April 17, 1956 C. BRAMMING 2,742,033

PORTABLE STOVE WITH COLLAPSIBLE CASING

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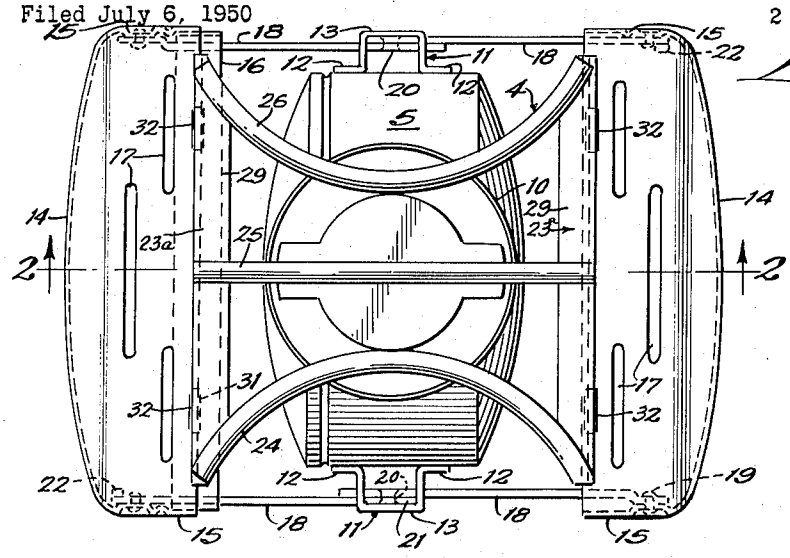


