Nov. 30, 1943. C. C. LAMAR 2,335,519

VALVE MECHANISM

Filed Oct. 1, 1941

Fig. 1

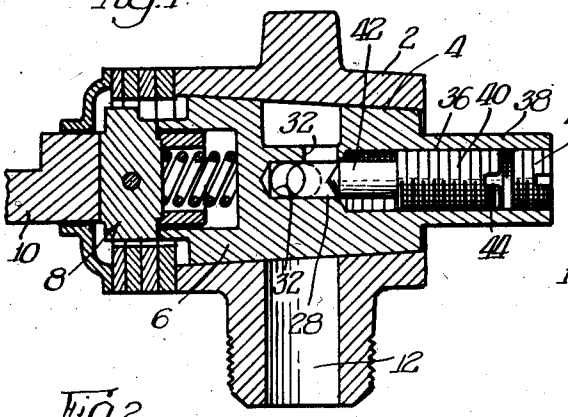


Fig. 2.

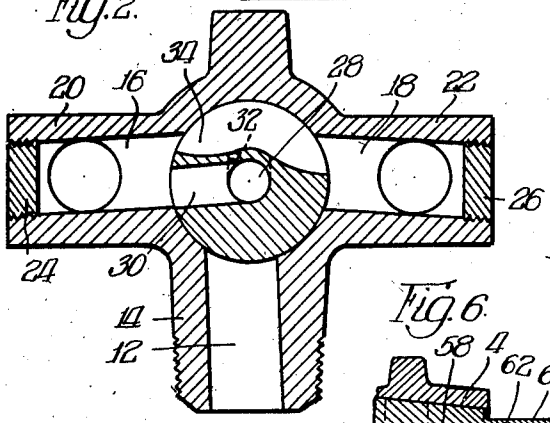


Fig. 3.

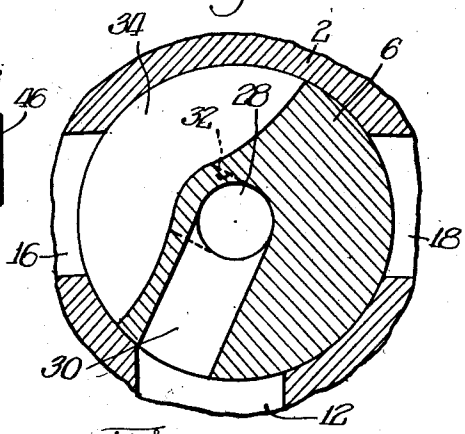


Fig. 4

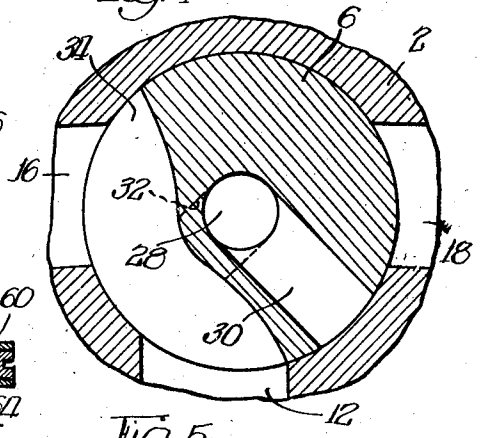


Fig. 6.

