This invention is directed to an improved burner arrangement which, while capable of more general application, is designed more particularly for use in connection with the ovens of gas stoves or ranges. As will be more fully discussed in the detailed description to follow, the improved arrangement comprises a substantially U-shaped burner tube, and a long inwardly extending mixing tube connected to the base portion of said burner tube and communicating therethrough with both of its branch portions, one of the latter being provided at its free end with an offset lighting extension, all for the purpose hereinafter set forth.

In the accompanying drawings:

Figs. 1 and 2 are side and plan views of one form of the improved arrangement, showing it in connection with a baking or roasting oven.

Figs. 3 and 4 illustrate another form applied to a duplex oven, Fig. 3 being a plan view, and Fig. 4 a section taken on the line 4—4 of Fig. 3; and

Figs. 5 and 6 illustrate further forms as embodied in a broiler oven, both showing the burner in side elevation.

Similar reference characters throughout the several views indicate the same parts.

Referring first to Figs. 1 and 2, there is illustrated a baking or roasting oven having an underlying heating chamber A 1 separated therefrom by an intermediate apertured partition A 2. The improved burner is located in the heating chamber A 1 and, as shown, comprises a substantially U-shaped tube presenting a base portion 1 located at the rear and disposed transversely of the chamber, and two parallel elongated branch portions 2 and 3 extending fore and aft of the chamber. At its free end, the branch portion 2 is provided with an integral forwardly and upwardly disposed lighting extension 2 a, which terminates below and slightly to one side of a match hole or opening A 3 formed in the separating partition A 2 at a point near the lower edge of the opening of the oven door A 4. Suitable flame ports are formed throughout the extent of the burner tube, those of the lighting extension 2 a being carried up along its side so that the lighted match, when inserted through the opening A 3, may be brought into direct contact with the gas issuing therefrom. Arranged centrally between and extending parallel with the two branch portions 2 and 3 of the burner tube is a so-called mixing tube 5 connected at the rear to the base portion 1 and communicating therethrough with both of said branch portions. At its forward end, the mixing tube 5 is provided with the customary air chamber 5 a, into which the gas is discharged under control of a stop-cock or valve 6, from a main supply pipe or manifold 6 extending across the front of the stove. As a matter of convenience, the burner tube and the mixing tube are cast in one piece, being braced and held apart at their outer ends by integral re-enforcing webs 7, but it will be understood of course that the parts might be made separately and then fitted together to make up the complete unit.

In Figs. 3 and 4, the oven is of the duplex variety, comprising an upper baking or roasting compartment B and a lower broiling compartment B 1, the two being separated by an intermediate apertured partition B 2. In this embodiment, the burner is located in the upper portion of the broiling compartment B 1 and is disposed transversely thereof, the base portion 1 being located at the left of the compartment and the two branch portions 2 and 3 extending across the same toward the right. This transverse arrangement of the burner allows the supply pipe or manifold 6 to be located at the right of the stove, as shown, instead of at the front. In providing for such arrangement of the burner, the branch portion 2 is provided with a lighting extension 2 b disposed forwardly and upwardly in a plane at right-angles to the horizontal plane of the burner and terminating below and slightly to one side of a match opening B 3 formed in the separating partition B 2 at a point near the lower edge of the opening of the upper oven door B 4. In this instance, the lighting extension is made separate from the branch portion 1 and has an elbow portion 8 fitted over the reduced end of the branch portion. Near its upper end, the extension 2 b is formed with a lug 9 which rests upon a fixed abutment 10 and holds the extension in its proper position within the oven. The above described connection of the branch portion 2 and the lighting extension 2 b leaves a gap between the flame ports 4 of these parts, and in order to bridge this gap, the lighting ex-
tension is formed with a depending portion 11 which has some of the flame ports arranged to direct the corresponding flame jets toward the left in a horizontal stream along the under side of the branch portion 2, see particularly Fig. 4.

In Fig. 5, the burner is arranged fore and aft in the upper portion of a broiler oven C. In this embodiment, the branch portion 2 is provided with an integral lighting extension 2 are disposed forwardly and downwardly and terminating at a point near and slightly below the upper edge of the opening of the door C. This burner is practically a duplicate of that illustrated in Figs. 1 and 2 when inverted (being made from the same casting), the only difference being in the location of the flame ports, which are drilled in the opposite side of the burner tube.