Fig. 1

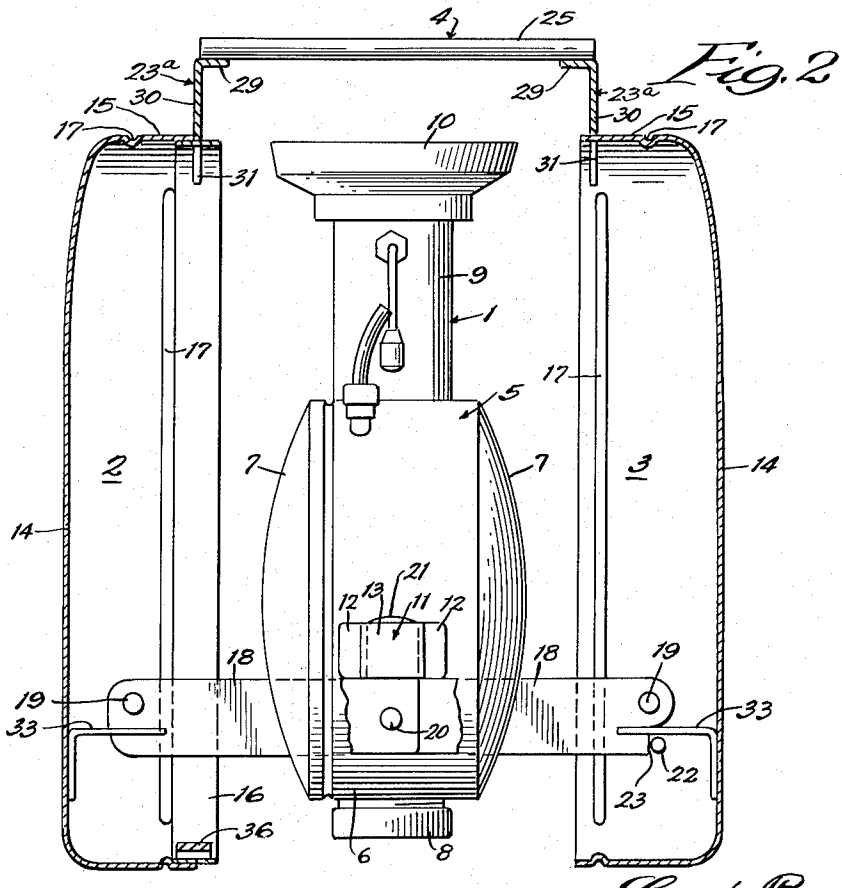


Fig. 2

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Fig. 3

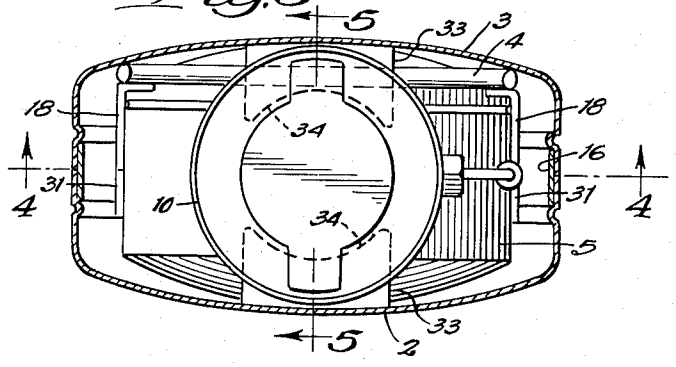


Fig. 4

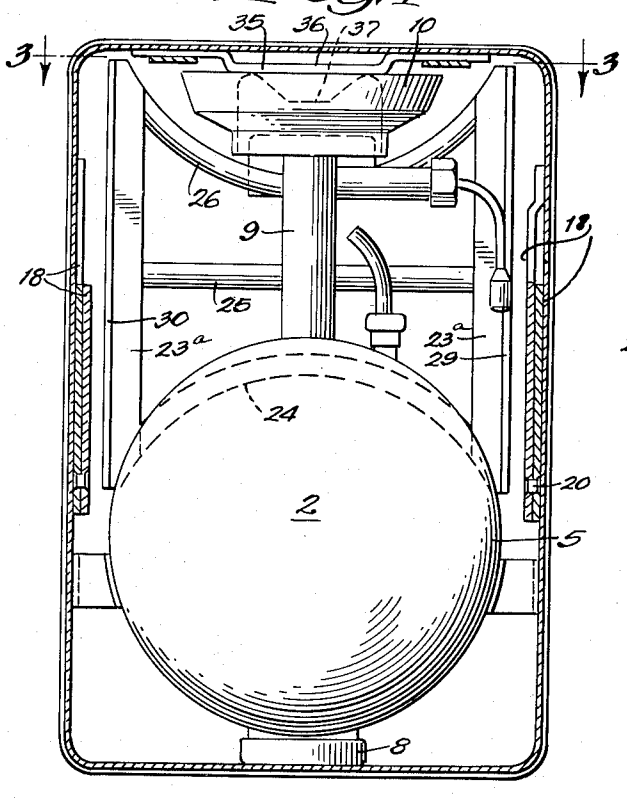
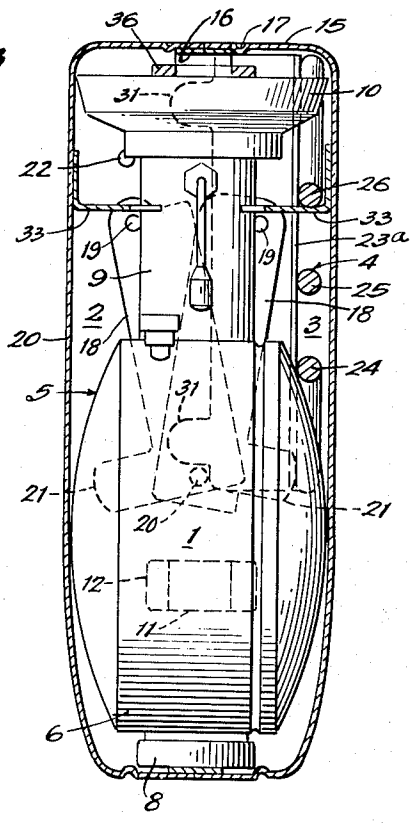


Fig. 5



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2,742,033

PORTABLE STOVE WITH COLLAPSIBLE CASING

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Application July 6, 1950, Serial No. 172,271

6 Claims. (Cl. 126—38)

My invention relates to an improved compact portable hydrocarbon fuel burning stove with a collapsible casing suitable for use by sportsmen or the like, capable in the collapsed condition of being carried in the pocket of a sportsman's jacket, knapsack, or trousers, and carrying all the elements, including fuel, necessary to heat food-containing utensils.

