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J. T. VORHEIS
BURNER HEAD AND MOUNTING

Filed Sept. 16, 1920

Fig. 2.

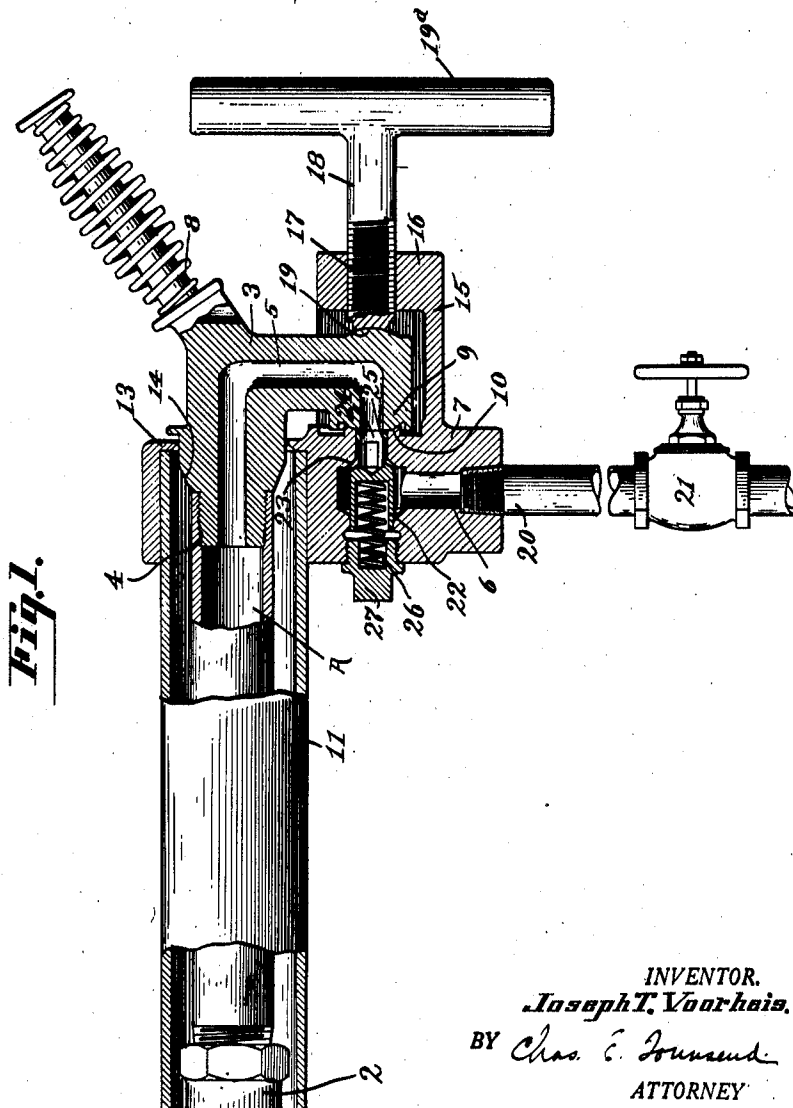
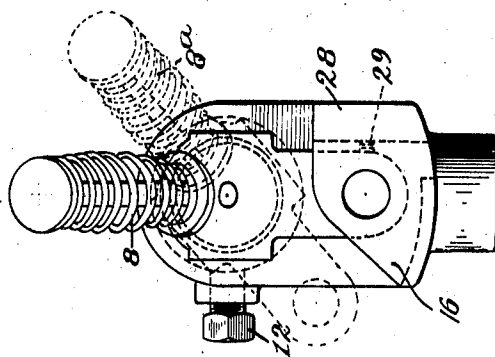


Fig. 1.

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JOSEPH T. VOORHEIS, OF OAKLAND, CALIFORNIA, ASSIGNOR TO COEN CO., INC., OF
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BURNER HEAD AND MOUNTING.

Application filed September 16, 1920. Serial No. 410,678.

To all whom it may concern:

Be it known that I, JOSEPH T. VOORHEIS, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented a new and useful Improvement in Burner Heads and Mountings, of which the following is a specification.

This invention relates to a burner head and mounting.

In the operation of oil burners of the type here shown, particularly on board ships, it sometimes happens that the burner tip carbonizes during a temporary shut-down, becomes wholly or partially clogged, or may for some reason require adjustment or change which cannot be accomplished without removal of the burner. Such removal should be quickly and readily accomplished in many instances, for instance when maneuvering at sea, making a landing or operating under any condition where a full head of steam is necessary as the steam pressure may drop or the furnaces may become too cool, thereby causing flare-backs or other disastrous results, etc.

