

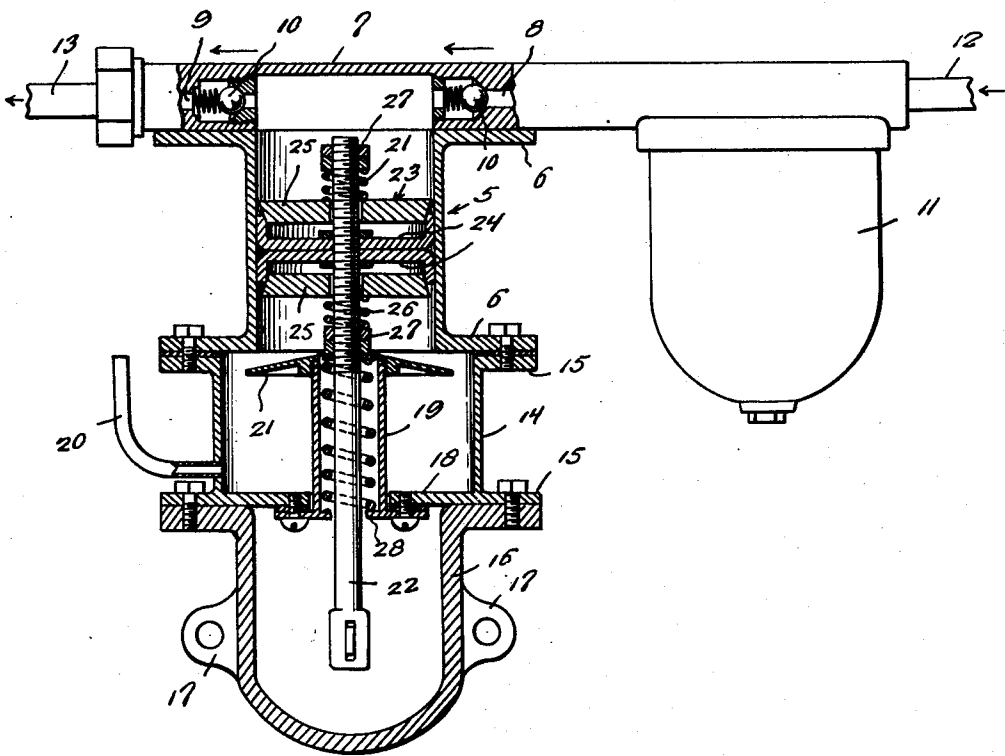
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FUEL PUMP

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## UNITED STATES PATENT OFFICE

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## FUEL PUMP

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2 Claims. (Cl. 103—154)

This invention relates to improvements in fuel pumps for internal combustion engines and similar devices. It is the practice to employ in such pumps diaphragms made of cloth or other similar materials and which are a source of trouble and annoyance and frequently must be replaced with loss of time and at considerable expense.

The primary object of the invention is the provision of a pump whereby said expenses and inefficiency of operation will be eliminated and which may be readily installed in lieu of a pump now in use and provide a positive circulating action on the fluid fuel to assure a proper supply of fuel to the engine under all conditions that the engine may be required to meet.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which

The figure is a side elevation partly in section illustrating a pump constructed in accordance with my invention.

Referring in detail to the drawing, the numeral 5 indicates a cylinder provided with attaching flanges 6 at opposite ends thereof. The uppermost flange is detachably secured in any well known manner to a conventional pump head 7 including a fuel intake passage 8 and a fuel outlet passage 9. Check valves 10 are arranged in the passages 8 and 9. The intake passage 8 leads from a sediment bulb or collection receptacle 11 supplied from a fuel source (not shown) by a pipe 12. The outlet passage 9 is connected to a carburetor of an engine (not shown) by a pipe 13.

The lower flange 6 of the cylinder 5 is detachably connected to an auxiliary cylinder 14. The auxiliary cylinder is equipped with attaching flanges 15 at opposite ends thereof, one of which is detachably secured to the flange 6 at the lower end of the cylinder 5 while the other flange 15 of the cylinder 14 is detachably secured to a conventional pump casing 16 including ears 17 apertured to receive fasteners for mounting the entire device on an engine or similar device.