Hydrocarbon fuel burning stoves are inherently unwieldy because they require a fuel tank of sufficient size to contain fuel for a considerable period of operation and, in the operating condition, the burner parts must have free access to air for cooling and combustion. Moreover, the stove in the operating condition must produce a flame of as large size as possible to distribute heat over the receptacle being heated to a maximum possible degree.

In accordance with the present invention a very small size stove capable in the packed condition of being received in the pocket of the user is provided which, when in the opened position for use, has ample air and receives a burner of relatively large size to produce a large heating flame suitable for heating or cooking the contents of relatively large vessels. The fuel tank of the stove is capable of holding sufficient hydrocarbon fuel for approximately two hours of continuous operation.

It is therefore a general object of the present invention to provide an improved hydrocarbon fuel burning stove with a collapsible casing capable of being received in a sportsman's pocket when not in use and in use defining an effective heater.

A further object of the present invention is to provide a completely self-contained portable stove and casing which in the packed or carrying condition contains all the elements required for effective operation and in the condition of use forms a complete heater of adequate size and capacity to receive relatively large cooking utensils.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, together with other objects and further advantages thereof, may best be understood by reference to the following description taken in conjunction with the accompanying drawing, in which:

Figure 1 is a top plan view of the stove of the present invention in condition for use;

Figure 2 is a cross-sectional view through axis 2—2, Figure 1, showing parts in elevation;

Figure 3 is a cross-sectional view through axis 3—3, Figure 4, showing the stove in the collapsed carrying condition; and,

Figures 4 and 5 are cross-sectional views through axes 4—4 and 5—5, Figure 3, showing the stove in the collapsed carrying condition.

As seen best in Figure 2, the stove of the present invention comprises a heater, indicated generally at 1, which in the operating condition is suspended between a pair of shells, 2 and 3, and lies underneath the utensil-supporting frame 4 when the stove is in use. In the collapsed condition of the casing shown in Figures 3 to 5, the heater 1 is

entirely encased by the shells 2 and 3 and the frame 4 rests in the space between the burner and the shell.

The heater indicated generally at 1 comprises a fuel tank 5 which is of drum or flat cylindrical configuration as shown. The tank is defined by the cylindrical central portion 6 and the two complementary opposed convex end plates 7. The bottom of the tank has a threaded hole to receive the threaded filling cap 8 which forms a seal to retain the contents of the tank. A burner column 9 surmounts the tank 5 and terminates in a burner bowl 10 within which an annular heating flame is produced.

The heater 1 may be any one of many types known to the art. For example, it may be of the vapor type generating its own pressure wherein a wick extends downwardly from the bowl 10 into the liquid hydrocarbon fuel in the tank 5. Alternatively, the burner may be of the pressure type wherein pump elements (not shown) located in the tank 5 enable creation of air pressure in the tank and heating means are provided to vaporize the hydrocarbon fuel, such as gasoline, for normal operation. These types of burners or flame producing means require access to free air for normal operation and operate most effectively when spaced from adjacent objects as shown in Figure 2.

The tank 5 has a pair of complementary opposed rectangular pocket defining side members 11. Each of these members is rigidly secured to the tank by means of oppositely extending portions 12 having a surface conforming in shape to the cylindrical surface portion 6 of the tank 5. The intermediate portion 13 of each member is raised above the tank surface and extends in spaced relation with respect to the surface of the tank to define a rectangular pocket as shown in Figure 2.

The casing for the stove is defined by a pair of opposed complementary shells 2 and 3. These are of substantially identical construction with rounded convex side panels 14 and with wall portions 15 extending around the side panels. The wall portion 15 of the shell 2 receives the offset extension 16 which in the closed position of the shells (Figure 5) also telescopes snugly in the shell 3 to form a tight receptacle. The wall portions 15 each have a series of embossed ribs 17 which serve as stops for the extension 16.

