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(19) **United States**(12) **Patent Application Publication**  
**LECLERC**(10) **Pub. No.: US 2021/0363747 A1**(43) **Pub. Date: Nov. 25, 2021**(54) **MOBILE SERVICE BLOCK SYSTEM AND METHOD**(52) **U.S. Cl.**CPC ..... **E04B 1/34869** (2013.01); **A47B 77/08** (2013.01)(71) Applicant: **LES MODULES ECOLOGIQUES**  
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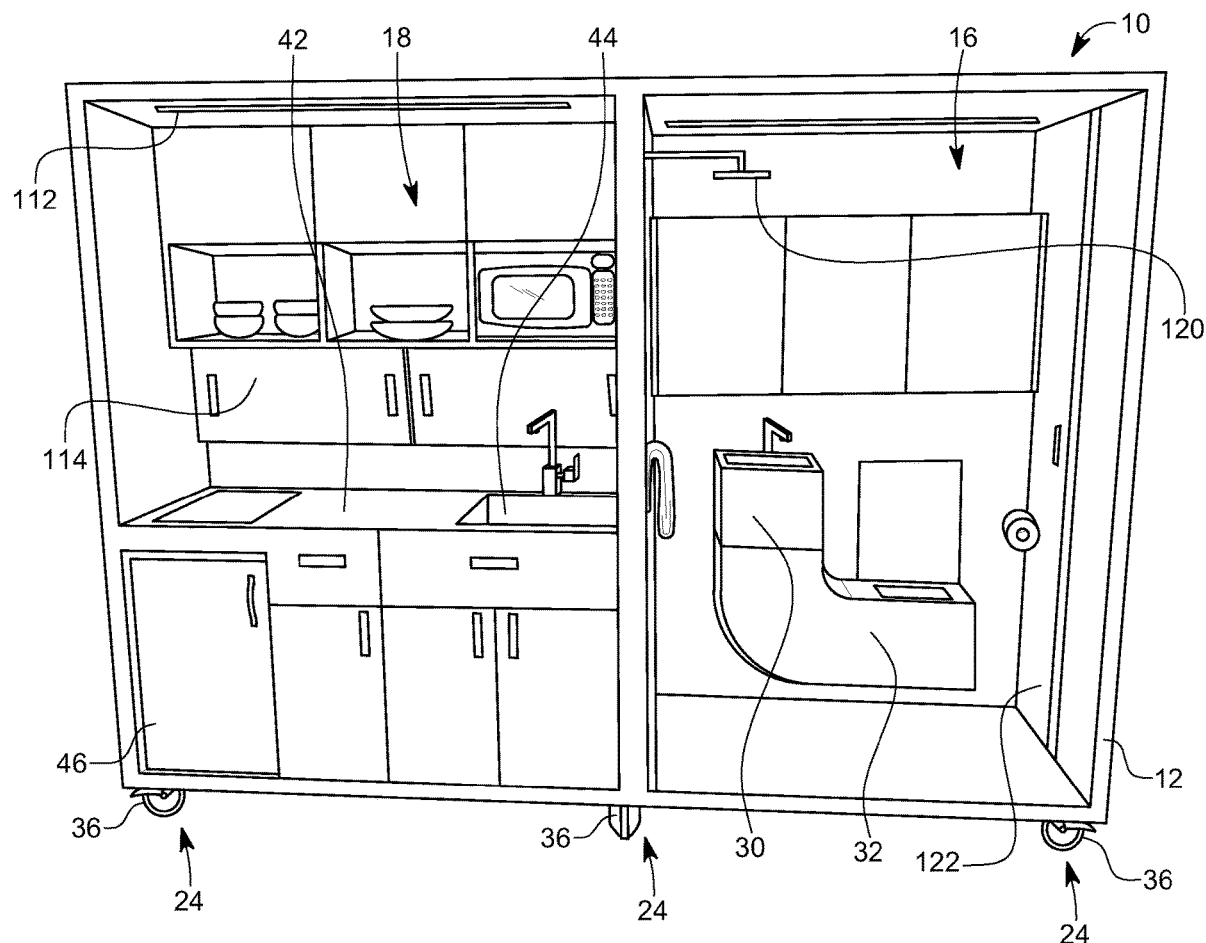
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**ABSTRACT**(72) Inventor: **Pierre LECLERC**, Carignan (CA)(21) Appl. No.: **17/161,279**(22) Filed: **Jan. 28, 2021****Related U.S. Application Data**

(63) Continuation-in-part of application No. 15/651,012, filed on Jul. 17, 2017, now abandoned, which is a continuation of application No. 14/295,777, filed on Jun. 4, 2014, now abandoned.

**Publication Classification**(51) **Int. Cl.****E04B 1/348** (2006.01)**A47B 77/08** (2006.01)

A service block system defining a living space for a user of said service block system, the service block system including: a) a base frame contained in the living space and delimiting a pair of corresponding rooms of the living space, the base frame supporting at least one service unit selected from the group comprising a bathroom unit and a kitchen unit; b) a displacement mechanism operatively connected to the base frame for displacement of the base frame within the living space in order to adjustably vary corresponding sizes of the rooms in accordance with a displacement of the base frame about the living space of the service block system; and c) at least one connection selected from the group comprising plumbing and electrical connections, for connecting the mobile service block system to a corresponding infrastructure of a building associated to the service block system.



