

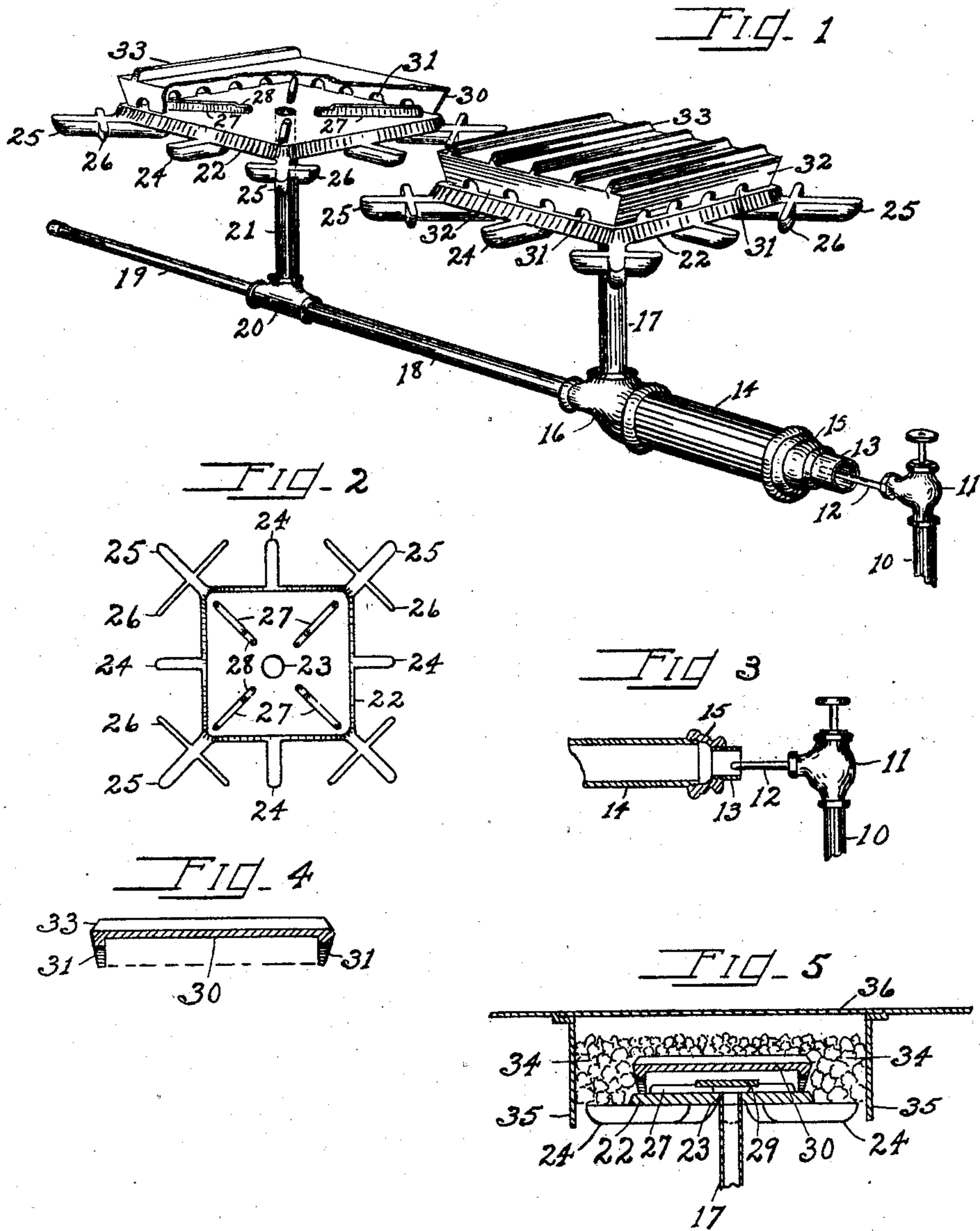
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PATENTED JULY 9, 1907.

C. G. CRONWALL.

GAS BURNER.

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Witnesses

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# UNITED STATES PATENT OFFICE.

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## GAS-BURNER.

No. 859,486.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed April 4, 1907. Serial No. 366,322.

