

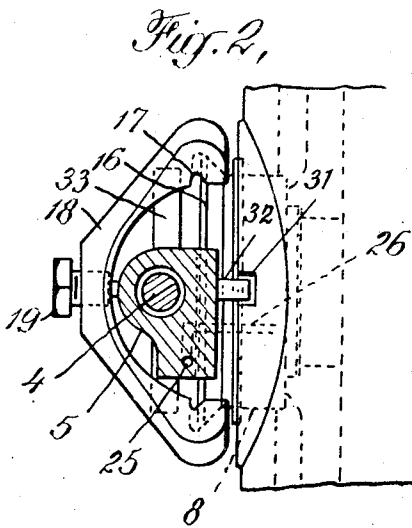
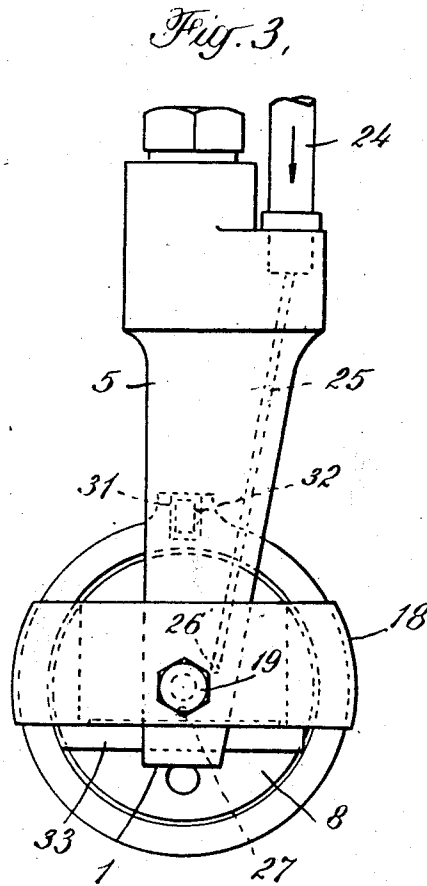
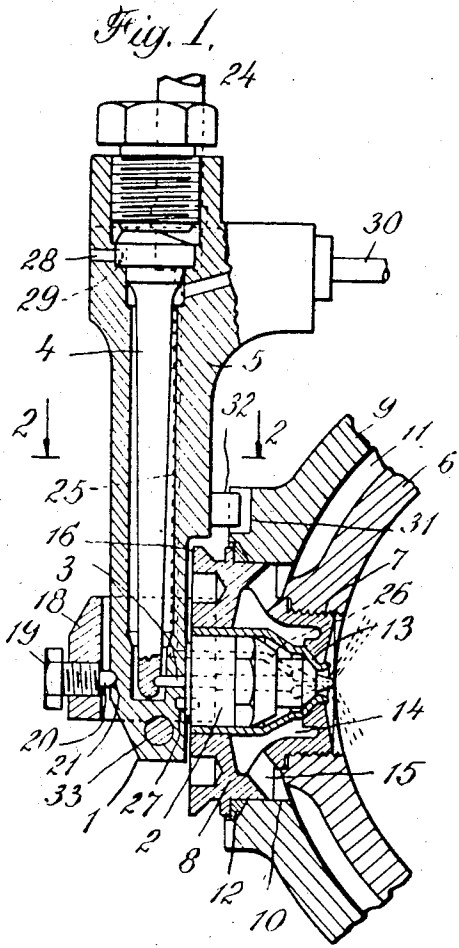
June 3, 1941.

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2,244,345

FUEL VALVE FOR COMBUSTION ENGINES

Filed July 9, 1938



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2,244,345

FUEL VALVE FOR COMBUSTION ENGINES

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Application July 9, 1938, Serial No. 218,321
In Switzerland July 13, 1937

3 Claims. (Cl. 251—144)

This invention relates to a fuel valve assembly arranged to be mounted in an opening in a chamber wall. The assembly is particularly suitable for mounting in a cylinder wall provided with a jacket forming a space for the circulation of a cooling medium such as internal combustion engine cylinders.

The fuel valve assembly comprises a valve mounting member mounted in an opening in the chamber wall in which the fuel valve is removably secured by clamping means. The fuel valve preferably comprises an injector portion, the axis of which extends through the opening in the chamber wall, a spring, and a housing for the spring, said spring and housing being arranged crosswise to the axis of the injector portion. The mounting member is preferably in the form of a bushing secured in the chamber wall and has a central opening in which is fitted a sleeve which forms with the bushing an annular passageway for the circulation therein of a cooling medium, and conduit means connect the annular passageway with the space between the chamber wall and the jacket. An attachment member, preferably in the form of a clamp is provided for removably securing the valve within the bushing and particularly within the sleeve. The bushing has means for engaging the attachment-member and securing the valve in its mounting in the chamber wall. In a preferred construction, the bushing has a projecting edge-portion to which the attachment member or clamp is locked. The clamp is preferably provided with a screw adapted to engage a recess in the valve housing and force the valve into proper position within the bushing.

