Oct. 16, 1923. 1,471,104

E. E. CORNWELL ET AL

BURNER

Filed June 5, 1922

Fig. 1.

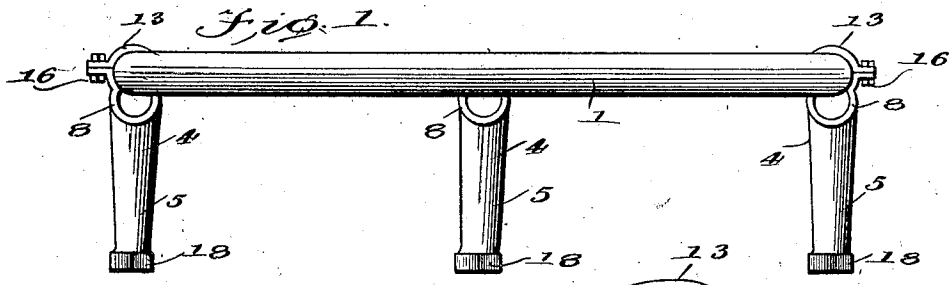
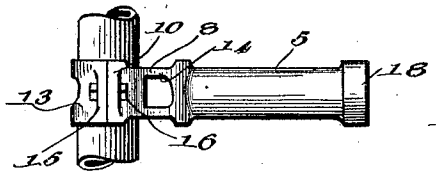


Fig. 2.



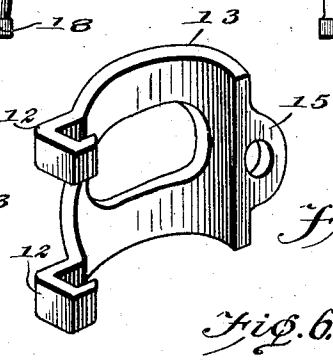
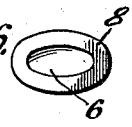


Fig. 5.

Fig. 6.



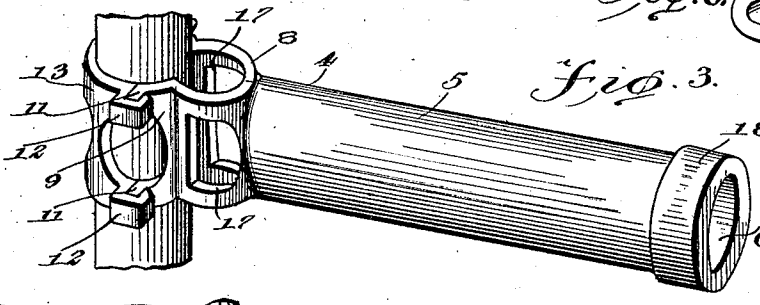
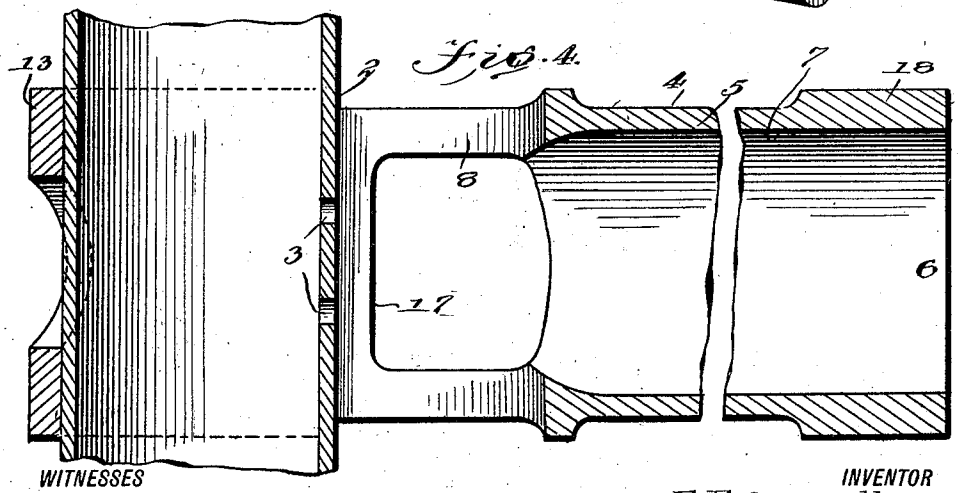


Fig. 3.

