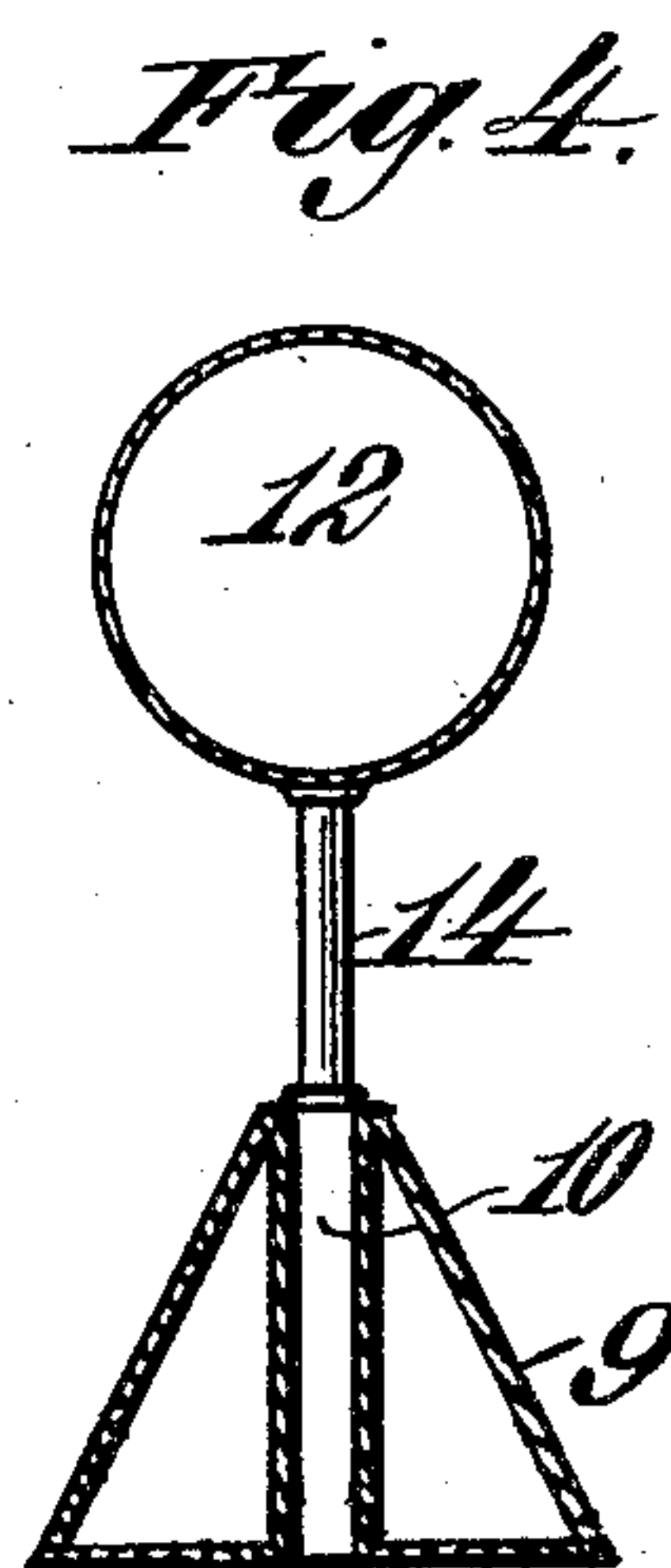
