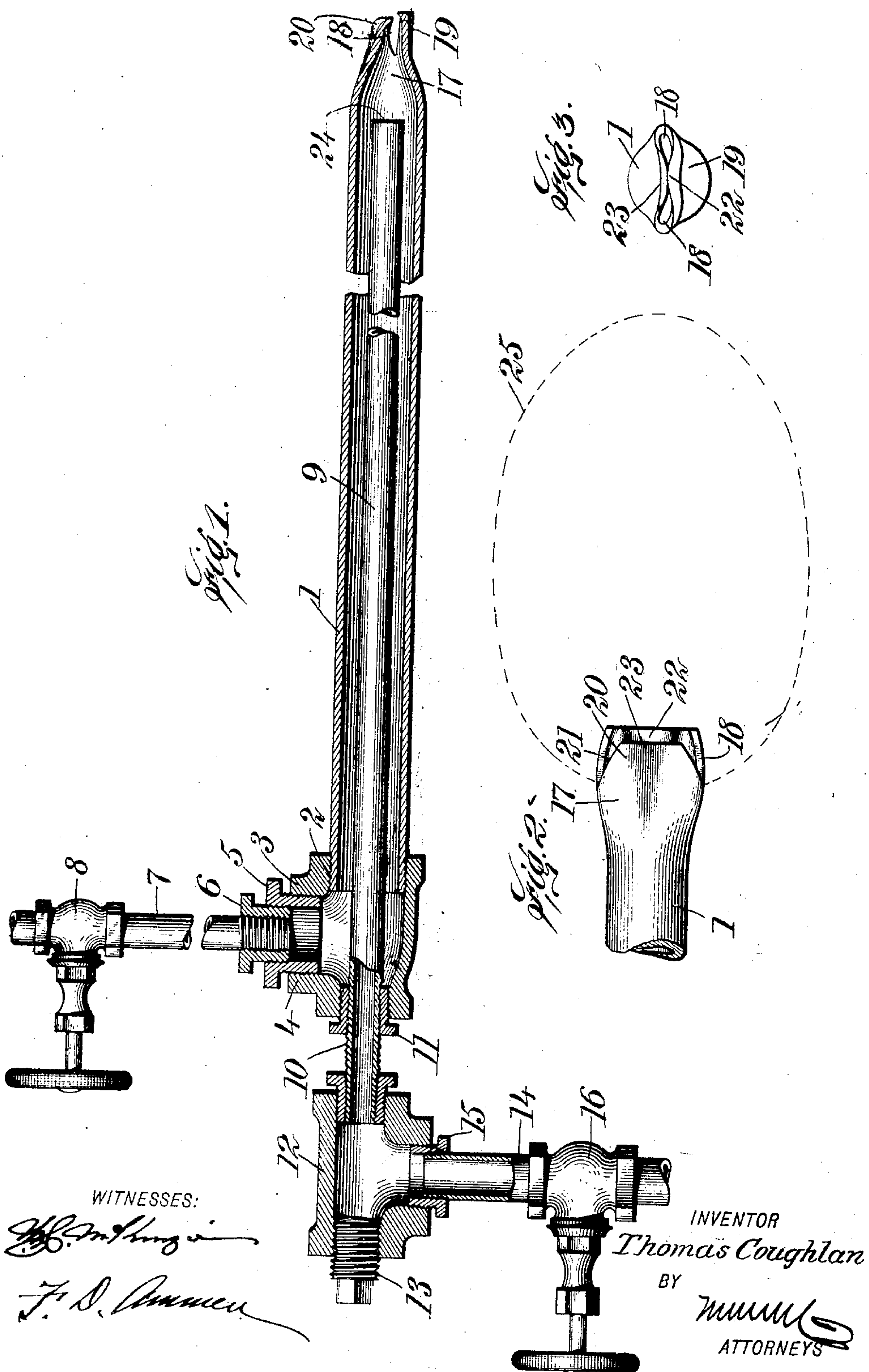


No. 835,403.

PATENTED NOV. 6, 1906.

T. COUGHLAN.
BURNER FOR COAL TAR.
APPLICATION FILED NOV. 3, 1905.



WITNESSES:

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THOMAS COUGHLAN, OF NEW YORK, N. Y.

BURNER FOR COAL-TAR.

No. 835,403.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed November 3, 1905. Serial No. 235,728.

To all whom it may concern:

Be it known that I, THOMAS COUGHLAN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county and State of New York, have invented a new and Improved Burner for Coal-Tar, of which the following is a full, clear, and exact description.

This invention relates to burners for liquid or semiliquid fuels, such as hydrocarbon. It is intended especially for burning coal-tar.

The object of the invention is to produce a burner of simple construction which is especially adapted to be constructed of piping, but which will operate efficiently.

A further object is to construct a burner so that it may be readily cleaned and to form the mouth of the burner in such a way as to produce a flame of a desirable form.

