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(54) Titre : BRULEUR A DOUBLE VENTURI
(54) Title: DOUBLE VENTURI BURNER

(57) Abrégé/Abstract:
In various implementations, a burner may include two venturi inlets coupled to one or more burner heads. The venturi inlets may be opposingly disposed. During use, fuel may be provided to the burner via the two venturi inlets and at least partially combusted proximate the burner heads.
ABSTRACT

In various implementations, a burner may include two venturi inlets coupled to one or more burner heads. The venturi inlets may be opposingly disposed. During use, fuel may be provided to the burner via the two venturi inlets and at least partially combusted proximate the burner heads.
DOUBLE VENTURI BURNER

TECHNICAL FIELD

The present disclosure relates to a burner with a double inlet.

BACKGROUND

Burners generally include a single inlet coupled to a single burner head proximate an outlet. For example, a flammable fluid, as natural gas may be fed into the inlet of the burner and combusted proximate the burner head.

SUMMARY

In various implementations, a burner may include a double inlet, such as two venturi inlets. Fuel may be supplied to the burner via two opposing inlets. The fuel may mix with air in the burner and at least partially combust proximate the burner heads.

In various implementations, a burner may include a body, a plurality of burner heads coupled to the body, and two venturi inlets coupled to the body. The body may include a first arm and a second arm. The venturi inlets may include a first venturi inlet coupled to the first arm of the body and a second venturi inlet coupled to the second arm of the body. The first venturi inlet and the second venturi inlet may be opposingly disposed.

Implementations may include one or more of the following features. The first arm may be disposed proximate a first end of the body, and the second arm may be disposed proximate a second end of the body. The body may include a first mixing length and a second mixing length. The first mixing length may include the distance between a first end of the first arm and a second end of the first arm. The second mixing length may include the distance between a first end of the second arm and a second end of the second arm. The first venturi inlet may be coupled proximate a first end of the first arm, and the second venturi inlet may be coupled proximate a second end of the second arm. The plurality of burner heads may include a first burner head and a second burner head. The first burner head may have a first height and the second burner head may have a
second height. The second height may be greater than the first height, in some implementations. The plurality of burner heads may include at least two burner heads comprising approximately similar heights. The two venturi inlets may be adapted such that a fuel stream from a fuel inlet may be provided to the two venturi inlets. The velocity of the fuel stream may generate a primary air stream from the air proximate the two venturi inlets, and the primary air stream may be provided to the two venturi inlets.

In various implementations, an assembly may include a burner. The burner may include two venturi inlets adapted to receive a fuel stream and a primary air stream. The burner may include a body and one or more burner heads.

Implementations may include one or more of the following features. The assembly may include a fuel inlet. The fuel inlet may provide the fuel stream to the two venturi inlets of the burner. The fuel inlet may include at least one outlet proximate each venturi inlet of the burner. Each outlet of the fuel inlet may be adapted to provide at least a portion of the fuel stream to the venturi inlet of the burner proximate each outlet. In some implementations, each outlet of the fuel inlet may include an outlet cross-sectional area that is less than an inlet cross-sectional area of a proximate venturi inlet. The burner may include more than one burner head. At least two of the burner heads may have similar heights. In some implementations, at least two of the burner heads may have at least two different heights.

In various implementations, generating heat may include allowing at least a portion of a fuel stream to flow from at least one outlet of a fuel inlet to two venturi inlets of a burner. The two venturi inlets may be opposingly disposed. A primary air stream may be allowed to flow at least partially into the two venturi inlets of the burner. At least a portion of the primary air stream and at least a portion of the fuel stream may be allowed to mix in a body of the burner. The mixed stream, which may include at least a portion of the primary air stream and at least a portion of the fuel stream, may be allowed to flow to the burner heads of the burner. Combustion of the mixed stream proximate the burner heads of the burner may be allowed.

Implementations may include one or more of the following features. A secondary air stream from the air proximate the burner heads may be allowed to mix with the mixed
stream proximate the burner heads. The primary air stream may have a greater flow rate than the secondary air stream. The velocity of the fuel stream from at least one of the outlets of the fuel inlet may increase the velocity of the primary air stream into the two venturi inlets. Allowing at least a portion of the primary air stream and at least a portion of the fuel stream to mix may include allowing at least a portion of the primary air stream and at least a portion of the fuel stream to mix along a mixing length of a body of the burner. Allowing combustion of the mixed stream may include generating a flame proximate each burner head of a burner. Allowing combustion of the mixed stream may include allowing at least partial combustion of the fuel of the fuel stream.

