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(54) **HEATED AND COOLED SEAT FOR LOCKER**

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A47B 61/00	(2006.01)
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F25D 13/02	(2006.01)

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USPC ... 312/236, 237, 235.5, 235.4, 235.3, 235.2; 297/188.04; 70/63, 78
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,686,613	A	8/1954	Tamminga	
3,353,865	A	11/1967	Bass	
5,369,892	A	12/1994	Dhaemers	
5,812,643	A	9/1998	Schelberg, Jr. et al.	
5,815,961	A *	10/1998	Estes	D06F 73/02 38/14
5,921,858	A	7/1999	Kawai	
6,018,885	A	2/2000	Hill	

(Continued)

OTHER PUBLICATIONS

Office Action dated Jun. 9, 2020 from U.S. Appl. No. 16/804,879.

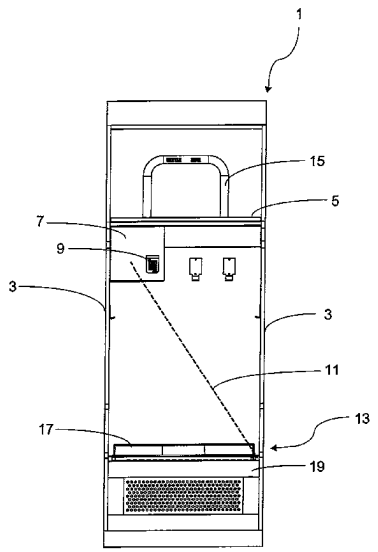
(Continued)

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(57) **ABSTRACT**

An improved locker seat includes a pair of spaced-apart upstanding sidewalls having a pair of lateral edges. A generally horizontal seat is disposed between the lateral edges of the sidewalls. In a first mode, an air source is connected to an airway formed within the seat to create an airflow. The airflow from the air source creates a first temperature differential to cool the seat. In a second mode, an external or internal heat source provides heat to a top surface of the seat, creating a second temperature differential to heat the seat. The first and second temperature differential are distributed across the top surface of the seat. The seat is hinged to be movable about the hinge between an open and a closed position.

14 Claims, 5 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

6,189,346	B1 *	2/2001	Chen	D06F 73/02 68/5 R
6,273,810	B1	8/2001	Rhodes, Jr.	
7,261,384	B1	8/2007	Craft, Jr.	
7,900,371	B1	3/2011	Bullard	
8,006,336	B1 *	8/2011	Gerlach	B05B 5/03 68/5 R
8,484,860	B2	7/2013	Moon	
9,906,897	B2	2/2018	Milne	
9,955,784	B1	5/2018	Smith	
10,883,221	B1	1/2021	Allen	
11,136,708	B1 *	10/2021	Allen	A47B 61/00
2006/0261643	A1	11/2006	Lingwall	
2007/0040421	A1	2/2007	Zuzga	
2011/0025181	A1	2/2011	Vinke	
2015/0008809	A1	1/2015	Palumbo	
2018/0135237	A1	5/2018	Yoon	
2019/0365094	A1 *	12/2019	Allen	A47B 61/02
2020/0256008	A1	8/2020	Yoon	
2021/0080983	A1	3/2021	Meggers	

OTHER PUBLICATIONS

Amendment dated Aug. 31, 2020 from U.S. Appl. No. 16/804,879.
Notice of Allowance dated Sep. 8, 2020 from U.S. Appl. No. 16/804,879.
Office Action dated Mar. 29, 2021 from U.S. Appl. No. 17/138,439.
Amendment dated Jun. 17, 2021 from U.S. Appl. No. 17/138,439.
Final Office Action dated Jun. 30, 2021 from U.S, U.S. Appl. No. 17/138,439.
Response dated Jul. 23, 2021 from U.S. Appl. No. 17/138,439.
Notice of Allowance dated Aug. 5, 2021 from U.S. Appl. No. 17/138,439.

