

A CONFIGURABLE FRAME ASSEMBLY FOR A SERVICE STATION

Technical Field

[0001] The present disclosure generally relates to a frame assembly. More particularly, it relates to a configurable frame assembly for a service station that can be assembled into a desired shape to fit the configuration of the service station.

Background

[0002] The following discussion of the background to the invention is intended to facilitate an understanding of the present invention. However, it should be appreciated that the discussion is not an acknowledgment or admission that any of the material referred to was published, known or part of the common general knowledge in any jurisdiction as at the priority date of the application.

[0001] Food safety is an important, ongoing issue in the food service industry. Many food establishments serve food and drink to thousands of customers daily. Given the scale and amount of food prepared and served, it can be difficult to continuously monitor food quality and safety, such that customers are served food that meets all health safety standards and regulations.

[0002] There exists a pressing need to monitor the duration of prepared food stored at a food service station to ensure the timely collection and service of the prepared food by the service crew to customers. This is crucial to ensure adherence to food quality and safety standards. If the prepared food remains on the service station beyond a predetermined time limit, it must be discarded.

[0003] Considering the variety of prepared food items, the deployment of multiple timing devices on service stations becomes imperative, each tailored to monitor distinct food types. A significant challenge revolves around the installation of these timing devices and the inconspicuous arrangement of their electrical cables.

[0004] Furthermore, these installations must cause minimal disruption to the restaurant's operations, as these establishments often operate for extended hours, sometimes around the clock. The problem thus involves designing, developing, and installing this system efficiently and effectively, ensuring food safety and quality while addressing the practical operational constraints of the restaurant environment.

[0005] Therefore, the present invention attempts to overcome at least in part some of the aforementioned problems and to provide for an improved approach for addressing the foregoing challenges.

Summary of the Invention

[0006] Throughout this document, unless otherwise indicated to the contrary, the terms “comprising”, “consisting of”, and the like, are to be construed as non-exhaustive, or in other words, as meaning “including, but not limited to”.

[0007] In accordance with a first aspect of the invention, there is disclosed a configurable frame assembly for a service station comprising two horizontal support frames including an upper horizontal support frame and a lower horizontal support frame, each horizontal support frame including an upper horizontal member and a lower horizontal member spaced apart from each other and configured to fit at least a device holder for holding an electronic device, a vertical support frame coupled to each end of the two horizontal

support frames to define the frame assembly, the vertical support frame including an inner vertical member and an outer vertical member spaced apart from each other and coupled to the horizontal support frame by a connecting assembly, a power supply unit in electrical communication with the frame assembly, wherein each connecting assembly comprises a longitudinal member having a first connector member at one end and a second connector member at the other end of the longitudinal member, wherein the first connector member and second connector member are coupled to the horizontal support frame and the vertical support frame.

[0008] According to various embodiments, the first connector member includes a first opening for receiving the upper horizontal member and a second opening for receiving the outer vertical member, wherein the upper horizontal member is in contact with the outer vertical member when received through the first opening and the second opening respectively.

[0009] According to various embodiments, the second connector member includes a third opening for receiving the lower horizontal member and a fourth opening receiving the inner vertical member, wherein the lower horizontal member is in contact with the inner vertical member when received through the third opening and the fourth opening respectively.

[0010] According to various embodiments, the first opening includes a first bore extending through the first connector member and aligned with the upper horizontal member, and the second opening includes a second bore extending through the first connector member, wherein the first opening is oriented substantially perpendicular to the second opening.

[0011] According to various embodiments, the third opening includes a third bore extending through the second connector member and aligned with the lower horizontal member, and the fourth opening includes a fourth bore extending through the second connector member and aligned with the inner vertical member, wherein the third opening is oriented substantially perpendicular to the fourth opening.

[0012] According to various embodiments, the device holder includes a housing configured to fit the electronic device, the housing including an upper projection projecting from an upper longitudinal edge of the housing and a lower projection projecting from a lower longitudinal edge of the housing.

[0013] According to various embodiments, the device holder includes a first metal rod partially embedded within an upper portion of the housing, and a second metal rod partially embedded within a lower portion of the housing, wherein the first metal rod and the second metal rod are in contact with the upper horizontal member and the lower horizontal member respectively.

[0014] According to various embodiments, the housing includes a cable connector located on the upper portion of the housing and a lower portion of the housing, wherein the cable connector is configured to provide an inlet for a cable from the electronic device to contact the metal rod.

