



AFRICAN REGIONAL INDUSTRIAL PROPERTY ORGANISATION (ARIPO)

807

(11) (A)

<p>(21) Application Number: AP/P/98/01323</p> <p>(22) Filing Date: 19970905</p> <p>(24) Date of Grant & Publication 20000131</p>	<p>(73) Applicant(s): NAPHTALI MACHARIA KABUGA P.O. Box 78061 Nairobi Kenya</p>
<p>(30) Priority Data</p> <p>(33) Country:</p> <p>(31) Number:</p> <p>(32) Date:</p>	<p>(72) Inventors: NAPHTALI MACHARIA KABUGA P.O.Box 78061 Nairobi Kenya</p>
<p>(84) Designated States:</p> <p>BW GH KE MW SD UG</p> <p>ZM ZW</p>	<p>(74) Representative NAPHTALI MACHARIA KABUGA P.O BOX 78061 NAIROBI KENYA</p>

(51) **International Patent Classification (Int. CL.6):** B07D 5/61; B61D 5/08

(54) **Title:** Mobile Fuel Station

(57) **Abstract:**

This invention consists of a mobile fuel service station. A mobile fuel tanker truck is fitted with pumps and fuel meters so that it can be able to service vehicles at their station or in remote areas. The fuel tank consists of several compartments to hold the different types of fuels. Each compartment is fitted with a pump and a meter.

FIELD OF THE INVENTION

This invention relates to a mobile fuel service station that offers filling services to motor vehicles in an area remote from a petrol station and the equipment used thereof.

5

BACKGROUND

This existing situation is that when a motorist wants to fill his vehicle with fuel he has to travel to a service station. This has a drawback especially for enterprises with a large fleet of vehicles since each vehicle has to travel to the service station. For vehicles operating on a remote area without service stations, it can be very difficult for motorists to get fuel. Therefore there exists a need to provide a means by which motorists can easily get fuel even from places remote from a fuel station.

10

15

SUMMARY OF THE INVENTION

The present invention discloses a mobile fuel station by which a fuel selling enterprise can be able to provide fuel to vehicles at a place remote from a fuel service station. This invention consists of a fuel tanker, which is a truck with a fuel tank, fitted with fuel pumps and fuel gauge meters. The fuel tank in the fuel tanker is subdivided into four parts. These four parts are for carrying the various different types of fuels, for example, petrol supper, petrol, regular, etc. Each of these compartments is fitted with a unit which comprises of a fuel compartment via a pipe. This pipe could be flexible pipe or a fixed metallic type. This is the suction pipe, or the pipe that draws fuel from the fuel compartment. Then from the unit with the pump and the fuel meter, another pipe comes out. This pipe is made of flexible material to enable movement. This is the pipe that takes the fuel to the vehicles fuel tank or any other receptor for the fuel. At the end of this pipe is fitted a manually operated valve. In one arrangement, the unit with the pump and the meter is fitted at the bottom of the tank. This way the meter can be read easily by a person standing beside the truck as he fills a vehicle or any other acceptor.

20

25

30

In another second arrangement, the pump can be fitted separately at the top of the fuel

AP/P/98/01323

compartment and the meter fitted either beside the truck or at its side. In this arrangement, there is a third pipe to connect the pump with the meter.

5 In a third kind of arrangement the fuel flows by gravity, in which case no pump is fitted. Only a fuel meter is fitted at the bottom of the fuel compartment. This pump can be fitted directly at the compartment without any interconnecting pipes or there can be a flexible pipe connecting the pump with the fuel compartment. The pump in all cases mentioned earlier can either be mechanical or electrical and preferably electrical and getting their power from the main engine of the truck or from an auxiliary engine fitted in any convenient place in the
10 truck.

