

June 10, 1969

C. E. PALMER

3,448,735

HEATING UNIT

Filed Nov. 2, 1967

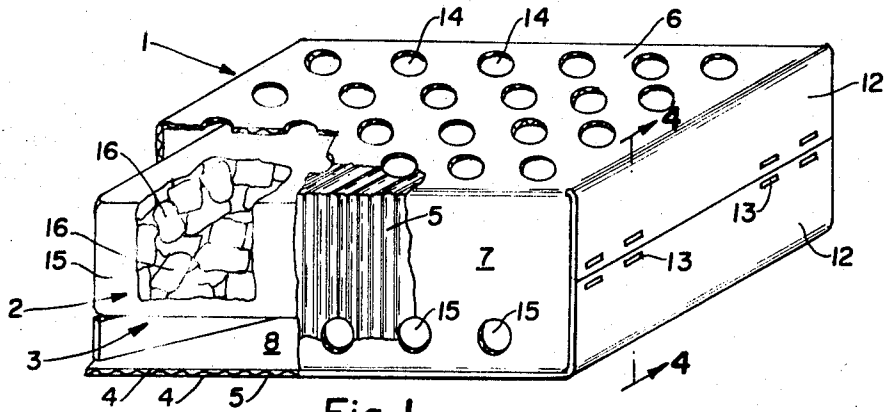


Fig. 1

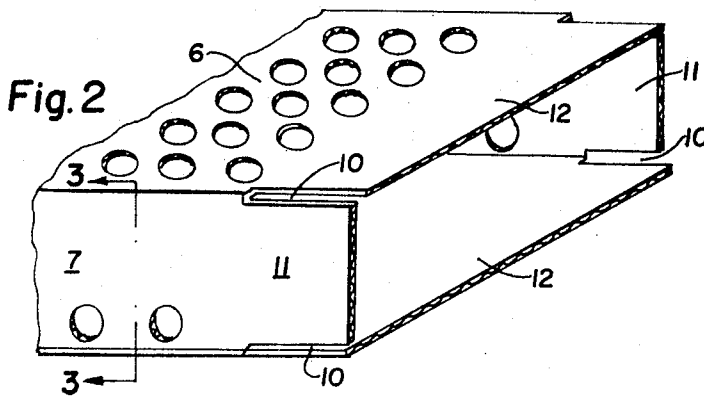


Fig. 2

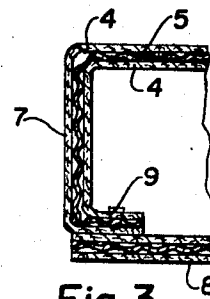


Fig. 3

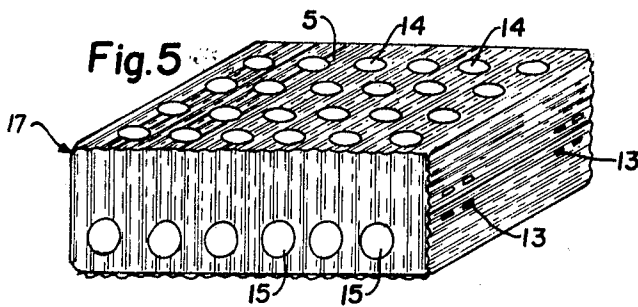


Fig. 5

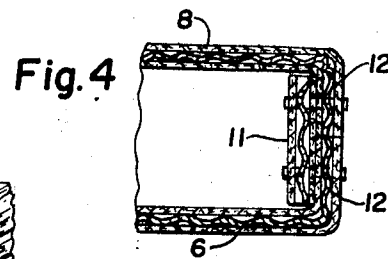


Fig. 4

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3,448,735

HEATING UNIT

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Filed Nov. 2, 1967, Ser. No. 680,201

Int. Cl. F24b 3/00; A47j 37/07

U.S. Cl. 126—25

5 Claims

ABSTRACT OF THE DISCLOSURE

This invention discloses a heating unit constructed of a paperboard-steel foil laminate. The heating unit includes a fuel package as an integral part thereof so as to provide a compact self-contained means for heating.

This invention relates to a self-contained portable and disposable heating unit or grill constructed of steel foil.

It is an object of the invention to provide a self-contained heating unit including both a fuel supply and stove which requires no additional equipment for its use other than a flame to initiate the combustion thereof.

Another object of the invention is to provide a heating unit which is compact and portable so as to be readily transportable to remote places.

Yet another object of the invention is to provide a heating unit which is both substantial enough to serve as a stove or grill and inexpensive enough to produce so that it may be discarded after a single use.

A further object of the present invention is to provide such a heating unit constructed of steel foil.

The objects of the invention are achieved by constructing a heating unit from a three-layer steel foil-paperboard laminate wherein the two outside layers comprise paperboard and the central layer comprises steel foil. Supported within the unit is a fuel package which includes an appropriate charge of fuel packaged within a combustible container. By igniting the unit, the paperboard laminae and the combustible container burn away leaving the fuel charge within the steel foil stove. During the initial combustion of the unit, the fuel package is supported off the bottom of the unit so that a good draft of air flows into the unit through openings in the side thereof and out openings in the top of the unit.

