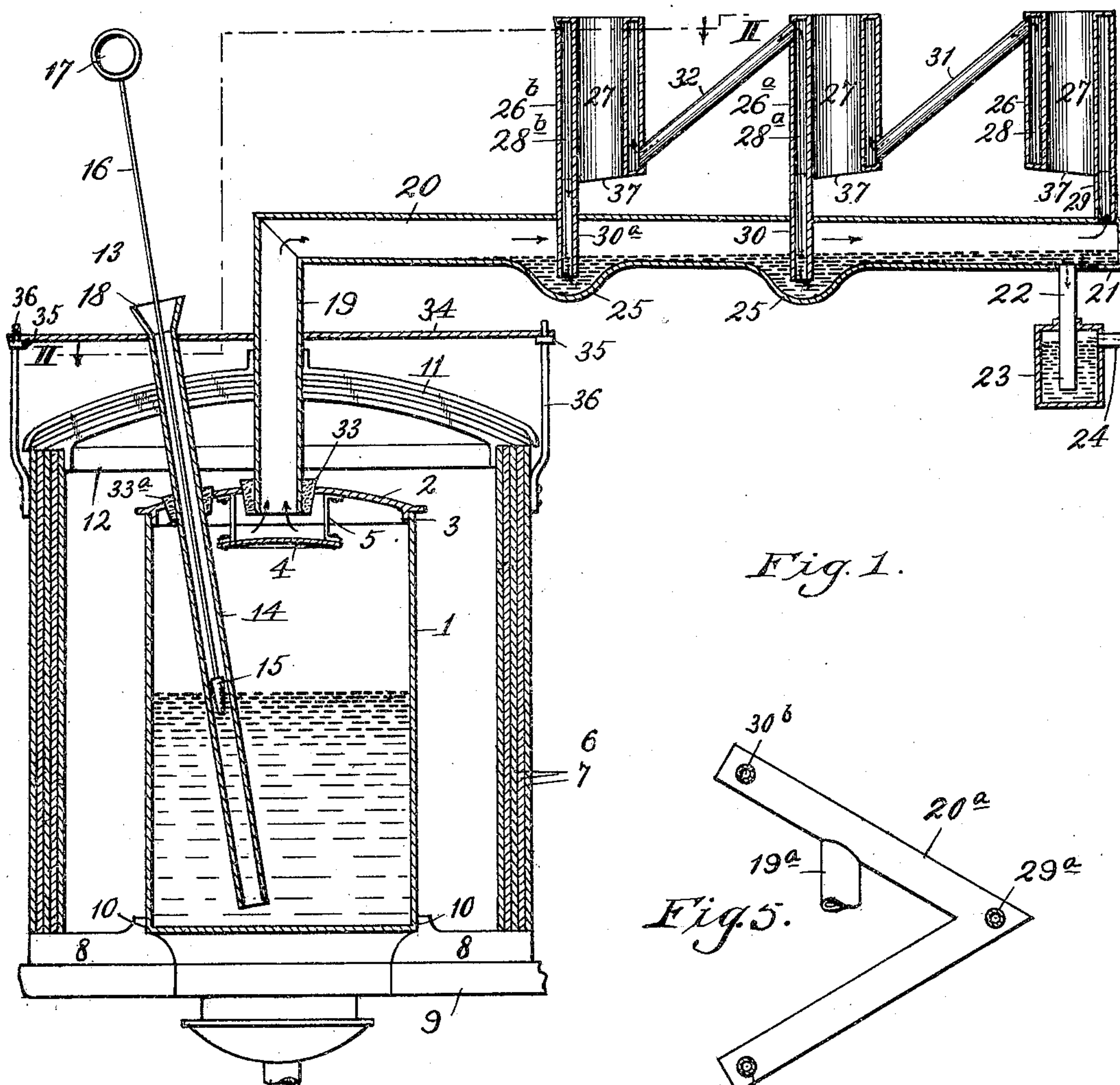


Fig. 1.

