

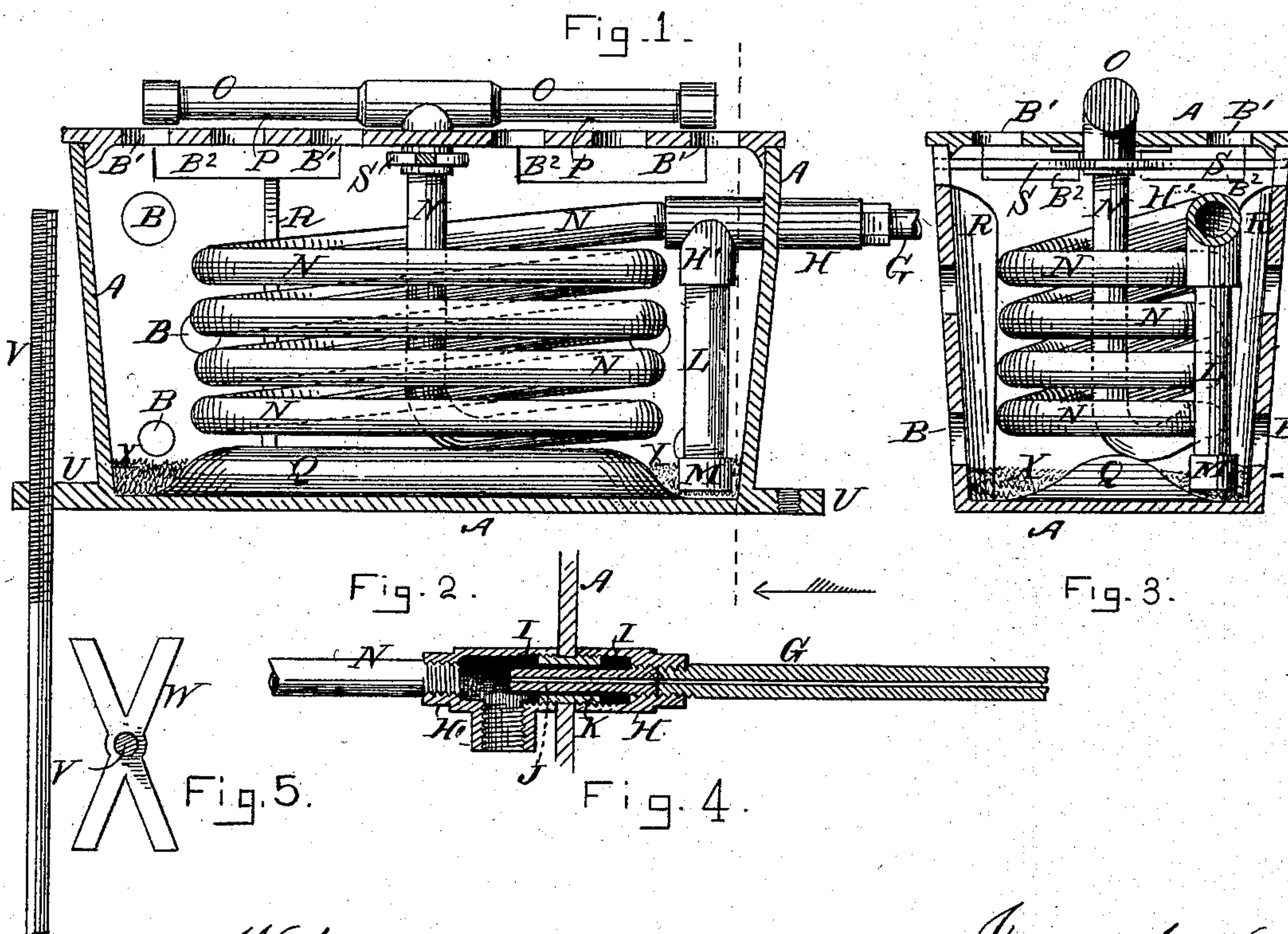
