

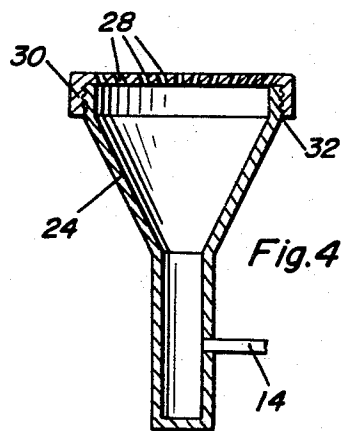
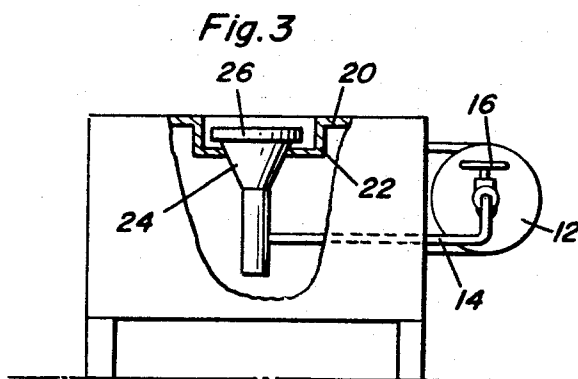
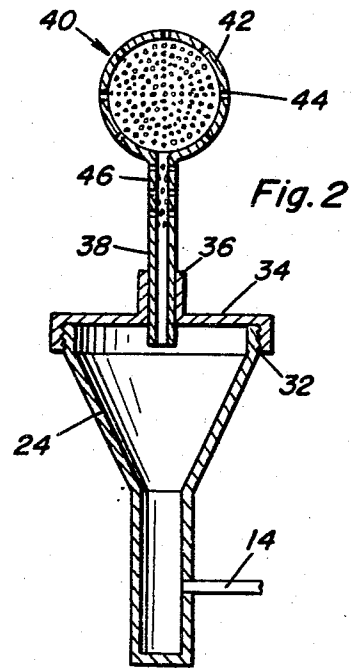
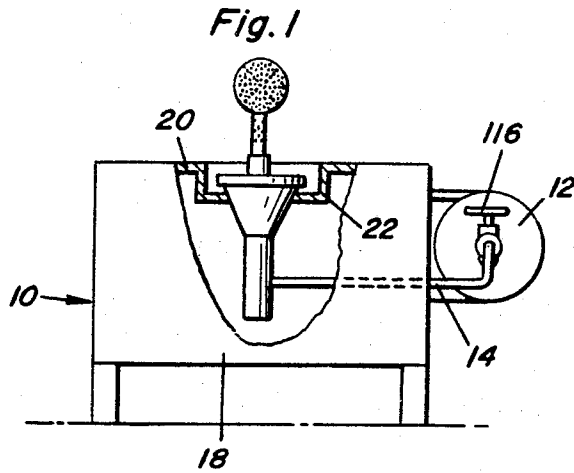
June 13, 1967

T. C. SWINYAR

3,324,687

COMBINATION CAMP STOVE AND LIGHT WITH CERAMIC MANTLE

Filed Oct. 21, 1965



Theodore C. Swinyar  
INVENTOR.

BY *Alance A. O'Brien*  
*and Harvey B. Jacobson*  
Attorneys

1

3,324,687  
**COMBINATION CAMP STOVE AND LIGHT  
WITH CERAMIC MANTLE**  
Theodore C. Swinyar, Collegedale Medical Center,  
Collegedale, Tenn. 37315  
Filed Oct. 21, 1965, Ser. No. 499,831  
3 Claims. (Cl. 67-96)

## ABSTRACT OF THE DISCLOSURE

A camp stove and light with the combustible material normally used to cook on the stove serving to render an attached mantle incandescent to provide illumination. The normally provided burner structure of the stove is removed and the mantle assembly placed in position for receiving the combustible mixture. The mantle includes a hollow spherical member having a plurality of small holes or pores therein for passage of the combustible mixture.

