

June 10, 1958

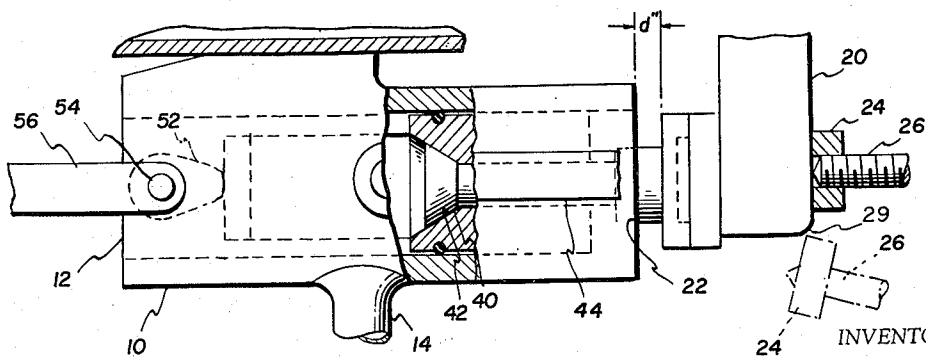
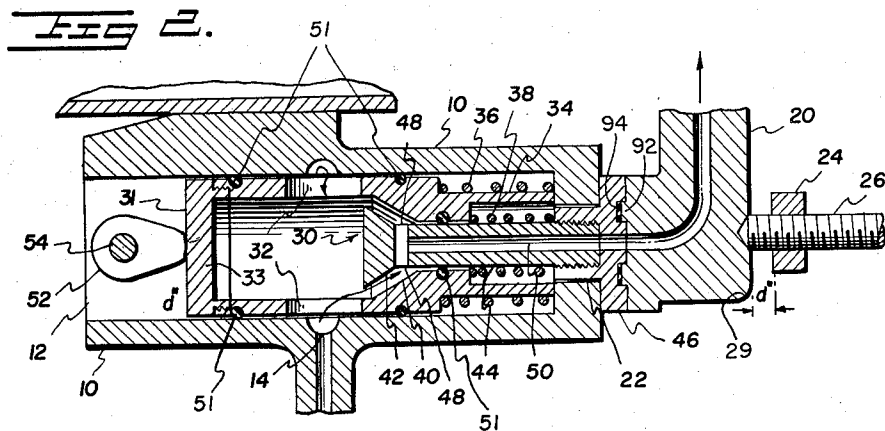
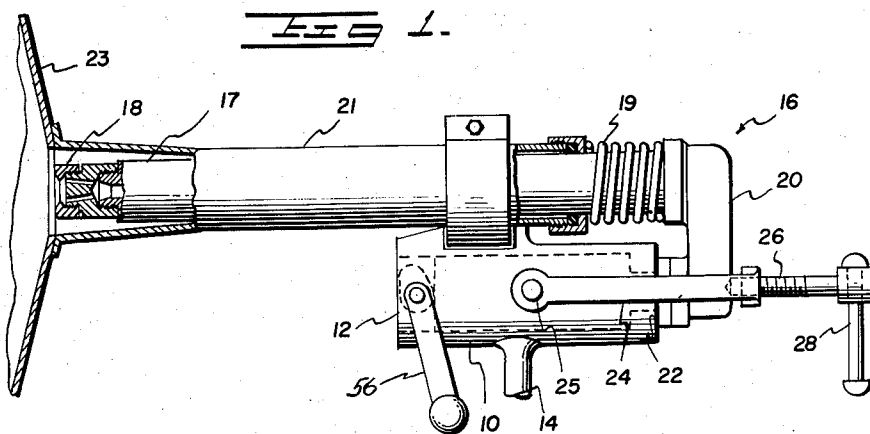
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2,838,104

FUEL OIL BURNER SAFETY DEVICE

Filed Aug. 6, 1954

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

FIG 4.