A pair of links 18 forming a toggle are located on each side of the tank 5 and extend between shells 2 and 3 as shown in Figure 2. These links are pivotally supported from the wall portions 15 of the shells 2 and 3 by the pins 19. The links of each toggle pair are pivotally attached by the pins 20, Figures 1 and 2.

Each toggle link has a rectangular lug or spade 21 positioned adjacent the pin 20 and oriented to extend upwardly when the links are in the extended or opened position of Figure 2. These spades are of size to fit snugly in the rectangular pockets defined by the members 11 so that the links are held in a predetermined transverse orientation relative to the plane of the tank 5 by the coaction of the spade portions 21 and the pocket-defining members 11.

When the heater 1 is removed, the toggle links are held in the horizontal position of Figure 2 by the pins 22 which may be seen in Figures 1 and 2. These pins are held in the wall portions 15 of the shells 2 and 3 and coact with the notches 23, Figure 2, of the corresponding links to hold the links against dropping substantially below the horizontal or aligned orientation.

The pins 22 hold the links 18 in a position slightly below the position these links are constrained to assume when confined by the spades 21 and the pockets defined by members 11. Consequently, the weight of the heater 1 is carried by the spades 21 and there is no tendency to spring the stops 22 or the pins 19 because of this load.

The shells 2 and 3 are held upright in the expanded

position by the frame 4. As seen best in Figure 1, this frame consists of a pair of spaced members 23*a* between which the rods 24, 25, and 26 extend to form the grid of the stove. The central grid rod, 25, is straight and extends directly over the burner B. The edge grid rods 24 and 26 are arcuate and define concave sides to the frame, thereby permitting the frame to fit snugly in the casing when the unit is collapsed as in Figure 4.

As seen best in Figure 2, the members 23*a* are of L-shaped cross-section and define overhanging faces 29 to which the grid rods are affixed by welding or similar means. The downturned sides of these members, indicated at 30, have depending lugs or spade portions, 31, Figures 2 and 5, which fit in corresponding elongated slots in the top portion of the wall 15 of the shells 2 and 3 and the extension 16. These slots are seen in plan view in Figure 1 and are indicated at 32, respectively.

When the frame 4 rests on the top of the shells 2 and 3 with the spades or lugs 31 received in the slots 32, the tops of the shells are held a predetermined distance apart to define a complete rigid unit capable of supporting utensils containing food to be cooked.

A pair of brackets 33 extend inwardly from the shells 2 and 3 as shown in Figure 2. These brackets have concave central portions, 34, Figure 3, which snugly receive the top portion 9 of the heater 1 when the heater is inverted and placed between the closed shells 2 and 3. This snugly secures the heater in position.

When the stove is packed for carrying, the heater 1 is inverted relative to the shells 2 and 3 and the shells joined about the heater to form a casing as shown in Figures 3, 4, and 5. In this condition the shells snugly encase the burner and form a compact unit with little unused space. The frame 4 is lifted from the shells 2 and 3 before packing and is positioned adjacent the heater 1 as shown in the figures. The curvature of the rods 24 and 26 conforms to the shape of the tank 5 so that the frame is snugly held in position when packed.

When the shells are brought together for packing, the toggles defined by links 18 collapse as shown in Figures 4 and 5.

The spacer member 35 mounted on the bottom of extension 16 as shown in Figures 2 and 4 has an intermediate portion 36 which fits against the flame flange 37, Figure 4, of the heater 1 to hold the same in position.

From the foregoing description it will be evident that I have provided an improved stove for sportsmen or the like which in the open condition for use defines a complete sturdy structure capable of supporting cooking utensils and providing adequate air for the burner. In the closed condition, the parts of the stove conform to form a very small compact unit having little unused space. In actual models of the present invention it has been found possible to make the stove so small that in the collapsed condition it may easily be carried in the coat pocket of a sportsman.