* cited by examiner

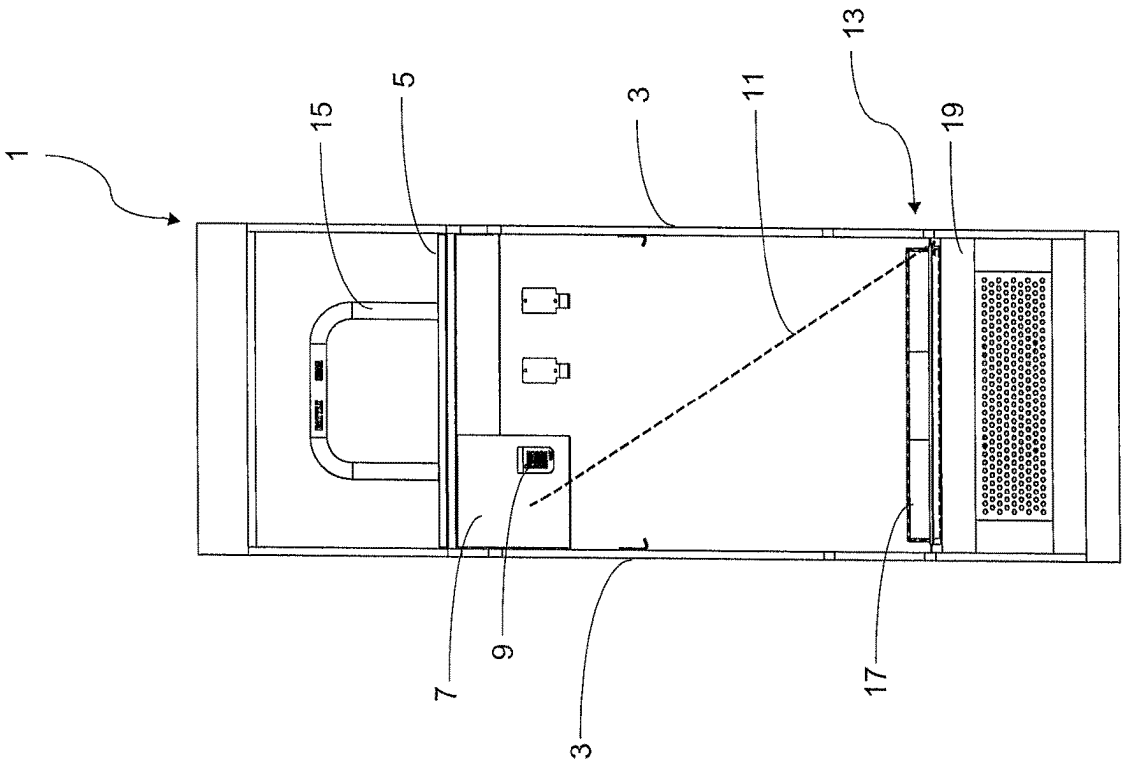


Figure 1

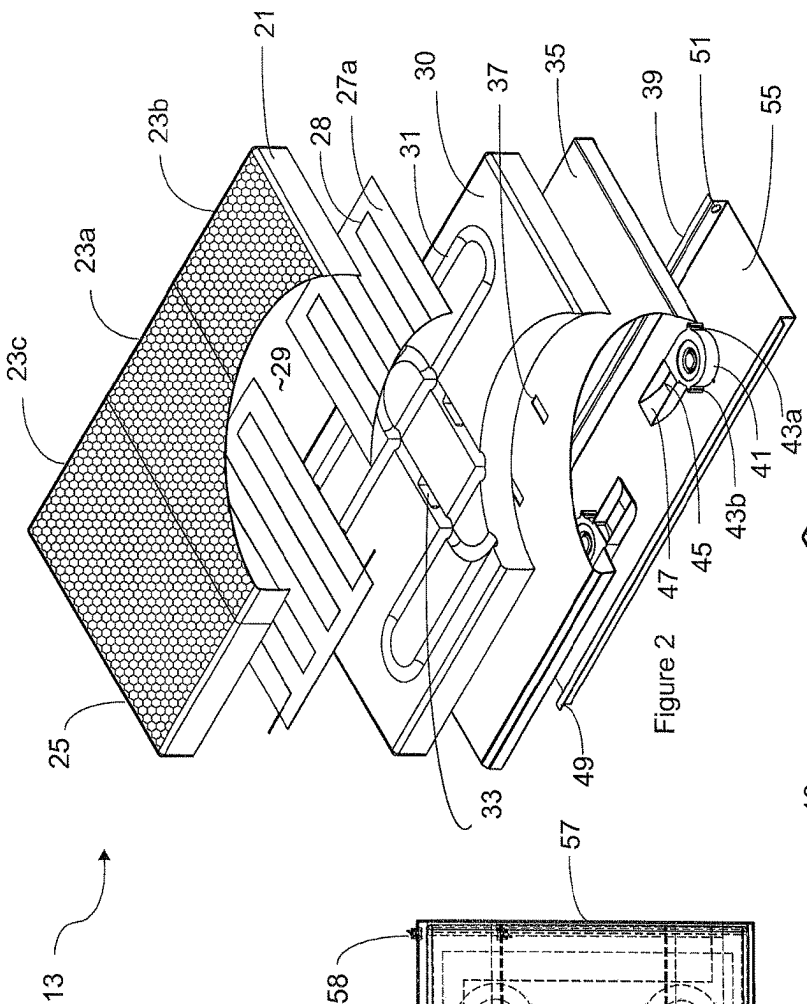


Figure 2

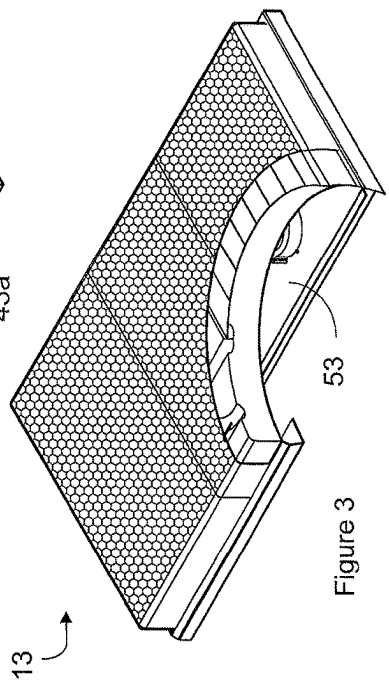


Figure 3

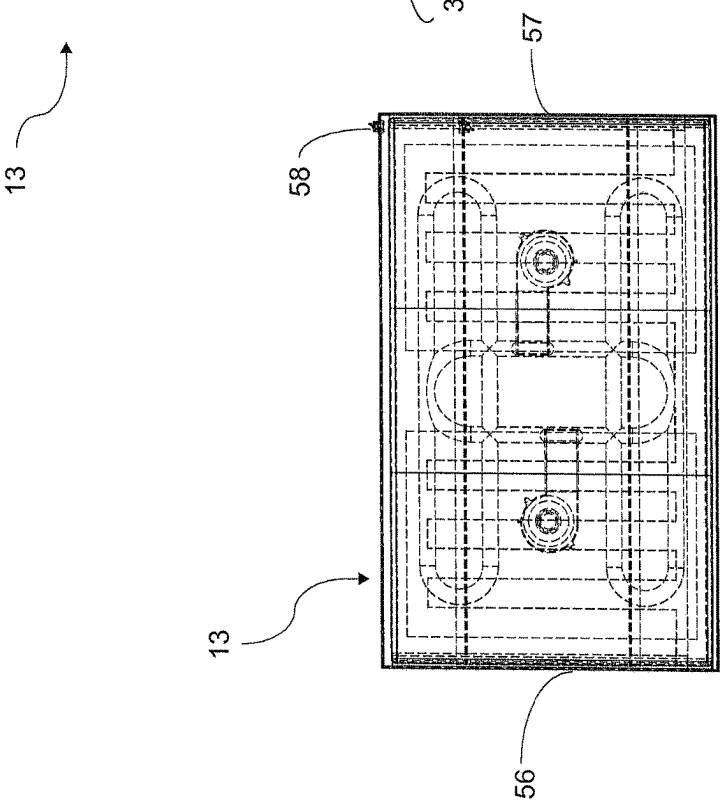


Figure 4

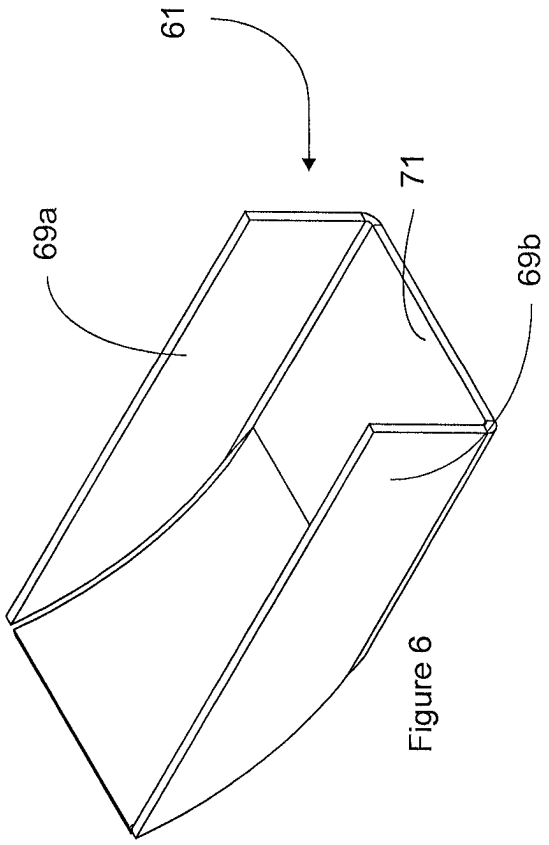


Figure 6

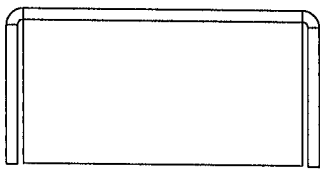


Figure 8

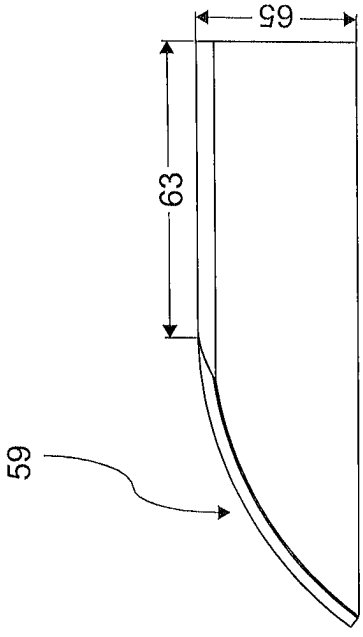


Figure 5

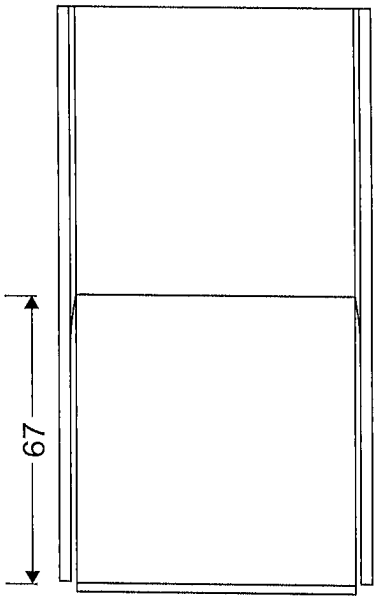


Figure 7

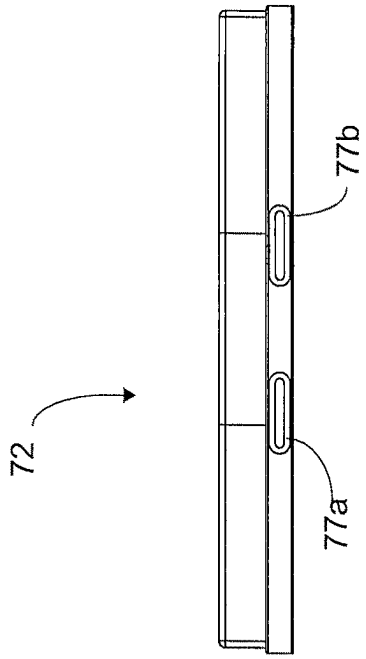


Figure 10

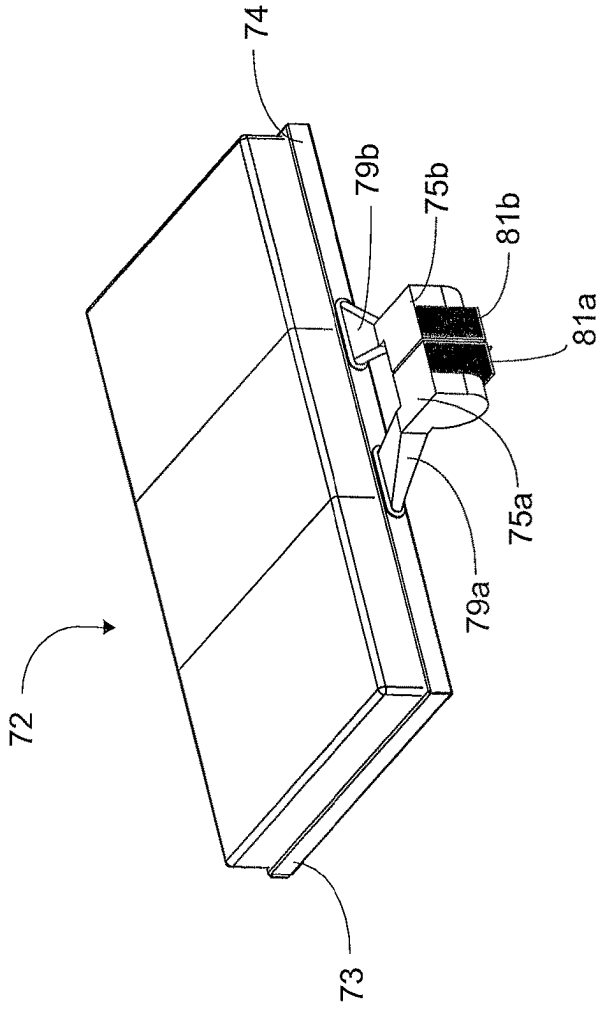


Figure 9

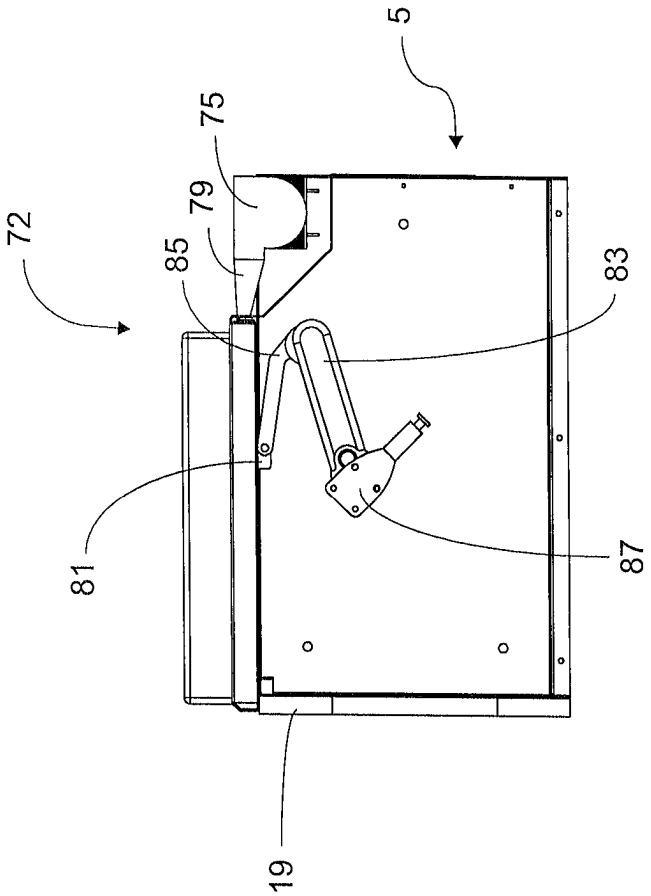


Figure 11

HEATED AND COOLED SEAT FOR LOCKER

This application is a continuation of U.S. patent application Ser. No. 17/138,439, filed on 30 Dec. 2020, titled "Heated and Cooled Seat for Locker," which issued as U.S. Pat. No. 11,136,708 on 5 Oct. 2021, which is a continuation of U.S. patent application Ser. No. 16/804,879, filed on 28 Feb. 2020, titled "Heated and Cooled Seat for Locker," which issued as U.S. Pat. No. 10,883,221 on 5 Jan. 2021, all of which are incorporated herein by reference for all purposes.

BACKGROUND

1. Field of the Invention

The present invention relates generally to improvements in lockers or storage cabinets used in athletic or sporting facilities, and more specifically to seating incorporated into such lockers.

2. Description of Related Art

