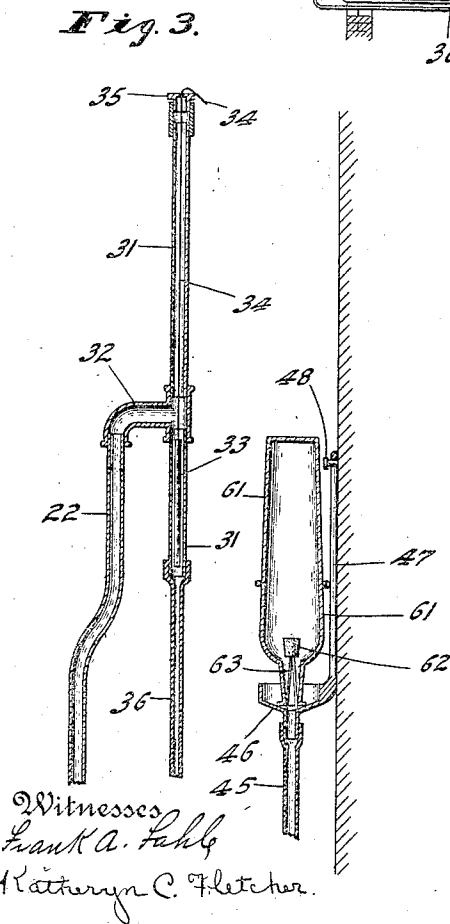
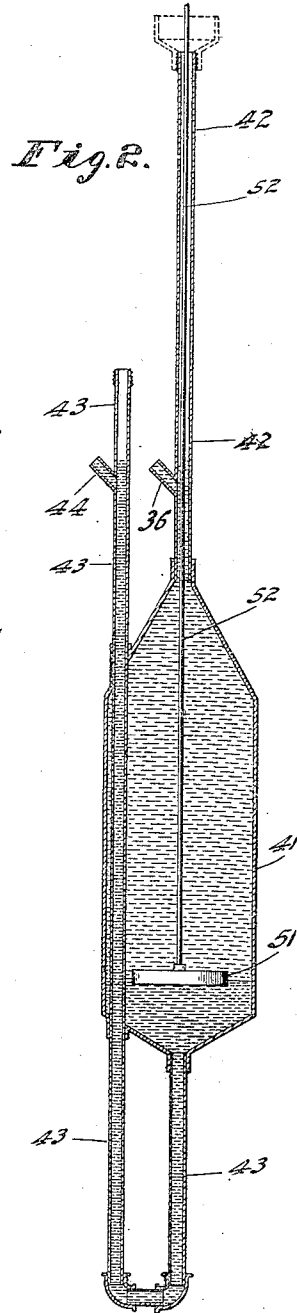
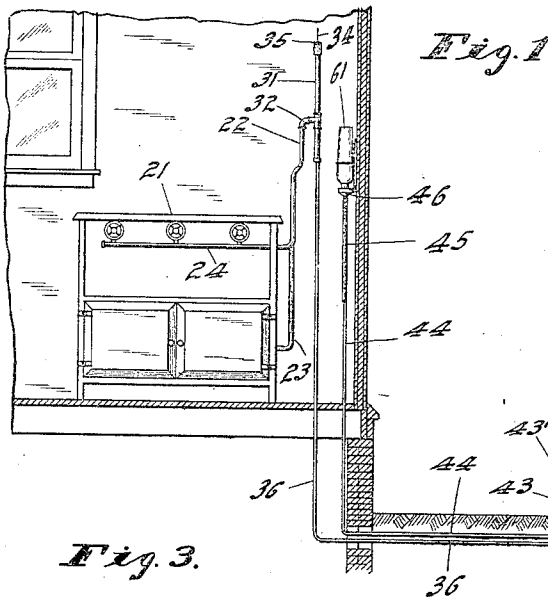


R. S. MITCHELL.  
 APPARATUS FOR HANDLING FLUID FUEL.  
 APPLICATION FILED JULY 30, 1908.

936,470.

Patented Oct. 12, 1909.



Witnesses  
 Frank A. Fahg  
 Kathryn C. Fletcher.

Inventor  
 Richard S. Mitchell,  
 By Bradford & Wood,  
 Attorneys.

# UNITED STATES PATENT OFFICE.

RICHARD S. MITCHELL, OF MORGANTOWN, INDIANA.

## APPARATUS FOR HANDLING FLUID FUEL.

Specification of Letters Patent.

Patented Oct. 12, 1909.

36,470.

Application filed July 30, 1908. Serial No. 448,069.

*to all whom it may concern:*

Be it known that I, RICHARD S. MITCHELL, citizen of the United States, residing at Morgantown, in the county of Morgan and State of Indiana, have invented certain new and useful Improvements in Apparatus for handling Fluid Fuel, of which the following is a specification.

