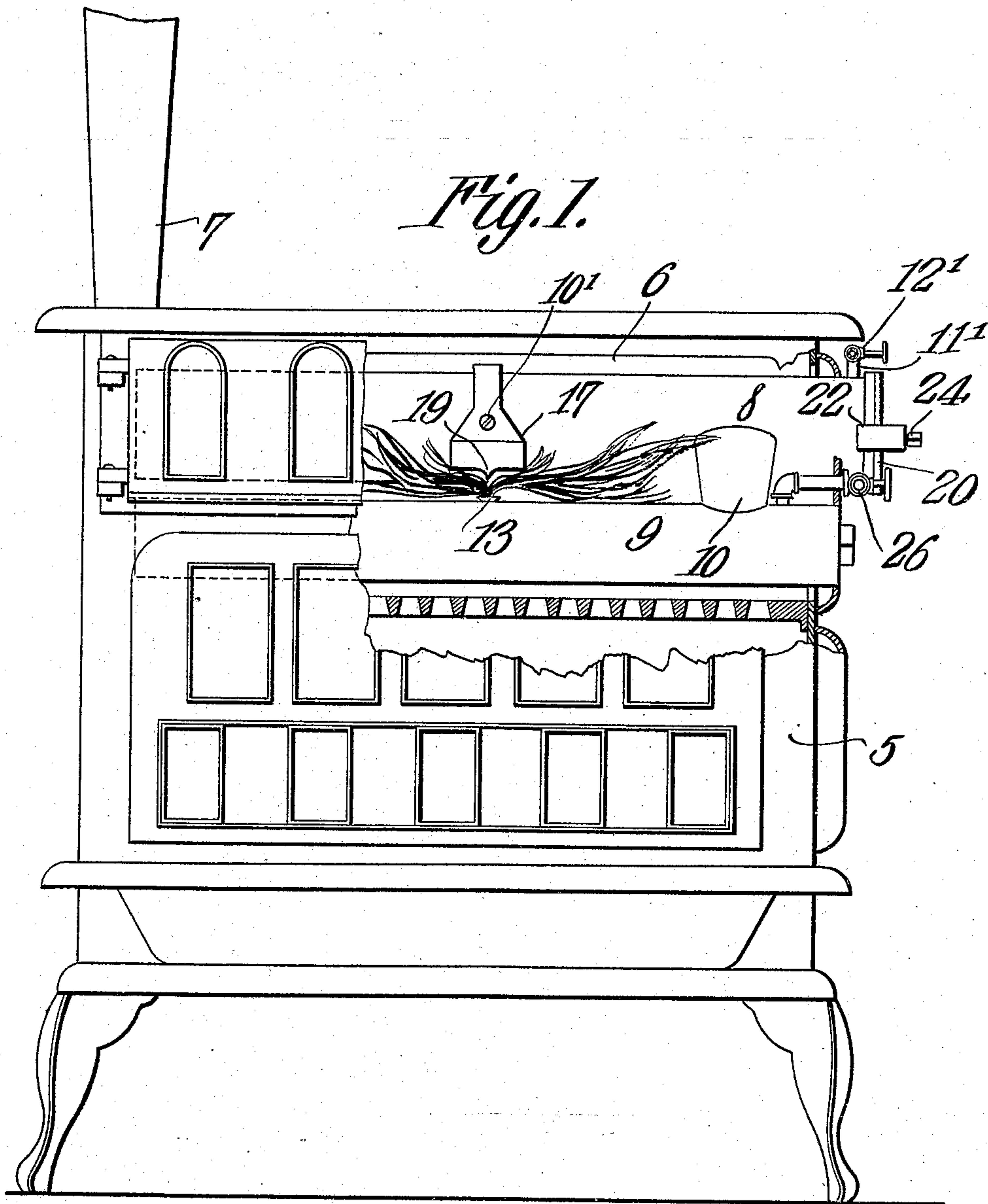


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OIL BURNER.  
APPLICATION FILED MAR. 6, 1908.

911,704.

Patented Feb. 9, 1909.  
2 SHEETS—SHEET 1.