Fig. 4.



WITNESSES

Lawrence O. Mauleon

INVENTOR

E. E. Cornwell,
J. H. McCready,
BY Munn & Co.
ATTORNEYS

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UNITED STATES PATENT OFFICE.

ELMER E. CORNWELL AND JOSEPH H. McCREADY, OF OKMULGEE, OKLAHOMA.

BURNER.

Application filed June 5, 1922. Serial No. 565,804.

To all whom it may concern:

Be it known that we, ELMER E. CORNWELL and JOSEPH H. McCREADY, citizens of the United States, and residents of Okmulgee, in the county of Okmulgee and State of Oklahoma, have invented certain new and useful Improvements in Burners, of which the following is a specification.

Our invention relates to improvements in gas burners of the type of construction disclosed in Letters Patent of the United States, No. 1,382,894, issued to us June 28th, 1921, and it consists in the combinations, construction and arrangements herein described and claimed.

An object of our invention is to provide in a burner of the character described, a novel tip or combustion tube which can be detachably secured to a feed or supply tube and which can therefore be readily replaced when broken or removed and replaced for any other cause.

A further object of our invention is to provide a burner tip which is adapted to effect thorough and intimate commingling of a hydro-carbon fuel and air admitted thereto at one end and passing therethrough to the other end of the tip.

A still further object of our invention is to provide a tip which is strong and durable in construction, capable of withstanding an intense heat without impairment and which is thoroughly practical commercially.

Other objects and advantages will be apparent from the following description, and the novel features of the invention will be particularly outlined in the appended claim.

Our invention is illustrated in the accompanying drawings, forming a part of this application, in which—

Figure 1 is a view of a burner embodying the invention,

Figure 2 is a fragmentary view at right angles to Figure 1, showing one of our improved tips applied to a feed pipe,

Figure 3 is a perspective view, showing the reverse side of the structure shown in Figure 2,

Figure 4 is an enlarged longitudinal section through the structure shown in Figure 2,

Figure 5 is an enlarged perspective view of a clamping element comprised in the device, and

Figure 6 is an end view showing the elliptical outlet of the burner tip.

In Figure 1, we show a tubular head or manifold 1 provided with feed branches 2 of tubular form, each of the feed branches 2 being formed with feed orifices 3 extending through the walls thereof. In the form of the device illustrated in the drawings, two adjacent feed orifices 3 through each feed tube 2 are adapted to discharge into the interior of one of a plurality of tips or combustion tubes 4, as will presently appear.

Each of the tips or combustion tubes 4 comprises a tubular body 5 which is flattened toward one end thereof to define an outlet 6 of elliptical contour for the bore or longitudinal passage 7 through the body 5. The end of the body 5 remote from the outlet 6 is merged into the walls of a hollow base 8, the bore of the tubular body continuing through the walls of the base and opening into the interior of the latter. The base 8 is arcuate in cross sectional contour, being struck about a radius greater than that of the body 5 and being located with the longitudinal axis thereof intersecting at right angles the longitudinal axis of the body 5. In the form of the device illustrated in the drawings, the base portion 8 constitutes a major portion of a cylinder, thus defining a pair of side portions or wings which extend forwardly of the adjacent end of the tubular body, the outer or free side edges of the side portions being located in spaced relation to the proximate end of the body 5. Extending obliquely from the outer side edges of the side portions of the base 8 and preferably formed integrally with the latter are clamp sections 9 and 10 respectively, which clamp sections are curved to conform to the cross sectional contour of one of the feed pipes 2 and extend from the outer side edges of the side portions of the base to points located diametrically opposite on the feed tube 2 when the outer side edges of the side portions of the base 8 are in abutting relation to the feed tube 2. The clamp section 9 is provided with outwardly extending projections or lugs 11 at its outer edge, which lugs are adapted to enter socket portions 12 provided at one side edge of a clamp section 13 which is substantially semi-cylindrical in form and is complemental to the clamp sections 9 and 10. The clamp section 10 is formed with an outwardly extending integral lug or ear 14 at its side edge adapted to

lie in flatwise contiguous relation to a cooperating lug or ear 15 which is formed on the clamp section 13 to extend outwardly from the side edge thereof contiguous to the clamp section 10. The cooperating lugs or ears 14 and 15 are provided with aligned bolt receiving openings therethrough and a bolt 16 may be projected therethrough and a nut screwed on the end thereof to releasably clamp the base 8 to the feed pipe 2.