[0015] According to various embodiments, the device holder includes a housing having an upper portion and a lower portion, wherein the upper portion and the lower portion are configured to fit between the upper horizontal member and the lower horizontal member respectively.

[0016] According to various embodiments, the upper portion includes an upper projection projecting from an upper longitudinal edge of the housing and the lower portion includes a lower projection projecting from a lower longitudinal edge of the housing.

[0017] According to various embodiments, the upper portion and the lower portion each includes a metal rod partially embedded within the said upper portion and the said lower portion so that the each metal rod is in contact with the upper horizontal member and the lower horizontal member.

[0018] According to various embodiments, the upper horizontal member, lower horizontal member, outer vertical member and inner vertical member have a squarish cross-sectional profile.

[0019] According to various embodiments, the power supply unit is configured to slidably connect to the inner vertical member and the outer vertical member.

[0020] According to various embodiments, the power supply unit is configured to provide a positive polarity voltage to the outer vertical member and a negative polarity voltage to the inner vertical member.

[0021] According to various embodiments, the power supply unit is configured to provide a positive polarity voltage to the inner vertical member and a negative polarity voltage to the outer vertical member.

[0022] According to various embodiments, the power supply unit is configured to provide an electrical current flow from within the inner and outer vertical members and the upper and lower horizontal members.

Brief Description of the Drawings

[0023] In the drawings, like reference characters generally refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead generally being placed upon illustrating the principles of the invention. The dimensions of the various features or elements may be arbitrarily expanded or reduced for clarity. In the following description, various embodiments of the invention will be better understood with reference to the detailed description when considered in conjunction with the non-limiting examples and the accompany drawings, in which:

[0024] Figure 1 is a front view of a frame assembly for monitoring food at a food service station according to various embodiments;

[0025] Figure 2 is a perspective view of a device holder for holding an electronic device according to various embodiments;

[0026] Figure 3a is an enlarged front view of a section of the frame assembly according to various embodiments;

[0027] Figure 3b is an enlarged side view of the section of the frame assembly of Figure 3a according to various embodiments;

[0028] Figure 4 is an enlarged front view of a corner section of the frame assembly according to various embodiments;

[0029] Figure 5 is a side profile view of the device holder according to various embodiments; and

[0030] Figure 6 is a perspective view of device holder according to various embodiments.

Detailed Description

[0031] Reference will now be made in detail to an exemplary embodiment of the present invention, examples of which are illustrated in the accompanying drawings. While the invention will be described in conjunction with the embodiment, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the invention as defined by the appended description. Furthermore, in the following detailed description of embodiments of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be recognized by one of ordinary skill in the art that the present invention may be practiced without these specific details. In other instances, well-known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of the embodiments of the present invention.

[0032] In the specification the term “comprising” shall be understood to have a broad meaning similar to the term “including” and will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps. This definition also applies to variations on the term “comprising” such as “comprise” and “comprises”.

[0033] In the specification, the term “engage” and its variants including “engagement”, “engages”, “engaging” and “engaged” as used herein are to be interpreted to include engagement by touching, rubbing or abutting including engagement in one or more of an axial, radial, tangential and circumferential direction, and includes engagement through an intermediary such as a component positioned or sandwiched between a first component and a second component.

[0034] Throughout the specification and claims, the following terms take the meanings explicitly associated herein, unless the context clearly dictates otherwise. The phrase “in one embodiment” as used herein does not necessarily refer to the same embodiment, though it may. Furthermore, the phrase “in another embodiment” as used herein does not necessarily refer to a different embodiment, although it may. Thus, as described below, various embodiments of the invention may be readily combined, without departing from the scope or spirit of the invention.

[0035] Certain terminology used in the description is for convenience in reference only and shall not be limiting. For example, up, down, front, back, right, and left refer to the disclosed subject matter as orientated in the view being referred to. The words, “inwardly” and “outwardly” refer to directions toward and away from, respectively, the geometric center of the aspect being described and designated parts thereof. The terminology will include the words specifically mentioned, derivatives thereof, and words of similar meaning. Like references numbers denote like features, components, or elements throughout the various embodiments.

[0036] In addition, as used herein, the term “or” is an inclusive “or” operator, and is equivalent to the term “and/or,” unless the context clearly dictates otherwise. The term “based on” is not exclusive and allows for being based on additional factors not described, unless the context clearly dictates otherwise. In addition, throughout the specification, the meaning of “a,” “an,” and “the” include plural references. The meaning of “in” includes “in” and “on.”