While I have shown and described a specific embodiment of my invention, it will of course be understood that I do not wish to be limited thereto and that by the appended claims I intend to cover all modifications and alternative constructions falling within the true spirit and scope thereof.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A collapsible pocket stove for sportsmen or the like comprising in combination, a heater having on its sides a pair of opposed rectangular pockets opening downwardly, a pair of complementary housing shells having relatively flat side skirt portions and adapted to encase the heater in the inverted position, the shells having a plurality of openings on their top surfaces, toggle links secured to the skirt portions of the shells and in the opened condition with the shells upright defining upstanding spades adapted to be received in the pockets to support the heater in an upright position on the toggles and to restrain the toggles against collapse, and a support frame adapted to fit over the shells when in the open position and having lugs adapted to fit in said openings to secure the tops of the shells in predetermined spaced relation.

2. A collapsible pocket stove for sportsmen or the like comprising in combination a heater having a substantially disk-shaped fuel tank surmounted by a flame producing means of smaller cross-section, the tank having a pair of rectangular pockets opening downwardly, a pair of complementary housing shells adapted to encase the heater in the inverted position, the shells having top openings to receive a support frame, toggle links extending between the shells and in the opened condition with the shells upright defining upstanding spades adapted to be received in the pockets to support the heater in the upright position on the toggles and to restrain the toggles against collapse, and a support frame adapted to fit over the shells in the open position and having lugs adapted to fit in said openings to secure the tops of the shells in predetermined spaced relation, the frame having concave side members to mate with the tank to form a snug fit between the shells when in the closed position.

3. A collapsible pocket stove for sportsmen or the like comprising, in combination, a heater, a pair of complementary, laterally skirted interengageable half shells for encasing said heater, said shells being separable horizontally to form spaced vertical supports, toggle links pivoted to and extending between said shells for movement between generally vertical jackknifed positions with said shells closed and generally horizontal extended positions with said shells separated, said links having angularly extending spade arms thereon movable into alined upstanding positions with said links extended, said heater having means thereon forming downwardly opening slots telescopically engageable over said alined arms to mount said heater in an upright position on said links and to restrain said links against downward jackknifing movement, and a utensil supporting member extending across and interconnecting the tops of said shells when in separated relation, said supporting member being receivable in said shells when closed.

4. A collapsible pocket stove for sportsmen or the like comprising, in combination, a heater, a pair of complementary, laterally skirted interengageable half shells for encasing said heater, said shells being separable horizontally to form spaced vertical utensil supports, and toggle links pivoted to and extending between said shells for movement between generally vertical jackknifed positions with said shells engaged and generally horizontal extended positions with said shells separated, said links having angularly extending arms thereon movable into alined upstanding positions with said links extended, said heater having means on its sides forming downwardly opening slots engageable telescopically over said alined arms to mount said heater in an upright position on said links and to restrain said toggle links against downward jackknifing movement, said shells and said links having interengageable stop elements for restraining said links from dropping substantially below the position occupied by said links with said arms received in said slots, said stop elements being effective during erection of said stove to facilitate mounting of said heater on said arms.

5. A collapsible pocket stove for sportsmen or the like comprising, in combination, a heater, a pair of complementary, laterally flanged interengageable half shells for encasing said heater, said shells being separable horizontally to form spaced vertical utensil supports, and toggle links pivoted to and extending between said shells, said links being movable between generally vertical jackknifed positions with said shells closed and generally horizontal extended position with said shells separated, said links having angularly extending arms thereon movable into alined upstanding positions with said links extended, said heater having means on its sides forming downwardly opening slots for telescopically receiving said

alined arms to mount said heater in an upright position on said links and to restrain said links against downward jackknifing movement.

6. A collapsible pocket stove for sportsmen or the like comprising, in combination, a heater, a pair of complementary, laterally flanged interengageable half shells for encasing said heater, said shells being separable horizontally to form spaced vertical utensil supports, toggle links pivoted to and extending between said shells for movement between generally vertical jackknifed positions with said shells closed and generally horizontal extended positions with said shells separated, said links and said heater having locking elements movable into interlocking engagement with said links extended to support said heater

in an upright position on said links and to restrain said links against downward jackknifing movement.

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