

No. 743,940.

PATENTED NOV. 10, 1903.

H. L. SHERWOOD.
OIL BURNER.

APPLICATION FILED DEC. 26, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

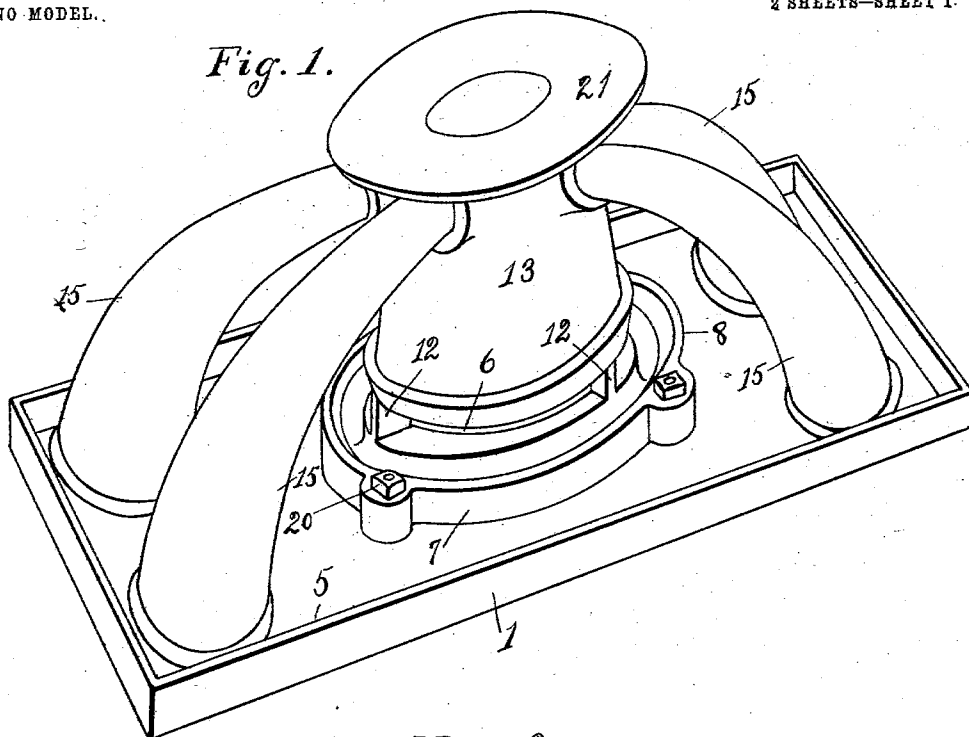
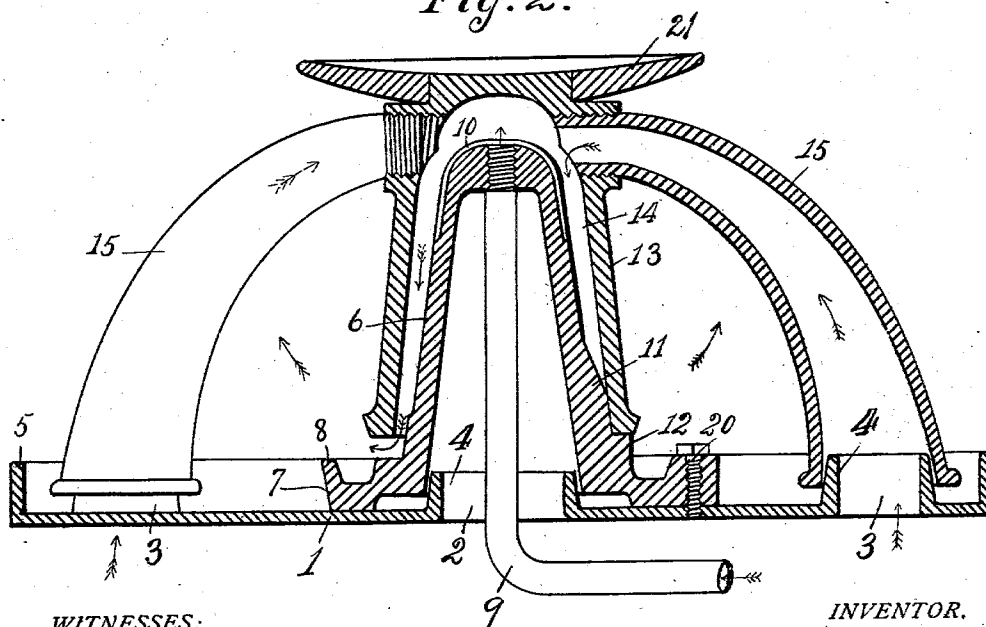


