May 3, 1949. B. W. TULLIS 2,469,185

PORTABLE STOVE

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Fig. 1

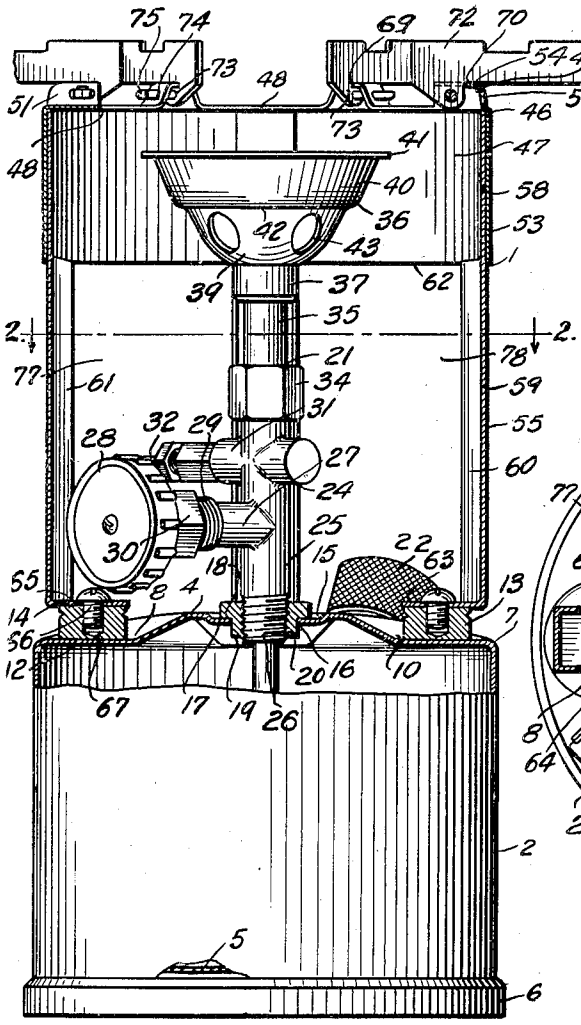

Fig. 2.

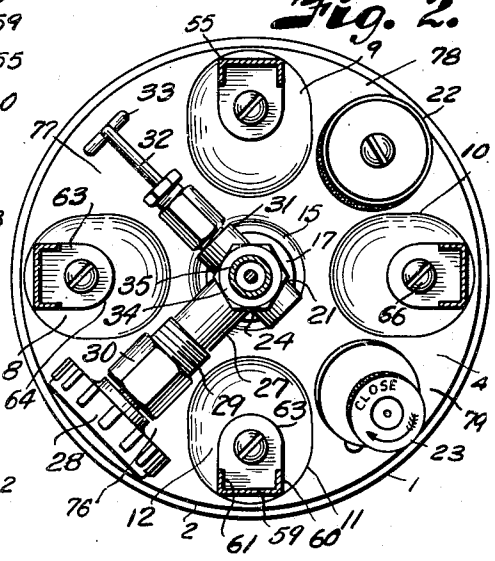

Fig. 3.