[0037] In the context of various embodiments, the articles “a,” “an” and “the” as used with regard to a feature or element include a reference to one or more of the features or elements.

[0038] Features that are described in the context of an embodiment may correspondingly be applicable to the same or similar features in the other embodiments. Features that are described in the context of an embodiment may correspondingly be applicable to the other embodiments, even if not explicitly described in these other embodiments. Furthermore, additions and/or combinations and/or alternatives as described for a feature in the context of an embodiment may correspondingly be applicable to the same or similar feature in the other embodiments.

[0039] To achieve the stated features, advantages and objects, the present invention is directed to a frame assembly for a food service station.

[0040] The present disclosure tackles some problem areas commonly encountered in food establishments, particularly quick service restaurants. The present disclosure discloses a frame assembly for holding electronic timing devices that is designed to be modular and retrofitted onto an existing food service station in a food establishment with minimal downtime and renovation in restaurant operations. The present disclosure also addresses the problem of concealment of electrical cables powering the electronic timing devices which typically requires downtime and extensive renovation of the food service station area.

[0041] Figure 1 is a front view of a frame assembly 100 for monitoring prepared food at a food service station according to various embodiments. The frame assembly 100 includes horizontal support frames 70, 80, 90, and vertical support frames 60, 70 to define the frame assembly 100 for retrofitting on a food service station. A typical food service station can include at least two tiered rows of shelving for storing food prepared by the kitchen crew in a food establishment. Each tiered row of shelving is separated into distinct columns so that each distinct column represents a specific prepared food item. This allows the service crew to monitor the duration of time each prepared food item is

placed in a specific row and column. Whenever a prepared food item is placed in a specific row and column by the kitchen crew, the person would initiate an electronic device 20 that is strategically located for each row and column. In other words, each electronic device 20 corresponds to each specific prepared food item. The electronic device 20 will initiate a timing counter that will monitor the duration of time the prepared food item is held in the specific row and column. Once the prepared food item on the service station exceeds the predetermined time limit for that specific food item, for example, 5 minutes, the prepared food item is discarded as it will not meet food service and quality standards.

[0042] In the present embodiment, the frame assembly 100 can be retrofitted or installed on a food service station that includes three tiered rows with three columns for each tiered row, thereby monitoring a total of nine distinct prepared food items. Each electronic timestamp device 20 corresponds to each distinct prepared food item.

[0043] In other embodiments, a basic module of the frame assembly 100 can include two horizontal support frames 80, 90 and two vertical support frames 60, 70 to form a basic frame assembly that is capable of monitoring at least two distinct prepared food items. The two horizontal support frames include an upper horizontal support frame 90 and a lower horizontal support frame 80. Each of the two vertical support frames 60, 70 include an outer vertical member 61, 71 and an inner vertical member 62, 72. The two horizontal support frames 80, 90 and the two vertical support frames 60, 70 together define a quadrilateral shape. In some embodiments, the quadrilateral shape can be a square or a rectangle. The upper horizontal support frame 90 includes an upper horizontal member 91 and a lower horizontal member 92 spaced apart from each other, and the lower horizontal support frame 80 includes an upper horizontal member 81 and a lower horizontal member 82 spaced apart from each other. The upper horizontal member 81, 91 and the lower horizontal member 82, 92 are spaced from each other and configured and

sized to fit a device holder capable of holding an electronic device. Each end of the upper horizontal support member 91 and the lower horizontal support member 92 are coupled to a connecting assembly 10 that is also respectively coupled to the outer vertical member 61, 71 and the inner vertical member 62, 72. Details of the connecting assembly 10 will be explained hereinafter.

[0044] In some embodiments, the basic module of the frame assembly 100 (that includes two horizontal support frames 80, 90 and two vertical support frames 60, 70) is sufficient to fit a food service station that has two rows. The length of the frame assembly 100 can be configured and customized to suit the length of the food service station and the number of electronic devices 20 can be configured accordingly to the number of specific food items monitored.

