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J. ABSTERDAM.

FIRE KINDLER.

No. 397,576. Patented Feb. 12, 1889.

Fig. 1.

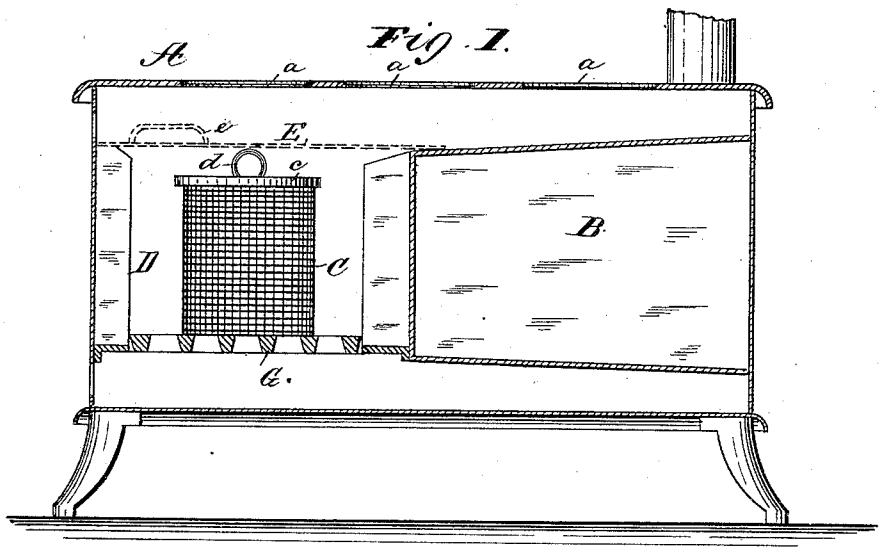
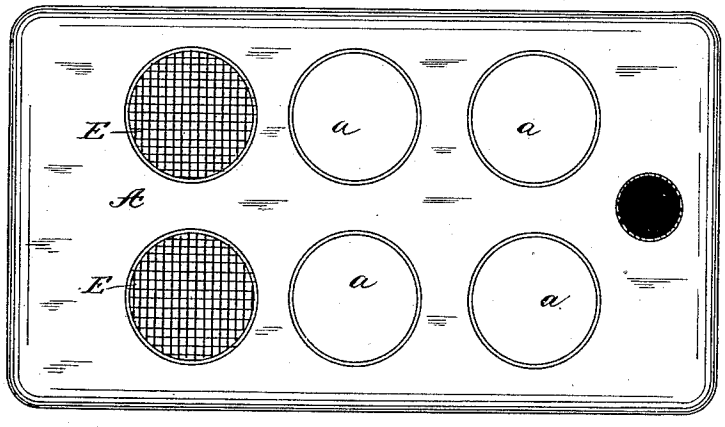


Fig. 2.



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Fig. 3

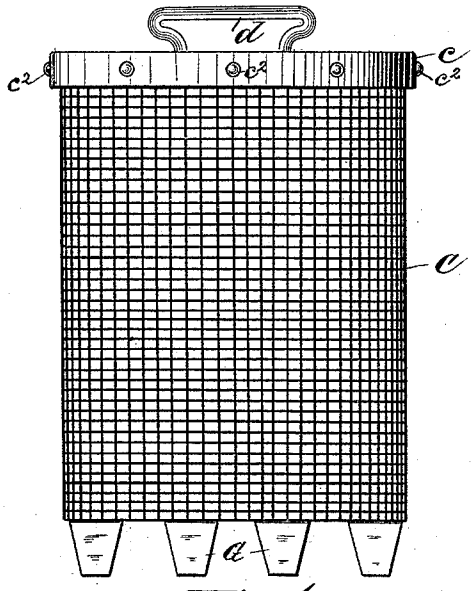
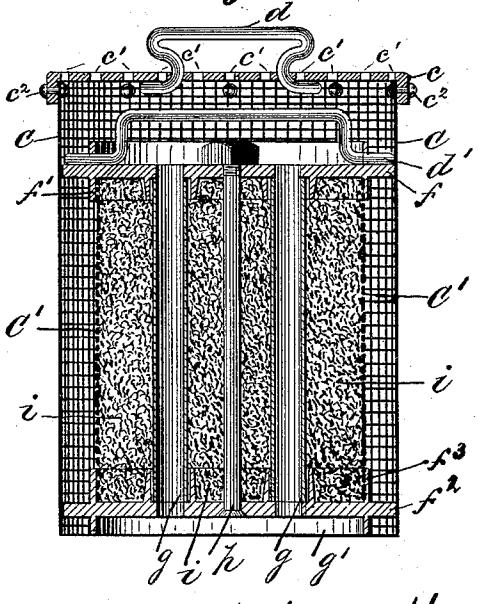