The invention is illustrated in the accompanying drawing, wherein:

FIGURE 1 is a perspective view of a heating unit having parts broken away to show internal details;

FIGURE 2 is a fragmentary view in perspective of the heating unit at an intermediate stage of construction;

FIGURE 3 is a fragmentary view of the section taken on line 3—3 of FIGURE 2;

FIGURE 4 is a fragmentary view of the section taken on line 4—4 of FIGURE 1;

FIGURE 5 is a perspective view, on a reduced scale, of the heating unit after the combustible material has burned away.

The heating unit of the present invention comprises three component parts: an outer body section 1, a fuel package 2, and a fuel package support means 3.

Body section 1 is constructed from an integral blank comprising a three-layer laminate material consisting of two outside paperboard layers 4—4 and a middle corrugated steel foil layer 5. The laminate is formed by securing the two paperboard layers to the steel foil layer by means of a suitable adhesive. The steel foil is about .004 inch thick and is "full hard," that is, steel foil which is not annealed after being worked to final gauge. While steel foil of different tempers is used, "full hard" steel foil

possesses the greatest strength. Additional strength is imparted to the heating unit by employing the steel foil in a corrugated form.

The body section is of rectangular cross-section and is made by bending the laminate blank along appropriate fold lines to form an upper surface 6, two sidewalls 7—7 and a bottom wall 8. One of the sidewalls 7 is provided with a turned under margin 9 which is placed in face-to-face engagement with bottom wall 8 as best seen in FIGURE 3. Margin 9 and bottom wall 8 are fastened together by means of staples so as to assist in holding the body section in shape.

Along each of the fold lines joining sidewalls 7—7 to upper surface 6 and bottom wall 8 are notches 10—10 which define a pair of side flap members 11—11 and a pair of closure flap members 12—12 at both ends of the body section. In completing the body section ends, side flaps 11—11 are first folded inwardly, followed by closure flaps 12—12. The closure flaps are then fastened to the side flaps by means of staples 13—13.

A plurality of openings 14—14 are provided in the heating surface 6 and are made in the laminate blank preferably prior to construction of the body section. A series of openings 15—15 are also provided in the sidewalls 7—7 adjacent the bottom thereof to insure the ingress of air into the heating unit during combustion thereof.

The fuel package 2 consists of a paperboard box 15 in which are packed a number of briquettes 16—16. Box 16 is impregnated with a flammable compound such as paraffin, which in addition to promoting combustion of the package, serves to protect the briquettes from moisture damage. The fuel package 2 is maintained above bottom wall 8 and openings 15—15 by supporting means 3 which comprises two strips of cardboard positioned on edge so as to extend across the bottom wall 8 between diagonally opposed corners.

In use, the heating unit is suitably ignited and begins to burn freely as the corrugations in the steel foil provided air passages between the foil and the paperboard laminae 4—4 so as to aid combustion. During a substantial period of the burning away of the paperboard laminae and the burning of the fuel package 2, the latter is maintained above 15—15 by support means 3 so that a good draft of air flows through said openings, around said fuel package and out openings 14—14, thus insuring adequate ignition and combustion of the briquettes 16—16. Eventually the support means 3, being made of cardboard, burns away but by that time the briquettes are well fired and proceed to burn in a uniform manner within the corrugated steel foil shell or stove 17. The material to be heated can then be placed on the heating surface of the steel foil stove. After the briquettes are consumed, the stove can be discarded.

While corrugated steel foil .004 inch thick is employed in the preferred embodiment of my invention, non-corrugated steel foil having thicknesses from .001 to .006 inch is also used. On addition, solid fuel such as coal dust held together with a suitable binder and formed into briquettes or wood charcoal are used in place of the charcoal briquettes. Thus while the illustrated embodiment is considered presently to be the best mode of carrying out the invention, construction thereof is subject to modification without departing from the spirit and scope of the invention as defined in the following claims.

I claim:

1. A self-contained heating unit comprising an enclosed outer body section having a heating surface, sidewalls, end walls, and a bottom wall, said body section being formed from a laminate material comprising two outer paperboard laminae and a central steel foil lamina, said upper heating surface including a plurality of openings therein,

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at least one of said sidewalls including a plurality of openings therein adjacent said bottom wall, an enclosed fuel package positioned within said outer body section, means for supporting such fuel package off the bottom wall of the outer body section and above the openings in the side-

2. The heating unit of claim 1 wherein said fuel package comprises a plurality of charcoal briquettes contained within a paperboard container.

3. The heating unit of claim 2 wherein said paperboard container is impregnated with a flammable compound.

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4. The heating unit of claim 1 wherein the steel foil is corrugated.

5. The heating unit of claim 1 wherein the steel foil is full hard.

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