[0045] In an embodiment, the upper horizontal members 81, 91 and the lower horizontal members 82, 92 are made of metal and conducts electricity within the frame assembly 100 to provide power to the multiple electronic devices 20 held between the upper horizontal member 81, 91 and the lower horizontal member 82, 92. A power supply unit (not shown) provides voltage to the upper horizontal members 81, 91 and the lower horizontal members 82, 92 through the vertical support frames 60, 70. When a potential difference (voltage) is applied across the upper horizontal member 91 and the lower horizontal member 92, it creates an electric field. This field causes the free electrons in the metal to move from one end (negative terminal) to the other end (positive terminal). This movement of electrons constitutes the electric current that flows through the upper horizontal members and the lower horizontal members so that the electronic devices 20 in electrical communication with the upper horizontal member and the lower horizontal member causes the electronic devices 20 to be powered effectively. The upper horizontal member 91 and the lower horizontal member 92 are therefore oppositely charged, i.e. one is positively charged and the other is negatively charged in order to provide the current

required to power the electronic device 20. In other words, the electronic device connected between the upper horizontal member 91 and the lower horizontal member 92 forms part of an electrical circuit. When the power supply is turned on, it completes the circuit, allowing current to flow through it. The electronic device 20 therefore uses this electric current to operate. In some embodiments, the upper horizontal members 81, 91, the lower horizontal member 82, 92, the outer vertical members and the inner vertical members have a four-sided or a squarish cross-sectional profile. This cross-sectional profile restricts the freedom of movement of the horizontal and vertical members so that the frame assembly 100 does not loosen over time and prevents the frame assembly from falling apart.

[0046] While the present invention is illustrated as being used in a food establishment, it is also possible to use the frame assembly for purposes other than for a food service station. For example, the frame assembly can be used in establishments that require monitoring of distinct categories of products that are time sensitive.

[0047] Figure 2 is a perspective view of a device holder 20 for holding an electronic device according to various embodiments. The device holder 20 includes an upper portion 21 and a lower portion 22 and these portions are configured to fit between the upper horizontal member and the lower horizontal member of the horizontal support frame. The upper portion 21 includes a projection 25 projecting longitudinally from one edge of the upper portion 21. Another projection projecting longitudinally on the opposed end of the upper portion 21 is also present. The projections are sized and configured to provide a tight and secure fit or an interference fit for the upper horizontal member to fit between the projections. Similarly, the lower portion 22 includes a projection projecting longitudinally at one edge of the lower portion 21 and another projection on the opposed edge of the lower portion 21. The projections are sized and configured to provide a tight and secure fit or an interference fit for the lower horizontal member to fit between the

projections. With the projections of both the upper and lower portions, this ensures that the device holder 20 can be slotted in between the upper horizontal member and the lower horizontal member. In some embodiments, the device holder 20 can be first fitted in between the upper and lower horizontal members and moved laterally along the upper and lower horizontal members to a desired placement location along the horizontal support frame.

[0048] The device holder 20 includes a housing 24 attached to the upper portion 21 and the lower portion 22 such that the housing 24 is in between the upper portion 21 and the lower portion 22. In some embodiments, the upper portion 21 and the lower portion 22 can be integrated with the housing 24. The housing 24, or the upper portion 21 and the lower portion 22 also includes a metal rod 23 partially embedded within the housing or the upper portion and lower portion. The metal rod 23 is partially exposed along the length of the upper and lower portions in order to allow the metal rod 23 to be in engagement with the upper and lower horizontal members. In some embodiments, the metal rod 23 has a circular cross-sectional profile.

[0049] The upper portion and the lower portion each includes a cable connector 26 centrally located along the length of the upper portion 21 and the lower portion 22. The cable connector 26 includes an aperture at one end that provides an inlet for a cable from an electronic device within the housing 24 and an outlet at the opposed end for the cable to be in electrical contact with the metal rod 23. In some embodiments, the cable connector 26 includes a spring connector (not shown) within the aperture configured to resiliently engage the cable from the electronic device to hold the cable in place and to ensure constant engagement with the metal rod 23. The spring connector also prevents the cable from slipping out from the inlet and losing connection with the metal rod. By doing so, the electronic device can be powered by the flow of electricity provided via a power supply unit (as shown in Figure 4) through the horizontal members in contact with

the metal rods. The device holder 24 is sized and configured to fit an electronic device. In some embodiments, the electronic device can be a timing device or a timestamp device for logging a start and an end time a prepared food item is placed on the food service station, or any other electronic devices capable of monitoring items.

