A heat transfer controller is configured to control the heat distribution and transfer of a heating system. An exemplary heating system comprises an air intake, an exhaust mechanism, and a heat transfer controller. The heat transfer controller is configured to control the distribution and transfer of heat exhausted from the exhaust mechanism to the heating area, and can comprise a heat deflector having a width, length and height that can be suitably configured to provide variable heat transfer control characteristics. In addition, the heat transfer controller can comprise an arch-like configuration. For example, the width of the heat transfer controller can be configured to direct and/or transfer heat from an area most likely to have heat restricted or increased. In addition, the height of the heat transfer controller can be configured to generate a convection effect to pull heat outwards from the area with the greatest heat restrictions. The heat transfer controller can also suitably comprise any other configurations, such as triangular, trapezoidal or other like configurations that may be configured to direct and/or transfer heat and/or provide heat convection functions.
FIG. 1

100

AIR INTAKE

102

EXHAUST MECHANISM

104

HEAT TRANSFER CONTROLLER

106
HEAT TRANSFER CONTROLLER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application No. 60/406,601, entitled “Heat Transfer Controller” and filed Aug. 28, 2002.

TECHNICAL FIELD

[0002] The present invention relates, generally, to heating systems, and in particular to an improved heat transfer controller for providing control of the heat distribution from such heating systems.

BACKGROUND OF THE INVENTION

[0003] Various heating systems, including fireplaces and furnaces for home installations, have been made available to consumers in recent years with improved venting systems. Despite improvements to the ventilation systems, such heating systems are limited in the ability to control the heat transfer and distribution from the heating system to the area to be heated. Further, such heating systems have limited ability, if any, to control the surface temperature of the heating systems.

[0004] For example, while current heating systems have frequently utilized venting techniques to separate the combustion air from the room air, such as direct air venting systems, very little has been done to improve heat transfer and distribution. Some heating systems, such as fireplaces, have utilized a screen in an attempt to control the heat transfer and distribution, as well as surface temperature. Other heating systems have attempted to include a horizontal deflector of a fixed width and length across the surface of the heating system, just above the area that heat is distributed.

[0005] Unfortunately, other than providing some shielding of the heating system from the heat being generated, these screening and horizontal deflector configurations inadequately control the heat transfer and distribution within the heating area of the room, and provide minimal to no control of the surface temperature of the heating system. Instead, for example, the horizontal deflector configuration tends to collect heat, as opposed to transferring the heat from the heating system, and/or tends to force the heat around the sides of the deflector.

SUMMARY OF THE INVENTION

[0006] In accordance with various aspects of the present invention, a heat transfer controller is configured to control the heat distribution and transfer for a heating system. In accordance with an exemplary embodiment, an exemplary heating system comprises an air intake, an exhaust mechanism, and a heat transfer controller. The heating system can comprise various types of heating configurations, such as fireplaces, stoves, furnaces or other like heating systems. The air intake is configured to receive external air into the heating system, while the exhaust mechanism is configured to exhaust heat from within heating system. Both the air intake and exhaust mechanism can be configured in various manners, shapes and sizes for providing the respective air intake and exhaust exhaust functions.

[0007] In accordance with one aspect of the present invention, the heat transfer controller is configured to control the distribution and transfer of heat exhausted from the exhaust mechanism to the heating area. In accordance with an exemplary embodiment, the heat transfer controller comprises a heat deflector having width, length and height configurations of various dimensions that can be suitably configured to provide variable heat transfer control characteristics. In addition, the width, length and height of the heat deflector can suitably define planes that can be configured in a conventional X, Y and Z plane, or at various angles in between.

