No. 742,344. PATENTED OCT. 27, 1903.

H. J. MYERS.

HYDROCARBON BURNER.

APPLICATION FILED FEB. 10, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

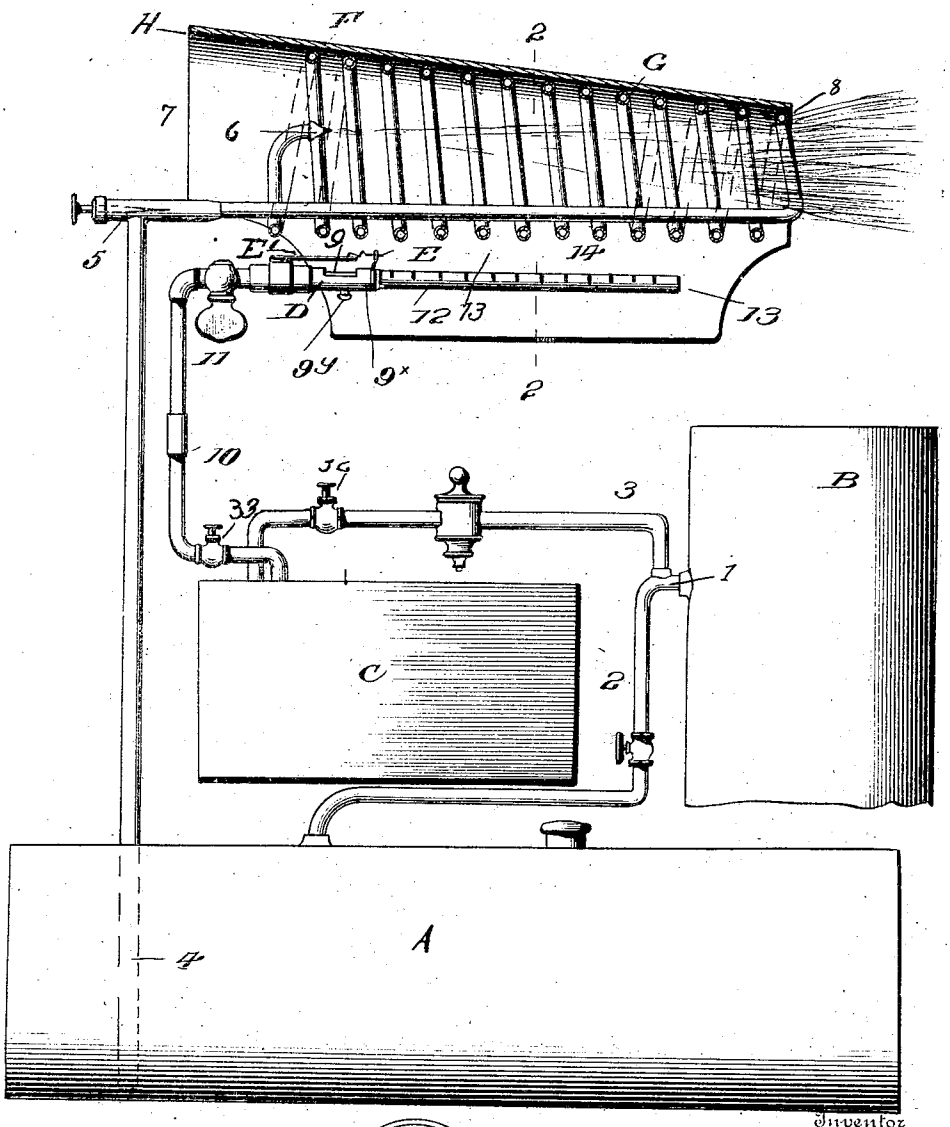
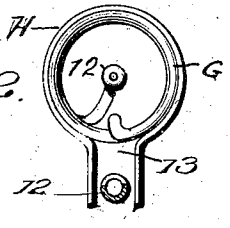



Fig. 2.




