Nov. 18, 1930. W. C. LINDEMANN 1,782,008

PORTABLE HYDROCARBON STOVE

Filed July 22, 1927

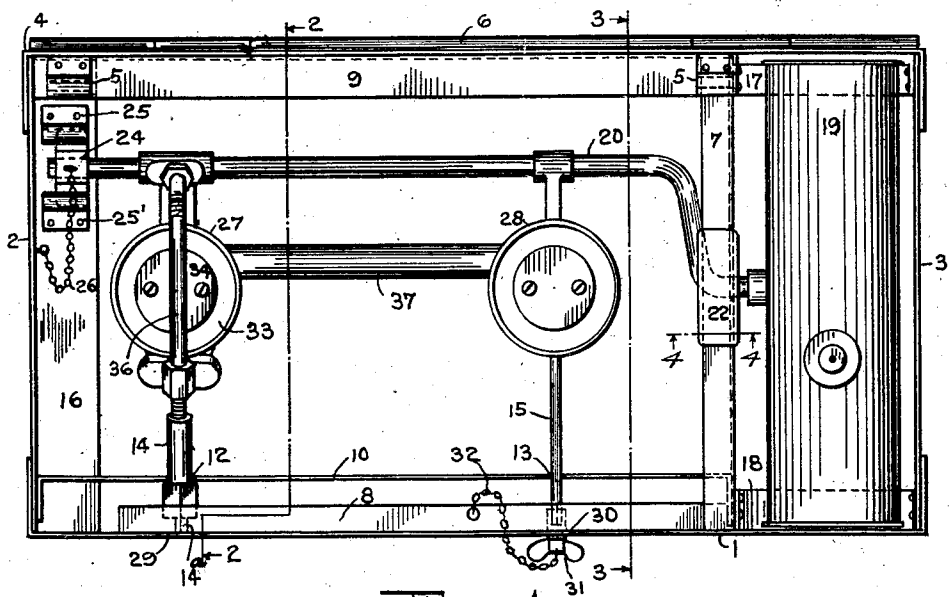


Fig. 1

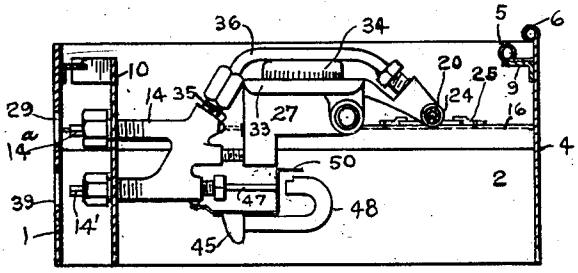


Fig. 2

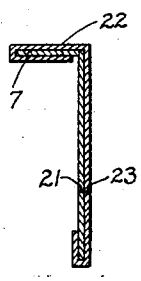


Fig. 4

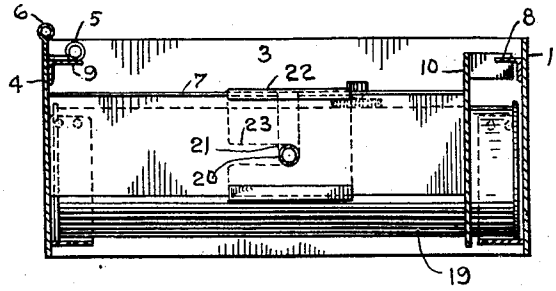


Fig. 3

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UNITED STATES PATENT OFFICE

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PORTABLE HYDROCARBON STOVE

Application filed July 22, 1927. Serial No. 207,651.

The improvements relate to hydrocarbon stoves generally, and more particularly to portable stoves of this type. They have, however, some features of general application. A stove in which the improvements are adapted to be employed is illustrated in United States Letters Patent to W. C. Lindemann and A. W. Benson, No. 1,686,620, dated Oct. 9, 1928, to which reference may be had for details showing the application of the improvements to such stoves.

Among the objects of the improvements are the production of a stove adapted to utilize liquid hydrocarbon, converting it into vapor and mixing it with air before combustion, of simple, safe and efficient character, and which may be easily stored, carried or otherwise transported and used under various outdoor and other conditions without danger of injury to any of its parts and without danger of undesirable results in use, and which may be quickly and easily assembled or taken apart for cleaning, renewal of parts or other purposes by unskilled persons.

The improvements are illustrated in the accompanying drawings, in which—

Fig. 1 is a plan view of a stove, comprising frame, tank, burners, supply pipe and accessories, embodying the improvements;

Fig. 2 is a vertical section substantially on the line 2—2 of Fig. 1 looking in the direction indicated by the arrows;

Fig. 3 is a vertical section and elevation substantially on the line 3—3 of Fig. 1 looking in the direction of the arrows;

Fig. 4 is an enlarged vertical section on the line 4—4 of Fig. 1 looking in the direction indicated by the arrows.

In the drawings, 1 represents the front plate of a rectangular stove frame of sheet metal, 2 and 3 the side and 4 the back plates thereof, the said back plate being provided with hinge members 5 and 6 for the attachment of a suitable grid and cover respectively, such as those shown and described in the said aforementioned patent.

Inside this frame is secured, by welding or other means, a supporting frame comprising the end partition 7, the front flange 8 and the back flange 9. An inside vertical partition 10 is secured to the partition 7 at one end and to the inside of the end plate of the enclosing frame 2 at the other end, and has upwardly open slots 12 and 13 to receive the burner valve connections 14 and 15 respectively.