The aesthetics and utility of lockers or storage cabinets in "locker rooms" of athletic and sporting facilities of sports teams and country clubs, for example, have become a measure of the quality and prestige of such organizations and an increasingly important aspect of recruiting new team or club members. Modern lockers are a far cry from the simple wood or metal cabinets of the past.

Modern lockers incorporate storage for specific items of equipment, such as helmets and shoes, and features promoting comfort and luxury. There is a constant need for improvement in both functional and aesthetic aspects of such lockers.

DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the embodiments of the present application are set forth in the appended claims. However, the embodiments themselves, as well as a preferred mode of use, and further objectives and advantages thereof, will best be understood by reference to the following detailed description when read in conjunction with the accompanying drawings, wherein:

FIG. **1** is an elevation view of a locker incorporating the seat assembly according to the present application;

FIGS. **2** through **3** are exploded top and perspective views of the seat of the locker of FIG. **1**;

FIG. **4** is a top view of an enlarged schematic diagram of the seat of the locker of FIG. **1**;

FIGS. **5** through **8** are enlarged, side, perspective, top, and rear views of a custom duct portion of the seat of the locker of FIG. **1**;

FIGS. **9** and **10** are perspective and rear views of an alternative embodiment of the seat of the locker of FIG. **1**; and

FIG. **11** is a side view of the alternative embodiment of the seat of the locker of FIG. **1**.

While the assembly and method of the present application is susceptible to various modifications and alternative forms, specific embodiments thereof have been shown by way of example in the drawings and are herein described in detail. It should be understood, however, that the description herein of specific embodiments is not intended to limit the invention to the particular embodiment disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the present application as defined by the appended claims.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Illustrative embodiments of the locker seat assembly are provided below. It will of course be appreciated that in the development of any actual embodiment, numerous implementation-specific decisions will be made to achieve the developer's specific goals, such as compliance with assembly-related and business-related constraints, which will vary from one implementation to another. Moreover, it will be appreciated that such a development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the art having the benefit of this disclosure.

Referring now to FIG. **1** in the drawings, locker **1**, incorporating a locker seat assembly **13** according to the present application is illustrated. As can be seen, locker **1** comprises a pair of upstanding sidewalls **3** that generally define the extent of the locker. Additional lockers may be installed adjacent to locker **1**, being similar or identical to locker **1**, with a rear against a wall, and a front facing the interior of the locker room.

Between the sidewalls **3** of each locker **1**, a plurality of compartments **5** are defined by shelves or other horizontally extending surfaces or platforms (only one compartment **5** is indicated in locker **1** for clarity and simplicity). Multiple additional sidewalls and/or shelves may be placed between the "main" or exterior sidewalls **3** to define compartments and the like. As used herein, "sidewall" or "sidewalls" may refer to either "main" sidewalls **3** or other sidewalls arranged between the "main" sidewalls. Each compartment **5** may be sized and otherwise configured for storage of clothing or sporting equipment or other items and may include a door **7**, having a lock **9**.

The lock **9** may include a numeric keypad, biometric access, voice-activated commands, network connections for administrator access, such as when lock combinations or codes are forgotten or for the locker resident/owner to grant authorized access remotely, and combinations thereof. The lock **9** may control locking/unlocking one or all of compartments **5** in locker **1**.