Fig. 2.



WITNESSES:

K. Lockwood-Nevins
Bessie Gorfinkel

INVENTOR.

H. L. Sherwood

BY

Francis M. Wright
ATTORNEY.

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2 SHEETS—SHEET 2.

Fig. 5.

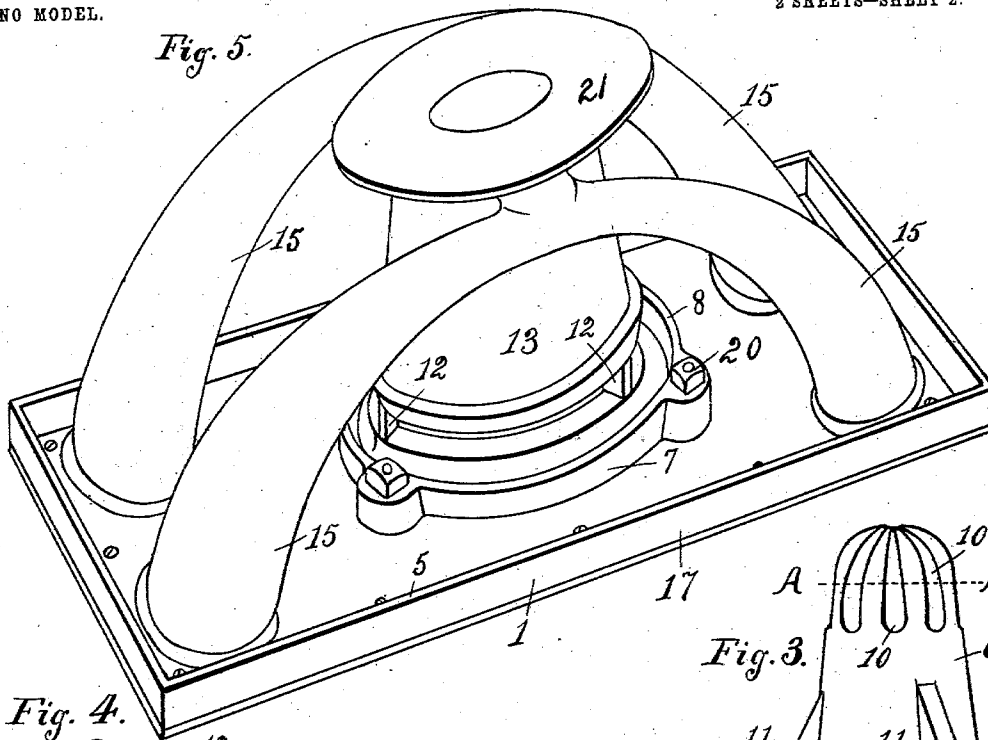


Fig. 4.

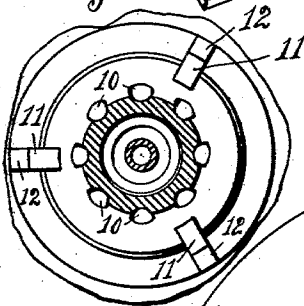


Fig. 3.