*To all whom it may concern:*

Be it known that I, CARL G. CRONWALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention relates to improvements in that class of gas burners used for cooking purposes in stoves or ranges, and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of the invention is to provide a gas burning apparatus, which shall be simple and inexpensive in construction, strong, durable and effective in operation, and so made that it may be placed in the fire box of a stove or range in such a manner that parts of it will form a support for pieces of fire brick, or other heat retaining material.

A further object of the invention is to produce a gas burning apparatus of such construction that the parts of the same may be readily cleaned of soot and other accumulations, and will not so readily burn out and become useless as is the case with many gas burners now in common use.

A still further object is to provide means for almost the perfect combustion of the gas, so as to create with the least amount thereof the intensest heat.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains, to make and use the same, I will now proceed to describe it, referring to the accompanying drawing, in which—

Figure 1 is a perspective view of a burner embodying my invention, showing one of the deflecting boxes or casings broken away to disclose the construction of its support or grate. Fig. 2 is a plan view of one of the grates or supports for the deflecting boxes or casings. Fig. 3 is a view partly in section and partly in elevation of a portion of the gas supply pipe and mixing chamber. Fig. 4 is a cross-sectional view of one of the deflecting boxes; and Fig. 5 is a sectional view through a portion of the fire box of a stove or range, and illustrating one of the grates and its deflecting box or casing located therein and supporting a quantity or pieces of fire brick or other heat retaining material.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawing.

The reference numeral 10 designates a portion of a supply pipe, which may be suitably supported and has communication with a source of gas supply under pressure (not shown), and which has on its end adjacent to the burner a regulating valve 11, of the ordinary or any preferred construction, from which is extended a

discharging nozzle 12, which projects into an open-ended tube 13, which is secured to another tube 14 of larger diameter by means of a coupling 15, which latter tube is used for the purpose of mixing the air and gas, and will be termed herein, the mixing chamber. The other end of the mixing chamber or tube 14 has thereon a union or coupling 16, from which leads a vertical pipe 17, which is preferably smaller than the tube 14 or mixing chamber. Leading from that end of the coupling 16 opposite the tube 14 is a pipe 18, which is connected to another section of pipe 19 by a coupling or union 20, from which is extended vertically a pipe 21, which, as well as the pipe 17 when both are used, has on its upper end a horizontally disposed grate or support which consists of a flat plate 22, of any desired form, but usually rectangular, as shown. This plate has a central opening 23 in which one of the pipes 17 or 21 may be screwed or fitted at its upper end, as is clearly shown in Figs. 1 and 5 of the drawing. Each of the plates 22, when both are used, is provided on its lower surface with a series of arms 24, which extend horizontally and at right angles to the sides of the plate, and also with a series of arms 25, which extend outwardly and horizontally from the lower portion and corners of the plate 22, and each of said arms 25 carries a cross-member or arm 26, as is clearly shown in Figs. 1 and 2 of the drawing. The arms 24 and 25 are preferably made integral with the plate 22 on the lower surface thereof, and have their inner ends extended to near the central opening 23 in said plate, as is clearly shown in Fig. 5 of the drawing. The upper surface of the plate 22 is provided with a series of ribs 27 radially disposed with respect to the opening 23, and extend outwardly to near the perimeter of the plate. Each of the ribs 27 is formed on the upper part of its inner portion with a recess 28 to receive the edges of a protecting plate 29, which will thereby be held at a suitable distance above the opening 23 in the plate and the upper end of the pipe 17, so as to prevent the same becoming clogged. Mounted on the plate 22 is a deflecting box or casing 30, which is preferably rectangular in shape to correspond with the form of the plate 22, and is of sufficient size at its open bottom to rest on the plate 22 just outside of the outer ends of the ribs 27, which ribs will hold it in position so that it may not be accidentally slid off. The deflector or box 30 has in each of its walls a series of upwardly extending openings 31, spaced apart by legs or portions 32, which will rest on the upper surface of the plate 22, as is apparent. The upper surface of the deflector or box 30 is formed or provided with a series of ribs 33 which will serve to hold the pieces of fire brick 34 or similar material at a distance from the top of the box, and apart, so that the heat and flames of the gas may pass between said pieces.