[0008] In accordance with an exemplary embodiment, the heat transfer controller comprises a heat deflector configured to control the heat transfer and distribution where the greatest heat accumulation or generation can occur within the heating system. For example, the width of the heat transfer controller can be configured to direct and/or transfer heat from an area most likely to have heat accumulated, restricted or increased. In addition, the height of the heat transfer controller can be configured to generate a convection effect to pull heat outwards from the area with the greatest heat accumulation. In accordance with an exemplary embodiment, the heat transfer controller comprises a heat deflector having an arch-like configuration. However, the heat transfer controller is not limited to an arch-like configuration, and can suitably comprise any other configurations, such as triangular, trapezoidal or other like configurations that may be configured to direct and/or transfer heat and/or provide heat convention functions.

[0009] In accordance with another aspect of the present invention, the heat transfer controller can be configured for control of the surface temperature of the heating system. Through operation of the heat transfer controller, heat is transferred from the heating system, and away from the heating system, preventing the collection and accumulation of heat.

BRIEF DESCRIPTION OF THE DRAWINGS FIGURES

[0010] The exemplary embodiments of the present invention will be described in conjunction with the appended drawings in which like numerals denote like elements and:

[0011] FIG. 1 illustrates a block diagram of an exemplary heating system in accordance with an exemplary embodiment of the present invention;

[0012] FIG. 2 illustrates a perspective view of an exemplary heating system in accordance with an exemplary embodiment of the present invention;

[0013] FIGS. 3A-3C illustrate front, top and side views of an exemplary heat transfer controller in accordance with an exemplary embodiment of the present invention; and

[0014] FIG. 4 illustrates a side view of an exemplary heating system having a heat transfer controller in accordance with an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0015] The present invention may be described herein in terms of various functional components. It should be appre-
ciated that such functional components may be realized by any number of hardware components, electrical and mechanical, configured to perform the specified functions. In addition, the present invention may be practiced in any number of heating system contexts and that the fireplace systems described herein are merely one exemplary application for the invention. Further, it should be noted that the present invention may employ any number of conventional techniques for heat combustion and for transmission and exhaustion of heat from the heating systems, and such general techniques that may be known to those skilled in the art are not described in detail herein.

[0016] In accordance with various aspects of the present invention, a heat transfer controller is configured to control the distribution and transfer of heat for a heating system.

[0017] In accordance with an exemplary embodiment, with reference to a block diagram illustrated in FIG. 1, an exemplary heating system 100 comprises an air intake 102; an exhaust mechanism 104, and a heat transfer controller 106. Heating system 100 can comprise various types of heating configurations. For example, with momentary reference to an exemplary embodiment illustrated in FIG. 2, an exemplary heating system 200 can comprise a fireplace configuration having an air intake 202, an exhaust mechanism 204, and a heat transfer controller 206. However, an exemplary heating system is not limited to fireplaces, such as air-light or open air fireplace units with and without doors, and can comprise any type of stove, furnaces or any other like heating systems configured for generating heat.

[0018] Air intake 102 is configured to receive external air into heating system 100 for conversion into heating room air. Air intake 102 can comprise various types of configurations for providing an air intake function. For example, with momentary reference again to FIG. 2, air intake 202 can comprise one or more intake or openings, e.g., a single horizontal opening configured, within a bottom portion of heating system 200, to receive external air. Air intake 202 can be configured in a horizontal manner, or any other orientations and shapes, such as rectangular, vertical or any other configuration. In addition, in accordance with an exemplary embodiment, air intake 202 can also suitably include a grating configuration to restrict and/or regulate the intake of air. For example, air intake 202 can comprise an exemplary grating configuration having a plurality of rectangular openings; in addition, numerous other grating configurations can be realized, such as only horizontal members, vertical members, cross-members, angled members, and any combination thereof configured to permit air to be received, but to provide some restriction of entry into the opening. However, no grating configuration is necessary.

[0019] While an exemplary air intake 202 is configured at a bottom portion of heating system 200, e.g., in the front proximate to a fuel or heat source, an exemplary air intake 202 can be suitably positioned in other manners within heating system 200. For example, an exemplary air intake 202 can also be configured on either or both sides of a front surface area 208, the sides of heating system 200, the top and/or back of heating system 200, or any other locations configured to receive internal air into heating system 200. In addition, an exemplary air intake 202 can comprise horizontal, vertical and/or curvilinear structures having various lengths, shapes and sizes. In addition, rather than a dedicated structural opening, air intake 202 can simply comprise crevices, piping, vents or other openings that allow or air to be received within heating system 200. Accordingly, an air intake 202 can comprise any configuration or manner for receiving air into heating system 200.