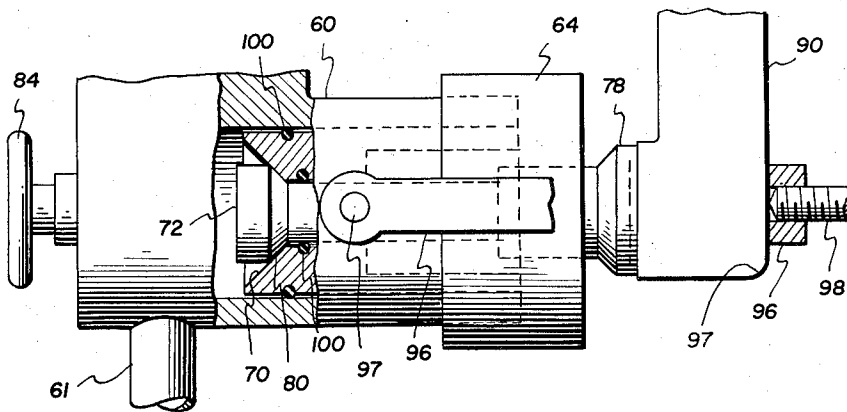
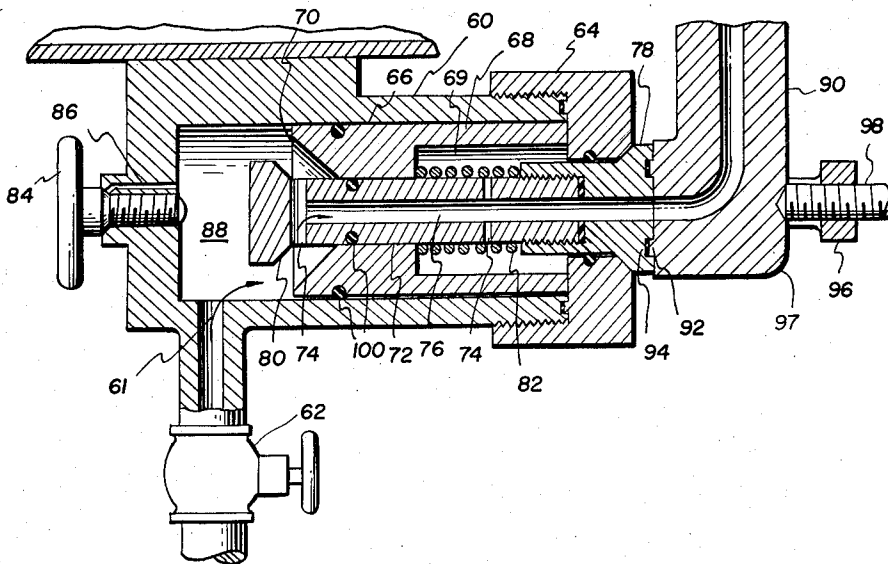


FIG 5.

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3 Sheets-Sheet 3

Fig 6.

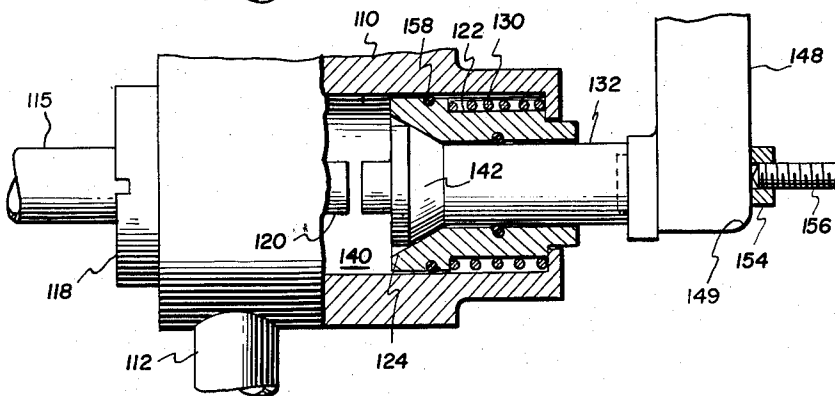
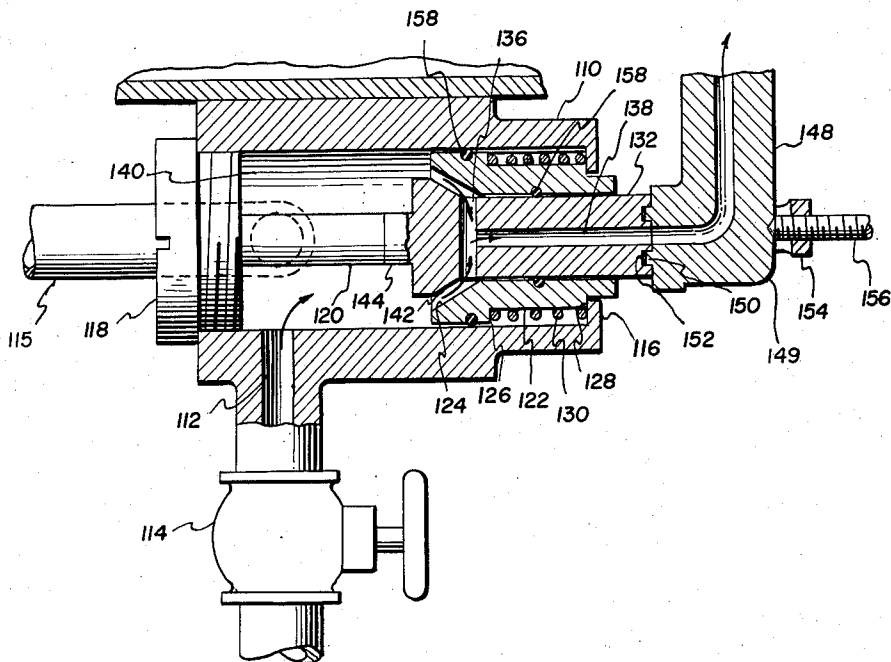


Fig 7.

