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FLUID DISPENSING SYSTEM

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Fig. 1.

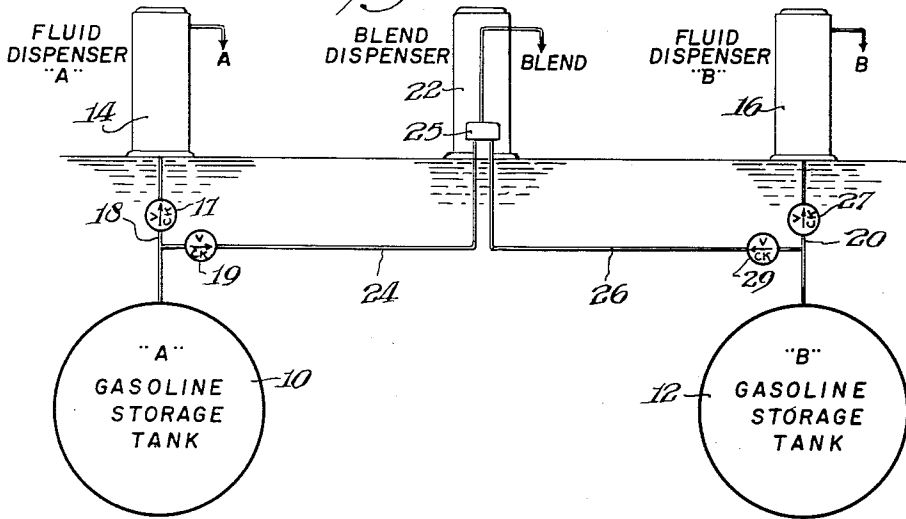
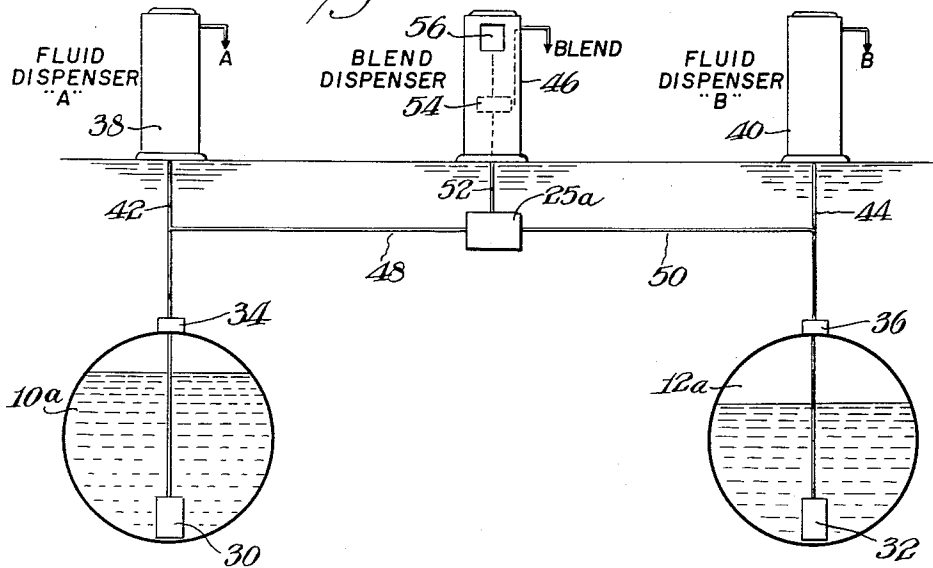


Fig. 2.



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FLUID DISPENSING SYSTEM

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Application April 17, 1957, Serial No. 653,366

4 Claims. (Cl. 222—135)

This invention relates to a system for proportioning and blending dissimilar fluids, and more particularly relates to a system for proportioning and blending an octane grade of gasoline intermediate relatively low and relatively high octane grades.

Automobiles with internal combustion engines of widely varying compression ratios are in service today. In order to satisfy the requirements of each of these engines with an economical fuel, it has been found necessary to provide three octane grades of gasoline instead of two grades which were previously considered adequate. The provision of a separate storage tank and dispensing system for the third grade of fuel, however, is expensive and space consuming. An object of this invention is to provide a simple and economical means of adapting a system for dispensing two dissimilar liquids into a system for dispensing three dissimilar liquids.

In accordance with this invention a proportioning and blending apparatus is connected to simultaneously draw a supply from each of the existing storage tanks. A relatively low octane gasoline, for example, is stored in one storage tank and a relatively high octane or premium grade of gasoline is stored in the other tank. These relatively high and relatively low grades are dispensed directly through the existing dispensers.

The aforementioned proportioning and blending apparatus mixes the two dissimilar base gasolines at a predetermined ratio to provide a blend having an octane rating intermediate that of the relatively high and relatively low octane grades. The proportioning and blending apparatus automatically maintains the blending ratio substantially constant. This apparatus may be incorporated within a dispenser, or it may be incorporated in a self-contained unit which is particularly advantageous in a remote type dispensing system.