[0020] Moreover, an exemplary air intake 202 can also be configured for providing a combustion air source to the fuel source, in addition to provide a source of air for heating. For example, air intake 202 could comprise the front opening of a fireplace configured without doors, wherein air can be received within the open area in the front of the fireplace can be used not only for a source for heating, but also for a source for combustion. However, air intake 202 can also be suitably separated from the combustion air source, and only provide a source of air for heating.

[0021] Exhaust mechanism 104 is configured to exhaust heated air from within heating system 100, such as air received from air intake 102 and heated by heating system 100. Exhaust mechanism 104 can comprise various types of configurations for providing an exhaust function. For example, with momentary reference again to FIG. 2, an exemplary exhaust mechanism 204 can comprise a vent or opening configured within an upper portion of heating system 200, e.g., above a heating region, and configured to exhaust heated air. However, exhaust mechanism 204 can also be configured along the sides, top, bottom and/or back of heating system 200 in any manner to exhaust heated air. In addition, exhaust mechanism 204 can also comprise an exemplary grating configuration having a plurality of circular openings; in addition, numerous other grating configurations can be realized, such as only horizontal members, vertical members, cross-members, angled members, and any combination thereof configured to permit air to be exhausted, but to provide some restriction of entry into the opening. However, no grating configuration is necessary.

[0022] Further, rather than a vent or dedicated opening, exhaust mechanism 204 can comprise other manners for exhaustion of heated air from heating system 200. For example, for an air-light system, exhaust mechanism 204 can comprise the exhaustion of air through cracks, crevices or other smaller and/or incidental openings. Further, for example, for an air-light system, exhaust mechanism 204 can comprise the exhaustion, permeation or other transfer of air through the doors, e.g., glass or metal, or other structure of heating system 200. Moreover, for an open air system, e.g., for a fireplace without doors, exhaust mechanism 204 can comprise the open front area of the fireplace.

[0023] An exemplary exhaust 204 can also comprise various lengths, shapes and sizes. For example, in accordance with an exemplary embodiment, exhaust mechanism 204 is configured in a curvilinear or arch-like manner. Such an arch-like configuration can facilitate the exhausting of heated air in an area where the heated air is more concentrated or accumulated within heating system 200, i.e., within the area proximate the center of an arch of exhaust mechanism 204. In addition, such an arch-like configuration can comprise various radii of curvature. In accordance with an exemplary embodiment, exhaust mechanism 204 comprises a radius of curvature between approximately 25 inches and 40 inches in length, such as, for example, approximately 30 to 34 inches in length. While an exem-
pary exhaust mechanism 204 comprises an arch-like configuration, exhaust mechanism 204 is not limited to such arch-like configurations, and can comprise other configurations, such as a substantially horizontal configuration, or a triangular, trapezoidal, or other multi-sided configuration. Accordingly, exhaust mechanism 204 can comprise any configuration for exhaustion of heated air from heating system 200.

[0024] With reference again to FIG. 1, heat transfer controller 106 is configured to control the distribution and transfer of heat exhausted from exhaust mechanism 104 to the heating area. In accordance with an exemplary embodiment, heat transfer controller 106 comprises a heat deflector having a width, length and height that can be suitably configured to provide variable heat transfer control characteristics. For example, with a momentary reference again to FIG. 2, heat transfer controller 206 can comprise a heat deflector suitably configured above exhaust mechanism 204 to direct and transfer heated air exhausted from exhaust mechanism 204.

[0025] Heat transfer controller 206 can be configured with variable width Z, length X and height Y dimensions to provide a plurality of heat distribution performance characteristics for heating system 200. In addition, the width, length and height of the heat deflector suitably define planes that can be configured in a conventional X, Y and Z plane, or at various angles in between.