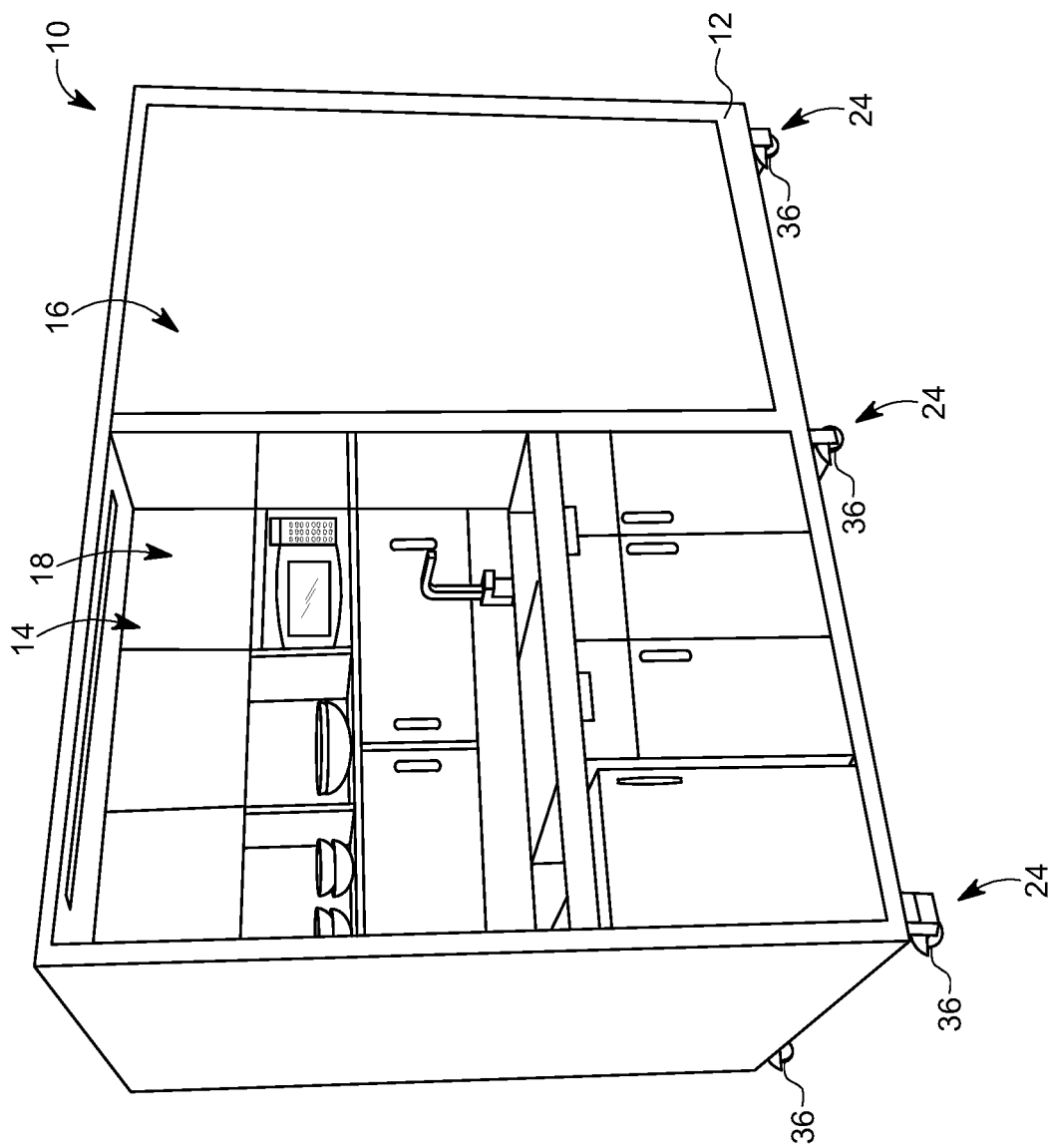


FIG. 1

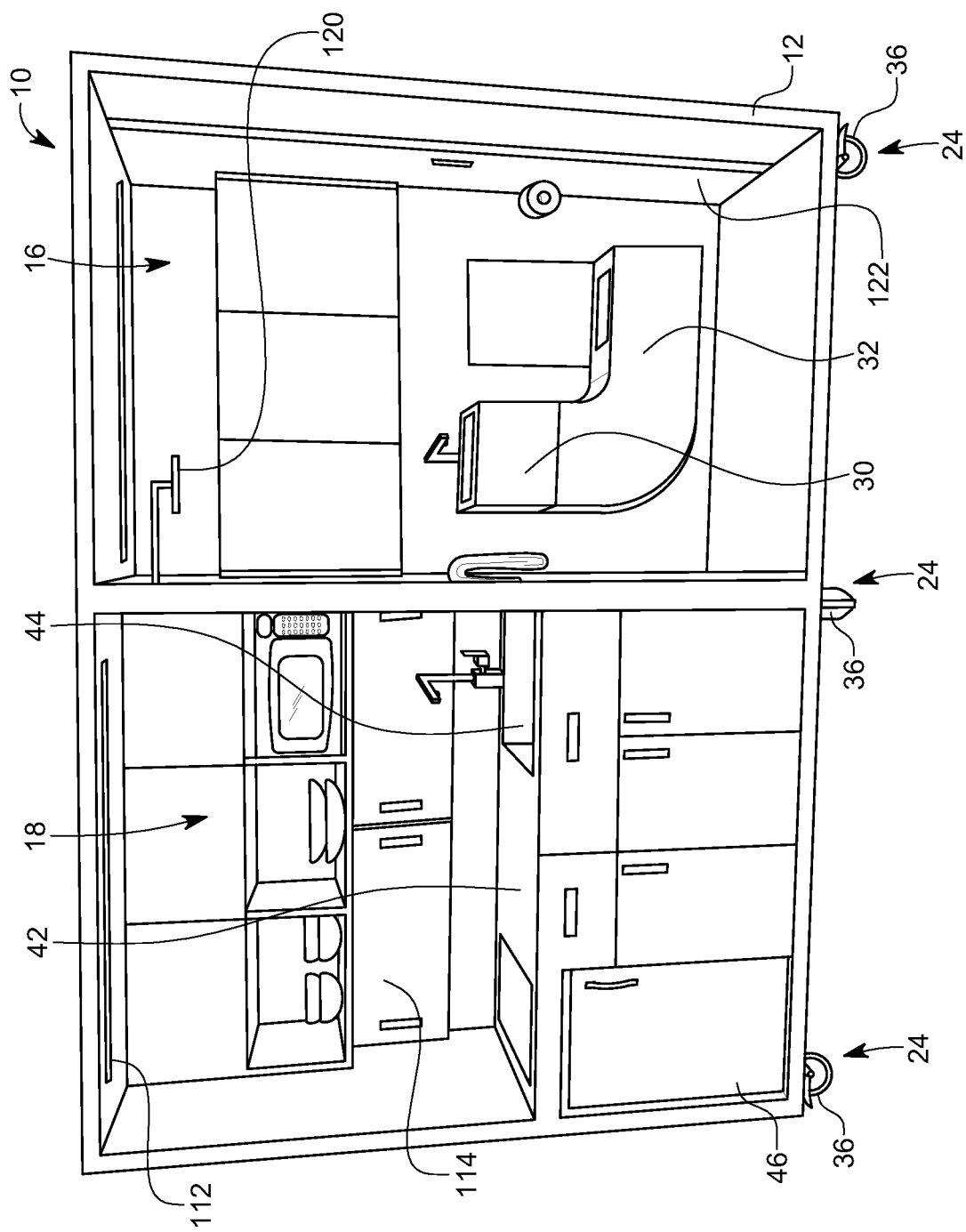


FIG. 2

