

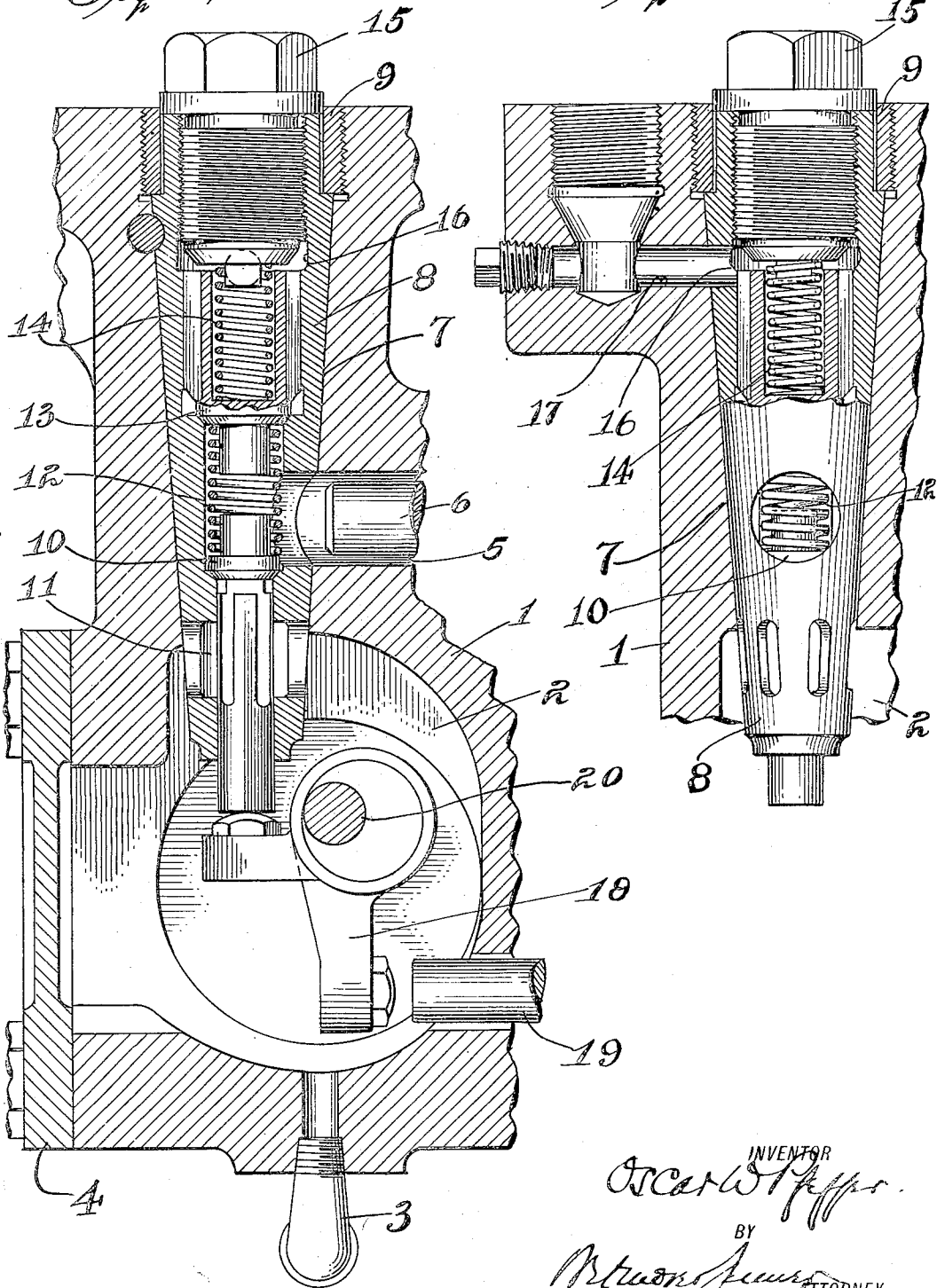
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FUEL PUMP.
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1,349,005.

Patented Aug. 10, 1920.

Fig. 1,

Fig. 2.



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FUEL-PUMP.

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To all whom it may concern:

Be it known that I, OSCAR W. PFEFFER, a citizen of the United States, residing in St. Louis, Missouri, have invented the following described Improvements in Fuel-Pumps.

