May 28, 1929. L. H. V. REYNOLDS ET AL 1,715,248

FLUID DISTRIBUTOR

Filed Sept. 16, 1927 2 Sheets-Sheet 1

Fig. 1.

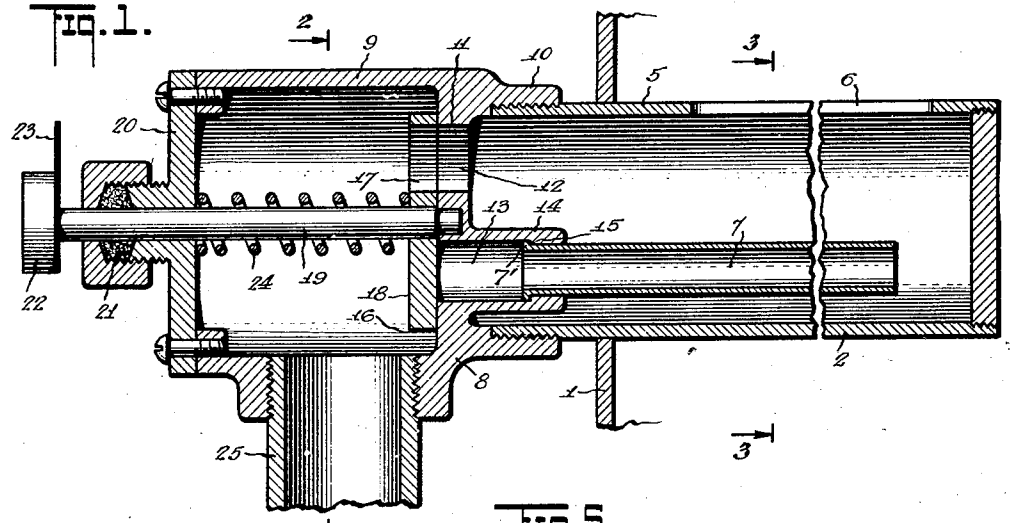


Fig. 5.

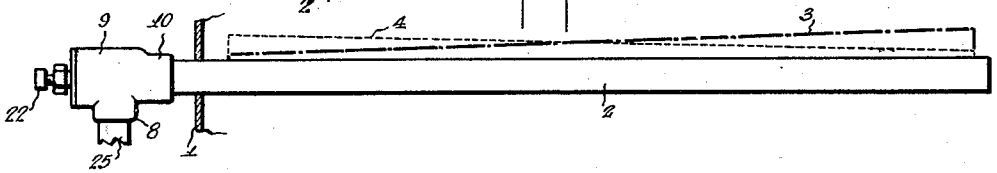


Fig. 2.

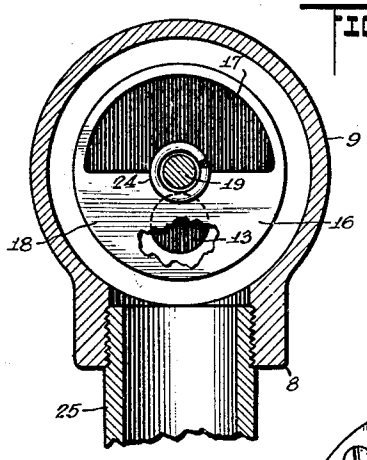


Fig. 3.

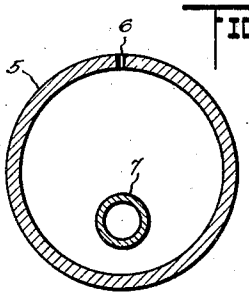
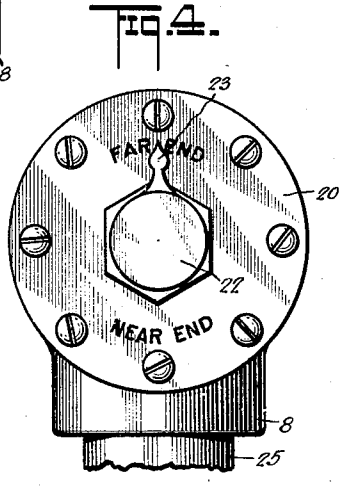


Fig. 4.



