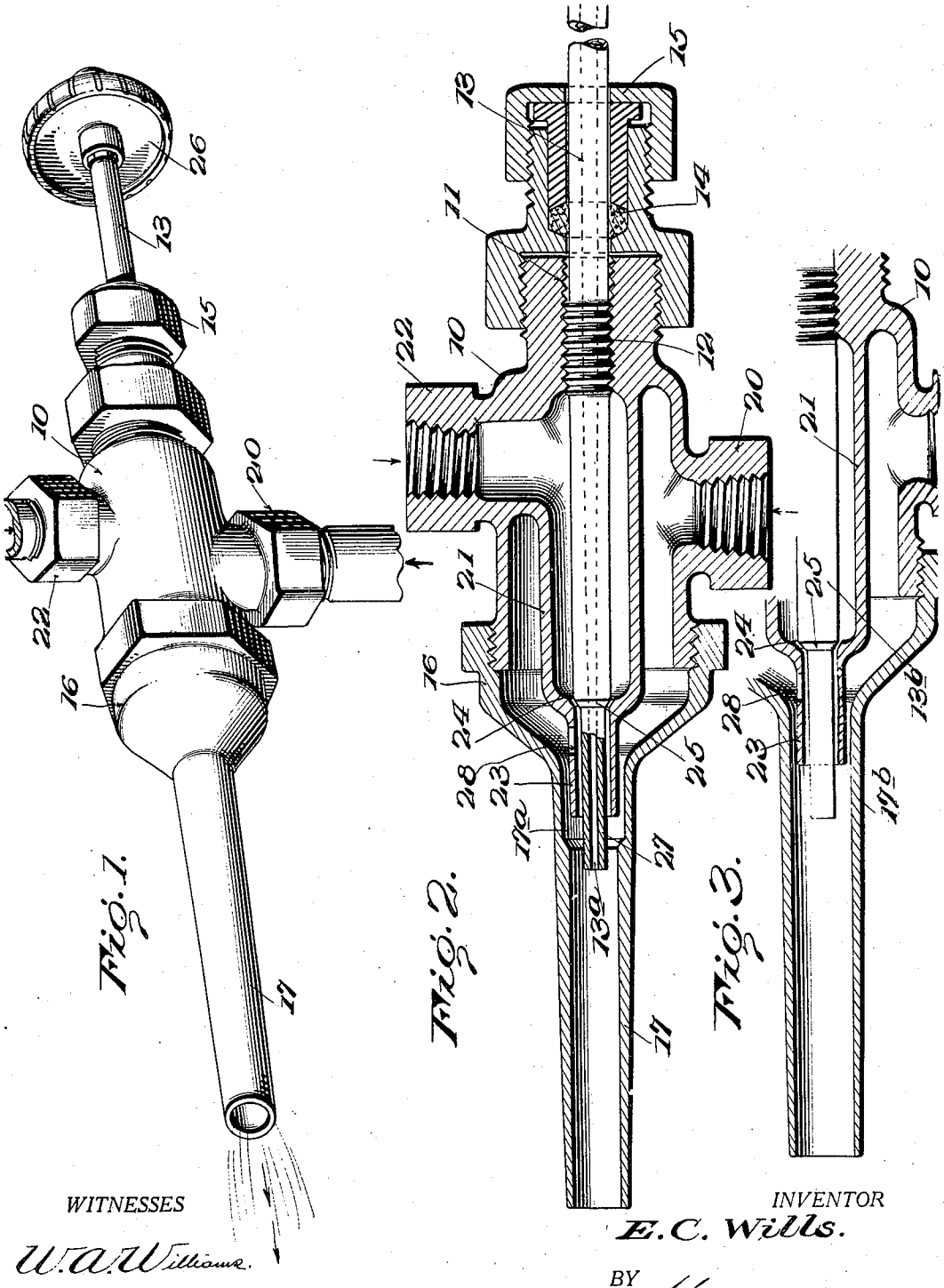
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OIL BURNER

Filed Feb. 6, 1924



WITNESSES

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OIL BURNER.

Application filed February 6, 1924. Serial No. 690,950.

To all whom it may concern:

Be it known that I, EDWIN C. WILLS, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Oil Burners, of which the following is a specification.

My present invention relates generally to oil burners and more particularly to burners of the type described and claimed in my copending application, Serial Number 648,724, which was filed June 30, 1923, my primary object being the provision of certain improvements in connection with my previous construction which will increase combustion and decrease noise in operation.

Generally speaking my present improvements propose to extend both the valve stem and the oil nozzle with respect to and axially within the burner nozzle, the substantial extension of these parts as well as the provision of means in the oil nozzle extending to permit of the entry of air around the valve stem extension, serving the aims of my invention.

In the accompanying drawing, forming a part of this specification, and illustrating my invention,

Figure 1 is a perspective view of the complete burner,

Figure 2 is a central longitudinal section therethrough, and

Figure 3 is a partial longitudinal section illustrating a slight modification.

Referring now to these figures and as in my application previously referred to, my improved burner includes a cylindrical casing 10, through one end of which an axial threaded bore 11 is formed for the intermediate threaded portion 12 of a valve stem 13 whose outer portion extends through a stuffing box 14 formed in connection with a cap 15 threaded upon and around the same end of the casing 10 and detachable therefrom.