Witnesses  
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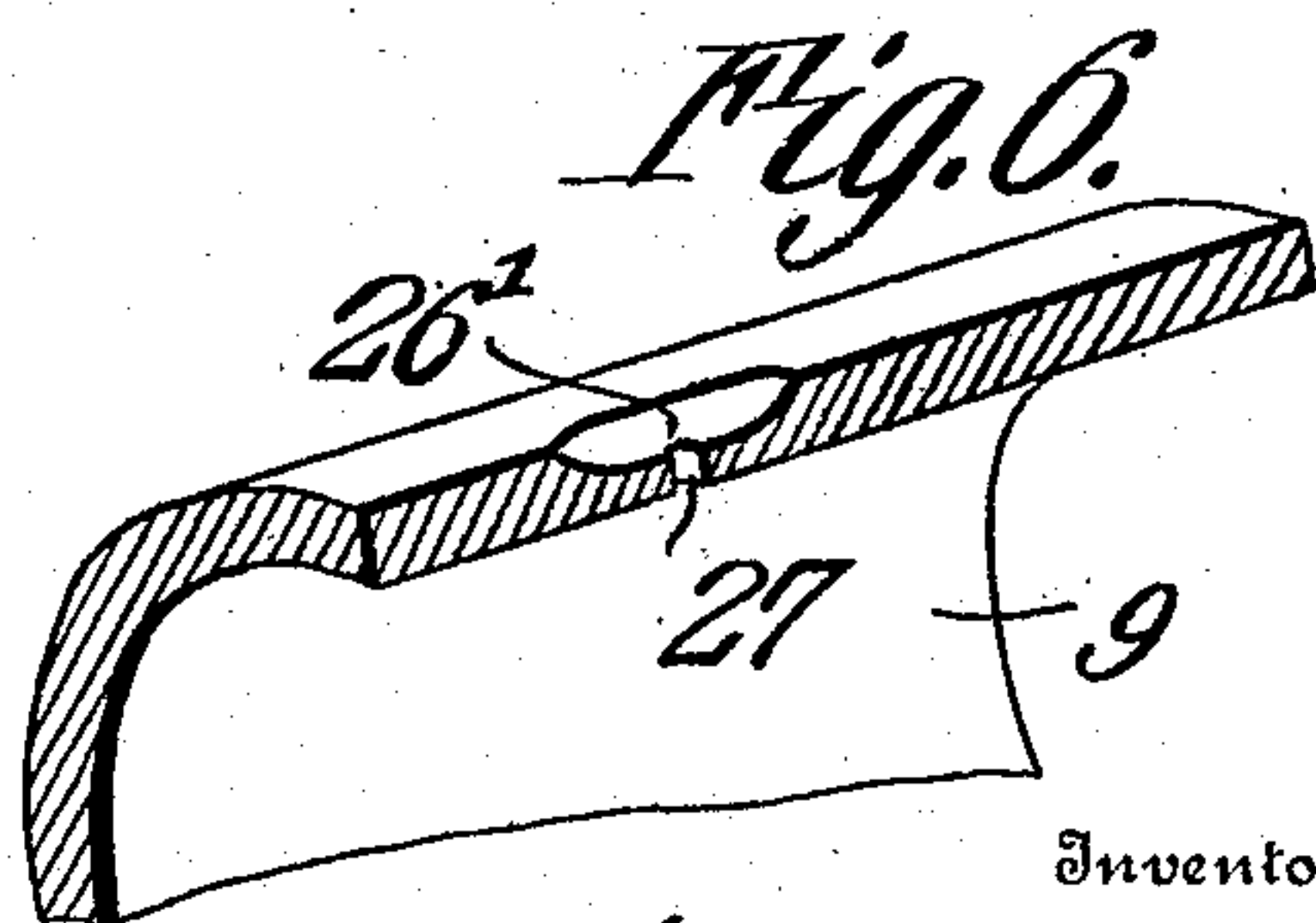
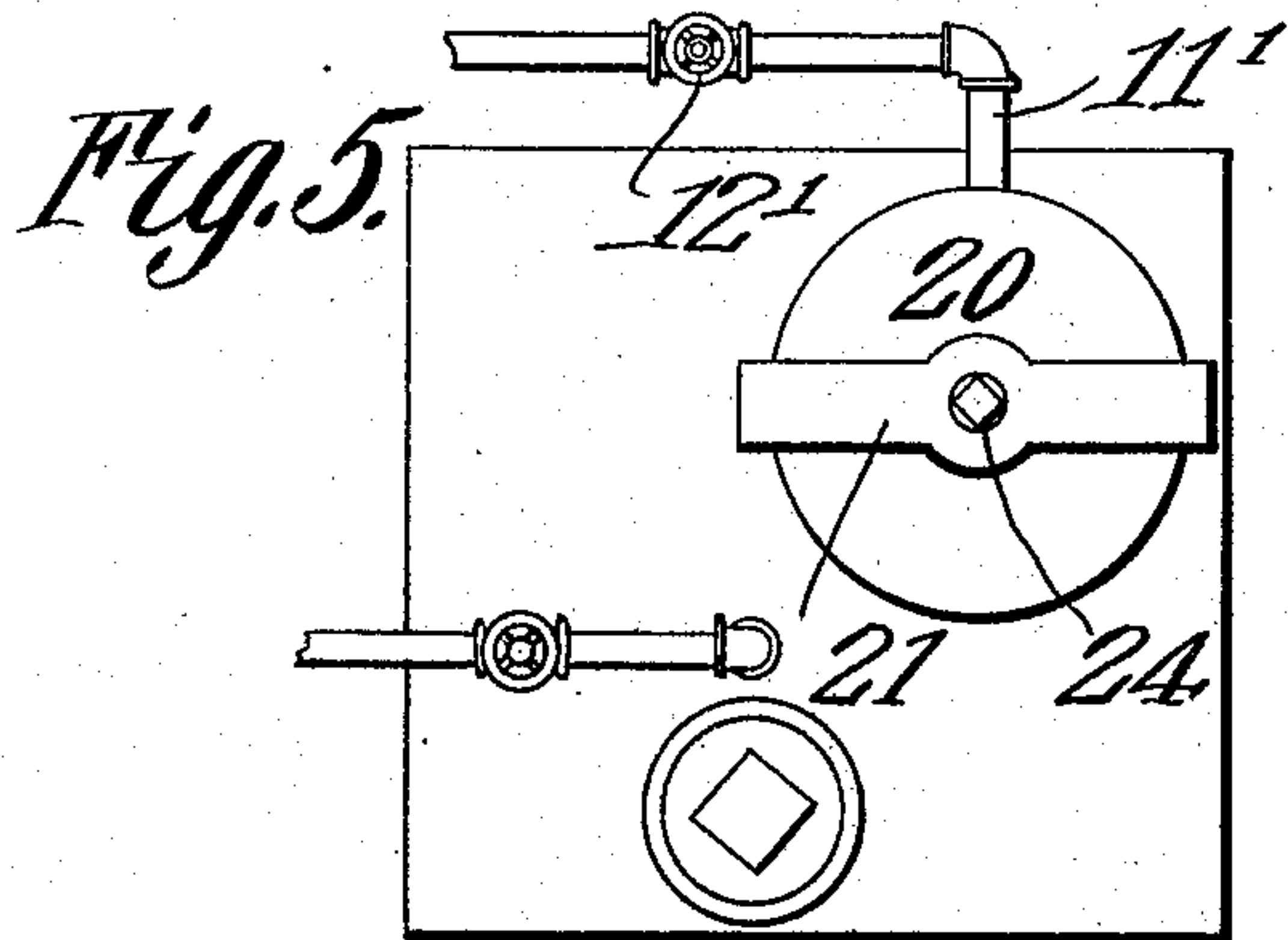
