R. SCHAWROWSKY.

HYDROCARBON BURNER.

APPLICATION FILED MAY 19, 1916.

1,243,559. Patented Oct. 16, 1917.

Fig 1

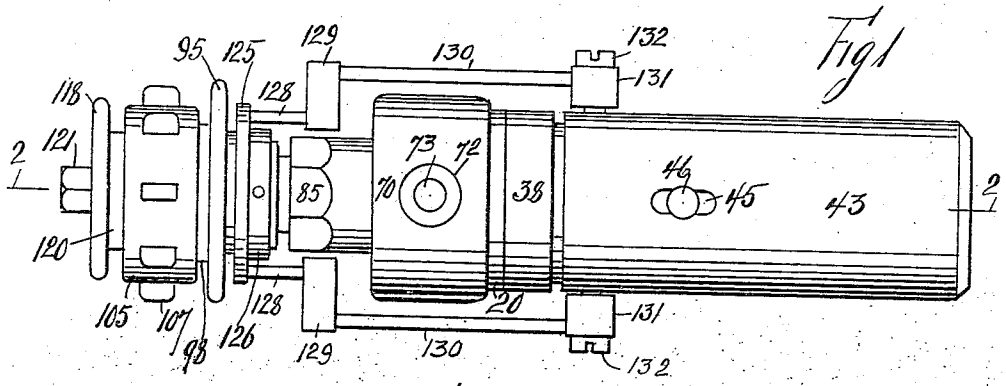


Fig 2

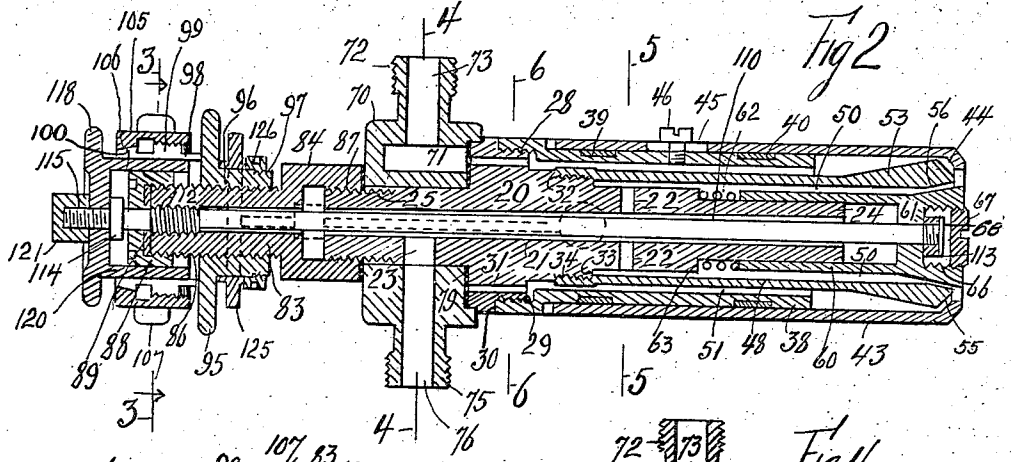


Fig 3

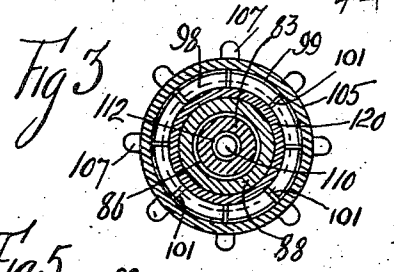


Fig 4

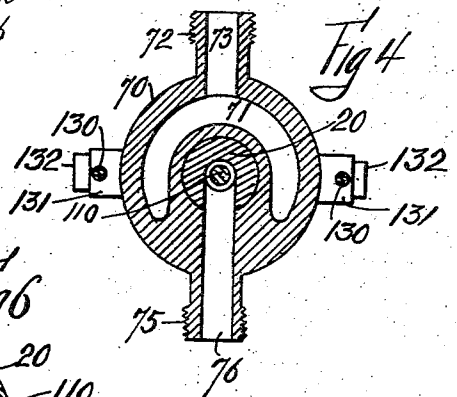


Fig 5

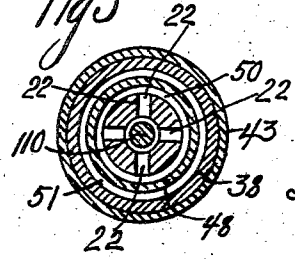
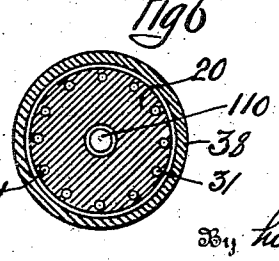


Fig 6



Inventor

Rappel Schawrowsky

By his Attorney

Alde Domecille

UNITED STATES PATENT OFFICE.

