

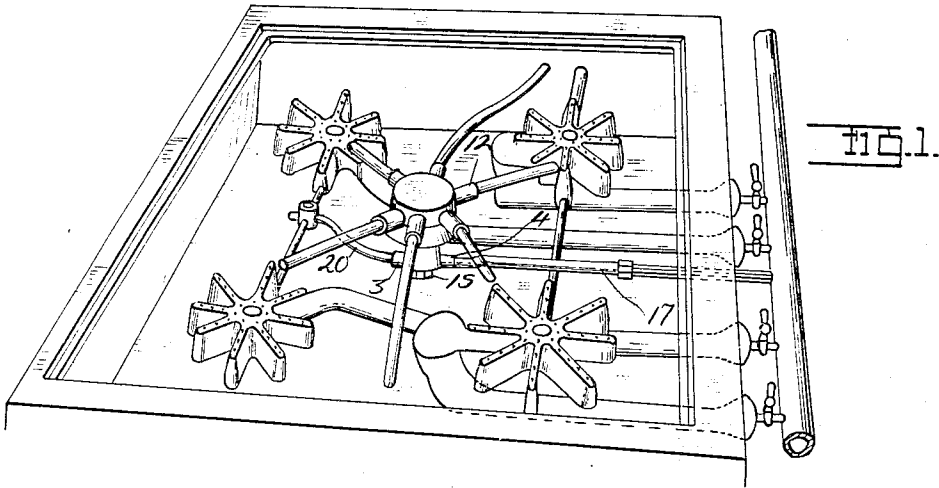
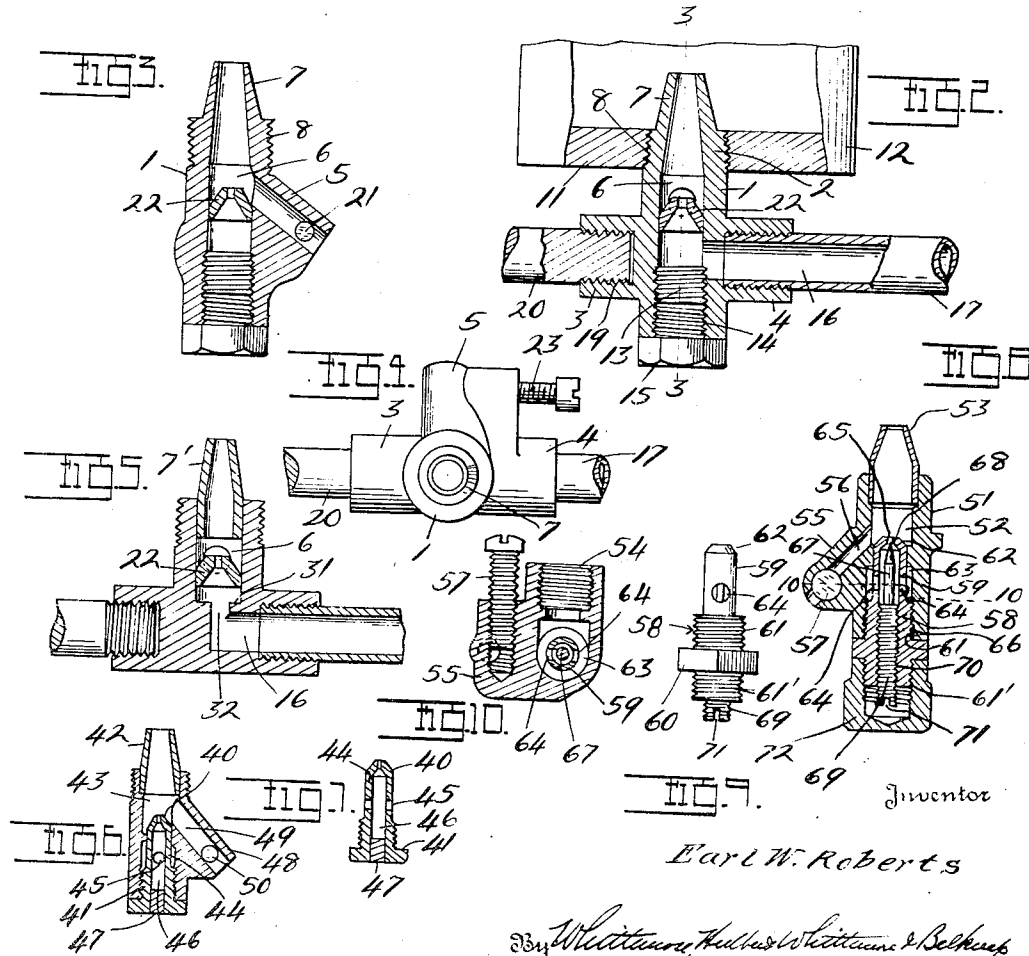
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PILOT JET ASSEMBLY