The details of one or more implementations are set forth in the accompanying drawings and the description below. Other features, objects, and advantages of the implementations will be apparent from the description and drawings.

**BRIEF DESCRIPTION OF THE DRAWINGS**

For a more complete understanding of this disclosure and its features, reference is now made to the following description, taken in conjunction with the accompanying drawings, in which:

Figure 1A illustrates an implementation of an example burner.

Figure 1B illustrates an implementation of an example burner during use.

Figure 2 illustrates an implementation of an example process for providing heat using a double venturi burner.

Figure 3 illustrates an implementation of an example process for providing heat using a double venturi burner.

Like reference symbols in the various drawings indicate like elements.
DETAILED DESCRIPTION

Burners may allow combustion of fuel in the presence of air. Fuel may include flammable fluids, such as natural gas, heating oil, and/or propane. A burner may be utilized to provide heat, for example, in heat exchangers, such as furnaces; boilers; and/or other applications.

In various implementations, a burner with two venturi inlets may be utilized. The burner may allow the flame profile of the flames generated by the burner to be controlled. For example, better mixing (e.g., more uniform) of air and fuel (e.g., when compared with a single inlet) may be allowed with a double inlet since air may contact more external surface area of the gas stream than when a similar amount of fuel is provided through a single inlet. In some implementations, a smaller footprint burner may be utilized with a double inlet since a comparable inlet to provide the same amount of gas and air to an inlet may utilize a larger single inlet. A smaller footprint may decrease costs and/or increase user satisfaction (e.g., by allowing smaller footprint applications, such as furnaces).

Figure 1A illustrates an implementation of an example double venturi inlet burner 100. The burner 100 may include a body 105 coupled to two inlets 110, 115, such as venturi inlets. The body may include a heat resistant material (e.g., metal and/or other heat resistant materials in the operating range of the burner). The burner may have dimensions, such as length, width, and height, which may allow coupling and/or disposition of the burner proximate a user (e.g., openings in a heat exchanger through which heat may be provided to the heat exchanger). The burner may have any appropriate regular and/or irregular shape.

The body 105 of the burner 100 may include two arms, a first arm 120 and a second arm 125. The first arm 120 may be coupled proximate a first end 130 of the body 105 and/or the second arm 125 may be coupled proximate a second end 135 of the body. The arms 120, 125 may be elongated members of the body 105.

The first arm 120 may be coupled at a first end 140 to the burner region 145 of the body 105 and coupled at a second end 150 to the first venturi inlet 110. The second arm 125
may be coupled at a first end 155 to the burner region 145 of the body 105 and coupled at a second end 160 to the second venturi inlet 115.

The arms may have a length and a cross-sectional area. For example, the first arm 120 may have a length, which includes the sum of the first length 121 and the second length 122. As illustrated, second arm 120 may have a length, which includes the sum of the third length 126 and the fourth length 127. The cross-sectional area of the arm may be less than a cross-sectional area of the inlet of the venturi inlets 110, 115. The cross-sectional area and/or shape of an arm proximate a second end may be approximately similar to the cross-sectional area and/or shape of the outlet of the venturi inlets. The arms 120, 125 may have any appropriate regular and/or irregular shape.

The body 105 may include a burner region 145. The burner region may be disposed between a first end 140 of the first arm 120 and the first end 155 of the second arm 125. The burner region 145 may include one or more burner heads. As illustrated, the burner region 145 includes a plurality of burner heads. The burner heads 170 may include one or more characteristics, such as width 175, a length (not shown), a distance 180 between burner heads (e.g., a perpendicular distance between an outer surface of a first burner head and an adjacent outer surface of an adjacent burner head), and/or a height 185 (e.g., a distance above the outer surface of the body that a burner head resides). One or more of the characteristics may affect the flame profile (e.g., temperature, size, and/or height of flame(s)) generated by burner head(s) (e.g., since the characteristic(s) may affect a fuel/air ratio and/or the clearance(s) between burner head(s) and a device, such as a heat exchanger).