[0050] Figure 3a is an enlarged front view of a section of the frame assembly 100 according to various embodiments. Figure 3b is an enlarged side view of a section of the frame assembly of Figure 3a. As shown in Figure 3a, the device holder 20 is fitted between the upper horizontal member 81, 91 and the lower horizontal member 82, 92. Each end of the upper horizontal member and the lower horizontal member is coupled to a connecting assembly 10. Each connecting assembly 10 includes a longitudinal member 11 having a first connector member 12 at one end and a second connector member 13 at the other end of the longitudinal member 11. The first connector member 12 includes a first opening 16 and a second opening 15. The first opening 16 is configured to receive the upper horizontal member 91 and the second opening 15 is configured to receive the outer vertical member 61. In some embodiments, the first opening 16 and the second opening 15 are through holes extending through the first connector member 12 and are oriented substantially perpendicular to each other. The second connector member 13 includes a third opening 17 and a fourth opening 18. The third opening 17 is configured for receiving the lower horizontal member 92 and the fourth opening 18 is configured for receiving the inner vertical member 62. The third opening 17 and the fourth opening 18 are through holes extending through the second connector member 13 and are oriented substantially perpendicular to each other. In some embodiments, the connecting assembly 10 can be a S-shaped or an I-shaped when viewed from the front. In some embodiments, the first connector member and the second connector member can be symmetrical (eg. when it is an I-shaped) or asymmetrical (eg. when it is an S-shaped) about the longitudinal axis (Axis Y-Y) of the longitudinal member 11. The connector members 12, 13 are designed and configured to extend from the longitudinal member 11 in order to

provide a horizontal space between the first and third openings for the upper horizontal members 91, 92 and a vertical space between the second and fourth openings for the outer vertical member 61 and the inner vertical member 62.

[0051] With reference to Figure 3b, the first opening 16 and the third opening 17 are spaced apart from each other to accommodate the upper horizontal member 91 and the lower horizontal member 92 respectively. In some embodiments, within the first connector member 12, the first opening 16 partially overlaps with the second opening 15 such that the upper horizontal member 91 is in contact with the outer vertical member 61 when received through the first opening 16 and the second opening 15 respectively. In this way, the upper horizontal member 91 is in electrical communication with the outer vertical member 61 so that electrical current can flow from the outer vertical member 61 to the upper horizontal member 91 and vice versa. Similarly, in some embodiments, within the second connector member 13, the third opening 17 and the fourth opening 18 partially overlaps such that the lower horizontal member 92 is in contact with the inner vertical member 62 when received through the third opening 17 and the fourth opening 18 respectively. In this way, the lower horizontal member 92 is in electrical communication with the inner vertical member 62 so that electrical current can flow from the inner vertical member 62 to the lower horizontal member 92 and vice versa. In all embodiments, the first, second, third and fourth openings are sized and configured to allow the respective horizontal and vertical members through the said openings.

[0052] In some embodiments, the connecting assembly 10 allows the frame assembly 10 to be constructed in a configurable or modular manner, and provides easy configuration and building of a frame assembly to accommodate a food service station with various sizes and shapes. This allows for easy installation or retrofitting of a constructed frame assembly to fit on a food service station. The openings of the connecting assembly 10 are configured such that electricity can flow through the

horizontal and vertical members of the frame assembly to provide power to the multiple electronic devices that are fitted on the frame assembly. In this way, unsightly cables are not required on the frame assembly since electricity simply flows through the horizontal and vertical members.

[0053] Figure 4 is a front enlarged view of a corner section of the frame assembly according to various embodiments. In this embodiment, a power supply unit 40 connected to the electrical mains provide the required voltage to the frame assembly 10 in order to provide electricity to the multiple electronic devices 20 present in the frame assembly. In some embodiments, the power supply unit 40 can be positioned anywhere along the frame assembly 10 as long as it straddles and is in electrical communication with the outer and inner vertical members or the upper horizontal member and the lower horizontal member so that electricity can be provided to both the outer and inner vertical members, and the upper horizontal member and the lower horizontal member. In some embodiments, the power supply unit 40 is slidably connected to the inner and outer vertical members via an interference fit or a snap fit configuration and can be displaced along the vertical support frame to a desired position. When the power supply unit 40 is on the vertical members, the power supply unit 40 is configured to provide a positive polarity voltage to one vertical member and a negative polarity voltage to the other vertical member. This allows the respective polarity voltages to flow from say the vertical members of a right vertical support frame to the horizontal members of the upper horizontal support frame and to the vertical members of a left vertical support frame throughout the frame assembly, and to provide a potential difference between the upper horizontal member and the lower horizontal member so that current can flow between the upper horizontal member and the lower horizontal member to provide power to the electronic device therebetween. In other words, the power supply unit 40 provides an electrical current flow throughout the frame assembly within the inner and outer vertical members and the upper and lower horizontal members. In some embodiments, the power

supply unit 40 is strategically located in a position where the cable from the power supply unit 40 is concealed and hidden away from the frame assembly 10. In some embodiments, the power supply unit 40 provides a voltage of 5V DC. This ensures that there is no risk of electrocution from the exposed metal of the horizontal support frame and vertical support frame.