WITNESSES

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Fig. 6.

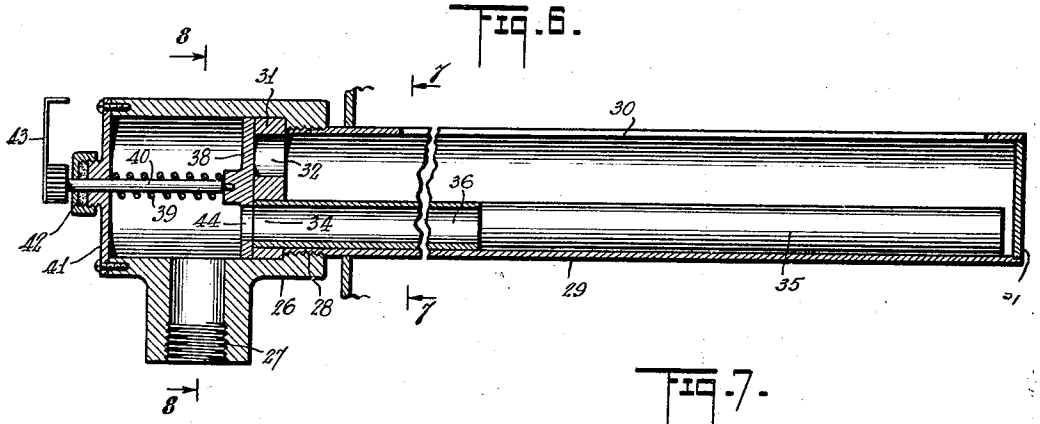


Fig. 7.

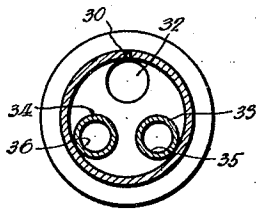


Fig. 8.

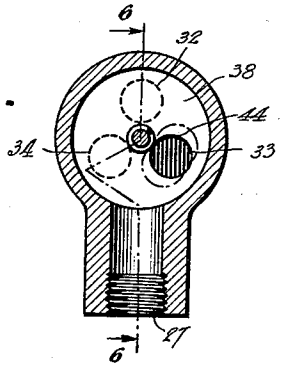


Fig. 9.

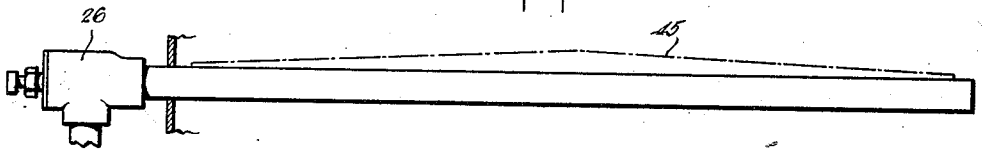


Fig. 10.

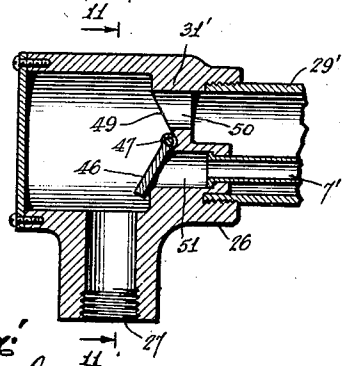
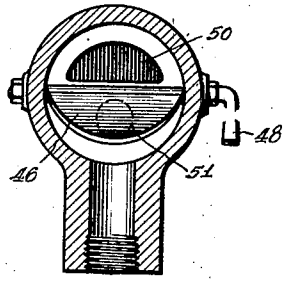


Fig. 11.



