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FUEL INJECTION NOZZLE

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Fig. 1.

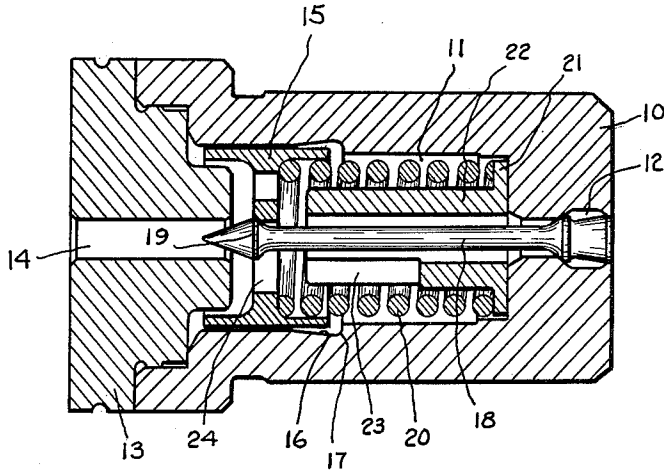
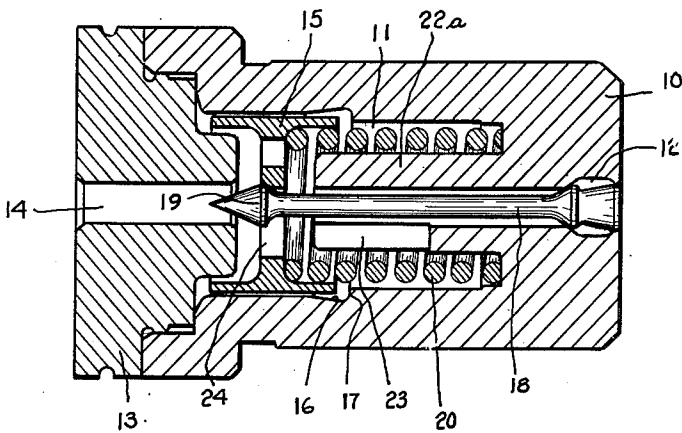


Fig. 2



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FUEL INJECTION NOZZLE

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1 Claim. (Cl. 299—107.6)

This invention relates to fuel injection nozzles and has particular reference to a new and improved nozzle having means for reducing the fuel volume in the fuel system and, therefore, reducing the volume under pressure which eliminates nozzle dripping, drooling and coking and, therefore, improves engine performance.

Another object of the invention is to provide a new and improved construction of the type set forth which is relatively simple and economical in construction and efficient in operation.

Another object is to provide a new and improved device of the type set forth in which no guide means is required for the nozzle valve, thus simplifying and reducing the cost of the device.

Referring to the drawing:

Fig. 1 is a longitudinal sectional view through one form of nozzle embodying the invention; and

Fig. 2 is a view similar to Fig. 1 but showing another form of embodiment of the invention.

Referring more particularly to the drawings wherein similar reference characters designate corresponding parts throughout, the form of the invention shown in Fig. 1 comprises a nozzle body 10 having the chamber 11 and the nozzle body 10 is provided with the discharge passage or opening 12.

Adjacent the opposite end of the nozzle body is provided the nozzle body cap 13 having the central fuel aperture 14 whereby fuel may pass into chamber 11.

Adjacent the end of the chamber 11 is provided slidably mounted valve retainer 15 mounted for sliding movement in the bore 16 and the internal shoulder 17 is provided between bore 16 and chamber 11 and serves as a limit stop to limit the movement of valve retainer 15 and thereby limit the outward movement of pintle nozzle valve 18 which has one end 19 in interlocking relation with valve retainer 15 and its opposite end positioned in passage 12 for controlling the fuel delivered therethrough.

The nozzle spring 20 is provided in chamber 11 and has one end bearing against the adjacent side of valve retainer 15 and its end engages the peripheral flange 21 on sleeve 22 which is positioned within chamber 11 and which is provided with the slot 23 which is aligned with the hole 24 in valve retainer 15 for assembly.

The embodiment shown in Fig. 2 is similar to the con-

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struction shown in Fig. 1 except that in Fig. 2 the sleeve 22a is formed integral with the nozzle body 10.

The purpose of sleeves 22 and 22a is to reduce the volume in the fuel injection system, that is, the volume under pressure is reduced due to the presence of the sleeve and this reduction in fuel volume tends to eliminate nozzle dripping or drooling and the coking of the nozzle tip all of which lead to improved engine performance.

By utilizing the sleeve 22 or 22a it is possible to make the chamber 11 of sufficient size that such chamber is relatively simple and easy as well as economical to manufacture while at the same time, the volume of the chamber is substantially reduced thereby facilitating the operation of the nozzle.

From the foregoing it will be seen that I have provided new and improved means for obtaining all of the objects and advantages of the invention.

I claim:

In a device of the character described a nozzle body, a passage axially through said nozzle body, said passage presenting an enlarged portion constituting a valve chamber at the discharge end of said nozzle body, a pintle valve having a stem portion of reduced diameter, an enlarged valve portion at one end, and a retainer element at the other end, said valve portion being provided with at least one valve surface to cooperate with a complementary surface in said enlarged portion of said passage to normally prevent discharge of fuel through said nozzle, a relatively large spring chamber in said nozzle at the end thereof remote from said discharge end, a guide member slidably mounted in said spring chamber, said guide receiving said retainer element of said pintle valve, a spring of a diameter to substantially fill said spring chamber surrounding said pintle valve and engaging said nozzle body and said guide member to bias said pintle valve into valve closed position, and a volume filler member having a central bore of greater diameter than said pintle valve in said spring chamber to form the flow passage of the fuel to said valve chamber, said valve filler substantially filling the interior of said spring when in valve open, compressed condition and being provided with a radial slot for flow of fuel from between the coils of said spring to said passage as it is compressed.

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