The embodiment illustrated in Fig. 6 differs from that of Fig. 5 principally in the form and location of the mixing tube 5, which, as shown, extends downwardly at an inclination to the horizontal plane of the burner tube. As a result of this variation the lighting extension 9 is somewhat shorter than before but still terminates at approximately the same point, as will be obvious from the drawing.

It will be seen that, in each of the embodiments above discussed, the burner may be lighted merely by opening the oven door and applying a match flame to the gas issuing from the lighting extension. In one case, the match being inserted through a special opening formed in the oven partition, and in the other case, it being applied to an exposed portion of the lighting extension. In either case, the lighting extension is readily accessible, even though the rest of the burner is not. Once the gas issuing from the lighting extension is ignited, the flame spreads and the whole burner set ablaze almost instantaneously. Inasmuch as the lighting extension is located at the free end of one of its branch portions, the burner tube is completely filled with gas when ignition takes place, so that the liability to flash back, due to the presence of excess or surplus air in the burner tube, is materially reduced, if not entirely obviated.

On the other hand, if for any reason the attendant should fail to light the burner within a reasonable time after the gas is turned on, the confined gases will be allowed to escape when the oven door is opened and all danger of explosion thus practically eliminated. The attachment of the mixing tube to the base portion of the burner tube is not only useful in connection with the foregoing features, but it also provides for a better and more uniform distribution of the gaseous fuel throughout the burner tube. Moreover, by extending it inwardly between the two branch portions of the burner tube, the mixing tube is rendered capable of containing a considerable volume of fuel and hence functions in the nature of a fuel reservoir, as a result of which the burner is enabled to operate at very low pressures or with a minimum flow of gas without danger of flash back or flame extinguishment. A further feature of the improved arrangement resides in the fact that the burner, whether used with a baking oven or a broiler oven may be made from the same casting, it being merely necessary to drill the flame ports in one side or the other according to its use. These and various other features will be readily understood by those skilled in the art, and it therefore seems unnecessary to discuss the matter further.

The invention is not of course confined to the precise constructions shown and described, nor to any other particular construction by which the same may be carried into effect, as many changes may be made in the details without departing from the main principles of the invention and without sacrificing its chief advantages. It should be understood, therefore, that the invention is not limited to any specific form or embodiment except in so far as such limitations are set forth in the appended claims.

Having thus described my invention, what I claim is:
1. In or for a gas stove, the combination of a substantially U-shaped burner tube, and a mixing tube connected directly to the base portion of said burner tube and communicating therethrough with both of its branch portions, one of said branch portions being provided at its free end with an offset lighting extension.
2. In a gas stove, the combination of an oven provided with a door opening, a burner tube located in said oven and comprising a relatively short base portion and an elongated branch portion, the latter being provided at its free end with a lighting extension terminating near the door opening, and a mixing tube connected directly to the base portion of said burner tube and communicating therethrough with its branch portion.
3. In a gas stove, the combination of an oven provided with a door opening, a burner tube located in said oven and provided at its free end with an offset lighting extension terminating near the door opening and communicating with the burner tube at one point only, and a mixing tube connected to said burner tube at a point remote from its lighting extension.
4. In a gas stove, the combination of an oven provided with a door opening, a substantially U-shaped burner tube located in said oven and provided at the free end of one of its branch portions with a lighting ex-
7. In a gas stove, the combination of an oven provided with a door-opening and having an underlying heating chamber separated therefrom by an intermediate aperture partition, the latter being formed with a match opening located near the lower edge of the oven door, a horizontally arranged substantially U-shaped burner tube located in said heating chamber and provided at the free end of one of its branch portions with an upwardly disposed lighting extension terminating adjacent said match opening, and a mixing tube connected directly to the base portion of said burner tube and communicating therethrough with both of its branch portions.

8. In or for a gas stove, the combination of a burner tube formed with a series of flame ports and provided with a lighting extension offset laterally from the plane of the burner tube and also formed with a series of flame ports in continuation of those of the burner tube proper, and a mixing tube connected to said burner tube at a point remote from its lighting extension.

In testimony whereof, I have affixed my signature hereto.

HENRY W. O'DOWD.