Fig. 4



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Fig. 5.

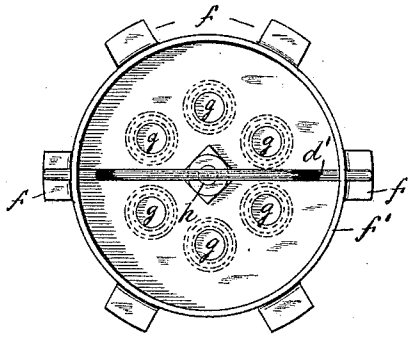
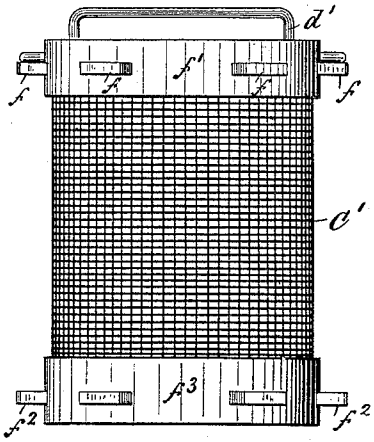


Fig. 6.



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FIRE KINDLER.

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Fig. 7.

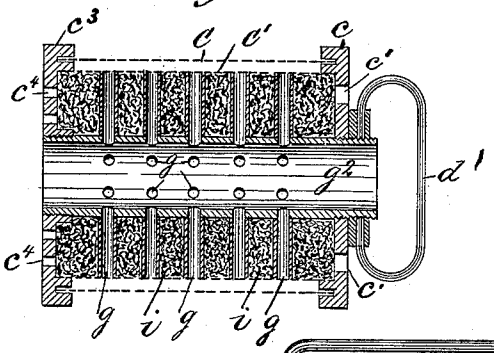


Fig. 8.

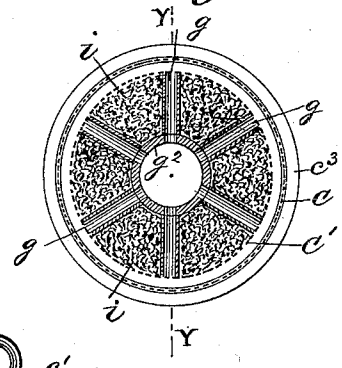


Fig. 9

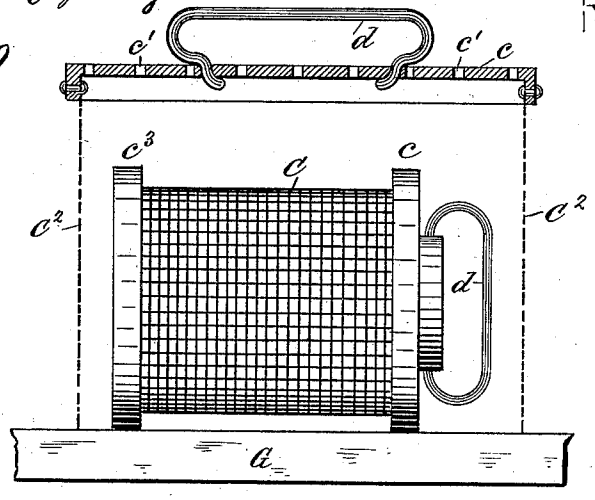


Fig. 10.