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PILOT JET ASSEMBLY

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12 Claims. (Cl. 158—115)

This invention relates generally to pilot jet assemblies and has for an object the provision of an improved needle valve construction in combination with the jet structure set forth in my application filed April 2, 1930, bearing Serial Number 446,041, of which the present application is a continuation in part.

Heretofore it has been customary to have at points remote to the pilot jets the means such as needle valves for controlling the supply of gas to the jets. In practice such control means become clogged and require frequent adjustment due primarily to the presence of a brown substance which being cold at such points often congeals and blocks or otherwise impedes the passage of the gas to the jets.

However, in the present instance this difficulty has been overcome by the elimination of the control means at the remote points referred to and the provision of suitable control means in close proximity to the jet where the gas will be maintained at sufficiently warm temperature by the heat from the flame at the jet to prevent the brown substance carried by the gas from congealing at or about the control means. As a result the gas will be free to flow past the control means according to the adjustment thereof and the supply of gas to the jet depending upon such adjustment will be constant. In this connection I have found that it is especially desirable to have the control means such as a needle valve adjustable within a pilot jet. However, I desire to have it understood that this is only one embodiment of my invention and that such changes may be resorted to whenever desired as fall within the scope of the appended claims.

In the accompanying drawing:

Figure 1 is a fragmentary perspective view of a stove with a pilot burner embodying my invention applied thereto;

Figure 2 is a vertical sectional view through the burner;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a top plan view thereof;

Figure 5 is a view similar to Figure 3 but showing a slightly modified construction;

Figure 6 is a vertical sectional view through another modification;

Figure 7 is a sectional view through the plug and jet assembly illustrated in Figure 6;

Figure 8 is a vertical sectional view through another modification;

Figure 9 is a detail view of the plug and jet unit illustrated in Figure 8.

Figure 10 is a section on the line 10—10 of Figure 8.

Referring now to the drawing, 1 is a casing having an upright portion 2, a pair of horizontal portions 3 and 4 respectively projecting laterally from the upright portion 2 at diametrically opposite sides thereof, and an enlargement 5 upon the upright portion 2 in substantially horizontal alignment with the horizontal portions 3 and 4. As shown, the upright portion 2 is provided throughout its length with a longitudinally extending passage 6 and has a frusto-conical tip 7 extending upwardly from the upper end thereof. Preferably the upright portion 2 has external threads 8 at its upper end to enable the casing to be secured in the base 11 of a lighter housing or casing 12 and has internal threads 13 at its lower end adapted to be engaged by the external threads 14 of a suitable plug or closure 15. The horizontal portion 4 has a longitudinally extending passage 16 receiving the gas supply pipe 17 and connects into the passage 6 in the upright portion 2, while the horizontal portion 3 has an internally threaded socket 19 receiving a supporting rod 20. The enlargement 5 has an upwardly and inwardly inclined passage 21 for supplying air from the atmosphere to the passage 6 in the upright portion.