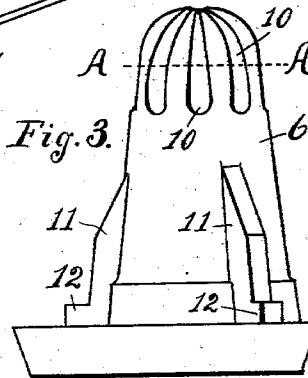
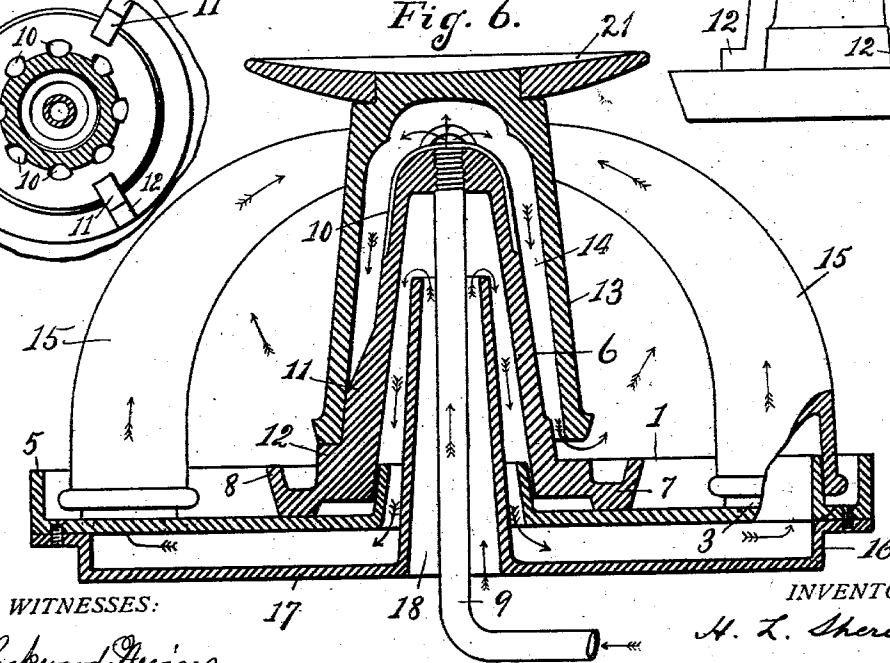


Fig. 6.



WITNESSES:

H. Lockwood Perine
Burr Gorfinkel

INVENTOR.

H. L. Sherwood
BY Francis W. Wright
ATTORNEY.

UNITED STATES PATENT OFFICE.

HARLEY LEROY SHERWOOD, OF OAKLAND, CALIFORNIA.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 743,940, dated November 10, 1903.

Application filed December 26, 1902. Serial No. 138,600. (No model.)

To all whom it may concern:

Be it known that I, HARLEY LEROY SHERWOOD, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification.

My invention relates to improvements in oil-burners, the object of my invention being to provide an oil-burner which can be used in domestic stoves, ranges, or grates and which will burn even distillate or a low grade of oil without the production of smoke or the deposition of soot.

My invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of my improved oil-burner. Fig. 2 is a longitudinal section on the left-hand side through the center or axial line of the burner and on the right-hand side through one of the air-supply pipes. Fig. 3 is a broken side elevation of the hollow cone detached. Fig. 4 is a horizontal section on the line A A of Fig. 3. Fig. 5 is a perspective view showing a modified form of attachment of the air-supply pipes to the cover. Fig. 6 is a longitudinal vertical section showing a modification of the air-conduits.

Referring to the drawings, 1 represents a suitable base, having a central aperture 2 and four apertures 3 at or near the corners thereof. Said apertures 2 and 3 are surrounded by flanges 4, and the base itself is also surrounded by a rim or flange 5 of substantially the same height as the flanges 4, the object of these flanges being to prevent the oil overflowing from the base when lighting the burner. It will be understood that, as is usual with this class of burners, on starting the fire a certain amount of oil is allowed to flow upon the base, and this is first burned by bits of paper or other substances laid upon the base, and the combustion of this oil serves to heat the oil flowing after it and to vaporize the same.

