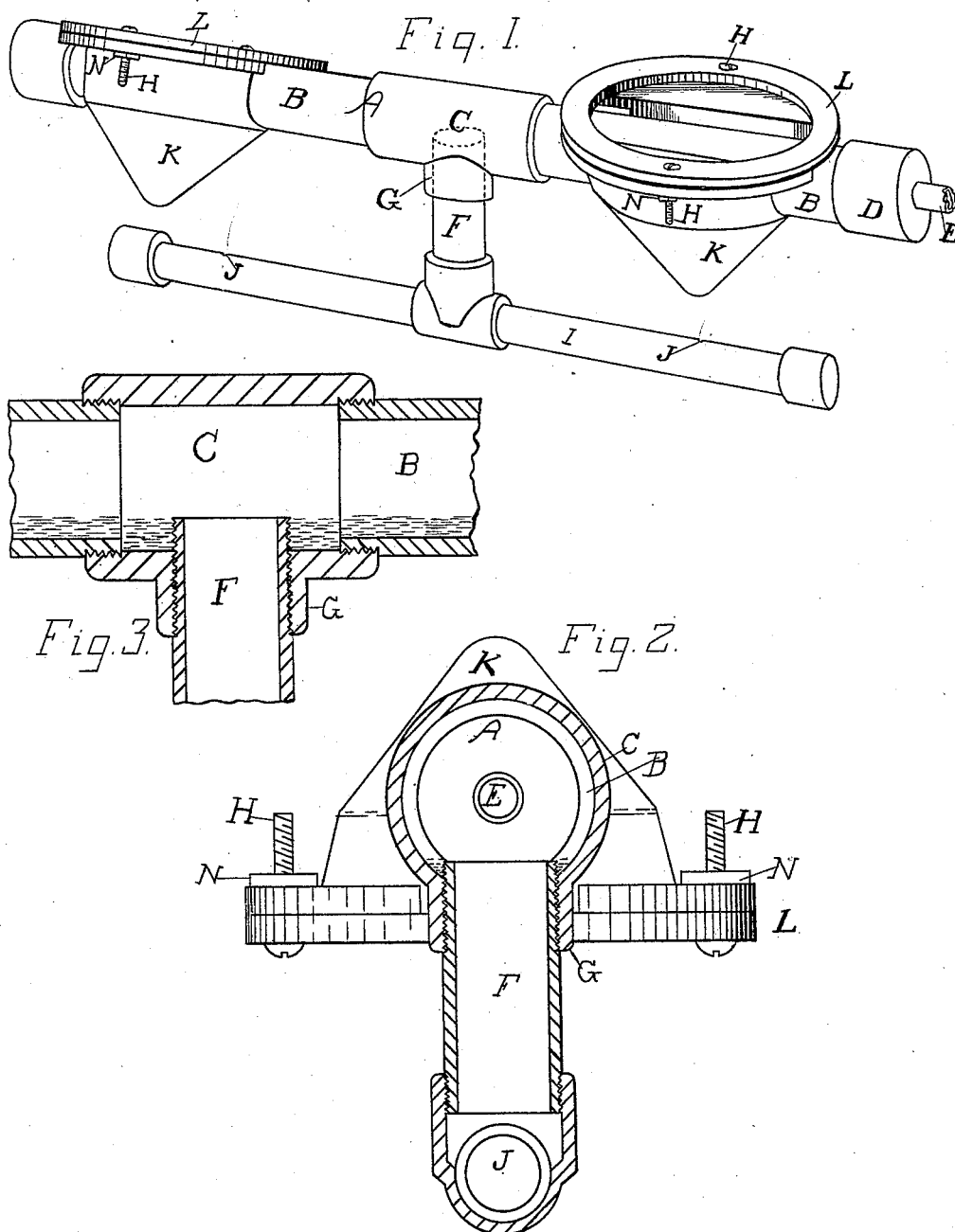


(No Model.)

J. F. BEALS.
OIL BURNER.

No. 422,329.

Patented Feb. 25, 1890.



Witnesses.

M. C. Galer
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UNITED STATES PATENT OFFICE.

JOHN F. BEALS, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO ELIAS B. DE LA MATYR, OF SAME PLACE.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 422,329, dated February 25, 1890.

Application filed December 27, 1888. Serial No. 294,783. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. BEALS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Oil-Burners, of which the following is a specification.

My invention relates more particularly to that class of oil-burners for domestic use in which the oil is vaporized in a retort heated by the flame of the burner; and the object of my invention is to construct a cheap burner which will not be liable to clog, and in which the residuum from the oil will be deposited at such a point that it will be of the least detriment and can be easily removed.

A further object is to so construct the burner that it can be easily taken apart to be cleaned.

A further object is to provide means for promoting combustion and directing the flame to the point desired, and whereby the heat of the flame may be concentrated for the purpose of heating soldering-irons and for similar purposes.

I accomplish these objects by means of the device described herein, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of one of my improved burners of two jets, looking at the rear of the burner. Fig. 2 is a vertical mid cross-section showing the deflector turned to concentrate the heat. Fig. 3 is a perpendicular mid longitudinal section of the central part of the burner.

The drawings illustrate the construction of my improved burner when provided with two jets. This can be converted into a single-jet burner by unscrewing the pipes at the left of the T's and substituting solid plugs therefor, or by plugging one of the jet-holes.

