Dec. 18, 1928.

1,695,548

E. A. HALL ET AL

GAS BURNER

Filed Jan. 9, 1928

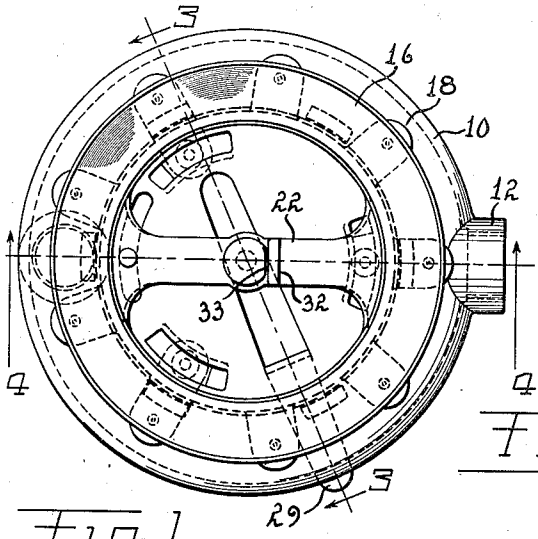


Fig-1

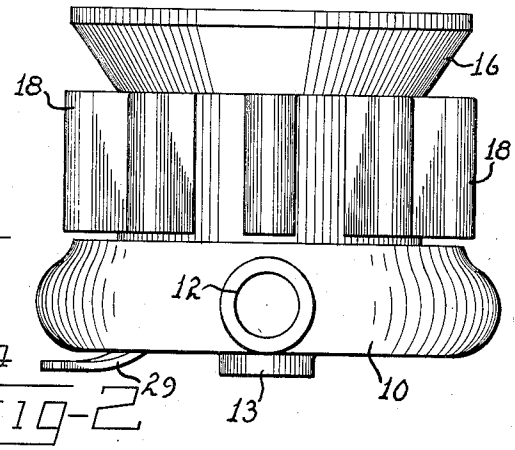


Fig-2

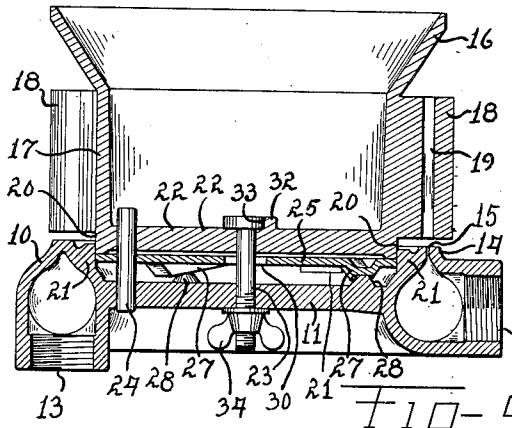


Fig- 4

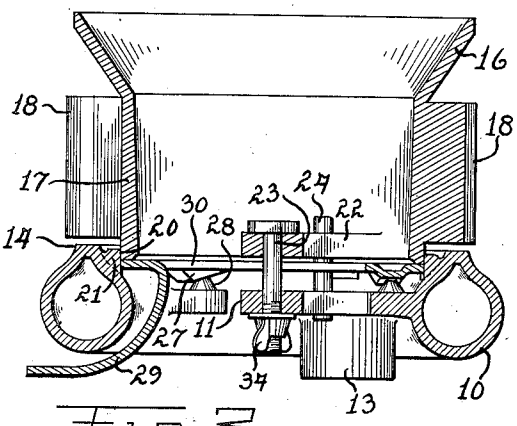


Fig-3

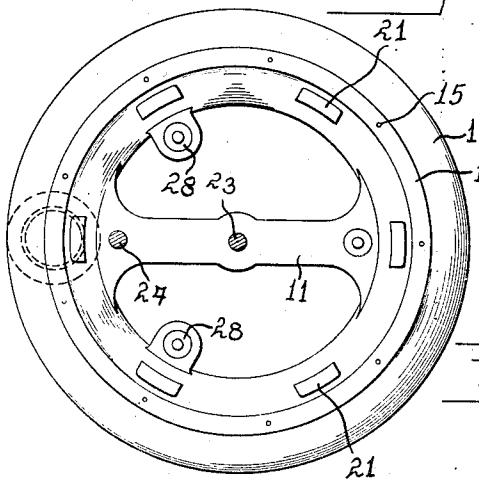


Fig-5

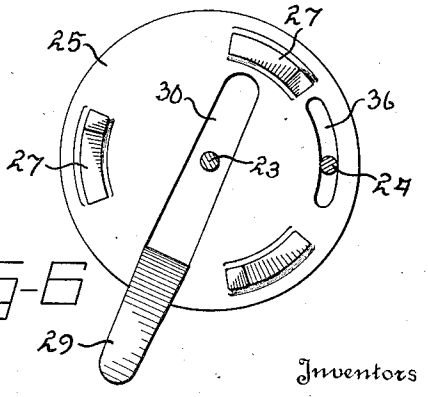


Fig-6

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Patented Dec. 18, 1928. 1,695,548

UNITED STATES PATENT OFFICE.

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GAS BURNER.

Application filed January 9, 1928. Serial No. 245,370.

This invention relates to an improved gas burner which is adapted to be used in connection with a heating plant or in any other location where it is customary to have a round gas burner.

The objects of the invention are to provide a burner of this type which is efficient in its operation, which may be economically manufactured and easily installed, and especially to provide improved means for adjusting the amount of air to be mixed with the gas, as the latter flows from the burner, so as to insure the most perfect combustion.

The specific construction of the invention, and its mode of operation, will be more particularly described in connection with the accompanying drawing, which illustrates one embodiment thereof, and in which—

Figure 1 represents a plan view of the burner assembly.

Fig. 2 represents a side elevation thereof.

Fig. 3 is a vertical section taken substantially on the line 3—3 of Fig. 1.

Fig. 4 is a vertical section taken substantially on the line 4—4 of Fig. 1.

Fig. 5 is a plan view of the burner casting, the connecting studs being shown in section.

Fig. 6 is a bottom plan view of the adjusting cam plate, with the connecting studs shown in section.

