Feb. 20, 1923. 1,445,827

M. A. FESLER

BURNER

Filed Feb. 16, 1920 2 sheets-sheet 1

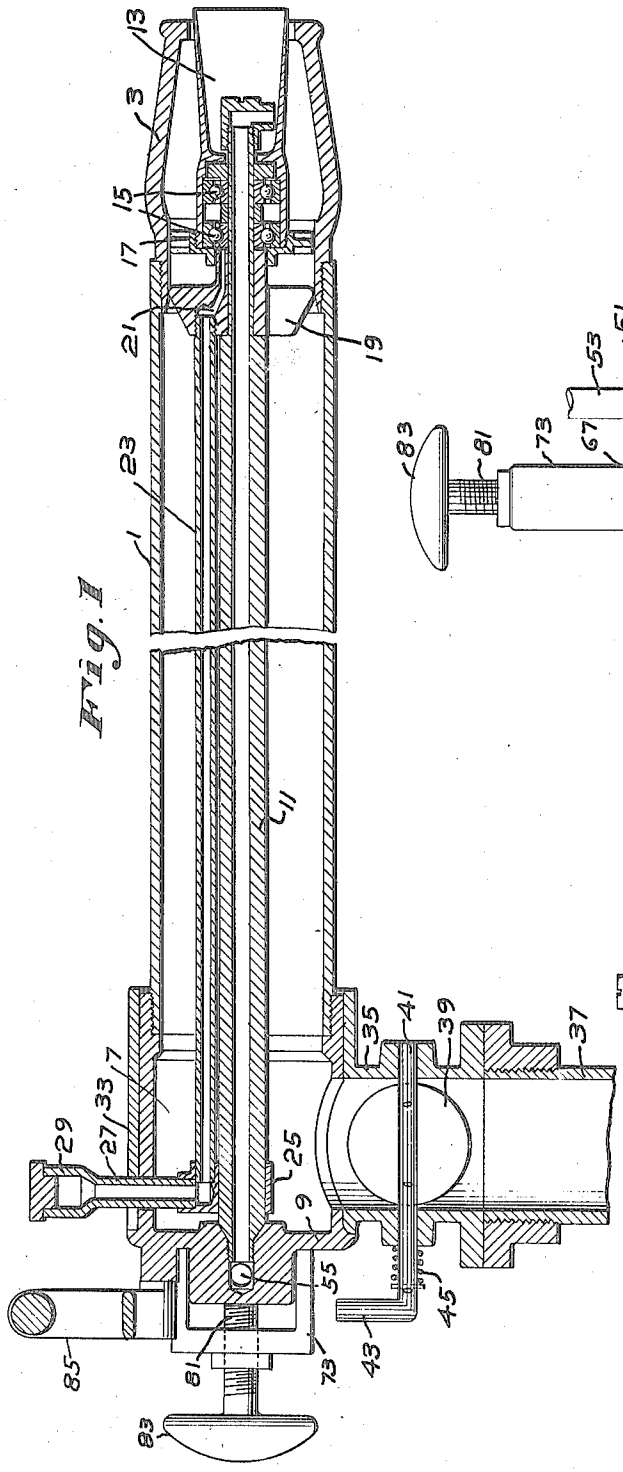


Fig. 1

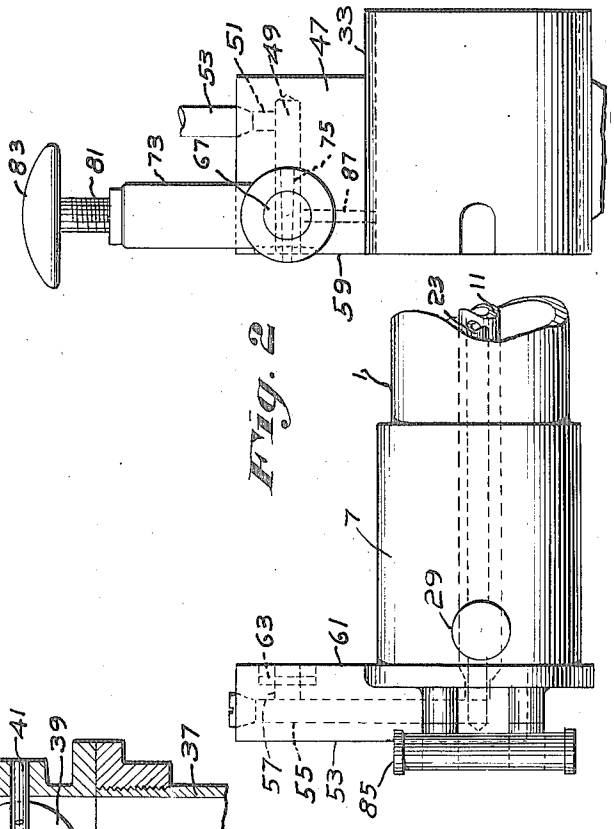


Fig. 2

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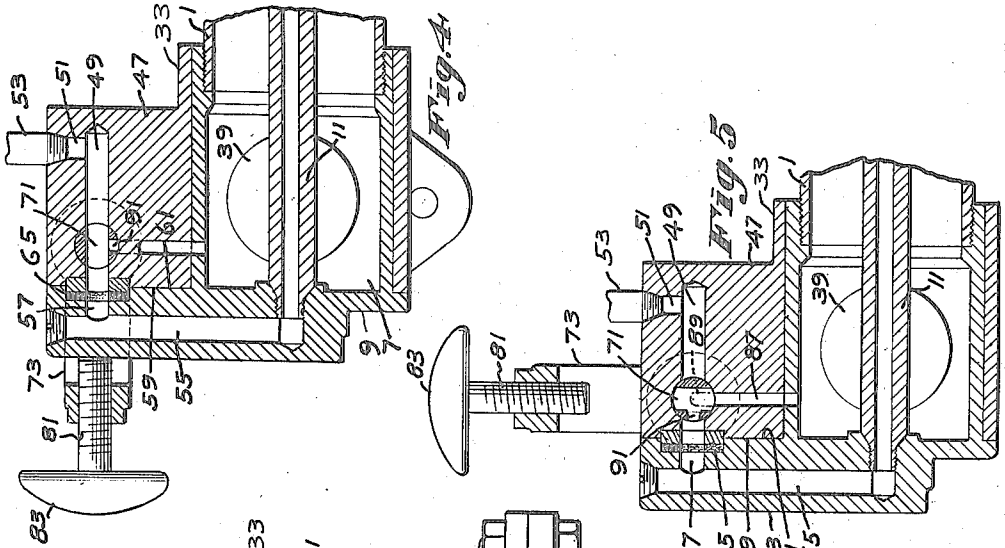