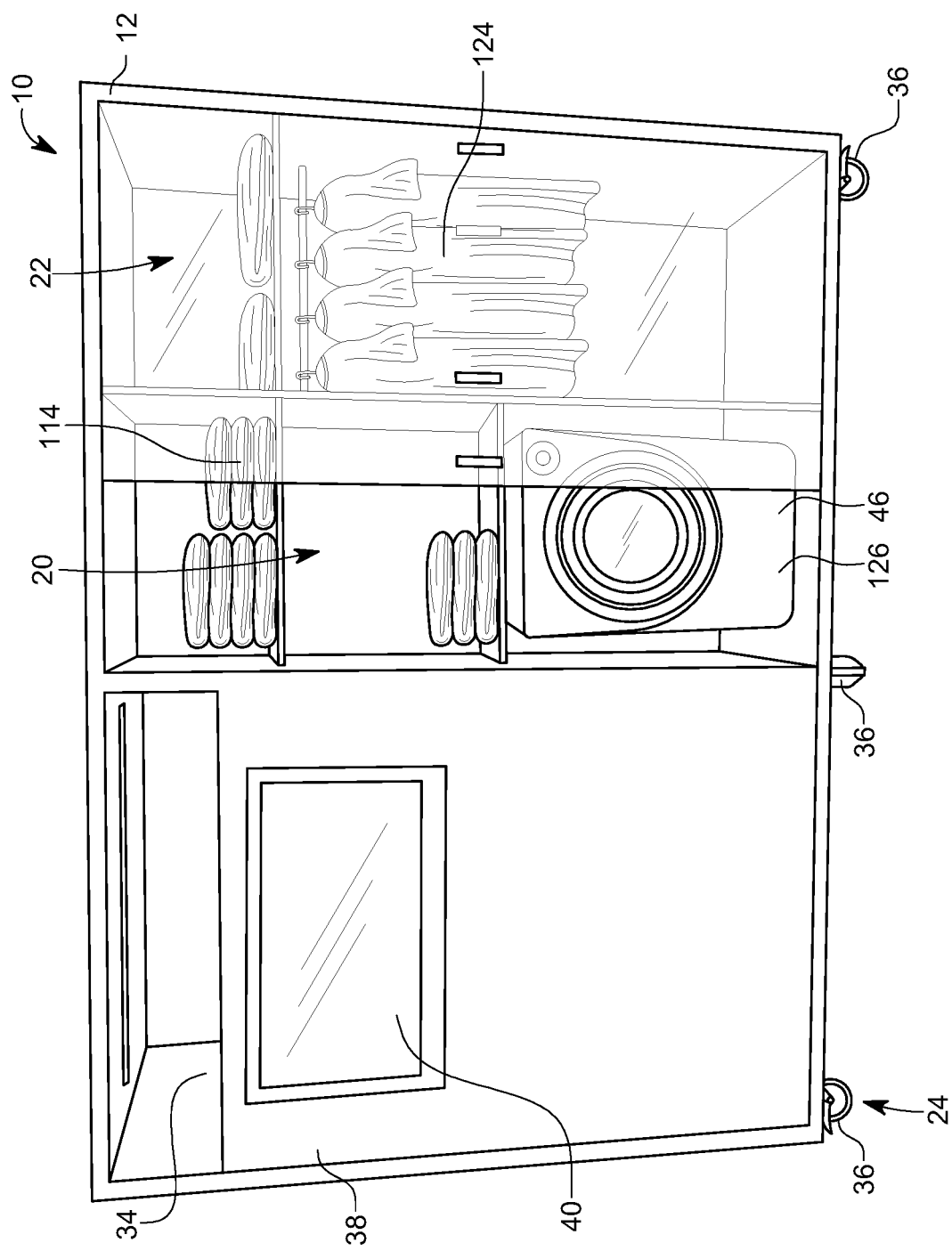


FIG. 3

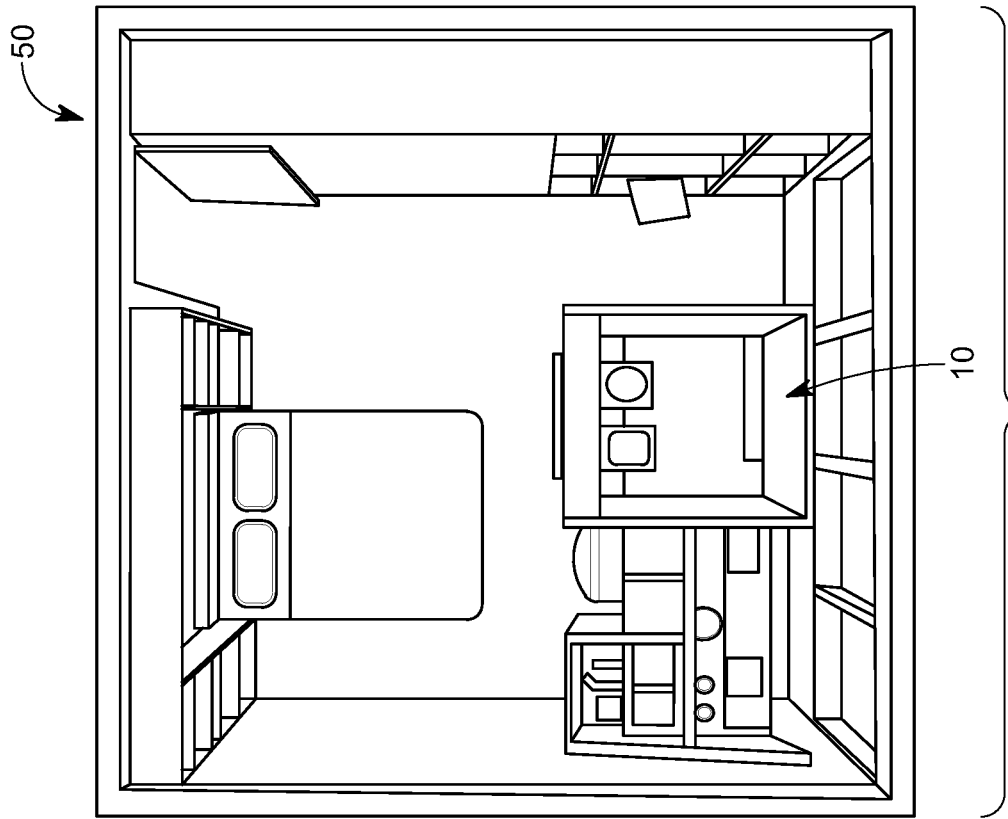


FIG. 4B