The invention is an improvement in high pressure pump mechanism such as used for fuel oil injection or lubricating purposes in internal combustion engines, and its object is to simplify the structure and cheapen the cost of manufacture of such pumps as well as to improve the facility for inspection and repair. The invention consists in an organization of the pump chamber and pump valves in a structure formed separately from the main pump body but removably secured therein, whereby the said main body can be made of cast iron, which is cheap, and the inserted body of denser metal such as rolled or cast bronze or steel forging, which is non-porous and not likely to permit leakage through its walls as in the case of cast iron under high pressure. The invention also consists in the general arrangement of parts as herein described which further enhances the utility and convenience of pump mechanism incorporating this invention.

In the drawing,—

Figure 1 is a longitudinal section through a portion of the main cast iron pump body and through the axis of the dense metal inserted body in position therein;

Fig. 2 is a cross section through the outlet port showing its relation to the inserted body.

The main pump body marked 1, is cast of any desired external shape such as may be suited to the particular purpose for which the pump is used and for which reason only part of it is illustrated in the drawing. It contains in the present case, an entrance chamber 2 for the oil supply incoming from the pipe 3 which chamber is closed by a removable cover plate 4, and it also contains a plunger chamber 5 in which the pump plunger 6 is reciprocated by any suitable means, not shown. The plunger chamber 5 intersects a chamber 7 which extends transversely thereto into the entrance chamber 2 and which is ground to a conical taper of low pitch as indicated. The inserted body 8 is ground to a corresponding conical shape and seated firmly in the tapered chamber 7

by means of a clamp member such as the ring nut 9 which is screwed into the cast iron body 1 and against the shoulder of the inserted body 8. The said inserted body is made of some of the denser metals above alluded to and contains within itself the suction and outlet valves of the pump and the passages leading to and from them. The inlet valve 10 of any suitable type is seated in the lower part of the body 8 and the fuel oil flows to it through the cross passages 11 in the small end of the body 8 which end projects into the entrance chamber 2. The suction valve is seated by a spring 12 which has its abutment against the face of the outlet valve 13 and the latter is seated by a spring 14 thrusting against the valve plug 15 screwed, with a long fine thread, into the larger end of the inserted body. The internal space between the two valves registers with the plunger chamber 5 and the discharge passage 16 above the outlet valve 13 registers with the outlet 17 in the cast iron body from which point a pipe connection leads the delivered fuel to its point of discharge. The suction valve end of the inserted body protrudes into the entrance chamber 2, as above stated, thus making three connections to the cast iron body part. The stem of the suction valve within the chamber 2 is subject to engagement by one arm of an eccentrically fulcrumed bell crank 18, the other arm of which is operated by a push rod 19 reciprocating in unison with the pump plunger 6. This rod acting through the bell crank opens the suction valve and, receding, permits it to close. By rotating the shaft 20 which carries the bell crank fulcrum eccentrically thereon, the position of the bell crank may be varied with relation to the valve so as to vary the time of its closing and thereby vary the amount of fuel oil delivered through the outlet passage, this manner of fuel control being common in the art. It will be observed that in the present construction the inserted body 8 holds the suction valve in the correct position for regulation by the bell crank, being at the same time removable with said body. The ground joint between the inserted and the main body affords a uniform metallic contact which gives reinforcement to the relatively thin walls of the inserted valve holder while the density of

the material of which the same is made prevents leakage therethrough and thereby insures a clean exterior for the apparatus when in use. The plunger chamber 5 is formed entirely in the cast body but leakage through its wall is minimized by reason of the greater thickness of metal which is conveniently used in this part of the structure.

Claim.

- 10 The combination with a high pressure pump body of cast iron having formed therein a plunger chamber and passages for the inlet and outlet of the liquid to be pumped, said chamber and passages where exposed to
15 the fluid under pressure having relatively

thick walls suited to prevent leakage of the liquid therethrough, a tapered chamber forming a communication between said plunger chamber and passages and a tapered valve holder of denser metal occupying said 20 chamber and containing inlet and outlet valves controlling the communications from said plunger chamber to said passages respectively, the walls of said valve holder, where exposed to the liquid under pressure, 25 being relatively thinner than the cast iron walls of said chamber.

In testimony whereof, I have signed this specification.

OSCAR W. PFEFFER.