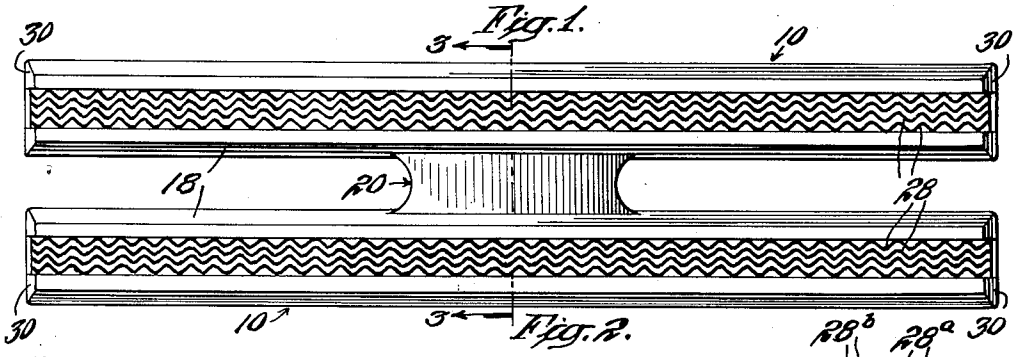
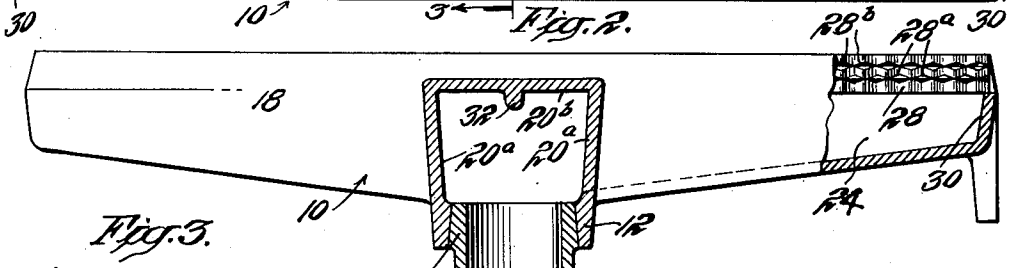
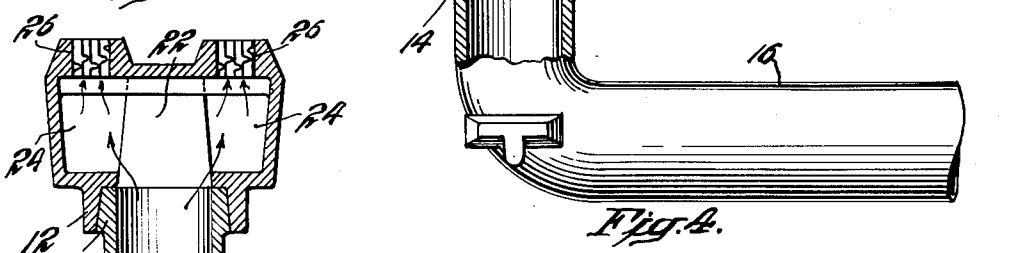
June 27, 1950 W. M. SIMPSON 2,512,752

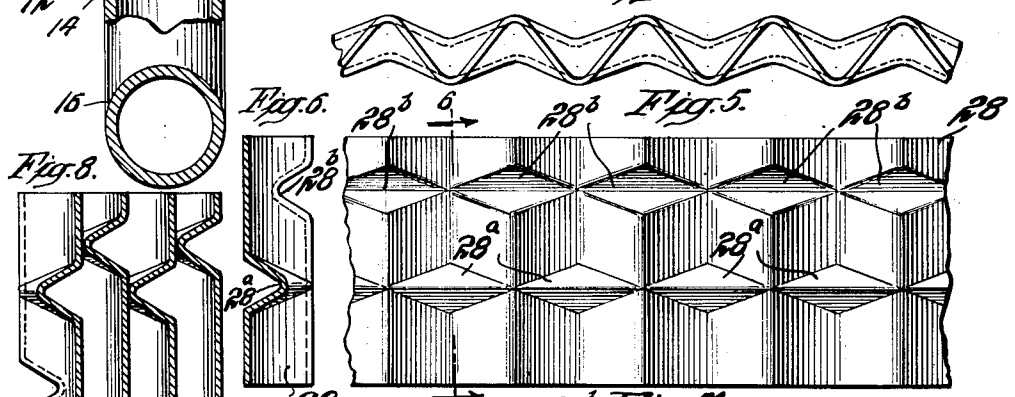
RIBBON BURNER

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RIBBON BURNER

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6 Claims. (Cl. 158—116)