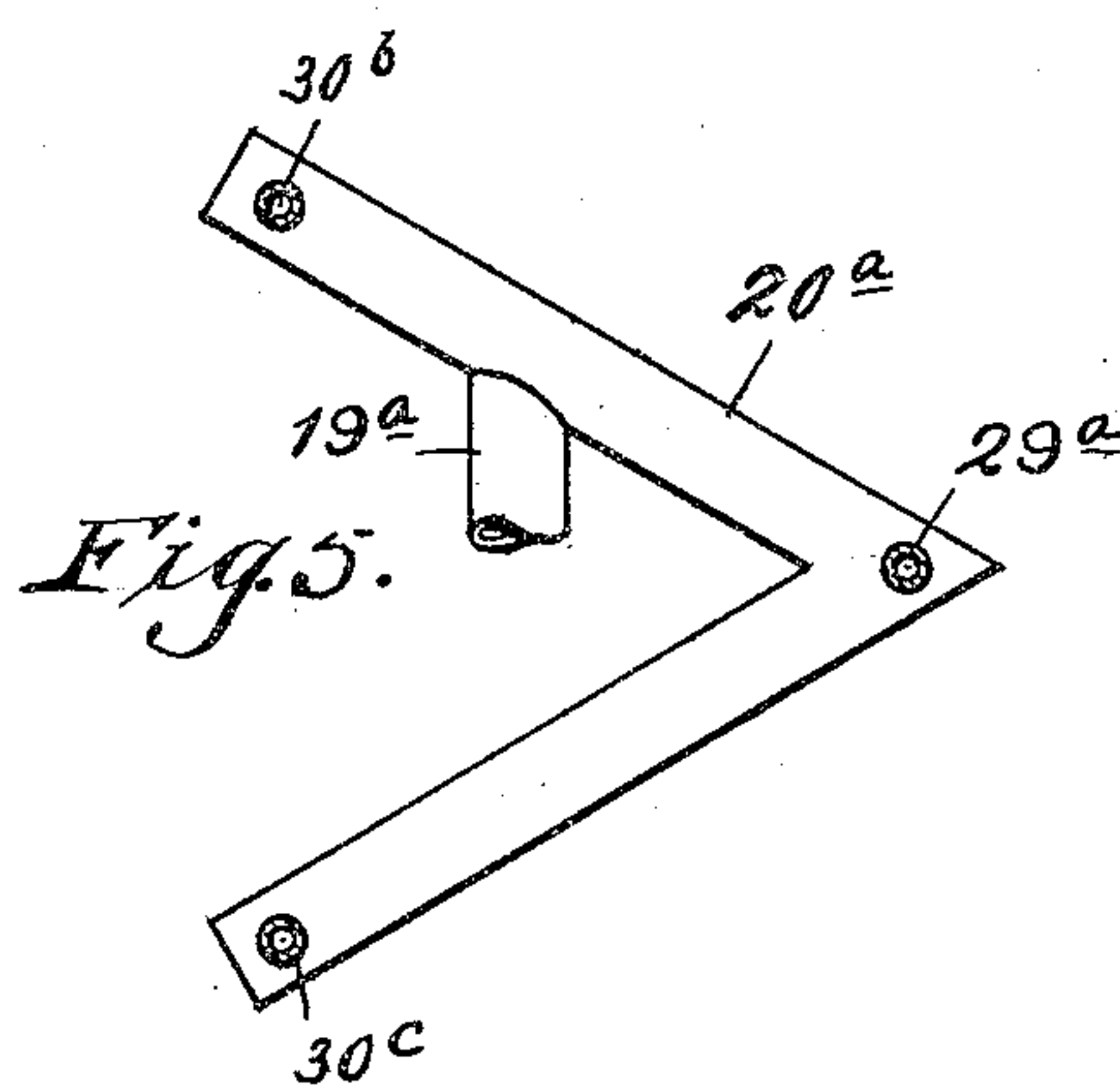


Fig. 5.