RAPPEL SCHAWROWSKY, OF BAYONNE, NEW JERSEY.

HYDROCARBON-BURNER.

1,243,559. Specification of Letters Patent. Patented Oct. 16, 1917.

Application filed May 19, 1916. Serial No. 98,493.

To all whom it may concern:

Be it known that I, RAPPEL SCHAWROWSKY, a subject of the Empire of Russia, and resident of Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in a Hydrocarbon-Burners, of which the following is a specification.

This invention relates to a hydro-carbon burner for burning liquid fuel, petroleum or the like. The organization of the invention comprises means for producing a conoidal zone of liquid fuel which is intersected by a conoidal zone of steam or air. One of the novel features of the invention comprises means for maintaining the same ratio of the liquid fuel and the steam or air for various charges of mixtures delivered by the burner.

In the accompanying drawings, Figure 1 shows a top plan view of a burner exemplifying the invention; Fig. 2 represents a section of Fig. 1 on the line 2, 2; Fig. 3 is a section of Fig. 2 on the line 3, 3; Fig. 4 represents a section as on the line 4, 4 of Fig. 2; Fig. 5 shows a section as on the line 5, 5 of Fig. 2, and Fig. 6 is a section of Fig. 2, as on the line 6, 6.

The burner is shown with the main guide and steam barrel 20 having the central longitudinal port 21, and the steam cross ports 22, 23. A guide sleeve 24 is formed at one end of the barrel 20, and an externally threaded sleeve 25 is formed at the other. An externally threaded flange 28, with the shoulders 29, 30 and fuel ports 31 is formed with the barrel 20. The barrel 20 is also shouldered at 32 and 33 and has the external thread 34. The flange 28 carries in threaded engagement the guide sleeve 38, which has formed therewith external recesses for the fibrous packing rings 39 and 40. An outer oil nozzle 43 with the conoidal spout 44 and elongated guide opening 45 is adjustably supported upon the guide sleeve 38. A guide screw 46 extends through the opening 45 and is in threaded engagement with the sleeve 38. A separator sleeve 48 is in threaded engagement with the external thread 34 and forms the inner annular steam conduit 50 and the outer annular oil conduit 51. A tapering head 53 is formed at the outer end of the sleeve 48 and has formed therewith the outer conoidal face 55, which can seat on the inner face of the conoidal spout 44. An inner conoidal face 56 is also formed with the head 58. A valve sleeve 60, with the flared head 61 is slidably supported on the guide sleeve 24. The flared head 61 can seat on the conoidal face 56. A spring 62 surrounds the sleeve 24 and bears between a shoulder 63 on the sleeve 24 and the accompanying edge of the sleeve 60. A threaded opening 66 is formed in the head 61, and a screw plug 67 is carried in said opening. A cavity 68 is formed in the head 61.

A barrel 70 with the oil chamber 71 is carried on the shoulder 30. A threaded sleeve 72 is formed with the barrel 70.

An oil port 73, in the sleeve 72, connects with the chamber 71. A threaded sleeve 75 with the steam port 76 is formed with the barrel 70. A packing ring 79 is interposed between the barrels 20 and 70.

A sleeve 83 has formed therewith the enlarged end 84, which latter is partially hexagonal at 85. An external thread 86 is formed with the sleeve 83 and an internal thread 87 is formed with the end 84. The end 84 is carried on the sleeve 25 and bears against the barrel 70. A cap nut 88 is in threaded engagement with the thread 86 and packing 89 is interposed between the nut 88 and the sleeve 83.

An adjusting collar 95 has formed at one end thereof the internally threaded sleeve 96, and is also externally threaded at 97. At the other end of the collar 95 and integral therewith extends the spring sleeve 98 having the threaded flange 99, the tapered end 100 and slots 101. A clamping nut 105 with the tapered internal face 106 and projections 107, is carried on the flange 99, and the face 106 thereof can ride on the tapered end 100 and depress the spring sleeve 98. A spindle 110 in the port 21 of the sleeve 20 extends into the opening 66 of the head 61.