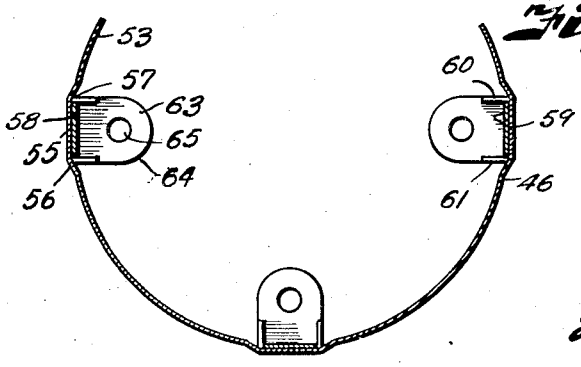

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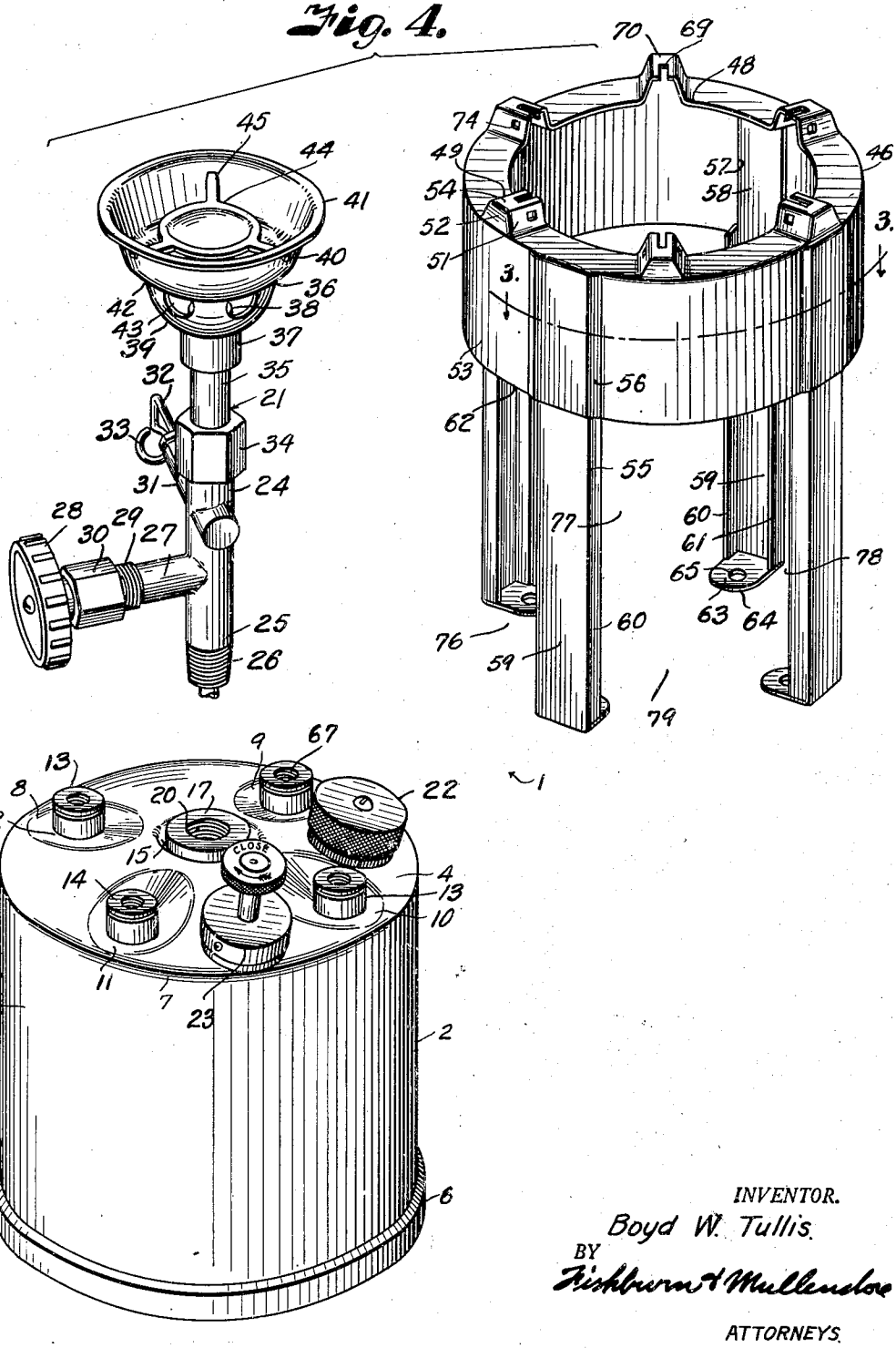
Fig. 4.

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# UNITED STATES PATENT OFFICE

2,469,185

## PORTABLE STOVE

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Application April 18, 1946, Serial No. 663,025

4 Claims. (Cl. 158—33)

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This invention relates to portable stoves of the type disclosed in Patent No. 2,397,766, issued to me on April 2, 1946, the present invention being directed to a stove of improved structure.

The principal objects of the present invention are to provide a stove having fewer number of parts that are of stronger and lighter weight construction and which are easier to manufacture and assemble in quantity production.

