

D. E. ERICKSON.
SPRAY BURNER.
APPLICATION FILED MAY 6, 1914.

1,166,840.

Patented Dec. 28, 1915.

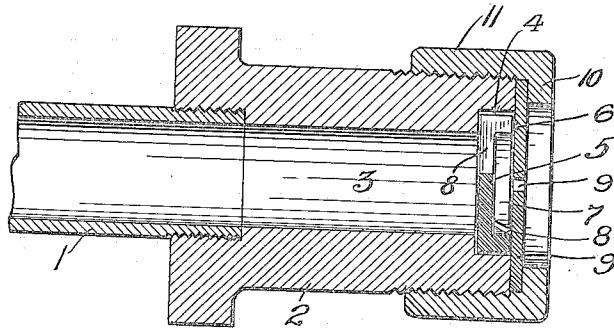


Fig. 1.

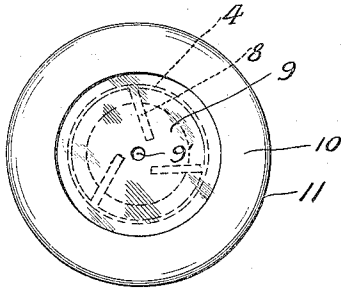


Fig. 2.

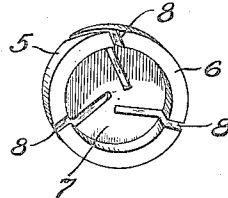


Fig. 3.

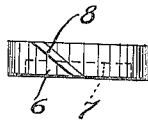


Fig. 4.

WITNESSES:
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UNITED STATES PATENT OFFICE.

DANIEL E. ERICKSON, OF BERKELEY, CALIFORNIA, ASSIGNOR TO R. S. MOORE, OF SAN FRANCISCO, CALIFORNIA.

SPRAY-BURNER.

1,166,340.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DANIEL E. ERICKSON, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Spray-Burners, of which the following is a specification.

The present invention relates to an improvement in fuel burners for spraying liquid mechanically, and adapted for use in connection with furnaces generally; the objects being the production of a spraying or atomizing burner of simple construction, efficient and economical in its operation, inexpensive as to manufacture, and one in which the atomizing disk is capable of rotation and is formed with a chamber or whirling cavity in its outer surface, thus dispensing with the spacing ring now commonly in use.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings and pointed out in the claim hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the appended claim may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more fully comprehend the invention, reference is directed to the accompanying sheet of drawings wherein is disclosed the preferred form of my invention and in which—

Figure 1 is a longitudinal sectional view of my improved device, disclosing the burner tip provided with a recessed outer end, the atomizing disk in the recess, the ported diaphragm and the end cap. Fig. 2 is an end view of the device disclosing the end cap, the ported diaphragm, and in dotted lines the slots in the atomizing disk. Fig. 3 is a perspective view of the atomizing disk, removed from the tip, disclosing the inclined slots therein and the annular flange providing a whirling chamber centrally of one face thereof. Fig. 4 is a side elevation of the atomizing disk, disclosing more fully the inclination of one of the slots.

Referring more particularly to the drawings, wherein like characters of reference designate corresponding parts throughout

the several views, the numeral 1 indicates a nozzle pipe, to the end of which is threaded a nozzle tip 2 formed with the fuel conduit 3. The outer end of the nozzle tip 2 surrounding the conduit 3 is formed with a circular recess 4 in which is adapted to be seated the atomizing disk 5, which is preferably of a diameter slightly smaller than the diameter of the recess and preferably of a thickness slightly less than the depth of the said recess.

The atomizing disk is formed on one face, that which is positioned toward the outer end of said nozzle tip, with an outwardly projecting annular flange 6, which provides a centrally arranged whirling chamber 7 in the outer face of the disk. Suitable apertures 8 are formed obliquely through the disk, and in the illustration the same are disclosed in the form of slots extending from the peripheral edge toward the center of said disk, but it is to be understood that said apertures may be of any suitable shape, just so long as the same extend through the disk in a direction oblique to the faces thereof.

A suitable diaphragm 9 formed with a central discharge orifice 9' is positioned over the outer end of the nozzle tip and is retained in position over the recess 4 by the flange 10 of the end cap 11 which is threaded on the outer end of the nozzle tip 2.

The fluid forced under pressure through the nozzle pipe will strike the atomizing disk 5 and will be forced through the apertures 8 therein, the action of the fluid passing through the oblique apertures causing the disk to rotate in its seat and the fluid issuing from the apertures into the whirling chamber 7 will be broken up and in the form of a spray, and the rotation of the disk will maintain the fluid in such condition, as the same will issue therefrom with a whirling motion. By providing an atomizing disk constructed as described, the openings in the same are prevented from clogging, owing to the rotation thereof. The atomized fluid collected in the whirling chamber will issue from the discharge orifice 9' in the form of a fine spray, which will produce uniform and complete combustion in the furnace fire box.

It will be apparent that by forming the whirling chamber in the atomizing disk that I have dispensed with the separate ring usu-

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ally placed in the nozzle tip for this purpose, and have provided a nozzle composed of but few parts, one capable of being constructed at little cost and one thoroughly
5 efficient for the use intended.

Having thus described my invention what is desired to protect by Letters Patent is.—

A spray burner comprising a burner pipe, a burner tip carried thereby and provided
10 with a fuel conduit, said burner tip formed at its outer end surrounding said conduit with a recess, an atomizing disk seated in said recess, an annular flange on the outer face of said disk and providing a centrally
15 disposed whirling chamber in the outer face thereof, said disks being of a diameter less than the interior diameter of said recess and of a thickness less than the depth of said

recess and provided with a plurality of slots passing through the same in a direction oblique to the faces thereof and each extending from the peripheral edge toward the center of the disk, a diaphragm positioned over and resting on the outer peripheral end of said burner tip and formed with a discharge opening in its center, and a flanged end cap fitted over the end of said burner tip for retaining said diaphragm in contact with said tip.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL E. ERICKSON.

Witnesses:

HARRY A. TOTTEN,
D. B. RICHARDS.