

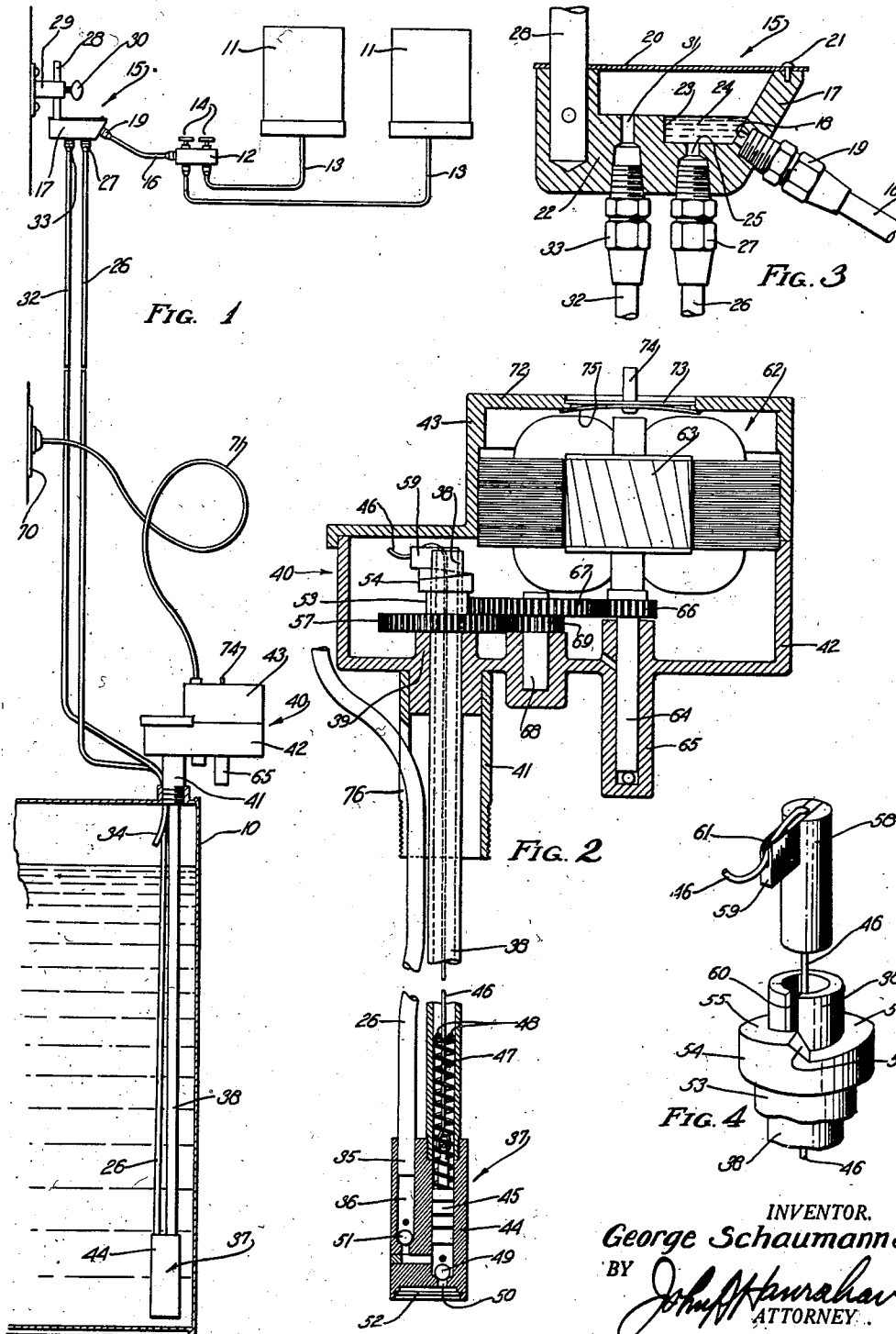
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KITCHEN RANGE BURNER OIL PUMP

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KITCHEN RANGE BURNER OIL PUMP

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3 Claims. (Cl. 103—218)

This invention relates to new and useful im-
provements in feeds for oil burners and has par-
ticular relation to a fuel feeding means for kitchen
range burners.