As illustrated in the drawing, the burner casting 10 is in the shape of a ring which is cored out to provide for the flow of gas, opposite sides of the ring being connected by a spider or web 11. This casting is preferably provided with two inlets 12 and 13, respectively, disposed on opposite sides thereof and adapted to be connected to a gas supply pipe. The upper side of the ring 10 is extended upwardly to form an annular shoulder or flange 14 through which are bored a plurality of equally spaced outlet holes 15.

Located above the burner casting 10 is a baffle 16, which tapers downwardly, merging into a cylindrical portion 17 formed with wings or enlargements 18 located above the respective holes 15 and having vertical passageways 19 in alinement with these holes. The cylindrical portion 17 of the baffle extends downwardly beyond the enlargements 18, as indicated at 20, and fits within an annular series of lugs or shoulders 21 formed on the inner face of the ring 10. Opposite sides of the extension 20 are connected by a spider or web 22, which is directly above the spider or web 11 of the burner casting 10 and is centrally connected thereto by a stud 23. Rotational movement of the baffle 16 about the central stud 23 is prevented by a guide pin 24, which is secured in the web 11 near one side of the burner casting and extends upwardly through the web 22.

The baffle 16, with the wings 18, is supported in properly spaced relation to the burner ring by means of an adjustable cam plate 25, which fits within the shoulders 21 and rests on the burner casting. The plate 25 is formed near its periphery with downwardly disposed equally spaced cams 27, which may be stamped from the plate. These cams have similar inclined surfaces which are adapted to bear against seats 28 formed on the burner casting 10 inside of the ring. The plate 25 has a handle 29 by means of which it may be partially rotated within the annular series of shoulders 21. This handle may be stamped from the plate 25, as shown in Figure 6, leaving an opening 30 in the plate through which the stud 23 passes.