Fig. 4

Fig. 5

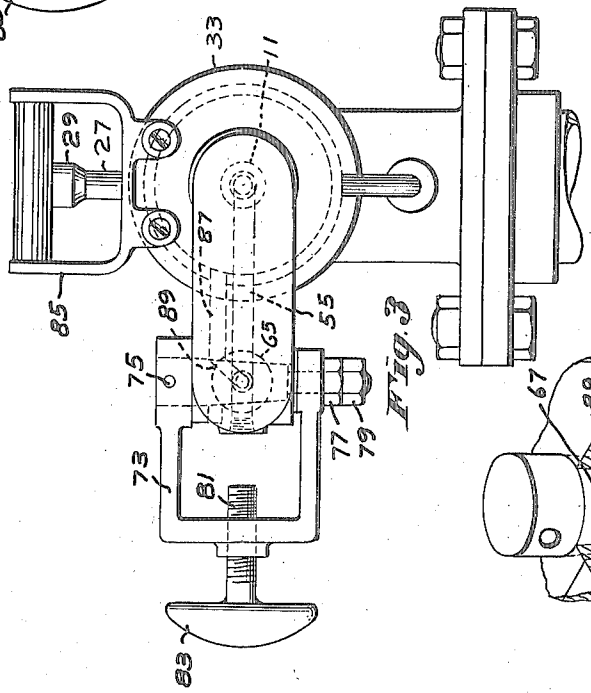


Fig. 3

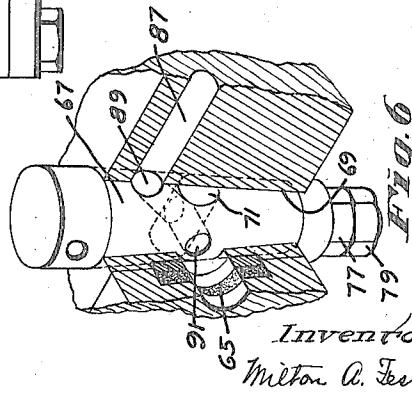


Fig. 6

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Patented Feb. 20, 1923. 1,445,827

UNITED STATES PATENT OFFICE.