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FUEL OIL BURNER SAFETY DEVICE

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12 Claims. (Cl. 158—73)

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The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to a fuel oil burner safety device and more particularly to safety shutoff apparatus wherein installation or removal of a fuel oil atomizing device is prevented in the event the fuel supply valves are inadvertently left in the open position.

An atomizer comprising a fuel supply tube terminating in a single orifice sprayer plate is commonly utilized for providing fuel to a burner. Interposed between the atomizer and the main fuel supply line in large burner installations is a safety cutoff device which acts automatically to shut off the supply of fuel through the atomizer when the latter is being replaced. As is well known in the art, the safety device becomes effective when an attempt is made to remove the atomizer while the fuel supply valves are in the open position. In many instances however, the device fails to operate because of inherent limitations in design of the apparatus, and fuel oil under high pressure is sprayed into the compartment causing injury to personnel and damage to adjacent equipment as well as creating a dangerous fire hazard.

A particular problem is presented in the power plants of turbine-driven ships since high oil pressures are utilized for achieving high-burner temperatures and steam pressures for driving the turbine. The problem is further complicated by the fact that the same atomizer is not used for delivering varying quantities of fuel to the burner, thereby necessitating frequent changes of the atomizers. For example, a known installation employs several different atomizers, each having an orifice of different-size in the sprayer plate. The atomizers having small orifices are directly related to slow speeds of a ship, while those having large-size orifices are related to higher speeds.

It is evident that when there is a demand for a major change in ship speed, the atomizer usually requires replacing in order to provide an amount of fuel to the burner that will correspond with the ship speed desired. The atomizer must be capable of being easily and quickly changed, and the safety device must be constructed in such manner that it is impossible to make or break the atomizer connection in the event the fuel supply valves are left in the open position.

The present invention eliminates the deficiencies of the prior art by providing a safety shutoff device that is simple, safe and reliable in operation. The device includes a plurality of coacting parts which are acted upon by oil pressure for precluding the escape of hot oil from the device when the atomizer connection is being made or broken.

It is an object of the invention to provide means automatically responsive to pressure in the fuel supply line for eliminating loss of fluid when an atomizer is changed.

Another object of the invention is the provision of

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a mechanically actuated quick closing oil admission valve in the device serving the dual purpose of providing fuel to the burner and functioning as an automatic pressure actuated check valve or safety device.

Still another object of the invention is to provide an oil admission valve wherein an atomizer functions as an essential element of the valve.

A further object of the invention is the provision of a follow-up mechanism in the device for preventing release of a yoke when the atomizer is being changed.

A still further object of the invention is the provision of a check valve in the device adapted to shut off supply of fuel in the event the fuel supply valves are left in the open position.

Another object of the invention is the provision of pressure relieving means in the device for relieving the pressure acting on the follow-up mechanism in order to allow installation of the atomizer.

With these and other objects in view, as will hereinafter more fully appear, and which will be more particularly pointed out in the appended claims, reference is now made to the following description, taken in connection with the accompanying drawings in which:

Figure 1 is a perspective view of the invention, partly in section, showing the atomizer installed on a dual purpose safety device and being in position for providing fuel to the burner;

Figure 2 is a cross-sectioned view in elevation showing the parts of the dual purpose safety device of Figure 1 in position for supplying fuel to the burner;

Figure 3 is a partly-sectioned view in elevation showing the position of parts in the device of Figure 1 when an attempt is made to remove the atomizer while the fuel supply valves are in the open position;

Figure 4 is a cross-sectioned view in elevation of a modification showing the parts in normal operating position;

Figure 5 is a partly-sectioned view in elevation of the device of Figure 4 showing the relationship of parts when an attempt is made to remove the atomizer while the pressure of fuel oil is acting on the device;

Figure 6 is a cross-sectioned view in elevation of another modification showing the parts in normal operating position; and

Figure 7 is a partly-sectioned view in elevation of the device of Figure 6 showing the relationship of parts when an attempt is made to remove the atomizer while the fuel supply valve is in an open position.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in Figures 1, 2, and 3, a housing 10 of generally cylindrical shape having an open end 12 and a fuel supply inlet 14 which receives fuel from a valve controlled manifold in the fuel system. An atomizer 16 containing a fuel supply tube 17 terminates in a single orifice sprayer plate 18 at one end, and is provided with a gooseneck portion 20 at its other end, the latter being adapted for connection to the outlet 22 of housing 10. The atomizer 16 is preferably provided with a spring 19 for biasing atomizer 16 away from protective tube 21.