The various parts of the burner are held in assembled relation by the stud 23. The web 22 is formed with a shoulder 32 against which the flattened side 33 of the stud engages so that it may be positively held against rotation when the wing nut 34 at the lower end of the stud is tightened.

From the foregoing description it will be understood that in order to adjust the baffle upwardly or downwardly it is only necessary to loosen the nut 34 and then by means of the handle 29 to partially rotate the plate 25 to the right or left as the case may be. The inclined surfaces of the cams 27 riding on the seats 28 determine the adjustment of the baffle 16, and regulate the amount of air which will be mixed with the gas at it passes upwardly from the holes 15 through the flues 19. When the proper proportion of air in the fuel mixture is obtained, the baffle may be locked in its properly adjusted relation to the burner casting by tightening the nut 34. In adjusting and securing the parts of the burner in assembled relation, the guide

stud 24 always serves to maintain the flues 19 in proper alinement with the holes 15. The plate 25 is provided with an arcuate slot 36 to permit the relative rotational movement of the plate about the stud 24.

The burner is so constructed that it may be economically manufactured on a commercial scale. It is very easy to assemble and install in connection with a furnace or in any other place where a round burner is used. The operation of adjusting the burner to proper quantity of air in the mixture is very simple and the mixture will always be uniform in all parts of the burner.

While we have shown and described in detail the various parts of the burner as they are at present constructed, it is to be understood that this has been done merely for the purpose of illustrating the principles of the invention and that these details may be considerably modified without departing from the scope of the invention as claimed.

What we claim is:

1. In a gas burner, the combination of a burner casting comprising a hollow ring with outlet holes for discharging gas, a supplemental member having flues in alinement with said holes and spaced therefrom to provide for the mixture of air with the gas, said ring being formed with an annular series of inwardly facing shoulders, said supplemental member having a downward extension fitting within said series of shoulders, and means for adjusting the distance between said supplemental member and said casting to vary the proportion of air in the mixture.

2. In a gas burner, the combination of a burner casting having outlet holes for the gas, a supplemental member having flues in alinement with said holes and spaced therefrom, an adjusting member against which the supplemental member rests, said supplemental member, adjusting member and burner casting having respectively coengaging surfaces, one of which is inclined so as to vary the distance between the outlet holes and the flues, when the adjusting member is moved in the proper direction.

3. In a gas burner, the combination of a burner casting comprising a hollow ring provided with outlet holes for discharging gas and having an annular series of shoulders on the inner face of the ring, a supplemental member having flues in alinement with said holes and spaced therefrom, said supplemental member having a downward extension fitting within said series of shoulders, an adjusting member interposed between the burner casting and said supplemental member, said burner casting, adjusting member and supplemental member having respectively coengaging surfaces, one of which is inclined so as to vary the distance between the outlet holes and the flues, when the adjusting member is moved in the proper direction.

4. In a gas burner, the combination of a burner casting having outlet holes for the gas, a supplemental member having flues in alinement with said holes and spaced therefrom, an intermediate member against which the supplemental member rests, said intermediate member being rotatably adjustable about a central axis and having inclined cam faces arranged about said axis, and seats engageable by said cam faces to vary the distance between the outlet holes and the flues, when said intermediate member is adjusted.

5. In a gas burner, the combination of a burner casting comprising a hollow ring provided with outlet holes for discharging gas and having an annular series of inwardly facing shoulders, a supplemental member disposed above the burner casting and having flues in alinement respectively with said holes and spaced therefrom, an intermediate member against which the supplemental member rests, said intermediate member being confined by said shoulders and being rotatably adjustable about a central axis, cam portions formed on said intermediate member and having inclined faces arranged about said axis, and seats engageable by said cam faces to adjust said supplemental member for varying the distance between the outlet holes and the flues, when said intermediate member is adjusted about its axis.