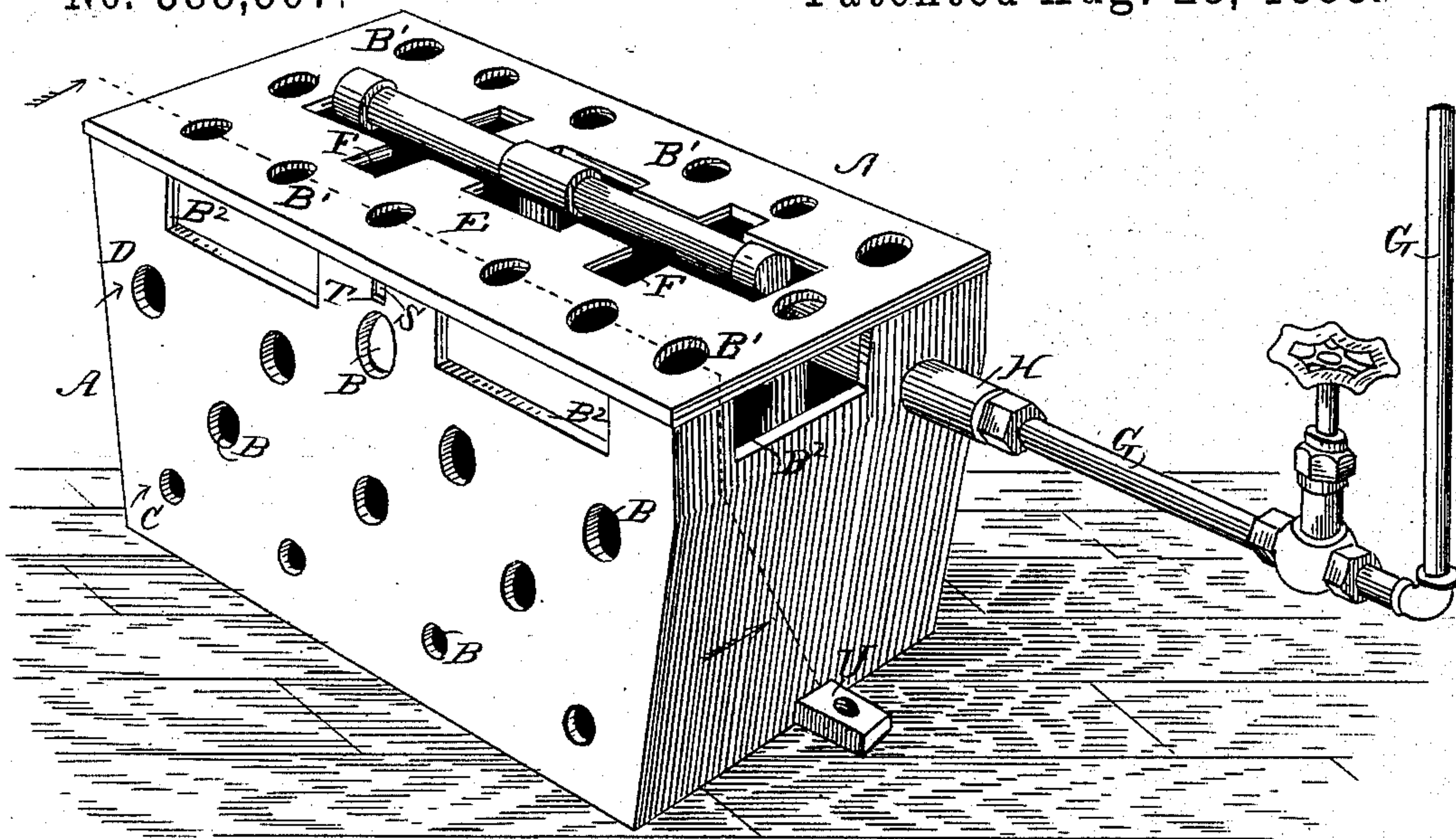
(No Model.)