5 An object of the invention is to provide a con-
tinuously operating system for supplying oil to
the type of burners commonly employed in
kitchen ranges.

10 Another object is to provide a fuel supply sys-
tem of the character stated and which is of sim-
ple construction, including a minimum of parts,
and which is reliable in operation.

15 Other objects and advantages will become ap-
parent from a consideration of the following de-
tailed description taken in connection with the
accompanying drawing wherein a satisfactory
embodiment of the invention is shown. How-
ever, it will be understood that the invention is
not limited to the details disclosed but includes
20 all such variations and modifications as fall with-
in the spirit of the invention and the scope of
the appended claims.

In the drawing:

25 Fig. 1 is an elevational view showing the com-
plete system of the present invention;

Fig. 2 is a vertical sectional view on an en-
larged scale through the motor and gear casing
and pump of the invention;

30 Fig. 3 is a vertical sectional view on an enlarged
scale through a fuel level control means em-
ployed; and

Fig. 4 is an enlarged perspective view showing
the pump operating means.

35 According to the present invention, fuel oil is
pumped directly from a drum or tank 10, in a
basement or other suitable location, to burners
11 which may be in a kitchen range or the like.
The burners 11 are ordinarily fed from an in-
verted bottle (not shown) which bottle is mount-
40 ed on a stand (not shown) adjacent the burners
and feeds oil to a valve 12 from which the oil
passes to the burners through tubes 13. In the
present instance, and usually, valve 12 is a mul-
tiple valve comprising a pair of needle valves
45 having hand pieces 14.

In the present instance, valve 12 is fed from
a fuel level control means 15 through a supply
tube 16. Means 15 comprises a receptacle 17
having a fuel feed outlet opening or port 18 to
50 which the tube 16 is connected by any suitable
fitting or coupling 19. By reference to Fig. 3
it will be noted that the receptacle 17 is open at
its upper side and is hollow and that the upper
side is ordinarily closed by a cover 20 pivoted to
55 the receptacle by a stem 28 about which it may

be swung horizontally so that the interior of the
receptacle may be inspected. A pin 21 prevents
casual movement of the cover. Further, it will
be seen that the bottom wall of the receptacle
includes a thickened portion 22, the upper sur-
5 face of which is considerably above the fuel feed
outlet opening 18 and which thickened portion
provides a shoulder 23 defining one side of a
small section or compartment 24 of the recep-
tacle.

10 An inlet opening or port 25 is provided in the
bottom wall of the receptacle 17 and enters the
latter in the section or compartment 24 and a
fuel supply tube 26 is connected with this port
25 by a suitable fitting or coupling 27. Fuel oil
15 fed to the section or compartment 24 through
the tube 26 may obviously pass into the coupling
19 and thence into the tube 16 to be carried to
the valve 12. The level control means 15 is
equipped with a stem or post 28 and is adjust-
20 ably mounted by passing such stem or post
through a suitably located bracket 29. Means
15 is adjusted to the desired level and is then
secured in adjusted position by tightening a
thumb screw 30 against the stem or post 28.

25 When properly adjusted receptacle 17 is so
located that the top edge of its internal shoulder
23 or of its thickened portion 22 is even with or
level with the highest level to which the fuel is
to be raised in the burners 11. The arrange-
30 ment is such that when the fuel in the section
or compartment 24 rises higher than the upper
surface of the thickened portion 22 or the shoul-
der 23 formed by said portion the surplus oil will
pass out through an overflow or return port 31
35 and into a return tube 32 connected with said
port by any suitable fitting or coupling 33 and
having its discharge end 34 located within the
tank 10.