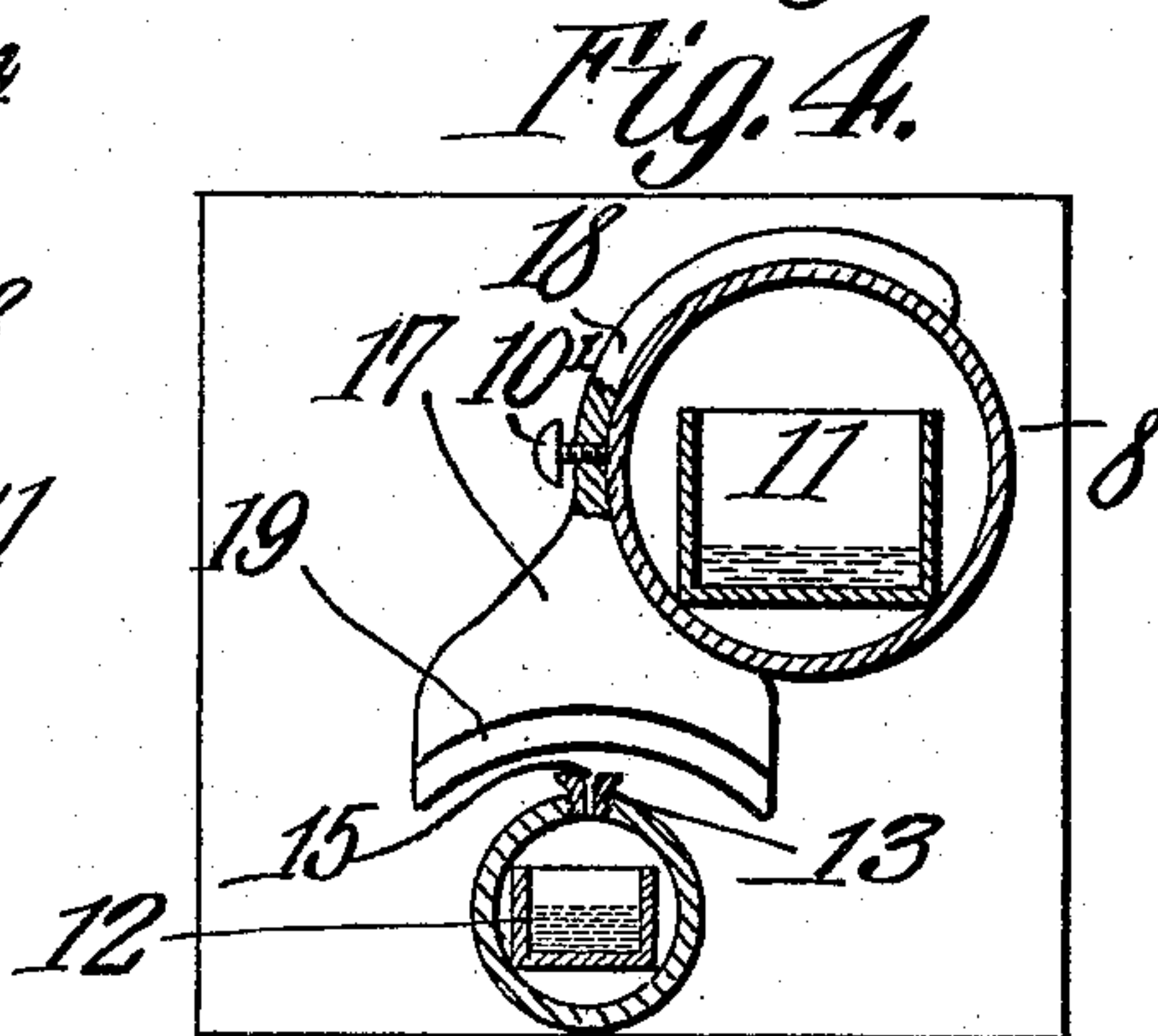
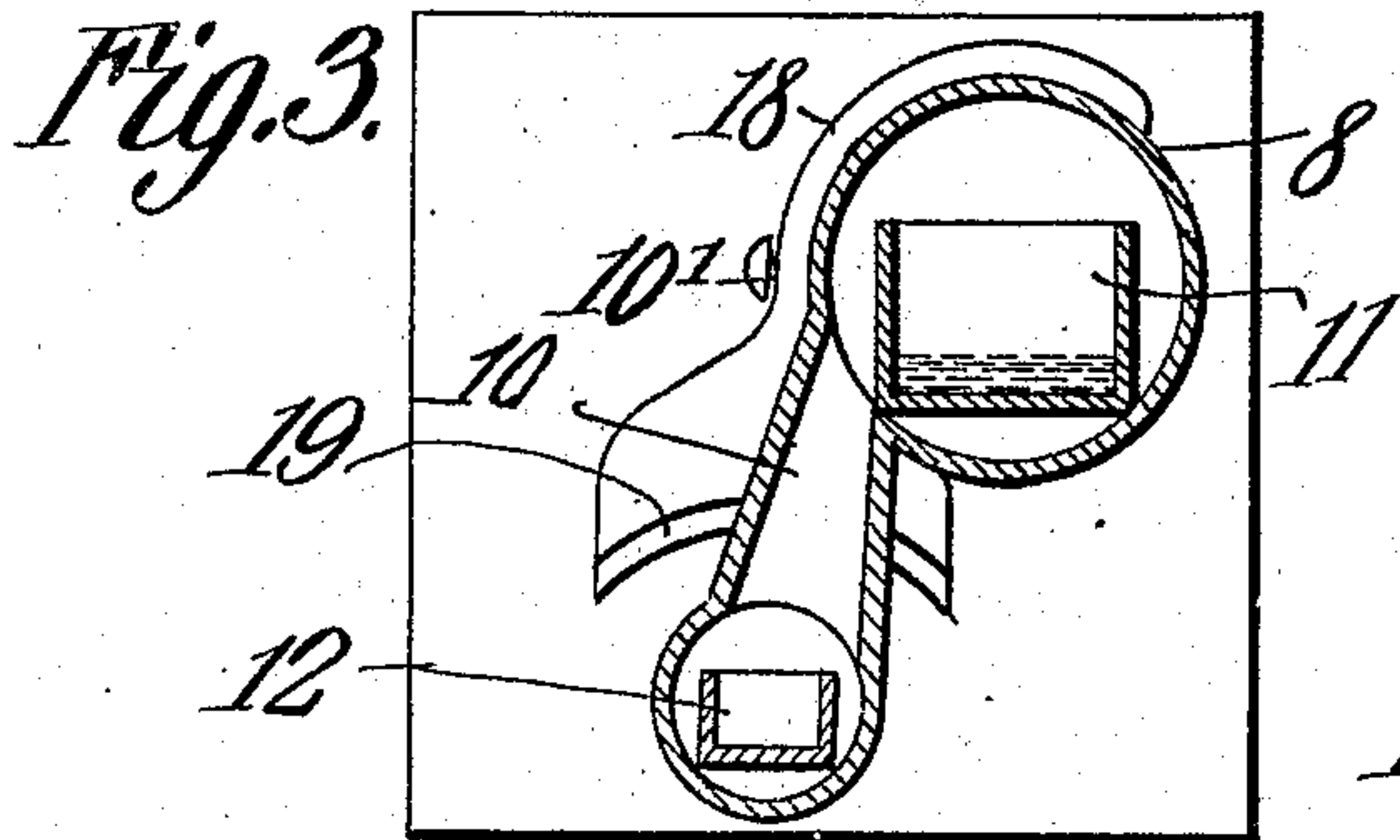
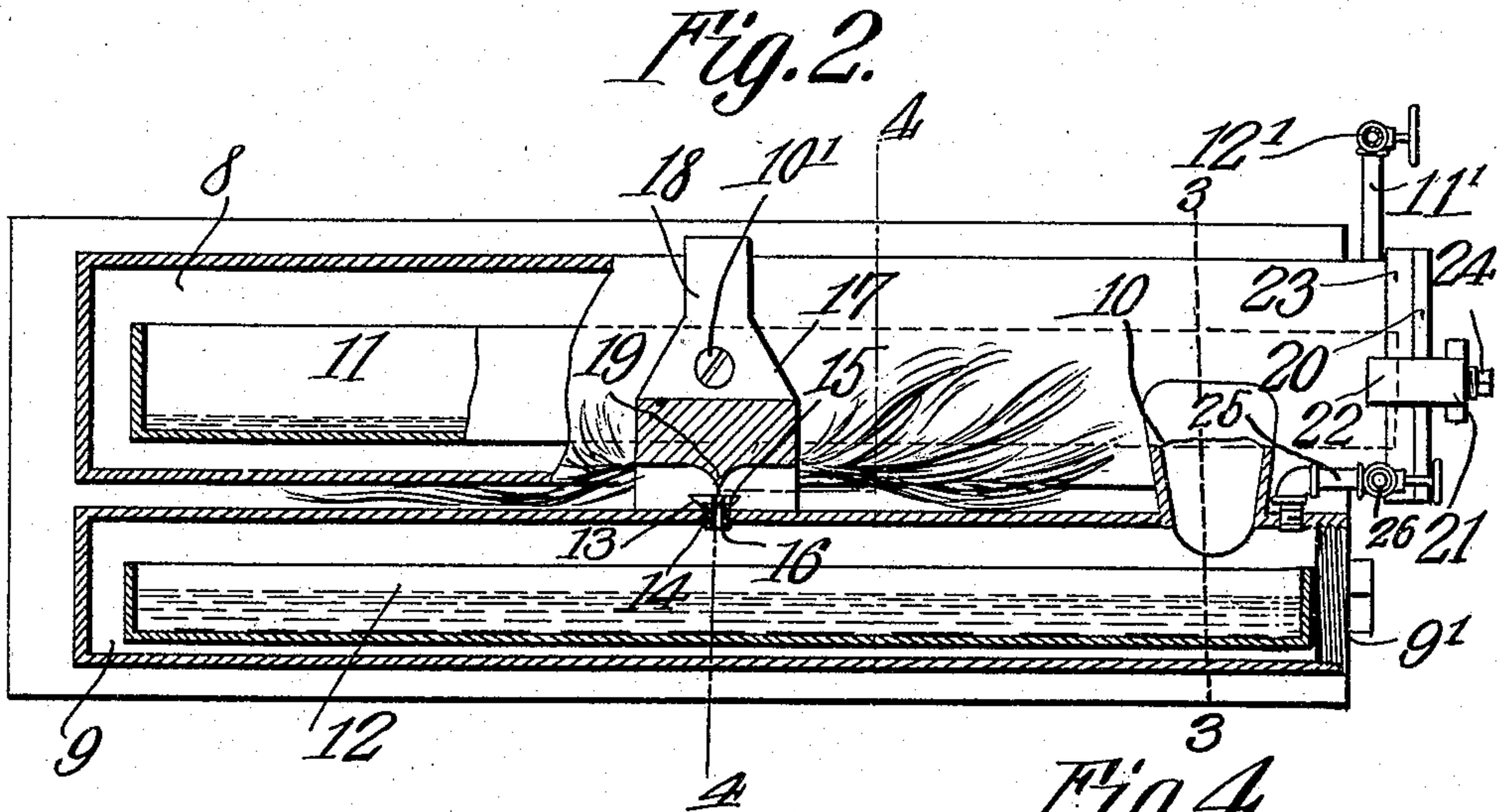
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Witnesses