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My invention relates to gas burners and particularly to an improvement in what is known as ribbon burners.

Ribbon burners are designed primarily to prevent backfiring and explosions, and to insure substantially uniform combustion across the burner head. This type of burner heretofore has been more or less complicated in that the individual ribbons that make up a set for a particular type of burner have necessarily been of different shapes and sizes. Also, it has been necessary to provide complicated supporting and securing means for holding the ribbons in place in the burner head.

I have invented a ribbon for use in the ribbon type burner of such construction that the ribbon may easily be made on continuous rollers and cut to any length as is needed for a particular type or shape of burner head. In accordance with my invention, each of the individual ribbons that make up a set or assembly for a particular burner is of the same shape and size, thereby greatly facilitating the assembly of the burner. The shape and construction of the individual ribbons is such that they may be assembled in any shape burner, and when so assembled, they cannot buckle out of place. Further, the construction of my improved ribbon is such that the assembled ribbons are always held in the desired spaced relation in the burner head so as to insure proper flow of the air-gas mixture through the burner and substantially complete combustion of the mixture.

The above and other objects and advantages of the invention are attained as set forth in the detailed specification taken with the accompanying drawing, in which:

Fig. 1 is a top plan view of a burner head incorporating my invention;

Fig. 2 is a side elevational view, partly in section, of the burner illustrated in Fig. 1;

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is an enlarged top plan view of a part of a burner ribbon incorporating my invention;

Fig. 5 is an enlarged front elevational view of the ribbon illustrated in Fig. 4;

Fig. 6 is a vertical sectional view, taken on line 6—6 of Fig. 5;

Fig. 7 is a top plan view showing portions of four burner ribbons assembled;

Fig. 8 is a vertical sectional view taken on line 8—8 of Fig. 7; and

Fig. 9 is a vertical sectional view taken on line 9—9 of Fig. 7.

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In Figs. 1–3 of the drawings, the numeral 10 designates a burner head. This burner head is provided with a collar 12 which snugly fits over an upstanding tapered neck 14 formed on a conventional mixing tube 16, whereby the burner head is removably supported on the mixing tube. Burner head 10 comprises a casting formed with two longitudinal branches 18 connected by an integral bridge member 20. Bridge member 20 is formed of two transverse walls 20a and a top wall 20b which form a transverse passage 22. Each of the branches 18 is formed with a longitudinal passage 24 which communicates midway its length with the transverse passage 22. As shown in Figs. 2 and 3, transverse passage 22 is in open communication with the upstanding neck 14 of mixing tube 16, the arrangement being such that a combustible air-gas mixture passes upwardly through mixing tube 16 into transverse passage 22 and from there into longitudinal passages 24. The upper surface of each of the branches 18 is flat and is machined to form a longitudinal slot 26 which is in open communication with the longitudinal passageway 24 of each of these branches.

In order to properly distribute the air-gas mixture throughout the length and breadth of the slots 26, and in order to prevent flash-back of the burning air-gas mixture through the flash tube and to hold the flame of burning air-gas mixture on the burner head, I provide each of the slots 26 with a plurality of grooved or corrugated strips or ribbons 28, to be described in more detail hereinafter. For purposes of illustration, I have shown four such ribbons in each of the slots. These ribbons are supported at their ends by the transverse end portions 30 of branches 18 and at their middle by a bridge member 32. The ribbons may be welded or otherwise secured at their ends and mid-portions, or they may be arranged to float lengthwise in the slots. However, because of their corrugated construction, the ribbons are free to expand and contract without buckling; therefore, I prefer to secure the ribbons in the slots.