Locker **1** may include one or more network connections **11**. For example, the one or more network connections **11** includes, but is not limited to, an electrical wire connecting the seat assembly **13**, the lock **9**, and/or the equipment drying rack **15** to AC power from the public power network. The one or more network connections **11** may also include a Cat-5 Ethernet cable connecting the locker to the Internet, a Bluetooth connection connecting electrical components of the locker to a mobile device, or a similar wired or wireless network connection.

The seat assembly **13** generally comprises a horizontal portion or bench **17** according to the present application. Bench **17** may be disposed and extend between main sidewalls **3** or other sidewalls defined between the main sidewalls **3**. Bench **17** may extend at least partially forward of the front edges of sidewalls **3** and may be bordered by armrests or other structures raised above the sides of bench **17**.

Bench **17** is connected to a front facial support **19** of the locker **1**, to a rear support (not shown), or to sidewalls **13** of the locker by hinges at one or more of, left, right, inner, or outer extents of the bench respectively. Bench **17** is thus

movable, about its hinges, between open and closed positions (the closed position is shown in FIG. **1**).

As shown in FIG. **1**, bench **17** may be generally aligned with the front edges of the sidewalls between which it is disposed, or may project forward or be recessed. Bench **17** may also be generally aligned with the lateral edges of the sidewalls between which it is disposed. Bench **17** preferably is padded and upholstered with an appropriate fabric, such as vinyl, leather, synthetic polyester, a woven fabric, or a textile material.

Recesses may be formed in the outer or inner edges of bench **17** that cooperate to form an aperture to facilitate opening the seat. Recesses may be of varying configuration (not shown), curved or square/rectilinear, and may be provided in only one of side of bench **17**, multiple sides, or not at all.

FIGS. **2** and **3** depict perspective and assembly views of seat assembly **13** having a seat cover **21**. The seat cover **21** includes a center section **23***a*, right section **23***b*, and left section **23***c*. In a preferred embodiment, the center section **23***a* is configured for a first temperature differential, such as cooling. For example, the center section **23***a* is made of a perforated vinyl material having perforations **25**. The left and right sections **23***b*, **23***c* are configured for a second temperature differential, such as heating. For example, the left and right sections **23***b*, **23***c* are made of a material that transfers heat better than vinyl, or is more durable over time despite experiencing seat-warming temperatures, such as a woven fabric. Each of the seat cover sections **23***a*, **23***b*, and **23***c* are configured to distribute a respective temperature differential across a top surface of the seat assembly **13** an through seat cover **21**. For example, the perforations **25** in the center section **23***a* may span a majority, or more than half, of the surface area of center section **23***a*. By way of another example, the seat assembly **13** may include a heating pad **27** associated with each of the left and right sections **23***b*, **23***c*, where each respective heating pad **27***a*, **27***b* spans a majority, or more than half, the surface area of the respective section **23***b* or **23***c*. In other embodiments, the heating pads **27***a*, **27***b* span a portion of the center section **23***a*.

The heating pad **27** includes a temperature-controlled heating element **28** including a resistive wire arranged in an alternating vertical up-and-down pattern. Other resistive wire configurations, such as spiral, horizontal back-and-forth, diagonal, zig-zag, and combinations thereof, are also encompassed by the present application. The first heating pad **27***a* and second heating pad **27***b* are separated by a center gap **29**, where a width of the center gap **29** varies depending on a number of factors, including but not limited to, cost of heating element **28**, surface area of seat **13**, and a configuration of recesses, openings, airways, or air channels **31**.

The seat assembly **13** further includes a cushion **30**. The cushion **30** is made from a high-density foam or batting material that is both elastic and workable. For example, an extra-firm urethane-based foam, such as part number HR 6130, from Rochford Supply, which passes Federal Motor Vehicle Safety Standard 302, or similar high-density foams may be used. The cushion **30** needs to retain the shape of an air channel **31** that is formed, melted, or cut into a surface of the cushion **30**, such as with hot wire or hot knife foam cutters. It is noted that although FIG. **3** depicts air channel **31** formed in a top surface of cushion **30**, other portions of cushion **30** may include an air channel **31**. For example, a middle section, a back surface, or a side surface may also include an air channel **31**.

Preferably, a cavity of the air channel **31** is rounded, sloped, or curved. However, other cavity shapes, such as square, angled, oblong, and rectangular are also encompassed by the present application. The air channel **31** includes a pair of straight parallel legs. However, other leg configurations may be used, such as curved, perpendicular, and serpentine.