40 The lower end of tube 26 is carried downwardly
through the oil in the tank 10 and has its extreme
lower end 35 connected with the discharge outlet
36 of a pump 37. This pump 37 is carried at the
lower end of a tubular column or length of pipe
38, the upper end of which is mounted in a
45 thickened portion 39 of a casing 40. Casing 40
is in turn mounted on a coupling 41 which may be
threaded into a tapped opening in the upper side
of the tank 10 as shown in Fig. 1. Casing 40 in-
cludes a receptacle-like lower portion 42 and a
50 cover portion 43 and the upper end of the column
38 extends into the casing and is disposed above
the bottom wall of the receptacle portion 42
thereof.

55 The barrel or cylinder 44 of the pump 37 is

threaded or otherwise secured to the lower end of the column 38 as shown in Fig. 2 and within the said cylinder portion there is a plunger or piston 45 to which is connected a wire or rod 46 extending upwardly through the column and projecting at the upper end thereof. Within the lower portion of said column is a coil spring 47 bearing at one end against the piston 45 and normally tending to keep it in a discharged position, and bearing at its other end against stop means 48 which may comprise a pair of pins extending transversely through the column. A ball check 49 controls the oil entrance port 50 of the pump and a ball check 51 controls the discharge of the pump into the outlet 36. Preferably, a strainer 52 is located to prevent the entrance of particles of foreign matter into the pump.

Rotatably mounted on the upper end of the tubular column 38 is a sleeve 53 on the upper portion of which is a cam member 54 having a gradually inclined cam surface portion 55 and a sharply inclined cam surface portion 56. On the lower portion of sleeve 53 is a relatively large gear 57, and the sleeve in addition to being turnable about the upper end of the column rests on or bears against the enlargement 39 of the bottom or receptacle portion 42 of the casing 40.

By reference to Fig. 4 it will be noted that the column 38 extends above the cam 54 and vertically reciprocable in the upper end portion of said column is a plug-like member 58 the upper end portion of which is kerfed and receives a portion of a member 59 extending transversely thereof and projecting beyond one side thereof. The projecting portion of the member 59 extends through a slot 60 opening through the upper end of column 38 whereby said member 59 and the plug-like member 58 are held against turning movement. Wire or rod 46 is carried upwardly through member 58 and then has its end passed through a slotted portion of the member 59 which slotted portion is pinched against the wire as at 61 whereby to secure it.

Within the casing 40 is a motor 62 including a rotor 63 the vertical shaft 64 of which extends into a relatively long bearing 65 formed with the bottom wall of the casing and which shaft is provided with a relatively small gear 66. Meshing with gear 66 is a relatively large gear 67 on a stub shaft 68 which shaft also carries a relatively small gear 69 which small gear meshes with and drives the gear 57 on the sleeve 53 whereby to rotate the cam 54. Current for the motor 62 may be supplied from any suitable source as, for example, from a socket 70 through the medium of a line or cord 71.

Preferably the lower portion 42 of the casing 40 constitutes an oil sump whereby the shafts and gears may be lubricated. The top wall 72 of the cover portion 43 of the casing is preferably provided with an opening closed as by a removable disc 73 to which is attached a hand piece 74 and the disc simply sets into a recess in the wall 72 and is held as by a flat spring 75 which spans the recess or opening and engages the under side of the wall at opposite sides of said opening. Obviously, by flexing the spring 75 the disc may be shifted to one side or the other of the opening and then removed to permit of inspection of the motor.

Assuming that the means of the present invention is completely installed and that the level control means 15 has been properly adjusted or adjusted to the proper elevation the motor 62 may be started and fuel oil will be supplied to the

valve 12 and from thence to either or both of the burners 11 as desired. Through the gears 66, 67, 69 and 57 the motor will rotate the sleeve 53 and the cam 54 will be carried with the sleeve. In this connection it is noted that said cam may be formed integral with the sleeve or may be formed separately therefrom and secured thereto. As the cam is rotated its gradually inclined surface 55 moves beneath the projecting portion of the member 59 gradually elevating said member and the plug-like member 58 and drawing the wire or rod 56 upwardly thereby raising the piston or plunger 45 against the action of the spring 47 and compressing the latter.