Other objects of the invention are to provide a stove structure having an improved appearance and which is adapted for better support of the cooking vessels from the tank or fount of the stove.

It is also an object of the invention to provide for a better and more convenient arrangement of the operating parts of the stove relatively to the grid supporting legs.

In accomplishing these and other objects of the invention hereinafter pointed out, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is a side elevational view partly in section of a stove constructed in accordance with the present invention.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1 particularly illustrating relative location of the operating elements of the stove.

Fig. 3 is a section through the grid ring and its supporting legs on the line 3—3 of Fig. 4.

Fig. 4 is a perspective view of the units composing the stove shown in disassembled spaced relation to illustrate the simplicity and assembly of the units.

Referring more in detail to the drawings:

1 designates a stove constructed in accordance with the present invention and which includes a fuel tank or fount 2 having a cylindrical side wall 3, an upwardly crowned top 4 and a bottom 5, the bottom 5 being preferably inset to provide an annular support or base flange 6. The crowned top 4 may be formed integrally with the side wall and merges therewith on a rounding curve 7 so that the body of the tank is adapted to be drawn from a single sheet of material. The top 4 is provided at substantially equally spaced points within the circumference thereof with depressions 8, 9, 10 and 11 so as to provide substantially horizontal footing portions 12 for attachment of substantially cylindrical lugs 13 having flat upper faces 14 preferably located slightly above the apical portion of the crown as best shown in Fig. 1. The lugs 13 are secured to the flat portions of the top by soldering, welding or

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the like to provide anchorage for the grid supporting legs later described. The apical portion of the crown top 4 is preferably provided with an inset 15 to form an annular corrugation encircling a bushing receiving opening 16 to enhance the rigidity of the portion of the top carrying a bushing 17 and to provide a seating face for seating an annular shoulder 18 of the bushing which is secured thereto to form a leak-tight joint. The bushing 17 also includes a depending portion 19 that projects inwardly of the tank through the opening 16 to provide a bushing of sufficient thickness to give the number of threads 20 necessary in adequately sealing and supporting a valve and burner unit 21, later described.

Also formed in the top 4 intermediate the depressions 9—10 and 10—11 are openings for mounting a filler cap assembly 22 and a pump unit 23 as best shown in Fig. 4. The valve and burner unit 21 includes a valve body 24 having a tubular leg 25 provided with threads 26 on the end thereof for engaging the threads 20 of the tank bushing previously described. In order to eliminate the necessity of gaskets and the like, the threads are tapered so as to assure a positive leak-tight connection when the valve and burner unit is mounted on the tank as later described.

The valve body also includes a laterally extending branch 27 adapted to project within the space between the depressions 8 and 11 of the tank top and which carries a valve indicated by the hand wheel 28 for controlling flow of fuel through the leg portion 25 of the valve body. The branch 27 is threaded as at 29 and carries a packing nut 30 for sealing about the stem of the valve. The total length of the branch 27 and parts carried thereby is such that the hand wheel is located within the circumference of the tank as shown in Fig. 2.

The valve body also includes a lateral branch 31 located above the branch 27 and extending at right angles thereto to mount the operating rod 32 of a nozzle cleanout needle of the same construction as the cleanout needle mechanism disclosed in the above mentioned patent. The operating rod 32 thus projects in the space between the depressions 8 and 9 and is of a length so that the handle portion 33 thereof terminates within the circumference of the tank as shown in Fig. 2.

The upper end of the valve body carries a nut 34 for mounting a generator tube 35 in axial alignment with the leg 25 and which carries a burner bowl assembly 36 which includes a collar 37 having heat conductive connection with the generator tube at a point below the fuel nozzle

38 and which is directly connected with the rounded bottom portion 39 of the burner bowl 36 and which has an outwardly flaring annular wall 40 terminating in a laterally extending annular rim 41. The flaring wall portion 40 is shown as offset above the rounded portion of the burner bowl as indicated at 42 so that the bottom portion may be of a size to confine a flow of cooling air around the nozzle which is admitted through openings 43 in the rounded portion of the burner bowl. The burner bowl carries a flame deflector 44 that is supported in spaced relation with the flaring wall portion 41 by arms 45. The flame deflector 44 is thus supported in coaxial relation with the burner so that the flame is spread outwardly in impingement with the flared portion 40 of the burner bowl. The wall of the burner bowl is thus heated and the heat is conducted through the rounded bottom portion to the collar 37 for heating the generator tube in the manner disclosed in the above mentioned patent.