Witnesses

Jno. Innis

C. M. Catlin

Inventor

Harry J. Myers

By Benj. R. Catlin

Attorney

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

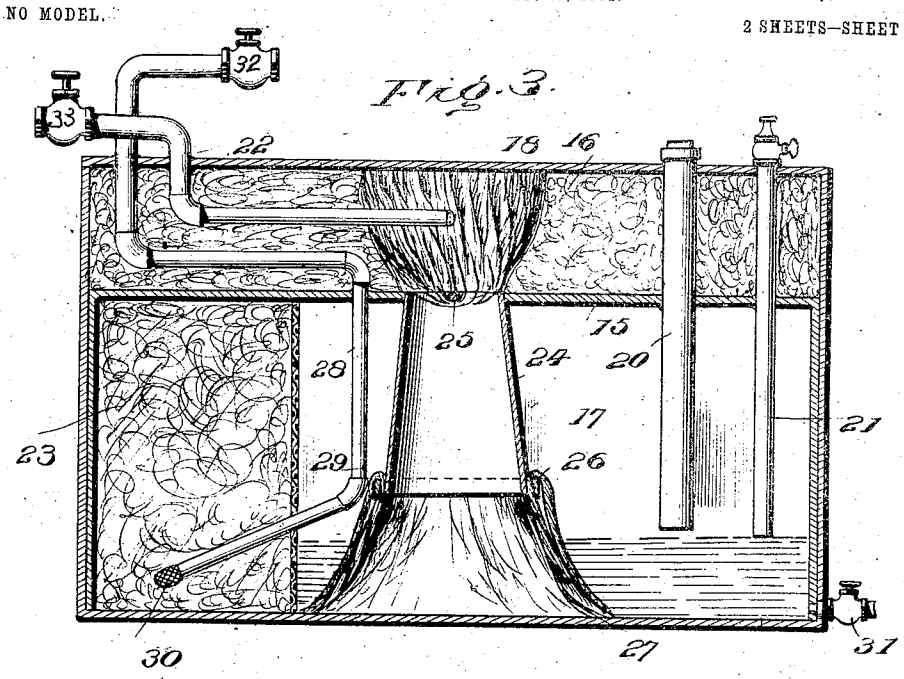
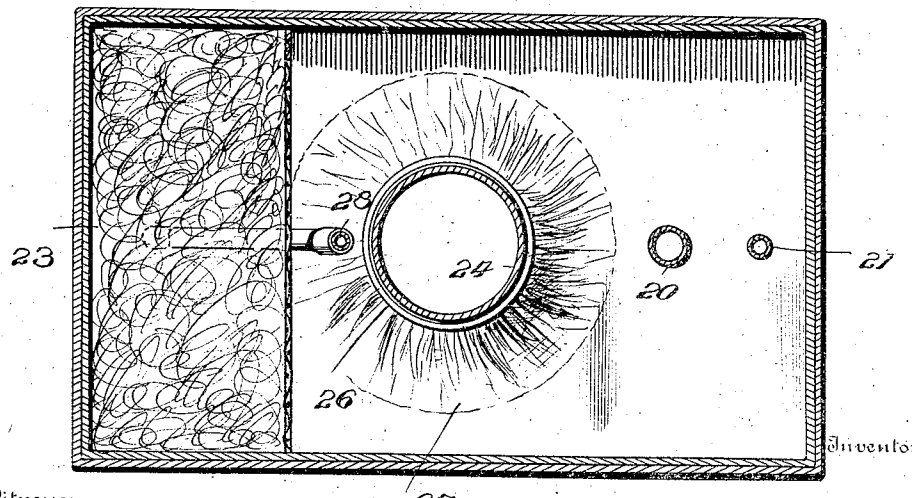



Fig. 4.




Witnesses

Mr. Munce

C. M. Catlin

Inventor

Harry J. Myers

By Benj R Catlin

Attorney

No. 742,844. Patented October 27, 1903.

# UNITED STATES PATENT OFFICE.

HARRY J. MYERS, OF ROCHESTER, NEW YORK, ASSIGNOR OF TWO-THIRDS TO SCOTT CUMMINGS AND FREDERICK C. PERRY, OF ROCHESTER, NEW YORK.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 742,844, dated October 27, 1903.

Application filed February 10, 1902. Serial No. 93,434. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY J. MYERS, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to apparatus for burning hydrocarbons adapted for generating steam to propel vehicles and for other purposes, and has for its object to secure safety, efficiency, and economy in use.

The invention consists in the construction herein described and pointed out.

In the accompanying drawings, which are diagrammatic in part, Figure 1 is a partially diagrammatic view of the improved apparatus, a part being shown in section. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a longitudinal central section of a carbureter. Fig. 4 is a horizontal central section of the same.

The letter A denotes an oil-tank, B a holder for compressed air, C a carbureter, D a burner for carbureted air, E and E' the electrodes of a lighting device, F a burner for vapor comprising a coil-retort G and a hood or partial inclosure H for the retort, all which parts except as hereinafter specified may have any usual or desired size, shape, and arrangement.

The air-holder is not essential; but means of supplying air under pressure is important for most uses of the apparatus and the devices comprised by it.

Numeral 1 denotes a pipe adapted to supply air under pressure through a branch 2 to the oil-tank and through a branch 3 to the carbureter.