The horizontal cylindrical retort A is made of a short piece of gas-pipe B, having one end screwed into one arm of a T-connection C, having a larger internal diameter than the pipe B, the other arm of which is closed, and having the other end of the pipe B provided with a cap D, into which the oil-supply pipe E is screwed. The connecting-pipe F is screwed into the stem G of the T and projects above the bottom of the inside of the T

and above the bottom of the pipe B, so that when oil is allowed to flow into the retort it will fill the bottom of the T and will not flow down the connecting-pipe F until the bottom of the retort is covered. The jet-tube I is of the ordinary construction, and comprises a small gas-pipe connected with the connecting-tube F and having a small jet-hole J in the top of the jet-tube beneath the retort.

The deflector consists of a cone K, tightly fitted upon the pipe B, so that it can be turned upon the pipe and slipped therealong, so as to change the position of the apex of the cone relative to the jet-hole. I ordinarily make the cone of cast-iron and secure it to the pipe B by a metal ring L, which is attached to the base of the deflector-cone by bolts H and nuts N. The bolts are of such length as to allow the cone to be lowered nearer to the jet-hole than it is shown in the drawings.

The operation of the burner is as follows: The oil is allowed to flow through the pipe E until it fills the retort to the top of the connecting-pipe F, down which it then flows until the jet-tube is filled and the oil flows out of the jet-holes, where it is then ignited. The flame heats the retort, as in ordinary burners, and the shallow edges of the body of oil in the retort are rapidly evaporated, and the vapor, expanding forces, its way out of the jet-tubes. The jet of vapor formed thereby ignites and strikes upon the conical deflector, by which it is broken and spread and mingled with the air. If it is desired to cause the flame to extend beyond the top of the burner, so as to heat ovens and ranges, the cone is adjusted so that its apex is closer to the jet-hole than is shown in the drawings. Then the vapor is scattered and broken in force, so that sufficient air is not immediately mingled with the vapor, and combustion continues as the vapor passes through the flues. If it is desired to cause more complete combustion in the fire-box of the stove or immediately within the burner, the cone is elevated, so that the jet, acting upon the surrounding air, will create such a rapid upward flow thereof as to supply such a volume of air around the cone as to cause immediate combustion of all the vapor. The

combustion becomes more perfect and concentrated as the cone is elevated.

It is desirable that the retort be not too highly heated when the burner is in ordinary use, otherwise the oil is liable to coke and the vapor is liable to become so rarefied and issue with such velocity that the flame is extinguished. The cylindrical shape of my retort and the combination therewith of the conical deflector avoids this difficulty. The oil is not subjected to the full force of the flame of the jet, but only to the portion of the flame which passes up against the retort at each side of the deflector. The margins of the oil in the retort are thin, and when the jet is ignited evaporation begins immediately the oil enters at the pipe, and it continues uniformly as the oil flows along the bottom of the retort through the portion protected by the deflector. The deflector when heated gives to the portion of the retort embraced by it a uniform heat less than that of the direct flame, but great enough to vaporize the oil.

All coke which may be formed by the heat of the flame will be deposited in the bottom of the retort and can be easily removed by unscrewing the pipe and scraping the coke out. The efficacy of the burner is not seriously impaired until the deposit of the coke is even with the top of the pipe F.

When it is desired to direct the flame against the back of the stove, the apex of the cone is thrown forward, so that the flame strikes upon the rear rounded face thereof, as shown by the deflector on the right side of the drawing, Figs. 1, and when it is desired to throw the flame to the center of the fire-box the deflector is slipped toward the end of the retort, as shown by the deflector on the left side of the drawings. When this is done, the retort is heated more intensely and the vapor made more rare, because the flame strikes directly upon the retort.

When it is desired to secure a very intense and concentrated heat for heating soldering-irons, the deflector is inverted, as shown in Fig. 2, and the direct force of the flame is re-

ceived by the retort, the vapor is highly rarefied, and is projected from the jet with great force, carrying a large volume of air, which is thoroughly intermingled with the vapor by contact with the irregularities of the deflector and retort.

It is desirable that as little oil as possible be allowed to flow into the jet-tubes, as it will form a deposit of coke which will choke the jet-holes.

When the oil is partially turned off to give a slow fire and a larger quantity is suddenly turned on to increase the flame, the increased flow of oil is liable to overflow into the jet-tube before the flame becomes hot enough to vaporize it. The enlargement of the retort around the upwardly-projecting connecting-pipe by means of the T-connection C tends to avoid this difficulty, as the surplus oil will flow into the enlarged chamber formed by the T, and there becomes more subject to the heat of the flame than if it were distributed over the bottom of the retort protected by the slightly-heated deflector.

The walls of the T will heat more quickly than the deflector, and the oil within the T will be more rapidly vaporized and the vapor will quickly produce sufficient pressure to prevent too rapid a flow of oil into the retort.

I am aware that conical deflectors have heretofore been used and that burners have heretofore been made with the burner-pipe inserted in the bottom of the retort and extending slightly thereabove.

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

The combination set forth of the cylindrical retort connected with an oil-supply, the jet-tube located beneath the retort, connected therewith, and provided upon its upper side with a jet-hole, the conical deflector K, fitted upon the retort, the ring L, bolts H, and nuts N.

JOHN F. BEALS.

Witnesses:

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