With this structure, it is obvious that the valve, generator 35, and burner bowl 36 are adapted to be assembled and mounted on the tank as a unit merely by screwing the leg portion 25 of the valve body 24 into the threaded opening of the bushing 17 until the threads are tight and the valve control wheel 28 is located in proper position between the depressions 8 and 11.

The stove also includes a grid ring 46 that is preferably of slightly smaller diameter than the side wall of the tank and which encircles the burner bowl as shown in Fig. 1, the ring being of sufficient depth so as to serve as a shield for protecting the burner from external drafts and also to cooperate with the burner bowl in providing an annular passageway 47 for flow of secondary air around the burner. The grid ring is also of sufficient depth so that it projects below the air inlet openings 43 of the bowl as shown in Fig. 1. The upper edge of the burner ring terminates in an inwardly extending annular flange 48 that is directed toward the extended axis of the burner bowl and which is shaped to provide a plurality of bosses 49 having sides 51 connected in rounding curves with the intermediate portions of the flange, outer faces 52 substantially registering with the circumference of the skirt portion 53 of the ring and substantially horizontal top faces 54 as best shown in Fig. 4. The bosses are extremely rigid and also enhance the rigidity of the grid ring and particularly the inwardly extending flange portion 48 thereof.

In order to facilitate location of the grid supporting legs 55, the skirt portion of the grid ring is preferably provided with outstruck portions 56 that extend parallel with the axis of the ring and which are of sufficient width to form channel-like seats 57 opening inwardly from the inner side of the grid ring to locate upwardly extending ends 58 on the legs 55. The depth of the grooves are preferably such that the inner faces of the upper portions of the legs are contiguous with the inner surface of the grid ring. The legs 55 are preferably of channel-shaped cross section and include web portions 59 that are continuations of the portions 58 previously described and which have inwardly extending side flanges 60 and 61 extending from a point adjacent the lower edge 62 of the grid ring to the lower ends of the legs where they join with feet 63, which feet are preferably provided by turning inwardly extensions of the web portions 59 of the legs as best shown in Fig. 4. The feet 63 are preferably provided with



rounded ends 64 so that they substantially confirm with the shape of the lugs 13 on which they are seated.

In order to secure the legs to the lugs, the feet have openings 65 for passing fastening devices such as screws 66 into threaded sockets 67 of the lugs as best shown in Figs. 1 and 4. The legs when thus formed provide a very rigid, light weight construction and facilitate attachment of the grid ring by spot welding of the skirt portion of the ring to the upper portions 58 of the legs so as to form a unit assembly that is applied to the tank by sleeving it over the burner and valve assembly.

Formed in the top portions of the respective bosses 49 are inwardly opening slots 69 which terminate short of the closed outer ends to form seat-like surfaces 70 for grid fingers 71. Each grid finger includes a relatively bar-like member 72 having a wing portion 73 projecting from the edge thereof near its inner end to project through the slots 69. The wings are provided with openings 73 registering with similar openings 74 in the side portions of the bosses for passing cotter pins or the like 75 whereon the fingers are adapted to pivot from an outwardly extending position shown in Fig. 1 with the edges of the fingers resting on the seating surfaces 70 to a folded position entirely within the bounds of the grid ring so that they are incompassed thereby when they are folded over the burner bowl in the same manner as the grid fingers disclosed in the above mentioned patent. When in extended position, the outer ends of the fingers are cantilevered over the seating surfaces 70 of the bosses to form a grid of adequate size to support the usual cooking utensils such as a frying pan, coffee pot or the like when the stove is in use.

