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GAS BURNER

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Fig. 1

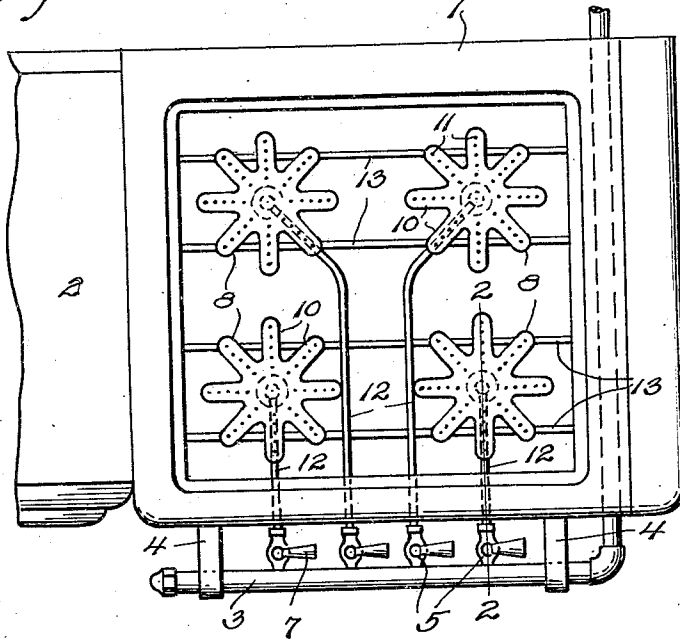
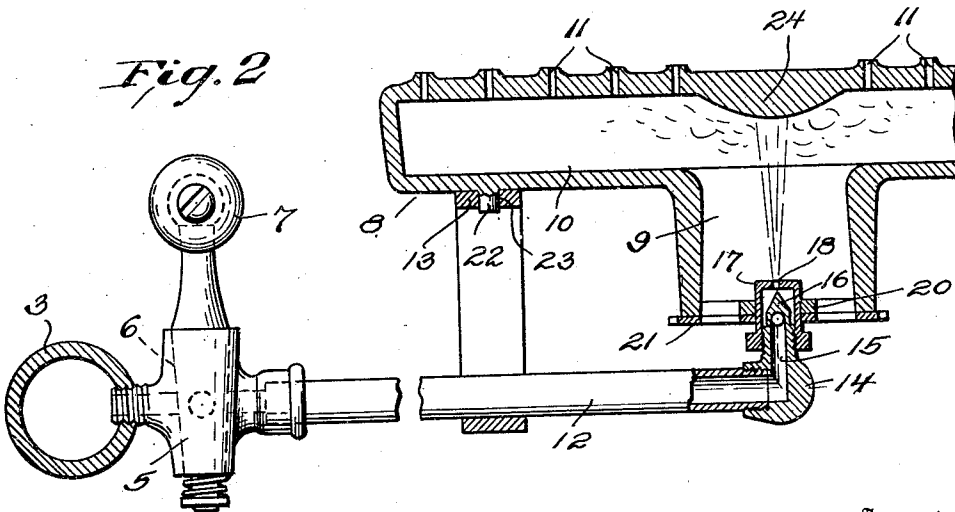


Fig. 2



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GAS BURNER

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This invention relates to improvements in gas burners, and more particularly to burners of the type employed in conjunction with cooking stoves and ranges, and it is a primary object thereof to improve burners of this character by providing features of construction whereby improved carburization of the gas and air mixture flowing to the burner orifices is obtained and at the same time to secure improved distribution of the carburetted gaseous mixture in order that the latter may flow uniformly to and through all of the orifices provided in the burner, to the end that the operation of the latter will be both highly efficient and economical.

With these and other objects in view which will appear as the description proceeds, the invention consists in the novel features of construction, combinations of elements and arrangements of parts hereinafter to be fully described and pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a top plan view of a gas range provided with the burner mechanism comprising the present invention, and

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1.

Referring more particularly to the drawings, the numeral 1 designates the frame structure of a cooking range 2. The frame carries the usual gas supply manifold 3 which may be supported in connection with the frame by the use of spaced brackets 4. Carried by the manifold 3 are control valves 5 of customary construction and which include the usual tapered plugs 6 and manipulating handles 7. By means of the valves 5 gas flow from the manifold 3 to a plurality of burner units 8 is controlled.

These burner units each comprise a metallic casting formed to include a centrally hollowed body 9 from the upper portion of which radiates a plurality of relatively spaced, horizontally disposed hollow arms 10 having closed outer ends, the arms being in open communication with the interior of the body 9. The upper surfaces of the arms 10 are provided with gas outlet orifices 11.