The spindle 110 has a thread 112 which engages an internal thread of the sleeve 83. The thread 112 is of the same pitch as the thread 86. A nut 113 in the opening 66 is in threaded engagement with one end of the spindle 110, and a flange 114 and thread 115 is formed at the other end of said spindle. An adjusting collar 118 with the sleeve 120 is clamped to the spindle 110, between the flange 114 and the box nut 121 carried on the thread 115 of the spindle 110.

The sleeve 96 supports the collar 125 which is maintained in proper position by the ring nut 126. A pair of rods 128 extend from the collar 125 and carry the blocks

129. Rods 130 extend from the blocks 129 and the latter in turn have formed therewith the sleeves 131. Screws 132 extend through the sleeves 131 and are fastened into the nozzle 43.

To operate the invention the burner is located to project into a furnace. Piping for oil (not shown) is connected to the threaded sleeve 72 and piping for steam or air is connected to the sleeve 75. The operator locates the valve sleeve 60 in proper position to obtain the requisite conoidal port opening between the outer face of its tapered head 61 and the face 56 of the head 53 for the discharge of the requisite amount of steam. The latter adjustment is obtained by turning the adjusting collar 118, by means of which the spindle 110 is moved longitudinally through the intervention of its threaded portion 112 and the engagement of said threaded portion with the sleeve 83. The adjusting collar 95 is then turned to adjust and locate the outer oil nozzle 43 in proper position, so that the conoidal port between the spout 44 and the conoidal face 55 of the head 53 will limit the requisite flow of the liquid fuel used in the burner. By turning the collar 95 longitudinal motion is transmitted to the nozzle 43, through the intervention of the collar 125 and the rods, 128, 130 and their connections to said nozzle 43.

Next the clamping nut 105 is turned, so that its face 106 bears up against the tapered end 100 of the spring sleeve 98 and thereby the sleeve 120 of the collar 118 is locked with said spring sleeve. This causes the collars 118 and 95 to be locked together.

By turning either of the collars 95 or 118 both will turn and consequently both the outer oil nozzle 43 and valve sleeve 60 are simultaneously moved. This maintains the same proportion of fuel oil and steam discharged from the burner for various quantities of liquid fuel used therein.

Having thus described my invention what I desire to secure by Letters Patent and claim is:

1. In a burner of the character described the combination of a steam barrel, a valve sleeve with a flared head slidably supported thereon, a spindle extending through the said barrel with one end connected to the valve sleeve, an adjusting collar connected to the other end of said spindle, an outer oil nozzle concentric with said valve sleeve, a second adjusting collar, connections between the second collar and said nozzle, a separator sleeve between said valve sleeve and said nozzle and means to move said adjusting collars simultaneously.

2. In a burner of the character described the combination of means to introduce a charge of liquid fuel into said burner, means to introduce steam into said burner, an adjusting collar for one of said means having a spring sleeve extending therefrom, an adjusting collar for the other of said means having a sleeve extending therefrom and clamping means to lock the sleeve of the latter collar with said spring sleeve.

3. In a burner of the character described the combination of means to introduce a charge of liquid fuel into said burner, means to introduce steam into said burner, an adjusting collar for one of said means having a spring sleeve with a tapered end, an adjusting collar for the other of said means having a sleeve, a clamping nut having a tapered internal face at one end, in threaded engagement with the spring sleeve, the said tapered face bearing against the tapered end of the spring sleeve, to clamp the two sleeves together.

4. In a burner the combination of a steam barrel, a spring actuated valve sleeve having a head with a cavity slidably supported on the barrel, a spindle extending through the barrel with one end extending into the cavity of the valve sleeve, a nut in said cavity in threaded engagement with the spindle, an adjusting collar connected to the other end of the spindle, an outer oil nozzle concentric with said valve sleeve, a second adjusting collar in threaded engagement with the barrel, connections between the latter adjusting collar and said nozzle, a separator sleeve between the valve sleeve and said nozzle and means to move the adjusting collars simultaneously.

5. In a burner the combination of a steam barrel, a valve sleeve slidably supported thereon, a spindle extending through the barrel adapted to move the valve sleeve, an adjusting collar connected to the other end of said spindle, an outer oil nozzle concentric with said valve sleeve, a second adjusting collar on the barrel, rods moving with the second collar, sleeves for said rods, screws extending through the latter sleeves and fastened to the outer oil nozzle, a separator sleeve between said valve sleeve and said nozzle and means to move said adjusting collars simultaneously.

Signed at Bayonne, in the county of Hudson and State of New Jersey, this 3rd day of May, A. D. 1916.

RAPPEL SCHAWROWSKY.

Witnesses:
ADOLPH FRIEDMANN,
SIGMUND J. MOSKOVITS.