As the piston 45 is drawn upwardly fuel oil is drawn into the cylinder 44 through the port 50, the action of the piston causing unseating of the check valve 49 and seating of the check valve 51. In this way, the pump is loaded or charged and as the cam continues to turn its sharply inclined surface 56 comes under the projecting portion of member 59 or in other words the high point of the cam moves from under said portion of such member releasing the member so that the spring 47 may act to draw the members 58 and 59 downwardly and project the piston 45 downwardly causing seating of the valve 49 and unseating of the valve 51 whereby the pump discharges into the outlet passage 36 and thence into the tube 26.

As the pump continues to operate, tube 26 delivers the fuel into the section or compartment 24 of the oil level-control means 15 and from such compartment the required amount of fuel passes into the tube 16 for delivery to the valve 12 and thence to the burners. When the height of oil in compartment 24 reaches the flood stage, the surplus oil passes into the over-flow port 31 and thence to the tube 32 and is returned by such tube to the tank 10. Tube 26 passes out of the tank and tube 32 enters the tank through a notch or cut-out 76 in one side of the coupling 41 as best shown in Fig. 2.

It is the present intention that the motor 62 operate constantly and the capacity of the pump 37 is such that said pump may supply oil in excess of the maximum requirements of the burners fed from the level control means 15. All surplus oil is returned to the tank through tube 32 and in the event that the burners are completely cut off and the motor is not stopped the entire out-put of the pump over-flows back to the tank. Since the system does not require attention and since the motor 62 consumes very little current, 6 or 8 watts, there is little advantage in shutting it off unless the burner is to be out of operation for a long period of time. As the projecting portion of member 59 passes through the slot 60 in the upper end of the pipe section 58 it will be appreciated that said member will not turn with the cam but may only move vertically.

Having thus set forth the nature of my invention, what I claim is:

1. In an apparatus of the character described, a coupling providing a detachable connection, a casing at the upper side of and supported by said coupling, a column entering said casing and supported by said coupling and extending from the lower side thereof, a pump cylinder carried by the lower end of said column, a reciprocable piston in said cylinder, means secured to the piston and extending upwardly through the column, a member secured to said means and having a portion in said casing, a spring in the column and normally holding the piston in discharged position

tion, a cam on the upper end of said column and operable to move the member and draw the piston upwardly to load the pump cylinder and then release said member to permit the spring to actuate the piston to discharge the pump, and a motor in said casing and connected to operate the cam.

2. In an apparatus of the character described, a hollow tubular coupling providing a detachable connection, a casing at the upper side of and supported by said coupling, a column entering said casing through the coupling and supported by said coupling and extending from the lower side thereof, a pump cylinder carried by the lower end of said column, a reciprocable piston in said cylinder, means secured to the piston and extending upwardly through the column, a member secured to said means and having a portion in said casing, a spring in the column and normally holding the piston in discharged position, a cam in the casing and operable to move the member and draw the piston upwardly to load the pump cylinder and then release said member to permit the spring to actuate the piston to discharge the pump, a motor in said casing and connected to operate the cam, said coupling having an opening in a side wall above its attaching portion, a tube into which the pump discharges, and said tube located at the side of

said column and extending through the opening in the coupling as and for the purpose set forth.

3. In an apparatus of the character described, a coupling comprising a detachable connection, a casing at the upper side of and supported by said coupling, a column entering said casing through the coupling and supported thereby and extending from the lower side thereof, a pump cylinder carried by the lower end of said column, a reciprocable piston in said cylinder, means secured to the piston and extending upwardly through the column into the casing, a member secured to said means and having a portion in the casing, a spring in the column and normally holding the piston in discharged position, a cam in the casing and operable to move the member and draw the piston upwardly to load the pump cylinder and then release said member to permit the spring to actuate the piston to discharge the pump, a motor in the casing and connected to operate the cam, the lower portion of said casing comprising an oil sump, said motor in the upper portion of the casing, and gearing in the lower portion of the casing and comprising a driving connection between the motor and said cam.

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