Preferably, the parallel legs of air channel **31** are optimized for distribution across a cushion surface. For example, the parallel legs of the air channel **31** may be continuous, being connected by an arc length at each end of the parallel legs to facilitate a circular, looped, recycled, or continuous airflow. A first continuous air channel **31** is disposed laterally across the top surface of the cushion **30**, and one or more second continuous air channels **31** are disposed horizontally across the top surface. The first air channel **31** is disposed at a generally central location relative to the cushion **30**, while the one or more second air channels **31** are disposed at generally inner and outer extents relative to the locker **1**, such as at the front and rear of the cushion **30**. Preferably, the horizontal and lateral channels intersect.

The cushion **30** includes one or more air ports **33** cut or formed generally vertically through the body of the cushion **30**. The one or more ports may be formed with a vertical foam cutter or a foam hot knife.

The seat assembly **13** further includes frame **35** having one or more holes or cut-outs **37** coaxially aligned with the air ports **33** of the cushion **30**. Preferably, the frame is steel, but other rigid or semi-rigid materials, such as plastic, wood, and aluminum may also be used.

The seat assembly **13** further includes frame mounting bracket **39**. Preferably, mounting bracket **39** supports an air source **41**, having inlets **43***a*, **43***b*, and an outlet **45**. The outlet **45** is connected to a custom duct **47**. The frame mounting bracket **39** has one or more flanges **49** for attaching the mounting bracket **39** to the frame **35**. The mounting bracket also includes an opening or electric port **51**, for hardwired, electrical, fluid, tubing, drains, or other connections to the air source **41**. The one or more flanges **49** of the mounting bracket **39** are mounted to the frame **35** to create an air cavity **53** between frame **35** and the mounting bracket **39**. Preferably, the opening or electric port **51** is formed in a vertical member of the one or more flanges **49**.

In embodiments, a compartment **5** is located beneath the seat assembly **13**, and frame **35** supports the cushion **30** from underneath. Preferably, frame **35** extends slightly above a plane that is collinear with the underside of cushion **30** and slightly beyond the lateral and horizontal dimensions of the cushion **30**. The portions that extend beyond the lateral and horizontal dimensions surrounding a perimeter of the cushion **30**, and extending just slightly above the underside, or bottom surface, of the cushion **30**. In alternative embodiments, the frame **35** is an internal frame being encompassed on at least five of its six sides by seat cover **21**.

Preferably, the air source **41** is an internal air source, such as a blower or centrifugal fan, disposed within the frame **35**, abutting a base surface **55** of the mounting bracket **39**. Preferably, the seat **13** is configured to move between open and closed positions. In other embodiments, the seat **13** is configured to remain closed. When the seat **13** is configured to move between open and closed positions, the edge having electrical port **51** is a hinged edge of the seat **13** and wiring or connectors extending out of electrical port **51** is protected against wear and tear from constant movement, such as placing a flexible protective covering around the wire, running the wire through a coiled spring, coiling the wire, or through the use of other protective means.

Preferably, the seat assembly **13** is partially self-contained, meaning that at least heating pad **27**, airways, and air channel **31** are within the covered seat of the seat assembly **13**. In other embodiments, the seat assembly **13** is fully self-contained, meaning that the frame **35** is an internal frame, and one or more of the internal frame and the mounting bracket **39** are encompassed on at least five of its six sides by seat cover **21**.

FIG. **4** depicts the components of the seat assembly **13** in a diagrammatic detail view, having the components arranged relative to each other. A first lateral edge **56** and a second lateral edge **57** are disposed between sidewalls **3** of the locker **1**. A second opening or electrical port **58** is formed in a side of frame **35** between the first lateral edge **56** and the second lateral edge **57**.

FIGS. **5** through **8** depict side, perspective, top, and rear views of the custom duct **47**. The custom duct **47** includes a rounded, curved, or gradually sloping portion **59** and a squared, rectangular, or right-angled portion **61**. The slope of the sloping portion **59** can have any degree of curvature as long as it slopes to a 90° angle. For example, any or all of dimensions **63**, **65**, and **67** may be varied to change the degree of curvature of the sloping portion **59**. Preferably duct **47** is formed from a flat pattern and folded along bend lines to create the shape depicted. In other embodiments, duct **47** is cut or formed from a tube of metal, with its sloping portion **59** being brazed, soldered, welded, folded, or otherwise attached to the square/rectangular portion.

Preferably, duct **47** includes two parallel sides **69***a*, **69***b* that are folded to create an opening **71** that is arranged in the seat assembly **13** to channel airflow from an inlet of the duct **47** to an outlet. In other embodiments, one or more openings **71** are cut or otherwise formed on any of the surfaces of duct **47** depending on the configuration of the air channels **31**, air sources **41**, cushion **29**, and/or frame **35**. Preferably, the two parallel sides **69***a*, **69***b* are arranged to have a horizontal orientation relative to the seat assembly **13**, however, other orientations, such as lateral and vertical orientations may also be used depending on at least the airway, air channel, and air port configuration of the cushion.

