G. C. EVANS.

BURNER.

APPLICATION FILED JAN. 18, 1921.

1,429,415.

Patented Sept. 19, 1922.

2 SHEETS—SHEET 1.

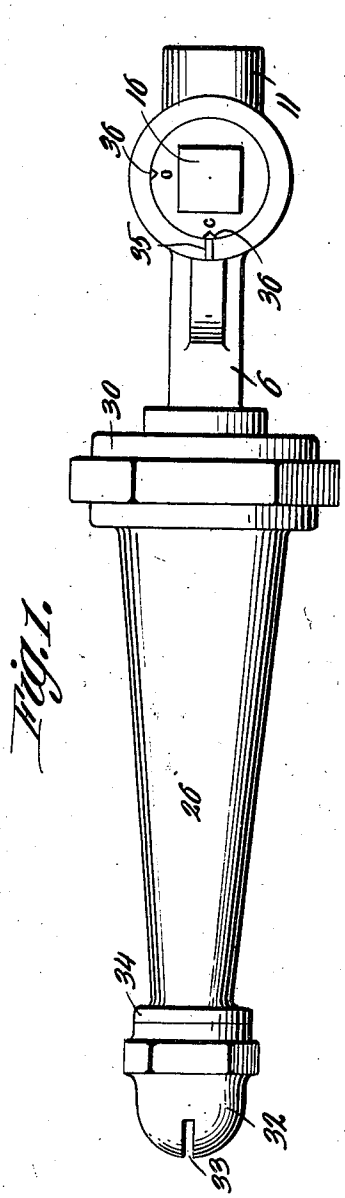


Fig. 1.

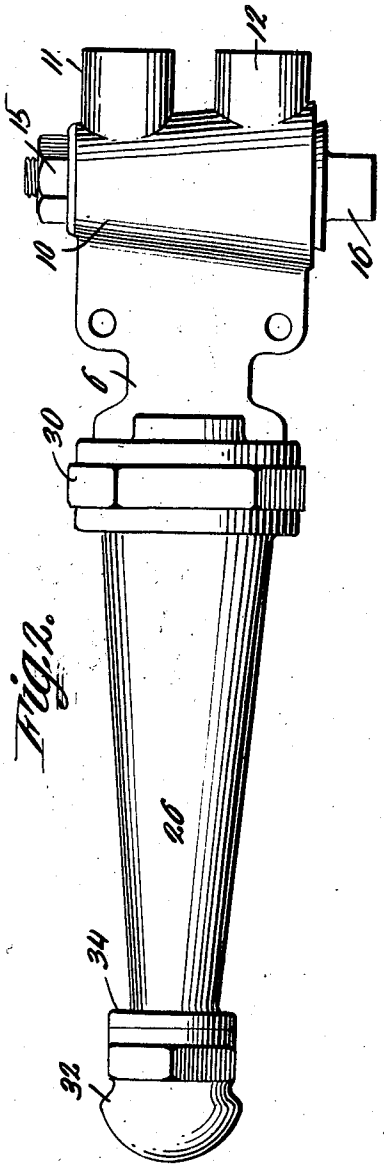


Fig. 2.

WITNESSES

Guy M. Strong

L. W. Schmidt

GEORGE C. EVANS

INVENTOR.

BY

Richard B. Owen

ATTORNEY.

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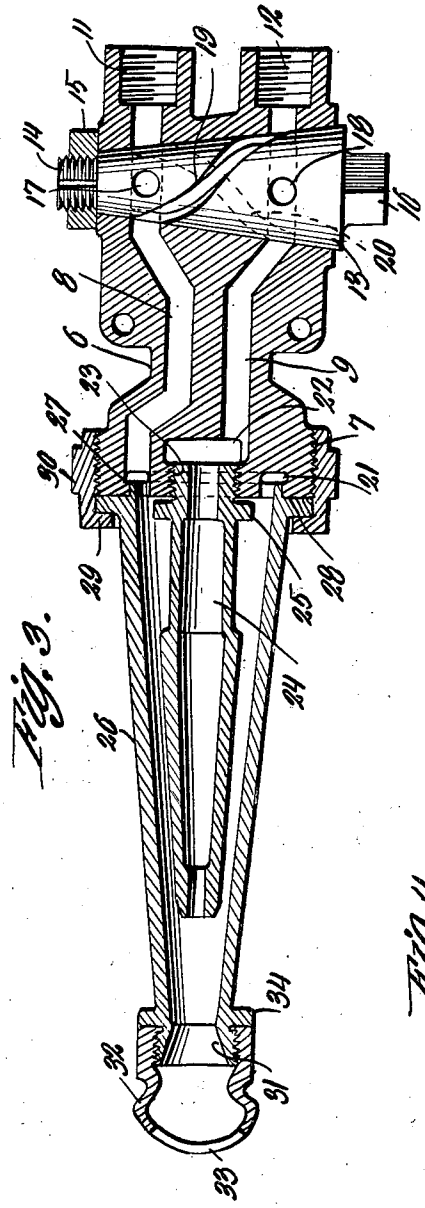


Fig. 3.