In some implementations, the burner heads 170 may be coupled to the body at a height 185 that is fixed. The burner head(s) 170 may be welded or otherwise affixed to the body at a height 185, in some implementations. In some implementations, the burner heads 170 may include a coupling member and the body may include a coupling member adapted to engage with the coupling member of the burner head 170. For example, at least a portion of an outer surface of a burner head may include threads and at least a portion of an inner surface of an opening in the body may include threads adapted to receive the threads of the burner head. In some implementations, at least a portion of the inner surface of the burner head may include threads adapted to engage
with threads on at least a portion of the body. Coupling the burner head and the body of the multi-burner head assembly may allow the burner head to be disposed at a fixed predetermined height.

The burner heads may be any appropriate burner head. For example, the burner heads 170 may include openings formed in the body. The burner heads may include cylindrical protrusions extending from the body of the burner. The burner heads maybe approximately uniform in size and/or shape. In some implementations, more than one characteristic (e.g., height, width, length, clearance, and/or distance between burner heads) of two or more burner heads may be similar or different. For example, the burners may include adjustable height burner heads. In some implementations, the burner may include one or more burner heads at a similar height, such as first burner 171 and second burner 172. The burner may include one or more burner heads at different heights, such as first burner 171 and third burner 173. As illustrated, a third burner 173 may have a height greater than a height of a first burner 171 and/or a second burner 172. Other burner heads may be utilized, as appropriate. U.S. Patent Application No. 14/079,826 entitled "Multi-Burner Head Assembly", filed on November 14, 2013 (Attorney File No. P130022/1655.1700) describes various burner heads that may be utilized with the double venturi inlet burner.

In various implementations, the inlets of the burner may include a first venturi inlet 110 and a second venturi inlet 115. The venturi inlets 110, 115 and the body 105 may be coupled (e.g., fastened, affixed and/or welded). For example, the first venturi inlet 110 and the second venturi inlet 115 may be may be welded to the body 105 (e.g., the first venturi inlet 110 may be welded proximate the second end 150 of the first arm 110 and/or the second venturi inlet may be welded proximate the second end 160 of the second arm 115).

As illustrated, the first venturi inlet 110 and the second venturi inlet 115 may be disposed opposingly. The two venturi inlets 110, 115 may be opposing such that a single fuel inlet 190 may provide the fuel to both of the venturi inlets. For example, the fuel inlet 190 may include at least two outlets, a first outlet 191 and a second outlet 192. The first outlet 191 may supply fuel to the first venturi inlet 110 and the second outlet 192 may supply fuel to the second venturi inlet 115. The outlets 191, 192 of the fuel inlet 190 may have
a cross-sectional area that is smaller than the cross-sectional area of the inlet of the venturi inlets 110, 115. Thus, fuel loss to the air surrounding the burner may be minimized.

The venturi inlets 110, 115 may have a size that includes a cross-sectional area and a length. The shape of the cross-section may be any appropriate shape. In some implementations, the size and/or shape of the venturi inlet 110, 115 may be based at least partially on the use of the burner 100.

The venturi inlets 110, 115 may be utilized to provide fuel (e.g., natural gas) and/or air to the burner heads of the burner. The first venturi inlet 110 and the second venturi inlet 115 may provide fuel and/or air to a plurality of burner heads. A burner may include more burner heads than venturi inlets, in some implementations. Thus, as illustrated, each venturi inlet (e.g., independently or in combination with another venturi inlet) provides fuel and/or air to more than one burner head.

The body 105 of the burner may have a first mixing length and a second mixing length. The first mixing length may be the distance the fuel entering the first venturi inlet may travel prior to combustion proximate a burner head of the burner. The second mixing length may be the distance the fuel entering the second venturi inlet may travel prior to combustion proximate a burner head. The first mixing length may be similar and/or different from the second mixing length. As illustrated, the first mixing length may include the length of the first arm (e.g., sum of 121 and 122) and the second mixing length may include the length of the second arm (e.g., sum of 126 and 127). The first mixing length and/or the second mixing length may be selected based on mixing length models.

