March 13, 1962 J. J. COLONNA 3,024,806

LIQUID MIXING APPARATUS

Filed Dec. 4, 1958 2 Sheets-Sheet 1

Fig 1

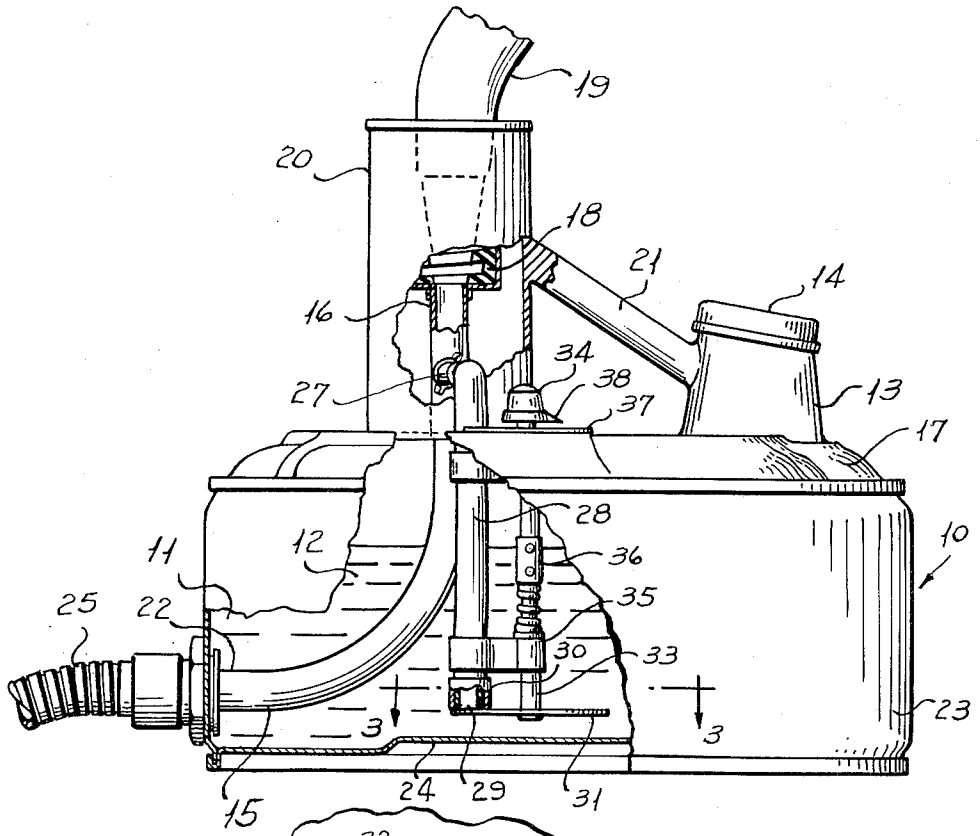
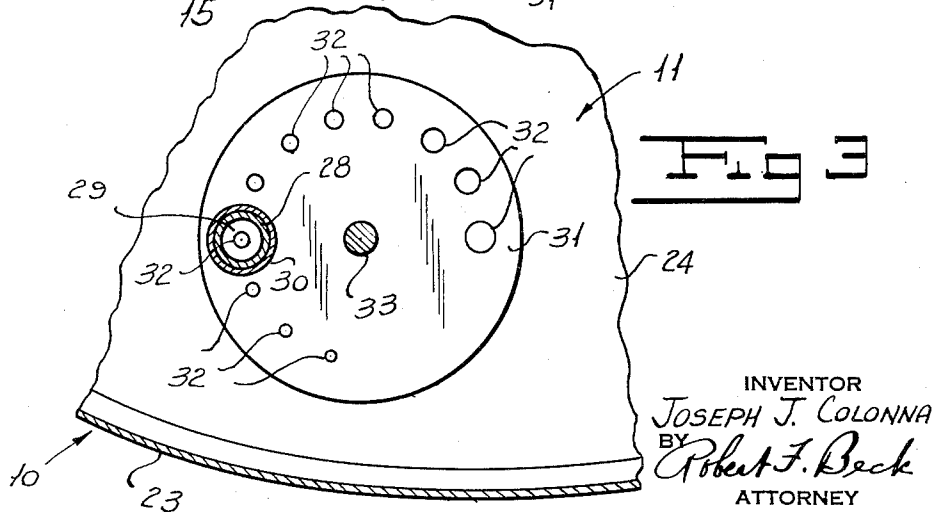