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Patented May 28, 1929. 1,715,248

UNITED STATES PATENT OFFICE.

LLOYD H. V. REYNOLDS AND WILLIAM B. ENSIGN, OF NEW YORK, N. Y., ASSIGNORS TO ENSIGN-REYNOLDS, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FLUID DISTRIBUTOR.

Application filed September 16, 1927. Serial No. 220,011.

This invention relates to fluid distributors and more particularly to means for distributing gas for combustion purposes and has for an object to provide an improved construction wherein the distribution of the fluid may be regulated fully.

Another object of the invention is to provide an improved fluid distributor formed in the nature of a burner wherein the fluid or gas may be caused to supply flames at different heights at the respective ends, according to the adjustment of the device.

A further object, more specifically, is to provide a gas burner with means for distributing gas and regulating the distribution so that a larger amount of gas may be supplied to one end than the other or the gas may be caused to be supplied substantially evenly throughout.

In the accompanying drawings—

Figure 1 is a longitudinal vertical sectional view through a gas burner disclosing an embodiment of the invention.

Figure 2 is a sectional view through Figure 1, approximately on line 2—2.

Figure 3 is a sectional view through Figure 1 on line 3—3.

Figure 4 is an end view of the structure shown in Figure 1.

Figure 5 is a side view on a reduced scale, of a complete burner with part of one of the walls of the furnace or oven illustrating how the flame may be larger at one end than the other.

Figure 6 is a view similar to Figure 1 but showing a modified form of the invention, the same being taken on line 6—6 of Figure 8.

Figure 7 is a transverse sectional view through Figure 6 on line 7—7.

Figure 8 is a sectional view through Figure 6 on line 8—8.

Figure 9 is a view similar to Figure 5 but illustrating how the flame may be highest in the center.

Figure 10 is a fragmentary sectional view similar to the left end in Figure 6 but showing a slightly modified construction.

Figure 11 is a sectional view through Figure 10 on line 11—11.

Referring to the accompanying drawing by numerals, 1 indicates part of a furnace or oven used for baking purposes or any other purpose. In burners used in ovens for baking, it has been found that a tubular burner having an even flame throughout will not satisfy all conditions and, therefore, means have been provided heretofore which will deflect the heat to the desired point. In the present instance, the burner 2 is provided and so arranged that the flame may be caused to assume the position indicated by dotted lines 3 or caused to assume the position illustrated by dotted lines 4. This throws the heat at either end of the burner and, consequently, at the desired place.

In order to secure these results and others, the construction shown in Figure 1 is provided as a preferable form, though it is evident that other structures could be used to accomplish the same result without departing from the spirit of the invention. As indicated in Figure 1, the burner 2 is formed with a tubular member 5 having a slit 6 extending from near one end to near the opposite end. Arranged in the tubular member 5 is a pipe 7 of smaller diameter and open at both ends. It will be noted that the tubular member 5 is closed at one end and open at the other end, said open end being screwed into a fitting or casting 8. The casting 8 and associated parts form what may be termed a head and which includes the shell 9 having the annular flange 10 into which the tubular member 5 is screwed. Also the head is provided with what may be termed a division wall 11 provided with passage-ways 12 and 13, passage-way 13 being comparatively long by reason of the projection 14 of wall 11. The projection 14 is provided with a shoulder 15 for receiving the turned over end or flange 7′ of the pipe 7 whereby this pipe is limited in its movement in one direction. Preferably, this pipe is held in place merely by friction and may be easily removed at any time. Co-acting with the wall 11 is a shutter or valve 16 which is provided with a comparatively large opening 17 and a solid portion 18. This valve is rigidly secured by a key or otherwise to the shaft 19 extending through the end 20 of the head or casting 8. The end 20 is provided with a packing gland 21 so as to prevent the escape of gas. A hand wheel 22 is rigidly secured to shaft 19. A pointer 23 is secured to hand wheel 22 for indicating the position of the opening 17. When the parts are in the position shown in Figures 1 and 4, pointer 23 is arranged so that the end thereof will be between the words "far end." When the solid portion 18 is positioned for closing the opening 12, the end of pointer 23