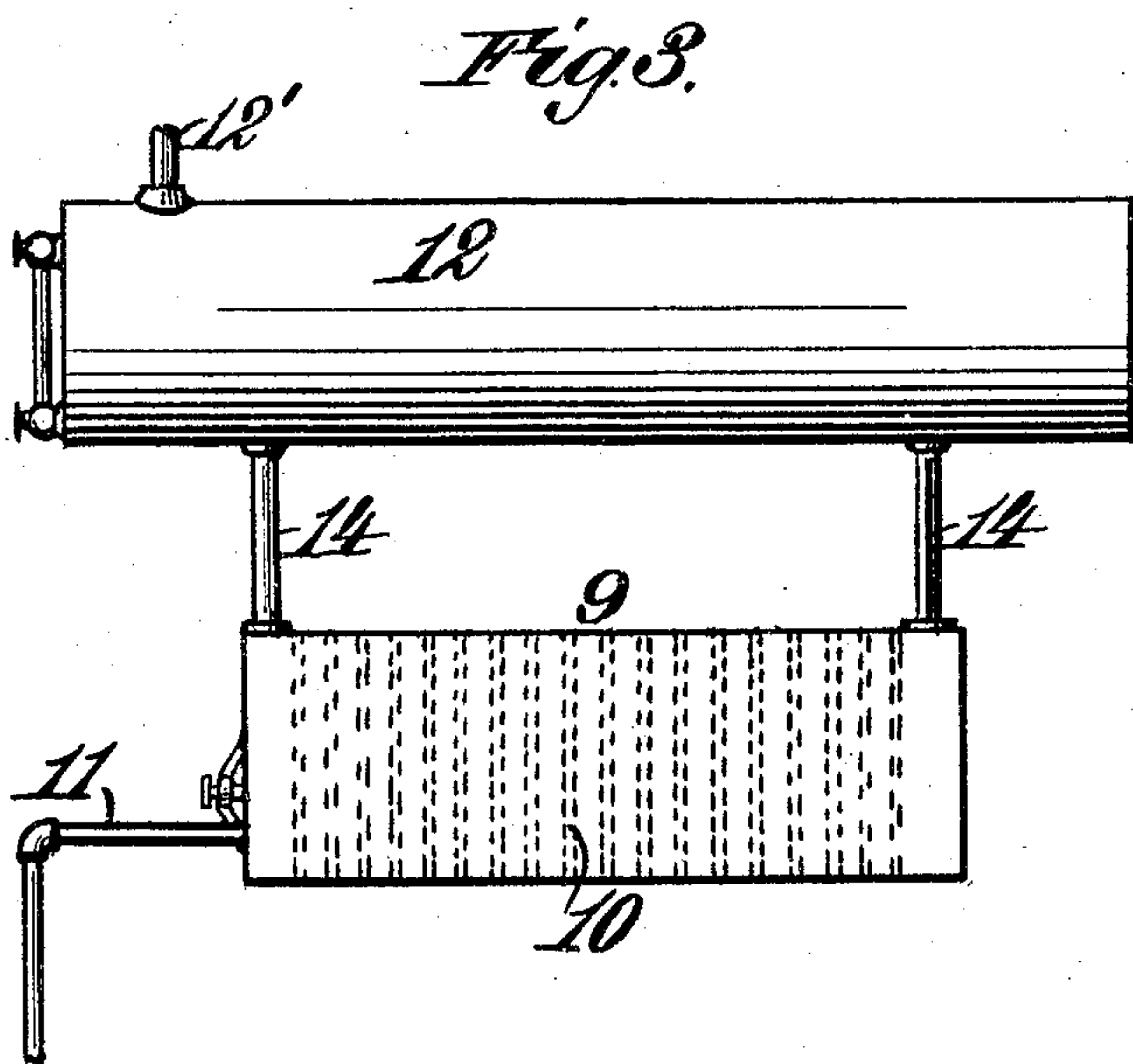
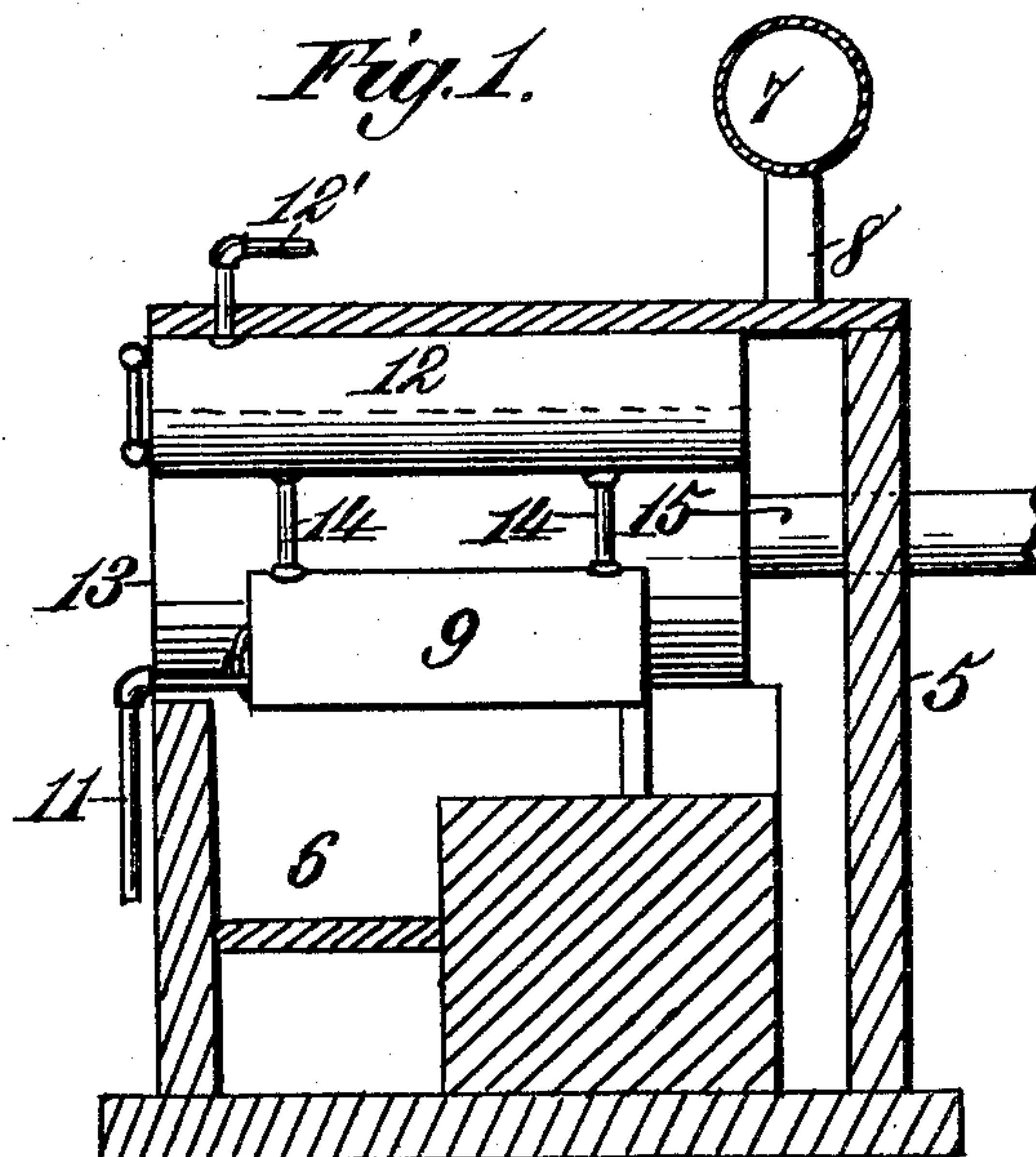