The present invention generally relates to a combination camp stove and light which involves the provision of a ceramic mantle that will replace the burner on a camp stove so that the camp stove can be converted to a light.

An object of the present invention is to provide a camp stove and light combination in which the stove may be converted to a light by removing the normal burner element provided therefor and placing an adapter thereon which supports a ceramic mantle which will become incandescent thus affording a camp light.

Another object of the present invention is to provide a combination camp stove and light having a ceramic mantle which enables a compact unit to be transported that will not only provide a camp stove but also provide a light which may be required for various purposes around a camp.

A further object of the present invention is to provide a structure by which a camp stove may be quickly and easily converted to a camp light and then reconverted quickly and easily back to a camp stove.

A further object of the present invention is to provide a combined camp stove and camp light which will result in a substantial reduction in weight and mass of camping equipment such as used by hunters, hikers, military personnel and the like.

Still another important object of the present invention is to provide a combination camp stove and camp light having a ceramic mantle which is of rugged construction as compared to the fragile mantles of silk or the like which are currently being used thereby providing for a long life and dependability of the ceramic mantle.

Yet another object of the present invention is to provide a combination camp stove and camp light having a ceramic mantle which may be easily converted between a stove and light arrangement and which will add very little to the over-all weight or size of the existent camp stove and which is relatively simple in construction, easy to use, efficient in operation, durable and relatively inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 illustrates schematically a camp stove with the adapter and ceramic burner incorporated therein;

FIGURE 2 is a detailed sectional view of the camp stove converted to a light employing the ceramic mantle of this invention;

2

FIGURE 3 is a view similar to FIGURE 1 but with the camp stove in its normal condition; and

FIGURE 4 is a view similar to FIGURE 2 but with the camp stove burner in place.

Referring now specifically to the drawings, the numeral 10 generally designates a camp stove which for purposes of this invention is conventional in nature and includes the usual fuel supply 12, fuel supply line 14, control valve 16 and a cabinet 18 or the like having a top surface 20 with a depressed central portion 22 for receiving the basic burner unit 24 which has the fuel inlet line 14 communicated with the bottom thereof. This portion of the basic burner is conventional and forms no part of the present invention. Normally, the burner unit 24 includes a burner head 26 attached thereto and provided with a plurality of apertures 28 through which the combustible mixture passes and is ignited at the top thereof for heating a pan or the like placed on the stove. The burner head 28 is provided with a depending flange 30 that is in screw threaded engagement with external threads 32 on the upper end of the basic burner unit 24.

The present invention involves the provision of an adapter plate 34 which replaces the burner head 26 and is screw threaded thereto in the same manner by the threaded connection 32. The center of the adapter 34 is provided with a tubular sleeve 36 receiving the tubular stem 38 of a ceramic mantle generally designated by the numeral 40 and which includes a generally spherical ceramic element 42 having a plurality of small apertures 44 extending from the external surface to the internal surface thereof. Also, the upper portion of the stem 38 is also provided with a plurality of small apertures 46 therein so that the fuel or fuel and air mixture will proceed through the apertures 44 at a relatively slow velocity so that the fuel and air mixture will burn on the external surface of the spherical mantle 40 thus raising the temperature of the ceramic mantle to a level where the ceramic mantle will become incandescent.

For protecting the mantle, a Pyrex glass element may surround the same with the Pyrex being of the type which will not materially interfere with flow of light transmitting rays from the mantle.

The mantle construction may vary but it has been found that a mantle having the following characteristics is successful:

Internal diameter of spherical element, 1 inch.  
External diameter of spherical element, 1.05 inches.  
Diameter of holes, .035 inch.

Density of holes, 225 per square inch of surface area.

The holes 46 in the tubular stem are for the purpose of admitting combustion supporting air to support the combustion of the gases on the surface of the ceramic spherical element.