MILTON A. FESLER, OF OAKLAND, CALIFORNIA, ASSIGNOR TO PETROLEUM HEAT AND POWER COMPANY, A CORPORATION OF DELAWARE.

BURNER.

Application filed February 16, 1920. Serial No. 358,908.

To all whom it may concern:

Be it known that I, MILTON A. FESLER, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented an Improvement in Burners, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The invention to be hereinafter described relates to burners employing liquid fuel, such, for example, as crude oil.

A usual form of burner of this type comprises a casing having a nozzle and passages for conducting the oil or liquid fuel and for conducting a fluid, such, for example, as compressed air to the nozzle to unite with the fuel and atomize the latter as it issues from the nozzle.

If the burner is allowed to remain in the furnace after the supply of oil to the burner has been shut off, the oil is liable to carbonize in the oil passage or around the nozzle and objectionably choke the burner and interfere with efficient working thereof. Consequently, it is customary to so mount these burners that they may be moved to and from active firing position in the furnace. When the burner is shut off, it is withdrawn from the furnace where it will not be subjected to the heat thereof, in order to avoid carbonization of any residual oil in the burner.

It is desirable that when the burner is shut off, any residual oil in the passages thereof shall be cleared from the passages to prevent any clogging of the passages and to maintain the same in open clear condition for efficient feeding of the oil in the next firing operation. One of the purposes of the present invention, therefore, is to provide simple and efficient means for admitting compressed air or other fluid into the oil conducting passage of the burner to clear residual oil therefrom.

The operator of the burner may neglect to admit the fluid into the oil conducting passage to force the residual oil therefrom, and therefore, another feature of the invention is the provision of means for automatically admitting compressed air or fluid to the oil conducting passage when the supply of oil to the burner is shut off.

The burner may be provided with means to lock the same in its mounting in active firing position, and this locking means must be released before the operator can withdraw the burner from its mounting or from its active firing position. Another purpose of the invention is to provide means for automatically shutting off the supply of oil to the burner when the locking means is operated to unlock the burner from its mounting. In the present instance of the invention, the unlocking operation of the locking means results in shutting off the supply of oil and in admitting fluid to the oil conducting passage to clear residual oil therefrom. Thus, when the burner is unlocked, shutting off of the oil and clearing of the oil passage is insured.

With the aforesaid and other purposes in view, the character of the invention will be best understood by reference to the following description of one good form thereof, shown in the accompanying drawings, wherein:

Fig. 1 is a longitudinal section through a burner and mounting embodying the invention;

Fig. 2 is a plan of the mounting and a portion of the burner showing the latter withdrawn from the mounting;

Fig. 3 is an end elevation of the burner shown in Fig. 1;

Fig. 4 is a horizontal section through the mounting and a portion of the burner showing a valve in position to admit oil to the burner;

Fig. 5 is a view similar to Fig. 4, showing the valve in position to admit compressed air to the oil conducting passage of the burner to clear residual oil therefrom; and

Fig. 6 is a sectional detail to be referred to.

Referring to the drawings, the burner shown therein as one good form of the invention, comprises an outer casing 1 conveniently of barrel form having an outer nozzle 3 secured to one end thereof. At the opposite end of the casing or barrel 1 is a head 7 conveniently of cylindrical form and having a closed end 9. An oil conducting member conveniently in the form of a tube 11 may have one end secured to the end 9 of the head of the burner, and the opposite end of the oil conducting tube may project into a flaring nozzle 13 located within the

outer nozzle 3 referred to, and journalled on ball bearings 15 mounted on the tube 11. Attached to the nozzle is a turbine 17 adapted to be driven by compressed air, in a manner well understood. To contribute to the support of the oil conducting tube 11, a spider 19 may be mounted on said tube and have legs engaging the inner surface of the nozzle 3. To lubricate the ball bearings 15, the spider 19 may be provided with a port 21 communicating with the chamber containing the ball bearings 15 and receiving lubricant through a tube 23 having one end secured to the spider, and its opposite end secured to a collar 25 mounted on the oil conducting tube 11. A tube 27 is connected to the collar 25, and projects laterally outward through the burner head 7 and carries a cup 29 adapted to receive a supply of lubricant. The construction is such that lubricant can pass from the cup 29 through the pipe 27 and pipe 23 to the ball bearings to maintain the same properly lubricated.