4 denotes a pipe by which oil may be forced through a needle-valve passage 5 to and through the retort G, the coils of which by preference will be contiguous, or nearly so, to a pilot vapor-burner 6. The cover or hood H, partially inclosing the burner 6 and the coil-retort G, has an air-inlet 7 and an oppositely-situated exit for gases and flame at 8 and is open at the bottom to admit flame and induced air, the former to constantly heat the coils and the surplus of the latter to maintain combustion of vapor and carbureted air within the hood. The hood incloses within and about the coil an initial combustion-chamber, final combustion taking place at and outside the exit 8. This combustion may be used first to heat the retort and then to generate steam for propelling an automobile or for any other appropriate purpose. The hood H is open on one side at 13, adjacent the gas or carbureted-air burner D, and the latter is preferably of the Bunsen type, having an air-injection opening 9, regulated by a rotatable sleeve $9^x$, having a handle $9^y$, a gas-supply pipe 10, a valve 11, and a burner-tube 12. This tube has lateral perforations 14, directing flames to the retort G through the opening 13.

The carbureter C to supply carbureted air to the burner D comprises a case having a diaphragm or partition 15, dividing its interior into two compartments 16 and 17. 20 is a tube for charging oil into the lower compartment below the diaphragm 15, and 21 is a vent-tube. Each of these tubes when not in use is tightly closed by a cap or plug. In one end of the case is a chamber 23, packed with capillary material, in communication with the oil in the compartment 17.

24 is an open-ended funnel-shaped tube fixed in the partition 15. The smaller end of this tube is filled with candle-wicking or like material 18, secured to cross-bars 25 or in any suitable way and extending into the upper compartment 16. Instead of a cross-bar to hold the fibrous material a ring may be employed for the purpose, such as indicated at 26, at the large end of the tube 24. Wicking 27, held by such ring, incloses the lower end of the pipe and extends into the compartment 17.

28 denotes a bent air-pipe to supply air to the carbureting-chamber 23. This pipe is bent substantially as shown and extended to the central part of the compartment 17 and is there provided with a pressure-vent 29. The exit of the air-pipe is guarded by a screen 30. A draw-off cock is denoted by 31. Air forced through the bent pipe 28 and through the fibrous material in the chamber 23 and through the fibrous material at each end of

tube 24 is highly carbureted and delivered through pipe 22 to the before-described burner D, where it may be ignited by an electric sparker E or by any suitable means. The pipes 22 and 28 are provided with cocks 32 and 33, respectively.

The diaphragm 15 is sealed oil-tight to the case, pipe, and tubes. The dimensions of the lower compartment and the quantity of oil in said compartment are such that it cannot flow either through tube 24 or through the vent-opening 29 even though the carbureter be turned on either side or end.

I am aware that air-carbureting devices have been used for preheating vapor-burners and that a coil-retort has been inclosed in a hood, said coil having a burner directed lengthwise the hood. Such constructions are not of my invention, which includes a hood having open ends and an open side, a burner for carbureted air being situated in or below said open side and adapted to constantly heat the retort, which is preferably a coil, the products of both burners being directed by the hood to the point of utilization of their combined heat. My improved construction is also adapted in starting to quickly vaporize oil that may be condensed or may remain in the lower parts of the several coils and also to preheat oil in the admission-pipe. The coil having preferably a horizontal axis is also heated by the oil-vapor burner. Its upper part receives more heat from said vapor-burner than the lower part; but this inequality is compensated for by the specified situation of the subsidiary burner. The improvement is further characterized by the hood having an open side to permit air induction around the subsidiary burner, whereby such burner is supplied with air and whereby also the vapor-burner is supplied with air in addition to that induced at the open end of the coil adjacent the vapor-burner.

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

1. In a hydrocarbon-burning apparatus, the combination of a hood having open ends and depending sides, a retort, a burner for vapor issuing from the retort, a burner for carbureted air, means of supplying a liquid fuel to the retort, and means of separately supplying carbureted air, the retort and the two burners being inclosed by the hood and both adapted to directly and constantly heat the retort.

2. In a hydrocarbon-burning apparatus, the combination of a hood, a coil-retort, a burner for vapor issuing from the retort, a burner for carbureted air, means of supplying a liquid fuel to the retort, and means of separately supplying carbureted air, the retort and the two burners being inclosed by the hood, and the vapor-burner situated near the central line of the retort, and the carbureted-air burner below said retort, whereby both the inside and outside of the coil-retort are heated.