2 Sheets—Sheet 1.

G. R. SEYMOUR.
APPARATUS FOR BURNING HYDROCARBON OIL.

No. 388,507.

Patented Aug. 28, 1888.



Witnesses:
Geo. J. Parker.
Henry E. Waite.

Inventor:
George R. Seymour.
Per H. E. Remick.

(No Model.)

2 Sheets—Sheet 2.

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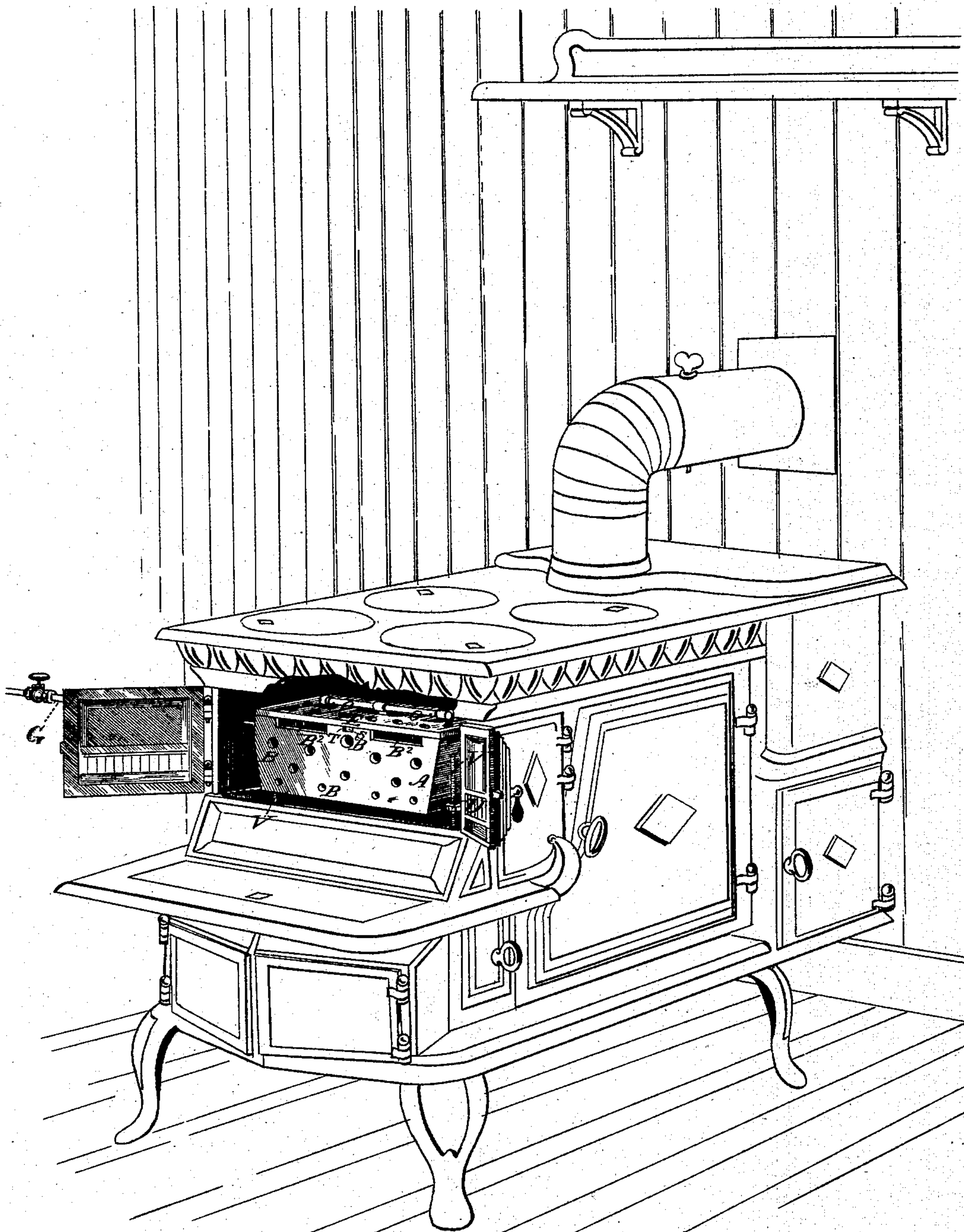


Fig. 6.

Witnesses.
H. E. Remick & Co.
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Inventor.
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per H. E. Remick.
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UNITED STATES PATENT OFFICE.

GEORGE R. SEYMOUR, OF BOSTON, MASSACHUSETTS.

APPARATUS FOR BURNING HYDROCARBON OIL.

SPECIFICATION forming part of Letters Patent No. 388,507, dated August 28, 1888.