[0054] Figure 5 is a side profile view of the device holder 20 according to various embodiments. The device holder 20 includes an upper portion 21 and a lower portion 22 and these portions are configured to fit between the upper horizontal member 91 and the lower horizontal member 92 respectively. The upper portion 21 includes a projection 25 projecting longitudinally from one edge of the upper portion 21. Similarly, the lower portion 22 includes a projection 25 projecting longitudinally at one edge of the lower portion 21. In some embodiments, the upper portion 21 and the lower portion 22 are made of a resilient and/or deformable material so that the horizontal members can be resiliently engaged with the upper portion and the lower portion to ensure that the device holder 20 is held in place. In some embodiments, the upper portion 21 and the lower portion is made of ABS plastic (Acrylonitrile Butadiene Styrene), polycarbonate plastic, or any other suitable material. In some embodiments, the metal rod 23 is in electrical communication with the horizontal members 91, 92 so that current can flow from the horizontal members 91, 92 to the metal rod 23 and subsequently to the electronic device within the housing 24. In some embodiments, the metal rod 23 is engaged with the horizontal member 91, 92 so that it provides resistance against the projections 25 to ensure that the device holder 20 is secured between the upper horizontal member 91 and lower horizontal member 92. With the projections 25 of both the upper and lower portions and the metal rods 23, this ensures that the device holder 20 can be slotted in between the upper horizontal member and the lower horizontal member. In some embodiments, the device holder 20 can be first fitted in between the upper and lower

horizontal members and moved laterally along the upper and lower horizontal members to a desired placement location along the horizontal support frame.

[0001] Figure 6 is a perspective view of another device holder 20 according to various embodiments. The device holder 20 includes a housing 24 configured to fit between the upper horizontal member 91 and the lower horizontal member 92 respectively. The housing 24 includes an upper projection 25 projecting longitudinally from one edge of an upper portion of the housing 24. Similarly, the housing 24 includes a lower projection 25 projecting longitudinally at one edge of the lower portion of the housing 24. In some embodiments, the housing 24 is made of a resilient and/or deformable material so that the horizontal members 91, 92 (not shown) can be resiliently engaged with the upper and lower projections 25 to ensure that the device holder 20 is held in place in between the upper horizontal member and the lower horizontal member. In some embodiments, the housing 24 is made of ABS plastic (Acrylonitrile Butadiene Styrene), polycarbonate plastic, or any other suitable material. In some embodiments, the metal rod 23 is in electrical communication with the horizontal members 91, 92 so that current can flow from the horizontal members 91, 92 to the metal rod 23 and subsequently to the electronic device within the housing 24. In some embodiments, the housing 24 includes a cable connector 26 on the rear of the housing 24. The cable connector 26 includes at least one aperture that provides an inlet for a cable from an electronic device within the housing 24 to be in electrical communication with the metal rod 23. In some embodiments, the cable connector 26 includes a spring connector (not shown) within the aperture configured to resiliently engage the cable from the electronic device to hold the cable in place and to ensure constant engagement with the metal rod 23. By doing so, the electronic device can be powered by the flow of electricity provided via a power supply unit (as shown in Figure 4) through the horizontal members in contact with the metal rods. The device holder 24 is sized and configured to fit an electronic device. In some embodiments, the electronic device can be a timing device or a

timestamp device for logging a start and an end time a prepared food item is placed on the food service station, or any other electronic devices capable of monitoring items.

[0002] In some embodiments, the metal rod 23 is engaged with the horizontal member 91, 92 so that it provides resistance against the projections 25 to ensure that the device holder 20 is secured between the upper horizontal member 91 and lower horizontal member 92. With the projections 25 of both the upper and lower portions and the metal rods 23, this ensures that the device holder 20 can be slotted in between the upper horizontal member and the lower horizontal member. In some embodiments, the device holder 20 can be first fitted in between the upper and lower horizontal members and moved laterally along the upper and lower horizontal members to a desired placement location along the horizontal support frame.

