Oct. 17, 1967 S. J. HERMAN 3,347,303

MECHANICAL DEVICE TO FACILITATE THE COMBUSTION OF FUEL OIL IN OIL BURNERS

Filed June 1, 1965 2 Sheets-Sheet 1

Fig.2

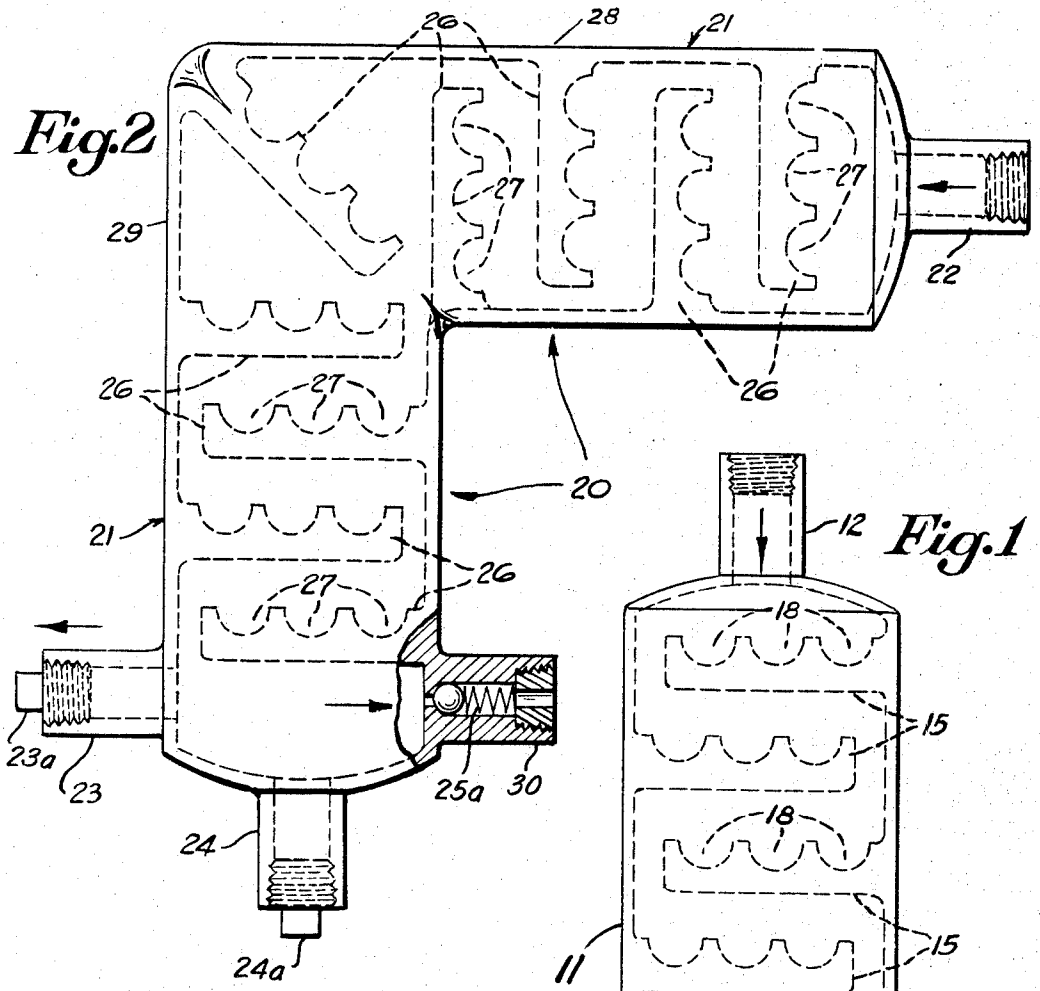



Fig.1



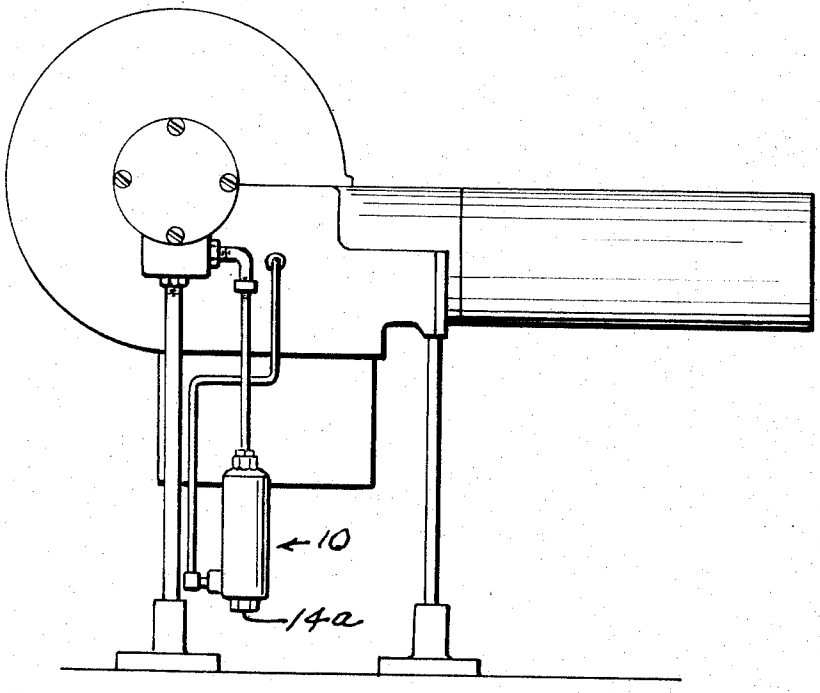

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Filed June 1, 1965 2 Sheets-Sheet 2

*Fig. 3*




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# MECHANICAL DEVICE TO FACILITATE THE COMBUSTION OF FUEL OIL IN OIL BURNERS

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6 Claims. (Cl. 158—36)

## ABSTRACT OF THE DISCLOSURE

An apparatus for mixing and homogenizing standard fuel oil solutions, for all high pressure burners, positioned in fuel feed line between pump and burner consisting of a flow through pressure cylinder containing fluted baffles, systematically placed to insure flow pattern obstructions, with inlet and outlet at opposite ends of the cylinder and a bored tap with plug in the cylinder wall for clean out. Turbulence created by obstructions to fluid flow under pressure thus mixing the solution.

This invention relates to a mechanical device to facilitate the combustion of fuel oil in oil burners.

It is an object of subject invention to provide a device that substantially eliminates fuel oil leakage when connected in the fuel oil supply line.

Another object is to provide an automatic shut off valve to the oil burner when the pressure in the device is reduced.

Another object is to substantially homogenize the fuel oil before reaching the oil burner.