The burner may be provided with any suitable mounting, in the present instance, comprising a sleeve 33 adapted to receive the cylindrical head 7 of the burner. Projecting laterally from this sleeve is a neck 35 secured to the pipe 37 for conducting compressed air or other fluid to the burner. To control the supply of compressed air, a disk valve 39 may be mounted in the neck 35 on a shaft 41 having one end projecting outward beyond the neck and terminating in a handle 43. A coil spring 45 may encircle the shaft 41 and be confined between a pin on the shaft and one side of the neck 35, the construction being such that the valve may be rocked to different positions of adjustment and held frictionally by the coil spring 45.

Projecting laterally from the mounting sleeve 33 is a block 47 (Figs. 2, 4 and 5) provided with an oil conducting port 49 communicating at one end with a lateral port 51 communicating in turn with the pipe 53 for conducting oil to the burner from any suitable source of supply. To conduct the oil from the port 49, the burner head 7 may have an extension 53 projecting laterally therefrom, and provided with a port 55 communicating at one end with the oil conducting tube 11 of the burner, and communicating at its opposite end with a transverse port 57 in line with the oil conducting port 49 referred to.

The block 47 on the mounting, and the extension 53 on the burner head have flat faces 59 and 61 (Fig. 2) respectively adapted to meet when the burner is in its mounting. To prevent leakage between the oil conducting ports 49 and 57, in the block and mounting respectively, a packing ring 63 may be mounted in a recess in the head extension 53, and may engage a ring 65 mounted in an opposed recess in the block 47. This ring 65 may be of sufficient thickness to project beyond the block face 59 and enter the recess in the extension so as to press against the packing ring 63.

To control the supply of oil or fuel to the burner, a valve 67 may be provided conveniently of tapered form mounted in a similarly shaped bore 69 in the block 47. This valve may have a port 71 for registration with the oil conducting ports 49 and 57 to admit oil to the burner when in one position, and to prevent flow of oil to the burner when in another position.

To operate the valve 67, a yoke 73 may be mounted on ends of the valve projecting beyond opposite faces of the block 47, and one of the legs of the yoke may be secured to the valve by a pin 75. The valve may have a reduced end 77 projecting through and beyond the opposite end of the leg, where it receives an adjusting nut 77 and a lock nut 79. Adjustment of these nuts will adjust the conical valve 67 so as to have a proper fit in its conical bearing 69.

When the yoke is rocked to the position shown in Fig. 4, it will cause the valve port 71 to register with the oil conducting ports 49 and 57 and admit oil to the burner. It is desirable that the head extension 61 shall be pressed into intimate engagement with the block 47, and that the burner shall be locked in its mounting when the valve is in position to admit oil to the burner. To accomplish this, in the present instance, the yoke 73 may be provided with a screw 81 threaded in the yoke and provided with a handle 83. After the yoke has been rocked to its position shown in Fig. 4, the screw 81 may be adjusted inward to engage the extension and press the same against the block. Since the yoke is carried by the mounting, it will securely lock the burner in the mounting when in its position shown in Fig. 4.

When it is desired to withdraw the burner from its mounting, the screw 81 is released and the yoke is rocked to its position shown in Fig. 5, where it will be out of the way of the extension and allow withdrawal of the burner. To facilitate insertion of the burner into and withdrawal thereof from its mounting, the burner head may be provided with a handle 85 rigidly secured thereto and projecting upward therefrom.

As stated, it is desirable when the supply of oil is shut off from the burner, that compressed air or fluid shall be admitted to the oil conducting passages of the burner to clear residual oil therefrom. To accomplish this, in the present instance, the mounting block 47 may be provided with a port 87 communicating with the space in the burner head through which compressed air or other fluid passes. The valve 67 may be provided with a port 89 obliquely disposed with re-

spect to the axis of the valve so as to communicate with the oil conducting port 71 of the valve, and communicating with the air conducting port 87, the latter being offset from the plane of the oil conducting ports 49, 57 and the valve port 71. Projecting at right angles to the valve port 71 is a port 91 in the same plane as the port 71. The construction is such that when the yoke 73 is rocked to its position shown in Fig. 5, the valve port 89 will communicate with the air port 87, and the valve port 91 will communicate with the oil conducting port 57. As a consequence, compressed air will be shunted from the space in the cylindrical head of the burner through the port 87, the valve ports 89, 71 and 91, and the ports 57 and 55 in the extension 53, to the oil conducting tube 11 in the burner, and the compressed air thus shunted to said tube will drive any residual oil therefrom.

