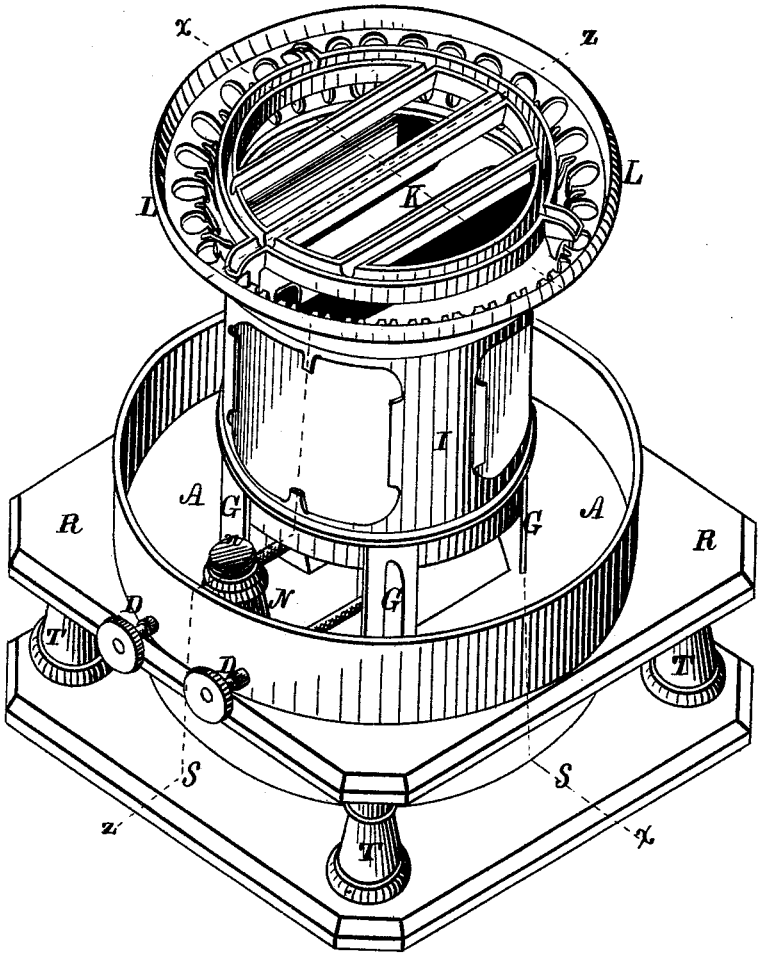
4 Sheets—Sheet 1.

J. A. FREY.

COAL OIL STOVE.

No. 185,908. Patented Jan. 2, 1877.

Fig. 1.



WITNESSES:

Jas. E. Hutchinson.

Henry C. Hazard.

INVENTOR.

John A. Frey, by

Pindle & Pindle his Attys.

4 Sheets—Sheet 2.

J. A. FREY.

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Fig. 2.

