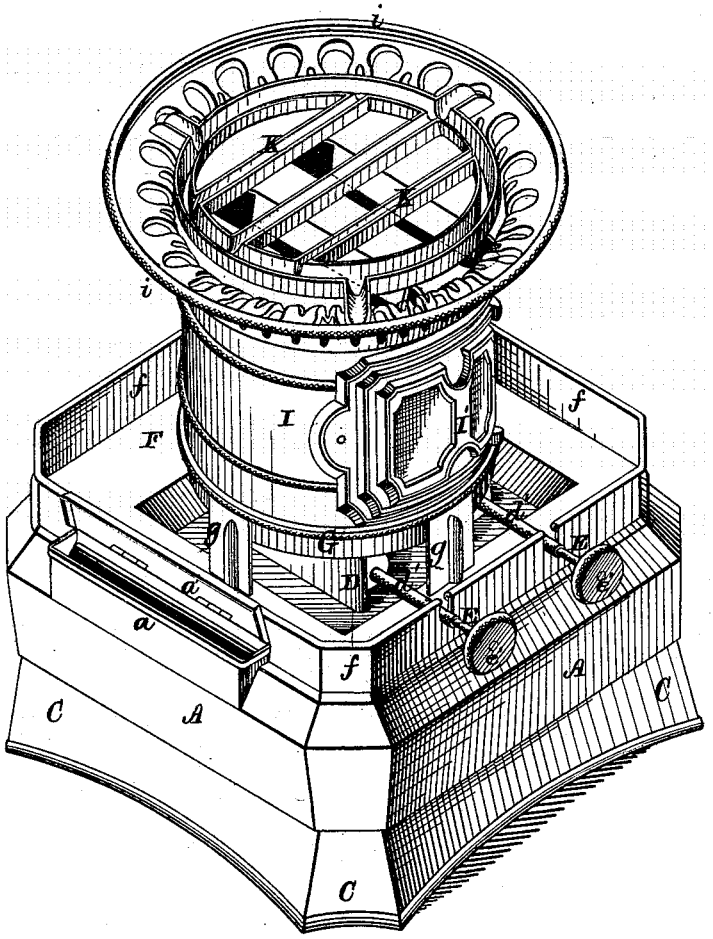
2 Sheets—Sheet 1.

J. A. FREY.
Coal-Oil Stove.

No. 199,280. **Patented Jan. 15, 1878.**

Fig. 1.



WITNESSES:
Jas. C. Hutchinson.
Henry C. Hazard.

INVENTOR.
Jno. A. Frey, by
Prindle & Lothrop his Attys

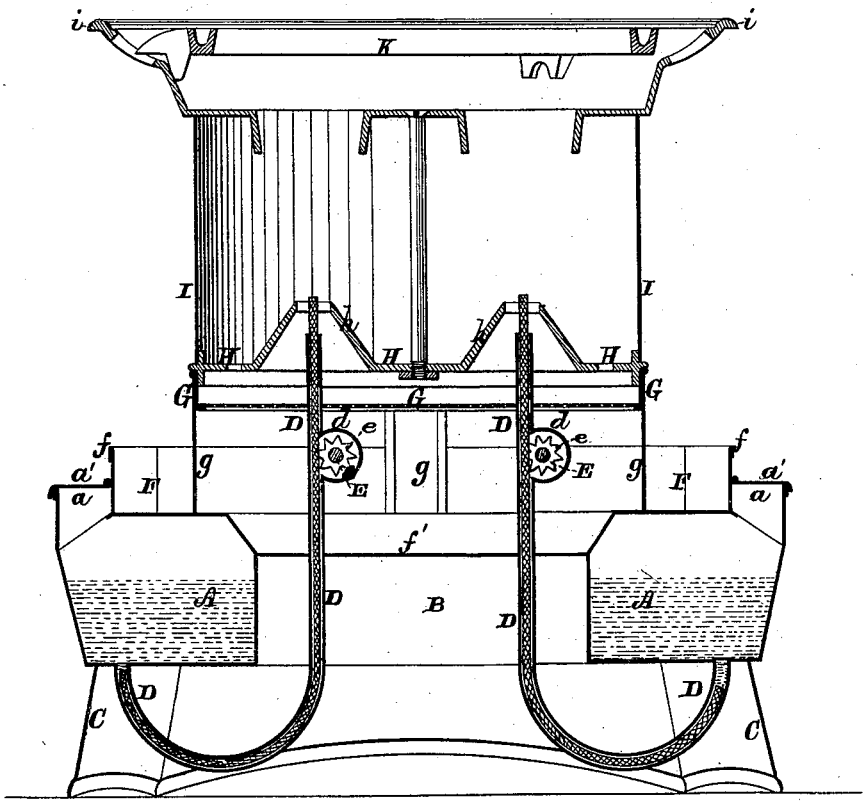
2 Sheets—Sheet 2.

J. A. FREY.

Coal-Oil Stove.

No. 199,280. **Patented Jan. 15, 1878.**

Fig. 2.



WITNESSES:

Jas. E. Hutchinson.

Henry C. Hazard

INVENTOR.

Jno. A. Frey. by

Brindle and Co. his attys

UNITED STATES PATENT OFFICE.

JOHN A. FREY, OF NEW YORK, N. Y.

IMPROVEMENT IN COAL-OIL STOVES.

Specification forming part of Letters Patent No. **199,280**, dated January 15, 1878; application filed November 21, 1877.

