W. H. CHADICK.

SELF CLEANING BURNER FOR FLUID COMBUSTIBLES.

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1,367,947. Patented Feb. 8, 1921.

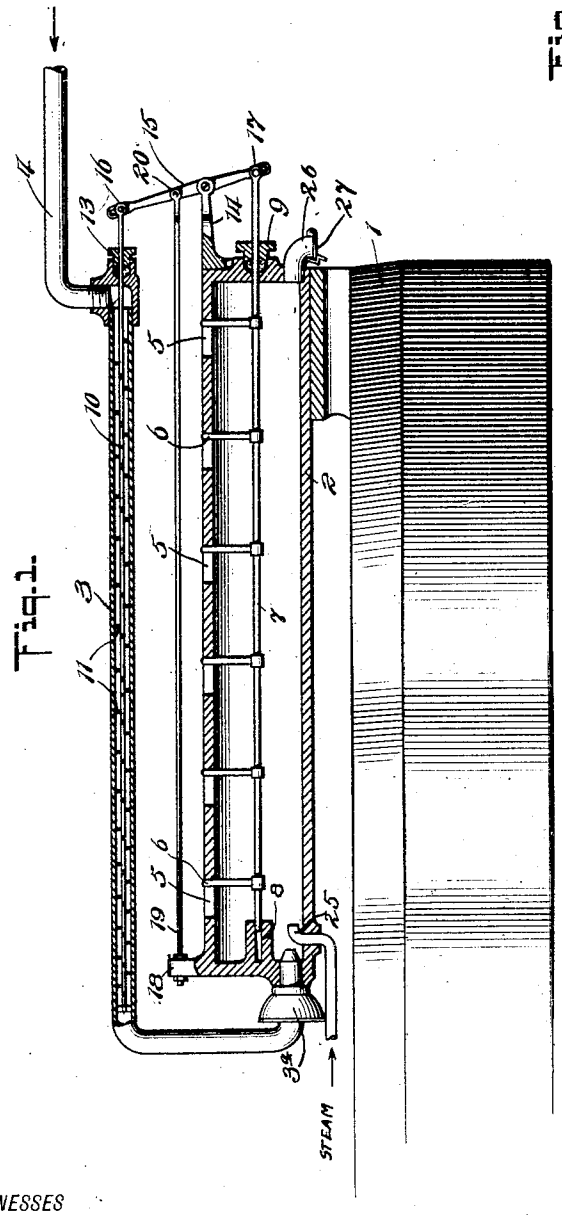


Fig. 1.

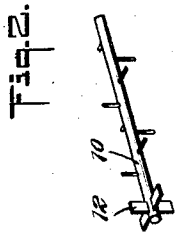


Fig. 2.

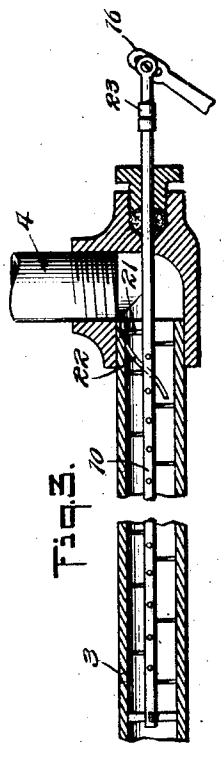


Fig. 3.

WITNESSES

INVENTOR

William H. Chadick

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM H. CHADICK, OF SUFFERN, NEW YORK.

SELF-CLEANING BURNER FOR FLUID COMBUSTIBLES.

1,367,947. Specification of Letters Patent. Patented Feb. 8, 1921.

Application filed March 29, 1919. Serial No. 285,981.

To all whom it may concern:

Be it known that I, WILLIAM H. CHADICK, a citizen of the United States, and residing at Suffern, county of Rockland, and State of New York, have invented certain new and useful Improvements in Self-Cleaning Burners for Fluid Combustibles, of which the following is a full and clear specification, illustrated in the annexed drawings.

The particular novel features of my invention are more fully pointed out in the annexed claims.

My invention relates to burners of the particular kind in which hydrocarbon oils and gases are used as fuel, and particularly to a type of burners used in steam propelled automobiles or the like, whether the fuel is delivered under pressure, or otherwise.

The hydrocarbon oils such, for instance, as gasolene used for the above mentioned purpose, have the disadvantage of sooting up the orifices at which the flame is formed and also of causing the ducts in which the fuel is evaporated to easily become clogged. The purpose of my invention is to automatically clean these ducts and orifices every time the burner is lighted and extinguished so that at no time large amounts of impurities can collect.

In the accompanying drawings, Figure 1 illustrates a longitudinal vertical section of the type of burner referred to. Fig. 2 illustrates in detail a portion of the scraper rod used in the fluid duct, and Fig. 3 is a longitudinal vertical section of a portion of the fluid supply duct showing certain detail arrangements.

Referring to Fig. 1, 1 represents the base on which the burner casing 2 is suitably mounted. Fuel supply duct 3 enters the burner at one end where an air mixing device 3^a is provided, which may be of any suitable construction. The supply duct 3 is connected to the fuel main 4 as shown.