In some implementations, the body 105 of the burner may have a configuration such that a cavity resides between the venturi inlets 110, 115 and the burner region 145 of the body. The cavity may supply air to the venturi inlets (e.g., for mixing with the fuel for combustion). The size of the cavity may affect the amount of air (e.g., primary air stream) that is allowed to flow into the venturi inlets 110, 115, in some implementations.
Although Figure 1A illustrates an implementation of a burner 100 and its components, other implementations may be utilized as appropriate. For example, the burner heads may include openings in the body through which fuel is provided. The arms may radiate from the body in a curved path. The burner may include one burner head. The burner may be a multi-burner head assembly, similar to the multi-burner head assembly described in U.S. Patent Application No. 14/079,826 and include two opposing venturi inlets rather than a single venturi inlet. The burner heads may be uniform in size and/or shape. In some implementations, two or more fuel inlets may be utilized. In some implementations, the burner may not include a manifold. Utilizing a burner without a manifold may reduce costs associated with manufacture of the burner. In some implementations, high deep drawing parts may not be utilized with the burner. By utilizing one or more parts other than high deep drawing parts, costs may be reduced. In some implementations, the venturi inlet(s) may be formed with the body (e.g., a unibody construction).

The burner 100 may be utilized in a variety of applications, such as furnaces and/or boilers. Figure 1B illustrates an implementation of a portion 101 of a furnace assembly that includes the burner 100, illustrated in Figure 1A, during use. As illustrated, the burner 100 generates flames 195 proximate the burner heads 170 of the burner. The burner may be designed such that flames may be inhibited from entering the burner head or otherwise causing flashback. For example, the burner head size and/or shape, burner mixing length, and/or inclusion of a flame arrestor may inhibit flames 195 from entering the burner. The flames 195 generate heat. The heat may be provided to an assembly, such as a heat exchanger 197. The heat exchanger 197 may be a tube and shell heat exchanger, in some implementations, in which the heat from the flames raises the temperature of air, water, and/or refrigerant passing through the heat exchanger. The heat exchanger 197 may include openings 198. The burner may be disposed proximate the heat exchanger 197 such that the openings 198 are at least partially aligned with the burner heads 170, and thus the flames proximate the burner heads. The burner head configuration (e.g., size, distance between burners, and/or shape) may be selected to minimize misalignment, and thus, heat loss, between the burner 100 and the heat exchanger 197. A clearance 199 may exist between the heat exchanger (e.g., an outer surface of the heat exchanger) and the burner (e.g., top surface 106 of the body 105, top surface 171 of a burner head 170).
Although a heat exchanger in a furnace has been described in Figure 1B, the burner may be utilized in other applications, such as other types of boilers. A clearance may exist between an opening of the device of the application, such as a boiler, and a burner head. In addition, although a specific burner has been illustrated in Figure 1B, other burners with two venturi inlets may be utilized.

During use, fuel (e.g., natural gas) may be provided to the burner via fuel inlet. The fuel may mix with a primary air stream (e.g., air proximate the venturi inlets) along a mixing length of the body. The mixed stream (e.g., fuel and air) may be provided to the burner head and at least partially combusted proximate the burner heads. The flame generated by the combustion may be inhibited from entering the burner head and/or body of the burner (e.g., by the velocity of the mixed stream, the burner head characteristics, the mixing length, and/or inclusion of a flame arrestor). The mixed stream may mix with an additional secondary air stream (e.g., air proximate the burner heads, exterior to the body) to further promote combustion.

Figure 2 illustrates an implementation of an example process 200 for use of a burner. A fuel stream may be provided to two venturi inlets of a burner (operation 210). For example, a fuel stream may be released at a first velocity from a fuel inlet proximate the venturi inlet(s). In some implementations, the velocity of the fuel stream may direct the fuel stream leaving the outlet(s) of the fuel inlet(s) towards the inlet(s) of the venturi inlet(s). The gas may be natural gas, in some implementations.

The fuel stream may be allowed to mix with air in the body of the burner (operation 220). An air stream may be provided to the body. The air stream may mix with the fuel stream in the body (e.g., in the arms, in the burner region, and/or other parts of the body). The properties (e.g., ratio of air/fuel, homogeneity of the mixture, and/or velocity) of the mixed stream may be at least partially based on the mixing length. For example, if the mixing length of the body is too short, portions of the mixed stream may contain less air than other potions.

At least a portion of the fuel stream proximate the burner head(s) may be allowed to combust (operation 230). For example, a flame from the combustion of the fuel in the
presence of air may be generated proximate the burner head. The flame may reside between the burner head the openings in a heat exchanger, in some implementations (e.g., in the clearance).