The object of my present invention is to provide an apparatus whereby fluid fuel, specially gasoline, can be supplied for consumption in a safe, economical and easily regulated manner.

I have illustrated this apparatus as arranged to supply gasoline to an ordinary gasoline cooking stove; but it may obviously be also utilized in supplying the fluid fuel to gasoline engines, or to any other sort of burners, or for any other purpose which may be desired.

Referring to the accompanying drawings, Figure 1 is an elevation of a gasoline stove in position for use with my improved fluid fuel supplying apparatus arranged in suitable relation thereto and connected therewith; Fig. 2 a detail sectional view, on a considerably enlarged scale, of the tank containing the fluid fuel and the pipes immediately connected therewith—the float for indicating the condition of the contents of the tank being also shown, and Fig. 3 a detail vertical sectional view of those portions of the pipes or tubes and immediately adjacent parts which are arranged in proximity to the point of consumption.

In the illustration given an ordinary gasoline stove 21 is connected, by means of a pipe 22 having branches 23 and 24, with the fluid fuel supply, which replaces the tank commonly used to contain such fluid fuel. The upper portion of the supply apparatus consists of a tube 31 having a branch 32 to which the pipe 22 is immediately connected. Within the member 31 is a float 33 from which a small rod 34 extends up through cap 35 of part 31. From the lower end of part 31 a plain tube 36 leads to the upper end of the main fluid fuel supply tank, or to a tube extending upwardly therefrom. This fluid fuel supply tank 41 is shown as cylindrical in form, with ends of conical shape. From the upper cone-shaped tank-end a tube 42 extends; and, in the construction shown, the supply pipe 36 branches off from this tube a short distance above the point where it joins the tank. Another pipe 43 also leads

from said tank, preferably its lower end, and returns upwardly to a point alongside the lower portion of pipe or tube 42. For purposes of protection and rigid and durable construction this pipe 43 is shown as passing through one side of tank 41; but, obviously, it might (without in any way affecting its functions) pass up outside of and free from said tank. Near its upper end a branch pipe 44 leads up to the vicinity of the point of use, near the part 31. The upper part 45 of this pipe 44 should be of rubber hose (or some such flexible material) for purposes which will presently be explained. Said pipe 44—45 terminates in a connection with a funnel 46; and said funnel, as best shown in Fig. 3, is usually suspended to the wall of the building, as by means of a loop 47 connected to said funnel and a suitable nail or pin 48 driven into the wall. Water is introduced into this funnel for the purpose of displacing the fluid fuel in the tank 41 and forcing the same up to the point of consumption.

I am able to produce the proper results with this apparatus in the following manner: Fluid fuels (such as gasoline) and water, are of different specific gravities, the fluid fuel being lighter than the water. The two substances will not commingle, therefore, when placed in the same vessel. I take advantage of this fact in the manipulation of this apparatus. I will first describe the introduction or renewal of the supply of fluid fuel into the tank 41:

With the parts in the condition shown in Fig. 2, the caps closing the upper ends of the pipes 42 and 43 being removed, and the pipe 42 extending to a considerable distance above the upper end of pipe 43, the branch pipes 36 and 44—45 being either closed or leading to a still higher level, I am able, by pouring the fluid fuel into the upper end of pipe 42 to displace the water which may be in the lower portion of the tank and cause the same to flow out of the top of pipe 43. The pipe 42 has a removable cap 42', and the pipe 43 a removable cap 43'. These are kept closed while the apparatus is in use, but are removed when the supply of fluid fuel in the tank is to be renewed in the manner above described. When the cap 42' is removed I preferably attach a funnel in its place, as is indicated by dotted lines in Fig. 2.

In order to know the character of the tank's contents, and thus avoid wasting the

fluid fuel, I provide a float 51 of such character and construction that it will float on water and will sink through the fluid fuel. When the upper end of tube 42 is opened, therefore, the rod 52 which extends up from float 51 will project out from the top of tube 42 a distance equal to the depth of the water in the lower portion of the tank 41. When this tube projects outwardly a considerable distance, after the cap has been removed from tube 42, it indicates that the fluid fuel has been consumed to the extent of such projection, and that its place has been supplied by the inflowing water, as will be presently described. Likewise, when filling the tank, the rod 52 will descend as the fluid fuel is introduced, and, when the top of said rod reaches the same level as the top of said tube it indicates that the tank has been fully supplied with the liquid fuel. When this is done the caps should be screwed on tightly onto both the tubes 42 and 43, and there remain until a new supply of fuel is necessary. In the consumption of the fluid I also take advantage of this same difference in the specific gravities of the two substances. The branch 32 through which the fluid fuel flows to the point of consumption is sufficiently higher than the funnel 46 to substantially balance this difference; and, in setting up this apparatus, I adjust this difference to exactly the amount necessary to attain the proper pressure to secure the desired flow of fuel. In installing the apparatus the flexible portion 45 of the pipe 44-45 becomes of service. In supplying the fuel for consumption I make use of a vessel 61. This vessel is shown as (and is preferred to be) a transparent vessel, as a bottle of suitable capacity, it being thus easy to observe the condition of its contents. This vessel 61 has an internally positioned stopper 62 from which project small rods 63, which extend out somewhat beyond the end of the neck of said vessel. When I desire to utilize this apparatus I first fill this bottle with water; and by means of the small rods 63, draw the cork into the neck, thus temporarily stopping the exit opening. I then place said vessel in an inverted position (as shown in the drawings) with its neck in the funnel 46 in position to discharge into the pipe 44-45. As it reaches its position in the funnel, contact with the bottom thereof will push the rods 63 and stopper 62 upwardly, leaving an opening through which the water may flow. The specific gravity of the water being greater than that of the fuel, the tendency will be to force the fuel out of the tank 41 and through pipe 36 to the point of consumption. The user can observe the amount of fuel being consumed by noticing the extent to which the water leaves the bottle. When the water in the bottle has been completely discharged, the flow of fuel will

