

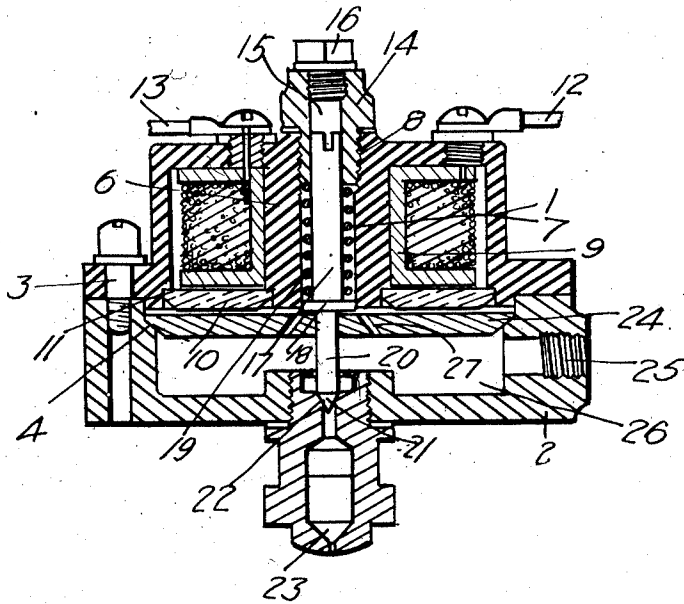
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MAGNETIC VALVE

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UNITED STATES PATENT OFFICE

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MAGNETIC VALVE

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My invention relates to improvements in liquid fuel valves, and the object of the invention is to devise a valve of this type for the control of atomized fires which may be electrically operated, which may be readily adapted either for delayed or instantaneous opening so that the fuel spray may be shut off quickly when required in order that the spray nozzle will not dribble and cause vapor or smoke, and at the same time to devise a valve in which a minimum amount of fuel will be trapped between the valve and the nozzle, and it consists essentially of the arrangement and construction of parts as hereinafter more particularly explained.

The figure represents a sectional view through my valve.

1 and 2 are the upper and lower members of a valve casing such members being connected together by screws as indicated at 3. The member 1 is provided with a central depending boss 6 having a central orifice 7 internally threaded at its upper end as indicated at 8. The boss 6 forms the core of an ironclad electrical magnet 9 which is supported thereon.

10 is a brass closing plate which fits within the recess 11 so as to protrude slightly below the surface of the member 1 to form a non-magnetic stop. 12 and 13 are the terminals of the winding of the electrical magnet 9. 14 is a plug through the upper end of the orifice 6 and provided with a central orifice 15 provided at its upper end with a closing screw 16. 17 is a vertically movable spindle slidable at its upper end in the orifice 15 and spaced apart from the walls of the orifice 6. 18 is a collar or enlargement on the lower end of the spindle 17 between which and the plug 14 extends a compression spring 19. The lower end of the spindle 17 is provided with a reduced extension 20 having a needle end 21 and co-acting with the valve seat 22 as a needle valve to feed the oil to the spray nozzle 23.

24 is an armature which normally rests upon the shoulder 4 when the valve is used for delayed operation. When it is used for instantaneous operation the valve is secured

directly to the spindle 20. 25 is the oil inlet.

In operation fuel is fed under pressure into the chamber 6 formed by the member 2 of the casing. When the magnet 9 is energized the armature 24 is attracted and when delay operations are required moves against the dashpot resistance in view to being immersed in oil and being in close fit in the casing until it strikes the enlargement 18 on the valve stem 17 when further movement opens the valve 21 lifting it from its seat 22. The time of opening is controlled by the size of bypass 27 formed in the armature 24. For quick instantaneous opening the armature 24 is secured directly to the valve stem 20 and reduced on its outside diameter so that immediately the stem is lifted by the upward movement of the armature the valve 21 is carried from its seat.

When the current energizing the magnet is broken the valve is returned to its seat by the spring 19 carrying the armature with it until the valve is seated. In the case of the armature being free it then travels the remainder of its distance to its seating position upon the shoulder 4 by means of gravity. If the valve is working horizontally the movement of course, could be effected by a suitable spring.

From this description it will be seen that I have devised a very simple construction of valve for controlling the flow of fuel oil to a spray nozzle which may be electrically operated and which may be readily adapted either for instantaneous or delayed operation.

What I claim as my invention is:—

1. A liquid fuel valve comprising a casing, an electromagnet located in the upper portion of the casing, a core forming part of the casing extending through the magnet and having a central orifice, a spring resisted stem supported within the orifice, an extension to the stem forming a needle valve, a needle valve seat coacting with the needle valve located in the lower portion of the casing, a disc armature engaging the stem when drawn upward by the magnet and a spray

nozzle carried by the casing through which the oil is fed from the valve seat.

2. A liquid fuel valve comprising a casing, a metallic disc dividing the casing into an upper and lower compartment, an oil inlet leading into a lower compartment, an electromagnet in the upper compartment, a spring pressed stem extending freely through the metallic disc and magnet, and forming a needle valve at its lower end, a needle valve seat formed in the lower compartment, a spray nozzle through which oil is fed from the seat, a disc armature sliding on the stem and adapted when attracted by the said magnet to lift the needle valve off its seat.

3. A liquid fuel valve comprising a casing, a metallic disc dividing the casing into an upper and lower compartment, an oil inlet leading into a lower compartment, an electromagnet in the upper compartment, a spring pressed stem extending freely through the metallic disc and magnet, and forming a needle valve at its lower end, an enlargement on the stem, a needle valve seat formed in the lower compartment, a spray nozzle through which oil is fed from the seat, and a disc armature having oil bypasses there-through, sliding freely on the stem to engage the stem enlargement.

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