One of the objects of the present invention is to provide a simple and substantial burner head and mounting therefor, which will permit changing or replacing of burners in a minimum of time and with comparatively little effort on the part of the firemen.

Another object of the invention is to provide a mechanism whereby the burner and head may be quickly removed or replaced with relation to the mounting or support, said mechanism being readily accessible and in a position where it will not be affected by leaking or escaping hot oil.

Another object of the invention is to provide a check valve whereby the oil flow to the burner is automatically closed when the burner is removed and conversely automatically opened when the burner is replaced.

Further objects will hereinafter appear.

The invention consists of the parts and the construction, combination and arrangement of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Fig. 1 is a side elevation of the burner and mounting partially in section.

Fig. 2 is an end view of the same.

Referring to the drawings in detail, A indicates a burner tube, 2 a nozzle or tip,

and 3 a head member to which the burner tube is secured as at 4. The head member is provided with an oil duct 5 which communicates at one end with the burner tube and at the opposite or lower end with an oil duct 6, which is formed in a mounting or casting 7 provided as a support for the burner head and tube. The head member is substantially L-shaped. It is provided with a handle extension 8 to permit it to be readily grasped and handled when removing or replacing the burner, and it is otherwise provided with a seat section 9 which is ground to snugly engage a ground joint or seat 10 formed in the casting 7. The burner tube is enclosed or partially protected from the heat of the furnace by an exterior tube 11. This tube is secured to the casting 7 by any suitable means, or as here shown by a set screw 12, the tube being secured against outward or endwise movement by means of an annular flange 13, which also serves the function of centering and guiding the burner head and tube when replaced; the burner head being slightly enlarged at its upper end, as at 14 to permit it to be readily centered with relation to the tube 11 when inserted. The casting 7 is otherwise provided with an integral extension bracket 15 on the forward end of which is formed a lug 16. This lug is drilled and threaded as at 17 to receive a clamping screw 18. The inner end of this screw is slightly concave and engages a centering boss 19 formed on the lower end of the head member 3. The screw 18 is positioned in alignment with the center portion of the ground seats 9 and 10 and is provided with a handle 19^a so that sufficient pressure may be exerted to form a tight leakproof joint between the seat sections. The casting or mounting 7 is suitably supported and secured with relation to the furnace front. It is connected with a source of oil supply by means of a pipe 20; this pipe being provided with a valve 21 whereby the oil supply to the burner may be regulated.

It has been found in actual practice that the firemen once in a while forget to close the valve 21 when attempting to remove the burner head and tube A. Such forgetfulness or carelessness on the part of the firemen has in several instances proved more or less disastrous as oil under high pressure has escaped into the fire room and has been

ignited by the fire in the furnace. To avoid such an accident I have provided a check valve 22. This valve engages a seat member 23 formed in the oil duct 6 and it is provided with a cylindrical hollow extension 24 which is engaged by the seat member 9 on the burner head. The hollow cylindrical extension 24 is so long that it will hold the check valve 22 away from its seat when the burner head is in position, thereby permitting oil from the duct 6 to pass between the valve and the seat and to enter the oil duct 5 in the burner head through radially disposed slots 25 formed in the extension 24. The check valve is engaged by a spring 26. This spring is interposed between the valve and a nut 27 and the tension is such that the valve will instantly move forward against its seat and shut off the oil supply when the burner head is released. It is conversely automatically opened when the burner head is replaced as the cylindrical hollow extension 24 is so long that it will be engaged by the seat section 9 and will thus force the valve rearwardly to open position when the burner head is replaced. It can therefore be seen that the danger of escaping oil or fire is entirely avoided in the present instance regardless of whether the valve 21 is closed or not as the check valve will automatically close when the burner head is removed and will similarly assume an open position when the burner head is replaced. In actual practice if for any reason it is necessary to change the burner, it is accomplished by first closing the valve 21; secondly releasing the clamping screw 18; third swinging the burner head by grasping the handle 8 to the dotted line position shown at 8°. This causes the lower part of the burner head to swing out of alignment with the lug 16 and thus permits the head, the burner tube A, and the nozzle carried thereby to be retracted. When it is desired to replace the same burner or a new burner, it is accomplished by inserting the nozzle and tube through the exterior tube 11; the tube and head being centered and guided while replacing the same by the annular flange 13. The moment complete insertion has been accomplished, it will only be necessary to turn the burner head and tube to the vertical position shown in Figs. 1 and 2 and then to tighten the clamping screw and again open the valve 21. While it is not absolutely necessary to close the valve 21, due to the provision of the check valve 22, it is obvious that it would be better practice to close the same as the oil flow would instantly start with full force unless the valve 21 is gradually opened. The annular flange 13 does not only center and guide the burner when it is reinserted, but it also serves as a pivotal point about which the

head is turned. It furthermore insures alignment of the two ground seats 9 and 10, thus insuring perfect positioning of the same when the clamping screw is tightened. To further insure alignment of the ground seats, I provide a side lug 28 and a pair of stop members 29. These stop members insure alignment of the ground seats in a lateral direction and the annular flange 13 insures alignment in a vertical direction. Injury to the seat sections is thus entirely avoided and alignment and centering of the same is quickly accomplished when replacing the burner.