DESCRIPTION

15 The tank and all fittings are to be suitable for handling all white oil products (Regular, Super, Kerosene and Gas Oil). To ensure that the thermal stability of these fuels is not adversely affected, it is advisable not to use copper or copper bearing alloys containing more than 35% copper may be used for any fittings or equipment in contact with the products carried and handled. Tank material are preferably mild steel or aluminium. The maximum width of the tank should preferably not be greater than the overall width of the
20 outer edges of the vehicle tyres. The tank is constructed with four compartments. The tank cross section can be round, oval, rectangular or any other shape. The tank can also either be fixed or detachable from the truck. The minimum ullage space of each compartment is preferably 4% of nominal capacity. Each compartment is designed to ensure complete drainage with the vehicle standing on a 1 in 20 slope in any direction. All welds
25 on the tank barrel and understructure are left in the as welded condition. Each tank compartment should be able to withstand a hydraulic pressure of at least 5 psi. Tank compartments are separated by cofferdams. Cofferdams are plugged and sealed at the bottom. Plugs are removable for inspection purposes. Each compartment should preferably be fitted with a manhole cover. The manhole, when unbolted, should be at least 10mm
30 diameter. The manholes are offset to the offside of the tank longitudinal centre line, and the "handling" of the manhole covers is to be selected so that the centres of all fill openings are as near as possible in a straight line. The compartment lids should preferably

AP/P/ 98 / 0 1 3 2 3

to hinge at the front except for the rear most which should hinge to the rear. A manually operated foot valve can be fitted in each compartment. Outlet valves to be manually operated. An electric pump complete with metering unit and hose/nozzle is fitted at each compartment. The outlet pipe from each compartment is brought out below the understructure on the nearside forward of the boogie. All changes of direction are uniformly curved and sharp changes of direction are to be avoided. A blind flange (and sealed) can be provided in case of future bottom loading.

Each pipe is to be arranged to slope continuously, minimum slope preferably to be 1 in 20 towards its outlet to ensure complete drainage. Each compartment outlet has a foot valve and an end cap. Outlet pipes terminate at the same area/location at the left hand side centre of the tank and with a distance of approximately 150mm between the outlet valves. The outlet valves are then enclosed in a lockable cabinet to prevent unauthorized access. Hoses have screwed couplings on both ends to securely hold the hose onto the truck and onto the off loading point while off loading. A full width walkway is fitted between the tank top coaming, and preferably constructed of serrated edge aluminium grating. Allowance to be made for cut-outs around proud fittings and manholes as necessary. The coaming is formed in the shape of an open inverted 'U' and is fitted along the whole length of tank top. Both ends should preferably be covered with flashing end plates extending across the top of tank at coaming height. The whole coaming is to be continuously welded to the tank shell to form an integral part thereof. The inside walls of the coaming can be vertical and preferably 915 mm apart, and the top will stand 25 mm above the highest point of any fitting on the manhole or walkway when such fitting is in the closed position. It is preferred that the manhole hatch assembly be mounted in a transverse or offset position to allow for a clear and unobstructed walkway of approximately 305 mm width on the nearside. (Dip to remain in the true centre of each compartment).

It is required that the coaming end flashing be relieved to provide easy access from ~~htr~~ to walkway. Flashing is to taper down from top of coaming and run across top of tank at a height of 25 mm. The 25mm height is required to prevent water and spillage from running down the end of the tank. Both coamings are to remain as a clear unobstructed duct

AP/P/98/01323

should further fitment of vapour recovery be necessary. All walkway panels are constructed with rails running across the tank, and fully supported between and along each coaming. Two internal drain tubes, are to be run from the rear walkway area. Extension pipework to below chassis level is should preferably be provided, (to ensure that water does not drain onto brake drums etc) Dipstick storages are located as close to the coaming as practicable to prevent the dipsticks when stowed from presenting a trip hazard. A walkway access ladder should preferably be provided centrally at the rear of the tank, approximately 150mm clear of it, sloping forward from the vertical. Hose racks are to be provided along each side of the tank to accommodate hoses. The hose rack supporting channels should preferably be aluminium alloy extrusions.

All electrical equipment and wiring is insulated return. All wiring is are PVC insulated and run with semi-rigid plastic conduit. Metallic components should preferably not be used. All wiring should preferably enter units from below to stop water entry where possible. Behind the rear of the driver's cab, screw-in or capless bulbs should not be used, junction boxes, connectors and all electrical connections should be adequately protected and shielded from ingress of moisture or flammable liquids. Battery to be contained in a box with a top insulated cover. A reverse bleeper to be fitted. All external electrical fittings should preferably be provided by a detachable diesel driven generator (sizing to be as per the use).