[0026] In accordance with an exemplary embodiment, heat transfer controller 206 comprises a heat deflector having a width Z comprising an arch-like configuration to direct and/or transfer heat from an area most likely to have heat restricted or increased. For example, with additional reference to FIGS. 3B and 3C, a heat transfer controller 300 can comprise a top surface 302 having a maximum width Z_MAX and a minimum width Z_MIN. In the exemplary embodiment, heat transfer controller 300 is configured with minimum widths Z_MIN located at the ends of the heat deflector, e.g., adjacent to connection or mounting components at the ends of heat transfer controller 300, and a maximum width Z_MAX configured approximately the center of a length X of heat deflector, e.g. proximate to X_MID to suitably provide an arch-like configuration 304.

[0027] Arch-like configuration 304 can be configured in various manners to direct and/or transfer heat from an area most likely to have heat restricted, accumulated and/or increased. For example, arch-like configuration 304 can comprise a smooth arch configuration having a substantially constant radius of curvature, or an arch having a varying radius of curvature, e.g., a larger radius proximate to the ends heat deflector 300 and a smaller radius of curvature proximate the center of heat deflector 300, or vice versa. In other words, arch-like configuration 304 can comprise any arc, semi-circle, semi-oval or other like configuration that allows for maximum width Z_MAX to be positioned proximate to the area where the greatest amount of heat that needs to be directed outwards from exhaust mechanism 204 to the heating area.

[0028] Heat transfer controller 300 can also be configured in other orientations and shapes for the width Z. For example, heat transfer controller 300 can comprise a curvilinear configuration with maximum widths Z_MAX located away from the center and towards one or both ends of the heat deflector, and with minimum width Z_MIN located approximately the center of the length of the heat deflector, or at various locations in between. Further, the configuration of width Z can be symmetrical about the center point of length X, or non-symmetrical in manner, e.g., configured with maximum width Z_MAX on one end and minimum width Z_MIN on the other end, or any other non-symmetrical configuration. In addition, other shapes and configurations can be realized.

[0029] Because the maximum amount of heat is generated and accumulated in the center of exhaust mechanism 204, with the least amount of heat being realized proximate ends 204A and 204B of exhaust mechanism 204, to provide greater control of the heat transfer, heat transfer controller 300 is configured with maximum width Z_MAX configured approximately the center of the heat deflector. In other words, while other variations of the location of maximum widths Z_MAX and a minimum width Z_MIN can be implemented, having maximum width Z_MAX configured approximately the center of the heat deflector at a midpoint in length X, i.e., at location X_MID, facilitates the greatest control of the heat transfer forward and away from heating system 200. Accordingly, with arch-like configuration 304 for heat transfer controller 300 having minimum widths Z_MIN located at the ends and maximum width Z_MAX configured approximately the center, greater direction and control of the heat from exhaust mechanism 204 where the heat is most likely to build or accumulate.

[0030] In accordance with another aspect of the present invention, heat transfer controller 300 can be configured for control of the surface temperature of heating system 200, i.e., control of the temperature of surface area 208. In particular, a correlation exists between width Z and/or the radius of curvature and the amount of heat dissipated from exhaust mechanism 204. For example, increasing the radius of curvature, e.g., increasing maximum width Z_MAX, can affect the transfer of heat from exhaust 104. In the event that maximum width Z_MAX is increased too large in width, a negative effect can result, wherein heat can actually be trapped underneath top surface 302, instead of being transferred out to the heating area; on the other hand, in the event maximum width Z_MAX is too small in width, the heat transfer from exhaust mechanism 204 will tend to flow directly upwards, or be forced towards the sides, heating a surface area 208 as opposed to heating the room area. Accordingly, to provide effective heat transfer and distribution, maximum width Z is suitably configured to facilitate heat transfer instead of accumulating or trapping heated air underneath top surface 302 or allowing heat to travel directly upwards to front surface area 208 or the sides of heat transfer controller 300.

