No. 716,918. Patented Dec. 30, 1902.

W. L. MERSFELDER.

BURNER FOR BURNING COAL OIL OR OTHER SIMILAR HYDROCARBONS.

(Application filed Nov. 18, 1899.)

(No Model.)

Fig. 1

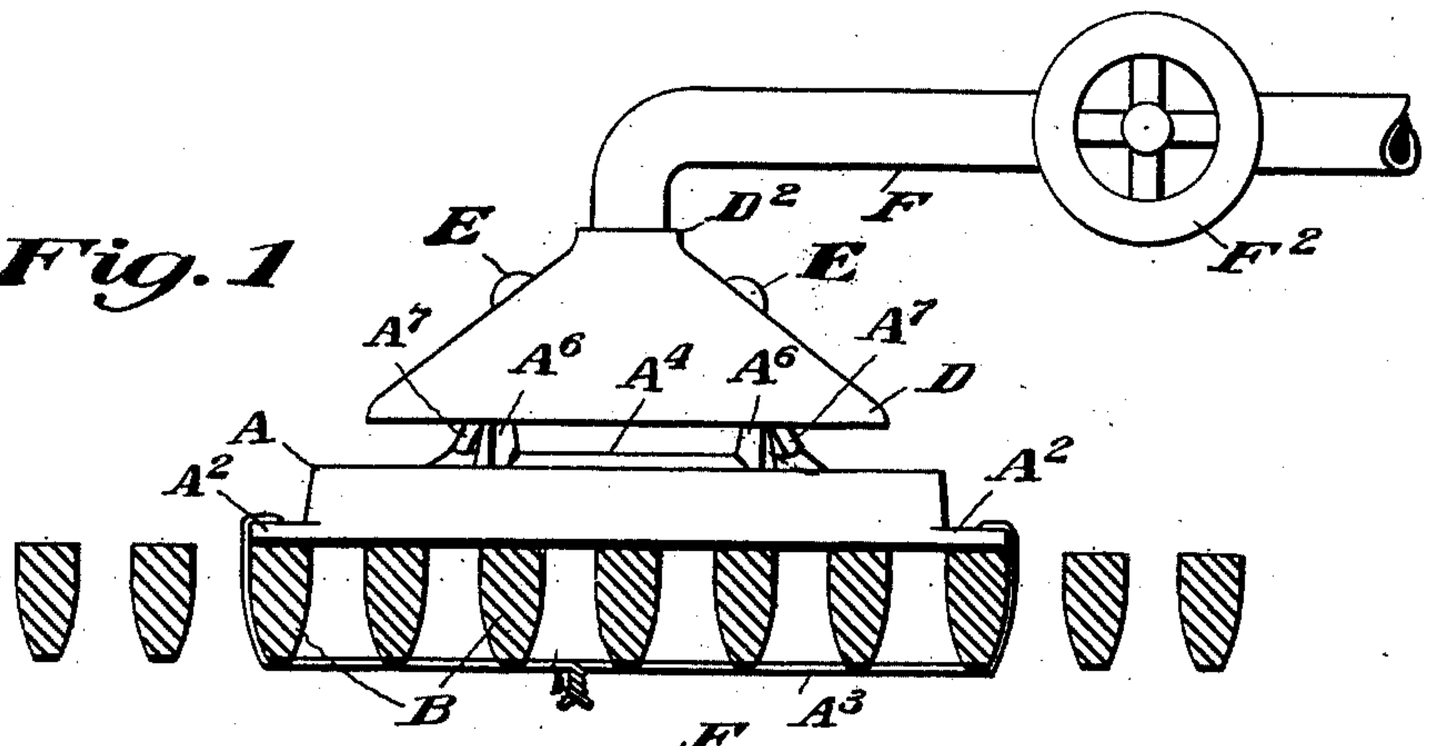


Fig. 2

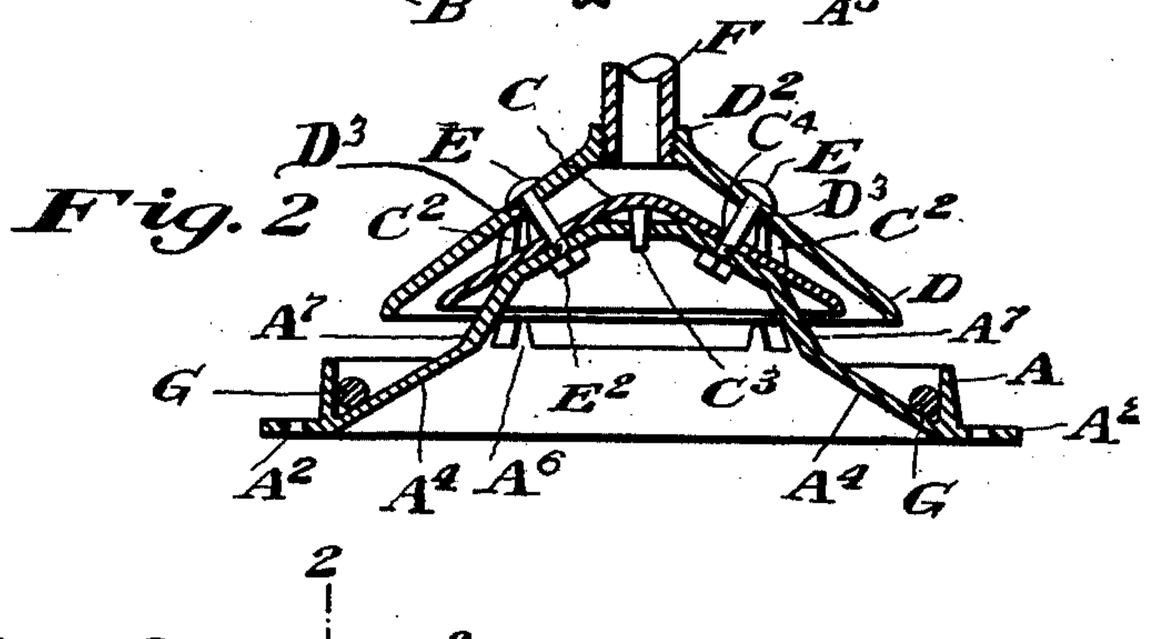


Fig. 3

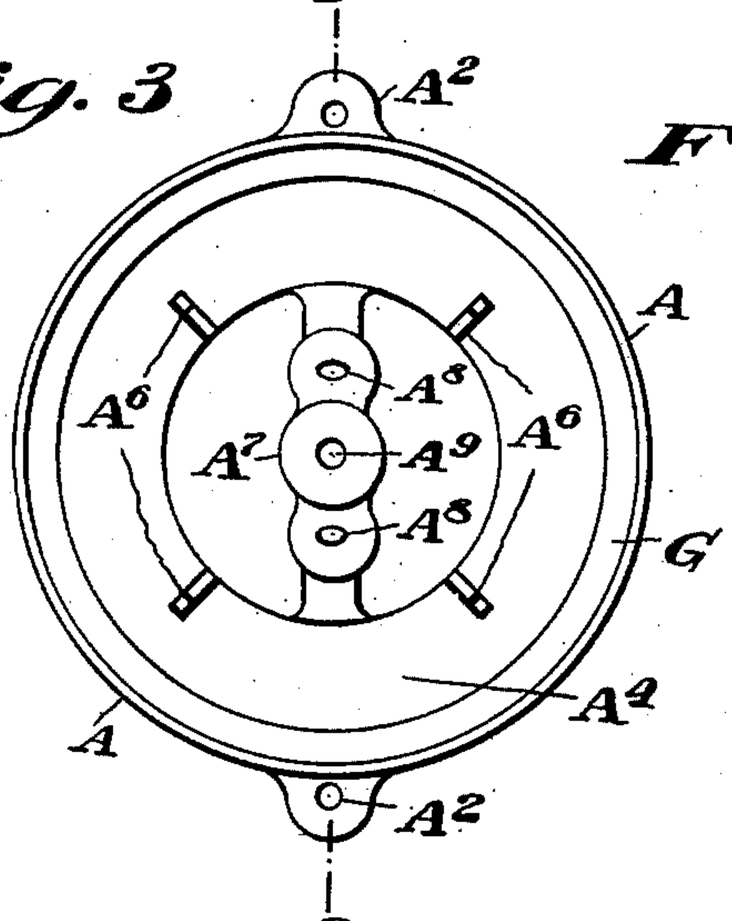
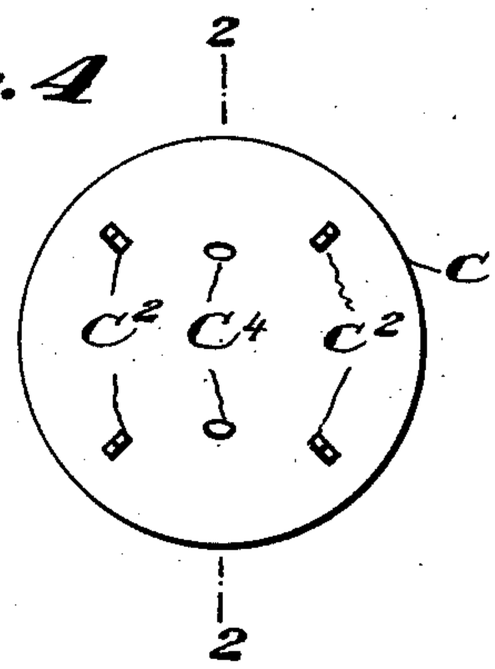