Fire extinguishers are to be mounted on the tank understructure. A heavy duty bumper should preferably be attached by bolting fitted across the rear end of the tank. This bumper can be the width of the tank and the ends are to be turned forwards.

Each compartment of the tank is to be calibrated and two or more sets of brass dipsticks are to be supplied with the tanker. An external engine emergency stop can be provided. Exhaust pipe should preferably be in the front, otherwise to be shielded with a sleeve to prevent spilt product from impinging on the exhaust's surface. Air induction point to be as high as possible to prevent product induction.

Wiring rear of fire screen can be nylon or PVC insulated and run with semi rigid plastic conduit No metallic component shall be used. Battery is contained in a box with insulated cover. A master switch is mounted on the offside, below the top of the chassis and

housed within a corrosion resistant weather proof box and suitably labelled. Two master switch remote operation buttons, suitably labelled can be fitted, one to the nearside of the vehicle and the second in the cab.

5 All controls which could be required to be operated whilst the vehicle is in motion should be within easy reach of the driver whilst wearing the seatbelt. The windscreen should preferably be Laminated. Electronic tachograph can be installed and should provide the Monitoring of overspeeding and fuel consumption, Indicate rough braking, does driver rating in percentage form, does vehicle and driver performances on daily basis and indicates
10 if any vehicle is used outside working hours or weekends and records over revving and idling. A cab tilt bar can be provided. All daily fluid levels including oil and water shall be possible without tilting the cab. The internal engine stop can be air operated, sited adjacent to the battery isolator button and clearly labelled.

15 The height of the centre of gravity of the load (vessel and payload) should preferably exceed 95% of the width across the outer walls of the tyres on the vehicle's rearmost support axle.

DESCRIPTION OF THE DRAWINGS

20 Fig 2: is the side elevation of the fuel tanker.
Fig 3: is a section through the fuel tank.
Fig 4: is the plan of tank.
25 (2) is the alert siren and 1 is the advertising board. (3,4, 5 & 7) is one location of the fuel metering unit. (4 & 6) is one location of a fire extinguisher. (8, 9 & 10) are storage for lubricants and (11) are fuel compartments. (12) is a catwalk and (13) is hose storage. (17) is one location of lubricants display holder.

AP/P/98/01323

CLAIMS

1. A mobile fuel service station characterised in that its a fuel tanker truck incorporating:-
 - a fuel tank having a plurality of compartments and the said compartments to hold different types of fuels.
 - Fuel(s) gauge meter(s) for quantifying fuel being dispensed.
 - A means of dispensing fuel from the storage compartments to a motor vehicle or container.
 - Fuel pumping system which can use pneumatic principles to force fuel through the gauge meter, and the dispensing hoose.
 - Fuel pumping system which can use any standard mechanical pump to force fuel through the gauge meter, and the dispensing hoose.
 - All the components in claim 1, being the truck, the fuel tank, the fuel gauge(s), fuel dispensing hose pipes, all to be manufactured as one unit to make a mobile fuel service station.
2. A mobile fuel service station of claim (1) wherein the said truck can be 2 axle, 3 axle truck , a semi trailer, a trailer or any other vehicle that can be fitted with a fuel tank.
3. The fuel tank according to claim 3 where the different compartments are served by one unit or a multiple of fuel meters.
4. The fuel tank according to claim (1) whose cross section is round, square, rectangular oval or any other shape.
5. The fuel tank according to claim (1) which is fixed onto the truck.
6. The mobile fuel service station according to claim (1) where the fuel gauge meters unit are fixed at the bottom of the fuel tank.
7. The mobile fuel service station according to claim (1) where the fuel gauge meters unit are fixed along the vertical side of the truck.
7. The fuel tank meter according to claim (1) where the fuel gauge meter can be placed on the front., side or back of the fuel tank.
8. In one preferred embodiment of the invention the fuel according to claim (1) flowing from the fuel tank through the meter gauge onward through the dispenser hose pipe to the motor vehicle or container by means of gravity.