Application filed December 27, 1887. Serial No. 259,154. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. SEYMOUR, a citizen of the United States, and a resident of Boston, (Charlestown District,) in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Burning Hydrocarbon Oils, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to produce an improved apparatus for burning hydrocarbon oils (more particularly petroleum and its products) to produce heat and light, adapted to all purposes for which coal and wood are now used.

The objections hitherto prevalent in the various methods of utilizing hydrocarbons have been occasioned through the unavoidable accumulation of carbon or soot, which, being eliminated from the oil, forms a deposit in and around the tubes or pipes, preventing a uniform flow of fuel, necessary to an unvariable degree of heat. It is also desirable to maintain a diminished temperature of the oleose fuel until the same becomes vaporized, as also to regulate the admission of air in order to secure good combustion and in a manner which will obviate the incessant noise attendant upon the same, (combustion,) as in the diverse constructions at present used. To insure the successful accomplishment of this desideratum is the purpose of my present invention, and I attain these results through the interchangeability of parts of the apparatus, with the foraminous construction of the air or combustion chamber, the vaporizing-reservoir, the inclosed feed-duct, and the air-space around said duct.

A specific description of the several features of my invention, their function, and operation will be readily comprehended by reference to the annexed drawings, forming a part of this specification, wherein—

Figure 1 illustrates in perspective the exterior of my apparatus for the consumption of hydrocarbons, Fig. 2 being a longitudinal vertical section thereof, with the interior construction shown in elevation. Fig. 3 designates a similar view to the above in transverse section. Fig. 4 is a longitudinal section of the

feed-pipe and T-connections, to exhibit the annular space surrounding the feed-duct. Fig. 5 exhibits a plan of the foot of the supporting-rods. Fig. 6 is a perspective view showing the burner applied to a stove.

Similar letters of reference indicate like features throughout the several views thereof, referring to which—

A designates the casing forming my improved combustion-chamber, the side walls of which have perforations B, varying in their circumference, enlarging from the bottom upward; also slots B². Said arrangement materially obviates the noise attendant upon combustion by permitting the admission of the colder air in a reduced volume at C, while the warmer air enters the higher and larger apertures, D and B², in increased quantity.

E indicates the foraminous removable cover additionally provided with apertures B' B' for the admission of air, and also openings F F to admit a suitable implement (should it be necessary) to clean the orifices through which the fuel or vapor is ejected into said chamber, all of the above apertures performing the double purpose of the admission of air in proper quantity and condition and the liberation of heat and flame.

G represents the induction-pipe conveying the fuel, the flow of which, either by gravity or air-pressure, is controlled by a needle-valve of ordinary construction arranged to permit a minimum supply of oil. The coupling H is of sufficient size to receive said pipe and form an annular space, I, around the feed-duct J, threaded into and supported in the same manner as said pipe G from T-connection H', properly united to said coupling by the threaded nipple K. Pendently attached to said part H', I provide a vaporizing-reservoir, L, which is made interchangeable and of larger diameter than the retort or coil N. A cap, M, closes said reservoir into which the oil enters and vaporizes. From this reservoir the vapor is conducted throughout the depressed coil N, approaching the bottom of the chamber A, whence it is deflected upward inside said coil and enters the extended horizontal pipes O O, finding its egress through the small orifices P P, situated on the lower sides of said pipes in the condition of vapor, the result of be-

coming superheated in its passage through said retort or coil. The results practically of combustion by my improved methods are as above, while it has been demonstrated that the older methods are inadequate to produce perfect combustion, mainly through the obstacles my present invention is designed to obviate, the accumulations in the older apparatus being deposited throughout the ramifications of the pipes, while in my present improvement such are deposited in the reservoir L, which, becoming filled with the residuum, is exchanged for new parts at an inappreciable cost. In a like manner the parts O can also be removed when necessary. The formation of said accumulations is much less in quantity than in any apparatus hitherto constructed, owing to the intensely-heated condition of the reservoir L and coil N, which causes a greater consumption of carbon. Experience has demonstrated that the temperature of the oleose fuel should be as near its normal condition as possible up to the point of its vaporization. I accomplish this by passing feed-pipe G through coupling H and within T H', uniting with the duct J, which causes the oil to be protected from the heat by a double thickness of pipe and the annular air-space I, thus preventing vaporization taking place in the feed-pipe and causing the oil to immediately flow into said vaporizing-reservoir L previous to its passage in the form of vapor into the superheating-retort N.