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# UNITED STATES PATENT OFFICE.

OREON STAUNTON DAVIS, OF ANAHEIM, CALIFORNIA.

## OIL-BURNER.

No. 911,704.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed March 6, 1908. Serial No. 419,532.

*To all whom it may concern:*

Be it known that I, OREON STAUNTON DAVIS, a citizen of the United States, residing at Anaheim, in the county of Orange and State of California, have invented a new and useful Oil-Burner, of which the following is a specification.

This invention relates to oil burners for stoves, furnaces and other heating apparatus and has for its object to provide a comparatively simple and thoroughly efficient device of this character especially designed for burning crude oil, petroleum and other hydrocarbon oils.

A further object of the invention is to provide a hydrocarbon burner including a retort or vaporizer having a steam generator associated therewith and through which the volatile gases or distillates pass on their way to the burner tip, the latter being so constructed as to spread or deflect the flame laterally to the opposite ends of the combustion chamber thereby to uniformly heat the same.

A further object is to provide the retort or vaporizing tube with a pan or trough adapted to receive the crude petroleum or other hydrocarbon oil as the latter is fed from a tank or other suitable source of supply, there being a similar water containing pan or trough arranged within the steam generating retort, said troughs being removable through openings in the ends of the retorts so as to permit the troughs to be emptied and cleaned when necessary.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency as well as to reduce the cost of manufacture.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a side elevation of a hydrocarbon burner constructed in accordance with my invention showing the same arranged within the combustion chamber of a cooking stove. Fig. 2 is a longitudinal sectional view of the same partly in elevation. Fig. 3 is a transverse

sectional view taken on the line 3—3 of Fig. 2. Fig. 4 is a similar view taken on the line 4—4 of Fig. 2. Fig. 5 is an end elevation of Fig. 2. Fig. 6 is a longitudinal sectional view illustrating a modified form of the burner tip.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The hydrocarbon burner forming the subject matter of the present invention is principally designed for use in connection with heating or cooking stoves, furnaces and similar heating apparatus and by way of illustration is shown in connection with a cooking stove of the ordinary construction in which 5 designates the body of the stove, 6 the combustion chamber and 7 the draft pipe or chimney communicating with the combustion chamber in the usual manner.

The device consists of spaced horizontally disposed tubes 8 and 9 one of which constitutes a retort or fuel vaporizer and the other a steam generator, said tubes being disposed within the combustion chamber and each having one end thereof extending through an opening in the adjacent wall of the combustion chamber, as shown. The tube 9 is smaller in diameter than the tube or fuel vaporizer 8 and is disposed below and to one side of the vertical axis of the tube 8 and is connected therewith by an inclined pipe 10 so as to permit the gases generated in the tube 8 to pass through the connecting tube 10 into the tube 9.

Arranged within the fuel vaporizer or tube 8 is an elongated pan or trough 11 adapted to receive crude petroleum or other hydrocarbon oil, the latter being fed through a pipe 11' from a tank or other suitable source of supply, there being a valve 12' in the supply pipe 11' by means of which the quantity of oil admitted to the pan or trough may be regulated at will.

Attention is here called to the fact that the upper longitudinal edges of the pan 11 are spaced from the adjacent walls of the retort 8 so as to permit the volatile gases generated in the tube 8 to pass from the latter through the connecting pipe 10 to the lower tube 9.