The fuel valve and associated mounting and attaching elements are constructed and arranged whereby the fuel valve may be readily removed from its mounting in the chamber wall without interrupting the circulation of cooling medium.

The accompanying drawing illustrates one embodiment of fuel valve assembly in accordance with the invention, in which

Fig. 1 is a sectional view of a valve assembly;
Fig. 2 is a sectional view along the line 2—2 of Fig. 1; and

Fig. 3 is a side view of the assembly shown in Fig. 1 from left to right.

In the embodiment of the invention illustrated in the drawing, the fuel valve assembly is mounted on the cylinder of an internal combustion engine and for which purpose the fuel valve assembly is especially suited.

The drawing illustrates a fuel valve 1 having a

nozzle or injector portion 2 containing the usual needle-valve operated by the needle-valve stem 3. The injector portion 2 has an axis coinciding with the axis of the needle-valve stem 3 which is preferably in the radial direction of the engine cylinder. The needle-valve stem 3 is actuated by a valve spring 4 in the form of a bar mounted within a housing 5. The spring 4 and housing 5 are mounted crosswise to the axis of the valve.

The engine cylinder 6 (chamber wall) has a threaded opening 7 into which is screwed a valve mounting-member, preferably in the form of a bushing, 8. The cylinder jacket 9 has an opening 10 concentric with the opening 7 and the bushing 8 is tightly fitted therein and the cylinder cooling medium circulating in the space 11 is prevented from escaping by means of the packing material 12. The bushing 8 has a central opening extending into the cylinder into which is fitted a jacket or sleeve 13 and an annular passageway 14 is formed in the bushing adjacent the sleeve. Conduits 15 connect the space or passageway 14 with the cooling space 11. By reason of this construction the cylinder cooling medium may be circulated from the space 11 through the conduits 15 and into the passageway 14.

The sleeve 13 is constructed to accommodate the nozzle portion 2 of the valve and as illustrated in Fig. 1, that portion of the valve is cooled by means of its contact with the sleeve.

The bushing is preferably constructed with a projecting edge-portion 16 adapted to effect engagement with a groove 17 in the valve attachment-member 18. The valve attachment-member is preferably constructed in the form of a clamp and the grooves 17 are arcuate and preferably concentric with the edge-portion 16 of the bushing. In the central portion of the clamp a screw 19 is mounted having a centering end portion 20 adapted to fit into a recess 21 in the housing 5.

In the valve assembly in accordance with the invention illustrated in the drawing, the valve, and particularly the nozzle portion thereof, is mounted in the central opening of the bushing and the clamp is placed over the bushing with the grooves 17 thereof in engagement with the projecting edge-portion 16. The screw 19 is advanced until the centering portion 20 thereof is pressed into the recess 21 thereby centering and securing the valve in the bushing 8.

The fuel, which is led in through the pipe 24, can be forced out through the passages 25, 26 of the fuel injection device. In the fuel valve 2,

a groove 27 is arranged, in which a key holds securely the outer part 1 of the fuel valve. In order to hold the spring bar 4, a groove 28 can be provided, in which a centering pin 29 for the spring bar is arranged. Any oil leaking out is led away through the pipe 30. For securing and fixing the valve 1, a further groove 31 can be provided in the cylinder and in it the key 32 fits. A stop pin 33 for the yoke 18 secures it.

Certain features of the apparatus illustrated in the drawing are described and claimed in my co-pending application Serial No. 110,643, filed November 13, 1936, which has matured into Patent No. 2,159,607, granted May 23, 1939.

I claim:

1. A fuel valve assembly arranged to be mounted in an opening in a chamber wall having a cooling space between the wall and a jacket which comprises a valve mounting-member fixed in the opening, said member having a passageway in communication with the cooling space for the

circulation therein of a cooling medium, a fuel valve mounted in the member, said fuel valve having an injector portion the axis of which extends through the opening in the wall, a spring for the fuel valve, a housing for the spring, said spring and housing being arranged crosswise to the axis of the injector portion, and means for removably securing the fuel valve in the mounting-member including a clamp constructed and arranged to form a gripping engagement with the mounting-member.

2. A fuel valve assembly according to claim 1 in which the valve mounting-member is a bushing having an edge portion to which the clamp is engaged.

3. A fuel valve assembly according to claim 1 in which the mounting member is a bushing having a projecting edge portion concentric with the valve and in which the clamp has a groove adapted to engage the edge portion.

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