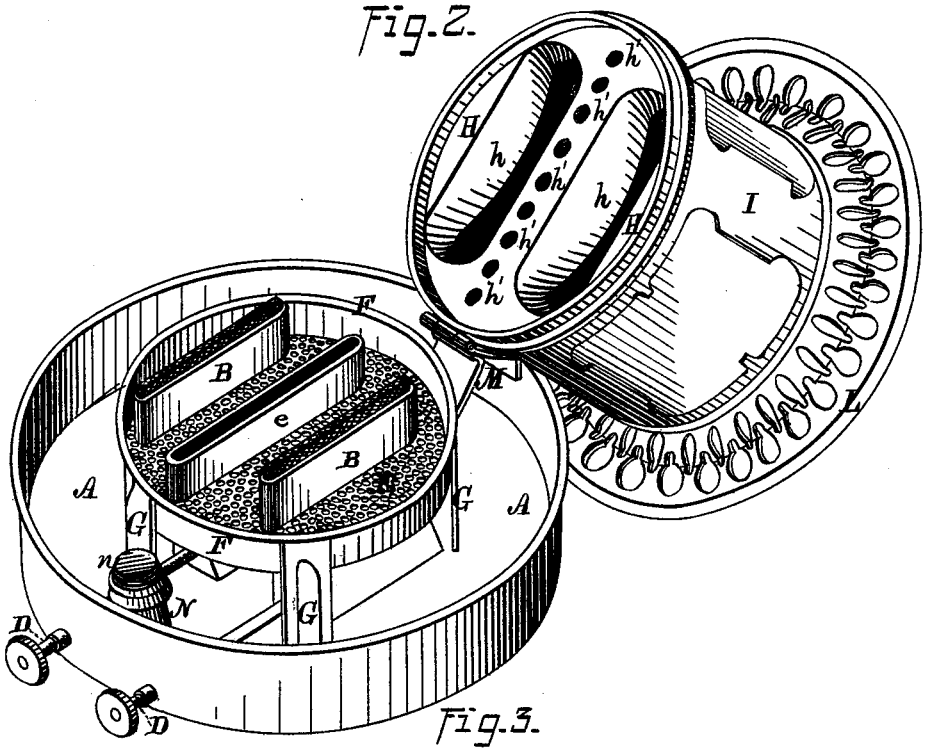
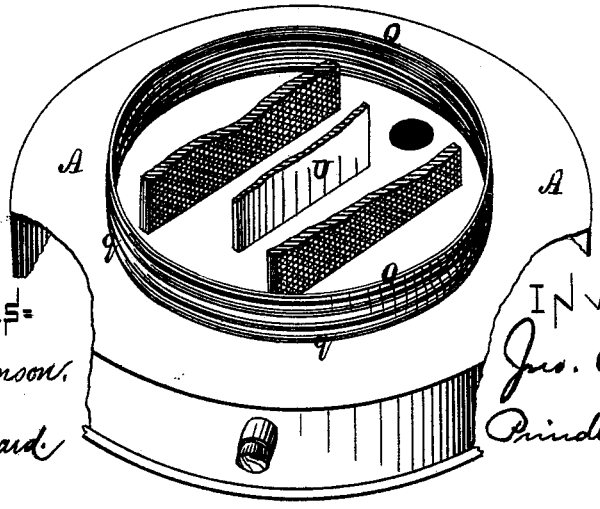


Fig. 3.



WITNESSES:

Jas. B. Hutchinson.

Henry C. Hazard.

INVENTOR.

Jno. A. Frey, by

Prindle & Lee, his

attorneys.

4 Sheets—Sheet 3

J. A. FREY.

COAL OIL STOVE.

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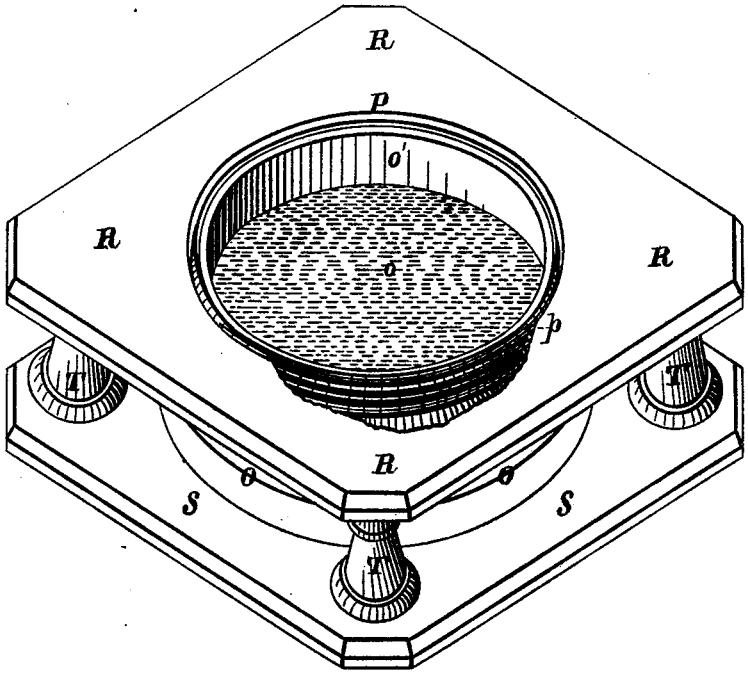
Fig. 4.