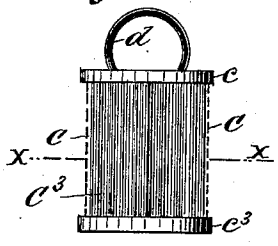


Fig. 11.

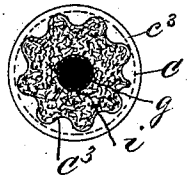


Fig. 12.

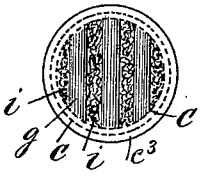
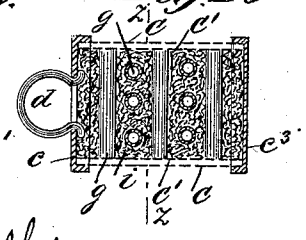


Fig. 13



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UNITED STATES PATENT OFFICE.

JOHN ABSTERDAM, OF NEW YORK, N. Y.

FIRE-KINDLER.

SPECIFICATION forming part of Letters Patent No. 397,576, dated February 12, 1889.

Application filed August 19, 1887. Serial No. 247,361. (No model.)

To all whom it may concern:

Be it known that I, JOHN ABSTERDAM, of the city, county, and State of New York, have invented certain new and useful Improvements in Burning Petroleum as Fuel in Coal or Wood Cooking or Heating Stoves and Fire-Grates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to that class of inventions for burning petroleum where the oil is absorbed by some substance, matter, or material—such as asbestus, mineral wool, or other absorbing matter—which is incombustible. These contrivances are generally made into cylinders of wire-cloth or perforated metal, or both, and are filled with asbestus or mineral wool. Some are called "fuel-cartridges" and others "indestructible fuel-burners," &c. These fuel cartridges or burners are generally made from two to four inches in diameter and from five to ten inches in length. They are placed in a tin can containing petroleum, or petroleum is poured over them, of which they absorb from one-quarter of a pint to one pint of oil, according to their size. After the oil is thus absorbed they are placed on the grate of any cooking or heating stove or open fire-place and ignited. The oil so absorbed is then burned as fuel, and, as these cylinders are made of incombustible material, they themselves do not burn. After the oil is burned the cylinders are again immersed in petroleum and repeatedly used in the stoves or fire-grates for burning the absorbed oil as fuel. These incombustible cylinders are made to absorb a large amount of oil in a small compass, and when they are used as fuel in the stove or fire-grate they produce a very smoky flame, owing to the lack of sufficient oxygen to consume the carbon, a great quantity of which passes off as smoke without being consumed, thereby filling the stove or grate and flues with lamp-black or soot in a short time.

The object of my invention is to remedy this defect; and it consists in surrounding or covering the oil-absorbing contrivance on the grate of a stove, range, or open fire-place with a wire-cloth or perforated metal jacket, hood, cap, or cover, thereby forming an air-chamber between the absorbing matter and said jacket, hood, cap, cover, or screen for mixing the oil-flame with atmospheric air in passing through the perforations or the interstices of the wire-cloth, thereby consuming the smoke and producing a great heat.

The contrivance containing the absorbing matter I denominate a "fuel-canister."

In making my fuel-canisters, if they are intended to be set upright on the fire-grate of a stove, range, or open fire-grate, I prefer making them with one or more flues in their longitudinal direction, and the jacket, hood, or screen for the canisters is made accordingly, leaving at least from three-eighths to one-half of an inch space around between the sides of the canister and the said hood, jacket, or screen and at least one to three inches space on top, and instead of using mineral wool or asbestus as the absorbing material some of the absorbing earths may be used, and in place of using a perforated metal or wire-cloth casing for the canisters the earthy matter may be cemented into bricks, and the flues or channels may be made in the brick, either lengthwise or crosswise, when the bricks are molded.