The lower end of the auxiliary cylinder 14 is partially closed by an end wall 18 provided with a centrally arranged opening through which a sleeve 19 extends. The lower end of the sleeve 19 is flanged and detachably secured to the wall 18. A suitable gasket is arranged between the flange

on the sleeve 19 and the wall 18 to prevent leakage of any fluid that may accumulate in the auxiliary cylinder 14. An overflow pipe 20 is connected to the auxiliary cylinder 14 for draining therefrom any surplus amount of fluid which may accumulate therein.

The upper end of the sleeve 19 terminates adjacent the lower end of the cylinder 5 and has a conical shaped deflector 21 threaded thereto which underlies the walls of the cylinder 5 and any fluid dripping from said walls will be directed away from the sleeve 19 into the auxiliary cylinder 14.

The sleeve 19 provides a passageway for a stem 22 of a piston 23 operating in the cylinder 5. The deflector 21 is provided with an opening aligning with the sleeve 19 to allow free movement of the stem 22, the lower end of which terminates in the casing 16 in the form of a slotted portion to receive an operating lever of the engine. The piston is reciprocated in the cylinder 5 for the purpose of drawing fuel into the cylinder and expelling the same into the carburetor of the engine. The stem is provided with a screw threaded portion and mounted thereon are cup-shaped washers 24 arranged in opposite directions to each other so that the flanges of the cup-shaped washers extend oppositely to one another and in contact with the walls of the cylinder 5.

Spreaders in the form of discs 25 are loosely mounted on the screw threaded portion of the stem and engage the flanges of the cup shaped washers to force said flanges tightly against the walls of the cylinder 5 to prevent seepage of fuel past the piston. The spreaders 25 are engaged by expansion springs 26 mounted on the threaded portion of the stem 22 and bear against nuts 27 threaded on the stem.

Thus it will be seen that the spreaders 25 are always under tension tending to urge the flanges of the cup-shaped washers in tight frictional contact with the walls of the cylinder 5 to prevent leakage past the piston. The nuts may be adjusted on the stem for the purpose of varying the action of the springs on the spreaders.

A coil spring surrounds the stem 22 within the sleeve 19 and bears against the lower group of nuts 27 and also against a flange 28 formed on the lower end of the sleeve 19. The purpose of the spring 19 is to urge the piston upwardly in the cylinder 5 while the piston is drawn downwardly by the action of the connecting device between the lower end of the piston and the engine.

Thus it will be seen that the reciprocation of

the pistons in the cylinder 8 will provide a positive pumping action for the fuel to the engine and provides a construction capable of withstanding severe usage and also capable of a long life and one that will not require frequent overhauling or attention thereto.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described the invention, what I claim is:

1. In a fuel pump, a cylinder, a head on one end of the cylinder and including inlet and outlet passages, check valves for said passages, a piston in said cylinder, said piston including a piston head and stem, said stem extending exteriorly of the cylinder, an auxiliary cylinder connected to the first-named cylinder and having the piston stem extending therethrough, a sleeve mounted in the auxiliary cylinder with the stem extending there-

through, a deflector carried by said sleeve, an overflow for said auxiliary cylinder, and means for connecting the stem to an engine for the reciprocation of the piston.

5 2. In a fuel pump, a cylinder, a head on one end of the cylinder and including inlet and outlet passages, check valves for said passages, a piston in said cylinder, said piston including a piston head and stem, said stem extending exteriorly of the cylinder, an auxiliary cylinder connected to the first named cylinder and having the piston stem extending therethrough, a sleeve mounted in the auxiliary cylinder with the stem extending therethrough, a deflector carried by said sleeve, 10 an overflow for said auxiliary cylinder, a casing receiving the stem and mounted on the auxiliary cylinder for mounting on an engine, a spring confined in the sleeve and acting to urge the stem in one direction, and means for connecting the 15 stem to a cylinder of an engine for the operation of the piston.

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