The invention consists in the construction and combination of parts to be described more fully hereinafter, and definitely set forth in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is substantially a central vertical section through the burner, certain parts being broken away or shown in elevation. Fig. 2 is a plan of the tip of the burner, and Fig. 3 is a front elevation of the tip of the burner.

Referring more particularly to the parts, 1 represents the body of the burner, which is of tubular form and preferably constructed of a piece of wrought-iron pipe. One extremity of this body is attached in any suitable manner, as by screw-threads 2, to a reducing-T 3, the same having an upwardly-disposed boss 4, in which reducing-bushings 5 and 6 are arranged. In the inner bushing 6 a pipe connection 7 is attached, which includes a valve 8 of any suitable construction. Through the pipe connection 7 the hydrocarbon or tar passes to the interior of the burner.

Within the interior of the body 1 I provide an inner tube 9, which is disposed centrally on the axis of the body and has a threaded extremity 10, which projects beyond the T 3. This threaded extremity passes through a bushing 11, mounted in the T, as shown. Upon the threaded extremity 10 of the inner tube I provide a T connection 12, and the side of this T opposite to the inner tube 9 is closed by a suitable removable plug 13, the

said plug being preferably threaded into the T, as shown.

I provide a steam pipe connection 14, which is connected with the T 12 in any suitable manner, and this connection may include a bushing 15, such as that shown, the said bushing making a threaded connection with the T and receiving the pipe 14. The steam-pipe 14 includes a suitable valve 16, which controls the flow of steam through the inner tube, as will be readily understood.

The body 1 of the burner is formed at its outer extremity into a head or tip 17. I prefer to form this head by making slots or slits 18 on opposite sides of the pipe at its mouth, the said slits being disposed on the same level and at substantially the same level as the axis of the body. After forming these slits I prefer to flatten the pipe by pressing the edges thereof toward each other, as indicated most clearly in Fig. 3. In this way a lower lip 19 is formed and an upper lip or tongue 20 overlying the same. I cut away the side edges 21 of the tongue 20 on inclined lines, as indicated in Fig. 2, the same leading from the inner extremities of the slots or slits 18. I also cut away the extremity of the tongue 20, so that the lip 19 projects slightly therebeyond, as shown most clearly in Figs. 1 and 2. Furthermore, as indicated most clearly in Fig. 3, I press the central portion of the lower lip 19 upwardly, so as to form a mount 22, and centrally in the tongue 20 I form a depression 23 by forcing the extremity thereof downwardly. When the burner-tip is formed as described, it presents substantially the appearance illustrated.

I prefer to arrange the inner tube so that its extremity 24 lies adjacent to the inner extremity of the tip, as illustrated in Fig. 1. In using the burner it should be understood that steam or a similar gas at a suitable temperature and pressure is admitted through the pipe 14, and this steam passes through the tube 9 and escapes through the tip of the burner. The hydrocarbon fuel or coal-tar passes into the body of the burner through the pipe connection 7 and is exposed to the heated surface of the inner tube 9, around which it passes in moving toward the tip of the burner. In this way a sluggish or highly-viscous fuel is reduced to a very desirable condition of fluidity. Arriving at the mouth 24 of the inner tube, the fuel, such as tar, becomes finely atomized and is blown

with violence through the burner-tip. The flame will have substantially the form indicated by the dotted outline 25 in Fig. 2. This form is substantially oval. In the figure the flame is shown of very much reduced size relatively to the tip; but in practice, using the normal steam-pressure, I obtain a very large flame giving a very high temperature. The form which I give to the tip enables me to produce a flame of the form described. In this connection it may be stated that the slits 18 at the sides tend to throw the flame laterally, while the mount 22 and the depression 23 restrict its extension longitudinally. By reason of the fact that the slits 18 are made in a horizontal plane I am enabled to produce a flame in a substantially horizontal plane which covers an enormous area and is admirably adapted for firing boilers or furnaces. The tip 17 is readily formed directly on the body of the burner with ordinary blacksmiths' tools. I find that it is unnecessary to provide means for bringing the tar to the burner, as the escaping steam entrains the tar, at the same time atomizing it thoroughly before it escapes through the tip. If it should happen that the tip 17 becomes clogged, it can be

readily cleaned, usually without detaching the body of the burner, by simply removing the plug 13 and inserting a rod from the rear side of the inner tube. The extremity of this rod will be passed in till it extends beyond the mouth 24 and engages the inner sides of the wall of the tip, where it can be used as a scraper or punch to dislocate the obstructions.

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

A burner-tip of substantially tubular form, having slits on the sides thereof, said burner having a flattened tongue on its upper side, and a flattened lip on its under side, projecting beyond said tongue, said lip and said tongue being pressed into close proximity near the central axis of said tip, whereby the flow is developed through said slits.

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

THOMAS COUGHLAN.

Witnesses:

WM. WARNER,
PETER ALFANO.