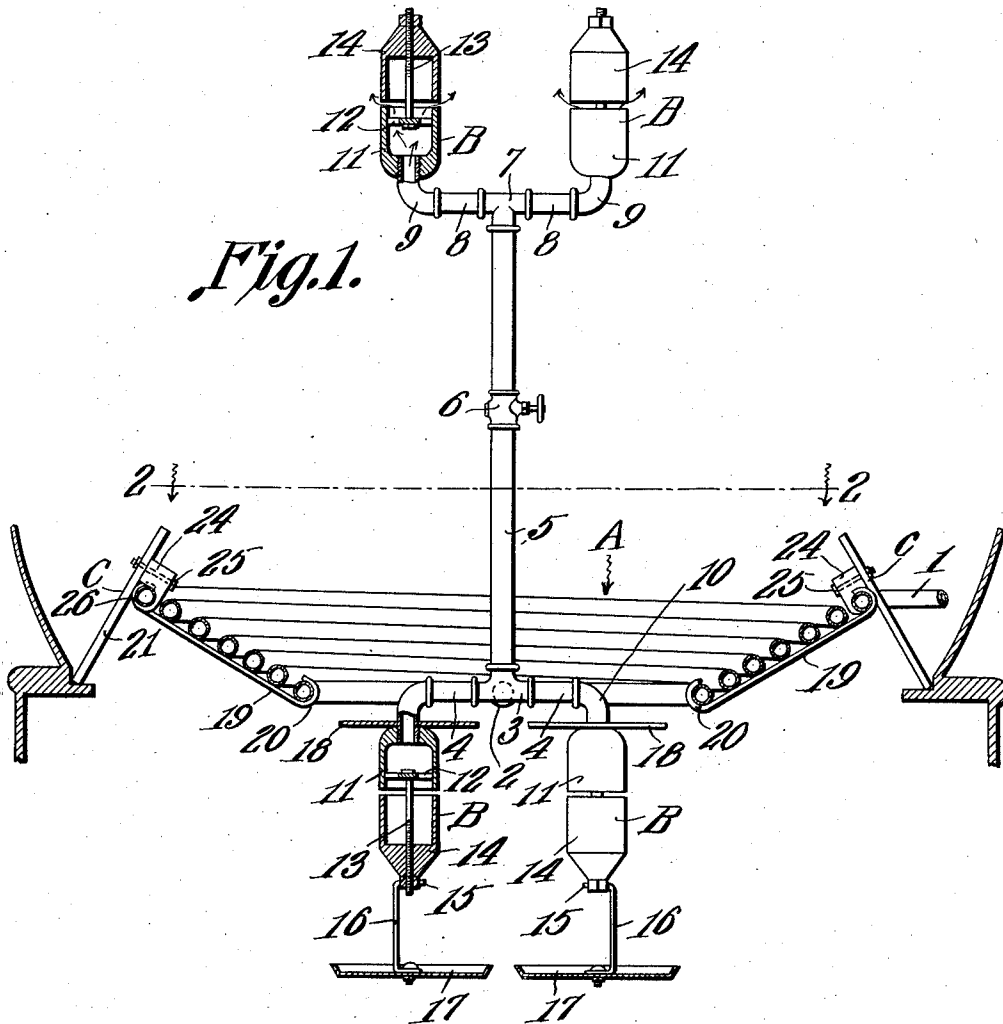


W. R. McHILL.
LIQUID FUEL BURNER.
APPLICATION FILED MAR. 9, 1911.

1,025,636.

Patented May 7, 1912.