stop; and, in the case of a stove (as illustrated) the fire must go out. This is a matter of considerable consequence, as in case of carelessly leaving the fire unattended it will become extinguished in a short time.

The float 33 enables me to position the funnel 46 in exactly the proper relation to the discharge branch 32 when setting up the apparatus. I move said funnel until the fuel will just flow into said branch. This causes the float 33 to raise; and, when at this exact point, I bend the small rod or wire 34, and this point is thus definitely ascertained and preserved to indicate the correct position of the float in future adjustments.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. The combination, in an apparatus for handling liquid fuel, of a tank, a fuel pipe connected to the upper end of said tank, a water pipe also connected with said tank, the upper ends of said pipes being at different levels whereby the liquid fuel is enabled to displace the water when introduced and cause said water to flow up to the upper end of its said pipe, means for tightly closing said pipes when the tank has been charged with fuel, connections leading from said pipes to the point of use, and means whereby the liquid fuel is gradually displaced and caused to flow to said point of use.

2. The combination, in an apparatus for handling liquid fuel, of a tank, a liquid fuel supply therefor, a water supply therefor, a float therein which will float on the water and sink in the fuel, and a rod extending from said float up through the fuel supply tube and arranged to indicate the character of the contents of the tank.

3. The combination, in an apparatus for handling liquid fuel, of a supply tank, a pipe leading from the upper end thereof to the point of use, a second pipe leading from near the point of use back to the tank, and a vessel arranged at a lower level than the point to which the liquid fuel is carried for supplying water to said last named pipe and thus gradually displacing the liquid fuel and causing the same to flow to the point of use.

4. The combination, in an apparatus for handling liquid fuel, of a tank for containing the fuel supply located outside the building which contains the fuel consuming device and buried in the ground, a pipe leading from the upper end thereof to above the ground, another pipe leading from the lower end thereof to above the ground but to a less height than the first mentioned pipe, branch pipes leading therefrom to the point of use, a branch from that pipe which extends further from the ground leading to a point higher than the branch which leads

from the other pipe, a connection from the first-named branch leading to the consuming devices, and a regulating fluid supply arranged to discharge into the second named branch whereby the fluid fuel is caused to flow through said first-named branch.

5. The combination, in an apparatus for handling liquid fuel, of a tank for containing the fuel supply located outside the building which contains the fuel consuming device and buried in the ground, a pipe leading from the upper end thereof to above the ground, another pipe leading from the lower end thereof to above the ground but to a less height than the first-mentioned pipe, said pipes each having a removable cap, and each having a branch leading to near the point of use, the arrangement being such that when said caps are removed and the fluid fuel is introduced through the taller pipe the water which has previously been introduced will flow out through the shorter pipe.

6. The combination, in an apparatus for handling liquid fuel, of a tank containing the fuel supply located outside the building which contains the fuel consuming device and buried in the ground, a pipe leading from the upper end thereof to above the ground, another pipe leading from the lower end thereof to above the ground but to a less

height than the first-mentioned pipe, said pipes each having a removable cap, and each having a branch leading to near the point of use, the arrangement being such that when said caps are removed and the fluid fuel is introduced through the taller pipe the water which has previously been introduced will flow out through the shorter pipe, said tank containing a float, and said float having a rod which extends up through the taller pipe and serves as an indicator for the contents.

7. The combination, in an apparatus for handling liquid fuel, of a supply tank, a fuel pipe leading from the upper end thereof to the point of use, and a water pipe leading from said tank to near the point of use but terminating at a lower level than the discharge point of the fuel pipe, said difference in the elevation of terminal points being sufficient to compensate for the difference in the specific gravities of the fuel and the water.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this twenty-seventh day of July, A. D. one thousand nine hundred and eight.

RICHARD S. MITCHELL. [L. s.]

Witnesses:

CHESTER BRADFORD,  
A. C. RICE.