Fig. 4



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BURNER FOR BURNING COAL-OIL OR OTHER SIMILAR HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 716,918, dated December 30, 1902.

Application filed November 18, 1899. Serial No. 737,414. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. MERSFELDER, a citizen of the United States, and a resident of the village of Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Burners for Burning Coal-Oil or other Similar Hydrocarbons, of which the following is a specification.

The several features of my invention and the various advantages resulting from their use conjointly or otherwise will be apparent from the following description and claims.

In the accompanying drawings, making a part of this application, and in which similar letters of reference indicate corresponding parts, Figure 1 is a side elevation of a burner, illustrating my invention, the grate-bars of the stove to which the burner is attached being shown in vertical cross-section. Fig. 2 is a vertical central section of the burner, taken in the plane of the dotted line 2 2 of Fig. 3 and 2 2 of Fig. 4, the bolts being shown in elevation. Fig. 3 is a plan view of the bottom piece or basal frame of the burner. Fig. 4 is a top view of the spreader or piece intermediate between the basal frame and the part above.

I will now proceed to describe my invention in detail.

First, I provide a basal frame which I construct substantially as follows: There is an outlying annular flange A extending vertically upward. An annular floor A^4 extends from the base of flange A and inclines upwardly and inwardly. An annular trough is formed by the flange A in conjunction with the floor A^4. At the bottom of the basal frame are means for connecting it to grate-bars or adjacent portions of the stove.

It is to be understood that the burner rests upon the grate-bars B of the fire-chamber of the stove in which it is used. The preferred means for connecting the burner to the stove consist of the lugs A^2 A^2, perforated. A piece of wire passed through the perforation of the lug and twisted around a grate-bar B is a convenient article for connecting the basal frame and the stove together. An arch A^7, connected at each end to the floor A^4, sustains the superstructure of the burner. Upon this arch rests the intermediate hollow conical discal part C, having its convex side upward. Because of one of its principal functions I will denominate this part C the "spreader." A pin C^3, united to the central under portion of the spreader, extends down and passes through a central hole A^9 in the arch A^7. Thus the shield is centrally held in position. Above the spreader is the cap D, also conical or dome-shaped, hollow beneath, and having its convex side upward. Lugs or pillars C^2 are located at suitable intervals between the spreader C and the cap D and serve to keep apart the cap and spreader and to support the latter. These lugs C^2 are preferably united to the top of the spreader, substantially as shown.

To steady the spreader C and prevent its possible oscillation, I provide the lugs A^6, located between the spreader C and the basal frame and preferably located on the floor A^4 and united to the latter. The lower edge (rim) of the spreader rests on these lugs.

The basal frame, the spreader, and the cap are all securely united. To this end I provide the openings A^8 in the arch A^7 and the openings C^4 in the spreader and similar openings D^3 in the cap. Thus two sets of holes, each set in alinement, are present, and through each set a bolt E is passed. A nut E^2, screwed thereon, secures the several parts together. Thus the various portions constitute a rigid structure, which latter when united to the grate constitutes a permanent structure.