The floor of the combustion-chamber I convex centrally and longitudinally, as at Q, forming a dispenser, so that the vapor may impinge in a manner to more equally diffuse itself within the interior, while to insure stability of the coil I cast two or more webs alternately on the inside face of the walls, as at R R. For a similar purpose I locate transversely the removable truss or brace S, surrounding the vertical length of the part H, having its extremes resting within the re-entering slot T in said walls.

To support the chamber A, I project the lugs U at each end from the bottom, which receive threaded supporting-rods V, upheld by a foot, W, resting upon the floor of fire-box in the stove or wherever it may be placed, the vertical height of the apparatus being regulated upon said threaded support. To facilitate the ignition of the fuel, I employ an absorbent composed of asbestos, (indicated at X,) which rests upon the floor of the combustion-chamber.

The process of igniting the fuel is as follows: Oil is admitted through the feed-pipe G and the duct J into the vaporizing-reservoir L, thence filling the coil N and horizontal pipes O O, whence it flows through the vents P P into the chamber A and is absorbed by the asbestos. A small quantity only being necessary, the valve in the feed-pipe G is immediately closed when the oil appears at the vents P P. A lighted match is then dropped into the chamber A, which ignites the oil absorbed

by the asbestos. The flame enveloping the coil N and reservoir L expands the oil within and forces it from said pipes through the vents P P into the chamber A. After the oil is nearly consumed the said valve is again opened very slightly—enough to allow a small quantity of oil to trickle through the feed pipe and duct into the reservoir L, which has now become heated enough so as to convert the oil into vapor, and the superheating occurs immediately between said point and the orifices P P within the coil, through which the gas commingling with the flame creates an intense heat containing an inappreciable amount of carbon. If preferred, the fire may be ignited by saturating the asbestos directly from the exterior of said combustion-chamber through the apertures of the cover.

Having described the operation and construction of my improved invention, I claim—

1. In an improved apparatus for the combustion of hydrocarbon oils, the following elements: a casing with projecting lugs to receive supporting-rods, and provided with graduated openings in the side walls thereof, whose diameters increase from the bottom upward, for the purpose described, an interior convex dispenser integral with the bottom, a foraminous removable top engaging with said casing, a retort of a heliciform character provided at its inlet with an annular chambered coupling suspending a vaporizing-chamber, and further provided at its outlet with terminals diverging at right angles and perforated to emit vapor and to permit ignition of the same, means to uphold said retort, substantially as described, a non-destructible absorbent material surrounding said dispenser to accelerate the heating of said retort, and the threaded vertical rods and supporting-base thereof, in conjunction with said projecting lugs, to regulate the position of said apparatus in the fire-pot of the stove or furnace with which it may be employed, all arranged substantially in the manner and for the purpose specified.

2. In an apparatus for burning hydrocarbon oils, the casing A, forming the combustion-chamber, provided with graduated apertures B, for admitting air, and elongated enlarged apertures B', contiguous to its top, admitting a preponderance of warmer air, and the convex dispenser Q, integral with the bottom, all arranged and combined to operate in conjunction with the retort N, provided with extended terminals O O, the orifices P P therein for the egress of vapor, the coupling H, connected to said retort, provided interiorly with a feed-duct, J, and exteriorly with a pendent vaporizer, L, and the feed-pipe G, establishing communication from the fuel-supply to said retort, substantially for the purpose and in the manner specified.

3. In an apparatus for the burning of hydrocarbon oils, the combination, with the vaporizer L, the coupling H, provided with an annular space, I, to preserve a low temperature

of oil and adapted to receive the feed-pipe G,
provided with a drip-duct, J, the retort N,
the perforated terminals O O, thereto con-
nected, and the supporting-bar S, combined
5 to coact with the foraminous casing A, pro-
vided integrally with a convex dispenser, Q,
apertures B and F, lugs U, and threaded
graduating supporting-rods V, and base W,
thereto united, substantially as and for the
10 purpose set forth.

In testimony whereof I have signed my name
to this specification in the presence of two sub-
scribing witnesses.

GEO. R. SEYMOUR.

Witnesses:

WM. H. MILLER,
H. E. REMICK.