Disposed within the tube 9 is a pan or trough 12 similar in construction to the pan 11 and adapted to receive a quantity of



water, the latter being heated by the gases from the retort 8 and also by the flame from the burner tip 13 and the resulting steam together with the gas discharged through said burner tip. The burner tip 13 is provided with an enlarged head having a threaded shank 14 which engages a correspondingly threaded opening formed in the tube 9, there being a transverse slot 15 formed in the head of the burner tip and intersected by a vertical opening 16 disposed beneath and in vertical alinement with a deflector 17. The deflector 17 is slidably mounted on and adjustable longitudinally with respect to the tube 8, said deflector having a curved arm or hook 18 which embraces the tube 8 and by means of which the deflector is suspended from said tube. The lower or active face of the deflector is concave and provided with a central transverse rib 19 conforming to and preferably formed integral with the concave face of the deflector, said rib being substantially triangular in cross section so as to split the flame from the burner tip and deflect the same laterally towards the opposite ends of the fire box, a portion of the flame also being deflected downwardly beneath the fuel vaporizer 8 by reason of the concave face of the deflector. A set screw 10' is threaded in the deflector for engagement with the exterior wall of the fuel vaporizer or tube 8 so that by manipulating the screw the deflector may be centered with respect to the burner tip.

It will here be noted that the slot or channel 15 in the head of the burner tip serves to assist in directing the flame from the burner tip longitudinally of the tubes 8 and 9 to the opposite ends of the combustion chamber while the concave face of the deflector 17 serves to spread the flame laterally at said burner tip thereby to effectually heat the entire area of said combustion chamber.

The outer or extended end of the tube 8 is provided with a cap 20 which forms a closure for the adjacent end of the tube, said closure being detachable to permit the removal of the trough or pan 11 when it is desired to empty or clean the same. The cap or closure 20 is locked in position on the end of the tube by means of a clamping member 21 having oppositely disposed inwardly extending lugs 22 which engage an annular flange or shoulder 23 formed on the end of the tube 8, the cap being forced in engagement with the tube by an adjusting screw 24 which engages a correspondingly threaded opening formed in the clamping member with its terminal bearing against the cap 20.

The outer end of the lower tube 9 is spaced inwardly from the tube 8 and is provided with interior threads for engagement

with a correspondingly threaded plug 9', which latter constitutes a closure and is provided with an angular head for engagement with a wrench or other tool when it is desired to remove the same.

In operation the retort 8 is initially heated in any suitable manner, after which the valve 12' is moved to open position so as to allow a small quantity of oil to flow through the pipe 11' into the pan or trough 11, the water being fed to the pan 12 through a suitable supply pipe 25 provided with a controlling valve 26. The volatile gases arising from the oil in the pan 8 pass through the pipe 10 into the tube or retort 9 thus heating the water in the pan or trough 12 and generating steam, which latter together with the heated gas from the retort are forced under pressure through the burner and ignited in any suitable manner. The heavy hydrocarbons will be precipitated to the bottom of the pan 11 and after the latter has become partially filled, said pan may be removed and cleaned by detaching the clamping member 21 and removing the pan through the open end of the tube, in the manner before stated.

The pan or trough 12 not only forms a receptacle for the water but also serves to receive any precipitation of lime, soda, alkali or other impurities in the water so as to prevent the same from clogging or otherwise obstructing the burner tip.

It will thus be seen that the pan or trough 11 may be removed and emptied when necessary by detaching the clamping member 21 and closure 20, while the pan 12 may be removed by unscrewing the plug 9'.

By having the deflector slidably mounted on the exterior wall of the retort or generator, said deflector may be moved longitudinally on the tube 8 to inoperative position so that the burner tip may be exposed and readily cleaned should the latter for any reason become clogged or otherwise obstructed. This adjustment of the deflector also permits the rib 19 to be centered with respect to the burner tip, in the manner before stated.

In Fig. 6 of the drawings there is illustrated a modified form of burner tip in which the exterior surface of the tube 9 is formed with an elongated depression 25' which corresponds with the spreading channel 15 and is intersected by a vertical opening or orifice 27 to permit the passage of steam and gas from the lower retort 9.

If desired, the water pan in the lower retort or generator 9 may be dispensed with and said retort used as a superheater without departing from the spirit of the invention.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by



those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

5 1. A hydrocarbon burner including communicating retorts, a burner jet communicating with one of the retorts, and a deflector carried by the other retort and disposed above the jet, said deflector having its  
10 lower face concaved and provided with a spreading rib.