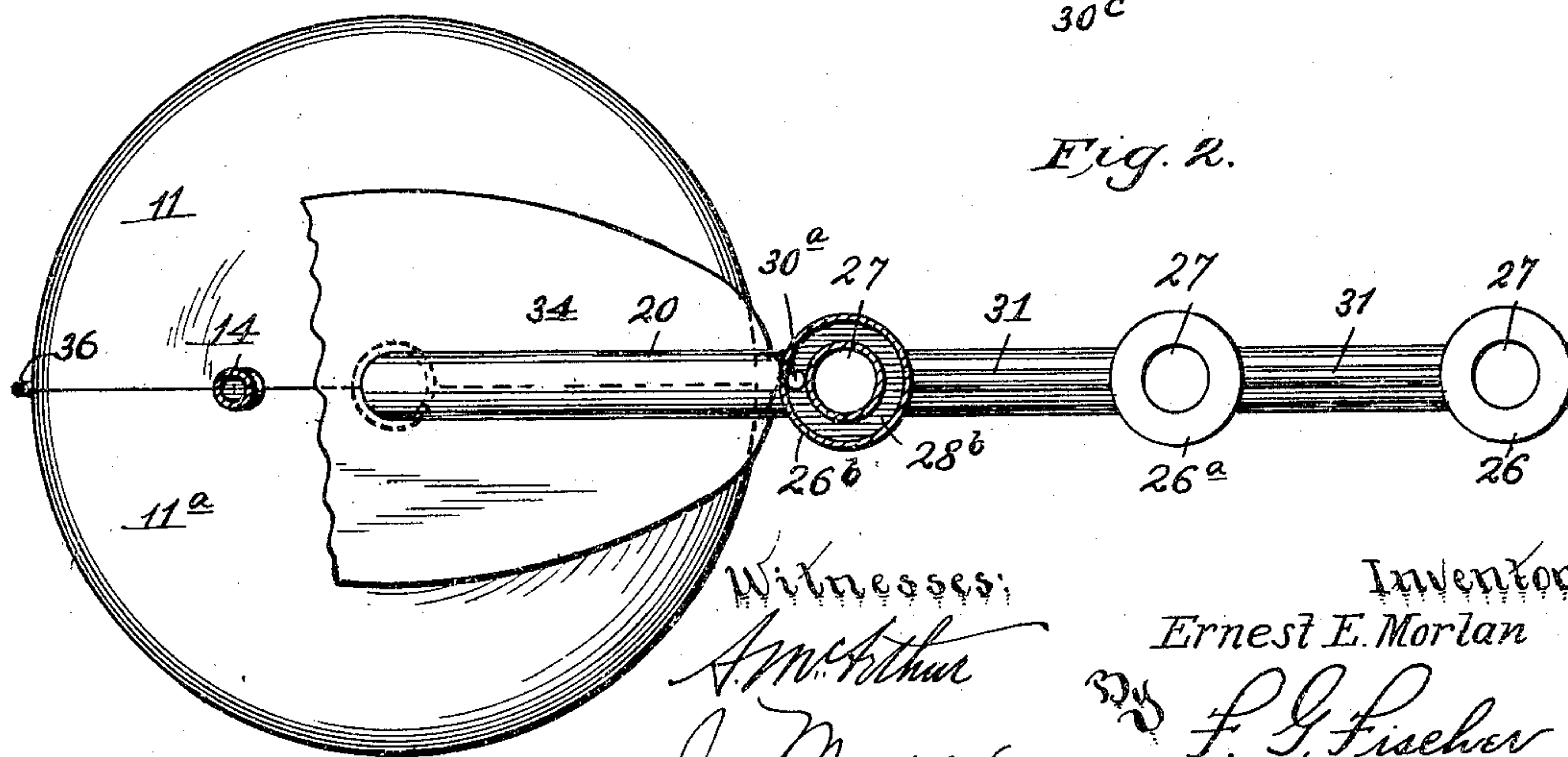


Fig. 2.

