

No. 702,374.

Patented June 10, 1902.

H. M. McCall.
AIR SUPERHEATER OR CARBURETER.

(Application filed Mar. 7, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

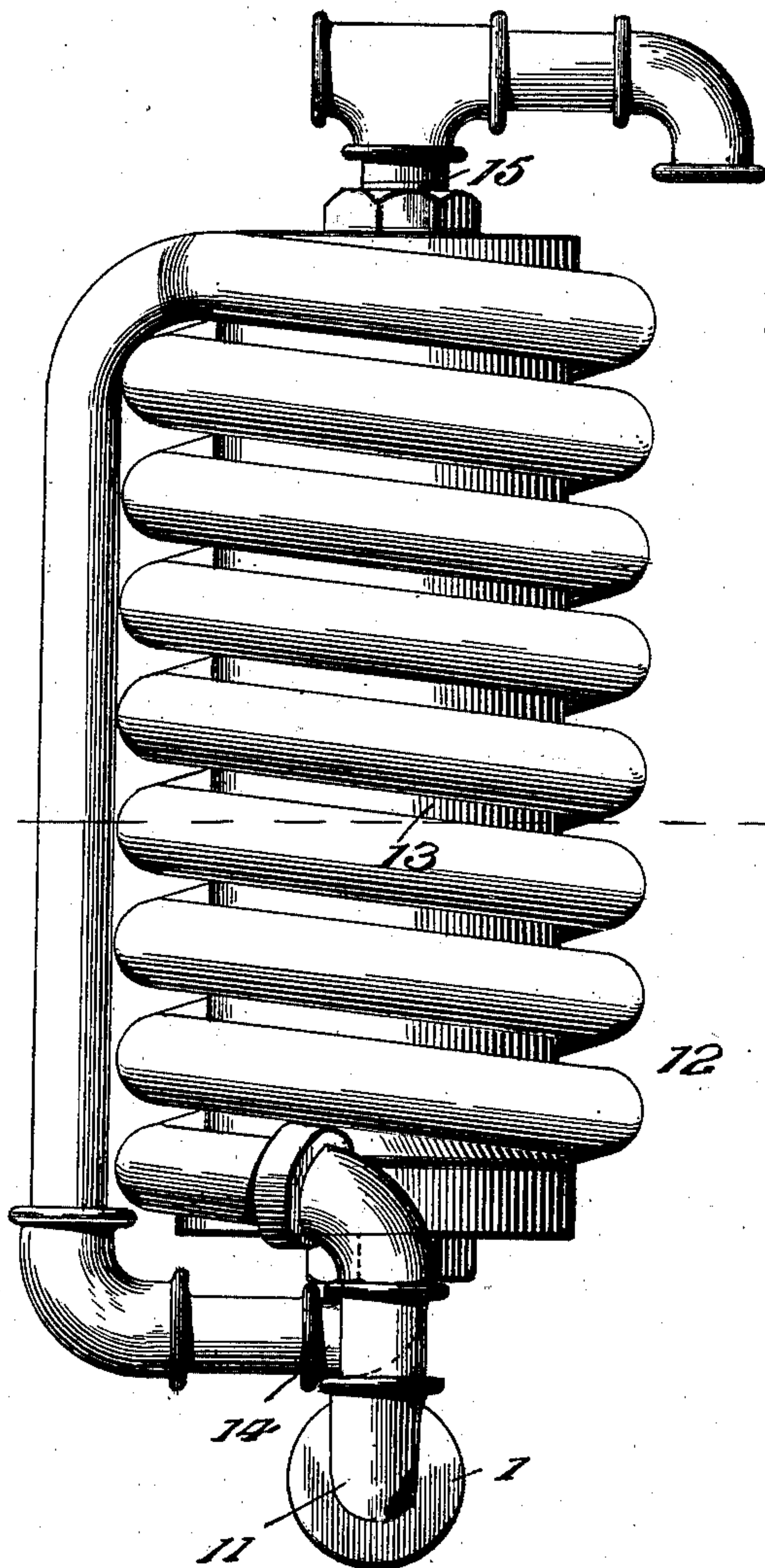
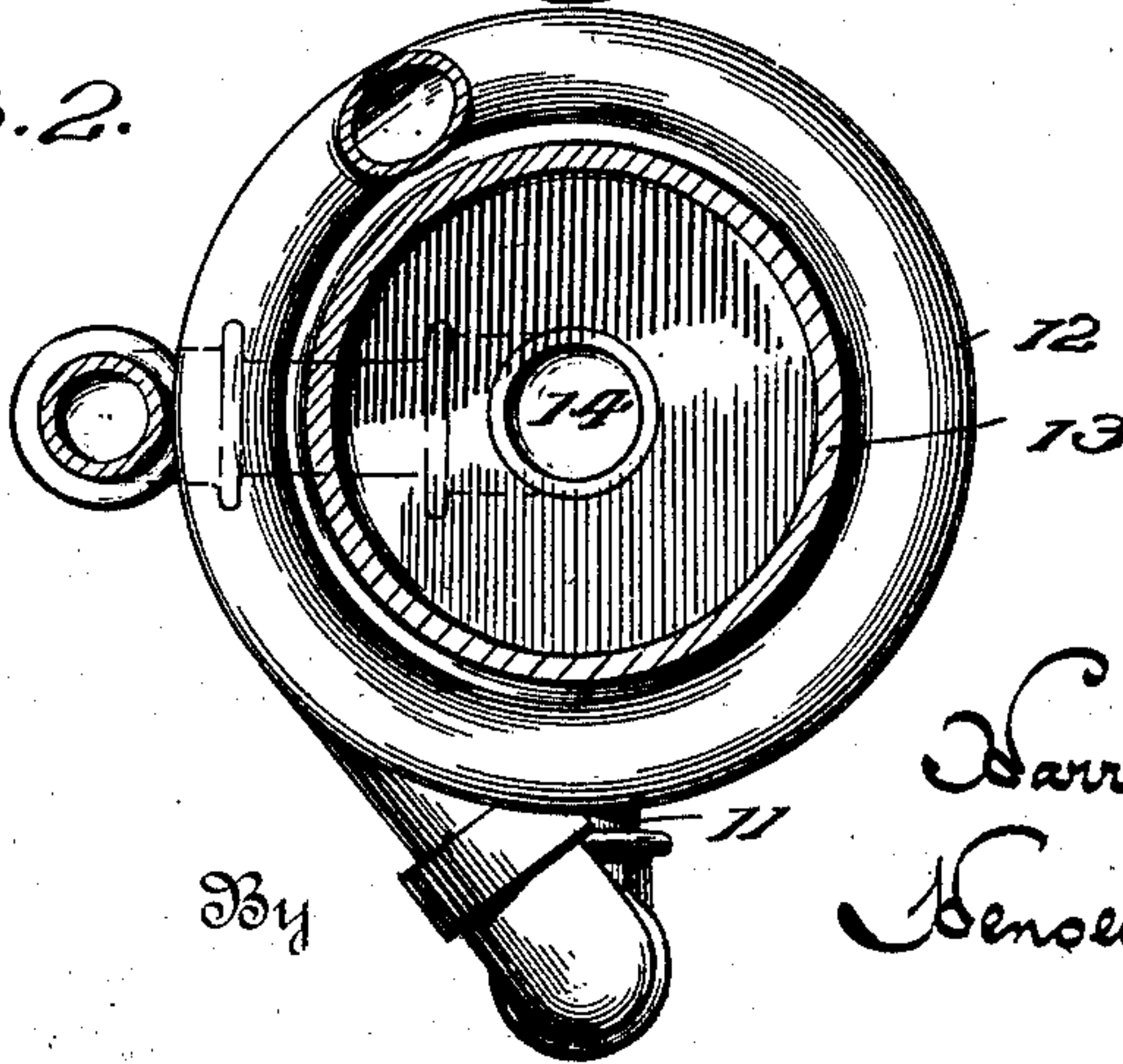