2. A hydrocarbon burner including communicating retorts disposed one below and to one side of the vertical axis of the other,  
15 a burner jet communicating with one of the retorts, and a deflector carried by the other retort and disposed above the jet, said deflector having its lower face concaved and provided with a transverse spreading rib.

20 3. A hydrocarbon burner including communicating retorts one of which constitutes a fuel vaporizer and the other a steam generator, a burner tip communicating within the interior of the steam generator, and a  
25 deflector carried by the fuel vaporizer and disposed above the burner tip, said deflector having its lower face concaved and provided with a depending spreading rib curved to conform to the concave face of  
30 said deflector.

4. A hydrocarbon burner including communicating retorts one of which constitutes a fuel vaporizer and the other a steam generator, an oil pan disposed within the fuel  
35 vaporizer, a water pan arranged within the generator, a burner tip communicating with the interior of the generator, and a deflector carried by and adjustable longitudinally of the fuel vaporizer.

40 5. A hydrocarbon burner including communicating retorts each having one end thereof open and its opposite end closed, one of said retorts constituting a fuel vaporizer and the other a steam generator, fluid receiving troughs disposed within the retorts,  
45 a burner jet communicating with the interior of the steam generator, removable closures for the open ends of the retorts, and a deflector carried by and adjustable longitudinally of the fuel vaporizer.  
50

6. A hydrocarbon burner including communicating retorts one of which is disposed below and to one side of the vertical axis of the other, an oil receiving trough disposed  
55 within the upper retort, a water trough arranged within the lower retort, a burner communicating with the interior of the lower retort above the water trough, a deflector carried by the upper retort and disposed  
60 above the burner jet, means for supplying oil to the trough of the upper retort, and means for supplying fluid to the water receiving trough.

7. A hydrocarbon burner including com-

municating retorts, one of which is disposed 65 below and to one side of the vertical axis of the other, an oil trough arranged within the upper retort, a water trough disposed within the lower retort, a burner jet communicating with the interior of the lower retort, 70 a deflector slidably mounted on the upper retort and provided with a spreading rib disposed above the burner tip, a valved pipe for supplying oil to the upper trough, and a similar pipe for supplying water to the 75 trough of the lower retort.

8. A hydrocarbon burner including communicating retorts, a burner jet communicating with the interior of one of the retorts and provided with a transverse channel in- 80 tersected by a vertical orifice, a deflector carried by the other retort and disposed above the orifice, and means for adjusting said deflector laterally and longitudinally with respect to said retort. 85

9. A hydrocarbon burner including spaced tubes connected by an inclined pipe and each having one end thereof closed and its opposite end open, one of said tubes constituting a fuel vaporizer and the other a steam 90 generator, an oil receiving trough arranged within the vaporizer, a liquid receiving trough disposed within the steam generator, a burner tip communicating with the interior of the steam generator, a deflector se- 95 cured to the fuel vaporizer and disposed above the burner tip, means for supplying fluid to said troughs, closures for the open ends of the tubes, and means for centering the deflector with respect to the burner tip. 100

10. A hydrocarbon burner including spaced tubes one of which is disposed below and to one side of the vertical axis of the other tube, said tubes being connected by an inclined pipe and each having one end there- 105 of closed and its opposite end open, elongated fluid receiving troughs disposed within the tubes and having their upper edges spaced from the interior walls thereof, a burner jet communicating with the interior of one of 110 the tubes, a deflector slidably mounted on the other tube and having one end thereof provided with a curved arm for suspending the deflector from said tube, the opposite end of the deflector being concaved and pro- 115 vided with a spreading rib, a screw carried by the deflector for centering the rib with respect to the burner tip, a valved pipe for supplying oil to the trough of the upper tube, a similar pipe for supplying water to 120 the trough of the lower tube, closures for the open ends of the tubes, and means for locking one of the closures in operative position.

11. A hydrocarbon burner including com- 125 municating retorts, a burner jet communicating with one of the retorts, a deflector carried by the other retort and provided



with a transverse spreading rib, and means for centering the rib with respect to the burner jet.

12. A hydrocarbon burner including communicating retorts, a burner jet communicating with one of the retorts, a deflector suspended from and slidably mounted on the other retort, said deflector being provided with a concave face having a spreading rib, and means carried by the deflector

and engaging the walls of the adjacent retort for centering the rib with respect to the burner tip.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

OREON STAUNTON DAVIS.

Witnesses:

L. A. EVANS,  
ERWIN BARR.