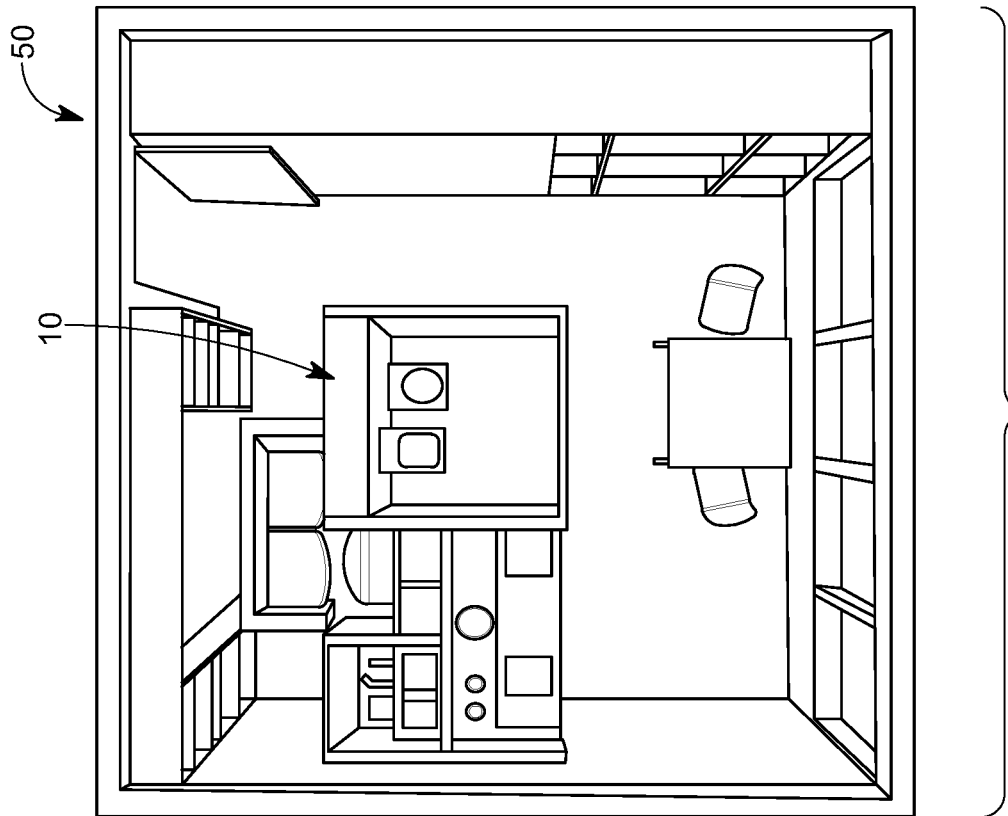


FIG. 4A

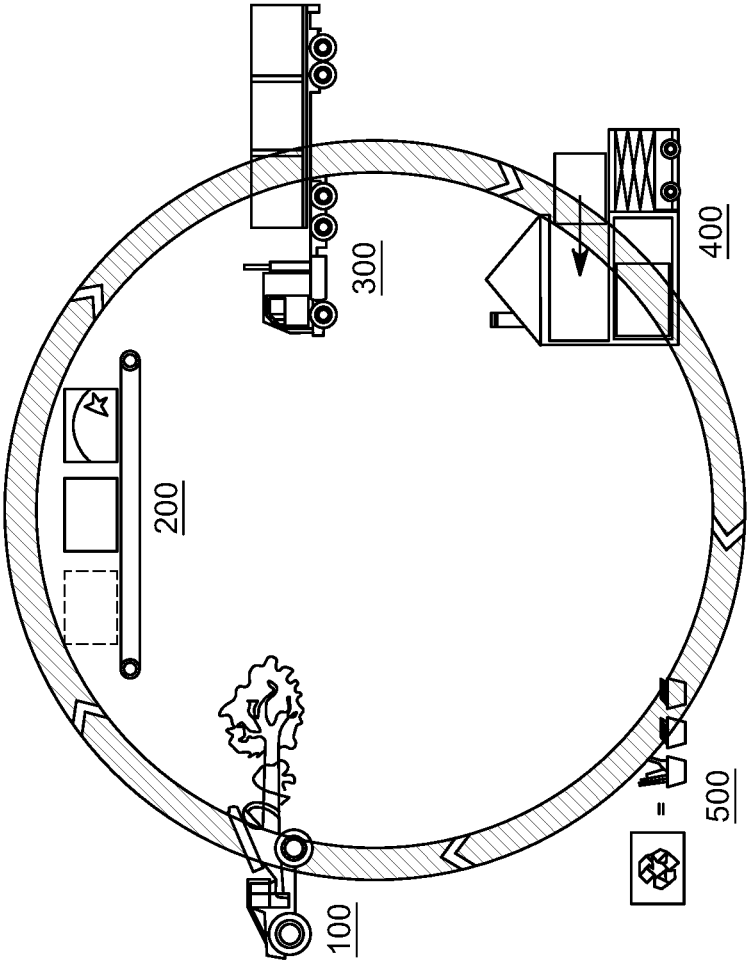


FIG. 5

