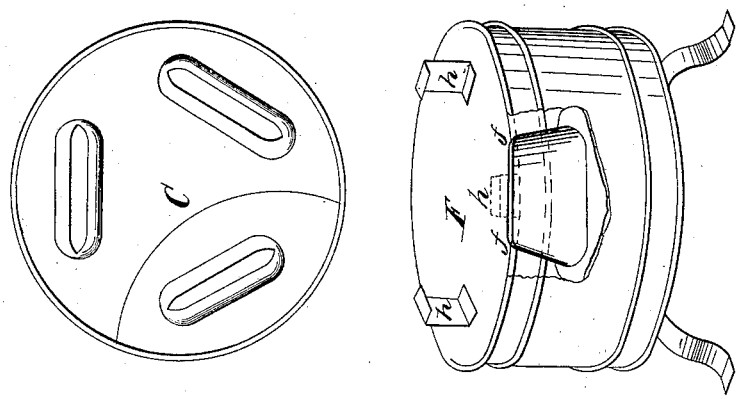
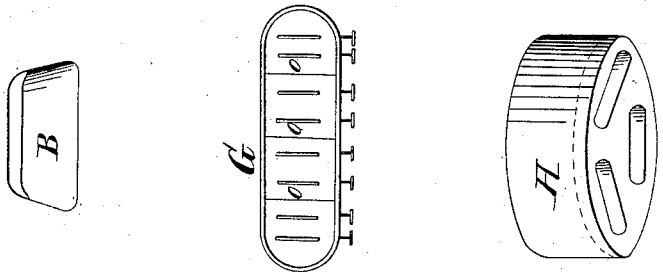
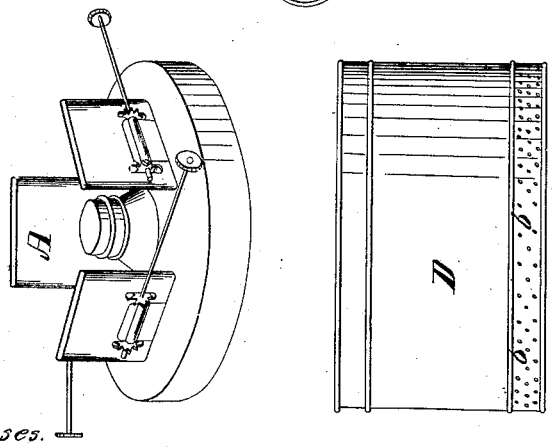
W. B. BILLINGS.

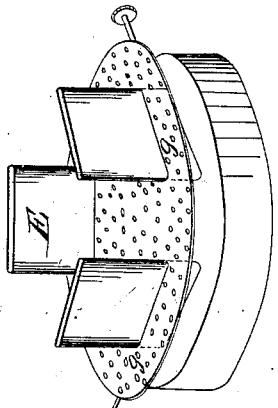
COAL OIL STOVE.

No. 45,957. Patented Jan. 17, 1865.









Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM B. BILLINGS, OF NEW YORK, N. Y.

COAL-OIL STOVE.

Specification forming part of Letters Patent No. **45,957**, dated January 17, 1865.

To all whom it may concern:

Be it known that I, WILLIAM B. BILLINGS, of the city, county, and State of New York, have invented a Coal-Oil Stove, of which the following is a specification.

The nature of my invention consists in a new mode or process of using coal-oil and petroleum for cooking and heating purposes. The great desideratum in this direction is, to produce an open fire from petroleum or coal-oil, at the same time obtain as perfect combustion substantially as can be produced by using the flues or common burner and chimney. This I claim to have accomplished.

I am familiar with the various heaters and cooking apparatus now made under the different patents granted to Warren L. Fish; also with the coal-oil stoves of Fulton, Eddy, Tuxworth, and others, all of whom use a flue or chimney—some in one way, some in another—but while I do not pretend to escape the necessity of using air, which I obtain by induction, I do claim to get all the air necessary by altogether other means than from a flue or chimney.

The foundation of my present invention rests on the simple principle set forth in my application for Letters Patent for an improvement in coal-oil burners, filed in the Patent Office in March, 1864, and allowed April 1, 1864, and I now propose to apply the same theory in a practical way to heating and cooking.

Beside the great end to be obtained of producing an open fire from petroleum and coal-oil there are other practical points to be gained of almost equal importance—viz., insulating the lamp or oil-holder from the rest of the stove, so that, no matter how much heat be attained above, the oil-holder remains comparatively cool—simplicity, durability, and cheapness in the construction of the whole, all of which I claim to have attained more completely than any of my predecessors.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and mode of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The material used may be common tin or sheet-iron. Both of these may be used to advantage, while light iron castings will be found preferable for some parts.

