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W. J. ELDER.
RADIATOR.
APPLICATION FILED FEB. 2, 1909.

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Fig. 1.

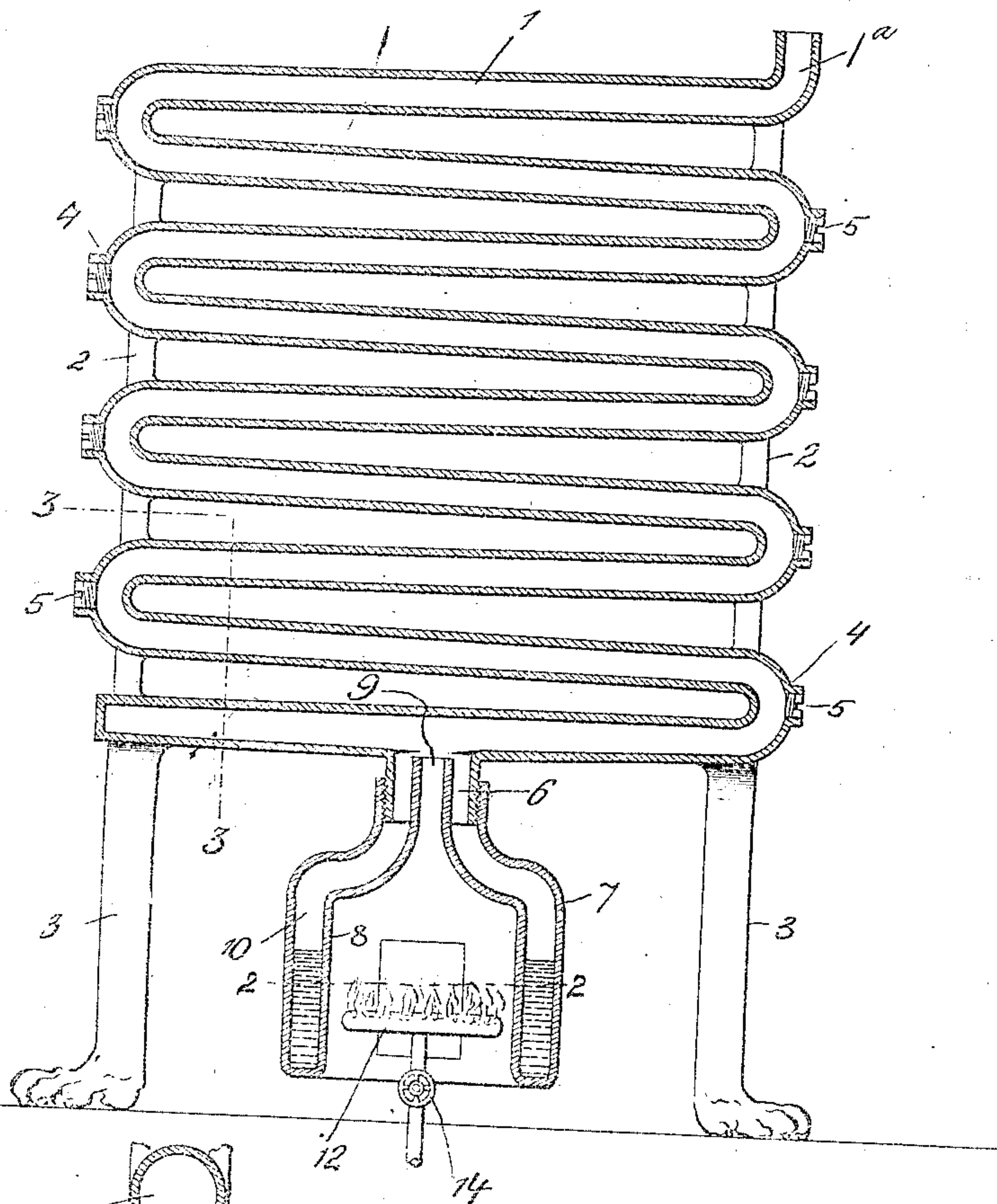


Fig. 4.