Fig. 2.



Witnesses

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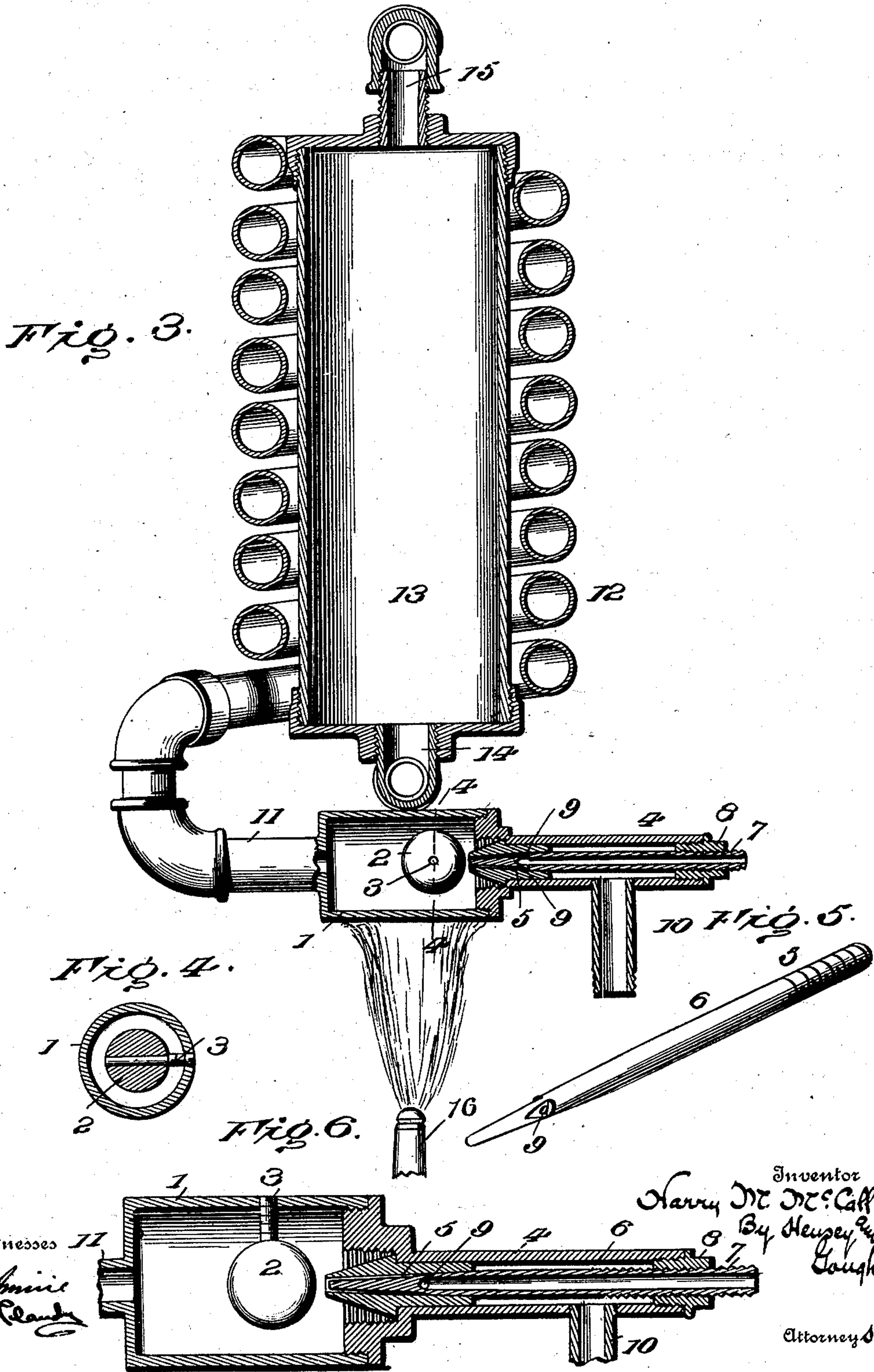
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

HARRY M. McCALL, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO PITTSBURG GAS ENGINE COMPANY, OF PITTSBURG, PENNSYLVANIA.

AIR SUPERHEATER OR CARBURETER.

SPECIFICATION forming part of Letters Patent No. 702,374, dated June 10, 1902.

Application filed March 7, 1902. Serial No. 97,079. (No model.)

To all whom it may concern:

Be it known that I, HARRY M. McCALL, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Air Superheaters or Carbureters, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention has relation to air superheaters or carbureters; and it consists in the novel construction and arrangement of its parts, as hereinafter described.

15 The object of this invention is to provide a device for use either for superheating air or for carbureting elements and for converting hydrocarbon into gas.

20 It consists, primarily, of a heating-chamber into which the elements are introduced under pressure, the said heating-chamber being provided in its interior with a means for spraying or forcing elements as they are introduced against the heated sides of the said chamber, the elements in gaseous state 25 passing from the heating-chamber into the upper end of a coil. Said coil surrounds a reservoir, to one end of which one end of the coil is attached. The element in gaseous state may be delivered from the reservoir to 30 any desired point.