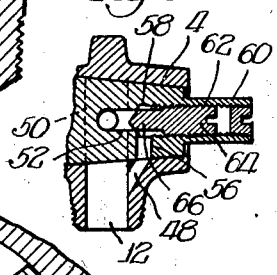


Fig. 7

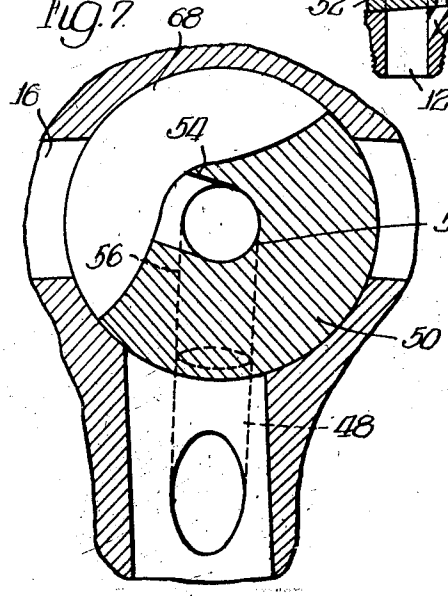
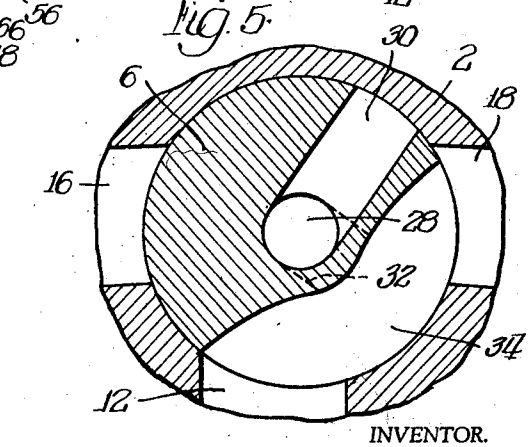


Fig. 5.



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VALVE MECHANISM

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Application October 1, 1941, Serial No. 413,090

5 Claims. (Cl. 277—56)

The present invention relates to improvements in valve mechanisms, and more in particular to novel valve structures adapted for use in conjunction with gas burners and the like.

Among the objects of the present invention is to provide a novel valve mechanism embodying in its construction an inlet means and a plurality of outlet means, in combination with a valve member incorporating noval structure having means for establishing fluid flow between the said inlet means and any one of said outlet means and for establishing a different rate of fluid flow between said inlet means and one of said outlet means.

Another object of the present invention is to provide a novel valve mechanism embodying the structure as immediately above set forth, and further including novel means for adjusting the fluid flow from the inlet means to one of said outlet means.

The present invention has as a further object the provision of novel valve mechanism for a double outlet oven valve for use with gas burners or the like, which provides for full capacity fluid flow from an inlet passageway to outlet passageways and for more limited flow through an auxiliary passageway from the inlet passageway to one of the outlet passageways.

More particularly, the invention contemplates such structure as immediately above defined in an integral housing assembly and in which novel means is provided for adjusting the fluid flow through the auxiliary passageway to one of the outlet passageways.

A further object of the present invention is to provide a double outlet oven valve incorporating novel valve mechanism operated by way of a handle or the like which will provide for the full capacity flow of fluid to either of the two outlet passageways incorporated in such structure, and which further is constructed to embody novel means to provide for a smaller predetermined fluid flow to one of said outlet passageways when the valve member is moved into another position.

As a further object of the present invention, novel means is provided in the valve mechanism for conveniently adjusting fluid flow at a predetermined rate in accordance with desired operating characteristics for the said burner or burners to which said valve is connected.

In one of its aspects, the present invention contemplates a valve mechanism having inlet and outlet means and novel valve structure providing for fluid flow at different rates therebetween and which includes as a novel feature conveniently arranged adjustable means for varying the said fluid flow at one of said rates. More particularly, the valve mechanism under consideration incorporates a rotatable valve member seating within the bore of a housing and which has an adjustable means, such as a screw or the like, for controlling the passage of fluid through the passageway establishing one of the rates of flow when the valve member is in one of its positions.

More particularly, the present invention embodies in its construction novel adjustable means mounted at one end of the valve member which is adapted to be adjustable for flow of fluid through the valve mechanism in predetermined quantities.

Other objects, features, capabilities and advantages are comprehended by the invention, as will later appear and as are inherently possessed thereby.

Referring to the drawing:

Figure 1 is a view in cross section of valve mechanism constructed in accordance with the present invention;

Figure 2 is a view in cross section of the valve structure shown in Figure 1 and taken in a plane substantially at 90 degrees to the plane of the section of that figure;

Figure 3 is an enlarged fragmentary view in cross section substantially according to Figure 2 of the drawing, showing one position of the valve member controlling the flow of fluid through the valve mechanism;

Figure 4 is an enlarged fragmentary view similar to that of Figure 3, showing a further position of the valve mechanism;

Figure 5 is an enlarged fragmentary view substantially the same as that of Figures 3 and 4, showing the valve member in another of its adjusted positions;

Figure 6 is a fragmentary view in cross section of a modified form of construction for the valve mechanism made in accordance with the present invention; and

Figure 7 is an enlarged fragmentary view in cross section of the structure shown in Figure 6, taken at substantially 90 degrees from the section represented by said Figure 6.