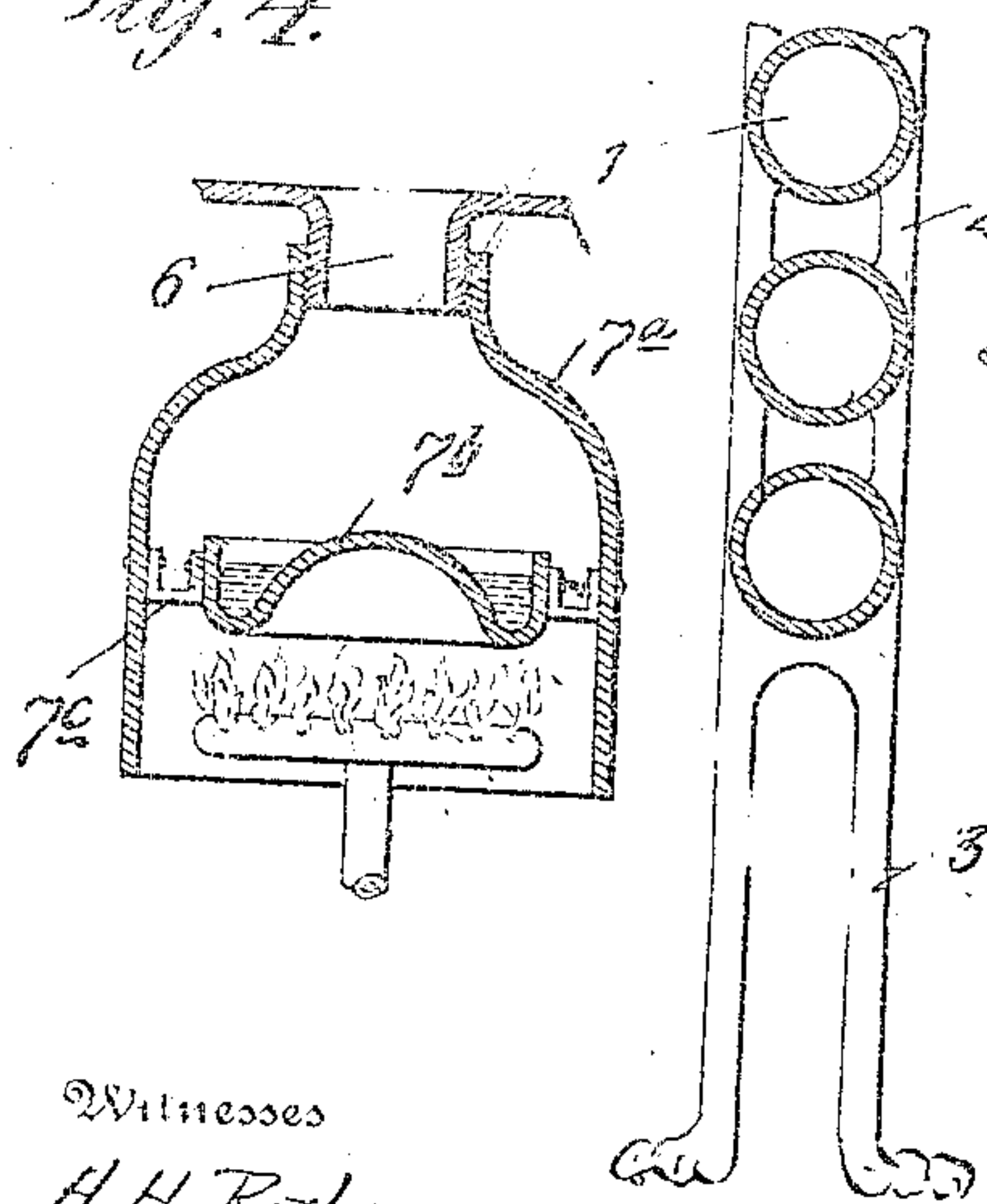


Fig. 3.

