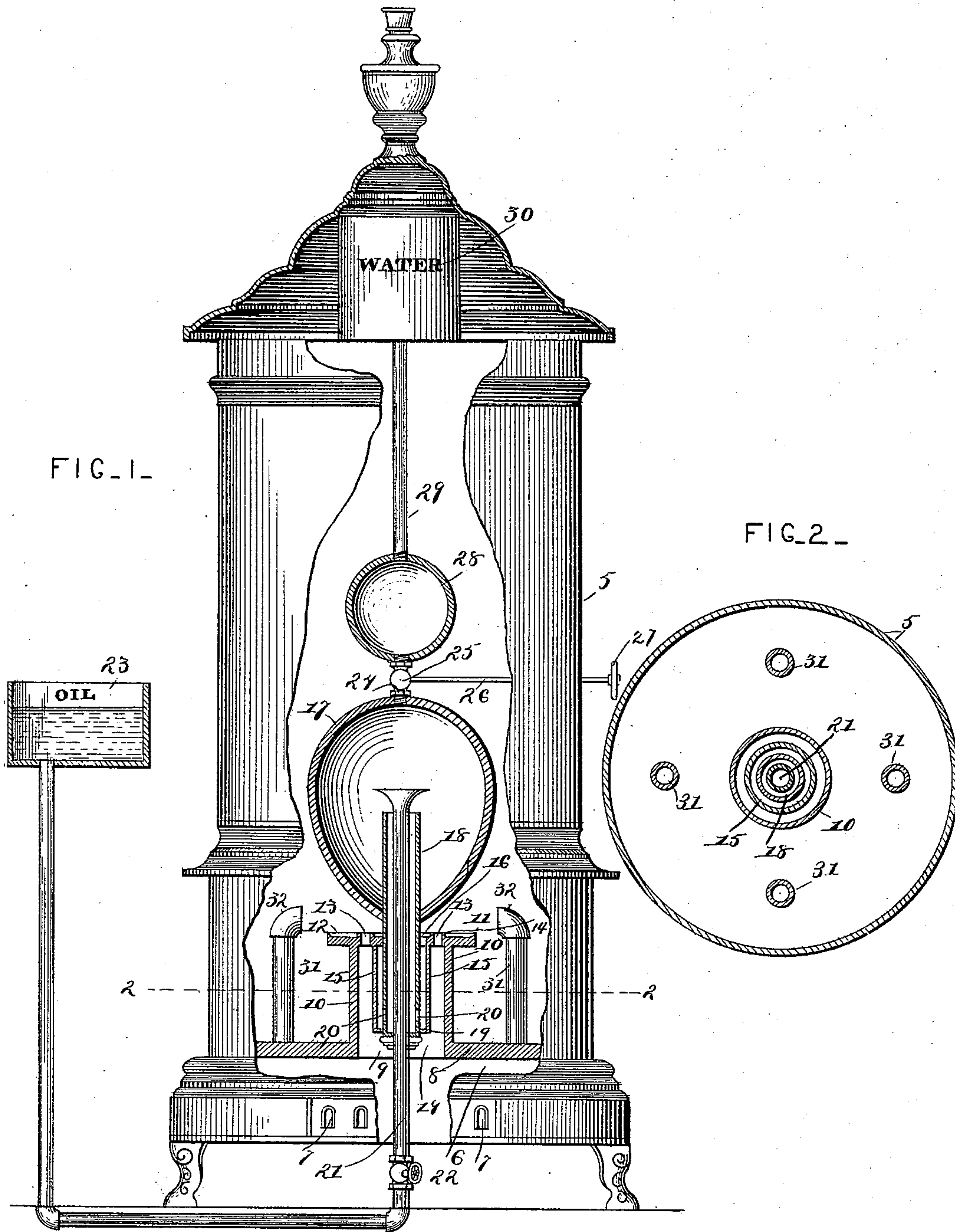


(No Model.)

A. C. BANNING.  
HYDROCARBON BURNER.

No. 454,676.

Patented June 23, 1891.



Witnesses

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# UNITED STATES PATENT OFFICE.

ARTHUR C. BANNING, OF ST. JOSEPH, MISSOURI.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 454,676, dated June 23, 1891.

Application filed December 17, 1890. Serial No. 375,000. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR C. BANNING, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and useful Hydrocarbon-Burner, of which the following is a specification.

This invention relates to hydrocarbon-burners; and it has for its object to provide an apparatus of this class which shall be simple in construction and efficient in operation and which may be readily mounted in the casing of an ordinary heating-stove.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a vertical sectional view showing my improved hydrocarbon-burner arranged in an ordinary stove-casing, the latter being partly broken away. Fig. 2 is a horizontal sectional view taken on the line 2 2 in Fig. 1.

Like numerals of reference indicate like parts in both figures of the drawings.

5 designates an ordinary stove-casing having the ash-pit 6 and draft-openings 7. Suitably mounted above the ash-pit is a base-plate 8, having a central opening 9, from which rises a pipe 10, at the upper end of which is formed a disk 11, the upper side of which has a recess or concavity 12, so as to form a saucer or receptacle. The latter is provided with openings 13, communicating with the pipe 10 and surrounded by annular flanges 14. The disk or saucer 11 is provided with a depending pipe 15, communicating with the central opening 16 in said disk or saucer.