will be arranged substantially between the words "near end" illustrated in Figure 4. A partial turning movement from either of these positions will cause a partial opening whereby any portion of gas may be supplied to either end of the tubular member 5. A spring 24 is provided for normally holding the valve 16 on its seat, namely, against the wall 11. The contact between the valve 16 and wall 11 need not be absolutely gas-tight as a slight leakage at any time will not affect the general action of the burner. It is, of course, evident that the supply pipe 25 is provided with a valve at some desired point whereby the gas may be turned on and off as the valve 16 merely regulates the gas as it enters the tubular member 5 so as to cause the flame to be large at either end or substantially even throughout.

In Figures 6 to 9 will be seen a modified form of the invention, wherein the gas may be distributed in different ways so as to cause the flame to be high at either end or high in the center. In this form of the invention, 26 is the casing to which a gas supply is secured by being screwed into the threaded extension 27. Casing 26 is provided with a threaded projection 28 in which is screwed the tubular burner 29, said burner having a slot 30 similar to slot 6 in the preferred form. A valve seat 31 is fitted into casing 26 and is provided with ports or apertures 32, 33 and 34, aperture 32 being left unobstructed while apertures 33 and 34 having screwed therein the respective pipes 35 and 36. Pipe 36 is intended to extend to a point substantially midway of the length of slot 30 while pipe 35 is intended to extend to near the closed end 37 of the burner 29. In this way, gas passing through any of the apertures 32, 33 and 34 will be distributed to different points in the burner, namely, to near either end or near the center. A shutter or valve 38 is held against the seat 31 by a suitable spring 39. A rod 40 is secured to valve 38 and extends through the end 41 and through a suitable packing box 42 so that the handle 43 secured to the rod 40 will be actuated for turning the valve 38 so that the single aperture 44 therein may be brought into registry with any of the ports in the seat 31. In this way the gas is distributed as desired. As a result, the flame 45 may be highest in the center as shown in Figure 9 or may be high at either end or at one end.

In Figures 10 and 11, a slightly modified structure is shown to that illustrated in Figure 6. In this form of the invention, a valve 46 is secured to a shaft 47 extending to a point exteriorly of the casing 26 and is provided with a handle 48. The valve seat 31′ in this form of the invention is shown integral with the casing 36 but it may be made separate and secured in place if desired. Valve seat 31′ is arranged with the outer face 49 tapering towards the center so that the valve 46 will fit flatwise against the face in either of two positions. In this form of the invention, either of the ports 50 or 51 may be open or both may be held open. In this form of the invention, there is port 50 discharged directly into the burner 29′ while port 51 is provided with a pipe 7′ which is similar to pipe 7 of the preferred form so that the gas can be discharged at either end of the burner 29′ or at both ends simultaneously. If desired, the aperture 44 in the valve 38 could be sufficiently large to partly open two adjacent ports in the seat 31 when in one position and when in another position, to open only one of these ports.

In operation, when the gas is turned on to pipe 25 of the preferred form, the gas will flow in casing 8 and if the parts are set as shown in Figure 1, the gas will flow through openings 17 and 12 and will provide a flame substantially as indicated by the dotted lines 4 in Figure 5. If it is desired to have more heat at the opposite end of the burner 2, valve 16 is turned a half revolution. This will cause the solid section 18 to close the opening or passage-way 12 and permit all of the gas to flow through the passage-way 13 and pipe 7 to the far end of the burner. This will cause the flame to appear as shown by dotted lines 3 indicated in Figure 5. By a less movement than a half revolution, any proportion of gas may be caused to pass through pipe 7 and passage-way 12 so that the flame may be adjusted to any desired condition. The same action is true in regard to Figure 6 except that the gas is adapted to be turned on at either end of the burner so that the flame will be high at either end. Also, the gas is adapted to be turned on in the center of the burner so that it will be high in the center as shown in Figure 9. If the aperture 44 was elongated as shown in dotted lines in Figure 8, an additional distribution could be made, using part of two of the ports of seat 31.