Below the top of the outer enclosing frame at one end is a supporting shelf 16 and at the other end, secured between the partition 7 and the end 3 of the outer frame are curved metallic straps 17 and 18 to support the tank 19. The tank 19 is supported in the saddles or straps 17 and 18 and has its outlet supply pipe 20 held in the vertical open end of the slot 21 extending from the upper edge of the partition 7 to a point below the middle thereof, so that the tank and supply pipe are additionally supported and held in position thereby. This partition forms a support for a grid, and for utensils thereon at the end of the stove nearest the tank, and also acts as a shield to intercept the heat and combustion of the burners and isolate the tank therefrom. The tank being positioned well below the top of the stove frame and protected by the partition 7 is ensured against overheating. The front and back flanges 8 and 9 will also support a grid or any other device used for the support of utensils.

To close the slot 21 and lock the supply pipe 20 in its slot a slide 22 is provided, in the form of a plate with inturned edges loosely turned over and grasping the upper horizontally turned and the lower vertical edge of the partition 7, and a slot 23 in this slide receives the pipe 20 when the slide is in normal position. To remove the tank it is only necessary to move the slide toward the front of the stove so as to release the supply pipe from the slot 23 and lift out the tank and pipe, with the burners and their valves and connections.

The opposite end of the supply pipe is held on the shelf 16 by means of an inverted U-shaped clip 24 with its horizontally flanged terminals held in the slides formed between the extending flanges of the strips 25, 25′ and the shelf 16, to which the said strips are secured. The sliding clip 24 is secured to the end wall of the outer frame by means of a

chain 26. It will be seen, therefore, that to remove the tank supply pipe, burners and connected parts it is only necessary to slide the clip 24 out from under the flanges, after having released the opposite end of the pipe from the slots 23, and lift the said burners, tanks and other parts from the stove frame.

The burners 27, 28 are supported at the rear on the supply pipe 20 and at the front in the slots 12 and 13 of the partition 10, and have their valve stems in proximity to openings 29 and 30 in the front of the frame, where they may be manipulated by means of a key 31 secured to the frame by a chain 32, or by any other suitable device. In removing the burners and connected parts it will be necessary to tilt or cant the entire structure forward to some extent, and this will also be necessary when they are replaced. The operation, however, is extremely easy and can be performed by any unskilled person of ordinary intelligence.

The burners may be of any suitable construction, and as shown consist of an outer trough 33 and an inner vertically slitted dome 34, the latter supplied with fuel, in the case of 27, by the vapor supply nozzle 35 in communication with the vapor generator 36 receiving liquid fuel from the main supply pipe 20 and vaporizing it as it passes over the top of the burner. The mixture 33 receives the the vapor, and air entrained therewith, and supplies it to the burner 27, and the burner 28 receives its supply from the said mixing chamber through its valve operated by the stem 15, the said fuel passing from the chamber 33 to the burner 28 through the conduit 37′ which is in communication with both. As usual, a lighter construction 45 is provided, being controlled by valve stem 14′ and comprises the generator 47, shield 50 and conduit 48. Valve stem 14′ is accessible through openings 39 in the front of the frame as seen in Fig. 2. Through suitable manipulation of valve stems 14ª and 14′, the burners may be started in a well known manner.

Another feature of the improvements is found in the provision of a single casting which provides a fuel duct to the burner and lighter, houses the valves, forms the main fuel supply nozzle and supports the lighter, the valve stems and the forward ends of the vaporizer tube 36. The extension 14′ of this casing rests in the bottom of the slot 12 and supports the casting and the burners at the front vertically, while the extension 14 in close proximity to the walls of said slot prevents lateral movement, and enables the operator to place the entire heating unit in position quickly and accurately.

It will be apparent that various modifications in the details of construction of the herein shown and described improvement may be made without departing from the invention, and that the positions and relations of the parts may be reversed or otherwise changed without departing therefrom.

I claim:

1. The combination of a supporting frame comprising longitudinal and lateral members having open recesses therein, a fuel supply tank, a fuel supply conduit, a burner connected with said conduit and valve carrying structure all rigidly connected to form a unit and removably supported in said recesses by said frame, one of said lateral members forming a partition to isolate the tank from the burner and intercept the radiation of heat from the latter to the former.

2. A portable stove comprising a hollow frame, a fuel tank, a burner, a fuel supply pipe communicating between said tank and burner, a lighting device and valves controlling the supply of fuel thereto all of said parts except the frame being connected to form a single removable unit, and detachable connections between said unit and said frame, said detachable connection comprising recesses in the frame receiving portions of the unit and movable members connected with one of them holding said portions in the recesses and arranged to be removed to release the same and permit their removal therefrom.

3. The combination of a hollow supporting frame, a fuel supply tank, a burner, a fuel supply pipe and valve structures all rigidly connected to form a single unit supported in said frame, said frame having recesses to receive the supply pipe at different points and support the same and also having recesses to receive portions of the valve structures and support the same, said burner being supported at one side by the supply pipe and at the opposite side by the valve connection.

4. A portable stove comprising a housing having an open top and bottom and a transverse vertical partition, said partition having a vertical slot, a removable unit disposed within said housing and having a fuel tank position on one side of said partition and a burner disposed on the other side thereof, a supply pipe connecting said burner and tank and disposed in said slot and being supported by said partition, a slide member mounted on said partition and having a horizontal slot intersecting said vertical slot and normally receiving said supply pipe in locked relation.

Witness my hand this 15th day of July, 1927, at the city of Milwaukee, in the county of Milwaukee, State of Wisconsin.

WALTER C. LINDEMANN.