In the present instance a jet 22 of frusto-conical formation has a press fit in the passage 6 opposite the upper end of the passage 21, and an adjusting screw 23 threadedly engages the enlargement 5 at right angles to the passage 21 and is adapted to control the flow of air from the atmosphere to the passage 6. In fact, the construction of the casing is such that the jet 22 may be inserted into the lower end of the passage 6 and then pressed upwardly therein to the proper point opposite the passage 21. After the jet 22 is in place the lower end of the passage 6 constitutes a clean-out opening and is normally closed by the plug. Thus the lower portion of the passage 6 serves a dual function. The upper portion of the passage 6 serves as a mixing chamber for gas and air; hence the structure functions as a Bunsen burner.

In Figure 5 I have illustrated a slight modification in which the tip 7' is separate from the casing and has a press fit in the passage 6. In this instance both the tip 7' and jet 22 are inserted through the upper end of the passage 6. Preferably the passage 6 terminates at 31 and is connected to the passage 16 by means of a restricted L-shaped passage 32. Thus in this construction the tip 7' and jet 22 may be easily and

quickly assembled with the casing and may after assembly be considered integral therewith. As a result the screw 23 is the only movable part.

In Figures 6 and 7 I have illustrated another modification in which a rod such as 20 may be dispensed with if desired. In this construction the jet 40 is integral with the plug 41, and the tip 42 has a press fit within the bore 43 in the casing. As shown, the jet 40 has a depending tubular portion 44 that connects into the plug 41 and that has a series of inlet openings 45 for gas. Preferably the plug 44 has a longitudinally extending bore 46 that constitutes a clean-out opening for the jet 40 and that is normally closed by a suitable plug 47. As shown, the enlargement 48 of the casing has an upwardly and inwardly inclined passage 49 for supplying air from the atmosphere to the bore 43, and an adjusting screw 50 threadedly engaging the enlargement at right angles to the passage 49 is adapted to control the flow of air from the atmosphere to the bore 43.

In Figures 8 to 10, inclusive, I have illustrated another modification in which a rod such as 20 may or may not be used as desired. In this construction the casing 51 has a vertical passage 52, a tip 53 at the upper end of said passage, a gas inlet 54 at one side of said passage adjacent the lower end thereof, and an enlargement 55 at one side having an upwardly and inwardly inclined passage 56 for conducting air from the atmosphere to the vertical passage 52 at a point between the gas inlet 54 and tip 53. An adjusting screw 57 threadedly engaging the enlargement at right angles to the passage 56 is adjustable to control the flow of air from the atmosphere to the passage 52 while a plug and jet unit 58 is received in the vertical passage 52. As shown, this unit 58 has a tubular portion 59 open at its lower end and provided with a polygonal portion 60, exteriorly threaded portions 61 and 61' and a frusto-conical portion 62. The tubular portion 59 is much smaller than the vertical passage 52 so that an annular space 63 is provided about said tubular portion for the reception of gas from the inlet 54. Suitable openings 64 and 65 respectively for gas are provided in the tubular portion 59 and frusto-conical portion 62. The exteriorly threaded portion 61 engages an interiorly threaded portion 66 of the passage 52 and any suitable tool (not shown) may be engaged with the polygonal portion 60 to effect the assembly of the parts. Preferably the construction is such that the polygonal portion 60 abuts the lower end of the casing when the parts are assembled. Adjustable within the tubular portion 59 of this unit is a needle valve 67 for controlling the flow of gas through the opening 65 in the frusto-conical portion 62. As shown, the needle valve 67 has a pointed end 68 in line with and movable relative to the opening 65 and has an enlarged exteriorly threaded portion 69 engaging an interiorly threaded part 70 of the tubular portion 59. The adjustment of the needle may be accomplished by the engagement of a suitable tool (not shown) with a transversely extending slot 71 in the lower end of the enlarged exteriorly threaded portion 69. Preferably a cap 72 is threaded upon the exteriorly threaded portion 61' to conceal and protect the needle valve 67 and to seal any leakage of gas past the exteriorly threaded portion 69 of the needle valve. Thus with this construction the opening 65 and the valve 67 controlling the same are located at such a point relative to the tip 53 that the heat from the flame at the tip will keep the gas flow-

ing through the opening 65 sufficiently warm to prevent the brown substance referred to in the gas from congealing and blocking or otherwise impeding the flow of gas from the inlet 54 to the tip. As a result the flow of gas to the tip 53 will be constant according to the adjustment of the needle.