The opposite end of the casing 10 is open and externally threaded for the detachable connection of the enlarged inner portion 16 of a burner pipe or nozzle 17 which is preferably cylindrical and of uniform internal diameter throughout with a smooth inner surface as indicated in Figure 2.

At one side intermediate its ends, the casing 10 has an internally threaded nipple 20 for pipe connection with any suitable source of air or steam under pressure whereby such air or stem may be fed into the casing for passage through the open end of the latter around an axially disposed oil nozzle 21 into which oil is fed through an internally threaded nipple 22 at the diametrically opposite side of the casing 10 with respect to the air or steam nipple 20.

At its delivery end, the oil nozzle 21 has an elongated tubular extension 23 and is provided with an internal valve seat 24 around the inner end of said extension, said valve seat being adapted to receive thereagainst the valve forming shoulder 25 of the valve stem 13, the stem being manipulated by a handle 26 at its outer end.

Beyond its valve forming shoulder 25, the valve stem 13 has a reduced cylindrical forward extension 27 which projects axially through and in slightly spaced relation to the tubular extension 23 of the burner nozzle and beyond the same so that when the valve stem is turned to slightly unseat the valve 25, oil under pressure will be forced past the valve seat 24 in the form of a film upon the surface of the cylindrical extension 27 within the oil nozzle extension 23.

The oil nozzle extension 23 may extend into a counterbore 17^a at the inner end of the burner nozzle 17 as shown in Figure 2, or the bore of the burner nozzle may be of the same diameter throughout sufficient to receive the oil nozzle extension therein in spaced relation as shown in Figure 3 where the burner nozzle is indicated at 17^b. Moreover the valve stem 13 may be either axially bored throughout its complete length including its extension 27 as indicated at 13^a in Figure 2, or may be solid as indicated in Figure 3 where the valve stem is indicated at 13^b.

By forming the valve stem extension 27 with a smooth cylindrical surface it is obvious the film of oil will extend continuously therearound, the said extension 27 forming a solid backing for the film of oil so that the blast of air or steam entering the burner nozzle 17 around the oil nozzle, will strike the oil film and instantly break the same completely into such fine particles as to promote thorough vaporization and in fact so thoroughly fog the oil that it will burn with intense heat and without the formation of carbon. This result is increased by providing the oil nozzle extension tube 23 with an opening or openings 28 adjacent to its inner end so that a portion of the air may

enter the extension tube 23 and pass through the latter with the oil film on the surface of the extension 27, thus thinning out the oil in preparation for the beforementioned blast of air which acts against the oil film upon the surface of the extension 27 beyond the free end of the extension tube 23.

By thus providing the tubular extension 23 in connection with the delivery end of the oil nozzle to project substantially within the burner nozzle and by further elongating the extension 27 so as to pass completely through such extension tube and beyond the free end of the latter within the burner nozzle, I am able to retain all of the advantages of my previous construction and add thereto certain other advantages including materially reduced noise in operation, increased efficiency and greater heat of combustion, and as a further advantage, and a very material one especially under some circumstances, I am able to operate the burner with the present improvements thereon in connection with a source of air or steam supply which need not have nearly so great pressure behind it for the proper operation of the burner.

I claim:

1. An oil burner including a casing open at one end and having an axial threaded bore in its opposite end and an inlet nipple intermediate its ends, an oil nozzle axially of the casing, and extending toward the open end of the casing, said nozzle having an oil inlet intermediate the ends of the casing, a burner nozzle attached to the open end of the casing, said oil nozzle having an extension tube at its open end projecting into the burner nozzle in spaced relation to the latter, and said oil nozzle having an internal valve seat at the inner end of its said extension tube, a valve stem having a handle at one end, extending axially through the oil nozzle and provided with a reduced cylindrical extension at its opposite end forming an annular shoulder at the inner end of the extension in cooperation with the valve seat of the oil nozzle, said valve stem extension projecting through and beyond the extension tube of the oil nozzle in spaced relation to the latter.

2. An oil burner including a casing open at one end and having an axial threaded bore in its opposite end and an inlet nipple intermediate its ends, an oil nozzle axially of the casing, and extending toward the open end of the casing, said nozzle having an oil inlet intermediate the ends of the casing, a burner nozzle attached to the open end of the casing, said oil nozzle having an extension tube at its open end projecting into the burner nozzle in spaced relation to the latter, and said oil nozzle having an internal valve seat at the inner end of its said extension tube, a valve stem having a handle at one end, extending axially through the oil nozzle and provided with a reduced cylindrical extension at its opposite end forming an annular shoulder at the inner end of the extension in cooperation with the valve seat of the oil nozzle, said valve stem extension projecting through and beyond the extension tube of the oil nozzle in spaced relation to the latter, and said extension tube of the oil nozzle having an opening in the wall thereof establishing communication between the interior of the said tube and the space within the casing around the oil nozzle.

3. An oil burner including a casing having a chamber therein and a fluid supply connection leading into said chamber, a burner nozzle in connection with the casing and in communication with said chamber, an oil nozzle within the casing having a tubular extension projecting axially into and opening at its outer end within the said burner nozzle and around which the fluid flows, and a member projecting through and beyond said extension of the oil nozzle and onto which the oil is fed, said member forming a solid backing for the oil within the influence of the fluid passing from the said chamber into the burner nozzle, said tubular extension of said oil nozzle having an opening therethrough at a point adjacent to its inner end for the purpose described.

EDWIN COOPER WILLS.