A yoke or U-shaped atomizer clamp 24, pivoted at 25 on housing 10, is provided with a threaded opening for receiving a jacking member or threaded stem 26. The stem 26 carries a handle or bar 28 for imparting rotary movement to the threaded stem. It will be clear from reference to the drawings that the stem 26 is engaged by the threaded opening and clockwise rotation of the handle 28 clamps atomizer gooseneck 20 to outlet bushing 46 supported by housing 10 while counter clockwise rotation releases it. The atomizer gooseneck 20 is provided with a depending portion 29 for preventing the

insertion or removal of yoke 24 from gooseneck 20 under certain conditions of operation, as more fully described hereinafter.

A unique arrangement for controlling the flow of fluid through housing 10 to atomizer gooseneck 20 consists of a dual purpose valve mechanism 30 positioned in the housing. Valve mechanism 30 comprises a slidable admission valve 31 having ports 32 of such size as to be continuously in communication with fuel inlet 14, regardless of the position assumed by valve 31. The ports 32 do not control flow of fluid through inlet 14. Integrally cast on the right side of admission valve 31, is a hollow cylindrical member 34 serving to space a pair of springs 36 and 38. As illustrated in Figure 2, the springs are under compression and the forces created on the various valve parts are more fully described hereinafter.

The inner peripheral portion of admission valve 31 converges to form a valve face 40 adapted for coaction with valve seat 42 for controlling fluid flow through housing 10. The valve seat 42 is an integral part of rod 44 threadably affixed in bushing 46, the latter being slidably mounted in outlet 22 of housing 10. In order to provide flow of fluid from housing 10 to the atomizer, rod 44 is laterally bored at 48, and both the rod and bushing 46 are equipped with a longitudinal passageway 50 for providing fluid communication between inlet 14 and the atomizer as indicated by the arrows in Figure 2. O-ring seals 51 prevent the escape of oil and depletion of oil pressure in housing 10.

In order to achieve actuation of admission valve 31, flat nosed cam 52 is rigidly affixed to shaft 54, the latter being rotatably mounted on casing 10. Handle 56 is attached to shaft 54 for rotating the cam and achieving a corresponding longitudinal movement of admission valve 31.

The atomizer gooseneck 20 is jointed to the solidly supported bushing 46 by means of a circular raised portion 92 mating with a corresponding slot 94 formed in the outer end of the bushing. As will be clear from reference to Figure 2, springs 36 and 38 serve to urge valve face 40 onto its seat 42 so that the valve is closed at all times other than when both cam 52 is in the "on" position and atomizer 16 is attached as shown in Figure 2. Further, when the atomizer connection is made, the atomizer becomes a part of the valve since it is directly connected to rod 44 having valve seat 42 formed on the extreme end thereof.

The use of cam-type equipment for achieving operation of valve mechanism 30 provides for quick opening and closing of the valve. Satisfactory performance at pressures of at least 1000 p. s. i. is additionally achieved which is in contrast to the self-opening tendency of convention quick closing valves.

Operation

The following mode of operation of the dual purpose safety device shown in Figures 1-3 includes first, normal operation, and second, abnormal operation wherein an attempt is made to either remove or replace the atomizer while fluid pressure exists in housing 10.

Figure 2 illustrates the relationship of the parts during normal operation of the device. The atomizer connection is made and yoke 24 urges atomizer gooseneck 20 in solid contact with bushing 46. The lobe of cam 52 has moved admission valve 31 to the right thereby compressing springs 36 and 38 and separating valve face 40 from its valve seat 42. The rod 44, with its attached valve seat 42, is restrained from moving during normal operation by virtue of the rigid connection made with atomizer 16. A clear avenue has accordingly been provided for the flow of fuel from inlet 14, past the separated portions of the valve and into passageway 50 and atomizer 16 prior to delivery to the burner.

In order to stop flow of fuel through the device, the lobe of cam 52 is rotated away from admission valve 31,

as shown in Figure 1, and springs 36 and 38 move the admission valve onto its seat thereby shutting off flow of fuel. The normal function of springs 36 and 38 is to urge the valve face 40 into contact with stationary valve seat 42 and the springs are assisted in doing this by the effect of fuel pressure acting on the opposite side of valve 31 as indicated at 33.

It is evident that during normal operation, the valve mechanism 30 operates as a simple and reliable manually actuated fluid admission valve. In the alternative, fuel supply valves commonly located in the fuel supply lines to the burner may be turned to the closed position for completely shutting off flow to housing 10.

In abnormal operation, when an attempt is made to remove the atomizer 16 with the admission valve 31 in the open position and fuel flowing to the burner, the parts coact with one another in such fashion as to preclude the escape of high-pressure oil through the atomizer connection into the compartment. With the device in normal operating position, as described above, threaded stem 26 is backed off to remove the atomizer. As the pressure on the atomizer gooseneck 20 is relieved by threaded stem 26, the combined effect of fuel oil pressure acting on the inlet end of rod 44, and spring 38, urges bushing 46, attached rod 44 and valve seat 42 to the right until valve seat 42 contacts the face 40 of the admission valve 31, thereby preventing flow of fuel to the atomizer. In this condition, the valve mechanism functions as a pressure actuated one piece check valve for stopping fluid flow.