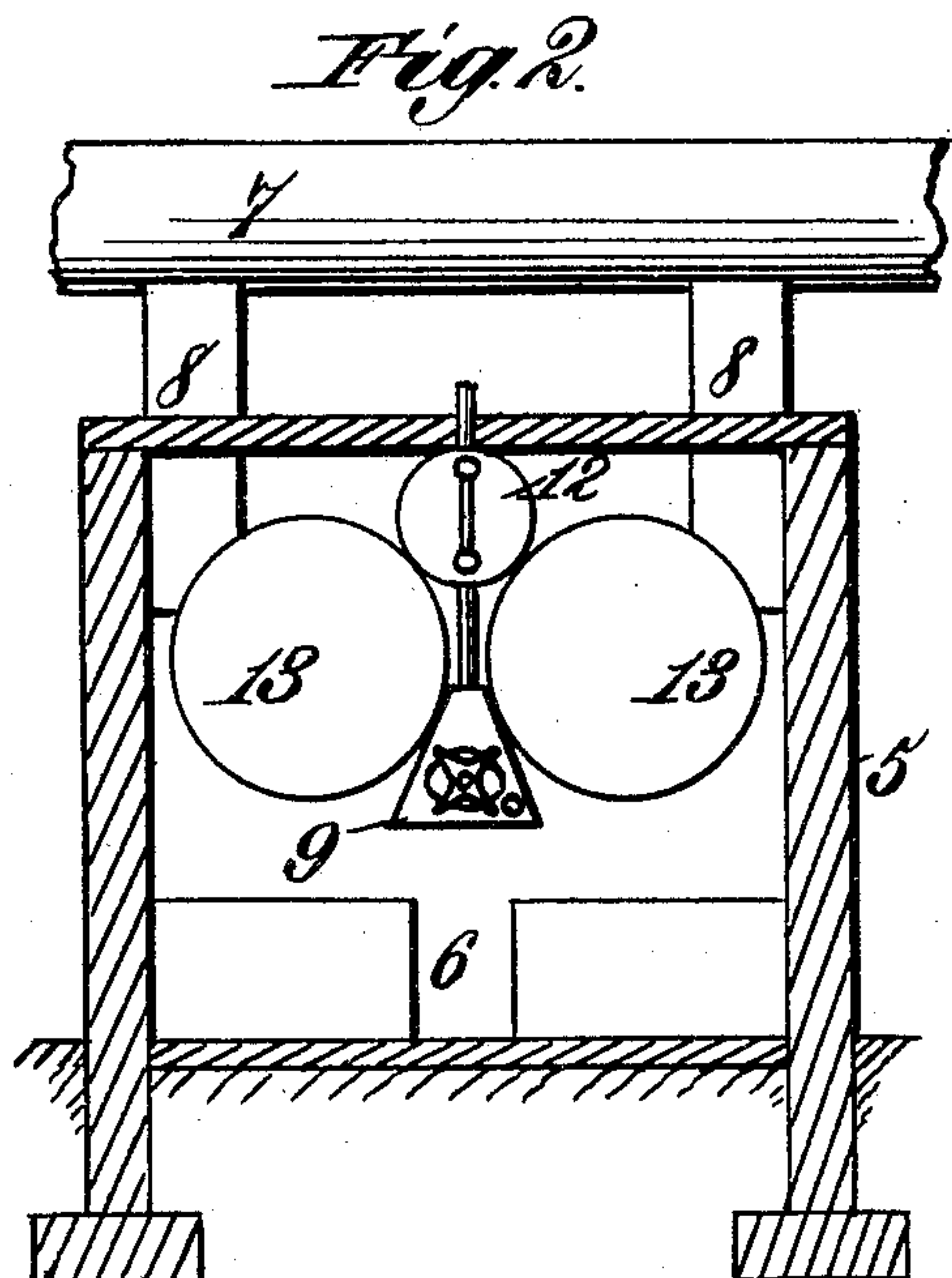