Around the central aperture 2 is supported the hollow spreader-cone 6, said spreader having a flanged portion 7, which is secured by screws 20 upon the base, and a circular lip 8,

extending upward from said flanged portion. Within the hollow spreader-cone rises the oil-supply pipe 9, its upper end being tightly screwed into the top of said spreader, so that the oil flows up through said pipe and over the top of said spreader and down the outer conical side thereof. Said outer surface is formed at the top with a number of equidistant grooves or channels 10, which broaden at the bottom, as shown, the object of said channels being to distribute the oil evenly around the surface of the spreader. Upon the wall of said spreader are formed buttresses 11, which serve the purpose of properly spacing the cover from the spreader-cone. They have ledges 12 at their lower ends, and upon said ledges rests the cup-shaped cover 13, which forms with the spreader the combined retort and mixing-chamber 14. Into the upper portion of the cover are screwed the small ends of tapering, curved, or horn-like air-supply pipes 15, the lower or enlarged ends of said pipes fitting around the flanges 4, which extend upward around the apertures 3 at the corners of the base. The oil which is burned in said base in starting the fire heats said air-supply pipes 15, so that the air which enters the chamber 14 is thoroughly heated thereby. The chamber 14 itself and the cover which forms the outer wall thereof are also highly heated by the flames from said burning oil. For these reasons said oil is completely vaporized, and the commingled air and vapor resulting therefrom are burned at the base of said cover, and the flames emerging from the space between said base and the flanged portion 7 of the spreader-cone intensify the heat of all the parts exposed to their action—that is to say, the cover and the upper portions of the air-supply chamber. Thus the distillate or other oil is completely burned without any smoke and without the deposition of soot.

A great drawback to oil-burners which are intended to burn unrefined oil, especially that having an asphaltic base, has been the deposition of the asphalt or sediment in the oil-supply pipe caused by the heating of the oil. It will be observed that in my construction the oil-supply pipe is surrounded up to its point of discharge by a body of air within the hollow spreader-cone. This shields or insu-

lates said pipe from the heat of the combustion-chamber, so that no deposition of sediment takes place in said pipe. For very crude oil the modification shown in Fig. 6 may be preferred, in which the base 1 rests upon the walls 16 of a second base 17, which latter has formed integral therewith at its center a sleeve or tube 18, which when in position surrounds the oil-supply pipe 9 for the greater portion of its height. The walls 16 form with said base 17 a closed chamber around the apertures 3. The result is that a good part of the air which is supplied to the combustion-chamber through the air-supply pipes 15 must first be drawn upward around the oil-supply pipe and within said sleeve 18, then over the top of said sleeve, then down around the same and within the spreader-cone, then between the two bases, and then through the apertures 3 and the air-supply pipes 15 as before. This construction possesses two advantages—first, by causing a constant circulation of the air within the spreader-cone, in drawing off heated air therefrom on the outside of the sleeve, and replenishing with cool air passing up on the inside thereof around the pipe it is insured that said oil-supply pipe shall be maintained always sufficiently cold; secondly, the heat of the air acquired within the spreader-cone is now added to the heat derived by passage through the heated air-supply pipes, so that the heat of the air used for combustion is intensified. It is not necessary, however, that the whole of the air used for combustion shall pass up and around the sleeve 18. The proportion which so passes will depend upon the closeness of the fit between the bases 1 and 17.

21 represents a disk which is placed upon the top of the cover, as shown, and serves the purpose of deflecting the flames onto the air-supply pipes to heat the same. It will be observed that these air-supply pipes are so arranged that the flames ascending between them and deflected by the spreader will come about in the middle of the holes of the top of an ordinary cook-stove when the burner is placed in the grate of said stove.

The height and conical form of the spreader-cone and cover form an important feature of my invention as they thus provide a long downdraft-chimney or combustion-chamber which is intensely heated by the flames ascending around on the outside thereof.