Fig 3



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FIG 2

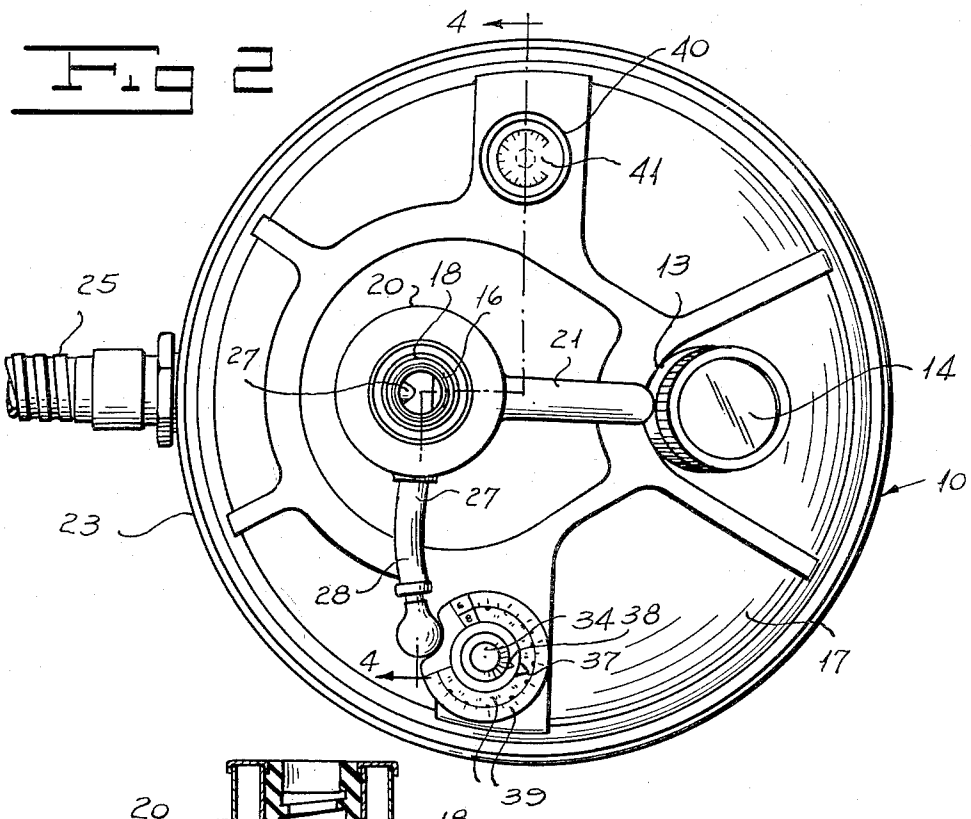
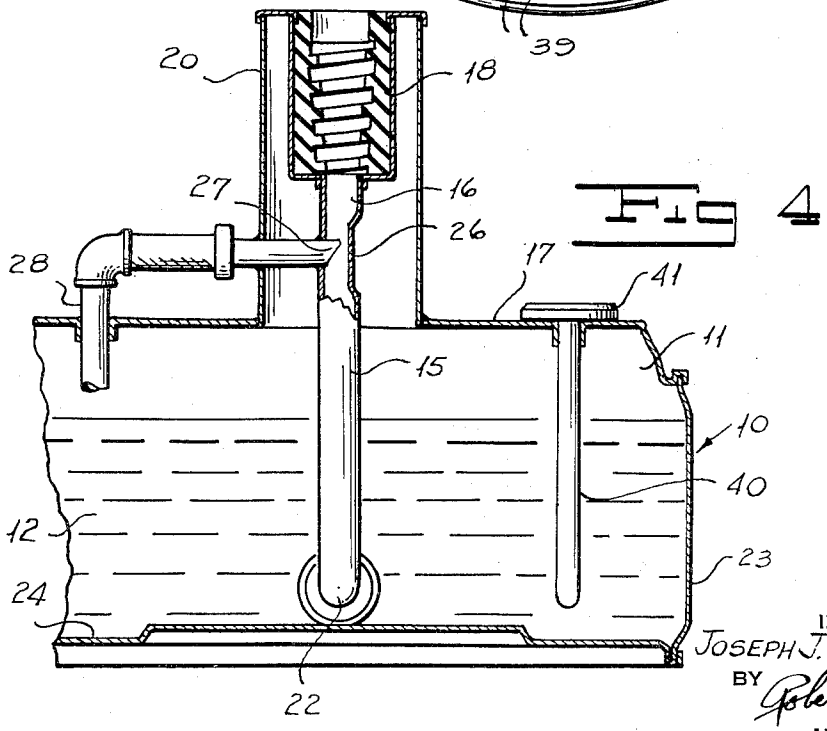


FIG 4



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LIQUID MIXING APPARATUS

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3 Claims. (Cl. 137—604)

My invention relates to mixing and more particularly to the mixing of liquids for use as a fuel mixture for engines and the like, this application being a continuation-in-part of my application Serial No. 691,893, filed October 23, 1957, now Patent Number 3,003,521.