[0031] As a result, arc configuration 304 can include various radii of curvature that correspond to different widths Z_MAX to facilitate efficient heat transfer, depending on the amount of heat generated and exhausted. In accordance with exemplary embodiments, heat transfer controller 300 can be configured with minimum widths Z_MIN varying between approximately 0.05" and 1.50", preferably between approximately 0.20" and 0.50", while maximum width Z_MAX varies between approximately 1.50" and 4.00", preferably between approximately 2.00" and 3.00", such as approximately 2.5" in width.
Although heat transfer controller 300 can include an arc-like configuration 304 in the exemplary embodiment, other variations can be realized, such as a triangle, trapezoidal or other multiple sided deflector configurations, i.e., heat transfer controller 302 can comprise other configurations having minimum widths $Z_{\text{MIN}}$ located at the ends and maximum width $Z_{\text{MAX}}$ suitably configured approximately the center to direct the greatest flow of heat being exhausted from exhaust mechanism 204. In other words, heat transfer controller 300 can be configured with a width $Z$ in any arrangement that allows for maximum width $Z_{\text{MAX}}$ to correspond to the amount of heat that needs to be directed outwards from exhaust mechanism 204 to the heating area.

Heat transfer controller 300 can also be configured in various lengths $X$ to control the heat distribution surface along the length of exhaust mechanism 204. For example, heat transfer controller 300 can be configured with a length $X$ extending past sides 204A and/or 204B of exhaust mechanism 204, extending equal in length to exhaust mechanism 204, or shorter in length than exhaust mechanism 204. In addition, length $X$ can be positioned at various locations above exhaust mechanism 204, e.g., closer to side 204A or closer to side 204B, if desired. In any event, length $X$ is configured to at least extend over the area where the greatest flow of heat is being generated and/or exhausted from exhaust mechanism 204.

Accordingly, for heat transfer controller 300 having maximum width $Z_{\text{MAX}}$ configured approximately the center of the heat deflector at a midpoint location $X_{\text{MD}}$, it is desirable, for length $X$ to be centered relative to sides 204A and 204B of exhaust mechanism 204. In accordance with the exemplary embodiment illustrated in FIG. 2, heat transfer controller 306 is configured with a length $X$ extending past sides 204A and/or 204B of exhaust mechanism 204. For example, in the exemplary embodiment, length $X$ comprises a length between approximately 30° and 40°, such as approximately 33° to 45° in length; however, heat transfer controller 300 can comprise any other suitable length depending on the length of exhaust mechanism 204.

Heat transfer controller 300 can also be configured in various heights $Y$ to control the heat distribution from top to bottom for surface area 208 above exhaust mechanism 204. For example, heat transfer controller 300 can comprise a maximum height $Y_{\text{MAX}}$ and a minimum height $Y_{\text{MIN}}$ configured in an arch-like arrangement 306. In the exemplary embodiment, heat transfer controller 300 is configured with minimum heights $Y_{\text{MIN}}$ located at the ends of the heat deflector, and a maximum height $Y_{\text{MAX}}$ configured approximately the center of the length of the heat deflector, i.e., proximate to maximum width $Z_{\text{MAX}}$ and, location $X_{\text{MD}}$: Maximum height $Y_{\text{MAX}}$ can be configured at various dimensions to control the surface temperature of heating system 200. In addition, heat transfer controller 300 can be configured in other manners, e.g., with maximum height $Y_{\text{MAX}}$ at one end and minimum height $Y_{\text{MIN}}$ in the middle and/or at the other end; heat transfer controller can have a symmetrical or non-symmetrical height $Y$ configuration.

In accordance with another aspect of the present invention, the height $Y$ of heat transfer controller 300 can be configured to generate a convection effect to pull heat outwards from the area with the greatest heat accumulations, e.g., with maximum height $Y_{\text{MAX}}$ configured proximate midpoint $X_{\text{MD}}$. In the exemplary embodiment, heat transfer controller 300 provides an arch-type configuration 306, such as that illustrated in FIG. 3A. Providing an arch configuration 306 generates a convection effect to pull heat outwards from the center of exhaust 104 and out to the heating area.