Extending from the discharge sides of the

valves 5 are pipes 12 which lead to each of the burner units 8. These pipes are supported in relatively spaced relation by the employment of longitudinally extending cross bars 13 which are stationarily connected with the frame 1. The inner ends of the pipes 12 are provided with threaded elbows 14 and the vertically extending branch of each of these elbows is provided with a gas passage 15 terminating in a laterally directed outlet which is formed in a conical stem 16. Threadedly connected with the stem 16 is a gas flow orifice cap 17 provided in its upper surface with a restricted outlet port 18 which may be moved relative to the conical end of the stem 16 in order that the effective area of the port 18 may be varied to control gas flow therethrough, whereby to adapt the burner unit to various gas pressures.

The lower end of each of the bodies 9 of the burner units is provided with a perforated web 20 in which the cap 17 is loosely positioned. In conjunction with each web 20 there is provided on the lower ends of each of the bodies 9 an adjustable air shutter 21 which, upon being rotated about the axis of the cap 17, is utilized to control the quantity and admission of air into the burner units. The burner units themselves are supported on the cross bars 13 and carry depending studs 22 formed on the end portions of certain of the arms 10. These studs are positioned within openings 23 provided by the cross bars 13. The studs prevent loss of position of the burner units but permit the latter to be readily removed from the range by merely lifting such units upwardly, thus supporting the same from the cap 17 and the cross bars 13. This construction permits the air shutters 21 to be conveniently adjusted to meet efficient carburization requirements and permits of corresponding convenience in adjustment of the cap 17 and its orifice 18 with respect to the conical end of the stem 16, thus regulating the gas flow.

Each of the burner units has the under surface of its upper wall provided axially with a convex enlargement 24 forming a distributor or deflector. It will be observed that each of these enlargements is located in registra-

tion with the orifice or port 18 formed in the cap 17 so that the gas stream issuing from said port will strike the distributor to break up the gas stream for the purpose of producing a high degree of turbulence in its flow and to permit the oxygen in the air drawn through the web 20 to unite readily with the hydrocarbon compounds of the gas stream to form a highly combustible gaseous mixture. Not only does the distributor 24 serve to promote more efficient carburization by producing turbulence in the gas stream but in addition it acts as a means for uniformly distributing the gas to each of the radially extending arms 10 of the burner unit. In other words, the distributor 24 acts to prevent "channeling" of the gas stream, that is, the tendency of the stream to flow more rapidly to a given area than other essential areas of the burner.

In the usual form of burner found in connection with gas ranges it is customary to cast the burner element with a laterally and longitudinally extending intake branch which extends to the valves 5 and which is provided with enlarged air introducing chambers at their outer ends. This usual type of construction produces to a very large extent channeling of the fuel mixture stream since there are no sharp obstructions present to break up the stream and to produce turbulence thereof in its flow toward the orifices of the burner element. Moreover, such ordinary constructions are relatively costly and require special designs and patterns for the rear burner elements and are quite frequently difficult to remove from the range for cleaning purposes. It will be observed that in the present invention the pipes 12 extending from the manifold 3 are formed from standard materials and are entirely separate from the burner units 8 and occupy planes below said units so that the gas stream enters said units in a vertical upward direction. Since the units 8 are of the same construction special castings and patterns are eliminated and manufacturing costs are, therefore, materially reduced as compared with previous generally accepted designs. In addition, the present invention provides for efficient carburization of the fuel mixture and insures its uniform distribution to all of the orifices 11 provided in connection with the arms 10. To clean or adjust the burner it is merely necessary to lift the units upwardly from the range which provides convenient access to all portions thereof.

What is claimed is:

1. In a gas range, a frame, a burner unit positioned on said frame and comprising a hollow body having a plurality of radiating arms, the upper surfaces of said arms being provided with gas orifices, a gas manifold, a valved pipe line extending from said manifold and entering the lower portion of said

burner unit to discharge gas in an upwardly directed stream into said burner unit, and means carried by the lower portion of said burner unit for admitting air into admixture with said gas stream.

2. In a gas range, a frame, a burner removably supported upon said frame, a gas supply manifold, a valved pipe line extending from said manifold to the lower central part of said burner unit, an adjustable orifice cap carried by the inner end of said pipe line and arranged within said burner unit for discharging a gas stream at high velocity in a vertically upward direction through the central part of said burner unit, and a distributor formed in said burner unit and against which said gas stream is directed at disintegrating velocities whereby to promote turbulence in said gas stream and to admit intimate admixture therewith of air which enters said unit contiguous to the point of entry of said gas stream.

In testimony whereof I affix my signature.
FRANCIS D. FORD.