In FIGS. **9** and **10** an alternative embodiment of seat assembly **13** is depicted as seat assembly **72**. The seat assembly **72** includes a frame **73** having a horizontal edge **74** configured to be connected with an external air source **75**. In a preferred embodiment, the external air source **75** is a dual Peltier Unit configuration, having left and right Peltier Units **75***a*, **75***b*, and left and right mounting brackets **81***a*, **81***b*. In other embodiments, a shared external air source, such as an HVAC, may be used. An edge of the frame **73** includes one or more air source connectors **77**. In a preferred embodiment, the air source connectors include left and right airway grommets **77***a*, **77***b*. When the seat **13** is configured to move between open and closed positions, the airway grommets **77***a*, **77***b* are located on an edge of the frame **73** that is opposite the hinged edge of the seat **72**. In a closed position, the airway grommets **77***a*, **77***b* create a seal between the grommets and one or more custom air ducts **79***a*, **79***b*.

FIG. **11** depicts a side view of a seat compartment **5** disposed beneath seat **72**. Seat compartment **5** includes a stop member **81** secured to a sidewall **3** to slow and/or stop rotation of seat **72** when moving to the closed position. A stop member **81** includes a support strut **83** and hinge arm **85** connected to and/or between the stop member **81** and the sidewall **3** of the locker. It is oriented to abut and connect to an underside of seat **72** to securely prevent it from further rotation when moving to the open position. The open position may include lateral edges of the seat being parallel with, or extending away from, a pair of sidewalls **3**. The support strut **83** maintains the open position and may have a damper **87** or soft-close feature attached and/or associated with it. An air cavity **53** is formed in a portion of the frame of seat assembly **72**, connecting the cushion air channels and airways to the air cavity **53**. Duct **79** connects the air cavity **53** to a Peltier Unit **75**. The Peltier Unit **75** is configured to heat and cool an airflow exiting or passing through the Peltier Unit **75**.

It is apparent that a system with significant advantages has been described and illustrated. The particular embodiments disclosed above are illustrative only, as the embodiments may be modified and practiced in different but equivalent manners apparent to those skilled in the art having the benefit of the teachings herein. It is therefore evident that the particular embodiments disclosed above may be altered or modified, and all such variations are considered within the scope and spirit of the application. Accordingly, the protection sought herein is as set forth in the description and claims. Although the present embodiments are shown above, they are not limited to just these embodiments, but are amenable to various changes and modifications without departing from the spirit thereof.

We claim:

1. A locker, comprising:
a pair of upstanding locker sidewalls;
a rear locker wall disposed between the locker sidewalls; and
an air-conditioned seat assembly comprising:
a seat bench;
an air source for supplying air to the seat bench;
a cushion coupled to the seat bench; and
at least one airflow channel formed in the cushion;
wherein the pair of upstanding locker sidewalls and the rear locker wall define a space within the locker.

2. The locker according to claim **1**, wherein the cushion comprises:
a foam material.

3. The locker according to claim **1**, further comprising:
a heat source.

4. The locker according to claim **3**, wherein the heat source comprises at least one of:
a temperature-controlled heating pad;
a furnace associated with an HVAC; and
a Peltier unit.

5. The locker according to claim **1**, further comprising:
a control system for controlling the operation of the locker.

6. The locker according to claim **1**, wherein the seat bench extends forward of at least one of the locker sidewalls.

7. The locker according to claim **1**, wherein the seat bench is coupled to a hinge, so as to be operable between an open position and a closed position.

8. The locker according to claim **1**, further comprising:
an external air source.

9. The locker according to claim **8**, wherein the external air source comprises:
an HVAC system.

10. The locker according to claim **1**, wherein the air-conditioned seat assembly further comprises:
a frame.

11. The locker according to claim **1**, further comprising:
a seat compartment disposed beneath the seat bench.

12. A locker, comprising:
a pair of upstanding locker sidewalls;
a rear locker wall disposed between the locker sidewalls; and

an air-conditioned seat assembly comprising:
a seat bench;
an air source for supplying air to the seat bench;
a cushion coupled to the seat bench;
at least one airflow channel formed in the cushion;
a seat cover disposed over at least a part of the cushion;
wherein the seat cover is configured to allow air to flow therethrough; and
wherein the pair of upstanding locker sidewalls and the rear locker wall define a space within the locker.

13. The locker according to claim **1**, further comprising:
A locker, comprising:
a pair of upstanding locker sidewalls;
a rear locker wall disposed between the locker sidewalls;
an air-conditioned seat assembly comprising:
a seat bench; and
an air source for supplying air to the seat bench; and
a network connector;
wherein the pair of upstanding locker sidewalls and the rear locker wall define a space within the locker.

14. A locker, comprising:
a pair of upstanding locker sidewalls;
a rear locker wall disposed between the locker sidewalls; and
an air-conditioned seat assembly comprising:
a seat bench; and
an air source for supplying air to the seat bench; and
a wireless communications system;
wherein the pair of upstanding locker sidewalls and the rear locker wall define a space within the locker.

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