In the accompanying drawings, Figure 1 is a front view of a stove with the front removed containing my canister on the fire-grate of the stove. The wire-cloth hood, jacket, or screen is the visible part, while the fuel-canister is inside of the screen, and the wire-cloth cover in the stove above the canister is shown in section. Fig. 2 is a top view of the said stove with two lids over the fire-grate removed, showing a top view of the wire-cloth cover over the canister on the fire-grate. Fig. 3 is a side elevation of the surrounding jacket, hood, or screen having the canister therein contained in the stove. Fig. 4 is a longitudinal section of the canister and jacket, hood, or screen around the canister. Fig. 5 is a top view of the canister. Fig. 6 is a side elevation of the same. Fig. 7 is a longitudinal section of a modification of my canister. Fig. 8 is a cross-section of the same. Fig. 9 is a side view of the same canister placed on

the grate-bars of a stove or open fire-grate in a horizontal position with the wire-cloth hood or screen over the same. Fig. 10 is a side view of a corrugated canister with a cylindrical wire-cloth jacket or screen around it. Fig. 11 is a cross-section of the same. Fig. 12 is a cross-section of another canister with tubular channels crosswise to the axis of the canister. Fig. 13 is a longitudinal section of the same. Like parts are indicated by similar letters of reference in the different views.

In the drawings, A represents the stove. B is the oven. C′ is the wire-cloth casing of the canister. D is the fire-box of the stove. E is the wire-cloth cover drawn over and above the wire jacket and canister in the fire-place in the stove, and G represents the grate-bars.

In Figs. 1 and 2, *a* represents the lids of the stove, two of which are removed from over the fire-place, showing a top view of the wire-cloth cover E. *c* represents the cap or top part of the jacket, hood, or screen C. *d* represents the handle of said hood or screen, and *e* represents the handle of the wire-cloth cover E in Fig. 2.

In Figs. 3 and 4, *c* represents the iron cap or top of the jacket, hood, or screen. *d′* is the handle of the fuel-canister. *f* represents wings or projections from the upper flange, *f′*. f^2 represents wings or projections around the lower flange, f^3. *g* represents tubes forming flues or tubular air-channels through the absorbing material. *g′* represents the projecting ends of the top and bottom flanges, which form a cup-like cavity at both ends of the fuel-canister. *h* is a bolt fastening tight both flanges against the ends of the wire-cloth cylinder C, thereby forming the fuel-canister. *i* represents the absorbing material in the canister.

In Figs. 5 and 6, *d* represents the handle of the canister. *f* shows the wings or projections of the top flanges. *f′* represents the top flange of the canister. f^2 represents the wings or projections of the lower flange, and f^3 represents the lower flange of the canister. *g* represents tubes or tubular channels through the upper flanges and is the head of the bolt and nut of the canister.

In Figs. 7, 8, and 9, C represents a stationary cylindrical wire-cloth jacket or screen surrounding the wire-cloth or perforated cylinder of the canister, forming a canister of two separate cylinders—one within the other—and separated from each other one-half to five-eighths of an inch, both cylinders being secured in place by the flanges *c* and c^3. c^2 represents a sectional view of a rectangular wire-cloth hood or screen, with its lower end resting on the fire-grate G, inclosing a fuel-canister therein. *d* is the handle of the hood or screen, and *d′* is the handle of the canister. *c′* are perforations in the top flanges, and c^1 shows perforations in the bottom flanges. *i* represents the absorbing material in the canister. *g* represents the tubes standing crosswise in the canisters, leading into a central tube or flue, g^2.

The longitudinal section of Fig. 7 is cut as shown at Y Y in Fig. 8.

In Figs. 10 and 11, C is the outer wire-cloth jacket. C^3 represents the sides of corrugated wire-cloth or perforated-metal canister and the outer wire-cloth jacket, as well as the inner corrugated cylinder, and held in their proper places by the iron flanges *c* and c^3, fastened together by means of the central flue, *g*. (Shown in the cross-section 11.) *i* represents the absorbing matter, and *d* is the handle of the canister, the cross-section 11 being cut at X X. (Shown in Fig. 10.)

In Figs. 12 and 13, C represents the outer stationary jacket of wire-cloth, and C′ represents the inner wire-cloth or perforated-metal cylinder. *c* and c^3 represent the top and bottom flanges. *d* is the handle of the canister. *i* represents the absorbing material in the inner cylinder, and *g* are the tubes placed crosswise among the absorbing material in the canister.