Novel features and advantages of the present invention will become apparent to one skilled in the art from a reading of the following description in conjunction with the accompanying drawing in which similar reference characters refer to similar parts and in which:

Fig. 1 is a schematic diagram of one embodiment of this invention; and

Fig. 2 is a schematic diagram of another embodiment of this invention.

In Fig. 1 a pair of storage tanks 10 and 12, installed underground for example, respectively contain a relatively high octane or A grade of gasoline and a relatively low octane or B grade of gasoline. Conventional gasoline dispensers 14 and 16 draw a supply from tanks 10 and 12 directly through conduits or pipes 18 and 20. A blending dispenser 22 described, for example, in copending commonly assigned application for Letters Patent S.N. 659,743 filed May 15, 1957, entitled Fluid Proportioning and Dispensing Apparatus draws a supply simultaneously from tanks 10 and 12 through conduits or pipes 24 and 26, which tap into pipes 18 and 20. Blending dispenser 22 includes a proportioning unit assembly 25 which is

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described in detail in the aforementioned copending application. Check valves 17 and 19 are respectively installed in lines 18 and 24 between dispensers 14 and 22 to prevent one of these dispensers from drawing gasoline or air from the other. Similar check valves 27 and 29 are respectively installed in corresponding positions in lines 20 and 26. These check valves are not required in the embodiment shown in Fig. 2 because adequate check valves are included with the connected units therein shown.

The A or high grade of gasoline which has an octane rating sufficiently high to meet the most stringent requirements is dispensed directly from dispenser 14. A relatively low or B grade of gasoline having an octane rating just high enough to meet the lowest requirements is dispensed from dispenser 16. A blend having an octane rating intermediate the A and B gasolines is dispensed from the proportioning and blending dispenser 22. The proportioning of the blend is adjusted to suit the requirements of the largest percentage of purchasers. Means may be provided as described in aforementioned copending application S.N. 659,743 for varying the ratio of the A and B gasolines in the blend in accordance with varying conditions of supply and demand.

In Fig. 2 a system incorporating a remote pumping installation also includes a pair of storage tanks 10A and 12A respectively containing the A or B octane grades of gasoline. Submersible pumps 30 and 32 are installed, for example, within tanks 10A and 12A respectively. These submersible pumps may be of the type described in commonly assigned copending application for Letters Patent S.N. 599,993 filed July 25, 1956, entitled Pumping Assembly which on June 24, 1958, issued as U.S. Patent Number 2,840,139. Pumps 30 and 32 discharge a flow of gasoline through air eliminating devices 34 and 36, for example, which may be of the type described in commonly assigned copending application for Letters Patent S.N. 604,784 filed August 15, 1956, entitled Air Eliminating Device, now Patent No. 2,847,149. From the air eliminators 34 and 36 the A and B grades of gasoline are pumped to remote type dispensers 38 and 40 through supply lines 42 and 44.

A proportioning and blending apparatus unit assembly 25A is installed intermediate the storage tanks and another remote type dispenser 46. Proportioning assembly 25A draws from tanks 10A and 12A by tapping into pipes 42 and 44 by means of conduits 48 and 50.

Proportioning and blending apparatus 25A is similar, for example, to the proportioning and blending unit assembly described and claimed in commonly assigned copending application for Letters Patent S.N. 659,743 filed May 15, 1957, entitled Fluid Proportioning and Dispensing Apparatus with the exception that the adding differential incorporated therein need not be included. The A and B grades of gasolines are proportioned and mixed at a substantially constant ratio by means of apparatus 25A. This blend is discharged through conduit 52 to the conventional remote type dispenser which includes, for example, a meter 54 and a computer 56 which indicates the cost in gallonage of the dispensed gasoline. A remote system for dispensing two grades of gasolines is accordingly modified to dispense three grades of gasoline with a minimum of expense or disruption of service. Proportioning and blending apparatus 25A may also be controlled to vary the ratio of A and B grades in the blend in accordance with local and current conditions.

What is claimed is:

1. A fluid dispensing system comprising storage tanks for dissimilar fluids, a dispensing apparatus directly connected to each storage tank, each of said dispensing apparatus including an individual discharge outlet for sepa-

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rately dispensing the fluid stored therein, a proportioning and blending device connected to simultaneously draw a supply from each of said tanks, said proportioning and blending device mixing said fluids in predetermined proportions to provide a blend having characteristics intermediate that of the stored fluids.

2. A system as set forth in claim 1 wherein said proportioning and blending device is incorporated within a dispensing apparatus.

3. A system as set forth in claim 1 wherein said dispensing apparatus are of the remote type, and said proportioning and blending device is incorporated in a self-

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contained unit connected between said storage tanks and the blend dispenser.

4. A system as set forth in claim 3 wherein pumps and air eliminators are installed at each of said storage tanks and said proportioning and blending device is installed between said air eliminators and said blend dispenser.

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