35 In the accompanying drawings, Figure 1 is a side elevation of my invention. Fig. 2 is a horizontal sectional view cut on the line 2 2 of Fig. 1. Fig. 3 is a transverse sectional view of my invention. Fig. 4 is a transverse sectional view of the heating-chamber cut on the line 4 4 of Fig. 3. Fig. 5 is a detail perspective view of a needle-valve used in the device; and Fig. 6 is a longitudinal sectional 40 view of the heating-chamber, the needle-valve, and its casing.

45 The heating-chamber 1 is provided in its interior with a sphere 2, said sphere being substantially concentrically arranged within the chamber 1, being held in position by a support 3, passing through the side of the said chamber. The needle-valve casing 4 enters one end of the chamber 1, the inner end of said casing being provided with a valve-seat 50 5, the hollow needle-valve 6 passing longitudinally through said casing. The rear end

of the said needle-valve 6 is threaded, as at 7, and engages an interior thread of the tap 8, whereby by turning the said needle-valve 6 it may be passed in or out of the seat 5, thus 55 opening or closing the space between the point end of said needle-valve and the said seat and increase or diminish accordingly the capacity of the passage of the elements at this point. The lateral openings 9 communicate the interior of the needle-valve 6 with the exterior just at the point where said needle-valve begins to taper. The tap 8 closes the rear end of the valve-casing 4, and the inlet-pipe 10 is connected with the side of 65 said casing. The pipe 11 is connected with the opposite end of the heating-chamber 1, said pipe 11 being connected with the coil 12, said coil surrounding the hollow reservoir 13, the other end of said coil 12 entering said 70 reservoir 13 at the point 14 at the bottom of the same, the said reservoir 13 being provided at its top with a suitable outlet 15.

In operation the device works as follows: The flame of the heating means 16 is brought 75 in contact with the heating-chamber 1, as shown in Fig. 3. The walls of said chamber are thus increased in temperature. Presuming that the device is to be used for heating air, the said element under pressure is introduced through the inlet-pipe 10 into the valve-casing 4, the outer end of the needle-valve 6 having previously been closed, the said needle-valve being so set with relation to the valve-seat 5 as to permit the requisite quantity of air to pass through the said seat 5. 85 As the air passes into the chamber 1 it strikes the side of the sphere 2 and is deflected in all directions against the hot sides of the said chamber 1. Thus the air is heated. It then 90 passes through the pipe 11 into the coil 12, said coil taking up the heat passing above the chamber 1. The said air while in the coil is superheated and eventually enters the reservoir 13 in this condition, from which place 95 it may be conducted to any desired point.

To use the apparatus as a carbureter, the air is introduced in a manner as above described. At the same time hydrocarbon is permitted to pass through the hollow of the 100 needle-valve 6, said hydrocarbon passing out through the openings 9 and mixing with the

air as it passes through the valve-seat 5. The mixture of hydrocarbon and air is forced against the sphere 2 and is instantly converted into a gas, which is subjected to the same
5 action as that above described for the air.

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

10 1. A device of the character as described, consisting of a heating-chamber, a sphere located in said chamber and adapted to deflect the elements as they are introduced into the chamber against the walls of the same.

15 2. An apparatus of the character as described, consisting of a heating-chamber, a deflecting means located within said chamber, a valve-casing connecting said chamber, said casing having an inlet, a hollow needle-valve located in said casing and a means for ad-
20 justing said valve.

25 3. A device of the character as described, consisting of a heating-chamber, a deflector located in the interior of said chamber, a valve-casing connecting said chamber, said valve-casing having an inlet, a hollow needle-valve located within the casing and a means for adjusting said needle-valve with relation

to the casing to regulate the capacity of the opening into the chamber.

4. A device of the character as described, 30 consisting of a heating-chamber, a deflector located in said chamber, a means for introducing an element into the chamber against said deflector, a coil connected with said chamber and located above the heating means, 35 a reservoir being connected with said coil and also being located above said heating means.

5. A device of the character as described, consisting of a heating-chamber, a deflector located in said chamber, a valve-casing en- 40 tering said chamber, said valve-casing having an inlet a hollow needle-valve located within said casing and a means for adjusting said needle-valve, a coil connected with said chamber being located above the heating 45 means, a reservoir surrounded by said coil, and also being located above the heating means and being connected to said coil.

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

HARRY M. McCALL.

Witnesses:

MARY L. MILLARD,
ANNA ELIZ. STULL.