Referring more particularly to the drawing, an embodiment selected to illustrate the present invention is shown in Figures 1 to 5 inclusive as including a housing of valve body 2 formed with an axially disposed tapered bore 4 extending therethrough and adapted to receive in seated

relation therewith valve member 6. The valve mechanism illustrated in the present embodiment further incorporates operating mechanism, generally referred to as 8, conforming substantially to the structure now disclosed in a copending application in the name of Philip S. Harper, filed July 29, 1939, and bearing Serial No. 287,398, and which mechanism forms no part of the present improved structure. This operating mechanism 8, as can very well be appreciated, is for operating the valve member 6 into its various rotative positions through the medium of a shaft, such as 10, controlled by a handle (not disclosed) which is mounted adjacent the outer end thereof whereby the said valve member 6 is easily and readily manipulated to its various positions as indicated.

The valve housing 2 includes the laterally disposed inlet passageway 12 formed by the exteriorly threaded wall 14 whereby the said valve housing may be connected to a gas supply in a conventional manner. The housing 2 further includes the oppositely disposed outlet passageways 16 and 18 formed in part by the wall structures 20 and 22 and in part by the wall structure (not disclosed) disposed in normal relation thereto and which is formed as integral structure with the said walls 20 and 22. The said passageways 16 and 18 are closed at one end by the closure elements 24 and 26, respectively.

The rotative valve member 6 in the embodiment shown in Figures 1 to 5 inclusive, is formed with an axially disposed bore 28 communicating at one point with a radially disposed passageway 30 and at another point with a radially disposed passageway 32, the former of which terminates at the periphery of the valve member 6 and the latter of which communicates with the passageway 34 extending across the said valve member 6 and intersecting the periphery thereof.

The valve mechanism further embodies in its construction an axially disposed bore 36 formed in part in the main body of the valve member 6 and in part in the extension 38 and which communicates with the bore 28. The bore 36 is internally threaded to receive the screw member 40 formed with its inner end as at 42 of reduced diameter which is adapted to slidably fit within the axially disposed passageway 28. The screw-threaded member 40 is formed with a slot 44 at its outer end to facilitate rotation thereof and to adjust its inner end 42 in the axial bore 28 whereby flow of fluid through the radially disposed passageway 32 may be regulated as desired, all as will more fully appear. In order to protect the screw-threaded member 40, a screw-threaded plug 46 is threaded into the extension 38.

The present valve mechanism as above described is all incorporated in a structure of unitary assembly and lends itself admirably to incorporation into control mechanism for the burners for gas ranges and the like, and particularly for controlling the flow of gas from the inlet means 12 to a broiler and also to an oven, particularly where high and low adjustment for the broiler is desired. In accordance with the present illustration, the passageway 16 is in communication with the broiler burner, and the passageway 18 is in communication with the oven burner. The improvements incorporated in the present valve mechanism are such as to facilitate the control of gas flow to the broiler burner to provide for high and low burning characteristics therefor when the valve member 6 is in either one of two positions, and to also provide for the full capacity flow of fluid to the oven burner when the valve member 6 is in another position.

As illustrated in Figure 3 of the drawing, the valve member 6 is in a position with respect to the valve housing or body 2 to provide for predetermined limited flow of fluid from the inlet passageway 12 to the outlet passageway 16. As is quite apparent, the passageway 30 is in communication with the inlet passageway 12 and through the axially disposed passageway 28 is in communication with the radially disposed passageway 32. Since this radially disposed passageway 32 communicates with the passageway 34, flow of gas to the outlet passageway 16 is accomplished. This passageway through the valve mechanism constitutes an auxiliary passageway providing for low burning characteristics for the broiler burner, and the quantity of gas passing therethrough is controlled by proper adjustment of the screw member 40. Accordingly, predetermined quantities of gas may pass from the inlet passageway 12 to the outlet passageway 16.

As illustrated in Figure 4 of the drawing, the valve member 6 has been rotated into a position to provide full capacity flow of gas from the inlet passageway 12 to the outlet passageway 16, this being accomplished through the medium of the passageway 34 provided in the valve member 6. This position of the valve member 6 provides for the high burning characteristics for the broiler burner, and such may be effected by simple rotative movement of the valve member 6 into another position from that shown in Figure 3 of the drawing.