The cross-section, Fig. 12, is cut at Z Z. (Shown in Fig. 13.) The jacket, hoods, caps, or cover, which I designate as being made of wire-cloth, may be made as well of perforated metal or of perforated earthenware or of such material as is made to stand a very high fire-heat.

In making the removable jackets, hoods, or caps I either make them with sides and top of wire-cloth or perforated metal or I make the cylindrical or rectangular part of the jacket or hood of wire-cloth or perforated metal and the top part of metal without perforations; or I make the cylindrical or rectangular part of metals or of earthenware without any perforations, and I make the top part of wire-cloth or of perforated metal or of fire-proof earthenware, as the case may require, according to the heat that my canister may be made to produce. In the absence of a surrounding screen or hood, I place a wire-cloth or perforated-metal cover in the stove over the fire-place, resting on the stove-oven and fire-lining over the canister, so that when the oil of the canister is ignited the flame from the same is made to pass through the perforated cover mixed with atmospheric air, which reduces the amount of smoke and increases the heat.

In its operation the fuel-canister is placed upright into a tin can which is higher and a little larger in diameter than the canister. Oil is then poured over the canister and into its tubes until the tin can is full. In a few minutes the canister will absorb all the oil it can take up. If it is a canister with longitudinal flues, it is placed upright on the grate of the stove, &c., and the perforated hood or jacket is placed over it, the lower end of the hood or jacket resting on the grate. After replacing the lid of the stove a burning piece of paper is introduced through the grate under the canister, from which the oil

will readily ignite. The oil-flame, passing through the perforations or meshes of the hood or jacket, mixes with atmospheric air, dividing into a great multitude of small jets, which, with the aid of the air supplied by the tubes in the interior of the flame, consume the smoke and produce a great amount of heat. When, however, it is desired to still further consume the smoke, a wire-cloth fire-place cover so constructed as to lie on the top of the oven of the stove when not in use is drawn over the canister in the stove, so that the flame after passing through the wire-cloth hood, jacket, or cap will pass through the said cover mixed with an additional amount of atmospheric air drawn from under the grate-bars outside of the said hood or jacket, so that the flame out of the wire-cloth cover will be still less smoky and will produce a greater amount of heat in the stove.

When the oil in the canister is burned out, the wire-cloth cover is pushed back over the oven, the hood or jacket is taken out, and the canister is lifted out of the stove and set to cool off, when, if the fire is to be continued, another canister impregnated with petroleum is placed on the grate-bars, the hood or jacket placed over the canister, and the fire again started and continued as before.

If the canister is placed horizontally in the stove, its appropriate hood is placed over it and the fire started, as before described. The wire-cloth cover in the stove may be used or not over the canister's hood or jacket, as the case may require, and for some purposes the said wire-cloth cover may be used as a substitute for the said jacket or hood.

The canister made with longitudinal flues may also be placed on the fire-grate in a horizontal position, if so desired; but in that case the hood made for that purpose must be used, which hood is rectangular in form, instead of being cylindrical. When the absorbing contrivance is made in the form of a brick without any outside casing, then I make them with crosswise flues or channels. After they have absorbed the petroleum I place them laterally on the fire-grate bars with tubular channels turned perpendicularly, so as to form upright channels for supplying atmospheric air into the oil-flame, and in this case I place over the brick on the grate-bars the rectangular wire-cloth hood and place the stove wire-cloth cover over the flame for better consumption of the smoke, as before stated.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination with an oil-absorbing canister, a reticulated metal screen surrounding said canister and separated therefrom, whereby a free air-space will be left between said canister and screen, substantially as described.

2. A fire-kindler consisting of an oil-absorbing canister having draft-passages through it, and a reticulated metal screen surrounding said canister and separated therefrom, whereby a free air-space will be left between said canister and screen, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 18th day of August, 1887.

JOHN ABSTERDAM.

Witnesses:
JOSIAH C. LONG, JR.,
J. LUTHER BRIGHT.