What I claim as my invention is:

1. A pilot burner having a tubular portion provided at its upper end with a substantially frusto-conical tip, said tubular portion being also provided at one side with a fluid inlet and having an enlargement at one side of the inlet, said enlargement having a passage establishing direct communication between the atmosphere and the tubular portion, and a valve adjustable in the enlargement so as to interrupt and control the passage aforesaid.
2. A pilot burner having a tubular portion provided at its upper end with a tip and provided at one side with a gas inlet, said tubular portion being open at its lower end to permit of the reception of a gas jet and to provide a clean-out opening, a gas jet within the tubular portion between the gas inlet and tip, and a closure for the open lower end of said tubular portion, the construction and arrangement of said closure and tip being such that a space is provided in the passage above the closure for gas from the inlet at one side of said tubular portion to flow to the tip.
3. A pilot burner having a tubular portion provided at its upper end with means for attaching it to a lighter housing and having a tip, said portion being also provided at one side with a gas inlet, said tubular portion being open at its lower end to permit of the insertion therein of a gas jet and to permit of the removal of dirt and sediment, a removable closure for said open lower end, and a gas jet above said closure in position to receive gas from the inlet, the construction and arrangement of said closure and tip being such that a space is provided in the passage above the closure for gas from the inlet at one side of said tubular portion to flow to the tip.
4. A pilot burner having a tubular portion provided at its upper end with external threads for engagement with a lighter housing and being provided intermediate its ends with a gas inlet and an air inlet, the air inlet being above the gas inlet, and the gas inlet being substantially midway between said air inlet and the lower end of the tubular portion, said tubular portion being provided at its upper end with a tip and being open at its lower end to permit of the removal of dirt and sediment, a closure for said open lower end, and a gas jet within the tubular portion above the gas inlet so as to receive gas therefrom and having its upper end adjacent the air inlet so that gas discharged from said upper end will commingle in the tubular portion with the air admitted thereto through the air inlet before passing out through the tip.
5. A pilot burner comprising a casing having an upright portion and a horizontal portion projecting laterally from the upright portion, said upright portion being provided throughout its length with a longitudinally extending passage and being provided at its upper end with a substantially frusto-conical tip, said upright portion being also provided above said horizontal portion with external threads to enable the casing to be secured to the base of a lighter housing and being provided below said horizontal portion with internal threads adapted to be engaged by the external threads of a removable closure, said

horizontal portion being provided with a longitudinally extending passage that is adapted to receive gas from a suitable source and that opens into the longitudinally extending passage in the upright portion, and a jet within the longitudinal passage in the upright portion just above the passage in the horizontal portion aforesaid.

6. A pilot burner comprising a casing having an upright portion, a horizontal portion projecting laterally from the upright portion, and an enlargement in substantially horizontal alignment with the horizontal portion, said upright portion being provided throughout its length with a longitudinally extending passage and being provided at its upper end with a substantially frusto-conical tip, said upright portion being also provided above said horizontal portion with means by which it may be attached to a lighter housing and being provided below said horizontal portion with internal threads adapted to be engaged by a removable closure, said horizontal portion being provided with a longitudinally extending passage that is adapted to receive gas from a suitable source and that opens into the longitudinally extending passage in the upright portion, said enlargement being provided with an upwardly and inwardly inclined passage for supplying air from the atmosphere to the passage in the upright portion, an adjusting screw carried by the enlargement for controlling the flow of air through the inclined passage, and a jet within the longitudinal passage in the upright portion just below said inclined passage.

7. A pilot burner comprising a casing having an upright portion, a horizontal portion projecting laterally from the upright portion, and an enlargement in substantially horizontal alignment with the horizontal portion, said upright portion being provided with a longitudinally extending passage and being provided at its upper end with a tip, said upright portion being also provided below said horizontal portion with internal threads adapted to be engaged by a removable closure, said horizontal portion being provided with a longitudinally extending passage that is adapted to receive gas from a suitable source and that opens into the longitudinally extending passage in the upright portion, said enlargement being provided with an upwardly and inwardly inclined passage for supplying air from the atmosphere to the passage in the upright portion, an adjusting screw carried by the enlargement for controlling the flow of air through the inclined passage, and a jet within the longitudinal passage in the upright portion just below said inclined passage.