A significant feature in the design of the apparatus is that even though the threaded stem 26 is backed off completely and atomizer gooseneck 20 is flush against the inside of yoke 24, the yoke 24 still cannot be removed, since the bottom 29 of the gooseneck protrudes a sufficient distance to prevent the yoke from sliding thereover. Accordingly, removal of the atomizer with consequent spillage of oil into the compartment is positively precluded. At this time, the atomizer can only be removed by rotating the lobe of cam 52 to the closed position, Figure 1, and manually pushing the valve mechanism, including the atomizer, to the left, i. e., into housing 10. Such movement to the left provides sufficient clearance for the removal of yoke 24 from the atomizer gooseneck 20 and subsequent separation of the atomizer 16 from bushing 46. Replacement of the atomizer may then be accomplished. It is to be noted that the valve mechanism can be moved quite easily since the fuel pressures acting on the opposite interior sides of admission valve 31 are balanced and the only friction offered to movement is that of drag created by the O-seal rings.

In the event an attempt is made to install an atomizer with cam 52 in the valve open position, the parts will protrude a sufficient distance making it impossible to slide yoke 24 past the bottom of the atomizer gooseneck 20, as shown by the dotted lines in Figure 3. Since the pressures are balanced, as indicated above, the only action necessary is that of turning cam 52 to the valve closed position and pushing the valve mechanism 30 into the housing to provide clearance for yoke 24.

It will be clear from the drawings, and the above description, that during normal operation, with rod 44 restrained from moving, the valve is held off its seat by cam pressure and therefore constitutes a manually actuated fluid admission valve. During abnormal operation, the valve seat 42 is caused to move by oil and spring pressure until it contacts valve 40. In the latter case, the valve mechanism operates as a check valve and prevents flow of oil to the atomizer. Further, the height of the cam lobe, the amount the valve seat must move to contact the valve and the clearance between atomizer gooseneck 20 and the yoke are substantially all of the same distance, as indicated by d'' on the drawings.

Referring now to the modification of the invention shown in Figures 4 and 5, there is shown a housing 60

provided with a fuel supply inlet 61 controlled by a valve 62 in the supply line. A centrally apertured cap 64 closes an open end of the casing. Slidably mounted within housing 60 is a pressure actuated fluid admission valve 66 having sides 68 forming a chamber 69, and being suitably ground at its other end forming a valve face 70. A slidable rod 72 provided with lateral openings 74 and a longitudinal passageway 76 is positioned within a central opening in valve 66. One end of rod 72 is threaded for engaging a slidably mounted bushing 78 in the central aperture of cap 64 while the other end of rod 72 contains a valve seat 80 ground to the same angle as the valve face 70. Spring 82 acts on one side of the bushing 78 and biases valve 66 to a closed position.

Positioned exteriorally of the housing is a threadably mounted handwheel 84 for controlling vent 86 communicating with chamber 88. Atomizer gooseneck 90 is adapted for connection to bushing 78 in the same manner as in the embodiment of Figures 1-3, namely, by the provision of a circular raised portion 92 which mates with a corresponding slot 94 formed in the outer end of the bushing. Yoke 96, pivoted on housing 60 at 97, is tapped for receiving threaded stem 98 which urges the gooseneck 90 in contact with bushing 78 for obtaining a leakproof connection. O-type seal rings 100 prevent leakage between the parts in housing 60.

In normal operation, with the atomizer in position, oil flowing through inlet 61 builds up a pressure in chamber 88. This pressure acts on the exposed surfaces of pressure actuated fluid admission valve 66, moving it away from its seat 80 until sides 68 abut the inner face of cap 64, as illustrated in Figure 4. Oil then flows freely through passageway 76 to the atomizer.

If an attempt is then made during normal operation, to remove the atomizer by turning stem 98 in a direction away from the atomizer gooseneck 90, the combined forces of oil pressure in chamber 88 acting on the exposed surface opposite from valve seat 80, and the biasing force of the spring 82, urges the slidable rod 72 and attached bushing 78 to the right, thereby maintaining a leakproof connection with the atomizer as the stem 98 is backed off until valve surfaces 70 and 80 are in contact. The position of the parts at this time is as illustrated in Figure 5, it being impossible to remove yoke 96 because of extended portion 97 on the atomizer gooseneck. In order to remove the atomizer, it is now necessary to shut valve 62 and vent the oil pressure in chamber 88 by opening vent 86, at which time the parts can be manually pushed to the left thereby providing sufficient clearance for the removal of yoke 96. It is apparent that if attempt is made to install an atomizer with the fuel valve 62 open, the parts will be fully extended to the right, since they will be moved as a unit when the atomizer is not in place, and it will not be possible to move yoke 96 behind the atomizer because of insufficient clearance. The above-described venting procedure would then have to be accomplished before replacement of the atomizer could be made.