In Figures 10 and 11, a further distribution is provided, namely, one where the gas can be discharged into the burner at either end for making either end of the flame high or the parts adjusted to discharge the gas at both ends simultaneously.

What we claim is:

1. A gas burner comprising a tubular structure, a head for supplying gas to the tubular structure, means for supplying gas to said head, a pipe extending from the head interiorly of the tubular structure to near the end thereof, and manually actuated means for controlling the flow of gas directly to the tubular member or to said pipe.

2. A gas burner comprising a burner tube having a slit extending longitudinally thereof, a pipe arranged in said tube extending from near one end to near the opposite end, means for supplying gas to said pipe and tube, and a valve for regulating the amount of gas supplied to the pipe and tube whereby

the volume of gas supplied to either end of the tube may be controlled.

3. A gas burner comprising a tubular member having a gas outlet, said tubular member being closed at one end, a head connected at the opposite end, said head having a division wall with a plurality of openings therein, a pipe mounted in one of said openings extending to near the closed end of the tubular member, means for supplying gas to said head, and means carried by the head for causing the gas to pass through any one of the openings in said wall.

4. A gas burner comprising a tubular member closed at one end and having a gas outlet extending from near one end to near the opposite end, a head connected with the open end of the tubular member, said head having a division wall provided with a plurality of openings, one of the openings functioning to discharge gas from the head into one end of the tubular member and another functioning to discharge gas at the opposite end of the tubular member, and manually actuated means for causing the gas to flow through the openings.

5. A gas burner comprising a tubular member closed at one end and open at the opposite end, a tubular head connected with the open end of the tubular member, a division wall for dividing the tubular member from the entrance to the head, said division wall having a plurality of openings, a pipe mounted in one of the openings extending to near the closed end of the tubular member, and a manually actuated rotating valve formed to close the respective openings and to maintain any one of said openings uncovered.

6. A gas burner comprising a tubular member having a gas outlet, said tubular member being closed at one end and open at the opposite end, a casing connected to the open end of the tubular member, said casing having a division wall provided with a plurality of openings discharging into the tubular member, a pipe in one of the openings for causing the gas passing through that opening to be discharged near the closed end of the tubular member, a rotating valve mounted on said division wall formed with an opening and a solid section, said opening and solid section being proportioned so that when the opening is in full registry with one of the openings in the division wall, the solid portion will be closing the other openings in the division wall, and manually actuated means for shifting said valve.

7. A fluid distributor, comprising a casing adapted to receive a fluid under pressure, a valve seat carried by said casing and provided with three outlets, a burner connected with said casing for receiving the fluid from said outlets, a pipe connected to said seat and receiving the fluid from one of said outlets, said pipe extending to the center of said burner, a second pipe connected to said valve seat and receiving the fluid from a second outlet, said second pipe extending to near the end of said burner opposite said casing, a valve member co-acting with said seat formed with a single opening, and manually actuated means for moving said valve member so as to cause said opening to register at different times with the respective ports in said seat.

8. A gas burner, comprising a tubular burner structure having a distributing head and one closed end and an open end, means for supplying gas to said head, means carried by said head and projecting into said burner for distributing gas to both ends and the center of the burner, and a manually operated valve for varying the distribution of gas to the burner.

9. A gas burner comprising a tubular member closed at one end, a head connected to the opposite end, said head being provided with a valve seat and three ports, a pipe extending from one of said ports to near the closed end of said tubular member, a pipe extending from a second port to a position approximately midway between said ports and said closed end, a flat valve positioned to close any of said ports and a manually actuated member for moving said valve from one position to another for deflecting gas from one pipe to the other.

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