6. In a gas burner, the combination of a burner casting having outlet holes for the gas, a baffle having a downwardly tapered conical portion disposed above the burner casting, with a central depending portion formed with a series of flues in alinement with said outlet holes and spaced from both the burner casting and said conical portion, and means for simultaneously adjusting all parts of the baffle and the flues vertically and equally with respect to the burner casting.

7. In a gas burner, the combination of a burner casting comprising a hollow ring having outlet holes for discharging gas, and formed with an annular series of inwardly facing shoulders, a baffle having a downwardly tapered conical portion above said hollow ring, with a central depending portion formed with a series of flues in alinement with said outlet holes and spaced from both the burner casting and said conical portion, said depending portion having a downward extension which fits within said series of shoulders, and means for adjusting the baffle vertically with respect to the burner casting.

8. In a gas burner, the combination of a burner casting having outlet holes for the gas, a baffle having a downwardly tapered conical portion above the burner casting, with a central depending portion formed with a series of flues in alinement with said outlet holes and spaced from both the burner casting and said conical portion, an adjusting member interposed between the burner cast-

ing and the depending portion of the baffle, said depending portion, adjusting member and burner casting having respectively coengaging surfaces, one of which is inclined so as to vary the distance between the outlet holes and the flues, when the adjusting member is moved in the proper direction.

9. In a gas burner, the combination of a burner casting comprising a hollow ring provided with outlet holes for discharging gas and formed with an annular series of inwardly facing shoulders, a baffle having a downwardly tapered conical portion above said hollow ring and a central depending portion formed with a series of flues in alinement with said outlet holes and spaced from both the hollow ring and the conical portion of the baffle, said depending portion having a downward extension fitting within said series of shoulders, an adjusting member interposed between said downward extension and the burner casting, said burner casting, adjusting member and downward extension having respective coengaging surfaces, one of which is inclined so as to vary the distance between the outlet holes and the flues, when the adjusting member is moved in the proper direction.

10. In a gas burner, the combination of a burner casting having outlet holes for the gas, a baffle having a downwardly tapered conical portion disposed above the burner casting and having a central depending portion formed with a series of flues in alinement with said outlet holes and spaced from both the burner casting and said conical portion, an intermediate member against which the depending portion of the baffle rests, said intermediate member being rotatably adjustable about a vertical axis and having inclined cam faces arranged about said axis, and seats engageable by said cam faces to vary the distance between the outlet holes and the flues when said intermediate member is adjusted.

11. In a gas burner, the combination of a burner casting comprising a hollow ring provided with outlet holes for discharging gas and formed with an annular series of inwardly facing shoulders, a baffle having a downwardly tapered conical portion above said hollow ring and having a central depending portion formed with a series of flues in alinement with said outlet holes and spaced from both the hollow ring and said conical portion, said depending portion having a downward extension fitting within said series of shoulders, an intermediate member against which said downward extension rests, said intermediate member being adjustable about a vertical axis and having inclined cam faces arranged about said axis, and seats engageable by said cam faces for adjusting the baffle vertically with respect to the burner casting to vary the distance between the outlet holes and the flues.

12. In a gas burner, the combination of a burner casting comprising a hollow ring with outlet holes for discharging gas, a supplemental member having flues in alinement with said holes and spaced therefrom to provide for mixing air with the gas which is discharged, a web connecting opposite sides of said ring, a central stud extending through said web and said supplemental member, means for adjusting the distance between the supplemental member and the burner casting to vary the proportion of air in the mixture, and means associated with said stud to lock the several parts in their adjusted position.

In testimony whereof, we have hereunto signed our names to this specification.

ERNEST A. HALL.
GORDON E. BURNS.