

W. A. CLARK.
WATER JACKETED NOZZLE.
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1,031,422.

Patented July 2, 1912.

Fig. 1.

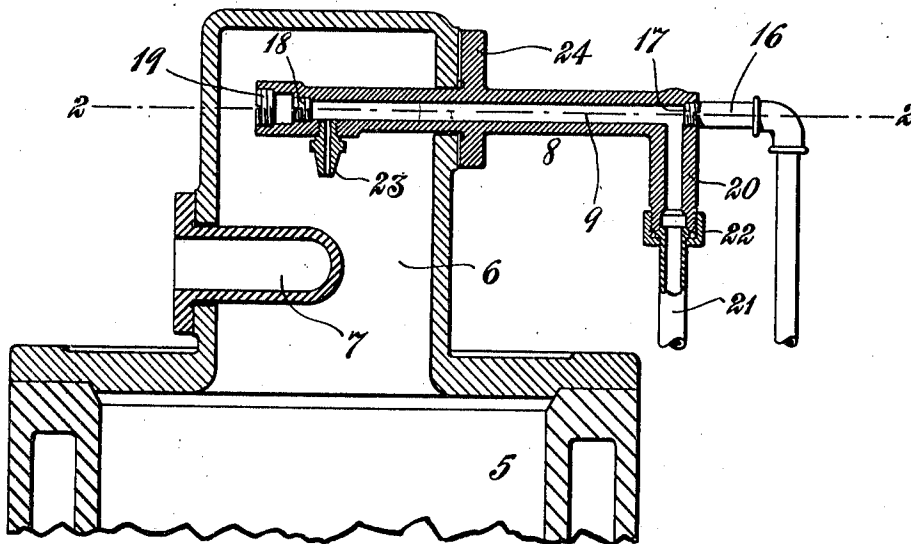
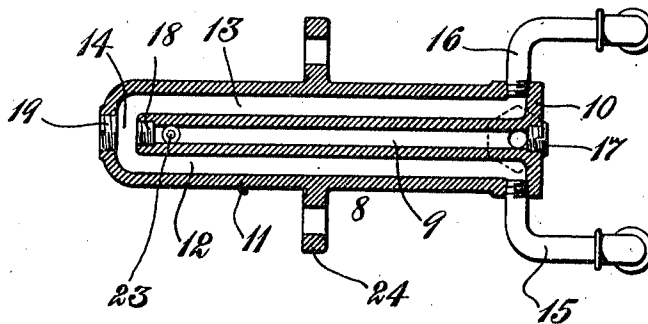


Fig. 2.



Witnesses:

L. L. Markel.
M. L. Glynn

Inventor:

W. A. Clark
By his Attorneys,

Sutherland & Anderson

UNITED STATES PATENT OFFICE.

WINTHROP A. CLARK, OF STAMFORD, CONNECTICUT.

WATER-JACKETED NOZZLE.

1,031,422.

Specification of Letters Patent.

Patented July 2, 1912.

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To all whom it may concern:

Be it known that I, WINTHROP A. CLARK, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Water-Jacketed Nozzles, of which the following is a specification.

This invention relates to water-jacketed nozzles, the primary object of the invention being to provide an effective article of this character by which a proper and adequate flow of water at and around the point of discharge of the jet issuing from the nozzle, are assured.

Another object of the invention is to provide a device of this character which can be readily and easily cleaned.

The nozzle possesses other features of novelty and advantage which with the foregoing, will be set forth at length in the following description wherein I will outline in detail that form of embodiment of the invention which I have selected for illustration in the drawings accompanying and forming part of the present specification, this showing being to enable those skilled in the art to practice the invention. From such statement it will be clear that I do not restrict myself to said disclosure; I may depart therefrom in several respects within the scope of the invention.

A nozzle involving my invention can be employed with advantage in many different connections for instance in conjunction with an engine or motor using kerosene as the motive agent, the fluid in this case being delivered in a jet within the combustion chamber or its equivalent of the cylinder.

Referring to said drawings: Figure 1 is a longitudinal sectional view of a nozzle including my invention showing the various pipes connected therewith and also illustrating part of a hydrocarbon-engine cylinder. Fig. 2 is a horizontal sectional view of the nozzle showing the several pipes, the section being on the line 2—2 of Fig. 1.