No. 793,542.

PATENTED JUNE 27, 1905.

W. F. ROSENCRANS.
WOOD ALCOHOL APPARATUS.
APPLICATION FILED AUG. 9, 1904.



Witnesses:
Robert Smith.
James L. Norris, Jr.

Inventor:
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By *James L. Norris.*
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM F. ROSENCRANS, OF STAMFORD, VERMONT.

WOOD-ALCOHOL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 793,542, dated June 27, 1905.

Application filed August 9, 1904. Serial No. 220,102.

To all whom it may concern:

Be it known that I, WILLIAM F. ROSENCRANS, a citizen of the United States, residing at Stamford, in the county of Bennington and State of Vermont, have invented new and useful Improvements in Wood-Alcohol Apparatus, of which the following is a specification.

This invention relates to what I shall for convenience term a "wood-alcohol apparatus," the latter having been found particularly advantageous in the distillation of alcohol from wood; and the object of the invention is to provide an apparatus wherein the life of the retorts therein will be materially prolonged beyond those of the ordinary kind and wherein the necessity of protecting the retorts from the direct blaze by arches over the fire-box is avoided. By the apparatus I utilize the heat which generates the steam in the heater forming part of said apparatus for charring the wood in said retorts, so that I dispense with the large boilers generally used in wood-alcohol plants and the expense of installing and maintaining same.

In that organization of the apparatus illustrated in the accompanying drawings, forming a part of this specification, two retorts for wood are involved, the wood being charred while in said retorts. In connection with said retorts I employ a heater the steam in which is generated by the action of a flame from the fire-box, and the heater is so positioned that it serves as a guard for the retorts in order to protect the same from the direct action of said flame, whereby, as hereinbefore set forth, their usefulness is increased over retorts of the ordinary mounting. The steam generated in the heater is used for distilling the acids obtained from the wood. The retorts are so placed that they are under the action of products of combustion passing from said fire-box, such products charring the wood in the retorts to the requisite extent.

Referring to said drawings, Figure 1 is a longitudinal sectional view of an apparatus involving my invention. Fig. 2 is a sectional front view of the same. Fig. 3 is an elevation of the boiler and heater shown in the preceding views and connected together; and Fig.

4 is a sectional front elevation of the heater and boiler, said Figs. 3 and 4 being upon a larger scale than the other two figures.