Where it is desired to provide full capacity flow of gas from the inlet passageway 12 to the outlet passageway 18, the valve member 6 may be rotated into a third position, such as shown in Figure 5 of the drawing, whereby the passageway 34 of the said valve member intercommunicates with the said passageways 12 and 18 to provide for such flow. In the illustration, the flow of gas through the valve mechanism provides for high burning characteristics for the oven burner. According to the invention, therefore, a valve mechanism of unitary structure is provided wherein gas may be supplied to the oven burner or to the broiler burner for high or low burning characteristics.

The valve mechanism may take the form as shown in Figures 6 and 7, if desired. The said valve mechanism in this modified version of the invention comprises a valve housing of substantially the same construction as shown in the first described embodiment except that a by-pass passageway 48 is provided which communicates with the inlet passageway 12 and the axially disposed bore 4 of the valve housing. The valve member 50 which seats within the bore 4 conforms substantially to the valve member 6 hereinabove described, and includes an axially arranged bore 52 communicating at one point with the radially disposed passageway 54 corresponding to the passageway 32 of the embodiment of Figures 1 to 5 inclusive, and at another point with a radially disposed passageway 56, which in turn is adapted to communicate with the by-pass passageway 48 when the valve member 50 is in one of its positions.

As in the previously described embodiment of the invention, valve member 50 is further formed

with an internally threaded axially disposed bore 58 formed in part in the main body of the valve 50 and in part in the extension 60 and which communicates with the bore 52. Mounted in the threaded bore 58 is a screw-threaded element 64 which has its inner end 66 of less diameter adapted to be slidably received within the bore 52 to adjust flow of gas from the inlet passageway 12 through the passageways 43 and 56 to the bore 52, and thence through the passageway 54 to the outlet passageway 16. This is accomplished through the medium of the passageway 68 conforming to the passageway 34 of the previously described embodiment, and which, in the position as shown in Figure 7 of the drawing, intercommunicates with the passageway 54 and the passageway 16.

In this modified valve structure, as in the previous illustration, the outlet passageway 16 communicates with a broiler burner, so that by virtue of the structure of the elements herein described, low burning characteristics for the broiler burner may be secured when the valve member 50 is in the position as shown in Figure 7 of the drawing. High burning characteristics for both the broiler burner and the oven burner are obtained when the valve member 50 is in positions corresponding to the positions of valve member 6 in Figures 4 and 5, respectively.

As will be clear from the above disclosure, the unitary valve assembly is of simple construction wherein the parts may be readily fabricated at low cost and which effectively provide, through the medium of a single unit, control of flow of gas to an oven burner and to a broiler burner for high and low characteristics. In addition, the improved valve mechanism incorporates an adjustable feature for flow of gas to the broiler burner which may be adjusted to predetermined rates to secure the desired low burning characteristics and which is conveniently disposed for adjustment between the housing wall structure which provides for the outlet passageways 16 and 18.

While I have herein described and upon the drawing shown illustrative embodiments of the invention, it is to be understood that the invention is not limited thereto but may comprehend other constructions, arrangements of parts, details and features without departing from the spirit of the invention.

I claim:

1. In a double outlet gas valve of the character described, the combination of a valve housing having an inlet passageway and spaced outlet passageways one of which is adapted to be connected to a broiler burner and the other of which is adapted to be connected to an oven burner, a valve member mounted in said housing having a passageway adapted to establish intercommunicating relation with said inlet passageway and either of said outlet passageways to provide for full capacity flow of gas to either said broiler or oven burners, said valve member having an auxiliary passageway adapted to establish intercommunicating relation between said inlet passageway and the one of said outlet passageways in communication with said broiler burner, said passageways of said valve member being so constructed and arranged with respect to one another and with respect to said inlet and outlet passageways that sequential operation of said valve member to provide flow through said passageways of said valve member is effected without stoppage of fluid flow between said inlet and said one of said outlet passageways, and means mounted in the inner end of said valve member for adjusting fluid flow through said auxiliary passageway.