The base 8 is open at its ends and is provided with apertures 17 of relatively large extent through the walls of the side portions thereof. The clamp sections 9, 10 and 13 are apertured for the sake of lightness, if desired.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. In securing a tip or combustion tube 4 to one of the branches or feed pipes 2, the former is arranged with the base portion 8 in encompassing relation to the feed orifices 3 so that a hydro-carbon fuel projected through the feed orifices 3 will enter the combustion tube 4 or longitudinal passage 7 through the base 8 and will be projected along the bore or longitudinal passage 7 to the outlet thereof. As stated, the outlet 6 is substantially elliptical in contour, thereby providing a flat or laterally elongated flame when a combustible mixture is passing through the body 5 and is ignited at the outlet. Moreover, the outlet 6 is relatively restricted since the minor axis thereof is less than the diameter or distance between points of the bore or longitudinal passage 7 at the inlet end thereof. Air is permitted to enter the bore or passage 7 through the apertures 17 and the open ends of the base 8 and mingles with the hydro-carbon fuel fed through the base to the body 5.

The commingled hydro-carbon fuel and oxygen will be thoroughly and intimately mixed in passing from the base to and through the elliptical outlet 6. The body 5 is formed with a flat bead or external annular enlargement 18 in the outlet end thereof, whereby the body 5 is not likely to be rendered unserviceable readily on account of oxidation or fracture of the body at the outlet end thereof.

With the construction described in the foregoing, the outlet 6 has an area less than that of the inlet end of the body and the major axis of the outlet is substantially equal to the diameter of the body at the inlet end. Back firing is thus precluded while the convergence of opposite sides of the body toward the outlet insures the intimate commingling of the hydro-carbon fuel and air entering the inlet of the body and a combustible fuel which will be completely consumed is thus provided.

Obviously, our invention is susceptible of embodiment in forms other than that illustrated in the accompanying drawings, and we therefore consider as our own all modifications of the forms of the device herein disclosed, which fairly fall within the scope of the appended claim.

Having thus described the invention, what we claim is:—

The combination with a supply tube having a lateral feed orifice through its walls of a burner comprising a tubular body and a hollow base into which the tubular body is merged at one of its ends, the bore of the tubular body continuing through the walls of the base and opening into the interior of the latter, said base having a pair of side portions extending forwardly of the proximate end of the tubular body, a clamp section merged into one of the side portions of the base along the outer side edge of the latter, a second clamp section merged into the other side portion of the base along the outer side edge of the latter, said clamp sections being adapted to terminate at their outer side edges in a diametrical plane of the supply tube when the outer side edges of the side portions of the base are in abutting relation to the peripheral wall of the supply tube, one of said clamp sections having an outwardly extending lug at its outer edge and the other of said clamp sections having a perforated outwardly extending ear at its outer edge, a clamp section complemental to said first named and said second named clamp sections, said third clamp section being adapted to extend in engagement with the outer peripheral wall of the supply tube between the outer edges of the first and second named clamp sections and having a socket portion at one side edge adapted to receive and engage with the lug on one of the other clamp sections and having an ear at its other side edge provided with a perforation in register with the perforation in the ear of the remaining clamp section, and a fastening device for holding said perforated ears together, whereby said third named clamp section will be releasably held against displacement from said first named and said second named clamp sections and said base may be held against said supply tube with the outer side edges of the side portions of the base clamped against the supply tube at opposite sides of the lateral feed orifice in the latter.

ELMER E. CORNWELL.
JOSEPH H McCREADY.