In Fig. 5 of the drawing, I have shown a portion of the gas burning apparatus located in the fire box of



a stove or range, which fire box may be of the ordinary or any preferred construction, and has thereon a cover 36, and have illustrated the arms 24 and 25 of the grate, as well as the deflector 30, supporting a quantity or  
 5 pieces of fire brick or other heat retaining material, from which view, as well as by reference to Fig. 1, it will be seen and readily understood that as the gas is discharged from the supply pipe 10 through the discharge nozzle 12, and is under considerable pressure,  
 10 it will pass into the mixing chamber 14 and out through the pipe 17 into the deflector 30, from whence it will escape through the openings 31 therein to pass through the crevices between the pieces 34 of fire brick when the same is employed, when it may be ignited to furnish the desired heat. As the gas passes into the mixing chamber 14 from the nozzle 12, it is apparent that  
 15 by reason of the pressure of the gas, air will be drawn through the tube 13 into the chamber 14 and mixed with the gas in said chamber, from whence it will be assisted in its passage through the pipe 17 by reason of  
 20 the draft of the pipe for the stove or range.

In Fig. 1 of the drawing, I have shown the burner as being equipped with two grates and deflectors, and while I prefer to use them arranged in close relation to  
 25 one another, as shown in said figure for the reason they produce an intense heat between them, yet it is evident that I may employ one only of the grates and deflectors without departing from the spirit of the invention. When arranged as shown in Fig. 1, the section of pipe 19 will act as a support at the rear part of  
 30 the stove or range, while the mixing chamber 14 will perform this function at the front wall of the stove or range through which it may be passed.

It is obvious that by constructing a burner according  
 35 to my invention and as above-described, the deflector box may be readily removed and cleaned of soot or other accumulations, and again replaced on the plate 22 for use, and as the walls of the box are provided with the slots or openings 31 and legs or extensions 32  
 40 between the same, the latter will become slightly elongated when the box is thoroughly heated and thus slightly raise the box and at the same time slightly elongate the openings therein. By using the protecting plate 29, which as before stated, rests on the inner  
 45 ends of the ribs 27, it is manifest that the opening 23 in the plate 22 and the pipe 17 will be prevented from

becoming clogged with the pieces 34 of fire brick or other material.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters-Patent, 50 is—

1. In a gas burner, the combination with a mixing chamber, of means to supply gas under pressure and admit air thereto, a pipe or tube communicating at one of its ends with the said chamber and extending upwardly, a  
 55 grate or support mounted on the upper portion of said pipe and consisting of a plate provided with a series of horizontally disposed arms projecting from its edges and having on its upper surface a series of ribs, and a deflector mounted on the plate and having a series of slots in one  
 60 or more of its walls, the lower part of the perimeter of the deflector adapted to rest on the upper surface of the plate between its edges and the outer ends of the ribs on said plate, substantially as described.

2. In a gas burner, the combination with a mixing chamber, of means to supply gas under pressure and admit air thereto, a pipe or tube communicating at one of its ends with the said chamber and extending upwardly, a  
 65 grate or support mounted on the upper portion of said pipe and consisting of a centrally apertured plate provided with a series of horizontally disposed arms projecting from its edges, some of said arms having cross-members, the said plate having on its upper surface a series of ribs  
 70 radially disposed with respect to the aperture in the plate and extending at their outer ends to near its perimeter, and a deflector mounted on the upper surface of the plate and consisting of a box-like casing having a series of openings or slots in each of its walls and provided on its upper  
 75 surface with spaced apart ribs, substantially as described.

3. In a gas burner, the combination with a mixing chamber, of means to supply gas under pressure and admit air thereto, a plurality of upwardly extending pipes having communication with the mixing chamber, a grate or support mounted on the upper portion of each of said  
 80 pipes and consisting of a centrally apertured plate having horizontally disposed arms projecting from its edges, the said plate having on its upper surface a series of ribs disposed radially with respect to the aperture in the plate, the said ribs having recesses in their upper portions at  
 85 their inner ends and extending at their outer ends to near the perimeter of the plate, a protecting plate located on the inner ends of the ribs in the recesses thereof, and a deflector mounted on the plate and consisting of a box-like casing having a series of slots in the lower edge of each of  
 90 its walls and provided on its upper surface with a series of spaced apart ribs, substantially as described. 95

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