Process 200 may be implemented by various systems, such as system 100. In addition, various operations may be added, deleted, and/or modified. For example, a secondary air stream may be provided. The secondary air stream may be proximate the burner heads and/or may assist in the combustion of the fuel. The ratio of fuel/air may affect the flame produced by a burner during combustion. The flame profile (e.g., the properties of the flame, such as temperature and/or size) may be determined based on characteristics of the burner head(s), in some implementations. For example, since air is mixed with fuel at the burner head (e.g., secondary air stream), the fuel/air ratio and/or the amount of secondary air stream that is allowed to mix with the fuel may be affected by characteristics of the burner head such as clearance, height, length, shape, and/or width. For example, a slit or rectangular shaped (e.g., cross-sectional shape) burner head may allow a greater amount of air to be mixed with the fuel at the burner head than a circular shaped (e.g., cross-sectional shape) burner head. A burner head with a first height may mix with less air than a second burner head with a second height that is less than the first height. In some implementations, the distance between burner heads may affect the flame profile since when there is less spacing between burner heads less air may be allowed to mix with fuel at a burner head.

In some implementations, the flame produced by each burner head of each burner may receive different amounts of air proximate the burner heads, which may affect the temperature, size, and/or shape of the flames produced. Thus, some flames may be the result of fuel/air ratios that are too high or too low. This may cause performance issues (e.g., incomplete burn and/or increased operation costs) and/or increase the risk for flashback. By managing the fuel/air ratio (e.g., by managing the primary air stream, secondary air stream, mixing length, burner head properties, etc.), flashback may be minimized. For example, incomplete burn issues and/or partial combustion may be minimized by using the double venturi inlet burner since the amount of primary air stream supplied to the fuel stream may be increased (e.g., when compared with a single venturi burner design).
Figure 3 illustrates an implementation of an example process 300 for using a burner. At least a portion of a fuel stream may be allowed to flow into two venturi inlets of a burner (operation 310). For example, a fuel inlet may include two outlets. Fuel may flow from an outlet of the fuel inlet to a venturi inlet such that at least a portion of the fuel from the fuel inlet may be provided to the burner for combustion.

A primary air stream may be allowed to flow into the two venturi inlets (operation 320). For example, the velocity of the fuel stream may draw air into the venturi inlets. The velocity of the primary air stream may be increased by the velocity of the fuel stream, in some implementations. As illustrated in Figures 1A-1B, the primary air stream may include air drawn from the area proximate a venturi inlet. The amount of air allowed to flow into the venturi inlets may be based on characteristics of the venturi inlet (e.g., shape, size, and/or coatings on the venturi inlet). In some implementations, a cross-section of a flow profile of fluid entering the venturi inlet may resemble an inner fuel stream at least partially surrounded by an annular ring of the air stream.

At least a portion of the primary air stream and at least a portion of the fuel stream may be allowed to mix (operation 330). Mixing may occur between the streams. For example, the fuel and the air may mix in along the boundaries between the two fluids. The fuel and air streams may mix along a length of the body (e.g., mixing length). The mixed stream (e.g., stream including a mix of fuel and air) may continue to mix along a length of the body until the fuel is combusted.

The mixed stream may be allowed to flow to the burner heads of the burner (operation 340). For example, the mixed stream may flow from the arms of the body into a burner region. From the burner region the mixed stream may flow out of the openings of the burner heads.

At least partial combustion of the mixed stream may be allowed proximate the burner heads (operation 350). For example, a flame may be generated proximate a burner head (e.g., an outer top surface of the burner head). The fuel in the mixed stream may be partially or fully combusted.
Process 300 may be implemented by various systems, such as systems 100, 101. In addition, various operations may be added, deleted, and/or modified. In some implementations, process 300 may be performed in combination with other processes such as process 200. For example, a burner with a single burner head may be utilized. In some implementations, the velocity of the fuel stream may generate the primary air stream. For example, the velocity of the fuel stream may create a velocity in the primary air stream and in a similar direction as the velocity of the fuel stream. In some implementations, the primary air stream may have a greater flow rate than the secondary air stream.