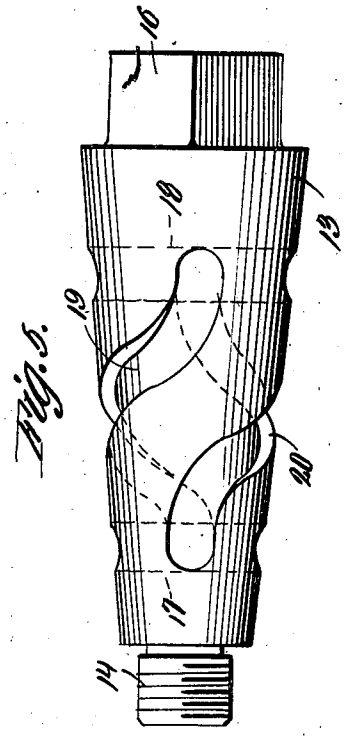


Fig. 5.

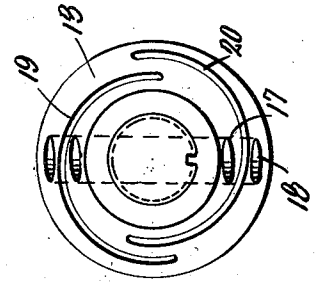


Fig. 4.

WITNESSES

Guy M. Spring

L. P. Schmidt.

GEORGE C. EVANS INVENTOR.

BY

Richard B. Evans

ATTORNEY.

Patented Sept. 19, 1922. 1,429,415

UNITED STATES PATENT OFFICE.

GEORGE C. EVANS, OF TULSA, OKLAHOMA.

BURNER.

Application filed January 18, 1921. Serial No. 438,075.

To all whom it may concern:

Be it known that I, GEORGE C. EVANS, a citizen of the United States, residing at 18A W. Third Street, Tulsa, in the county of Tulsa and State of Oklahoma, have invented certain new and useful Improvements in Burners, of which the following is a specification.

This invention relates to new and useful improvements in burners and more especially to that type which is designed to be used with a liquid fuel and steam; a primary object of the invention being to provide means for diverting the flow of each of the fluids from one passageway to another so as to obviate clogging of the various channels and insure the efficient operation of the burner at all times.

Another object of the invention is to provide a burner of the above nature, the parts of which are strong and durable and so associated as to render the assembling of the burner a comparatively easy matter; to provide a simple and inexpensive valve mechanism for diverting the flow of liquid or steam from one channel to another, and also to provide the burner with means whereby steam may be directed into a nozzle and entirely around a jet arranged concentrically therein.

Various other objects and advantages will become apparent during the course of the following description.

In the accompanying drawings forming a part of the application and wherein like numerals are employed to designate like parts throughout the several views,

Figure 1 is a top plan of the invention.

Figure 2 is a side elevation of the same.

Figure 3 is a longitudinal section through the same.

Figure 4 is a plan of the plug valve, and

Figure 5 is a side elevation of the same.

Referring now to the drawings, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 6 designates the body portion of the burner, the forward portion of which is cylindrical and exteriorly screwthreaded as at 7. A steam passage or channel 8 and an oil channel 9 extends longitudinally of the body portion from end to end thereof.

The inner portion of the body portion is formed into a plug valve casing 10 through which the channels 8 and 9 extend. For the purpose of distinction I will term the channels 8 and 9 as main channels while the inner ends or continuations of these channels 11 and 12 will be termed auxiliary channels and inasmuch as these channels are continuations of the main channels naturally they register therewith. The inner end of this valve casing is also provided with a pair of interiorly screw threaded nipples into which are inserted pipes for conveying mediums to the auxiliary channels 11 and 12.

The conical plug valve 13 is mounted for rotation in the valve casing 10, and one end of the valve is provided with a reduced threaded terminal 14 to receive thereon a nut 15 which securely retains the valve within the casing. The opposite ends of the valve is provided with a reduced squared extension 16 with which a suitable wrench may be engaged for actuating the valve.

The plug 13 is provided with a pair of transverse ports 17 and 18 which are adapted to alignment at certain times with the channels 8 and 9 respectively. It will of course be obvious that when the ports are arranged transversely of the channels, passage through the latter is prevented. A pair of spiral grooves 19 and 20 are provided in the plug to extend substantially longitudinally thereof and between corresponding ends of the ports. It is to be particularly noted that the ends of each groove terminate between the ends of the two ports so that when the two ports are arranged transversely of the channels, communication between the two channels is established by the grooves. Furthermore, it is to be understood that corresponding ends of the two grooves are arranged upon opposite sides of the plug so that steam entering the channel 8 may be directed by means of the groove 20 into the channel 9 and the oil entering the channel 9 may be directed by the groove 19 into the channel 8. However, when the plug is arranged so that the ports align with the channels, the latter are separate and distinct.