2 SHEETS—SHEET 1.



Witnesses

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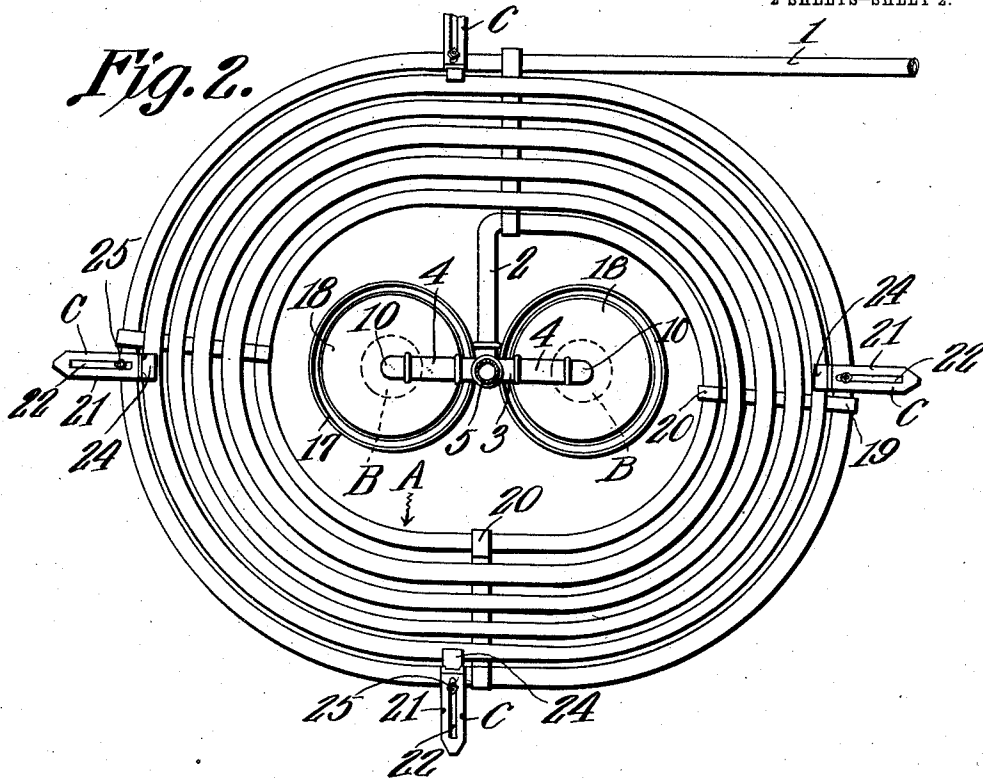


Fig. 3.

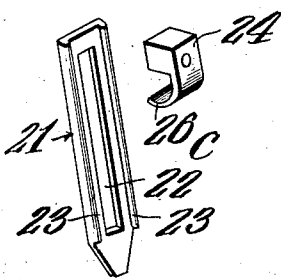
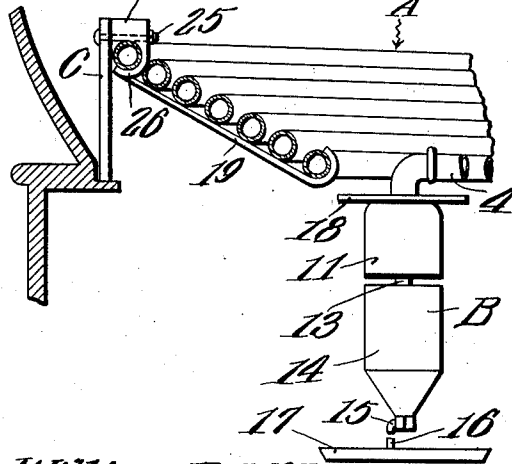


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM R. McHILL, OF MORAN, KANSAS, ASSIGNOR OF ONE-THIRD TO JAMES H. CRAMER, OF MORAN, KANSAS.

LIQUID-FUEL BURNER.

1,025,636.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed March 9, 1911. Serial No. 613,279.

To all whom it may concern:

Be it known that I, WILLIAM R. McHILL, a citizen of the United States, residing at Moran, in the county of Allen and State of Kansas, have invented a new and useful Liquid-Fuel Burner, of which the following is a specification.

This invention relates to burners and more particularly to the class of liquid fuel burners, and is an improvement on Patent No. 976,820, issued to me November 22, 1910.

The primary object of the invention is the provision of a fuel burner of the above-stated character, having a generator consisting of a coiled tube each convolution of which is of smaller diameter than the preceding one, so as to present a maximum heating surface to the radiation of heat from the burner arranged below the said generator.

Another object of the invention is the provision of a liquid fuel burning device comprising a generator consisting of a coiled tube having a burner, or plurality of burners, connected to the inner end thereof so as to provide sufficient heat when in operation to thoroughly vaporize all of the oil contained within the generator, thus producing a gas which will burn readily and effectively.

With these and other objects in view as will appear as the description proceeds, the invention comprises various novel features of construction and arrangements of parts, which will be more fully described hereinafter and set forth with particularity in the appended claims.