One of the objects of my invention is to provide mixing apparatus which is so constructed and arranged that a liquid contained therein may be metered and proportionally mixed with another liquid flowing through said apparatus.

Another object of my invention is to provide apparatus of the foregoing described character which is equipped with adjustable metering means whereby a pre-established ratio between the liquids may be maintained even though a change is obtained in the viscosity of one of the liquids.

A further object of my invention is to provide apparatus of the foregoing described character equipped with temperature responsive means for denoting the viscosity of one of the liquids whereby the metering means may be adjusted to accord with a change in the viscosity to thus maintain a pre-established ratio between the liquids being mixed.

An important object of my invention is to provide apparatus of the foregoing described character which is portable and simple in construction, durable in use, efficient in operation, economical in manufacture, and lends itself to the mixing of various liquids in predetermined proportions with a minimum of initial adjustment to obtain said proportions.

With the above and other objects in view, as will hereinafter appear, the invention consists in the combination and arrangement of parts hereinafter set forth and illustrated in the accompanying drawings from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Referring to the drawings wherein like reference characters designate like parts throughout the several views:

FIGURE 1 is a side elevation, partly in section, of my invention;

FIGURE 2 is a top plan view thereof;

FIGURE 3 is a detail sectional view taken on the line 3—3 of FIGURE 1; and

FIGURE 4 is a detail vertical sectional view taken on the line 4—4 of FIGURE 2.

In practicing my invention, as illustrated in the drawings, I provide a receptacle **10** having a chamber **11** constituting a reservoir for containing a mixing liquid, for instance, lubricating oil **12** which is introduced into the chamber **11** through a filling spout **13** provided with a vented removable cap **14**. The receptacle has extending therethrough a fuel supply conduit or pipe **15** for supplying a fuel mixture to a gasoline engine or the like. The upper end **16** of the conduit extends above the top wall **17** of the receptacle and is provided with a resilient coupling **18** having a tapered bore for receiving and tightly retaining therein the outlet end of a discharge nozzle **19** provided on the end of a hose leading from a gasoline supply pump or the like. The coupling is disposed within an elongated metallic collar **20** fixed to the top wall **17** of the receptacle. A bar **21** or the like constituting a handle is connected to and extends between the spout **13** and collar **20** whereby the receptacle may be conveniently supported during operation of the apparatus.

The lower end **22** of the conduit **15** extends through the side wall **23** of the receptacle adjacent the bottom wall **24** and is connected to a flexible armored tubular member or hose **25** leading to the gasoline tank of an engine. Above the top wall **17** the conduit **15** is provided with a constriction **26** constituting a Venturi nozzle in which is connected the upper end **27** of an aspiratory tube **28** extending downwardly within the reservoir and terminating in an intake port **29** in proximity to the bottom of the reservoir. The intake port **29** is defined by a collar **30** carried by the tube **28** and cooperates with a disc **31** having a plurality of openings **32** of varying diameters formed therein for selective registration with the intake port **29** whereby the amount of oil flowing through said port **29** may be controlled in accord with its viscosity.

The disc **31** is fixed to the lower end of a rotatable spindle **33** having an upper end journaled through the top wall **17** of the receptacle and provided with an operating knob **34**. The lower end section of the spindle is journaled in a bearing bracket **35** carried by the lower end of the tube **28** and with the spindle having fixed thereon a sleeve **36** superjacent the bracket **35** and on which spindle a coil spring is mounted, between the bracket and sleeve, for maintaining the disc **31** in tension engagement with the collar **30** to preclude rotation of the disc except through the instrumentality of the knob **34**.

A scale-plate **37** is secured to the top wall **17** below the knob **34** and through which plate the upper end of the spindle **33** extends. The knob **34** is provided with a pointer **38** which cooperates with indicia or markings **39** in the nature of symbols on the plate **37** for denoting the positions of the various openings **32** in the disc **31** relative to the intake port **29** whereby an opening **32** of a desired size may be selectively positioned in communication with the intake port **29** and thus control the flow of oil from the reservoir into the tube **15** by the siphoning action created by the flow of gasoline through said tube **15** in supplying the tank of the engine with gasoline from the gasoline pump. A thermometer **40** extends downwardly into the reservoir and is equipped with a scale **41** carried on the top wall **17** and containing a plurality of symbols which indicate the temperature and, accordingly, the viscosity of the oil **12** contained within the reservoir, it being understood that the viscosity of the oil is directly related to the temperature thereof.