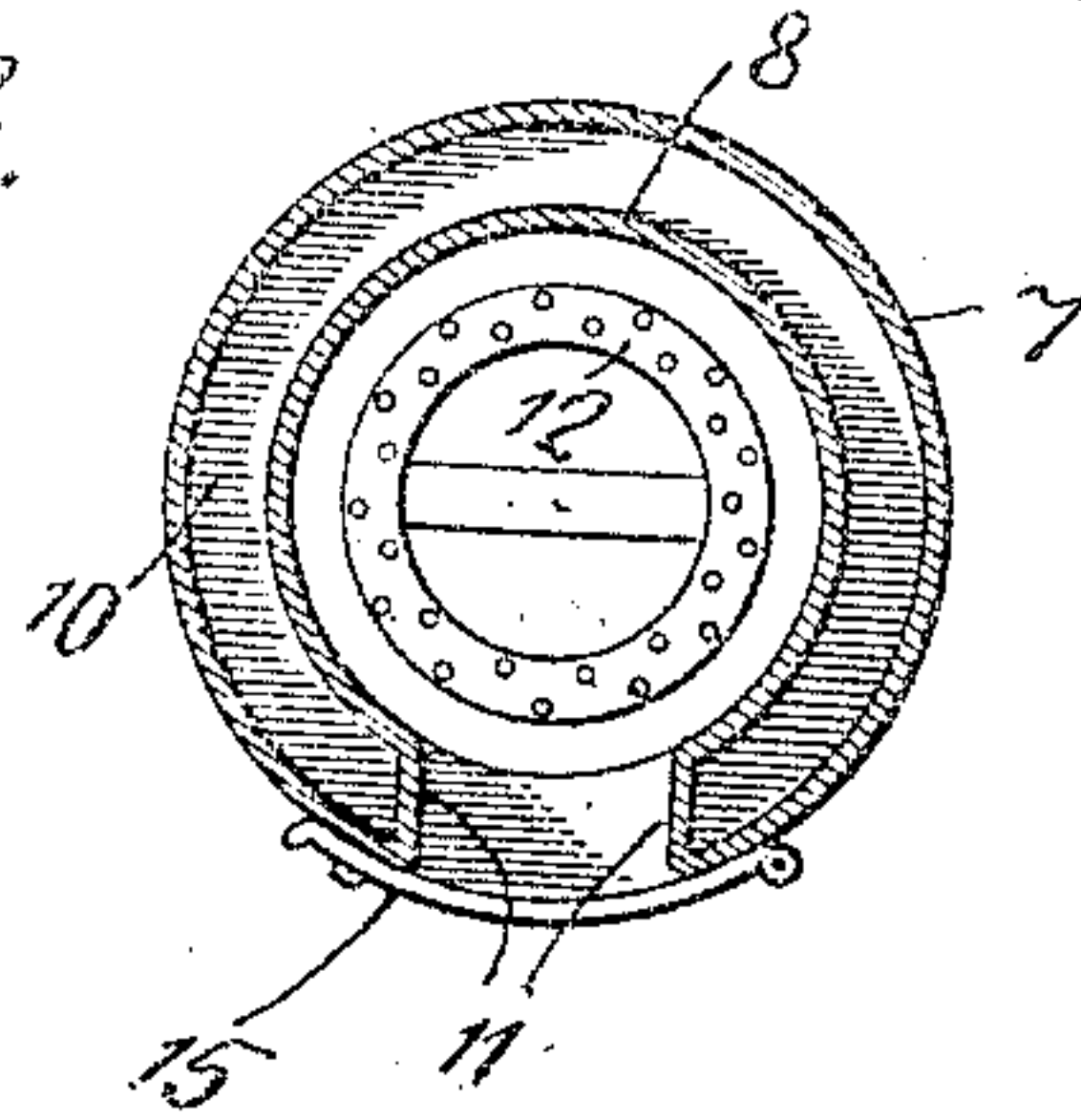


Fig. 2.

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RADIATOR.

940,445.

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To all whom it may concern:

Be it known that I, WELKER J. ELDER, a citizen of the United States of America, residing at Wilkesburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Radiators, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to radiators, and the object of the invention is to provide a radiator wherein gas is used as a heating medium, the radiator being designed to obtain a large number of caloric units from a
15 minimum expenditure of fuel.

As a radiator of heat, the radiator is constructed to provide a sinuous path for the heat units and products of combustion, before their final escape. Instead of the products of combustion escaping directly into the
20 compartment into which the radiator is used, I provide an outlet for the products of combustion, whereby the compartment or room will not be contaminated by impure air, or
25 other impurities.