First, the oil holder or lamp. For a heater or stove of medium size and capacity I construct a vessel, round, (or any other particular shape desired,) about seven inches in diameter and two inches high. In the cover or top of this vessel I insert and fasten one or more wick-tubes—say, three wick-tubes—two inches wide, about two inches long, and with a slot so thin that a wick made of stout Canton flannel will pass through with ease. The ratchet-wheels and shaft for moving the wick I attach to the wick-tubes in the usual manner, with the shaft running nearly close to the cover, and the thumb-piece or button on the end of the shaft extending over the edge or side. (See Drawing A.) The cover may be attached to the body of the oil-vessel by a hinge on one side and a catch on the other, or fitted on like the cover of a common sauce-pan, or soldered on, in which case a feed-hole must be inserted through which to fill the lamp. The device for guiding the air into the flame, and to be placed over the wick-tube, is shown in drawing B. These air-guides I fasten into a diaphragm about one-fourth of an inch larger in diameter than the lamp A. The relative position of the air-guides in the diaphragm should be the same as that of the wick-tubes in the lamp A. (See Drawing C.) I next construct a cylinder of the same diameter as the diaphragm C and about four inches high. The diaphragm C is fastened into this cylinder about half an inch from one end, which is to be the bottom or lower end. (See Drawing D.) I cut out another diaphragm about one-eighth of an inch larger than the diaphragm C, with slots in it, through which the wick-tubes in lamp A will pass. (See Drawing E, with letters *g g*.) Either this diaphragm *g g* must be perforated with small holes or the cylinder D below the diaphragm C must be perforated. (See letters *b b* in Drawing D.) Both may be perforated, but either one being perforated will answer the purpose. I attach three or more supports or legs to the bottom of the cylinder D, of sufficient length that, when it is placed over the lamp A, the corners of the wick-tubes will be on a level with the lowest point in the slot or mouth of the air-guides in diaphragm C. (See Drawing

F, with letters *f f*.) The diaphragm *g g*, when the cylinder D is in its place, should come up close to the end or bottom of it, and either be fastened to the wick-tubes in its place or to the bottom of the cylinder C, in which case the slots in the diaphragm *g g* should be just large enough to allow the wick-tubes to pass in and out without rubbing. When the diaphragm *g g* is fastened to the cylinder D and placed over the lamp A, the whole should be so adjusted that neither the body of the lamp nor the wick-tubes touch any part of the cylinder D on the diaphragms C and *g g*. This is easily done by having the whole rest upon a board or block, the lamp held in its place by pins, notches, or hooks, and the legs of the cylinder D also made fast to the same block or board, and when the whole is thus adjusted the lamp A is completely insulated from the rest of the stove or heater, as the cold air-chamber between the diaphragms C and *g g* effectually prevents the heat from being thrown upon the lamp A, and even where the wick-tubes are fastened to the diaphragm *g g* the heat at this point could never be strong enough to give the slighest trouble, as the diaphragm *g g* never becomes more than warm.

The current of air necessary to obtain perfect combustion, or substantially so, is produced by the cylinder D; but this would be too slight a draft for any burner but the one here used, or one constructed substantially like it or upon the same theory. Of course the top of the cylinder D should never be entirely closed. A kettle or sauce-pan may be set into the cylinder an inch or more, but a space must be left between the kettle and the cylinder to allow the heated air to pass out. The hooks *h h h*, riveted on the top of the cylinder D, show how a vessel can be supported on top and inside of it.

A single stove or heater complete is shown in Drawing F.

A stove or range can be constructed of any capacity required. Drawing G represents a stove or range of the capacity of three single stoves, as shown in Drawing F. The partitions *o o o*, in Drawing G, are not absolutely necessary to the working of this size range, but the draft is better, and, therefore, the combustion more perfect, especially when only a part of the wicks are burning at a time. It renders each section independent of the other. These partitions may be movable, and even in the single stove, when only one wick is burning, the movable partition will be found to increase its efficiency. Of course the partitions, whether movable or stationary, should not come up to the top of the stove or range by an inch or more.

I will describe another way in which the heat from the stove can be kept from the lamp or oil-holder. Fill the space between the diaphragms C and *g g* with a slab of cork-wood, or pack it with granulated cork, asbestus, or any similar non-conductor of heat adapted to the purpose, leaving an opening under each air-guide for air. (See Drawing H.) This plan would be more expensive than the air-chamber, but at the same time efficient.

What I claim as my invention, and wish to secure by Letters Patent of the United States, is as follows, viz:

1. The use and adaptation of the body or sides of the stove or range D, to serve as and perform the office of a flue or chimney over the lamp or oil-holder A, substantially as described, and for the purposes set forth.

2. The attaching of one or more air-guides, cones, or deflectors in the diaphragm C, and the adjustment of the same in the stove or range F, substantially as described, and for the purposes set forth.

3. The arrangement of the diaphragms C and *g g*, thus forming an air-chamber between the oil-holder and stove or range, substantially as described, and for the purposes set forth.

4. A non-conductor of heat used as a packing between the stove and oil-holder, arranged substantially as described and set forth.

5. The insulation of the lamp or oil-holder by non-contact with the heater, stove, or range, substantially as described and set forth.

In testimony of which invention I hereunto set my hand.

W. B. BILLINGS.

Witnesses:
A. H. WARREN,
C. S. TALLMADGE.