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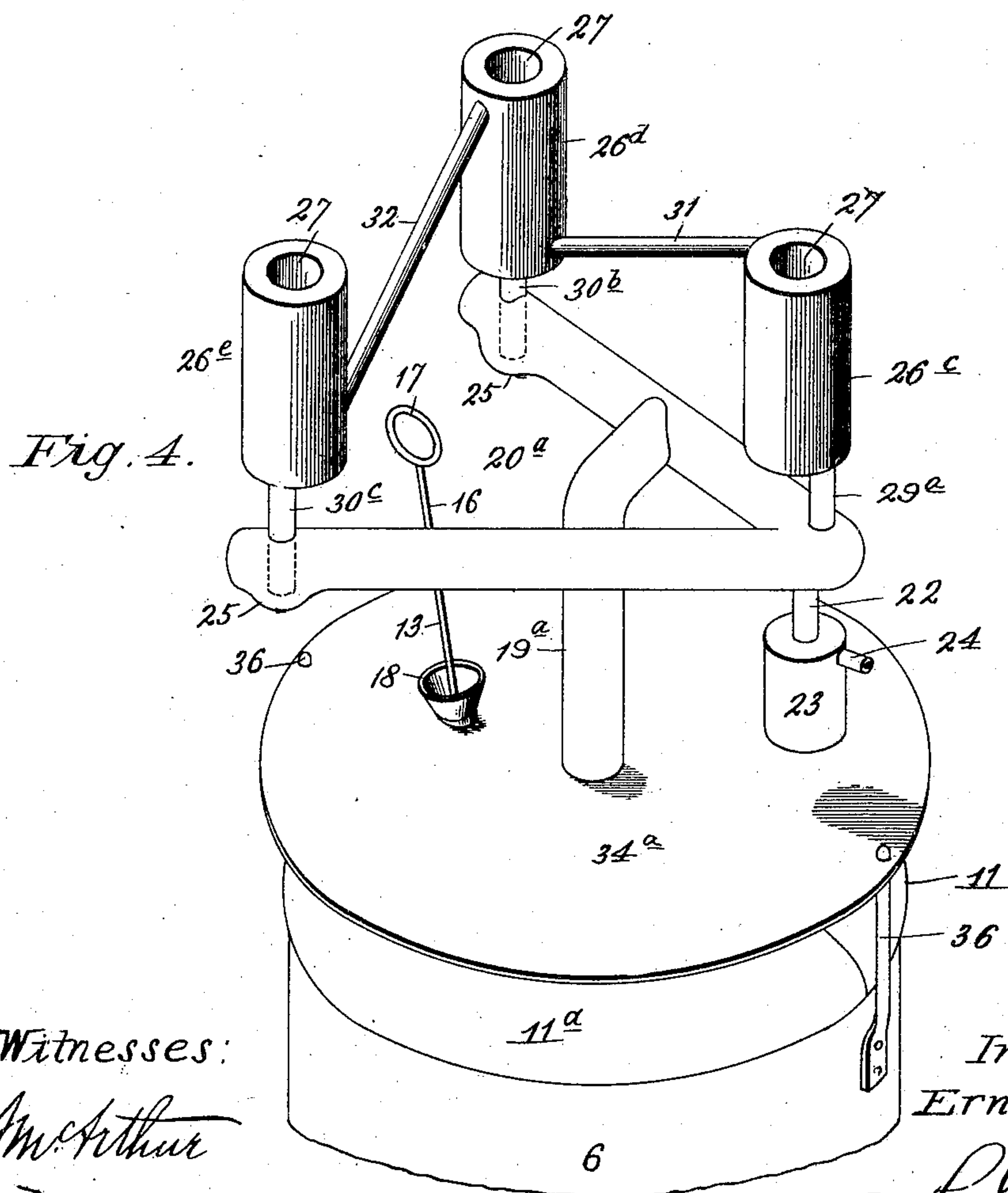