17 designates a spherical or ovoidal receptacle, which is made, preferably, of cast-iron, and which is provided in its lower end with a pipe 18, extending about half-way up into said receptacle and downwardly through the pipe 15, the lower end of which has a flange 19, engaging and holding the said pipe 18. The latter is provided near its lower end with perforations 20, communicating with the pipe 15. The lower end of the pipe 18 is closed and provided with a perforation for the passage of the feed-pipe 21, which is flaring or funnel-shaped at its upper end and is provided with

a valve 22, through which it communicates with a suitable tank or source of supply 23. Into the upper end of the receptacle 17 is screwed a pipe 24, having a valve 25, which may be operated by a suitable stem 26, having a handle 27. The upper end of the pipe 24 is connected with a reservoir 28, into the upper end of which is screwed a pipe 29, the upper end of which is connected with a water tank or reservoir 30, located in the top of the stove-casing.

A series of pipes 31, rising from the base-plate 8, are extended upwardly a short distance above the disk or saucer 11, and are provided at their upper ends with elbows 32, which are turned inwardly toward the said saucer.

In operation the oil is admitted through the pipe 21 into the receptacle 17, where it rises to the level of the upper end of the pipe 18 and overflows through the latter, passing through the perforations 20 and pipe 15 into the disk or saucer 11, where it is ignited. When the fire has been well started, the oil-supply is temporarily cut off until the contents of the receptacle 17 become vaporized, the vapor passing through the pipe 18, perforations 20, and pipe 15, at the upper end of which it becomes mixed with the atmospheric air passing from the bottom space or ash-pit 6 in an upward direction through the pipes 10 and 31. A plentiful supply of oxygen being thus secured, the vapor will burn very steadily and with an exceedingly hot flame. At the same time the water contained in the reservoir 28 becomes heated and is ejected through the valve 25 into the receptacle 17, where it becomes vaporized and is consumed along with the hydrocarbon vapors.

By this invention the hydrocarbon oil is fed gradually into the receptacle 17, into which the heated water from the reservoir 28 is simultaneously fed. The hydrocarbon oil and the water are thus mixed together and vaporized at the same time, thus forming a highly volatile and combustible vapor which is ejected forcibly at the upper end of the pipe 15. At this point the vapor becomes mixed with the atmospheric air passing through the surrounding pipe 10 through the perforations 13 in the disk or saucer at the upper end of said pipe. At the same time a strong blast of air passes through the pipes 31



and is thrown violently into the flame, thus insuring complete combustion and exceedingly hot fire. The supply of oil and water may be easily regulated by the valves 22 and 24.

5 Having thus described my invention, what I claim is—

1. In a hydrocarbon-burner, the combination of a receptacle or retort having a downwardly-extending overflow-pipe extending  
10 partially into said retort and provided with openings near its lower end, a supply-pipe extending through the overflow-pipe, and a pipe surrounding the lower end of the overflow-pipe and having at its upper end a disk or  
15 saucer, substantially as set forth.

2. In a hydrocarbon-burner, the combination of the retort having the downwardly-extending overflow-pipe provided with openings near its lower end, a supply-pipe extending  
20 through the said overflow-pipe and having a regulating-valve, a pipe surrounding the lower end of the overflow-pipe, a disk or saucer at the upper end of said surrounding pipe, and a base-plate having a central opening and an  
25 upwardly-extending pipe connected with said disk or saucer, substantially as set forth.

3. In a hydrocarbon-burner, the combination of a retort having an overflow-pipe provided with perforations near its lower end, a  
30 valved supply-pipe extending through said overflow-pipe, a base-plate having a central opening, an upwardly-extending pipe provided at its upper end with a flanged disk or saucer having a central depending pipe and  
35 provided with perforations surrounded by annular flanges, said depending pipe being connected at its lower end with the overflow-pipe, and draft-pipes extending upwardly from the base and provided at their upper ends with  
40 elbows facing the central disk or saucer, substantially as and for the purpose set forth.

4. In a hydrocarbon-burner, the combination of the retort having the overflow-pipe provided with perforations near its lower end,  
45 the base-plate having a central opening, an upwardly-extending pipe provided at its upper end with a flanged disk or saucer having a depending pipe and openings surrounded by annular flanges, said depending pipe  
50 being connected with the lower end of the overflow-pipe, the valved supply-pipe extend-

ing through the latter, a valved pipe connecting the upper end of the retort with a reservoir or heating-chamber, and a pipe connecting the upper end of the latter with a water-  
55 supply tank, substantially as and for the purpose set forth.

5. In a hydrocarbon-burner, the combination of the retort having the downwardly-extending overflow-pipe, the burner connected  
60 therewith, the valved supply-pipe extending through said overflow-pipe into the retort, a heating-chamber arranged above and connected with the latter by a valved pipe, a water-supply tank, and a pipe connecting the  
65 latter with the heating-chamber, substantially as and for the purpose set forth.

6. In a hydrocarbon-burner, the combination, with the retort consisting of a suitable chamber or casing, of the overflow-pipe fitted  
70 in the bottom of the retort and extending up into and downwardly from the latter, the burner, and a valved supply-pipe extending through said overflow-pipe into the retort, substantially as and for the purpose set forth.  
75

7. In a hydrocarbon-burner, the combination of the retort, the overflow-pipe extending to the latter, the burner connected with the lower end of the overflow-pipe, the valved  
80 supply-pipe extending through said overflow-pipe into the retort, the heating-chamber connected with the upper end of the latter by a valved pipe, the water-supply tank connected with said heating-chamber, and the draft-  
85 pipes rising from the base and having inwardly-curved elbows at their upper ends, substantially as and for the purpose set forth.

8. In a hydrocarbon-burner, the combination of a receptacle or retort having a downwardly-extending overflow-pipe, the burner  
90 connected with the latter, and a valved supply-pipe extending through said overflow-pipe into the retort and having a flaring or funnel-shaped upper end, substantially as and for the purpose set forth.  
95

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

ARTHUR C. BANNING.

Witnesses:

J. H. SIGGERS,  
J. A. SAUL.