Arch-like configuration 306 can be configured in various manners to generate a convection effect to pull heat outwards from the center of exhaust 104 and out to the heating area. For example, arch-like configuration 306 can comprise a smooth-arc configuration having a substantially constant radius of curvature, or an arc having a varying radius of curvature, e.g., a larger radius proximate the ends heat transfer controller 300 and a smaller radius of curvature proximate the center of heat transfer controller 300, or vice versa. In other words, arch-like configuration 306 can comprise any arc, semi-circle, semi-oval or other like configuration that can be configured for facilitating control of heat distribution and/or a convection effect to pull heat outwards from the center of exhaust mechanism 204 and to the heating area.

Arch configuration 306 can also be configured with various radii of curvature. In accordance with various exemplary embodiments, heat transfer controller 300 can be configured with minimum heights $Y_{\text{MIN}}$ varying between approximately 0.01° and 1.00°, preferably between approximately 0.05° and 0.25°, while maximum height $Y_{\text{MAX}}$ varies between approximately 1° and 10°, preferably between approximately 3° and 5°. In the exemplary embodiment illustrated in FIG. 3A, maximum height $Y_{\text{MAX}}$ comprises approximately 4° in height.

In accordance with other exemplary embodiments, maximum height $Y_{\text{MAX}}$ and a minimum height $Y_{\text{MIN}}$ can be suitably adjusted, such as by sliding the ends of the heat deflector upwards and downwards in a track configured at the ends of the heat deflector, to a desired heat control position. In other words, heat transfer controller 300 can be readily positioned at various heights above exhaust mechanism 204 depending on the amount of heat exhausted and the amount of heat that is to be transferred.

While heat transfer controller 300 can comprise an arch-type configuration 306 for the height $Y$ to provide control the heat distribution and/or generate a convection effect to pull heat outwards from the area with the greatest heat accumulations, heat transfer controller 300 is not limited to an arch-type configuration for the height $Y$. For example, other variations can be realized, such as a triangle, trapezoidal or other multiple sided deflector configurations having minimum heights $Y_{\text{MIN}}$ located proximate the ends and maximum height $Y_{\text{MAX}}$ configured proximate the center of length $X$ of the heat deflector. Accordingly, heat transfer controller 300 can be configured with any height $Y$ for facilitating control of heat distribution and/or a convection effect to pull heat outwards from the center of exhaust mechanism 204 and to the heating area.

While an exemplary embodiment of heat transfer controller 102 illustrated in FIG. 3 provides for both arch-like configuration 304 and arc-like configuration 306, an exemplary heat transfer controller 300 can comprise one or both of these features, i.e., a heat transfer controller 102 can comprise either arch-like configuration 304 or arc-like configuration 306; or both arc configuration 304 and arc-like
configuration 306. In addition heat transfer controller 300 can comprise other width Z and height Y configurations, e.g., a triangular configuration for width Z and arch-like for height Y, an arch-like configuration for width Z and a various multiple-sided configuration for width Y, a configuration with one of width Z or height Y having a substantially constant dimension across the length, or any other combinations. In other words, heat transfer controller 300 can be configured in any manner with at least one of maximum width \( Z_{\text{MAX}} \) and maximum height \( Y_{\text{MAX}} \) configured proximate to midpoint \( X_{\text{MED}} \).

[0042] Heat transfer controller 300 can also comprise various thickness, either uniform or non-uniform in nature. For example, heat transfer controller 300 can comprise a first thickness proximate to midpoint \( X_{\text{MED}} \) and then tapering down to a smaller thickness, or expanding to a larger thickness, at one or both ends. In addition, heat transfer controller 300 can have a first thickness along the edge coupled to heating system 200, and then tapering down to a smaller thickness, or expanding to a larger thickness, at the outer edges away from heating system 200. Accordingly, heat transfer controller 300 can comprise any thickness configured to allow transfer and distribution of heat from heating system 200.