While certain features of the present invention are more or less specifically illustrated, I wish it understood that various changes in form and proportion may be resorted to within the scope of the appended claims, similarly that the materials and finish of the several parts employed may be such as the experience and judgment of the manufacturer may dictate or varying uses may demand.

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

1. In a burner of the character described a stationary support, an oil duct formed therein connected with a source of oil supply, a seat formed on the support having a central opening formed therein in communication with the oil duct, a burner head adapted to be supported by the stationary support, a burner tube and nozzle secured to the burner head, an oil duct formed in the burner head communicating at one end with the oil duct in the stationary support and at the opposite end with the burner tube, a seat member formed on the burner head adapted to engage the first named seat member, a clamping screw engageable with the head to insure engagement of the seat members and to secure the burner head with relation to the support, and means carried by the stationary support adapted to automatically close the oil duct when the burner head is removed and conversely adapted to open the oil duct when the burner head is replaced.

2. In a burner of the character described a stationary support, an oil duct formed therein connected with a source of oil supply, a seat formed on the support having a central opening formed therein in communication with the oil duct, an L-shaped burner head, a seat member formed on the burner head adjacent one end of the vertical leg of the L-shaped burner head, a rigid bracket formed on the stationary support, a clamping screw carried by said bracket positioned in alignment with the seat members and engageable with the burner head to insure engagement of the seat members and to secure the burner head with relation to the sup-

port, a burner tube and nozzle carried by the burner head, an oil duct formed in the burner head communicating at one end with the oil duct in the support and at the opposite end with the burner tube, means on the stationary support insuring vertical alignment of the seat members, and other means on the support insuring lateral alignment of the seat members.

3. In a burner of the character described the combination with the stationary support of an L-shaped burner head adapted to be received and supported by the stationary supporting member, cooperating seat members formed respectively on the stationary support and on the burner head to form an oil-tight connection between the same, said seat members making a face contact, said seat members being ground and in alignment, and having an oil duct formed therein, means on the stationary support insuring vertical alignment of the seat members, and other means on the stationary support insuring lateral alignment of the seat members.

4. In a burner of the character described a stationary support, having a central opening formed in the upper end, a burner head retractable with relation to said opening and turnable therein, said burner head being substantially L-shaped and having a seat member formed on its lower end, a burner tube and nozzle supported by the burner head, an oil duct formed in the burner head communicating with the seat member and with the burner tube, a seat member formed on the stationary support, an oil duct formed in the stationary support connected with a source of supply and communicating with the central opening formed in the seat member, and with the oil duct in the burner head, a rigid lug formed on the stationary support, a clamping screw carried by the lug, said clamping screw being positioned in alignment with the seat members and engageable with the burner head to insure engagement of the seat members, and means on the lug insuring lateral alignment and engagement of the seat members.

5. In a burner of the character described

a stationary support, having a central opening formed in the upper end, a burner head retractable with relation to said opening and turnable therein, said burner head being substantially L-shaped and having a seat member formed on its lower end, a burner tube and nozzle supported by the burner head, an oil duct formed in the burner head communicating with the seat member and with the burner tube, a seat member formed on the stationary support, an oil duct formed in the stationary support connected with a source of supply and communicating with the central opening formed in the seat member and with the oil duct in the burner head, a rigid lug formed on the stationary support, a clamping screw carried by the lug, said clamping screw being positioned in alignment with the seat members and engageable with the burner head to insure engagement of the seat members, a valve carried by the stationary support, said valve having a projection formed thereon engageable with the burner head, said projection automatically opening the valve to permit an oil flow through the support and the burner head when the burner head is applied, and a spring for automatically closing the valve and the oil flow through the support when the burner head is removed.

6. In a burner of the character described the combination with a stationary support and the burner head, communicating oil ducts formed in the burner head and stationary support respectively, a check valve mounted in the oil duct formed in the stationary support, a projection on the check valve engageable with the burner head, said projection maintaining the check valve in open position when the burner head is applied and a spring adapted to automatically close the valve when the burner head is removed.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH T. VOORHEIS.

Witnesses:

STERLING H. COLY,

GEORGE S. BLANKENHORN.