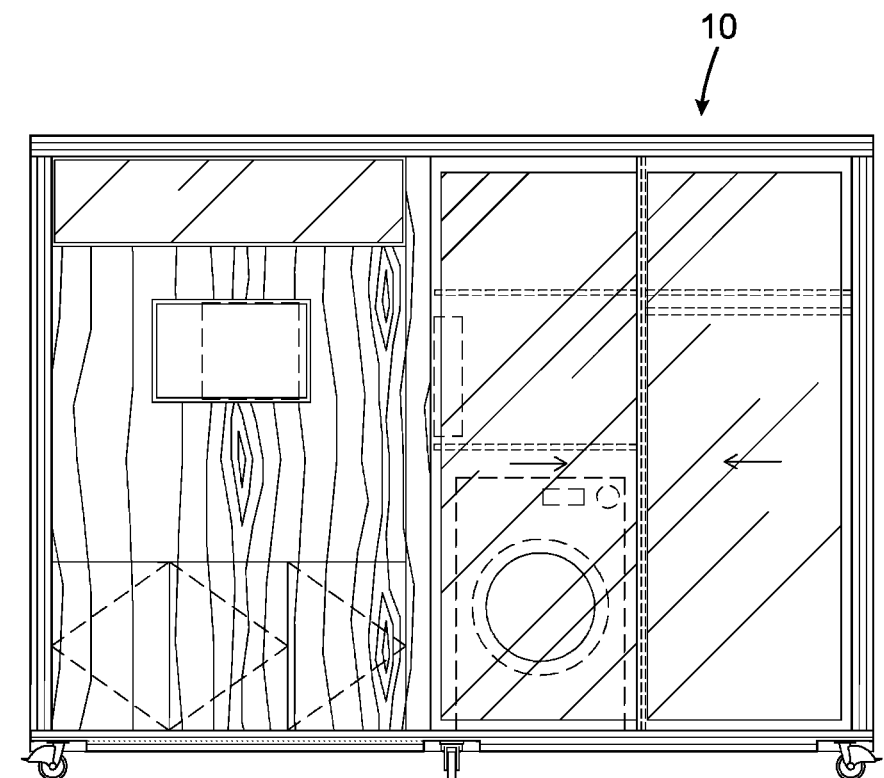


FIG. 6A

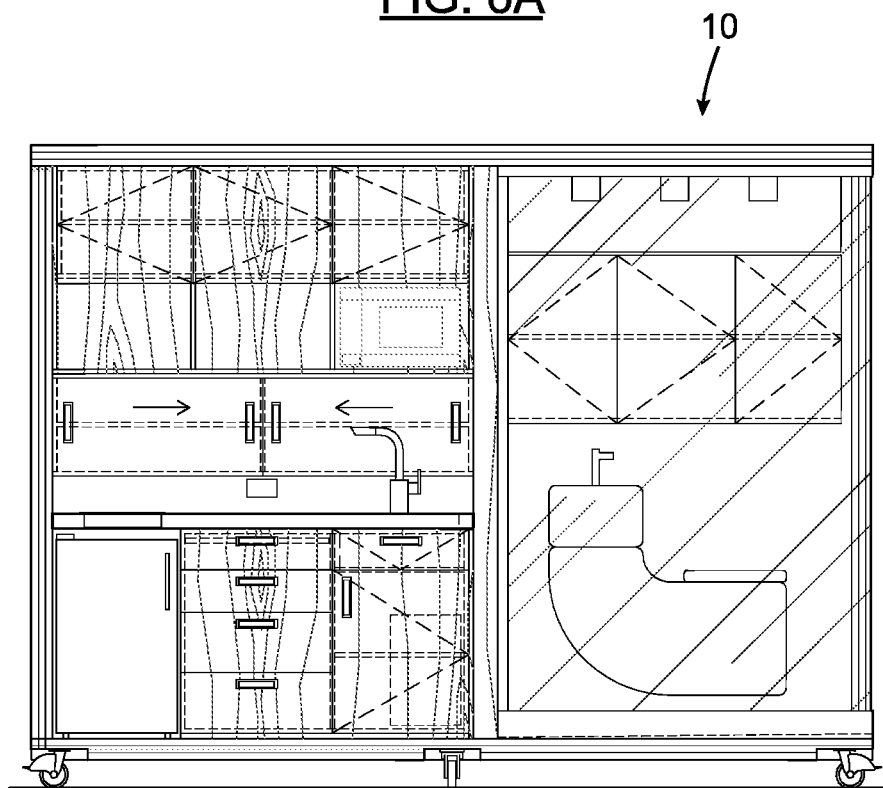
