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1,948,557

FUEL SPRAYING NOZZLE

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Fig. 1

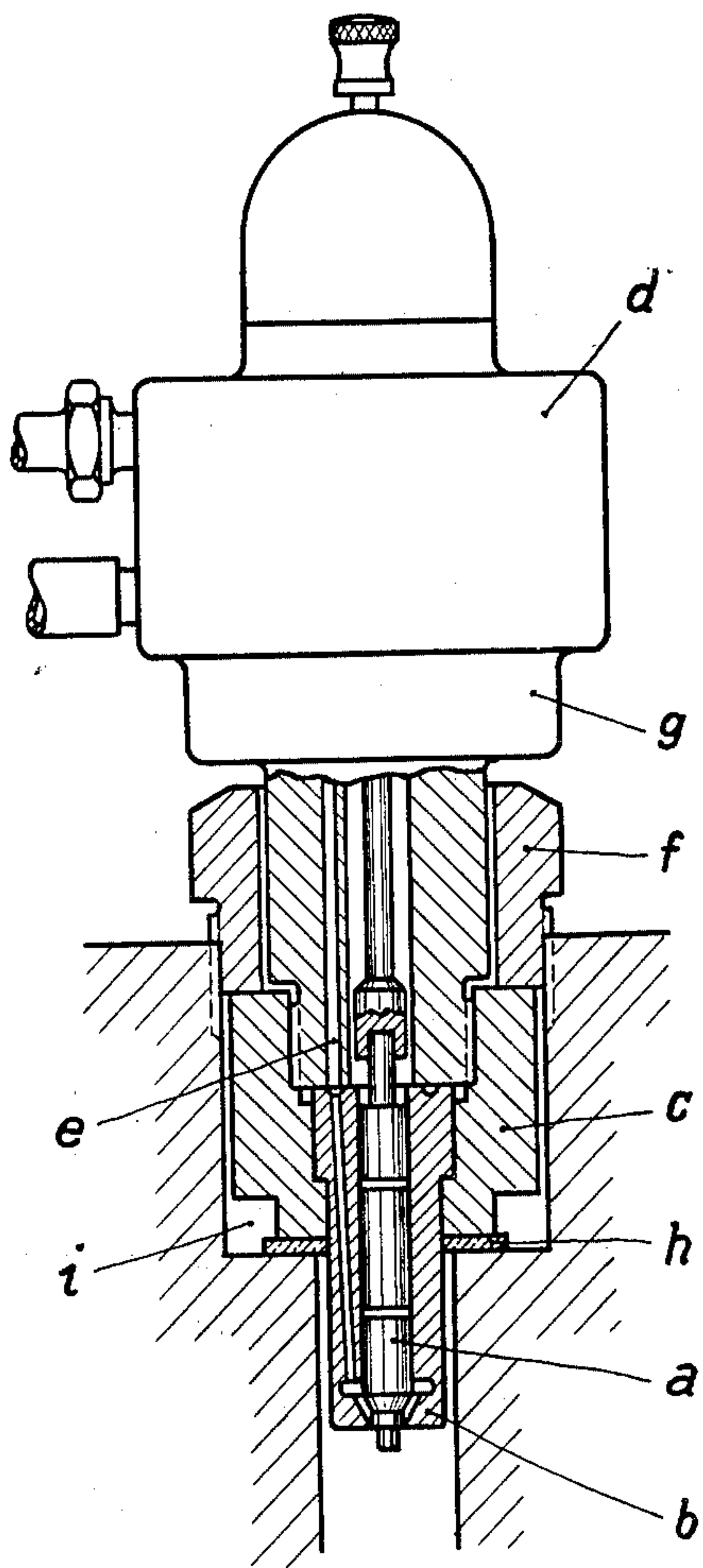
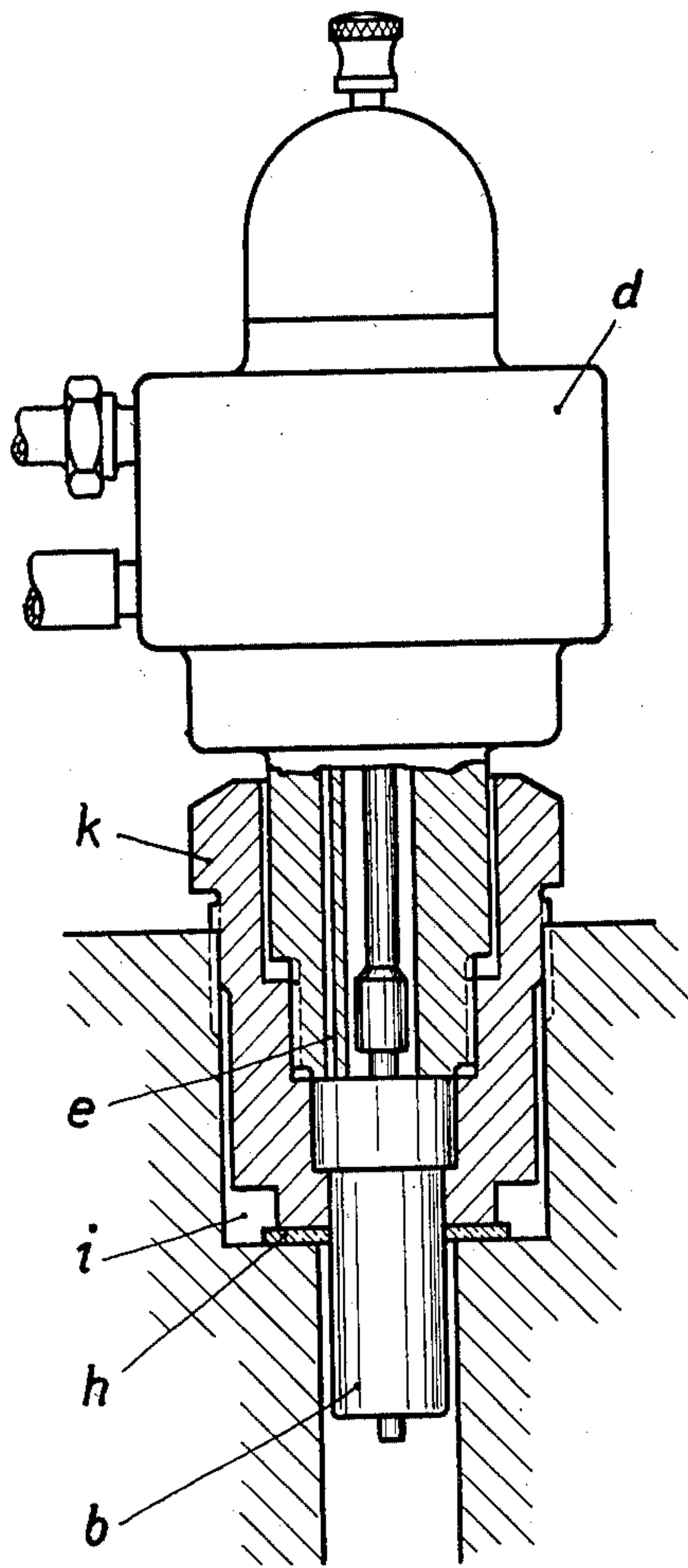