Other objects of the instant invention will become apparent in the course of the following detailed description when taken in conjunction with the accompanying drawings showing by way of example the preferred embodiments of the inventive concept.

In the attainment of the aforesaid objects, subject device is made in two embodiments. The second embodiment differs from the first chiefly in that it is designed to add maximum agitation to the fuel oil on its way to the oil burner.

In the drawings:

FIGURE 1 relates to the first embodiment and is a schematic view thereof;

FIGURE 2 shows the second embodiment and is a schematic view thereof; and

FIGURE 3 is a schematic view of the device attached to an oil burner.

Referring now to the first embodiment of the device shown in FIGURE 1, reference numeral **10** indicates the device.

The device **10** is constituted in part of a container **11** suitable to contain fuel oil.

Leading into the container **11** is an internally threaded inlet **12**. By making the base of the inlet **12** integral or the like with the container and internally threading the inlet, sufficient threads are provided to prevent leakage when the outlet from the oil pump is connected to the device.

Adjacent the opposite end of the container is an internally threaded outlet **13**, somewhat similar to the previously mentioned inlet, but which leads to the oil burner. In the outlet **13** is an automatic shut off valve **16** so designed that when a solid plug **14***a* in the clean out **14** is removed the pressure in the container will be reduced and the shut off valve **16** will automatically close and stop the flow of fuel oil to the oil burner as later shown.