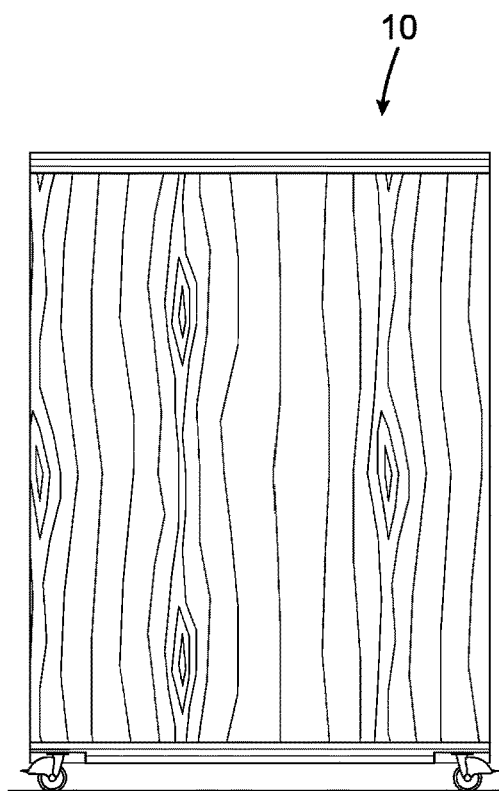
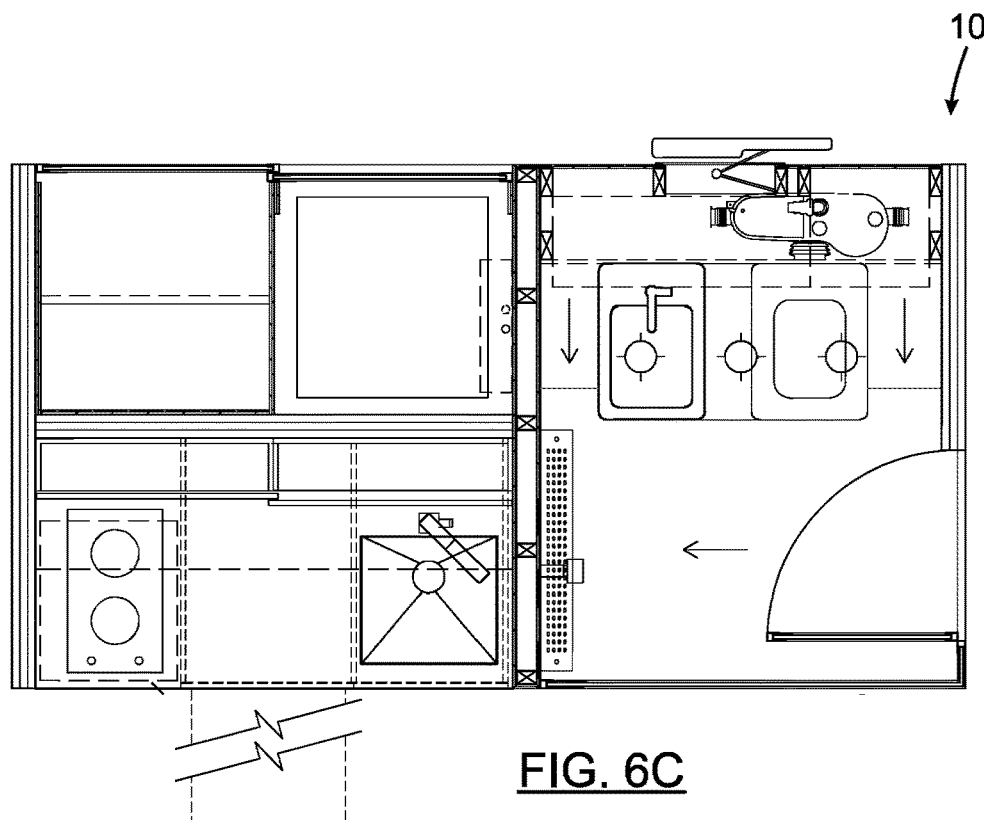
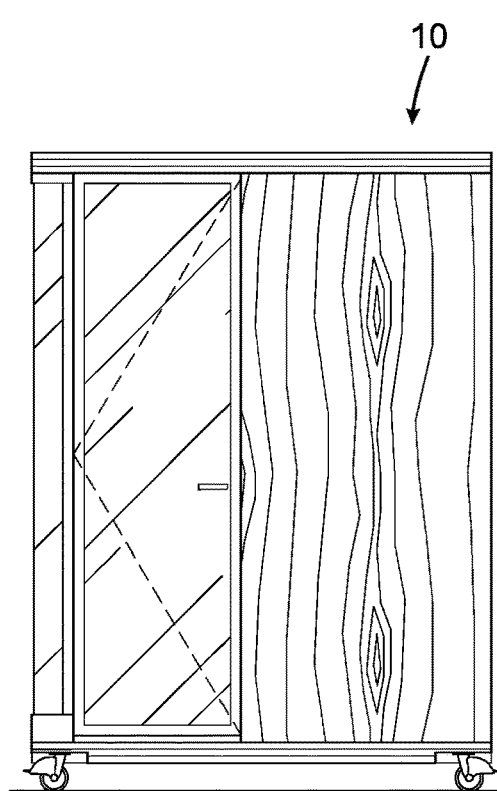