WITNESSES:

Jas. E. Hutchinson

Henry A. Hazard

INVENTOR.

Jno. A. Frey, by

Dindle & Co, his Attys

4 Sheets—Sheet 4.

J. A. FREY.

COAL OIL STOVE.

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Fig. 5.

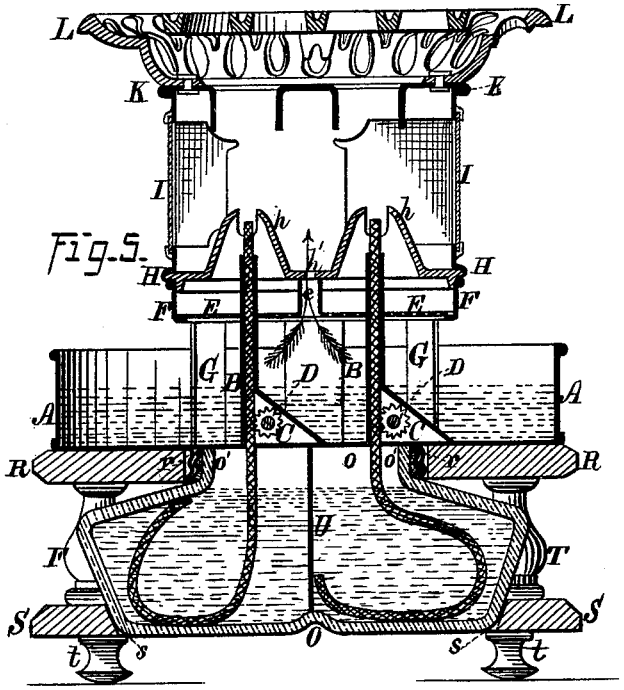
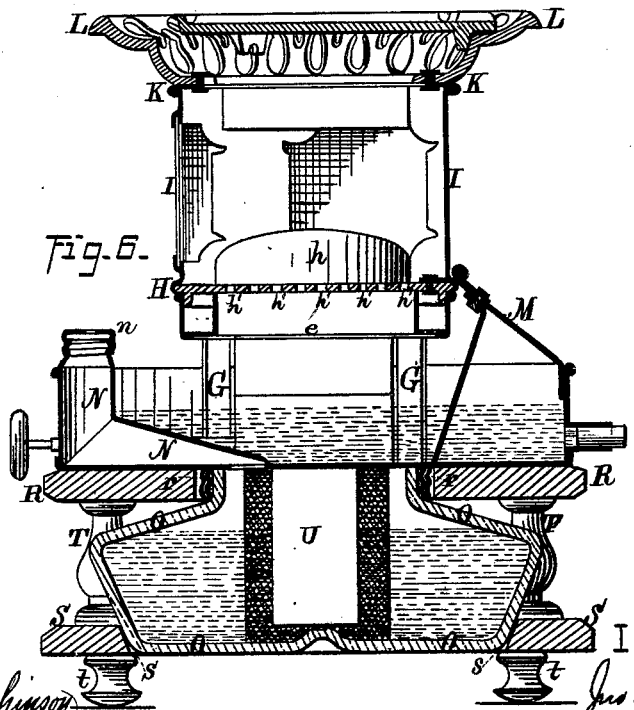


Fig. 6.



WITNESSES:

Jas. E. Hutchinson

Henry C. Hazard

INVENTOR.