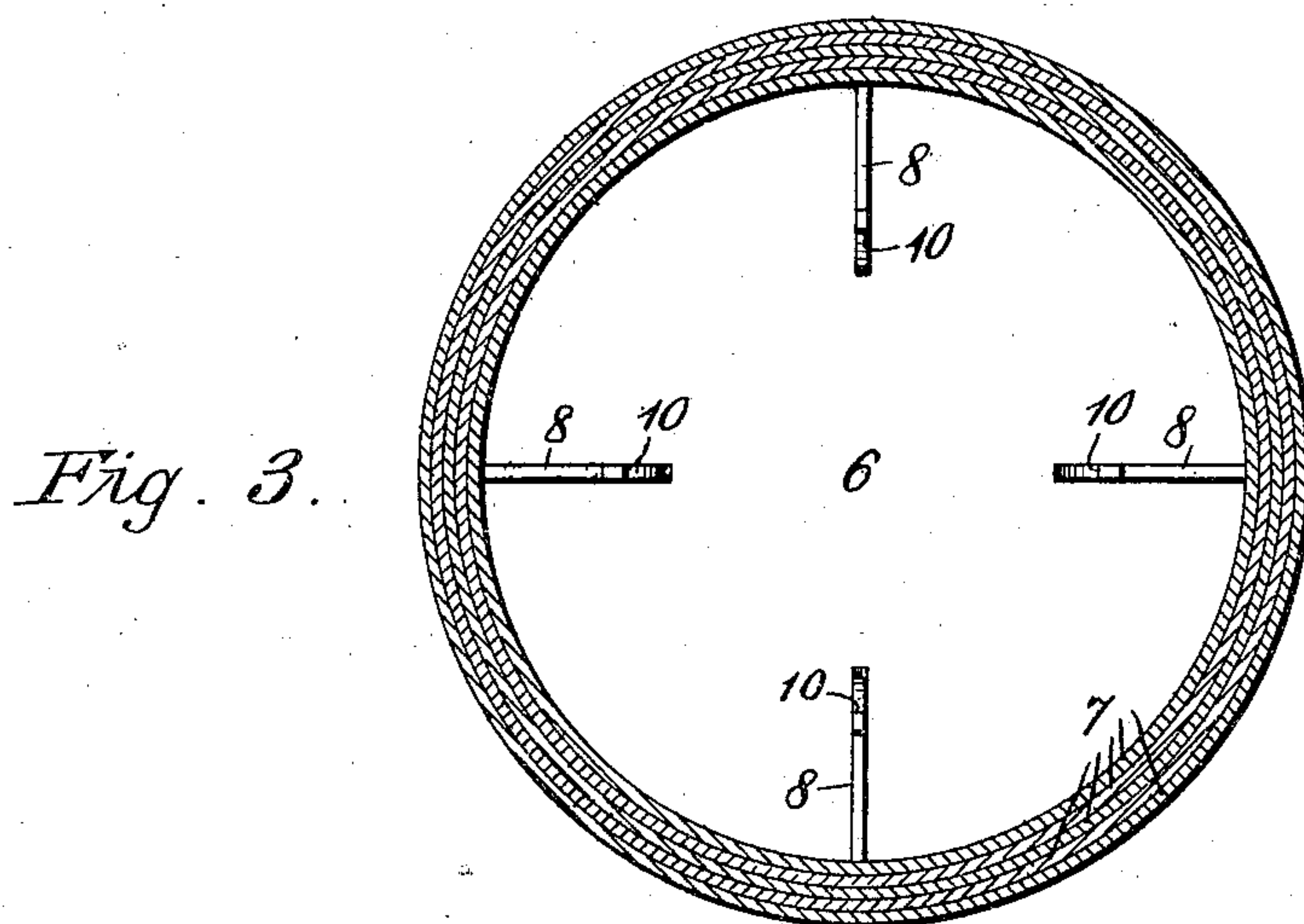
F. G. Fischer
att'y

