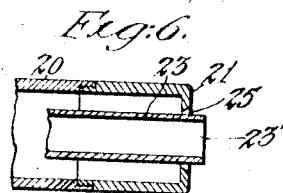
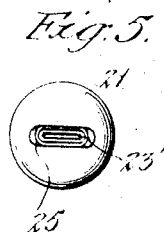
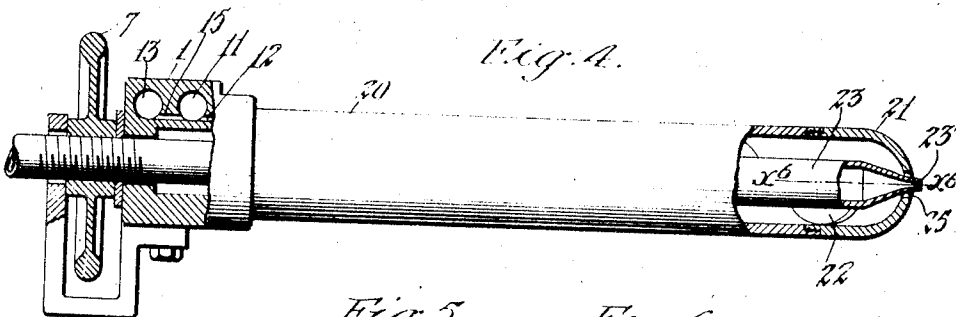
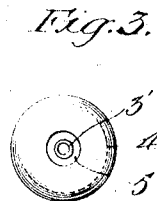
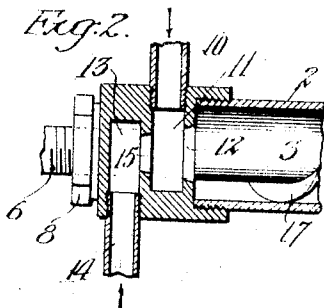
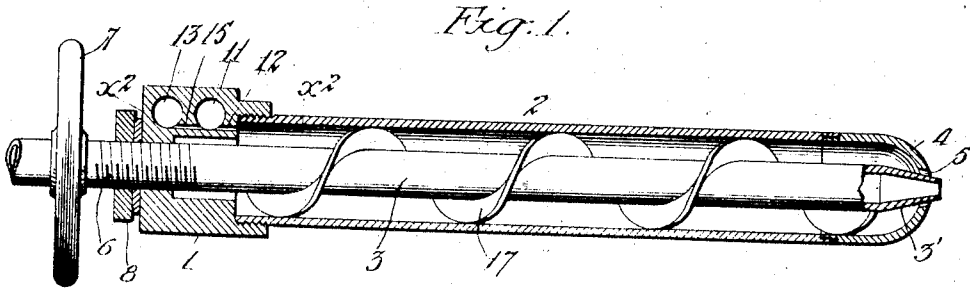


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Witnesses:-
Louis W. Gatz.
Frank L. Graham

Inventors
 Silas B. Tainter
 William H. Kelly
 By Townsend Higgin & Hackett
 Their Attys

UNITED STATES PATENT OFFICE.

SILAS B. TAINTER, OF SEATTLE, WASHINGTON, AND WILLIAM H. KELLY, OF LOS ANGELES, CALIFORNIA.

OIL-BURNER.

1,044,104.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed August 16, 1909. Serial No. 513,200.

To all whom it may concern:

Be it known that we, SILAS B. TAINTER and WILLIAM H. KELLY, citizens of the United States, residing, respectively, at Seattle, in the county of King and State of Washington, and Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Oil-Burner, of which the following is a specification.

The main object of the present invention is to provide an oil burner which will impart to the issuing jet a rotary or swirling motion.

A further object of the invention is to provide an oil burner in which the oil will be mixed with the atomizing fluid or medium by means of a rotary or swirling movement.

Other objects of the invention will appear hereinafter.

The accompanying drawings illustrate the invention.

Figure 1 is a longitudinal vertical section of the burner. Fig. 2 is a horizontal section on the line x^2-x^2 Fig. 1. Fig. 3 is a front elevation of the burner tube. Fig. 4 is a partial sectional elevation of a different form of the invention. Fig. 5 is a front end elevation of the form shown in Fig. 4. Fig. 6 is a fragmentary horizontal section on line x^6-x^6 in Fig. 5.