In some implementations, a secondary air stream may be allowed to mix with the mixed stream proximate the burner heads. For example, the secondary air stream may include air proximate the burner heads and as the mixed stream exits the burner head and/or the fuel in the mixed stream is combusted, the secondary air stream may mix with the mixed stream. As illustrated in Figures 1A-1B, the secondary air stream may include air drawn from the area proximate one or more of the burner heads. The secondary air stream may decrease the amount incomplete combustion. The amount of secondary air stream allowed to mix may be based at least partially on burner height, clearance, and/or distances between burners.

In some implementations, the amount of primary air stream may be increased and/or the amount of primary air stream allowed to mix with the fuel stream may be increased (e.g., when compared with a single venturi inlet burner that is able to process a similar flow rate of fuel). For example, since a larger exterior surface area of the fuel stream may be in contact with the primary air stream when using two venturi inlets (e.g., as opposed to a single larger venturi inlet that may be able to process a similar fuel flow rate), mixing may be improved. In some implementations, a greater total amount of primary air stream (e.g., when compared with a single venturi inlet designed to accommodate a similar fuel flow rate) may be allowed to enter the first and second venturi inlets, which may improve combustion.

In some implementations, utilizing the double venturi inlet burner may improve combustion (e.g., allow more complete combustion of fuel) when compared with a single
venturi inlet design for handling a similar total flow rate of fuel. For example, since mixing with the primary air stream may be increased with the double venturi inlet burner, more combustion may be improved (e.g., when compared with a single venturi inlet burner).

In some implementations, the effect of orientation of the burner (e.g., disposing the burner vertically, at an angle, and/or horizontally) may be minimized with the double venturi burner. For example, when aligning a burner with a furnace, the burner may be disposed in a vertical or other orientation. Gravity may affect mixing properties and/or flow rates in single venturi inlet burners. However, since pressure distribution in the burner may be maintained within a smaller range than when using a single venturi inlet (e.g., designed to process a similar amount of fuel), the orientation of the burner may not substantially impact the performance of the burner.

Although users have been described as a human, a user may be a person, a group of people, a person or persons interacting with one or more computers, and/or a computer system.

It is to be understood the implementations are not limited to particular systems or processes described which may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular implementations only, and is not intended to be limiting. As used in this specification, the singular forms “a”, “an” and “the” include plural referents unless the context clearly indicates otherwise. Thus, for example, reference to “an inlet” includes a combination of two or more inlets; and, reference to “a burner head” includes different types and/or combinations of burner heads. Reference to “a fuel” may include a combination of two or more fuels. As another example, “coupling” includes direct and/or indirect coupling of members.

Although the present disclosure has been described in detail, it should be understood that various changes, substitutions and alterations may be made herein without departing from the spirit and scope of the disclosure as defined by the appended claims. Moreover, the scope of the present application is not intended to be limited to the particular embodiments of the process, machine, manufacture, composition of matter, means, methods and steps described in the specification. As one of ordinary skill in the
art will readily appreciate from the disclosure, processes, machines, manufacture, compositions of matter, means, methods, or steps, presently existing or later to be developed that perform substantially the same function or achieve substantially the same result as the corresponding embodiments described herein may be utilized according to the present disclosure. Accordingly, the appended claims are intended to include within their scope such processes, machines, manufacture, compositions of matter, means, methods, or steps.
CLAIMS

1. A burner comprising:
   a body comprising:
       a first arm; and
       a second arm;
   a plurality of burner heads coupled to the body; and
   two venturi inlets coupled to the body, wherein the two venturi inlets comprise:
       a first venturi inlet coupled to the first arm; and
       a second venturi inlet coupled to the second arm, wherein the first venturi inlet and the second venturi inlet are opposingly disposed.

2. The burner of claim 1 wherein:
   the first arm is disposed proximate a first end of the body; and
   the second arm is disposed proximate a second end of the body.

3. The burner of claim 1 wherein the body comprises:
   a first mixing length comprising a distance between a first end of the first arm and a second end of the first arm; and
   a second mixing length comprising a distance between a first end of the second arm and a second end of the second arm.

4. The burner of claim 1 wherein:
   the first venturi inlet is coupled proximate a first end of the first arm; and
   the second venturi inlet is coupled proximate a second end of the second arm.