Fig. 2



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UNITED STATES PATENT OFFICE

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FUEL SPRAYING NOZZLE

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3 Claims. (Cl. 299—107.1)

This invention relates to a fuel spraying nozzle which is connected with a special holder for internal combustion engines.

Hitherto, as a rule, the holder together with the nozzle fastened thereto by means of a sleeve member has been screwed into the cylinder of the engine in the manner of an ignition plug, or has been fastened by a flange on the engine engaging over a collar on the holder.

The object of the present invention is to provide a securing means for a fuel spraying nozzle which is secured to a holder by means of a sleeve whereby the stress due to screwing the nozzle into the cylinder does not effect the nozzle or its holder.

A further object of the invention is to provide an external thread on the sleeve securing the nozzle to its holder for engaging in a thread in an opening in a cylinder of the engine. The sleeve may be formed in two parts, one part securing the nozzle and its holder together and the other part in the form of a nipple having the external thread thereon engaging the thread in the opening in the cylinder and pressing on one end of the first part.

Two constructions according to the invention are shown by way of example in the drawing in connection with a needle valve sprayer, in which:—

Figure 1 shows the first example of construction, and

Figure 2 the second example of construction in longitudinal elevation and partly in section.

A nozzle needle *a*, is guided in the nozzle body *b* and is controlled in the usual way by the pressure of the fuel and a closing spring.

In the example of construction according to Fig. 1, the nozzle body *b* is firmly pressed by a sleeve nut *c* against the lower front end of the nozzle holder *d*, which contains the fuel duct *e*, the sleeve nut *c* engaging around the reduced and threaded lower end of the holder *d*. The whole device is introduced into an opening *i* in the cylinder head of the engine and fastened by a screwed nipple *f* which surrounds the neck of the nozzle holder *d* with a certain amount of play. In the screwed-up condition the nipple engages one end of the sleeve nut *c* and presses this latter together with the holder *d* and nozzle body *b* firmly against the packing seat *h*. The pressure of the nipple acts in this case constantly only in the direction of the wall of the sleeve nut *c*, so that the needle guide and thus the nozzle needle *a* remain uninfluenced by the pressure.

The example of construction according to Fig.

2 differs from that previously described simply in the sleeve member which presses the nozzle body *b* against the nozzle holder *d* being made in one piece with the screwed nipple. The one-piece member is indicated in Fig. 2 by the numeral *k*.

Preferably, in the first construction, the arrangement is such that the nipple *f* on being screwed out comes against a stop of the holder *d*, for example, against a collar *g*, so that on a further screwing out of the nipple the holder together with the nozzle fastened thereto is forcibly drawn out of the opening in the cylinder top. This is particularly of advantage if the parts are burnt into the opening during working.

The invention is not, of course, limited to the securing of needle valves, but can be employed in all spraying devices in which the nozzle body is pressed by a sleeve member or the like indirectly or directly against the nozzle holder.

I declare that what I claim is:

1. An arrangement for securing a fuel spraying nozzle in a threaded and countersunk opening in a cylinder of an internal combustion engine comprising a holder, a spray nozzle of less transverse dimensions than said holder and having an exterior shoulder intermediate its ends, a sleeve having an interior shoulder engaging said shoulder on said nozzle and having a screw-threaded engagement with said holder securing said nozzle to said holder in free end-to-end abutting engagement of said nozzle and holder, said sleeve abutting against the shoulder of the countersunk opening and having an external thread thereon engaging the thread in said opening in the cylinder of the engine.

2. An arrangement for securing a fuel spraying nozzle in an opening in a cylinder of an internal combustion engine comprising a cylindrical holder having an exterior thread, a spraying nozzle having a shoulder intermediate its ends and of less over-all diameter than said holder, a sleeve nut engaging said shoulder on said nozzle and said thread on said holder for connecting said holder to said nozzle in free end-to-end abutting engagement, a nipple surrounding said holder and engaging one end of said sleeve nut and having an external thread thereon engaging a thread in said opening of the cylinder, said opening having a bearing shoulder against which the other end of said sleeve nut engages when the parts are assembled.

3. In a fuel spraying device for internal combustion engines, the combination with an engine having a threaded and countersunk aperture through a cylinder wall presenting said aperture

with a shoulder inwardly of the threads, of a holder and a spraying nozzle of less diameter than said holder adapted for free end-to-end abutting engagement with said holder within said aperture, 5 said holder having an exterior thread and said nozzle having an abutment intermediate its ends, and sleeve means surrounding said holder and nozzle in such engagement with said thread on said holder and said abutment on said nozzle 10 within said aperture and with said shoulder and threads of said aperture as to exert an endwise pressure on said nozzle clamping the same to said holder and securing said holder and nozzle within said aperture, the points of engagement of said sleeve means with said shoulder, said abutment on said nozzle, said thread of said holder and said 80 threads of said aperture being such that the pressure lines through said points of engagement do not extend inwardly of said nozzle beyond the abutment thereof.

OTTMAR BAUR. 85

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