Referring to Figs. 1 to 3, the burner comprises a body portion or fitting 1, a mixing tube 2 screwing in or otherwise secured to said body portion, and a central tube 3 extends longitudinally through the body portion 1 and through the tube 2 and is adapted to supply steam or expansive fluid to the center of the pulverized oil and steam mixed therewith. The tube 2 is provided with an outlet cap or nozzle 4 having a discharge grifice 5 surrounding the outlet end of the tube 3, said outlet end of the tube 3 being reduced or tapered, as shown at 3', so that it is somewhat smaller than the size of opening 5. Tube 2 is screw threaded, as at 6, to screw within the member 1 so as to adjust the area of the outlet at the opening 5, a handle 7 being provided to facilitate such adjustment, and a lock nut 8 being provided to lock the tube 3 in any position to which it may be adjusted. Tube 3 is provided at its rear end with any suitable connecting means whereby steam, for example, superheated steam, or air under pressure or under

atmospheric pressure is admitted to the center of the combustibles.

The oil is supplied by means of a pipe 10 screwing into a recess or chamber 11 in the body 1, the bottom of said recess communicating through a horizontal slot 12 with the space between tubes 2 and 3. At the rear of the recess 11 another recess 13 is provided communicating with a steam supply pipe 14, said recess 13 opening into recess 11 through a channel or horizontal slot 15 in line with the slot 12 aforesaid, so that the pressure of steam issuing through slot 15 will drive the oil from recess 11 through the slot 12 and into the mixing chamber between the tubes 2 and 3.

The mixing chamber between the tubes 2 and 3 is provided with a spiral deflector or baffle plate 17 formed, for example, of a band or strip of metal bent in helical shape so that a spiral passage is provided for the oil and the elastic fluid or steam, and the oil and steam traversing this passage from the rear to the delivery end of the tube 2 is agitated, broken up and thoroughly mixed.

The operation is as follows: Oil is supplied at pipe 10 and is forced from recess 11 by the pressure of the steam admitted by the pipe 14, as above described, and in its passage between the tubes 2 and 3 is spirally deflected by the deflector 17 and thereby atomized and mixed with the steam, the tube 2 serving as a mixing chamber and deflector 17 serving as a baffling device for insuring complete mixture. On reaching the outlet 5 the mixture of oil and steam is ejected forcibly and the air or steam issuing through the tube 3 and outlet 3' mingles centrally therewith, the issuing jet of steam retaining its swirling or rotary movement induced by the action of the deflector 17 aforesaid mingles and combines the pulverized combustibles and the additional supply of air or steam.

In case a flat jet or flame is desired the construction shown in Figs. 4, 5 and 6 may be adopted, the burner tube 20, head 21 and deflector 22 being constructed substantially, as above described, the nozzle cap 24 being provided with a horizontally elongated slot 25 and the tube 23 being provided with a horizontally elongated slot 23' in line with the slot 25. As shown the elastic fluid pipe

is tapered from the front end rearwardly to fit into the tapered orifice in the burner tip and by screwing the expansive fluid pipe forward the area of the orifice in the tip may be regulated as desired. The flame can be regulated by this means without the aid of valves in the steam or oil lines, and if desired by closing the orifice in the burner tip the pressure of the steam may be utilized to force the oil back through the oil pipe to clean the same. The outlet tip 4 is detachably secured to the end of the tube 2 and is readily removed therefrom, thereby facilitating the renewal of the orifice in case the same should become worn out, without the necessity or expense of providing an entirely complete new body. Such tip may be made of special metal and may be hardened to resist wear, and by making the same detachable from the tube 2, we avoid the necessity of providing an entire new tube and the attendant time and labor of replacement when the orifice becomes worn.

What we claim is:—

1. An oil burner comprising a mixing tube having a contracted outlet at one end, a member closing the other end of said tube and provided with steam inlet means and oil inlet means communicating with the interior of said tube, and an inner tube for supply of elastic fluid extending through said member and longitudinally within the mixing tube and through the outlet thereof and having an outlet beyond the outlet of

the mixing tube to deliver elastic fluid beyond the outlet of the steam and oil from the mixing tube, said inner tube being tapered at its delivery end and being longitudinally adjustable within the mixing tube.

2. An oil burner comprising a body member having an oil receiving recess, an oil pipe communicating therewith, said recess having a delivery slot, said body member having a steam receiving recess with a delivery slot in line with the aforesaid oil delivery slot, steam supply means communicating with said steam recess, a tubular member secured to the said body member and communicating with the oil delivery slot to receive oil therefrom, and provided at its farther end with an outlet, an elastic fluid supply pipe extending longitudinally through the body member and the tubular member and adjustable longitudinally therein and provided at its end with a discharge orifice in line with the aforesaid outlet of the tubular member, and a spiral deflector extending within the tubular member and in the space between the same and the said elastic fluid supply pipe.

SILAS B. TAINTER.
WILLIAM H. KELLY.

Witnesses for Tainter:

HELEN M. ADAMS,
WILLIAM E. FROUDE.

Witnesses for Kelly:

GEORGE T. HACKLEY,
FRANK L. A. GRAHAM.