Further, my invention aims to provide a simple and inexpensive radiator that can be easily cleaned and in connection with the radiator I use a novel receptacle for receiving the condensation of the radiator and returning it to the radiator in a gaseous state.

The invention will be presently described in detail and then specifically pointed out in the appended claims.

35 Referring first to the drawing: Figure 1 is a vertical sectional view of a radiator constructed in accordance with my invention, Fig. 2 is a horizontal sectional view of the burner housing taken on the line 2—2 of Fig. 1, Fig. 3 is a horizontal sectional view
40 of the radiator taken on the line 3—3 of Fig. 1, and Fig. 4 is a vertical sectional view of a modified form of burner housing.

To put my invention into practice, I construct the radiator of strong and durable
45 metal, preferably by casting the same. As a casting the radiator consists of a sinuous coil, the layers or windings of which are arranged one above the other providing a
50 narrow structure that will occupy a comparatively small space in a compartment or room. These layers or windings of the coil are connected together by spacing and supporting webs 2, and as a whole are supported
55 by suitable legs 3. The curved ends of the

sinuous coil are provided with nipples 4 normally closed by threaded plugs 5, these plugs being removed to permit of the windings or layers of the coil being easily cleansed.

The uppermost layer or winding of the
60 coil is adapted to communicate with the atmosphere, the outlet 1^a in practice being in communication with a flue (not shown) by which the products of combustion are conducted to the outside of the room, while the
65 lowermost layer or winding is closed, but centrally of the legs 3 is provided with a depending exteriorly threaded sleeve 6, for supporting a burner housing 7. This burner housing is preferably cylindrical and carries
70 an inner lining 8 having a contracted upper end 9 extending into the sleeve 6. The inner lining 8 provides a liquid receptacle 10, and is connected to the housing 7 by partitions 11, providing a door-way whereby easy access
75 can be had to a circular burner 12 located in the housing. This burner is of a conventional form and is controlled by a valve 14.

The door-way of the housing is normally
80 closed by a hinged door 15. The heated products of combustion arising from the burner 12 pass upwardly into the sinuous coil, passing through various layers and windings of the coil before being finally
85 ejected from the radiator. During the progress of the heated products of combustion, the entire surface of the sinuous coil is heated, this causing considerable heat to be emitted by the radiator.

As a certain amount of condensation takes place in the radiator, I have provided a liquid receptacle 10. This receptacle is adapted to receive whatever condensation may be sent back by the radiator, and as the
95 inner lining of the housing 7 extends below the burner, all condensation is trapped in the burner casing and returned to a gaseous state and permitted to pass through the radiator. To insure the return of such condensation as may accumulate within the
100 radiator, I have slightly inclined each layer or winding of the sinuous coil.

In Fig. 4 of the drawings I have illustrated a housing 7^a conforming to a dome or
105 shell. In this housing is supported a basin 7^b by brackets 7^c, said basin being beneath the sleeve 6 to receive such condensation as may flow downwardly into said sleeve. This modified form of construction is less ex-
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pensive to manufacture than the burner housing illustrated in Fig. 1 of the drawings.

The invention as above described is susceptible to such structural changes as are permissible by the appended claims.

Having now described my invention what I claim as new, is:—

1. A radiator comprising a sinuous coil discharging to the atmosphere and having the arms thereof arranged one above the other and disposed in alternating inclined relation to each other, the lowermost arm being closed at its free end and provided intermediate its ends with a depending sleeve, supporting legs in which the ends of each arm of the coil is received and supported, and a burner housing depending from said sleeve and formed with a combustion chamber and a vaporizing chamber, each in communication with the coil, said vaporizing chamber arranged to receive the condensation from the lowermost arm.

2. A radiator comprising a sinuous coil

discharging to the atmosphere and having the arms thereof arranged one above the other and disposed in alternating inclined relation to each other, the lowermost arm being closed at its free end and provided intermediate its ends with a depending sleeve, each arm provided with a drain-out opening, plugs normally closing said openings supporting legs in which the ends of each arm are received and supported, and a burner housing depending from said sleeve and formed with a combustion chamber and a vaporizing chamber, each in communication with the coil, said vaporizing chamber arranged to receive the condensation from the lowermost arm.

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

WELKER J. ELDER.

Witnesses:

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