Referring to the drawings: Figure 1 is a sectional elevation of my improved device, showing the same adjustably disposed upon a support, such as shown and described in my former patent, Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1, looking in the direction of the arrow, Fig. 3 is a detail perspective view of the adjustable support, Fig. 4 is a fragmentary sectional view illustrating the manner in which the generator is supported in a stove.

Similar characters of reference are used to denote like parts throughout the accompanying drawings and the annexed description.

My improved liquid fuel burning mechanism comprises a generator A having a burner or plurality of burners B connected

thereto, and adjustable supports C for supporting the entire device in position. The generator A consists of a coiled tube each convolution of which is smaller than the preceding one, the smallest convolution being arranged lowermost. It is to be understood that the coils forming the generator may be of any desired shape, but preferably are elongated in form, as shown in Fig. 2. The upper end of the tubing of the coil is connected to an oil supply pipe 1 entering the stove at any suitable point, and is connected to a tank or other suitable source of supply (not shown), the tank being preferably elevated so as to give a gravity feed. A suitable controlling valve such as a needle valve is to be arranged in the supply pipe between the stove and the supply tank. The inner lower end of the coiled tube forming the generator is bent to form an angular arm 2 which extends into the center of the lower convolution of the coil and is connected to one side of a T-coupling 3 arranged longitudinally of the coil, and threaded into the opposed ends of the T-coupling are pipe nipples 4. Threadedly connected to the upper portion of the T-coupling is a vertically extending pipe 5 which has arranged therein a controlling valve 6, the upper end of the said pipe 5 being connected to a T-coupling 7 similar to the T-coupling 3. Laterally extending pipe nipples 8 are connected to the opposed ends of the said T-coupling 7 and to elbows 9 which are threadedly connected with the upper set of burners B, so as to support the latter in vertical position. The outer ends of the pipe nipples 4 are threadedly connected to elbows 10 which extend downwardly and support the lower set of burners B in position beneath the coils of the generator.

It is to be understood that the construction of the upper and lower set of burners is identical, therefore a description of one will suffice for all.

Each of the burners B is formed of a tubular casing comprising a cup-like portion 11 into one end of which is threaded the end of the elbow or coupling 9 or 10 respectively. Arranged transversely of the members 11, which are preferably of circular form in cross section, is a spider 12 having a central opening into which is secured the end of a threaded stem or rod 13, which

latter has its outer end threaded to adjustably support a tubular member 14 which has its outer end cone-shaped and the apex thereof squared, for a purpose which will presently appear. By reference to Fig. 1 it will be seen that the intervening space between the members 11 and 14 may be varied at will by adjusting the member 14 upon the stem 13, the outer squared portion of the member 14 affording means whereby the latter may be rotated by applying a wrench to the squared portion to adjust the member 14 vertically. The squared portions of the outer ends of the members 14 of the lower set of burners B are each provided with an aperture extending laterally through the same and into which is positioned the upper laterally extending arm 15 of a depending drip-pan supporting arm or hanger 16. Each of the pans 17 is provided centrally with an aperture through which a bolt is passed to secure the pan to the lower end of the support 16.

Each of the lower set of burners B is provided with a deflector 18 comprising a flat disk provided centrally with an aperture through which the lower end of the coupling 10 extends, said disk being arranged to rest horizontally upon the top of the burner. The convolutions of the generator are provided at suitable spaced intervals with retaining straps 19 which are provided with inturned hooks 20 on the outer ends thereof whereby the convolutions of the generator will be held in place under all conditions during the use of the said generator.

Each of the adjustable supports C comprises an elongated standard 21 having a slot 22 therein and extending approximately throughout the length thereof. Each of the standards 21 is provided along its longitudinal edge with guide flanges 23 between which is adjustably supported a clamp member 24 having a bolt 25 passing through the upper part and the guide slot 22, and having its lower portion provided with a hook 26. The hook is adapted to be positioned around the upper convolution of the generator so as to support the latter. One end of the standard 21 rests upon a suitable support within a stove, furnace or the like, such as a grate-supporting flange arranged within the stove.

Referring to Fig. 4 it will be seen that the adjustable supports for the generator can be adjusted to support the latter within a stove, furnace or the like of smaller dimensions than the stove adapted to contain the previously described arrangement of the supports. When it is desired to change the generator from a stove of large dimensions to one of smaller, the bolt 25 adjustably securing the clamp member 24 upon the standard 21 is loosened, the clamp and support

moved laterally to approximately vertical position, after which the bolt is again tightened up in order to prevent the clamp 25 from moving up and down upon the standard 21, thus securing the device in the desired adjusted position.