[0063] While the invention has been particularly shown and described with reference to specific embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The scope of the invention is thus indicated by the appended claims and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced.

Claims

1. A configurable frame assembly for a service station, comprising:

two horizontal support frames including an upper horizontal support frame and a lower horizontal support frame, each horizontal support frame including an upper horizontal member and a lower horizontal member spaced apart from each other and configured to fit at least a device holder for holding an electronic device;

a vertical support frame coupled to each end of the two horizontal support frames to define the frame assembly, the vertical support frame including an inner vertical member and an outer vertical member spaced apart from each other and coupled to the horizontal support frame by a connecting assembly;

a power supply unit in electrical communication with the frame assembly;

wherein each connecting assembly comprises:

a longitudinal member having a first connector member at one end and a second connector member at the other end of the longitudinal member, wherein the first connector member and second connector member are coupled to the horizontal support frame and the vertical support frame.

2. The configurable frame assembly according to claim 1, wherein the first connector member includes a first opening for receiving the upper horizontal member and a second opening for receiving the outer vertical member, wherein the upper horizontal member is in contact with the outer vertical member when received through the first opening and the second opening respectively.

3. The configurable frame assembly according to claim 1 or 2, wherein the second connector member includes a third opening for receiving the lower horizontal member

and a fourth opening receiving the inner vertical member, wherein the lower horizontal member is in contact with the inner vertical member when received through the third opening and the fourth opening respectively.

4. The configurable frame assembly according to claim 2, wherein the first opening includes a first bore extending through the first connector member and aligned with the upper horizontal member, and the second opening includes a second bore extending through the first connector member, wherein the first opening is oriented substantially perpendicular to the second opening.

5. The configurable frame assembly according to claim 3, wherein the third opening includes a third bore extending through the second connector member and aligned with the lower horizontal member, and the fourth opening includes a fourth bore extending through the second connector member and aligned with the inner vertical member, wherein the third opening is oriented substantially perpendicular to the fourth opening.

6. The configurable frame assembly according to claim 1, wherein the device holder includes a housing configured to fit the electronic device, the housing including an upper projection projecting from an upper longitudinal edge of the housing and a lower projection projecting from a lower longitudinal edge of the housing.

7. The configurable frame assembly according to claim 6, wherein the device holder includes a first metal rod partially embedded within an upper portion of the housing, and a second metal rod partially embedded within a lower portion of the housing, wherein the first metal rod and the second metal rod are in contact with the upper horizontal member and the lower horizontal member respectively.

8. The configurable frame assembly according to claim 6 and 7, wherein the housing includes a cable connector located on the upper portion of the housing and a lower portion of the housing, wherein the cable connector is configured to provide an inlet for a cable from the electronic device to contact the metal rod.

9. The configurable frame assembly according to claim 1, wherein the device holder includes a housing having an upper portion and a lower portion, wherein the upper portion and the lower portion are configured to fit between the upper horizontal member and the lower horizontal member respectively.

10. The configurable frame assembly according to claim 9, wherein the upper portion includes an upper projection projecting from an upper longitudinal edge of the housing and the lower portion includes a lower projection projecting from a lower longitudinal edge of the housing.

11. The configurable frame assembly according to claim 10, wherein the upper portion and the lower portion each includes a metal rod partially embedded within the said upper portion and the said lower portion so that the each metal rod is in contact with the upper horizontal member and the lower horizontal member.

12. The configurable frame assembly according to claim 1, wherein the upper horizontal member, lower horizontal member, outer vertical member and inner vertical member have a squarish cross-sectional profile.

13. The configurable frame assembly according to claim 1, wherein the power supply unit is configured to slidably connect to the inner vertical member and the outer vertical member.

14. The configurable frame assembly according to claim 1, wherein the power supply unit is configured to provide a positive polarity voltage to the outer vertical member and a negative polarity voltage to the inner vertical member.

15. The configurable frame assembly according to claim 1, wherein the power supply unit is configured to provide a positive polarity voltage to the inner vertical member and a negative polarity voltage to the outer vertical member.

16. The configurable frame assembly according to claim 1, wherein the power supply unit is configured to provide an electrical current flow from within the inner and outer vertical members and the upper and lower horizontal members.