[0043] In accordance with another aspect of the present invention, heat transfer controller 300 can be configured to further provide variable control of the heat transfer rate. For example, with specific reference to FIG. 2, the angles ZX, YY and YZ between the various X, Y and Z axis of heat transfer controller 200 can be suitably varied to control the heat transfer rate. In accordance with an exemplary embodiment, with reference to FIG. 4, a heating system 400 can comprise a heat transfer controller 300 having a width Z configured with an approximate 90 degree angle relative to the height Y, i.e., the Z axis is perpendicular to the Y axis.

[0044] However, in accordance with other exemplary embodiments, rather than a 90 degree angle between the Y and Z axis, other variations can exist. For example, instead of having top surface 302 configured with an approximately horizontal arrangement in FIG. 4, and an angle YZ of approximately 90 degrees, top surface 302 can be suitably configured in other orientations, such as being angled downwards or upwards. Such an adjustment of the angle YZ can control the distribution of heat to the heating area, as well as the amount of heat of the surface area of heating system 400. For example, angling top surface 302 upwards will reduce the amount of heat flow restriction, and hence will increase the heat transfer rate, while angling top surface 302 downwards will increase the amount of heat flow restriction and/or accumulation, and hence will decrease the heat transfer rate.

[0045] In addition, any of the width, length, and height of heat transfer controller 300 can be configured in parallel or non-parallel to the \( X, Y \) and \( Z \) axis, e.g., length \( X \) can be slanted slightly upwards to one side or the other of exhaust mechanism 204. Still further, heat transfer controller 300 can have the XY plane suitably shifted, e.g., heat transfer controller 300 can be suitably shifted outwards away from front surface area 208.

[0046] The present invention sets forth a heat transfer controller that is applicable to various heating system applications. It will be understood that the foregoing description is of exemplary embodiments of the invention, and that the invention is not limited to the specific forms shown. Various modifications may be made in the design and arrangement of the elements set forth herein without departing from the scope of the invention. For example, the heat transfer controller can comprise various metal alloys, a single part or multiple components, can be firmly attached to the heating system, variably adjusted and/or rotated, or can be permanently attached to the heating system by any manner available for connecting a heat deflector to a heating system, such as brackets, connectors, welding, forging and the like, or suitably molded or otherwise integrally configured within the heating system. Still further, the width and height configurations can comprise substantially planar or straight arrangements, and/or a curved, beveled, wavy or other configurations. These and other changes or modifications are intended to be included within the scope of the present invention, as set forth in the following claims.

1. A heating system configured for optimizing heat distribution to a heating area, said heating system comprising:
   - an air intake configured to receive external air into said heating system;
   - a heating region configured to generate heated air from the external air;
   - an outer surface area;
   - an exhaust mechanism configured to exhaust the heated air from said heating system, said exhaust mechanism configured above said heating region and beneath said outer surface area; and
   - a heat transfer controller configured to control distribution and transfer of the heated air to the heating area, said heat transfer controller configured above said heating region and beneath said outer surface area.

2. The heating system according to claim 1, wherein said width configuration comprises a maximum width proximate a midpoint of said heat deflector, and minimum widths proximate ends of said heat deflector.

3. The heating system according to claim 2, wherein said width configuration comprises an arch-like configuration.

4. The heating system according to claim 2, wherein said width configuration comprises one of a triangular, trapezoidal and a multiple sided configuration.

5. The heating system according to claim 2, wherein said maximum width differs between approximately 1.50 and 4.00 and said minimum widths comprises widths between approximately 0.01 and 1.50.

6. The heating system according to claim 5, wherein said maximum width comprises a width between approximately 2.00 and 3.00 and said minimum widths comprises widths between approximately 0.05 and 0.50.