FIG. 6B



**FIG. 6D**



**FIG. 6E**

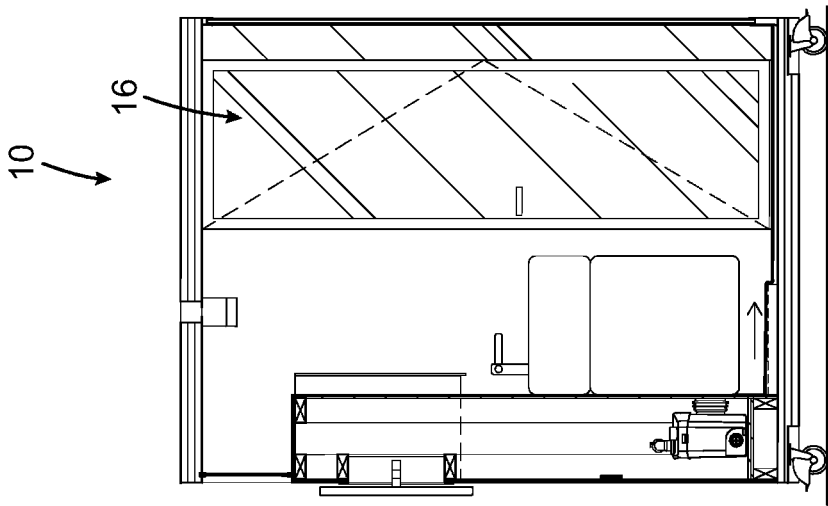


FIG. 7A

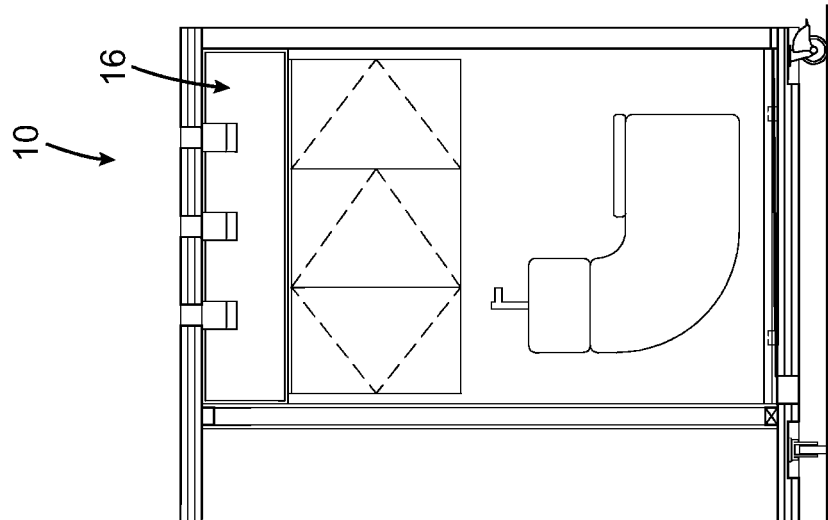


FIG. 7B

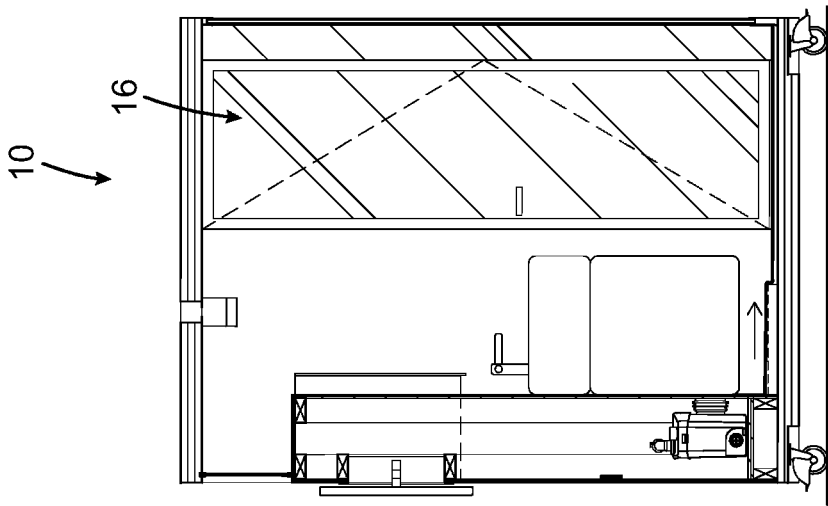
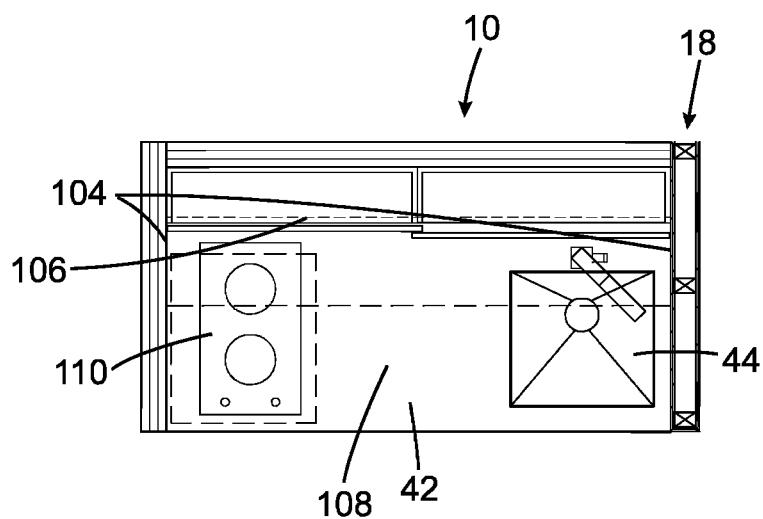
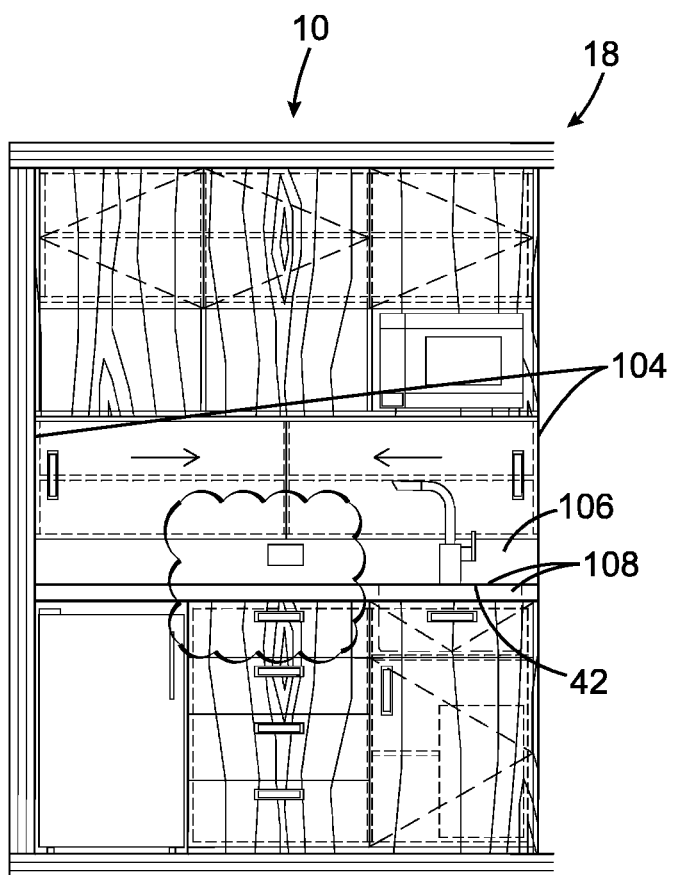