Inside the container **11** is a series of spaced baffles **15** with successive baffles oppositely directed which add turbulence to the fuel oil and when contoured as at **18** serve as receptacles to gather unhomogenized particles when the fuel oil passes therethrough on the way to the oil burner.



Referring now to the second embodiment of the device shown in FIGURE 2, reference numeral **20** indicates the device.

The second embodiment **20** differs from the previously described and illustrated first embodiment primarily in that the container **21** is made in two sections which are joined at an angle to each other for greater turbulence to the fuel oil prior to reaching the oil burner.

The container **21** of the second embodiment **20** is constituted, as illustrated, of a horizontal section **28** and a vertical section **29**. The two sections are shown as being at right angles to each other but the angle may be varied as desired. In addition, the two sections may be formed integral with each other or in any other known and suitable manner.

Adjacent the free end of section **29** is an internally threaded outlet **23** removably closed by a solid plug **23***a* as illustrated.

In the container **21** is a plurality of spaced baffles with successive baffles oppositely directed as indicated by reference numeral **26**. The baffles **26** on the side of the incoming fuel oil are provided with contours **27** which not only add to the turbulence of the fuel oil as it passes therethrough but also serve as receptacles for unhomogenized particles in the oil.

In the outlet **30**, as in the first embodiment, is a shut off valve **25***a* as illustrated and the purpose for which is later mentioned.

In operation: The amount of cleaning required, will depend upon the grade of fuel oil used. In either the device of the first or second embodiment, very little cleaning is required. In either embodiment, cleaning is started by shutting off the power to the electric pump, etc. Then, the solid plugs **14***a* or **24***a* and **23***a* are removed. Then again turning on the power to the pump, etc., the unhomogenized particles remaining in the containers will be flushed out. Whereupon the solid plugs **14***a* or **24***a* and **23***a* are replaced and the devices are again ready for operation.

What is claimed is:

1. A mechanical device to facilitate the combustion of fuel oil in oil burners, the device comprising an oil container, an inlet for the fuel oil under pressure at one end of the container, the inlet comprising a tube integrally formed at the base with the container and internally threaded, at least one outlet for the fuel oil in the opposite end of the container and internally threaded, at least one outlet for the fuel oil adjacent the first mentioned outlet, means removably closing the outlets, a spring loaded shut off valve disposed in one of the outlets, and means intermediate the inlet and outlets adapted to gather unhomogenized particles and agitate the oil as it passes through the container.

2. A mechanical device to facilitate the combustion of fuel oil in oil burners according to claim **1** in which the means intermediate the inlet and outlets for gathering particles and for agitating the fuel oil as it passes through the container comprises a series of spaced and oppositely directed baffles.

3. A mechanical device to facilitate the combustion of fuel oil in oil burners according to claim **1** in which the means intermediate the inlet and outlets for gathering particles and for agitating the fuel oil as it passes through the container comprises a series of spaced baffles, at least one of the baffles having spaced contours on the side of the incoming oil.

4. A mechanical device to facilitate the combustion of fuel oil in oil burners according to claim **1** in which the means intermediate the inlet and outlets for gathering

particles and for agitating the fuel oil as it passes through the container comprises a series of spaced baffles, the baffles being oppositely directed in succession and secured along one edge to the inner surface of the container.

5. A mechanical device to facilitate the combustion of fuel oil in oil burners according to claim 1 in which the means intermediate the inlet and outlets for gathering particles and for agitating the oil as it passes through the container comprises a baffled casing, the casing comprising at least one section formed at an angle to another section.

6. A mechanical device to facilitate the combustion of fuel oil in oil burners, the device comprising at least two sections, one section being formed at an angle to the other, at least one inlet for the fuel oil under pressure in the free end of the first mentioned section, at least one outlet for the fuel oil in the free end of the second mentioned section, means removably closing the outlet, at least two spaced outlets in the side of the second section and adjacent the free end, means adapted to connect one



of the outlets in the side of the second section to the oil burner, a shut off valve automatically closing the last named outlet when the pressure in the container is reduced, means removably closing the third mentioned outlet, and means adapted to gather unhomogenized particles and agitate the fuel oil as it passes through the container.

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