Jas. A. Frey, by

Prindle & Prindle 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. **185,908**, dated January 2, 1877; application filed December 26, 1876.

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. Fig. 2 is a like view of the stove portion detached from the oil-reservoir, the heating-cylinder being turned backward, so as to expose the burners. Fig. 3 is a perspective view of the lower side of said stove-section. Fig. 4 is a like view of said oil-reservoir, and Figs. 5 and 6 are vertical central sections upon lines *x x* and *z z*, respectively, of Fig. 1.

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

My invention relates to a class of stoves which is known as "oil-stoves," and has for its object an increase in the comfort, efficiency and safety of the same; to which end it consists, principally, in an oil-stove in which are combined a body, for containing heated air and sustaining cooking utensils, one or more burners for consuming oil, an oil-reservoir, constructed of or from glass and made detachable from said body, and a frame for sustaining, inclosing, or protecting said reservoir, substantially as hereinafter specified.

It consists, further, in the means employed for protecting the oil-reservoir, substantially as is hereinafter set forth.

It consists, further, in combining, with the burners and body of a stove, an auxiliary air guide or passage, substantially as and for the purpose hereinafter shown and described.

It consists, finally, in an oil-stove provided with a water-pan below its burners, and a detachable oil-reservoir below said water-pan, and having a pipe or passage for supplying oil to said reservoir, arranged within said water-pan, and partly or wholly surrounded by water, substantially as and for the purpose hereinafter specified.

In the annexed drawings, A represents the water-pan of my stove, which has any desired horizontal dimensions, and contains the wick-tubes B, wick-wheels and shafts C and D, respectively, and has, near the upper ends of said tubes, a perforated diaphragm, E, which is secured to the same, is provided at its edge with a cylindrical upward-projecting flange, F, and at such point is sustained by several braces, G, that extend vertically between said flange and the bottom of said pan, and are secured to each. Upon the upper end of the flange F is placed a plate, H, which contains two cones or air-guides, *h* and *h*, that fit over or around the upper ends of the wick-tubes B, and perform the usual office of such parts by directing the currents of air against the flame of the oil. Secured to and extending upward from the edge of the plate H is a cylinder, I, which has, preferably, a height about equal to its diameter, and at its upper end is inclosed by means of a plate, K, that is provided with openings *k* and *k*, directly over the wick-tubes B, through which the heated escaping products of combustion pass from said cylinder. An outward and upward extending plate, L, provided with openings *l* around its sides, is secured upon the upper end of the cylinder I, and serves as a support for cooking utensils. For convenience, the cylinder I is hinged at its lower end, at one side, to or upon the support M, which enables it to be turned outward and downward, so as to uncover the burners.

The device thus constructed is substantially like that shown in my patent of October 20, 1874, and comprises the operative parts of my oil-stove.

In order that the flames from the burners may be rendered more steady, and the heat generated may be caused to pass more quickly upward against the vessel being heated, I provide a series of openings, *h'*, in and through the cone-plate H. At a point midway between the cones or air-guides *h*, and below the same, I provide a tube, *e*, which extends downward to and through the diaphragm E, and conveys air from beneath the latter to said openings *h'*. The current of air passing upward through the openings *h'* separates and steadies the flames from the burners, and causes the heat gener-

ated by the same to pass quickly to the top of the cylinder, instead, as would otherwise be the case, of remaining at its lower end.

The tubes for supplying oil to the reservoir have heretofore been outside of, and below, the water-pan but as thus arranged have been liable to become broken or injured. To obviate such difficulty I form a passage, N, within the lower portion of the water-pan A, and extend the same from near the center of said pan, where communication is had with the interior of the oil-reservoir, radially outward to or near the edge of the same, and from thence vertically upward to a convenient height, to permit its end to be closed by a screw-cap, *n*.