The ribbons 28 are made of thin heat-resistant metal, and as shown particularly in Figs. 5 and 6, are formed with vertical corrugations provided with two rows of vertically-spaced staggered diamond-shaped indentations 28a and 28b formed on opposite sides of each ribbon. The arrangement is such that an indentation on one side of a ribbon forms a projection on the other side thereof. The indentations are formed so that, viewing the ribbon from either side, each

corrugation has at least one indentation in its crest and at least one projection in its valley. As viewed from the left in Fig. 6, indentations 28*a* project inwardly and upwardly from the crests of the corrugations to the valleys thereof and then these indentations project outwardly and upwardly from the valleys to the crests of the corrugations. Indentations 28*b*, on the other hand, produce projections on the left side of the ribbon which project outwardly and upwardly from the valleys to the crests of the corrugations and then upwardly and inwardly from the crests to the valleys. In Fig. 5 the heavy vertical lines represent the break lines in the corrugations, the diagonal lines represent the boundaries of the diamond-shaped indentations and projections, and the central horizontal lines between the diagonal lines represent the break lines in the indentations and projections.

The number and depth of the corrugations, and of the indentations and projections are made to suit the requirements of the burner in which the ribbons are to be used. However, by forming the corrugations with a plurality of rows of staggered indentations, with at least one row of indentations formed on opposite sides of each ribbon, and with one row of indentations located closer to one longitudinal edge of the ribbon than another row of indentations is located relative to the opposite longitudinal edge of the ribbon, the ribbons may be cut to the desired length to fit a particular type of burner and may be assembled by merely turning alternate ribbons upside down. In this manner, the ribbons are held in spaced relation to form jets for the air-gas mixture, and the corrugations together with the indentations and projections provide circuitous paths of flow for the air-gas mixture from the bottom to top of the assembled ribbons as viewed in Figs. 3, 8 and 9.

The ribbons are formed by passing a strip of heat-resistant metal of a proper thickness and width through a pair of rollers provided with corrugating and indenting surfaces. Then the strip is cut to the proper length for a particular type burner. Because of the arrangement and spacing of the corrugations and of the indentations and projections, the ribbons may be cut to any desired length to fit a particular type burner, whether the burner head be square, rectangular, round or otherwise, and the individual ribbons that make up a set for a particular type burner are each substantially identical, thereby obviating the need of a plurality of types of ribbon for a particular type of burner.

Various modifications and changes may be made within the scope of the invention which is not limited except as indicated in the following claims.

What is claimed is:

1. A gas burner including a burner head having an opening therein, a plurality of substantially identical ribbons arranged in said opening, each ribbon being formed with a plurality of transverse corrugations, each of said corrugations being provided with indentations forming projections on the opposite side of the ribbon which substantially span the valleys of said corrugations, the projections of one ribbon being adapted to abut against the crests of the corrugations of the next ribbon for keeping the ribbons properly spaced and for blocking straight line flow of fuel gas through said ribbons.

2. A gas burner including a burner head having an opening therein, a plurality of ribbons arranged in said opening, each ribbon being formed of corrugated sheet metal having spaced projections formed within the boundaries of the corrugations, the projections of one ribbon being adapted to hold an adjacent ribbon in spaced relation and provide circuitous paths of flow of fuel gas through said ribbons.

3. A gas burner as recited in claim 1 wherein the projections on one side of each of the ribbons are arranged in staggered relation to the projections on the opposite side thereof.

4. A gas burner as recited in claim 3 wherein the projections are arranged in rows that extend longitudinally of each of the ribbons.

5. A gas burner as recited in claim 4 wherein a row of projections on one side of each of the ribbons is located a greater distance from one longitudinal edge of the ribbon than a second row of projections on the opposite side of the ribbon is located relative to the opposite longitudinal edge of the ribbon.

6. A gas burner as recited in claim 5 wherein the plurality of ribbons is arranged in the burner opening in a manner that the rows of projections on one ribbon are located different distances from the longitudinal edges of said one ribbon than the rows of projections of an adjacent ribbon are located relative to its corresponding longitudinal edges.

WALTER M. SIMPSON.

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