Like characters refer to like parts throughout the several views.

The different parts of the apparatus are incased within a housing, as 5, which may be of masonry or of any other suitable construction. In the forward lower side of the housing is a fire box or chamber 6, into which the fuel to be ignited is introduced. The fuel may be of any desired kind. Above the top of the housing is represented a main flue 7, into the bottom of which the auxiliary flues 8 extend, said auxiliary flues leading directly from the interior of the housing 5. The brickwork within the housing supports a heater, as 9. This heater, which is shown as located directly over the fire-box 6, may be of any desirable form. It is represented as being substantially triangular in transverse section. Within the heater is a longitudinal row of tubular flues 10, which open at their ends into the bottom and top, respectively, of said heater. Said flues are for the passage of the products of combustion which rise directly from the fire-box, and the flame may also enter said flues in order to effectually heat the water within the heater. The water to be heated is delivered to the interior of the heater by the supply-pipe 11, extending into said heater from a point outside the furnace or housing. The heater has the usual manhole, closed normally by a cover, and by which access may be had to the interior thereof when occasion requires.

Above the heater is situated the boiler 12, the steam from which is carried away by the pipe 12' to be utilized in the distilling-room for heating and distilling the acids obtained from the wood. From the opposite ends and top of the heater 9 the tubes 14 rise, being connected at their upper ends to the under side of the boiler 12. The boiler is illustrated as equipped with a gage-glass of some well-known form, and it, like the retorts 13, is mounted in the brickwork of the housing or furnace structure. There are two of the retorts 13 represented and as situated comparatively close together, the triangularly-formed

heater being situated in the under side of the space between the same, so that said heater thereby serves to protect the retorts from the direct action of the flame in the fire box or chamber 6. The necks or offtakes of the retorts are designated by 15, and they are led through the rear wall of the housing 5 to carry off the vapors to be subsequently distilled, as is the custom.

10 While I have illustrated two retorts, this is not absolutely essential, and, in like manner, while I have illustrated the heater 9 as being triangular in cross-section, this is not necessary, for the heater may be of any other desired or preferred shape, although in practice I have found a heater of the kind illustrated satisfactory and efficient, for it presents a wide under base to receive the direct action of the flames issuing from the fire-box.

20 In practice a flame of suitable intensity is kindled in the fire-box 6 in the ordinary manner and issuing therefrom strikes directly against the under flat side of the heater 9 and does not strike directly against either of the retorts. The products of combustion which rise straight from the fire-box pass through the tubular flues 10 to aid in heating the water in the heater. Some of the products of combustion are diverted by the heater by reason of its location in opposite directions or toward the left and right, respectively, in Fig. 2, so as to circulate around the two retorts 13 in order to char the wood therein. Finally the products of combustion pass into the auxiliary flues 8 and from thence into the main flue 7 to the atmosphere. The heat radiating from said tubular flues 10 aids in heating the retorts, while after the products of combustion emerge from the upper ends of said flues they strike the boiler 12 to promote the generation of steam.

40 In practice the heater may be braced inte-

riorly in any desirable way to prevent it from collapsing or injury.

Having thus described the invention, what I claim is— 45

1. A wood-alcohol apparatus involving a fire-box, a pair of retorts arranged to be heated by the products of combustion from the fire-box, a heater arranged to be directly acted upon by the flame issuing from the fire-box and to prevent the direct action of said flame upon the retorts, said heater having a plurality of vertically-extending flues for the passage of the products of combustion from said fire-box. 55

2. A wood-alcohol apparatus involving a fire-box, a pair of retorts arranged to be heated by the products of combustion from the fire-box, a heater arranged to be directly acted upon by the flame issuing from the fire-box and to prevent the direct action of said flame upon the retorts, said heater having a plurality of vertically-extending flues for the passage of the products of combustion from said fire-box, and a boiler in communication with said heater. 65

3. A wood-alcohol apparatus involving a casing containing a fire-box, a pair of retorts arranged side by side in said casing and above the fire-box, a heater directly over the fire-box and constituting a guard to prevent the direct action of the flame from the fire-box against said retorts, a boiler located above and in communication with said fire-box, and a discharge-pipe connected with the boiler and leading out of said casing. 75

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM F. ROSENCRANS.

Witnesses:

A. W. WILLMARTH,

J. H. REED.