While a ceramic element has been disclosed, it is pointed out that a permanent mantle of metal coated with a luminescent material by employing a suitable adhesive either with or without a ceramic component is contemplated and is within the purview of the present invention. In fact, the luminescent material may also be incorporated into the body of the ceramic or used as a coating.

Basically, the mantle operates in the same manner as a silk mantle in that it is heated quite hot and the luminescent material incorporated into the ceramic glows or becomes incandescent when heated. The whole arrangement is such that the gases will be permitted to escape to the exterior surface of the mantle for burning. Further, in lieu of the holes as outlined, a mantle may be produced by the use of a porous clay or other material which permits the free flow of gas through the mantle. Such a porous characteristic may be produced by the addition of certain materials to the ceramic material prior to

the firing of the ceramic materials with such materials then being burned out in the firing process thus leaving small openings through which the gas flows freely through the mantle.

The convertible unit of the present invention employs the use of a relatively permanent mantle which basically is the result of the incorporation of a luminescent material or materials into a suitable ceramic material to produce a high degree of luminescence and relative permanency. This device would attain efficiency comparable to present day mantles and this mantle permits the production of a larger mantle than those presently constructed of silk or other fiber material. Consequently, greater brilliancy of light is attainable due to the larger luminescing surface area.

The apertures 46 and the entire stem 38 may be considered a generator in that the heat from the spherical element will be conducted to the gases and the additional air incorporated into the combustible mixture will provide a more efficient combustion of the combustible mixture.

In actually constructing the mantle, a suitable luminescent material such as thorium nitrate or cerium nitrate may be added to conventional ceramic material when in its powder form and such materials are added in whatever proportions are necessary to produce the highest degree of luminescence obtainable. This resultant material is then handled in the usual manner for the production of the desired form.

As illustrated in the drawings, the camp stove which is normally employed when camping may be easily converted into a camp light by unscrewing the burner head and replacing it with an adapter and ceramic mantle. The ceramic mantle will be relatively light in weight and requires very little area for storage thus enabling a person using the camp stove to have not only a stove but a camp light readily available with very little increase in the weight or mass of the items which must be conveyed to the campsite.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A device for converting a camp stove to a camp light

comprising an adapter plate adapted to be mounted on a burner unit in lieu of the burner head, a tubular stem attached to the adapter plate, and a generally spherical porous mantle on the end of the stem and being rigid therewith with the mantle having a plurality of pores extending therethrough throughout the surface area thereof, said mantle being of rigid material and provided with luminescent material for becoming incandescent when heated and maintaining its shape and configuration, said stem having air inlet apertures therein adjacent the mantle for introducing combustion supporting air into the combustible mixture.

2. A device for converting a camp stove to a camp light comprising an adapter plate adapted to be mounted on a burner unit in lieu of the burner head, a tubular stem attached to the adapter plate, and a generally spherical porous mantle on the end of the stem and being rigid therewith with the mantle having a plurality of pores extending therethrough throughout the surface area thereof, said mantle being of rigid material and provided with luminescent material for becoming incandescent when heated and maintaining its shape and configuration, said stem having air inlet apertures therein adjacent the mantle for introducing combustion supporting air into the combustible mixture, the pores in the mantle being in the form of apertures extending therethrough and having dimensional characteristics that will prevent back-flashing therethrough thereby enabling the combustible mixture to pass to the external surface of the mantle at a relatively low velocity for burning on the surface of the mantle for efficiently heating the surface thereof.

3. The structure as defined in claim 2 wherein the mantle is constructed of ceramic material with the apertures therein being of the order of .035 inch in diameter and being orientated with a density of approximately 225 per square inch of surface area.

#### References Cited

##### UNITED STATES PATENTS

749,384	1/1904	Imbert	67—88
1,981,976	11/1934	Wem	126—92 X
2,167,444	7/1939	Brace et al.	158—4
3,140,740	7/1964	Lagried et al.	67—96 X

##### FOREIGN PATENTS

1,056,454	10/1953	France.
-----------	---------	---------

JAMES W. WESTHAVER, *Primary Examiner.*