The burner is fed with liquid hydrocarbon at its top, namely: In the apex of the cap the delivery end of a hydrocarbon-supply pipe F is located and in the present illustrative instance is connected to the cap by a common screw connection D^2. The other end of the pipe F is duly connected with the reservoir containing the liquid hydrocarbon. The passage of the liquid hydrocarbon through the pipe F is regulated by a suitable cock, as F^2.

The mode in which my improved burner operates is as follows: Asbestos G, preferably a length of woven asbestos in the form of a round cord, is laid in the trough formed by the conjunction of the floor A^4 and the flange A. Hydrocarbon oil is then allowed to pass slowly through pipe F. This oil falls on the apex of the spreader and passes down over the latter in various directions and falls into

the trough, thus saturating the asbestos, the latter then making a wicking. When the asbestos is saturated and the trough partly filled, the wicking is lighted. The flame arising heats the cap D, and the lower portion of the cap becomes red-hot. The heat reflected from this red-hot surface being reflected upon the hydrocarbon running down the spreader not only heats the spreader and the cap, but converts the liquid hydrocarbon into vapor. The latter passes down between the cap and the spreader and then passes under the lower edge of the cap and shoots outwardly and rises. During this movement it mixes with the air and ignites. The flame from the wicking first ignites it.

It is to be observed that the air below the grate is free to rise and pass through the open center of the basal frame and then over the inner edge of the floor A^4 and then meet and mix with the hydrocarbon vapor coming from beneath the cap. Thereafter the outlying flame ignites the hydrocarbon vapor, which has become oxygenated, and comes out from under the cap. The oil in the trough and in the wicking is consumed and is no longer needed until the flame has been extinguished and the lamp is to be again lighted. Then the foregoing operations are to be repeated.

The construction of this burner is simple and economical. The hydrocarbon is thoroughly consumed, and the heat is given off in a manner which enables it to be utilized.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination of the basal frame having a vertical flange A, and an inclined annular floor A^4 forming an annular trough, a conical cap D having its outer rim located above the trough, said cap having an oil-inlet at its central highest point, a conical spreader intermediate the cap and annular floor and separated from the cap above and the floor beneath, said spreader having lugs C^2 supporting said conical cap and said basal frame having an arch A^7 supporting said spreader, substantially as and for the purposes specified.

2. In a burner of liquid hydrocarbon, the combination of the basal frame having the annular trough and the centrally-perforated arch A^7, located centrally of the annular trough, the conical spreader over the arch and having its outer rim above the trough, a central pin C^3 of the spreader entering the central perforation of the arch, and a conical cap D upheld by supporting means from the basal frame and separate from the spreader, the said spreader being separated from the annular trough, substantially as and for the purposes specified.

3. In a burner of liquid hydrocarbon, the combination of the basal frame having the flange A and inclined floor A^4 forming an annular trough, and the arch A^7, located centrally of the annular trough, the conical spreader over the arch, and the conical cap over the spreader, and the oil-inlet at the central highest point of this conical cap, and lugs between the spreader and inclined floor, and lugs between the spreader and the cap, substantially as and for the purposes specified.

4. In a burner of liquid hydrocarbon, the combination of the basal frame having the flange A and inclined floor A^4 forming an annular trough, and the lugs connected to the floor, and the centrally-perforated arch A^7, located centrally of the annular trough, the conical spreader having a pin entering a perforation of the arch and resting on the arch and the lugs aforementioned, lugs on the upper side of the spreader, a conical cap resting on the latter lugs, bolts connecting the arch, the cap and spreader, and a feed-pipe in the apex of the cap, and over the apex of the spreader, substantially as and for the purposes specified.

5. In a hydrocarbon-burner, the combination of the basal frame having an inclined floor and having an annular trough whose inner wall and bottom are formed by the inclined floor, said floor forming an upwardly-tapering air-chamber, a conical spreader above the basal frame and separated from the trough, a conical cap above and separated from the spreader and having in its apex a feed-pipe over the apex of the spreader, the rim of the spreader extending out beyond the upper free end of the inclined floor, the rim of the cap extending out beyond the rim of the spreader and lying in a horizontal plane below the horizontal plane of the rim of the spreader, said air-chamber being in communication with the space outside the frame at a point substantially in line with the rims of said cap and spreader.

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Attest:
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