K. M. DAHL.

LIQUID ATOMIZER.

APPLICATION FILED AUG. 2, 1911.

1,011,036.

Patented Dec. 5, 1911.

Fig. 1.

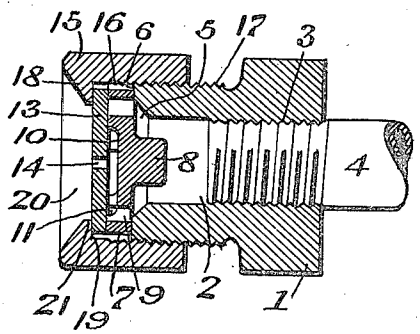


Fig. 2.

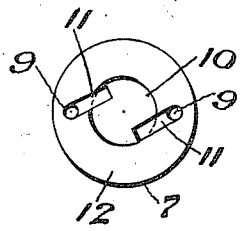


Fig. 3.

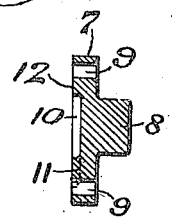
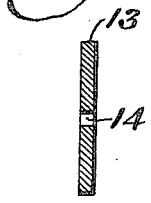


Fig. 4.



WITNESSES

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LIQUID-ATOMIZER.

1,011,036. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed August 2, 1911. Serial No. 641,929.

To all whom it may concern:

Be it known that I, KNUT M. DAHL, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented a new and useful Liquid-Atomizer, of which the following is a specification.

My present invention relates to a novel construction and arrangement of a liquid atomizer, wherein the only agent employed for the atomization of the liquid, such as crude oil, water or any other desired liquid, is the pressure of the liquid itself.

In a co-pending application, filed by me on June 12th, 1911, Serial No. 632,711, I have described and broadly claimed a novel construction of a liquid atomizer wherein the liquid is atomized owing to the pressure to which such liquid or fuel is subjected, and in my present invention, I have devised a novel and simplified construction wherein the construction of the parts have been greatly simplified with a consequent reduction in the cost of manufacture.

My invention further consists of a novel construction of an atomizer disk.

It further consists of a novel construction of an atomizer tip.

It further consists of a novel construction of a liquid atomizer, wherein novel means are employed for causing the liquid, which is being forced under pressure, through the atomizer to be atomized by the pressure of the liquid.

It further consists of other novel features of construction all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings, one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a central section of a liquid atomizer embodying my invention. Fig. 2 represents a plan view of the atomizing disk, in detached position. Fig. 3 represents a central section of Fig. 2. Fig. 4 represents a central section of the tip in detached position.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: 1 designates the body portion of my device which is provided with the internal bore or passage 2, a portion of which is threaded as indicated at 3, thereby adapting the same to have detachably connected therewith the threaded end of a conduit 4 which communicates with the source of liquid supply which it is desired to atomize, it being understood that the liquid or fuel is forced through the conduit 4 under any desired or predetermined pressure. The forward or outer end of the internal bore 2 is beveled or inclined outwardly, as is indicated at 5, and the front face of the body portion 1 is faced off as is indicated at 6, thereby adapting the same to have seated thereon an atomizing disk 7 which is provided with a rearwardly extending lug or projection 8. The atomizing disk 7 is provided near its outer periphery with a desired number of ports 9, which extend therethrough, and to which the liquid to be atomized passes owing to the manner in which the internal bore 2, of the body portion 1, is flared or inclined as indicated at 5. The forward or front face of the atomizer disk 7 is provided with a circular recess 10 of any desired depth, which communicates by means of the tangential ports or passages 11 with the ports 9, it being noted that in the present instance, the front face of the atomizing disk 7 is flattened or faced off, as is indicated at 12, thereby adapting the same to have seated thereon the tip 13, which, when the parts are in assembled position, closes the forward end of the ports 9, as will be apparent from Fig. 1. The tip 13 consists of a flat disk having an aperture 14 therethrough.

15 designates a clamping nut which is internally threaded as is indicated at 16, thereby adapting the same to engage with the exterior threaded portion 17 of the body portion 1. The clamping nut 15 is provided with an inwardly extending flange 18 which forms a shoulder 19, having a flattened face adapted to seat on the atomizer tip 13, while the outer face or forward end of the clamping nut 15 is provided with the outwardly flared or beveled portion 20, it being noted

that the outwardly flared or beveled portion 20 inclines outwardly from the forward edge of the walls of the aperture 21, formed by the inner face of the flange 18.

In asembling my device the atomizing disk 7 is seated on the forward face 6 of the body portion 1, and the atomizer tip 13 is seated on the front face 12 of the atomizer disk 7, whereby when the clamping nut 15 is secured in assembled position with respect to the body portion 1, the parts will be maintained in their proper assembled position, as is evident.

The operation of my novel atomizer will now be apparent to those skilled in the art to which this invention apertains, and is as follows. The liquid under pressure enters from a source of liquid supply through the conduit 4 into the chamber formed by the internal bore 2, of the body portion 1. The liquid then passes to the ports 9 and thence through the tangential ports or passages 11, to the chamber formed by the recess 10 and the wall of the atomizer tip 13, and owing to the novel manner in which this chamber is formed the liquid will be given a rotary whirling, or centrifugal motion so that as it passes through the discharge port or aperture 14, in the atomizer tip 13, it will pass therefrom in the form of a fine spray, such action being increased owing to the novel manner in which the forward face of the clamping nut is formed, although, as is apparent, the flaring of the forward face of the clamping nut is not essential, in all cases arising in practice.

Special attention is directed to the novel manner in which the liquid under pressure has imparted thereto a rotary or whirling movement before it passes through the discharge port 14 in the atomizer tip 13.

So far as I am aware I am the first to devise a construction wherein the pressure of the liquid will cause the liquid to receive a rotary whirling or centrifugal movement, in close proximity to the discharge port in the atomizer tip, in the manner herein set forth, and it is to be understood that my claims to such features are to be interpreted with corresponding scope. The number of ports such as 9 and 11 may vary in accordance with the conditions and requirement met with in practice.

Special attention is directed to the novel and simplified construction of the atomizing disk 7, and also of the atomizing tip 13.

It will now be apparent that I have devised a novel and useful construction of a liquid atomizer which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a liquid fuel atomizer, a body portion having a passage therethrough provided with a flaring outlet, an atomizing disk having an extension projecting rearwardly into said passage, said disk having a port extending forwardly therethrough, and having a recess in its forward face and provided with a port leading tangentially into said recess and communicating with said first named port, a tip comprising a disk having a discharge port communicating with said recess, said disk forming with said recess a chamber having a circular wall, a clamping nut having threaded engagement with said body portion for maintaining the parts in assembled condition and means for admitting liquid into said passage.

2. In a liquid fuel atomizer, a body portion having a passage therethrough the forward end of which is beveled, an atomizing disk having ports near its outer periphery communicating with said passage, and having a circular shaped recess and ports leading tangentially into said recess and communicating with said first named ports, a disk having a port therethrough and seated on said atomizing disk, and a clamping nut detachably connected with said body portion and having a flange engaging said tip to secure the parts in assembled condition.

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