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G. L. DU ROSTU

2,667,182

PRESSURE-RESPONSIVE MEMBRANE AND MOVEMENT LIMITING MEANS THEREFOR

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Fig. 1.

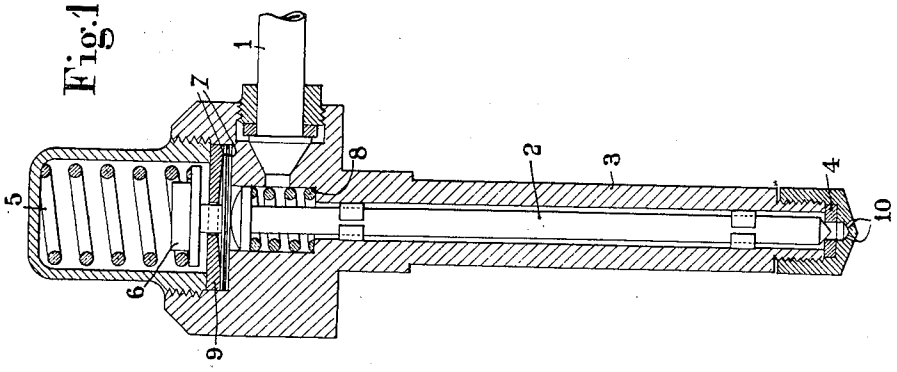
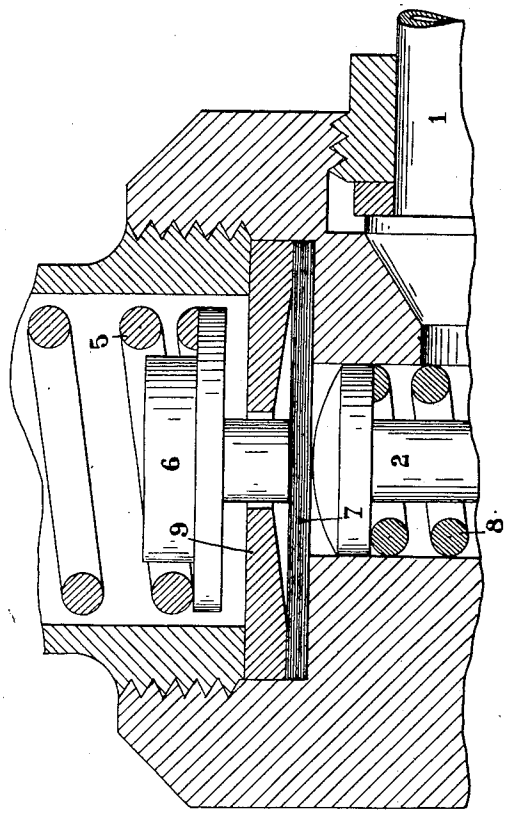


Fig. 2.



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PRESSURE-RESPONSIVE MEMBRANE AND MOVEMENT LIMITING MEANS THEREFOR

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Claims priority, application France June 5, 1947

2 Claims. (Cl. 137—788)

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The present invention has for its object an improvement in engine fuel injectors and more particularly in injectors of the kind comprising an elastic membrane. Its purpose is to improve the mechanical strength of the membrane.

According to the invention, a plurality of thin piled-up metal membranes (e. g. 4 to 20) are used instead of a single one.

For instance, instead of a single membrane of the .4 mm. gauge there will be used 5 membranes of the .1 mm. gauge, or still better 12 membranes of the .05 mm. gauge.

Preferably, these multiple membranes will be used in combination with a member adapted to limit their deformation, according to a method already described in the patent entitled: "Backflowless Injector Comprising Separate Elements of Very Small Diameter" filed by the applicants in France on the 15th of May, 1942, now Patent 976,643.

An injector according to the present invention is described hereinafter by way of exemplification, reference being had to the appended drawing in which

Fig. 1 is a longitudinal sectional view

Fig. 2 is a sectional view on an enlarged scale showing the details of the diaphragm structure.

The fuel is supplied through the pipe 1, flows around the needle 2 guided in the injector body 3. The needle 2 is formed at its lower end as seen in the figure with a cone providing for a fluid-tight joint with its seat 4. The needle is kept normally pressed on the seat 4 by a spring 5 through the push rod 6. The membranes 7 transmit the thrust of the spring while providing for a fuel-tight joint. Upon the fuel pressure reaching a definite value the membranes 7 will act upon the push rod 6 and compress the spring 5.

The needle 2 is held in engagement with the membranes by the spring 8; the liquid is thus enabled to flow between the conical portion of the needle 2 and the seat 4 and finally through the atomizing holes 10.

Moreover, the push rod 6 is guided in a part 9 which is so shaped that the membrane 7 will find a rest thereon with a view to limit their deformation.

What I claim is:

1. A membrane fuel injector having in combination a needle-guiding body provided with a longitudinal hollow duct and with an annular flat surface around the entrance of said duct at one end thereof, a pressure-responsive membrane constituted by multiple thin and plane piled up metal discs, each of said discs having a uniform thickness of the order of some hundredths of a millimeter, one face of said membrane being in resting contact with said annular surface, and a clamping member fixed to said needle-guiding body and having a resting contact with the outermost annular portion of the other face of the membrane, said clamping-member having in front of the membrane a concave face so designed as to provide a rest for said membrane when this latter is being deformed.

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2. A membrane fuel injector having in combination a needle-guiding body provided with a longitudinal hollow duct and with an annular flat surface around the entrance of said duct at one end thereof, a pressure-responsive membrane constituted by thin piled up metal discs, said membrane having one face in resting contact with said annular surface, and a clamping-member fixed to said needle-guiding body and having a resting contact with the outermost annular portion of the other face of the membrane, said clamping-member having in front of the membrane a concave face so designed as to provide a rest for said membrane when this latter is being deformed.

GEORGES LEVESQUE DU ROSTU.

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