2. In a double outlet gas valve of the character described, the combination of a valve housing having an axially disposed bore, said housing having a laterally disposed inlet passageway and spaced laterally disposed outlet passageways one of which is adapted to be connected to a broiler burner and the other of which is adapted to be connected to an oven burner, a valve member rotatably seating in said bore having a transversely disposed passageway adapted to establish intercommunicating relation with said inlet passageway and either of said outlet passageways when said valve member is in either of two positions to provide for full capacity flow of gas to either said broiler or oven burners, said valve member having an auxiliary passageway disposed substantially in the plane of said first named passageway, said auxiliary passageway having a part thereof axially disposed in said valve member and communicating radially disposed parts, one of which terminates in the outer surface of said valve member and the other of which terminates in said first named passageway, said auxiliary passageway being adapted to establish intercommunicating relation between said inlet passageway and the one of said outlet passageways in communication with said broiler burner when said valve member is in another of its positions, said passageways of said valve member being so constructed and arranged with respect to one another and with respect to said inlet and outlet passageways that sequential operation of said valve member to provide flow through said passageways of said valve member is effected without stoppage of fluid flow between said inlet and said one of said outlet passageways, and means mounted in said valve member and disposed between said outlet passageways for adjusting fluid flow through said auxiliary passageway.

3. In a double outlet gas valve of the character described, the combination of a valve housing having an axially disposed bore, said housing having a laterally disposed inlet passageway and spaced laterally disposed outlet passageways one of which is adapted to be connected to a broiler burner and the other of which is adapted to be connected to an oven burner, a valve member rotatably seating in said bore having a passageway adapted to establish intercommunicating relation with said inlet passageway and either of said outlet passageways when said valve member is in either of two positions to provide for full capacity flow of gas to either said broiler or oven burners, said valve member having an auxiliary passageway adapted to establish intercommunicating relation between said inlet passageway and the one of said outlet passageways in communication with said broiler burner when said valve member is in another of its positions, said passageways of said valve member being so constructed and arranged with respect to one another and with respect to said inlet and outlet passageways that sequential operation of said valve member to provide flow through said passageways of said valve member is effected without stoppage of fluid flow between said inlet and said one of said outlet passageways, and an adjusting screw mounted axially with respect to said valve member and between said outlet passageways for adjusting fluid flow through said auxiliary passageway.

4. In a double outlet gas valve of the character described, the combination of a valve housing having an axially disposed bore, said housing having an inlet passageway and spaced outlet passageways one of which is adapted to be connected to a broiler burner and the other of which is adapted to be connected to an oven burner, said housing also having a by-pass passageway communicating with said inlet passageway, a valve member rotatably seating in said bore having a passageway adapted to establish intercommunicating relation with said inlet passageway and either of said outlet passageways when said valve member is in either of two positions to provide for full capacity flow of gas to either said broiler or oven burners, said valve member having an auxiliary passageway adapted to establish intercommunicating relation between said by-pass passageway and the one of said outlet passageways in communication with said broiler burner when said valve member is in another of its positions, said passageways of said valve member being so constructed and arranged with respect to one another and with respect to said inlet and outlet passageways that sequential operation of said valve member to provide flow through said passageways of said valve member is effected without stoppage of fluid flow between said inlet and said one of said outlet passageways, and means mounted in the inner end of said valve member for adjusting fluid flow through said auxiliary passageway.

5. In a double outlet gas valve of the character described, the combination of a valve housing having an axially disposed bore, said housing having an inlet passageway and spaced outlet passageways one of which is adapted to be connected to a broiler burner and the other of which is adapted to be connected to an oven burner, said housing also having a by-pass passageway communicating with said inlet passageway, a valve member rotatably seating in said bore having a passageway adapted to establish intercommunicating relation with said inlet passageway and either of said outlet passageways when said valve member is in either of two positions to provide for full capacity flow of gas to either said broiler or oven burners, said valve member having an auxiliary passageway adapted to establish intercommunicating relation between said by-pass passageway and the one of said outlet passageways in communication with said broiler burner when said valve member is in another of its positions, said passageways of said valve member being so constructed and arranged with respect to one another and with respect to said inlet and outlet passageways that sequential operation of said valve member to provide flow through said passageways of said valve member is effected without stoppage of fluid flow between said inlet and said one of said outlet passageways, and an adjusting screw mounted axially with respect to said valve member and between said outlet passageways for adjusting fluid flow through said auxiliary passageway.

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