Like characters refer to like parts in both views.

As already intimated an injector embodying my invention can be employed in several different ways for instance and as shown, in connection with a hydrocarbon-engine which may as already indicated, employ kerosene as the motive fluid, the injector being utilized in such a case, to deliver such

fluid into the cylinder, part of which is shown in Fig. 1 of the drawings and is denoted by 5, being provided with a combustion-chamber 6 into which the gaseous charge is initially delivered, said charge being ignited or exploded therein by the hot tube 7 or otherwise. The nozzle which is denoted in a general way by 8 extends into said chamber 6, said nozzle as will be hereinafter explained, being provided with an outlet by which the gaseous fluid is directed in a vertical and preferably downward direction toward the hot tube 7, the circulating cooling water as will hereinafter appear flowing horizontally.

The nozzle 8 involves in its make-up an inner tube 9 provided at its rear or outer end with a head or flange 10. Inclosing the tube 9 is a casing 11 the rear end of which is connected with the head 10. The casing or shell 11 is separated from the sides and inner end of the tube 9 so as to form the two lateral channels 12 and 13 and the connecting channel 14. The channels 12, 14 and 13 present a substantially U-shaped passage for the flow of water which practically entirely surrounds the tube or nozzle proper 9 thereby to effectually cool the fluid in the tube. Fitted into supply and discharge openings in the shell 11 for instance by screw threading, are pipes as 15 and 16 the former constituting a supply pipe and the latter a discharge pipe. Water, therefore, will pass from said pipe 15 into the channel 12, channel 14, channel 13 and then into the discharge pipe 16 thoroughly circulating through the nozzle so that the water will not become stagnant in addition to thoroughly cooling the parts.

Fitted into the opposite ends of the tube 9 are plugs as 17 and 18 which as shown are threaded therinto and by removing which the tube 9 can be easily cleaned. The shell 11 at its outer end may be furnished with a similar plug 19 by removing which the water passage between the shell 11 and tube 9 can be also cleaned. As shown the several plugs are in line longitudinally of the nozzle so as to facilitate the cleaning of the parts and more especially the tube 9 in that when the several plugs are withdrawn a cleaner of some kind can be passed entirely through the tube 9 from either end thereof.

The tube 9 may as shown, be provided with a pendent tubular member 20 to which a pipe 21 may be connected through the

agency of a union 22, the pipe 21 being adapted to supply the hydrocarbon of whatever nature the same may be. The tube 9 is further provided with a pendent nipple or fitting 23 which is adapted to direct the fluid onto the hot tube 7. I desire to call attention to the fact that the nipple or fitting 23 is located near the outer end of the tube 9 whereby water circulates around said nipple or fitting so as to properly cool the discharge point of the nozzle.

The chamber or hood 6 has a hole or opening to receive the nozzle 8, said nozzle being provided with an external flange 24 adapted to fit against the exterior of the said chamber or hood 6 and to be connected therewith by bolts, rivets or otherwise, packing means being usually interposed between the flange and the hood so as to make a close joint at such place.

It is a simple matter to make the nozzle, in that the same can be made by casting in a single piece.

What I claim is:

1. A water-jacketed nozzle comprising a tube, and a shell inclosing the tube, said shell being separated from the tube along

the sides and outer end thereof to thereby provide a substantially U-shaped water passage, the tube having a discharge near its outer end, and said passage having an inlet and an outlet for water at its inner ends, said tube and shell having removable plugs at their outer ends.

2. A water-jacketed nozzle comprising a tube having an inlet for fluid at its inner end and an outlet for fluid at its outer end, a shell inclosing the tube and separated therefrom along the sides and at the outer end of said tube to thereby provide a water passage, said passage having an inlet and an outlet for water at its inner ends, the tube having removable plugs at its opposite ends and the shell having a removable plug at its outer end, the several plugs being approximately in alinement longitudinally of the nozzle.

In testimony whereof I affix my signature in presence of two witnesses.

WINTHROP A. CLARK.

Witnesses:

WM. F. WATERBURY,
GEORGE R. CLOSE.