In operation, the oil is turned on and allowed to run through the coils of the generator into the burners B until it flows out between the members 11 and 14 of each burner, into the drip-pans 17 respectively. After a sufficient quantity of oil has run into the pan, the supply is shut off and the oil in the pan ignited. The radiation of heat from the burning oil quickly heats the coil, and before the oil burns entirely out, the supply is again turned on, and, passing through the heated coil, is vaporized, and in this form passes into the burners B, from which it issues through the opening between the members 11 and 14 at which point the gas or vapor is ignited. Until the coils have become sufficiently heated to produce sufficient gas for the burner, the flames arising from the oil contained within the drip-pan will be deflected laterally into close proximity to the coils, so that the maximum heating surface presented by the coils will be acted upon by the radiation of heat from the flames. The intensity of the flame of each burner may be varied at will by adjusting the members 14 upon the stems 13 of the members 11.

It will be noted by the arrangement and use of the valve 6 arranged between the upper and lower set of burners that the upper set may be cut out of use at any time.

It is to be understood that I do not desire to limit myself to the number of burners shown, but that any suitable number may be used if found necessary to effectively vaporize the oil contained within the generator.

From the foregoing description taken in connection with the accompanying drawing, the arrangement of parts and method of operation will be readily apparent to those skilled in the art to which the invention relates, and while I have described the principal operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that such changes may be made when desired as are within the scope of the appended claims.

Having thus described my invention, what I claim as new is:

1. In a mechanism of the character described, comprising a coiled tube, each convolution of which is smaller than the preceding one, an adjustable support for the generator, a plurality of burners connected to the inner end of the coiled tube and disposed centrally beneath the same, said burners each consisting of a pair of tubular

members, a stem supported in one of the members and projecting outwardly therefrom, the other member of the burner being threadedly connected to the said stem whereby it may be adjusted upon the stem to vary the discharge opening of the burner, a deflector arranged upon the burner, said deflector being in the shape of a disk, and a drip pan detachably connected to the burner.

2. In a mechanism of the character described, a generator comprising a coiled tube, a support therefor, a burner arranged beneath the coiled tube and connected to the inner end thereof into which the coil discharges, said burner comprising a hollow cup-like member, a spider arranged in said member, a stem secured centrally of the spider and projecting from said member, a cup-like member adjustable upon the outer end of the stem and having a conical-shaped outer end the apex of which is squared to provide a means for adjusting the member upon the stem so that the discharge opening between the said members may be varied in size, a drip-pan detachably connected with the said squared end of the last-mentioned member, and a deflector comprising a flat apertured disk mounted upon the burner and surrounding the inlet pipe of the burner.

3. In a mechanism of the character described, an adjustable support, a generator comprising a coiled tube each convolution of which is smaller than the preceding one, a pair of burners arranged above and below the generator and having connection with the inner end of the coiled tube of the generator, a valve arranged between the upper and lower pair of burners whereby the said upper pair of burners may be cut out of use.

4. In a mechanism of the character de-

scribed, a support, a generator comprising an elongated coiled tube, each convolution of which is smaller than the preceding one, burners arranged above and below the generator vertically and centrally thereof into which the coiled tube discharges, a valve arranged between the upper and lower burners, a deflector plate arranged upon the top of the lower burner, and a drip-pan detachably connected to the bottom of the lower burner.

5. In a mechanism of the character described, a support, a generator comprising a coiled tube, each convolution of which is smaller than the preceding one, a plurality of burners arranged centrally above and below the generator and connected together, the lower discharge end of the coiled tube being connected to the lower set of burners, and a valve arranged between the upper and lower set of burners whereby the upper set of burners may be cut off.

6. In a mechanism of the character described, a support, a generator arranged upon the support and comprising a coiled tube each convolution of which is smaller in diameter than the preceding convolution, retaining straps connecting the upper and lower convolutions, and sustaining the intermediate convolutions of the coil, and a burner connected to the inner end of the coiled tube and provided with an outlet opening.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM R. McHILL.

Witnesses:

H. G. COLCORD,
W. H. LACEY.