The burner 2 is provided at its upper side with orifices 5, 5 which may be oblong or rectangular so that scraping members 6, one of which is disposed in each orifice, are able to move in these orifices and scrape along the walls thereof. Scraping members 6 are all connected and fastened to a common rod 7 which is slidingly disposed in the burner casing 2, by having its inner end disposed in a guide boss 8 and its outer end protruding through a stuffing box 9 for the purpose to be referred to hereinafter.

In the fuel supply duct 3, a rod 10 is disposed on which are mounted radially extending pins 11 of suitable length so as to touch the inner wall of duct 3. The inner end of scraper rod 10 is centrally supported by a cross 12 shown in detail in Fig. 2, and the outer end of rod 10 is guided in a stuffing box 13. On a suitably shaped arm 14 is pivoted a double lever 15 one end of which is pivotally attached at 16 to the scraper rod 10, its other end being pivotally attached at 17 to the outer end of rod 7, as is shown in Fig. 3. One of the pins 21 of scraper rod 10 engages in a helical groove 22 provided in the inner wall of duct 3 so that when rod 10 is moved back and forth longitudinally, it is compelled at the same time to perform an oscillating motion on its longitudinal axis. In order to enable rod 10 to thus oscillate, a swivel joint 23 is interposed between the rod and the pivotal joint 16.

At the rear end of burner 2 is provided an upright boss 18 in which is fixed one end of a thermostat rod 19, the other end of this rod being pivotally attached at 20 to lever 15. Thermostat rod 19 is disposed on the burner casing 2 so that it is exposed to the heat of the flames emanating from orifices 5.

The operation of the device is as follows: So long as the burner is cool the several elements of the device described may be assumed in the position shown in Fig. 1, in which for instance, the scraping members 6 which are located in orifices 5 are then at the right hand end of the orifices. At this time, thermostat rod 19 is contracted and rigidly holds the scraping members 6 and also scraper rod 10 with its pins in the position shown. If the burner is lighted, or otherwise heated, the heat of the flames emanating from orifices 5 will expand thermostat 19 so that this rod, in lengthening, moves the upper half of lever 15 to the right and the lower half to the left, which causes scraping members 6 to move to the other end of their respective orifices, and rod 10 to move outwardly, thereby oscillating on its own axis by virtue of spiral groove 22 as described before. When rod 10 thus moves, its scraping pins 11 scrape along the inner wall of the duct 3 and hold it free from deposits which might form thereon. Scraping members 6 remove, by their moving to the left, any soot which might have formed on the walls of the orifices 5. The entire scraping device remains in this position as long as the burner

is lighted. When the burner is extinguished, thermostat rod 19 contracts and moves the two scraping devices in the other direction whereby their respective scraping members clean the orifices or walls from any deposits which might have formed during the operation of the burner.

The deposits, which are removed from orifices 5 in the manner described before, will fall into the burner casing 2, whence they may be removed from time to time by means of a steam jet emanating from a steam pipe 25, terminating close to the bottom of casing 2. Pipe 25 may be connected to the boiler or any other suitable steam supply. A discharge gate 26 is provided at the opposite end of the burner casing and normally closed by a hinged shutter 27. When the steam is turned on, shutter 27 is opened and the deposits are blown out of the casing.

What I claim is:

1. In a burner of the character described having fuel ducts, carbon scraping members located in said ducts, and a thermostat exposed to the heat produced by the burner, and suitably connected to said scraping members for moving the same in said ducts in a predetermined direction when the thermostat is expanded during the operation of the burner and for moving said members in the opposite direction when the burner cools off and the thermostat is contracted.

2. In a burner of the character described having a fuel duct and orifices in the wall of the burner at which the flames are formed, scraping members located in said orifices and adapted to move therein to remove combustion deposits therefrom, and a thermostat exposed to the heat of the flames and suitably connected to said scraping members to move same in one direction when the thermostat is expanded by the heat and to move said members in the opposite direction when the burner cools off and the thermostat is contracted.

3. In a burner of the character described a fuel discharge compartment having orifices in its wall at which the flames are formed, a scraping member located in each orifice and adapted to move therein to remove combustion deposits therefrom, all of said members being fixed to a common rod slidingly disposed in the burner structure, a fuel supply duct leading to said compartment and containing a scraper rod having scraping pins bearing against the inner duct wall, a helical guide slot in the duct wall adapted to engage one of said pins to impart an oscillating motion on its axis to the rod, when it is moved in longitudinal direction, a double armed lever pivotally attached to the burner structure and having one end pivotally connected to said scraper rod and the other end pivotally connected to said common rod of the discharge compartment, a thermostat rod exposed to the heat of the burner and fixed at one end to the burner structure and pivotally attached at its other end to said lever, said thermostat causing said lever to rock in one direction when it is expanded by the heat and to rock in the other direction when the thermostat contracts through the cooling off of the burner, the rocking of said lever causing said scraper pins and scraping members to operate.

WILLIAM H. CHADICK.