7. The heating system according to claim 1, wherein said height configuration comprises a maximum height prox-
mate a midpoint of said heat deflector, and minimum heights proximate ends of said heat deflector.
8. The heating system according to claim 7, wherein said maximum height comprises a height between approximately 1.00" and 10.00" and said minimum heights comprises heights between approximately 0.01" and 1.00".
9. The heating system according to claim 7, wherein said width configuration comprises one of a triangular, trapezoidal and a multiple-sided configuration.
10. The heating system according to claim 7, wherein said maximum height comprises a height between approximately 3.00" and 5.00" and said minimum heights comprises heights between approximately 0.05 and 0.25".
11. The heating system according to claim 10, wherein said maximum height comprises a height between approximately 3.00" and 5.00" and said minimum heights comprises heights between approximately 0.05 and 0.25".
12. The heating system according to claim 1, wherein said length is configured to extend longer than a length of said exhaust mechanism.
13. The heating system according to claim 1, wherein said air intake is configured beneath said heating region.
14. The heating system according to claim 1, wherein said exhaust mechanism comprises an arch-like configuration.
15. The heating system according to claim 1, wherein said width configuration and said height configuration comprise an approximate 90 degree angle in between.
16. A heat transfer controller for controlling the distribution and transfer of heat from a heating system, said heat transfer controller comprising a heat deflector having:
   a length configured for alignment above an exhaust mechanism of the heating system, said length having a midpoint, a first end and a second end;
   a maximum width and at least one minimum width; and
   a maximum height and at least one minimum height, wherein at least one of said maximum width and said maximum height are configured proximate to said midpoint.
17. The heat transfer controller according to claim 16, wherein said maximum width is configured proximate to said midpoint, and said at least one minimum width is configured proximate said first end.
18. The heat transfer controller according to claim 16, wherein said maximum height is configured proximate to said midpoint, and said at least one minimum height is configured proximate said first end.
19. The heat transfer controller according to claim 16, wherein said at least one of said maximum width and said maximum height comprise an arch-type configuration.
20. The heat transfer controller according to claim 16, wherein said maximum width comprises a width between approximately 2.00" and 3.00" and said at least one of said minimum widths comprises a width between approximately 0.05" and 0.50".
21. The heat transfer controller according to claim 16, wherein said maximum height comprises a height between approximately 3.00" and 5.00" and said minimum heights comprises heights between approximately 0.05 and 0.25".
22. A fireplace system configured for improved heat distribution to a heating area, said fireplace system comprising:
   an air intake configured to receive external air into said fireplace system;
   an exhaust mechanism configured to exhaust heated air produced from within said fireplace system; and
   a heat transfer controller configured to control distribution and transfer of the heated air to the heating area, said heat transfer controller configured above said exhaust mechanism and comprising a heat deflector having:
   a length configured for alignment above said exhaust mechanism, said length having a midpoint and a pair of ends;
   a width configuration comprising a maximum width and at least one minimum width, said maximum width configured proximate to said midpoint; and
   a height configuration comprising a maximum height and at least one minimum height, said maximum height configured proximate to said midpoint.
23. The fireplace system according to claim 22, wherein said width configuration and said height configuration comprise arch-like configurations.
24. The fireplace system according to claim 22, wherein said maximum width comprises a width between approximately 2.00" and 3.00" and said at least one of said minimum widths comprises a width between approximately 0.05" and 0.50", and said maximum height comprises a height between approximately 3.00" and 5.00" and said minimum heights comprises heights between approximately 0.05 and 0.25".
25. A heat transfer controller for controlling the distribution and transfer of heat from a heating system, said heat transfer controller comprising a heat deflector having:
   a length having a first end and a second end defining a midpoint;
   a width configured to facilitate transfer of heated air away from the heating system without significant accumulation; and
   a maximum height and at least one minimum height, wherein said maximum height is configured proximate to said midpoint.
26. The heat transfer controller according to claim 25, wherein said heat transfer controller further comprises a maximum width configured proximate to said midpoint, and said at least one minimum width configured proximate said first end.
27. The heat transfer controller according to claim 26, wherein said at least one of said maximum width and said maximum height are arranged within an arch-type configuration.