By this arrangement the supply-tube is removed from all liability to contact with surrounding objects, and, being covered by the liquid contents of the water-pan, cannot become heated.

Sheet-metal reservoirs for containing oil have heretofore been employed, which reservoirs have been permanently attached to or upon the stove-section, so that their interiors could not be exposed without removing the solder from the joints and separating the top or bottom plates.

In the use of this class of reservoirs the only way in which the presence or absence of a supply of oil could be ascertained was by shaking the stove, while in filling such reservoir the means for determining when it was full was the rising of the oil within the filling-tube, the result frequently being an overflow of oil.

Another difficulty arose from the inability of the operator to see the wick within the reservoir, and thereby know whether said wick was being raised or lowered by turning the wick-wheel shaft, the result being that occasionally said shaft would be turned in the wrong direction, so as to force the wick out of its tube and entirely beyond reach. The wick thus forced into the reservoir would frequently become entangled with and interfere with the movement of the wicks contained within the tubes, and when, as sometimes occurred, several wicks were contained within said reservoir, the effect would be to completely obstruct the operation of the stove.

The difficulties named are remedied by me in the following manner: I construct a reservoir, O, from glass, and at its upper end provide an opening, *o*, which has a somewhat larger diameter than is necessary for the admission of the wicks, as arranged in the stove. Surrounding the opening *o* is a vertical flange or neck, *o'*, around which is cemented a metal ring, P, that is provided exteriorly with a screw-thread, *p*, which coincides with an interior or female screw-thread, *q*, that is formed within a flange, Q, which is secured upon and depends from the bottom of the water-pan A.

As thus arranged, by placing the flange Q upon the ring P, and screwing the former down around the latter, the stove and reservoir will be firmly united, while at the same time they are capable of being easily and quickly separated.

In order that the glass reservoir may be protected from injury, it is inclosed within a frame, which is composed of two square pieces of board, R and S, that are arranged horizontally in parallel lines, and are connected together at their corners by means of posts T, constructed, preferably, from wood, which posts may extend below the lower board S, and form feet *t*; or said feet may be constructed separately and attached.

The reservoir O is, preferably, constructed with sides which flare upward and outward, and within the lower board S is provided a correspondingly-shaped recess, *s*, for the reception of the lower end of said reservoir.

An opening, *r*, for the reception of the neck portion of the upper end of the reservoir O, completes the frame, which forms a perfect protection for said reservoir from contact with articles of furniture, cooking utensils, &c.

The water-pan rests upon the upper side of the frame, which latter is thus caused to sustain the weight of the stove and of articles placed thereon.

For the purpose of preventing the wicks within the reservoir from becoming entangled with each other, I attach to or upon the lower side of the water-pan A, midway between the wick-tubes B, a plate or diaphragm, U, which extends downward to or near the bottom of the reservoir O, and effectually separates said wicks.

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

1. An oil-stove in which are combined the following-named elements, to wit: a body for containing heated air and supporting cooking utensils, one or more burners for consuming oil, an oil-reservoir constructed of or from glass and made detachable from said body, and a frame for sustaining, inclosing, or protecting said reservoir, substantially as specified.

2. In combination with the glass reservoir O, for containing oil, the protecting-frame composed of the upper and lower recessed wooden plates R and S, respectively, combined by means of the posts T, and arranged to embrace the upper and lower ends of said reservoir, substantially as and for the purpose set forth.

3. In combination with two separate and independent burners of an oil-stove, an auxiliary air guide or passage, located between the cones of said burners, and arranged to convey air into the heating-chamber of said stove, substantially as and for the purpose shown and described.

4. In an oil-stove provided with a water-pan below its burners, and a detachable oil-reservoir below said water-pan, the pipe or passage N, for supplying oil to said reservoir, arranged within said water-pan, and partly or wholly surrounded by water, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of December, 1876.

JOHN A. FREY.

Witnesses:
C. SEDGWICK,
J. H. SCARBOROUGH.