The symbols on the plate **37** associated with the valve correspond with the symbols on the temperature dial **41** so that by adjusting the spindle **33**, through the medium of the knob **34**, a reading on the plate **37** may be obtained which coincides with the reading on the scale **41** whereby an opening **32** of proper size is disposed in registration with the inlet port **29** thereby permitting oil in the reservoir to be withdrawn through the tube at a rate for mixing with the gasoline in accord with a pre-established proportion. Obviously, upon a change in the viscosity of the oil, as indicated by the thermometer reading, the spindle is operated to effect registry of another of the openings **32** with the inlet port **29** to compensate for the change in the viscosity.

In use, assuming the disc **31** is in position to effect registry of the inlet port with a suitable opening **32** to accord with the viscosity of the oil, as indicated on the plate **37**, a flow of gasoline is effected from the pump downwardly through the tube **15** and thus siphons a predetermined amount of oil from the reservoir by virtue of the Venturi nozzle **26**, whereby a designed mixture of gasoline and oil is obtained and introduced into the tank of the engine, through the hose **25**, as a fuel for the engine. Obviously my invention provides means by which gasoline and oil may be readily mixed in proper proportions as a fuel mixture and said proportions capable of being maintained upon a variation in the viscosity of the oil.

Without further elaboration, the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and sub-combinations.

It is obvious that the invention is not confined solely to the use herein disclosed in connection therewith as it may be utilized for any purpose to which it is adaptable. It is, herefore, to be understood that the invention is not limited to the specific construction as illustrated and described, as the same is only illustrative of the principles involved which are capable of extended application in various forms, and the invention comprehends all construction within the scope of the appended claims.

What is claimed is:

1. In a mixing apparatus, a container having a reservoir, a conduit extending through and above said container and terminating in a resilient coupling having a tapered bore, said conduit having an inward depression contained therein immediately below said coupling, a siphoning tube extending downwardly into said reservoir and having an angularly cut upper end extending into said conduit diametrically opposite said depression, said siphoning tube adapted to siphon liquid from said reservoir upon the flow of fluid through said conduit for mixing said fluid and liquid to provide a fuel, valve means having indicia thereon and connected to said tube for controlling the amount of flow of liquid therethrough, said valve means being adjustable relative to said tube to vary said flow through said tube to accord with a predetermined value, and temperature indicating means extending into said liquid and effective for denoting the viscosity thereof to thus enable an operator to adjust said valve member in accordance with such viscosity.

2. In a fuel mixing device, a receptacle having a chamber therein for oil to be mixed with gasoline in predetermined proportions to provide an engine fuel, a gasoline supply conduit carried by said container and extending through said chamber to terminate in a resilient coupling having a tapering bore, said conduit being provided with a restricted portion above said chamber, an aspiratory tube having a lower end terminating in an inlet port adjacent the bottom of said chamber, said tube having an angularly cut upper end terminating above said chamber and communicating with said restricted portion for siphoning oil from said chamber upon flow of gasoline through said conduit for mixing said oil and gasoline to provide the engine fuel, a thermometer extending into said chamber and effective for denoting the viscosity of the oil therein, said thermometer being provided with visual indicia for indicating a value, and valve means comprising a rotatable flat disc mounted laterally of the inlet port of said aspiratory tube on a rotatable spindle extending through and to a point above said chamber, said disc being provided with openings of various sizes for selective registry with said inlet port to control the flow of oil into said tube in accordance with said value, the upper end of said spindle having indicating means cooperably associated therewith for permitting adjustment of said valve through said spindle to the proper sized opening related to the value indicated by said thermometer.

3. In an oil and gasoline mixing apparatus, a container having an oil reservoir, a conduit extending through said container and terminating in a gasoline inlet above said oil reservoir, said conduit having a restricted portion therein intermediate its inlet and said oil reservoir, a siphoning tube extending downwardly into said reservoir and having its upper end extending into said conduit within said restricted portion, said siphoning tube adapted to siphon oil from said reservoir upon the flow of gasoline through said conduit for mixing said oil and gasoline to provide an engine fuel, a spindle rotatably mounted in said container with one end thereof located within said reservoir laterally of the lower end of said siphoning tube and the other end located exteriorly of and above said reservoir, a flat valve disc mounted on the lower end of said spindle for rotation therewith, said valve disc having sliding coaction with the lower end of said siphoning tube and being provided with various sized openings for selective registry with said tube end, temperature indicating means extending into the oil in said reservoir and effective to denote the viscosity thereof and means on the upper end of said valve spindle correlated with said temperature indicating means for enabling an operator to rotate said spindle and adjust said valve disc in accordance with said oil viscosity.

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