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Ernest E. Morlan

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UNITED STATES PATENT OFFICE.

ERNEST E. MORLAN, OF KANSAS CITY, KANSAS.

DISTILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 793,732, dated July 4, 1905.

Application filed June 11, 1904. Serial No. 212,077.

To all whom it may concern:

Be it known that I, ERNEST E. MORLAN, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Distilling Apparatus, of which the following is a specification.

My invention relates to improvements in distilling apparatus; and my object is to provide a simple and inexpensive apparatus for distilling water for either domestic or laboratory purposes.

The invention consists in the novel construction, combination, and arrangement of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a central vertical sectional view of the apparatus. Fig. 2 is a plan view of the same, partly in section, taken on line II II of Fig. 1. Fig. 3 is a sectional plan view of the casing forming part of the invention, and Figs. 4 and 5 show a modification of a steam-pipe forming part of the invention.

In carrying out the invention I employ a retort 1, composed, preferably, of porcelain and provided at its upper end with a removable lid 2, having a depending flange 3 for engaging the inner surface of the retort in order to form a steam-tight joint.

4 designates a centrally-disposed deflecting-plate secured to lid 2 by means of depending arms 5.

6 designates a casing, consisting of a composite wall 7, composed, preferably, of alternate layers of sheet metal and asbestos or other non-heat-conducting material. Casing 6 is provided at its lower open end with radial arms 8, adapted to rest upon a gas-stove 9 or other heater and provided near their inner ends with shoulders 10 for centering the retort in the casing. The upper open end of the casing is closed when in use by a lid of two sections 11 11^a, having depending flanges 12 for engaging the inner surface of the casing to prevent the escape of heat at this point.

13 designates a gage for automatically indicating the depth of water within the retort, consisting of a tube 14, a float 15, and a stem 16, secured at its lower inner end to the float

and terminating at its upper outer end in a ring 17. The tube 14 extends downwardly through the lids of the casing and the retort and terminates near the bottom of the latter. It is provided at its upper end with a conical mouth 18, so that water may be conveniently supplied therethrough to the retort.

19 designates the vertical portion of a steam-pipe leading from the retort through the central portion of the casing-lid and communicating at its upper end with portion 20, which inclines downwardly toward its outer end 21, where it is provided with an outlet-pipe 22, communicating with a trap 23, having an outlet-pipe 24 near its upper end. The inclined portion 20 of the steam-pipe is provided at its lower side with depressed portions 25.

26 26^a 26^b designate a series of condensers open at their central portions 27 and having annular chambers 28 28^a 28^b. Communication is established between chamber 28 and the depressed end 21 of the steam-pipe through tube 29, connected at its opposite terminals with the top of the steam-pipe and the bottom of condenser 26. Condensers 26^a 26^b communicate with the inclined portion of the steam-pipe through tubes 30 30^a, leading from the bottom portions of the condensers to within a short distance of the bottom portions of the depressions 25.

31 designates an inclined tube communicating at its opposite ends with the upper portion of chamber 28 and the lower portion of chamber 28^a. 32 designates a similar tube connecting the upper end of chamber 28^a with the lower portion of chamber 28^a.

33 33^a designate tapering corks interposed between lid 2, vertical portion 19, and tube 14 to render the joints between said members steam-tight.

34 designates a deflecting-plate interposed between the casing-lid and the inclined portion of the steam-pipe to protect the latter from any heat which might escape from the casing. Said deflecting-plate rests upon collars 35, secured to the upper portions of rods 36, extending upwardly from the casing. When the casing is placed in position over the burner of the gas-stove, the heat ascending from the latter will be confined by the

casing around the retort, so that the water therein will be quickly converted into steam. As the latter ascends to escape into the steam-pipe it impinges against deflector 4, so that all entrained water will be precipitated instead of escaping with the steam. The steam then flows through the steam-pipe and successively through chambers 28 28^a 28^b. In its passage through the steam-pipe a portion of the steam is condensed and fills depressions 25, thereby sealing the discharge ends of tubes 30 30^a, so the remaining steam will be compelled to pass successively through the condensers, as above mentioned. The condensers have inclined bottom portions 37 leading to the discharge-tubes and are of such dimensions that the steam in its passage therethrough will be entirely condensed and precipitated upon the said inclined bottom portions which conduct it to the discharge-tubes communicating with their lower portions. The peculiar formation of the condensers whereby the steam is divided into thin annular sheets exposed to the action of the atmosphere circulating around chambers 28 28^a 28^b and through circular openings 27 gives them great condensing capacity so they may be made small in comparison to the rest of the apparatus.

As the several parts are detachable, repairs can be easily made, and access may be had to the interior of the retort in order to remove all sediment deposited therein from the water by removing the lids of the casing and said retort.

As the lid of the casing is composed of two sections 11 11^a, it can be removed from tube 14 and the vertical portion of the steam-pipe, so that said tube and pipe can be readily connected and disconnected from the retort, and when they are connected to said retort sections 11 11^a can be readily placed in position on the casing. When sections 11 11^a are in position on the casing, they snugly fit against each other, the casing, tube 14, and the steam-pipe, and thus prevent the escape of heat through the upper portion of the casing.