The valving arrangement of Figures 4 and 5 differs from Figures 1-3 in that the former operates as a pressure actuated fluid admission valve during normal operation, whereas the valve of Figures 1-3 is a mechanically actuated fluid admission valve. In both modifications, however when the sliding rods 44 and 72 become unrestrained, as in abnormal operation, fluid and spring pressure close the sliding valve parts and the valve then functions as a one piece check valve to stop fluid flow and to prevent atomizer installation or removal.

Referring now to the embodiment of Figures 6 and 7, there is shown a safety device comprising a housing 110 having a fuel inlet 112 controlled by a valve 114. Vent line 115, normally controlled by a valve (not shown), is provided for venting oil pressure from housing 110. One end of the housing is equipped with an integral flange 116 turned inwardly for a purpose hereinafter described. The other end of the casing 110 is adapted to

receive a threaded plug 118 provided with a valve stop bar 120. The valve mechanism for the device comprises a pressure actuated slidable admission valve 122 having a valve face 124 on one end and being provided with a pair of steps 126 and 128 of reduced diameter turned on the outer periphery of the valve body. Spring 130 acts against the inner face of flange 116 and step 126 for biasing the valve 122 to a closed position, i. e., in a direction to the left as shown in Figure 6. Step 128 serves as a stop for the valve when oil pressure moves it to the right during normal operation.

Centrally positioned within the valve body is a slidable rod 132 provided with lateral and longitudinal passageways 136 and 138 respectively, for conveying oil from chamber 140 to the atomizer. A valve seat 142 for the valve is ground on the end of rod 132, and the side opposite from the valve seat is equipped with a stop shaft 144 having the same diameter and in alignment with the valve stop bar 120. The atomizer gooseneck 148 for the atomizer is identical with the structure in prior modifications including a depending portion 149. A leakproof fit is provided for the atomizer and comprises a raised flange 150 of circular form adapted for mating with a corresponding groove 152 in rod 132. A gasket is interposed therebetween for assuring a leakproof joint. Yoke 154, provided with threaded stem 156, is included for securing the atomizer gooseneck to outlet end of rod 132. O-type seal rings 158 prevent leakage of oil past the movable elements in the device.

In normal operation, oil flowing through inlet 112 creates a pressure in chamber 140 overcoming spring 130 and moving valve 122 off its seat. Movement of the valve continues until step 128 engages stop flange 116 thereby providing uninterrupted flow of oil to the atomizer through passageways 136 and 138.

As in previous modifications, the atomizer connection cannot be broken while oil is flowing, since rod 132 will follow the atomizer gooseneck 148 as threaded stem 156 is backed out of yoke 154. The rod is caused to move by the action of oil pressure acting on the exposed surface of the rod, and the rod will continue movement until the valve seat rests in the valve and cuts off the flow of fuel, the parts thereby constituting a one piece check valve. Clearances between the valve face 124 and valve seat 142 and between the atomizer gooseneck 148 and inner face of yoke 154, are so proportioned that when the valve is seated, as shown in Figure 7, the gooseneck is almost flush with the yoke thereby making it impossible to drop the yoke away from the gooseneck. In order to remove the yoke under these conditions, valve 114 is turned to the closed position and the pressure in housing 110 vented through line 115. The valve mechanism can then be manually pushed into the housing, yoke 154 dropped and the atomizer removed.

When the fuel valve 114 is opened without an atomizer in place, the oil pressure in chamber 140 causes the parts to move to the right as a unit thereby preventing escape of high-pressure oil into the compartment. An atomizer cannot be installed under the last-mentioned condition because of the lack of sufficient clearance between the gooseneck and yoke thereby preventing physical movement of the yoke behind the atomizer. The above-described venting procedure must then be performed to effect installation of the atomizer.

It should be understood that the foregoing disclosure relates to only preferred embodiments of the invention and that it is intended to cover all changes and modifications of the examples of the invention herein chosen for the purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. A safety cutoff device adapted for insertion in a fluid fuel supply line comprising a housing provided with a fluid inlet and an outlet, a movable valve mechanism

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positioned between said inlet and outlet in said housing for controlling flow of fluid through said outlet, said valve mechanism comprising a first valve member movably mounted in said housing and having a longitudinal bore terminating in a valve face, a second valve member slidably mounted in said bore having one end terminating adjacent said outlet and the other end in a valve seat, said valve seat arranged to coact with said face of said first valve member to open and close said valve mechanism, biasing means in said housing urging said valve mechanism to a closed position, said housing arranged to permit movement of said valve members within predetermined limits, each valve member mounted movable relative to each other within said predetermined limits in said housing, a coupling bushing adapted to form a fluid tight joint for the discharge of fuel from said housing and mounted adjacent to said second valve member in said housing outlet to slide in and out to bear upon and actuate said second valve member, valve operating means supported by said housing for positioning said first valve member to open and close the valve, a coupling means on said housing for positioning said coupling bushing and second valve member, said coupling means including a fluid carrying device adapted to coact with said coupling bushing to form a fluid tight joint, and fastening means mounted on said housing for detachably connecting said fluid-carrying device to said bushing and thus actuate said second valve member.