8. A pilot burner having an upright tubular portion for gas provided at one side with an inlet for the gas and provided at its upper end with an outlet for the gas, said tubular portion being also provided at one side in substantially horizontal alignment with the inlet with an enlargement having a passage establishing direct communication between the atmosphere and the tubular portion, and a valve adjustable in the enlargement so as to interrupt and control said passage.

9. A pilot burner having a tubular portion provided at its upper end with a tip and provided at one side with a gas inlet, said tubular portion being open at its lower end to permit of the reception of a gas jet and to provide a clean-out opening, a gas jet within the tubular portion between the gas inlet and tip, a closure for the open lower end of said tubular portion, a con-

nection between the closure and jet operable upon adjustment of the closure to move the jet toward and away from the tip, said connection being constructed and arranged in such a way that a space is provided in the passage above the closure for gas from the inlet at one side of said tubular portion to flow to the tip, a needle valve controlling the jet and having a stem adjustable in the closure, one end of said stem projecting and being accessible below the closure, and a cap carried by the closure normally covering and concealing the projecting end of the stem but removable from the closure to afford access to said end.

10. A pilot burner having a tubular portion provided at its upper end with a tip and provided at one side with a gas inlet, said tubular portion being open at its lower end to permit of the reception of a gas jet and to provide a clean-out opening, a gas jet within the tubular portion between the gas inlet and tip, a closure for the open lower end of said tubular portion, having a flange abutting the lower end of said tubular portion and provided below the flange with an exteriorly threaded portion, a connection between the closure and jet operable upon adjustment of the closure to move the jet toward and away from the tip, said connection being constructed and arranged in such a way that a space is provided in the passage above the closure for gas from the inlet at one side of said tubular portion to flow to the tip, a needle valve controlling the jet and having a stem adjustable in the closure, one end of said stem projecting and being accessible below the exteriorly threaded portion of the closure, and a cap adjustably engaging the exteriorly threaded portion of the closure normally covering and concealing the projecting end of the stem but removable from said exteriorly threaded portion to afford access to said end.

11. A pilot burner having a tubular portion provided at its upper end with a tip and provided at one side with a gas inlet, said tubular portion being open at its lower end to permit of the reception of a gas jet and to provide a clean-out opening, a gas jet within the tubular portion between the gas inlet and tip, a closure for the open lower end of said tubular portion, having a flange abutting the lower end of said tubular portion and provided below the flange with a depending portion, a connection between the closure and jet operable upon adjustment of the closure to move the jet toward and away from the tip, said connection being constructed and arranged in such a way that a space is provided in the passage above the closure for gas from the inlet at one side of said tubular portion to flow to the tip, a needle valve controlling the jet and having a stem threadedly engaging the closure, one end of said stem projecting and being accessible below the depending portion of the closure, and a cap adjustable upon the depending portion of the closure into engagement with the flange thereof so as to normally cover and conceal the projecting end of the stem but removable from the depending portion to afford access to said end.

12. A pilot burner having a tubular portion provided at its upper end with a tip and provided at one side with a gas inlet, said tubular portion being also provided at one side above the gas inlet with an inlet for air and being open at its lower end to permit of the reception of a gas jet and to provide a clean-out opening, a gas jet within the tubular portion between the

gas inlet and air inlet, a closure for the open lower end of said tubular portion, a connection between the closure and jet operable upon adjustment of the closure to move the jet toward and away from the air inlet, said connection being constructed and arranged in such a way that a space is provided in the passage above the closure for gas from the inlet at one side of said tubular portion to flow to the jet, a needle valve

controlling the jet and having a stem adjustable in the closure, one end of said stem projecting and being accessible below the closure, and a cap carried by the closure normally covering and concealing the projecting end of the stem but removable from the closure to afford access to said end.

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