5. The burner of claim 1, wherein the plurality of burner heads comprises:
   a first burner head comprising a first height; and
   a second burner head comprising a second height, wherein the second height is greater than the first height.
6. The burner of claim 1 wherein the plurality of burner heads comprises at least two burner heads comprising approximately similar heights.

7. The burner of claim 1 wherein the two venturi inlets are adapted such that a fuel stream from a fuel inlet may be provided to the two venturi inlets; and wherein the velocity of the fuel stream generates a primary air stream from the air proximate the two venturi inlets, and wherein the primary air stream is provided to the two venturi inlets.

8. An assembly comprising:
   a burner comprising:
   two venturi inlets adapted to receive a fuel stream and a primary air stream;
   a body; and
   one or more burner heads.

9. The assembly of claim 8 further comprising a fuel inlet adapted to provide the fuel stream to the two venturi inlets of the burner.

10. The assembly of claim 8 further comprising a fuel inlet, wherein the fuel inlet comprises at least one outlet proximate each venturi inlet of the burner, and wherein each outlet of the fuel inlet is adapted to provide at least a portion of the fuel stream to the venturi inlet of the burner proximate each outlet.

11. The assembly of claim 8 further comprising a fuel inlet, wherein the fuel inlet comprises at least one outlet proximate each venturi inlet of the burner, and wherein each outlet of the fuel inlet is adapted to provide at least a portion of the fuel stream to a proximate venturi inlet, and wherein each outlet of the fuel inlet comprises an outlet cross-sectional area that is less than an inlet cross-sectional area of the proximate venturi inlet.

12. The assembly of claim 8 wherein the burner comprises more than one burner head, and wherein at least two of the burner heads comprise similar heights.
13. The assembly of claim 8 wherein the burner comprises more than one burner head, and wherein at least two of the burner heads comprise at least two different heights.

14. A method of generating heat comprising:
allowing at least a portion of a fuel stream to flow from at least one outlet of a fuel inlet to two venturi inlets of a burner, wherein the two venturi inlets are opposingly disposed;

allowing a primary air stream to flow at least partially into the two venturi inlets of the burner;

allowing at least a portion of the primary air stream and at least a portion of the fuel stream to mix in a body of the burner;

allowing a mixed stream to flow to the burner heads of the burner, wherein the mixed stream comprises at least a portion of the primary air stream and at least a portion of the fuel stream; and

allowing combustion of the mixed stream proximate the burner heads of the burner.

15. The method of claim 14 further comprising allowing a secondary air stream from the air proximate the burner heads to mix with the mixed stream proximate the burner heads.

16. The method of claim 15 wherein a flow rate of the primary air stream is greater than a flow rate of the secondary air stream.

17. The method of claim 14 wherein the velocity of the fuel stream from at least one of the outlets of the fuel inlet increases the velocity of the primary air stream into the two venturi inlets.
18. The method of claim 14 wherein allowing at least a portion of the primary air stream and at least a portion of the fuel stream to mix comprises allowing at least a portion of the primary air stream and at least a portion of the fuel stream to mix along a mixing length of a body of the burner.

19. The method of claim 14 wherein allowing combustion of the mixed stream comprises generating a flame proximate each burner head of a burner.

20. The method of claim 14 wherein allowing combustion of the mixed stream comprises allowing at least partial combustion of fuel of the fuel stream.
FIG. 2

200
ALLOW FUEL STREAM TO BE PROVIDED TO TWO VENTURI INLETS OF A BURNER

210

ALLOW THE FUEL STREAM TO MIX WITH AIR IN THE BODY OF THE BURNER

220

COMBUST AT LEAST A PORTION OF THE FUEL STREAM PROXIMATE THE BURNER HEAD(S)

230

FIG. 3

300
ALLOW AT LEAST A PORTION OF A FUEL STREAM TO FLOW INTO TWO VENTURI INLETS OF A BURNER

310

ALLOW A PRIMARY AIR STREAM TO FLOW INTO THE TWO VENTURI INLETS

320

ALLOW AT LEAST A PORTION OF THE PRIMARY AIR STREAM AND AT LEAST A PORTION OF THE FUEL STREAM TO MIX

330

ALLOW THE MIXED STREAM TO FLOW TO THE BURNER HEADS OF THE BURNER

340

ALLOW AT LEAST PARTIAL COMBUSTION OF THE MIXED STREAM PROXIMATE THE BURNER HEADS

350