2. The combination according to claim 1 wherein said first means includes cam type operating means pivotally supported by said housing for effecting opening movement of said first valve member.

3. The combination according to claim 1 wherein said valve mechanism comprises a pressure actuating fluid admission valve in which the valve members are urged closed by the pressure of fluid adapted to flow through said housing.

4. The combination according to claim 1 wherein said fastening means comprises a yoke pivotally mounted on said housing, and a jacking member in said yoke in alignment with said fluid-carrying device for connecting the latter to said second valve member through said bushing, said jacking member arranged when fully tightened to position said second valve member at one limit of its travel.

5. The combination according to claim 4 wherein said fluid-carrying device is provided with a depending portion adjacent the bottom thereof which is held by the yoke to within predetermined limited movement to prevent removal of said yoke means by fluid pressure in said housing when said jacking member is loosened.

6. A safety cutoff device for a fluid burner comprising a housing having a fluid inlet and an outlet, a valve mechanism in said housing controlling flow of fluid through said housing, said valve mechanism positioned between said inlet and outlet comprising a first slidable valve member having admission ports continuously in communication with said inlet, a valve face and an integrally formed stop on said first member for limiting longitudinal movement thereof, a second slidable valve member comprising a rod provided with an internal longitudinal passageway in communication with said inlet and outlet, a valve seat on one end of said second member arranged to engage said valve face and connecting means on the other end, a pair of springs in contact with said housing biasing said first and second valve members of said valve mechanism to a closed position, said housing arranged to permit movement of said valve members within predetermined limits, each valve member movable relative to each other within predetermined limits in said housing, a coupling bushing adapted to form a fluid tight joint for the discharge of fluid from said housing and mounted adjacent to said second valve member in said housing outlet engageable with said connecting means of said second valve member to slide in and out

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to actuate said second valve member, valve operating means supported by said housing for positioning said first valve member to open and close the valve, a coupling means on said housing for positioning said coupling bushing and second valve member, said coupling means including an atomizer connected with said coupling bushing for conveying fluid from said passageway, a yoke on said housing arranged to clamp said atomizer to said bushing, and jacking means on said yoke for detachably clamping said atomizer into fluid-tight relationship with and positioning in an in or out position said coupling bushing, whereby fluid pressure causes said second slidable member to follow said atomizer when said jacking means is withdrawn from said atomizer.

7. In a fuel burner system including a fuel carrying device detachably coupled to a source of fluid fuel, a combined safety valve and coupling comprising a housing having a fluid inlet and outlet, a valve mechanism positioned between said inlet and outlet in said housing for controlling the flow of fuel through said outlet, said valve mechanism positioned between said inlet and outlet comprising a first slidable valve member having a valve face, a second slidable valve member having a seat coacting with the valve face of said first valve member to control flow of fuel therethrough, said housing arranged to permit movement of said valve members within predetermined limits, each valve member mounted movable relative to each other within said predetermined limits in said housing, a coupling bushing adapted to mate with said fuel carrying device and mounted adjacent to said second valve member in said housing outlet to slide in and out within limits to actuate said second valve member, valve operating means supported by said housing having an open and closed position for positioning said first valve member for the opening and closing of the valve, spring means in said housing arranged to urge said first and second valve members closed.

8. In a fuel burner system including a fuel carrying device detachably coupled to a source of fluid fuel, a combined safety valve and coupling comprising a housing having a fluid inlet and outlet, a valve mechanism positioned between said inlet and outlet in said housing for controlling the flow of fuel through said outlet, said valve mechanism comprising a first slidable valve member having a valve face, a second slidable valve member having a seat co-acting with the valve face of said first valve member to control flow of fuel therethrough, said housing arranged to permit movement of said valve members within predetermined limits, each valve member mounted movable relative to each other within said predetermined limits in said housing, a coupling bushing adapted to mate with said fuel carrying device and mounted adjacent to said second valve member in said housing outlet to slide in and out within limits to actuate said second valve member, valve operating means supported by said housing having an open and closed position for positioning said first valve member for the opening and closing of the valve, spring means in said housing arranged to urge said first and second valve members closed and said coupling bushing outwardly, said housing predetermined limits arranged so the limits of each valve member overlap to always close the valve when the coupling bushing is in its outermost position and said valve operating means is in its open position.