To all whom it may concern:

Be it known that I, JOHN A. FREY, of New York, in the county of New York and in the State of New York, have invented certain new and useful Improvements in Coal-Oil Stoves; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my stove arranged for use, and Fig. 2 is a vertical central section of the same upon a line passing transversely across the burners.

Letters of like name and kind refer to like parts in each of the figures.

In the use of hydrocarbon oils for illuminating, heating, or cooking purposes great difficulty has been experienced in preventing fire from reaching the oil-reservoir and igniting the gases given off from such oils; but all of the remedies proposed or tested have had in view nothing further than the insulation of the burner from the reservoir, so as to prevent heat from being conducted from the former to the latter. The wick-tube must have such size as to permit the wick to move freely through the same, and if, as frequently occurs, the wick happens to be smaller than the average, a sufficient space is left unfilled within the tube to permit gas from the reservoir to pass upward to the flame, and, if in sufficient quantity, said gas is liable to ignite within said tube and communicate fire to the gas within the reservoir, the result being an explosion, which is more or less disastrous in its effect. A like result frequently occurs in an attempt to extinguish the flame in the burner by blowing down the chimney, the downward current of air causing the flame to be forced into the wick-tube, so as to ignite the gas contained therein and force the same into the oil-reservoir.

To obviate these difficulties is the design of my invention, which consists in a coal-oil stove in which are combined the following-named elements, to wit: an oil-reservoir which horizontally surrounds a central air-chamber, a water-reservoir that incloses the upper side of said air-chamber and extends over a portion or the whole of the upper side of such oil-reservoir, and wick-tubes which pass downward through said water-reservoir and air-chamber, and thence extend in a curve downward, outward, and upward to, and are connected with, the bottom of said oil-reservoir, substantially as and for the purpose hereinafter set forth.

As the principle of operation of my invention is the same whether applied to lamps or to stoves, it will sufficiently illustrate said invention to show its employment in the latter. For the purpose of illustration, two forms of reservoir and wick-tubes will be shown, the first being that represented in Fig. 2.

In the annexed drawings, A represents the oil-reservoir of my stove, which has, preferably, a general rectangular form in the plan view, is provided with a correspondingly-shaped central opening, B, and rests upon, and is supported by, a suitable base, C. From opposite sides, at the bottom of the reservoir A, two wick-tubes, D, extend downward, inward, and upward in a curve, and near their upper ends, which have the usual elevation above the reservoir, are each provided with one or more wick-wheels, *e*, that are secured upon and operated by a shaft, E, which extends horizontally outward in a line parallel with the side of said tube, and at its outer end is provided with a button, *e'*, by which said shaft is rotated. Said wick-wheels are each inclosed in the usual manner by a housing, *d*, which is formed upon the side of said tube, while from said housing outward nearly to said button-head *e'* a tube, *d'*, incloses said shaft E. Upon the upper side of the oil-reservoir A a chamber or reservoir, F, is formed by means of a vertical flange, *f*, which extends upward from the upper side, near the outer edge of said oil-reservoir, and a diaphragm, *f'*, that extends horizontally across the opening B at any point between its lower and upper ends, the design of which chamber is to contain water to intercept such heat as is radiated downward from the burners, and to keep the wick-tubes and wick-raising mechanism cool. Upon opposite sides of the oil-reservoir A, immediately outside of the flange *f*, are provided openings *a*, each of which has slightly greater length than the transverse length of a wick-tube, D, is arranged directly over the lower end of the same, and is provided with a cover, *a'*, that is hinged or in any manner secured in place. Surrounding the

wick-tubes D, between the housings *d* and their upper ends, is a reticulated diaphragm, G, which at its edges is secured to or upon a vertical circular flange, G′, that is supported upon three legs, *g*, which legs are secured to, and extend between, said flange and the oil-reservoir A. To one side of the flange G′ is hinged a cone-plate, H, which is provided with cones *h*, that surround the upper end of each wick-tube D, and, when turned downward to a horizontal position, inclose the upper side of said flange. From the edge of the cone-plate H a cylinder, I, extends upward to a suitable height, and at its upper end is provided with a flaring open-work flange, *i*, and a grating, K, for the support of cooking utensils.

A mica door, I′, arranged at one side of the heating-cylinder I, enables access to be had to the interior of the latter for the purpose of lighting the wicks.

The stove, which is now complete, and is used in the ordinary manner, possesses the following advantages: First, the wick-tubes are filled with oil within their curved portions while any oil remains in the reservoir, and, consequently no gas can pass through the same from said reservoir, nor can flame pass downward from the burners; second, in consequence of the length of the wick-tubes, the heat generated at their upper ends is dissipated before it reaches the oil-reservoir, and does not operate to raise the temperature of the liquid contents of the same; third, the form of the wick-tubes and the location of the lower end of the same below the supply-openings enables the wicks to be seen and withdrawn from the reservoir whenever they are turned downward beyond reach of the wick-wheels, and also enables the operator to know in which direction he is moving said wicks when their upper ends are withdrawn from sight.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

A coal-oil stove in which are combined the following-named elements, to wit: an oil-reservoir which horizontally surrounds a central air-chamber, a water-reservoir that incloses the upper side of said air-chamber, and extends over a portion or the whole of the upper side of said oil-reservoir, and wick-tubes which pass downward through said water-reservoir and air-chamber, and thence extend in a curve downward, outward, and upward to, and are connected with, the bottom of said oil-reservoir, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of November, 1877.

JOHN A. FREY.

Witnesses:

FRANCIS WILLIAM LAMB,

SAMUEL LOBENTHAL.