In assembling the stove constructed as described, the tank or fount, the valve and burner bowl and the grid with its supporting legs, are assembled as complete units. The pump and filler cap are applied in their proper position on the tank unit. The burner and valve unit is mounted on the tank by inserting the threaded leg 25 of the valve body into the threaded opening of the bushing 17 so that it may be turned therein until the threads are tight when the operating wheel 28 of the valve is located intermediate the position of the depressions 8 and 11. The grid and leg unit is then inserted over the burner bowl 40 so that the feet 63 of the legs 55 rest upon their respective lugs 13 after which the fastening devices are inserted and turned into the sockets 67 of the lugs so that the heads thereof draw the feet of the legs into firm contact with the lugs so as to complete the assembly.

When the parts are assembled, it is apparent that the legs of the grid ring unit form openings 76, 77, 78 and 79 for individual access to the valve wheel, the cleanout needle lever, the filler cap, and the pump, the openings being of sufficient size to allow ready manipulation of the respective parts even when the operating parts are manipulated with gloves on the hand of the operator as when the stove is used during cold weather or in cold climates.

From the foregoing it is obvious that I have provided a portable stove that is of extremely simple and compact construction which is composed of few parts and which is adapted to be readily assembled so that the stove may be produced in quantity production and at relatively low cost with a minimum of skilled labor.

What I claim and desire to secure by Letters Patent is:

1. A stove of the character described including a cylindrical fount, a valve and burner unit having a tubular leg mounted on the upper end of the fount substantially in the axial center thereof, a plurality of lugs having threaded sockets and fixed to said top in a circular series about the leg of the valve unit, a grid ring encircling the burner of said unit and having an annular depending skirt substantially conforming to the diameter of the fount, legs fixed to the skirt of the grid ring in corresponding relation to the spacing of said lugs and having inturned apertured feet on the lower ends seated on the lugs with the apertures in registry with the sockets, and fastening devices extending through the apertured feet and into the threaded sockets of the lugs for securing the feet to said lugs and to anchor the grid ring on the fount.

2. A stove of the character described including a cylindrical fount, a valve and burner unit having a tubular leg mounted on the upper end of the fount substantially in the axial center thereof, a plurality of lugs having threaded sockets and fixed to said top in a circular series about the leg of the valve unit, a grid ring encircling the burner and having an annular depending skirt provided with channel-like seats extending in the axial direction of the grid ring, legs having upper ends fixed within said channel-like seats and having inturned apertured foot portions registering with the threaded sockets of said lugs, and fastening devices extending through the apertures of the foot portions and into the threaded sockets of said lugs.

3. A stove of the character described including a cylindrical fount, a valve and burner unit having a tubular leg mounted on the upper end of the fount substantially in the axial center thereof and provided with an operating member and nozzle cleanout means having an operating member arranged at right angles to the valve operating member, lugs having threaded sockets and fixed to said top at substantially 90° apart with one of the lugs intermediate the operating members, a filler cap and a pump located in said top in diametrical registry with said operating members whereby said filler cap and pump are positioned in spaces between other of the lugs, a grid ring encircling the burner of said unit and having an annular depending skirt substantially conforming to the diameter of the fount, legs fixed to the skirt of the grid ring is corresponding relation



to the spacing of said lugs and having inturned apertured feet on the lower ends seated on the lugs with the apertures in registry with the sockets, and fastening devices extending through the apertured feet and into the threaded sockets of the lugs for securing the feet to said legs and to anchor the grid ring on the fount, said legs forming the sides of individual operating spaces for the filler cap, pump and both operating members respectively.

4. A stove of the character described including a cylindrical fount, a valve and burner unit having a tubular leg mounted on the upper end of the fount substantially in the axial center thereof, and provided with an operating member and nozzle cleanout means having an operating member at substantially right angles to the operating member of the valve unit, lugs having threaded sockets and fixed to said top at substantially 90° apart with one of the lugs being located between said operating means, a filler cap and a pump located in said top in diametrical registry with the operating members whereby said filler cap and pump are located in spaces between other of the lugs, a grid ring encircling the burner and having an annular depending skirt provided with offset portions forming channel-like seats extending in the axial direction of the grid ring, legs having upper ends fixed in said channel-like seats and having inturned apertured foot portions registering with the threaded sockets of said lugs, and fastening devices extending through the apertures of the foot portions and into the threaded sockets of said lugs, said legs forming the sides of individual operating spaces for the filler cap, pump and both operating members respectively.

BOYD W. TULLIS.


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