3. The combination of a hood having its opposite ends open, one for the induction of air and the other for the eduction of the products of combustion and having its lower side open for the induction of air, a coil-retort, a vapor-burner situated near the axial line of the retort and near the air-inlet of the hood to induce an inflow of air, and a carbureted-air burner situated near the open side of the hood to induce inflow of air around said latter burner, both burners being adapted to constantly heat the retort, one interiorly and the other exteriorly, the products of combustion of said burners having a common exit from the hood.

4. In a hydrocarbon-burning apparatus, a pipe coil-retort having an approximately horizontal axis, an oil-admission pipe extending approximately the whole length of the retort along its bottom part and communicating with the retort at one end thereof, and a vapor-burner at the opposite end of said retort to discharge vapor lengthwise the coil, and a second burner situated immediately beneath said oil-admission-pipe extension at the bottom of the retort to heat the coil members and the admission-pipe, and an open-ended hood inclosing the retort and both burners, said hood being open on its under side for air induction.

5. A hood having an approximately horizontal axis, open ends and an open lower side, a coil-retort having a vapor-burner situated near the axis of the coil, and the burner for carbureted air, said coil-retort having a liquid-fuel-supply pipe extending its whole length and immediately over and parallel to the carbureted-air burner, the said latter burner being adapted to heat the exterior lower part of the several coils of the retort and said fuel-supply pipe.

6. In a hydrocarbon-burning apparatus, the combination with a coil-retort such retort being arranged with its axis in a horizontal plane, and having the supply-pipe extended in such coil at the lower portion thereof, said coil ending in a vapor-jet nozzle arranged to project the vapor axially in the coil, a hood arranged over said coil and having depending sides, and carbureted-air burner comprising a burner-tube having openings along one side horizontally arranged below said coil and supply-pipe, and means for supplying carbureted air to such burner-tube.

7. In a hydrocarbon-burning apparatus, the combination with a coil-retort such retort being arranged with its axis in a horizontal plane, and having the supply-pipe extended near the lower portion of the coil, said coil ending in a vapor-jet nozzle arranged to project the vapor axially in the coil, a hood arranged over said coil and having depending sides, and carbureted-air burner comprising a burner-tube having openings along one side horizontally arranged below said coil and supply-pipe, and means for supplying carbureted air to such burner-tube.

8. The combination of a hood having its op-

posite ends open, one for the induction of air and the other for the eduction of the products of combustion and having its lower side open for the induction of air, a coil-retort, a vapor-burner situated near the axial line of the retort and near the air-inlet of the hood to induce an inflow of air, and a carbureted-air burner situated near the open side of the hood to induce inflow of air around said latter burner, both burners being adapted to constantly heat the retort, one interiorly and the other exteriorly, the products of combustion of said burners having a common exit from the hood.

9. In a hydrocarbon-burning apparatus, a pipe coil-retort having an approximately horizontal axis, an oil-admission pipe extending approximately the whole length of the retort along its bottom part and communicating with the retort at one end thereof, and a vapor-burner at the opposite end of said retort to discharge vapor lengthwise the coil, and a second burner situated immediately beneath said oil-admission-pipe extension at the bottom of the retort to heat the coil members and the admission-pipe, and an open-ended hood inclosing the retort and both burners, said hood being open on its under side for air induction.

10. A hood having an approximately horizontal axis open ends and an open lower side, a coil-retort having a vapor-burner situated near the axis of the coil, and the burner for carbureted air, said coil-retort having a liquid-fuel-supply pipe extending its whole length and immediately over and parallel to the carbureted-air burner, the said latter burner being adapted to heat the exterior lower part of the several coils of the retort and said fuel-supply pipe.

11. In a hydrocarbon-burning apparatus, the combination with a coil-retort such retort being arranged with its axis in a horizontal plane, and having the supply-pipe extended in such coil at the lower portion thereof, said coil ending in a vapor-jet nozzle arranged to project the vapor axially in the coil, a hood arranged over said coil and having depending sides, and carbureted-air burner comprising a burner-tube having openings along one side horizontally arranged below said coil and supply-pipe, and means for supplying carbureted air to such burner-tube.

12. In a hydrocarbon-burning apparatus, the combination with a coil-retort such retort being arranged with its axis in a horizontal plane, and having the supply-pipe extended near the lower portion of the coil, said coil ending in a vapor-jet nozzle arranged to project the vapor axially in the coil, a hood arranged over said coil and having depending sides, and carbureted-air burner comprising a burner-tube having openings along one side horizontally arranged below said coil and supply-pipe, and means for supplying carbureted air to such burner-tube.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HARRY J. MYERS.

Witnesses:
BENJ. R. CATLIN,
G. W. BALLOCH.