I claim—

1. In an oil-burner, the combination of a base having an aperture, a hollow spreader over said aperture, an oil-supply pipe leading upward in the interior of said hollow spreader to the top thereof, and discharging onto its upper surface, a cover over said spreader forming therewith a combined retort and mixing-chamber having a downwardly-opening mouth or aperture through which the flames discharge around said spreader, and an air-supply pipe attached to said cover at or near said chamber to provide a conduit for the air

which shall be heated by said flames, substantially as described.

2. In an oil-burner, the combination of a base having an aperture, a hollow spreader over said aperture, an oil-supply pipe leading upward in the interior of said hollow spreader to the top thereof, and discharging onto its upper surface, a cover over said spreader forming therewith a combined retort and mixing-chamber having a downwardly-opening mouth or aperture through which the flames discharge around said spreader, an air-supply pipe attached to said cover at or near said chamber to provide a conduit for the air which shall be heated by said flames, and a deflector on said cover, substantially as described.

3. In an oil-burner, the combination of a base having an aperture, a hollow spreader over said aperture, an oil-supply pipe leading upward in the interior of said hollow spreader to the top thereof, and discharging onto its upper surface, a cover over said spreader forming therewith a combined retort and mixing-chamber having a downwardly-opening mouth or aperture through which the flames discharge around said spreader, and upwardly-curving air-supply pipes the upper ends of which are screwed into said cover, and the lower ends of which surround apertures in said base, substantially as described.

4. In an oil-burner, the combination of a base having an aperture, a hollow spreader over said aperture, an oil-supply pipe leading upward in the interior of said hollow spreader to the top thereof, and discharging onto its upper surface, a cover over said spreader forming therewith a combined retort and mixing-chamber having a downwardly-opening mouth or aperture through which the flames discharge around said spreader, upwardly-curving air-supply pipes the upper ends of which are screwed into said cover, and the lower ends of which surround apertures in said base, and a deflector on said cover above the upper ends of said pipes, substantially as described.

5. In an oil-burner, the combination of a base, a hollow spreader supported on said base, an oil-supply pipe discharging at the top of said spreader onto the upper surface thereof, a cover over said spreader forming therewith a combined retort and mixing-chamber having a downwardly-extending mouth or aperture through which the flames discharge around said spreader, and air-supply pipes passing above said mouth or aperture and connected with said combined retort and mixing-chamber, substantially as described.

6. In an oil-burner, the combination of a base, a hollow spreader supported on said base, an oil-supply pipe discharging at the top of said spreader onto the upper surface thereof, a cover over said spreader forming therewith a combined retort and mixing-chamber having a downwardly-opening mouth or aperture through which the flames

discharge around said spreader and air-supply pipes attached to said cover at or near said chamber and passing over said mouth or aperture, substantially as described.

5 7. In an oil-burner, the combination of a base, a spreader supported on said base, an oil-supply pipe discharging at the top of said spreader over the outer surface thereof, a cover over said spreader forming therewith a
10 combined retort and mixing-chamber having a downwardly-opening mouth or aperture through which the flames discharge around said spreader, said cover and spreader having coengaging parts to space the two at the
15 proper distance apart, and air-supply pipes connected with said combined retort and mixing-chamber and passing over the flames emerging from said mouth or aperture, substantially as described.

20 8. In an oil-burner, the combination of a base, having an aperture, a spreader supported on said base around said aperture, an oil-supply pipe extending upwardly within

said spreader and discharging at the top thereof over the outer surface, a cover around
25 said spreader, and suitably spaced therefrom forming therewith a combined retort and mixing-chamber having a downwardly-opening mouth or aperture, air-supply pipes connected with said combined retort and mix-
30 ing-chamber and passing above the flames discharged from said aperture, and a second base upon which the first base rests, said second base having a sleeve extending around
35 said oil-supply pipe within said hollow spreader and said bases forming the upper and lower walls of an air-supply chamber, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses. 40

HARLEY LEROY SHERWOOD.

Witnesses:

F. M. WRIGHT,
BESSIE GORFINKEL.