The forward end of the channel 8 terminates in an annular groove or recess 21 provided in the forward end of the body portion and corresponding end of the channel 9 terminates in a relatively deeper recess 22 arranged concentrically to the recess 21. The outer portion of this recess 22 is screw-threaded as at 23 to receive the threaded end of an oil jet 24 for securing the same to the body portion 6. This jet is provided near

its threaded end with an annular laterally extending flange 25 which is adapted to abut the forward end of the body portion.

A nozzle of tapering configuration is arranged concentrically to the jet 24 and its inner end is provided with a reduced portion 27 forming a flange which is adapted to snugly fit the outer end of the recess 21 in the body portion. The nozzle portion 26 is likewise provided with a laterally extended annular flange 28 adjacent this reduced portion to abut the body portion and to provide engaging means which are adapted to cooperate with an inwardly extending flange 29 provided upon a union nut 30 whereby when the latter is screwed upon the threads 7 of the body portion the flange 29 engages the flange 28 of the nozzle and draws it into binding engagement with the forward end of the body portion. This nozzle 26 extends a substantial distance beyond the jet 24 and its forward end is provided with an outwardly flaring bore 31. This end of the nozzle is also exteriorly threaded for the reception of a tip 32 having a slot 33 extending across the closed forward end thereof. The forward end of the nozzle is also provided with an outwardly extending flange 34 adapted to abut the inner end of the tip 32 which may be of any desired shape and may be provided with either a slot or cylindrical opening for the egress of fuel ingredients, but is shown here as dome shaped.

As best seen in Figure 1, one end of the valve casing 10 is equipped with an indication of any character 35 with which is adapted to align either one of two indications 36 arranged on the corresponding end of the plug 13. These indications are arranged at the end of a quadrant, one being marked with a letter indicating that steam is passing through the channel 8 when it is aligned with the indication on valve casing and the other when aligned indicating the passage of steam through the other channel.

In use, the plug 13 is turned a quarter of a turn from the position shown in Figure 3 so that the ports 17 and 18 align with the channels through the body portion. Steam may then enter the channel 8 and pass into the nozzle 26 around the jet, while the oil passes into the nipple 12 thence into the tunnel 9 and then into the jet 24. The oil is here heated by the steam and sprayed through the outlet end of the jet into the nozzle to properly combine with the steam to render the fuel highly combustible as it egresses through the slot 33 in the tip 32.

As extraneous matter is bound to be found in any fuel oil at some time or other, the jet will sometimes become clogged and therefore prevent the egress of oil therethrough so that the operativeness of the burner is impaired until the obstruction may be removed.

In order to eliminate the necessity of disassembling the burner to remove such accumulation, I have provided a plug valve 13 so that it may be shifted to dispose its ports transversely of the channels 8 and 9 and to align corresponding ends of the grooves 19 and 20 with the channels so that the steam entering the nipple 11 will be diverted through the groove 20 of the plug and into the channel 9. From here, the steam will expand into the jet 24 and cause disintegration of the accumulated material therein so that it may be forced through the tip 32 and the jet thoroughly cleaned. Such positioning of the plug will of course permit the oil entering into the nipple 12 to pass through the groove 19 in the plug and into the channel 8 of the body portion to be guided into the nozzle 26 toward the outlet end thereof. The burner may be permitted to continue to operate in this manner or the valve 13 may be shifted to align its ports with the channels so that the burner will assume its original operation.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and the method of operation will be readily apparent to those skilled in the art to which the invention appertains and while I have described the principle of the operation of the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made as are within the scope of the claimed invention.

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

1. A burner including a casing having a pair of channels therein, and valve means intersecting the channels for permitting uninterrupted passage therethrough in one position of the valve means, and for simultaneously interchanging passage through the channels in another position in the valve means.

2. A burner including a body portion having a pair of main channels therein and an auxiliary channel for each main channel in registration therewith, valve means interposed between the main and auxiliary channels for permitting communication between the registering main and auxiliary channels in one position of the valve means, and for communicating the main channels with non-registering auxiliary channels in another position of the valve means.

3. A burner including a body portion having a pair of main channels therein and an auxiliary channel for each main channel in registration therewith, and a plug valve interposed between the main and auxiliary channels and having ports for communicating the registering main and auxiliary chan-

nels in one position of the valve, and said valve also having other passages therein for communicating the main channels with non-registering auxiliary channels in another position of the valve.

4. A burner comprising a body portion having a pair of channels therein and also an auxiliary channel for each main channel in registration therewith, a plug valve interposed between the main and auxiliary channels and having ports extending therethrough from one side thereof to the other, and also having passages extending from opposite sides of the valve whereby the main channels can be communicated with the non-registering auxiliary channels in one position of said valve.

5. A burner including a body portion having a pair of main channels therein and also an auxiliary channel for each main channel in registration therewith, a plug valve intersecting the channels and disposed between the main and auxiliary channels, said valve having ports extending diametrically therethrough from one side thereof to the other, for communicating the main channels with their alining auxiliary channels, and said valve also having sinuous grooves extending from opposite sides of the valve with their ends terminating between the ends of two ports for communicating the main channels with non-registering auxiliary channels in one position of the valve.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE C. EVANS.

Witnesses:
MAY BARRETT,
J. L. SHEDEZ.