9. In a fuel burner system including a fuel carrying device detachably coupled to a source of fluid fuel, a combined safety valve and coupling comprising a housing having a fluid inlet and outlet, a valve mechanism positioned between said inlet and outlet in said housing for controlling the flow of fuel through said outlet, said valve mechanism comprising a first slidable valve member having a valve face, a second slidable valve member having a seat coacting with the valve face of said first valve member to control flow of fuel therethrough, said housing arranged to permit movement of said valve mem-

bers within predetermined limits, each valve member mounted movable relative to each other within said predetermined limits in said housing, a coupling bushing adapted to mate with said fuel carrying device and mounted adjacent to said second valve member in said housing outlet to slide in and out within limits to actuate said second valve member, valve operating means supported by said housing having an open and closed position for positioning said first valve member for the opening and closing of the valve, spring means in said housing arranged to urge said first and second valve members closed and said coupling bushing outwardly, a yoke pivotably mounted on said housing and having a jacking member in said yoke in alignment with the fuel outlet for clamping said fuel carrying device onto said coupling bushing while moving inwardly said coupling bushing.

10. In a fuel burner system including a fuel carrying device detachably coupled to a source of fluid fuel, a combined safety valve and coupling comprising a housing having a fluid inlet and outlet, a valve mechanism positioned between said inlet and outlet in said housing for controlling the flow of fuel through said outlet, said valve mechanism comprising a first slidable valve member having a valve face, a second slidable valve member having a seat coacting with the valve face of said first valve member to control flow of fuel therethrough, said housing arranged to permit movement of said valve members within predetermined limits, each valve member mounted movable relative to each other within said predetermined limits in said housing, a coupling bushing adapted to mate with said fuel carrying device and mounted adjacent to said second valve member in said housing outlet to slide in and out within limits to actuate said second valve member, valve operating means supported by said housing having an open and closed position for positioning said first valve member for the opening and closing of the valve, spring means in said housing arranged to urge said first and second valve members closed and said coupling bushing outwardly, a yoke pivotably mounted on said housing and having a jacking member in said yoke in alignment with the fuel outlet for clamping said fuel carrying device onto said coupling bushing while moving inwardly said coupling bushing, said bushing and yoke being arranged to prevent the yoke and fuel carrying device from being placed in operative position when said bushing is in its outermost position.

11. In a fuel burner system including a fuel carrying device detachably coupled to a source of fluid fuel, a combined safety valve and coupling comprising a housing having a fluid inlet and outlet, a valve mechanism positioned between said inlet and outlet in said housing for controlling the flow of fuel through said outlet, said valve mechanism comprising a first slidable valve member having a valve face, a second slidable valve member having a seat coacting with the valve face of said first valve member to control flow of fuel therethrough, said housing arranged to permit movement of said valve members within predetermined limits, each valve member mounted movable relative to each other within said predetermined limits in said housing, a coupling bushing adapted to mate with said fuel carrying device and mounted adjacent to said second valve member in said housing outlet to slide in and out within limits to actuate said second valve

member, valve operating means supported by said housing having an open and closed position for positioning said first valve member for the opening and closing of the valve, spring means in said housing arranged to urge said first and second valve members closed and said coupling bushing outwardly, said housing predetermined limits arranged so the limits of each valve member overlap to always close the valve when the coupling bushing is in its outermost position and said valve operating means is in its open position, a yoke pivotably mounted on said housing and having a jacking member in said yoke in alignment with the fuel outlet for clamping said fuel carrying device onto said coupling bushing while moving inwardly said coupling bushing.

12. In a fuel burner system including a fuel carrying device detachably coupled to a source of fluid fuel, a combined safety valve and coupling comprising a housing having a fluid inlet and outlet, a valve mechanism positioned between said inlet and outlet in said housing for controlling the flow of fuel through said outlet, said valve mechanism comprising a first slidable valve member having a valve face, a second slidable valve member having a seat coacting with the valve face of said first valve member to control flow of fuel therethrough, said housing arranged to permit movement of said valve members within predetermined limits, each valve member mounted movable relative to each other within said predetermined limits in said housing, a coupling bushing adapted to mate with said fuel carrying device and mounted adjacent to said second valve member in said housing outlet to slide in and out within limits to actuate said second valve member, valve operating means supported by said housing having an open and closed position for positioning said first valve member for the opening and closing of the valve, spring means in said housing arranged to urge said first and second valve members closed and said coupling bushing outwardly, said housing predetermined limits arranged so the limits of each valve member overlap to always close the valve when the coupling bushing is in its outermost position and said valve operating means is in its open position, a yoke pivotably mounted on said housing and having a jacking member in said yoke in alignment with the fuel outlet for clamping said fuel carrying device onto said coupling bushing while moving inwardly said coupling bushing, said bushing and yoke being arranged to prevent the yoke and fuel carrying device from being placed in operative position when said bushing is in its outermost position.

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