The modification Figs. 4 and 5 shows the inclined portion of the steam-pipe 20^a arranged in V form, its depressed end being at the apex of the angle. It communicates with the condensers 26^c, 26^d, and 26^e through tubes 29^a, 30^b, and 30^c and is supplied with steam through pipe 19^a. By thus making the steam-pipe V-shaped it will not project beyond the casing, and consequently the apparatus will occupy less space than when the pipe shown in Fig. 1 is employed. When V-shaped pipe 20^a is used, a circular deflecting-plate 34^a is employed to protect it from the heat.

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

1. A distilling apparatus, consisting of a steam-generating retort, a casing for inclosing the sides and top of the retort, a steam-pipe

communicating with the retort having an inclined portion provided with depressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the steam-pipe, condensers having outlets terminating beneath the upper portions of the depressions in the steam-pipe, and inclined pipes connecting the condensers, substantially as described.

2. A distilling apparatus, consisting of a steam-generating retort, a casing composed of composite walls for inclosing the sides and top of the retort, a steam-pipe communicating with the retort having an inclined portion provided with depressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the steam-pipe, condensers having outlets terminating beneath the upper portions of the depressions in the steam-pipe, and inclined pipes connecting the condensers, substantially as described.

3. A distilling apparatus consisting of a steam-generating retort, a casing for inclosing the sides and top of the retort, a steam-pipe communicating with the retort having an inclined portion provided with depressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the steam-pipe, condensers having outlets terminating beneath the upper portions of the depressions in the steam-pipe, inclined pipes connecting the condensers, and a deflector interposed between the top of the casing and the inclined portion of the steam-pipe, substantially as described.

4. A distilling apparatus, consisting of a steam-generating retort, a casing for inclosing the sides and the top of the retort, a steam-pipe communicating with the retort having an inclined portion provided with depressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the steam-pipe, condensers having outlets terminating beneath the upper portions of the depressions in the steam-pipe, inclined pipes connecting the condensers, rods extending upwardly from the casing and provided near their upper ends with collars, and a deflector engaging the upper ends of the rods and resting upon the collars, substantially as described.

5. A distilling apparatus, consisting of a steam-generating retort, a casing for inclosing the sides and top of the retort provided at its lower ends with radial arms having shoulders near their inner ends for centering the retort in the casing, a steam-pipe communicating with the retort having an inclined portion provided with depressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the steam-pipe, condensers having outlets terminating beneath the upper portions of the depressions in the steam-pipe, and inclined

pipes connecting the condensers, substantially as described.

5 6. A distilling apparatus, consisting of a steam-generating retort, a gage extending upwardly through the top of the retort, a casing for inclosing the sides of the retort, a lid made in two sections for closing the top of the casing and fitting around the gage, a steam-pipe communicating with the top of the retort having an inclined portion provided with de-
10 pressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the steam-pipe, condensers having outlets terminating beneath the upper portions of the de-
15 pressions in the steam-pipe, and pipes connecting the condensers.

7. A distilling apparatus, consisting of a steam-generating retort, a casing for inclosing
20 the sides and top of the retort, a steam-pipe communicating with the top of the retort having an inclined portion provided with depressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the
25 steam-pipe, condensers having outlets termi-

nating beneath the upper portions of the depressions in the steam-pipes, pipes connecting the condensers, and a deflector arranged within the retort below the communicating end of
30 the steam-pipe.

8. A distilling apparatus, consisting of a steam-generating retort, a casing for inclosing the sides and top of the retort, a steam-pipe communicating with the retort having an in-
35 clined portion provided with depressions at its under side, a condenser communicating with the upper portion of the depressed end of the inclined portion of the steam-pipe, condensers having outlets terminating beneath the upper
40 portions of the depressions in the steam-pipe, inclined pipes connecting the condensers, a pipe leading from the lower end of the inclined portion of the steam-pipe, a trap communicating with said pipe, and a pipe leading from
45 the trap.

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

ERNEST E. MORLAN.

Witnesses:

A. McARTHUR,
F. G. FISCHER.