When the yoke 73 is rocked to its position shown in Fig. 4, the valve port 89 will be moved out of registration with the air port 87, and the valve port 91 will be moved out of registration with the oil conducting port 57.

Thus, by the construction described, when the operator rocks the yoke 73 to unlock the burner from the mounting, the valve 67 will be automatically turned to cut off the supply of oil to the burner, and to admit compressed air to the oil ports and passages to clear residual oil therefrom. On the other hand, when the yoke 73 is rocked to position for locking the burner in its mounting, the valve 67 is turned into a position to admit oil to the burner.

It will be understood that the invention is not limited to the specific embodiment shown, and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What is claimed is:—

1. The combination with a support, of a burner movably mounted thereon and having fuel and fluid conducting passages leading to the delivery end of said burner, and a device adapted to lock the burner in the support and to admit fuel to the burner when in one position, and adapted to unlock the burner from the support, to cut off the fuel supply and to admit fluid to the fuel passage to drive residual fuel therefrom when in a different position.

2. The combination with a support, of a burner mounted thereon for movement to and from the firing position and having fuel and fluid conducting passages, a device for locking the burner in firing position on the support, said device being operable upon movement into locking position to admit fuel to the burner and operable upon movement from the locking to the unlocking position to cut off the fuel supply to the burner.

3. The combination with a support, of a burner mounted thereon and movable to and from active firing position, said burner having fuel and fluid conducting passages, a valve for controlling the supply of fuel to the fuel passage, and a device for locking the burner in firing position on the support and operatively connected to said valve automatically to move the valve to admit fuel to the burner when in locking position, and to cut off the supply of fuel to the burner when in unlocking position.

4. The combination with a support, of a burner mounted thereon movable to and from active firing position, said burner having fuel and fluid conducting passages, a valve mounted on said support for controlling admission of fuel to the burner, a yoke pivotally mounted on said support movable to positions for locking the burner to the support or releasing the burner from the support, and means connecting said yoke to said valve for opening the valve to admit fuel to the burner when the yoke is in locking position, and for closing the valve to cut off the supply of fuel when the yoke is in position to unlock the burner from the support.

5. The combination with a support, of a burner mounted thereon movable to and from active firing position, said burner having fuel and fluid conducting passages therein, a device for locking the burner on the support in firing position and unlocking the burner from firing position, and means for automatically admitting fluid to the fuel conducting passage on unlocking movement of said device to drive residual fuel from the fuel passage of the burner while the burner is in the firing position.

6. The combination with a support, of a burner mounted thereon movable relatively to said support to and from active firing position, said burner having fuel and fluid conducting passages, means for locking the burner in firing position on said support, and means operable by the locking movement of the locking means to admit fuel to the fuel passage of the burner on movement of said locking means into position to lock the burner in firing position on said support.

7. The combination with a support, of a burner mounted thereon movable to and from active firing position, means for locking the burner in firing position on said support, means controlled by the locking movement of said locking means and operable to cut off the supply of fuel to the burner on movement of said locking means to unlocking position.

8. The combination with a support, of a burner mounted thereon movable to and from active firing position, said burner having fuel and fluid conducting passages therein, and said support having a fuel port for

communication with the fuel conducting passage when the burner is in firing position, a valve for said port, a device for locking the burner in firing position on the support and for automatically opening said valve when in locking position, and for automatically closing said valve when in unlocking position.

9. The combination with a support, of a burner mounted thereon movable to and from firing position, said burner having fuel and fluid conducting passages therein, and said support having a fuel admission port and a fluid admission port for communication respectively with the fuel and fluid conducting passages of the burner, a valve for said ports, a locking member pivotally mounted on said support and connected to said valve for operating the latter to admit fuel to the burner on movement of the locking member to a position to lock the burner on the support, and for operating said valve to shut off the fuel and admit fluid to the fuel passage on movement of said locking member to a position to unlock the burner from the support.

10. The combination with a support, of a burner mounted thereon for movement to and from the firing position and having fuel and fluid conducting passages, valve means adjustable to one position to admit fuel through the fuel passage to the burner and adjustable to a second position to cut off the fuel supply and admit fluid through the fuel passage to drive residual fuel therefrom, a device for locking the burner in firing position upon the support, and means for operatively connecting said device to said valve.

In testimony whereof, I have signed my name to this specification.

MILTON A. FESLER.