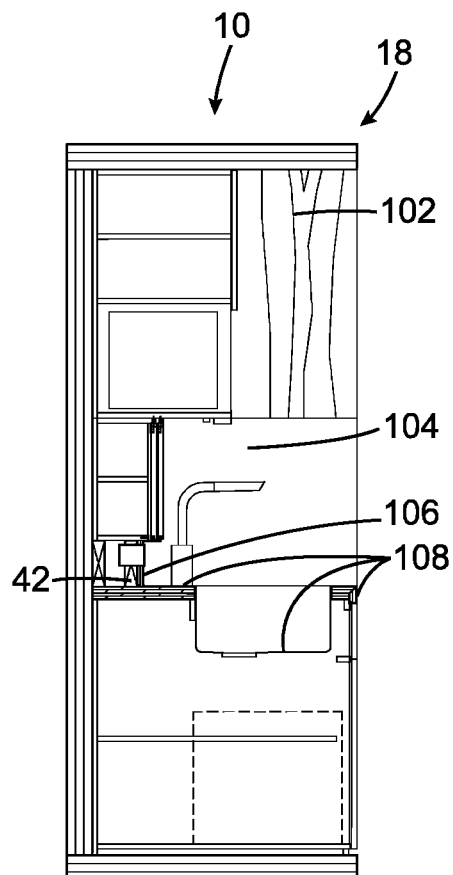
FIG. 7C



**FIG. 8A**



**FIG. 8B**



**FIG. 8C**

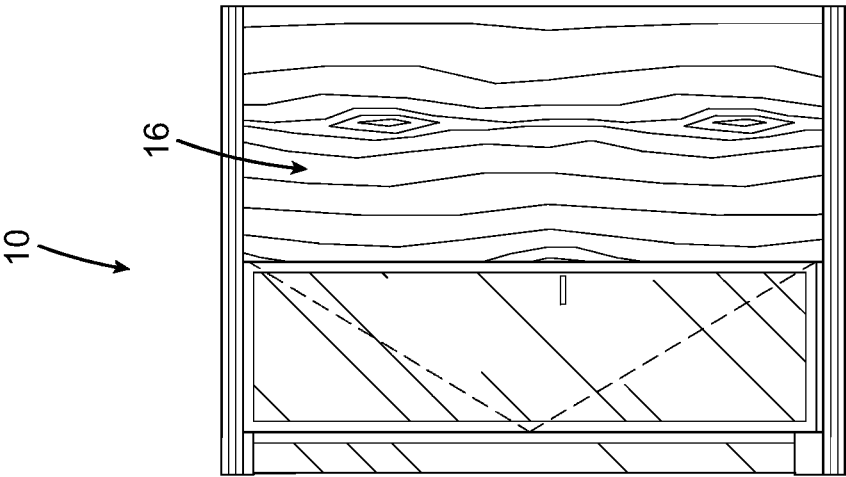


FIG. 9A

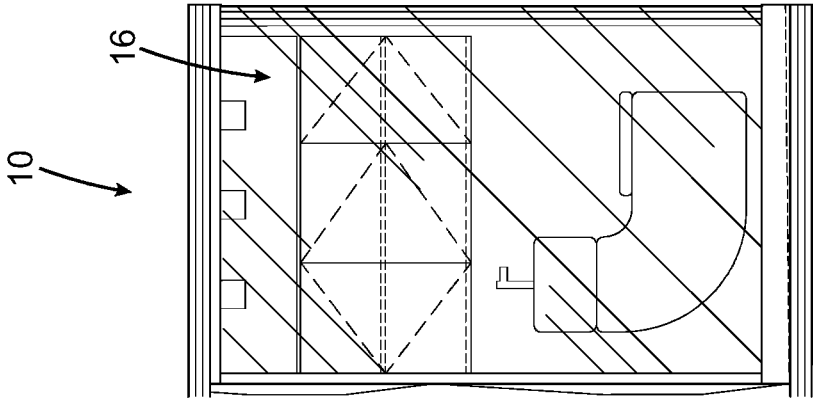


FIG. 9B

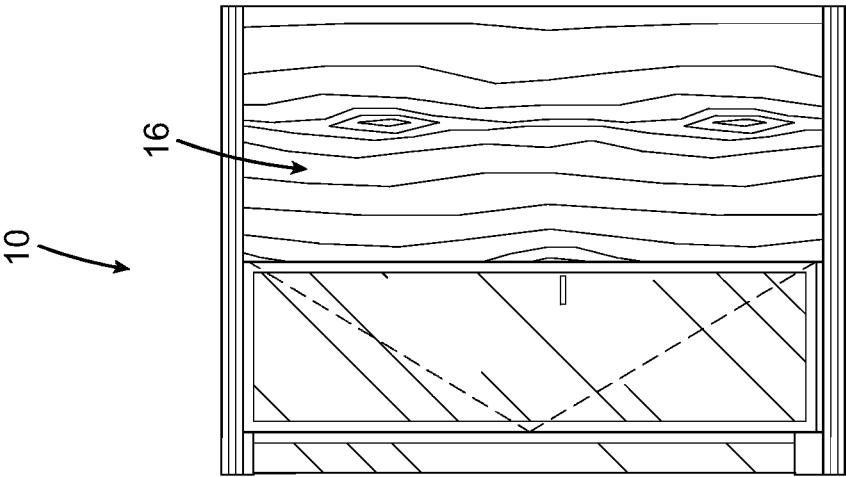


FIG. 9C

## MOBILE SERVICE BLOCK SYSTEM AND METHOD

### FIELD OF THE INVENTION

**[0001]** The present invention generally relates to building systems, and is more particularly directed to a mobile service block system including prefabricated bathroom, kitchen and other service room units in a single compact and mobile form for installation and use in buildings. The present patent application is a Continuation-In-Part (CIP) of U.S. patent application Ser. No. 15/651,012 filed on Jul. 17, 2017, which is in turn a Continuation of U.S. patent application Ser. No. 14/295,777 filed on Jun. 4, 2014, the benefits of these patent applications being claimed herein, and the contents of all these patent applications being also incorporated herein by reference.

### BACKGROUND

**[0002]** In certain countries, like Canada and the United-States, for example, each person consumes an average of nearly 329 liters of water per day. Energy and water conservation and management are becoming important concerns in building constructions. Also, saving space and minimizing the use of premium materials are also becoming important considerations when designing buildings.

**[0003]** Accordingly, there is a need for a building system and method that addresses at least one of the above-mentioned concerns.

**[0004]** Known to the Applicant is US patent application No. 2011/0209735 A1 made public on Sep. 1, 2011, in the name of ROWAN, and relating to a “shelter building”. This document describes a housing for emergencies or for those in need could be a short-term solution or may be set up as a longer-term shelter. The shelter may be flexible to grow and change enough to accommodate the individual, the family and the community. The shelter is more substantial than a tent and easier to assemble and transport as compared to conventional shelters. The shelter can be transported in a standard size truck bed (for example, 4 feet by 8 feet) and erected by two individuals in a minimal amount of time, typically less than an hour. The walls of the shelter may include various features, including shelving, bathing facilities, sinks, beds, lighting, and the like. The shelters may be designed to be connected to external electric and water supplies. Optionally, the shelters may be designed as stand-alone, “off-the-grid” units. The ceiling of the shelter may include one or more solar panels to provide power for the shelter. The shelter’s container provides the essentials needed to sustain life. This takes away the need for standing in multiple lines and gives the much needed immediate help.

**[0005]** Also known to the Applicant is US patent application No. 2002/0024274 A1, in the name of SWAAB, made public on Feb. 28, 2002, and relating to a “workspace”. This document describes a work space which incorporates structures in order to flexibly divide the workspace into areas. The structures are moveable to adjust the prospective sizes of the areas as required by differing business teams over a commercial project lifespan. The structures incorporate a plurality of facilities normally required by staff such as telephone and power connections, etc.

**[0006]** Also known to the Applicant is U.S. Pat. No. 9,222,255 B2, in the name of JOHNSON et al., granted on Dec. 29, 2015, and relating to an “apparatus and method for

reconfigurable space”. This document describes a reconfigurable space system and components therefore which can be reconfigured to accommodate sleeping space, entertainment space, work space, kitchen space, dining space and various combinations thereof.

**[0007]** Also known to the Applicant is French document No. FR 2286923 A1, in the name of CAMUSOT, made public on Apr. 30, 1976, which relates to a “prefabricated building unit system”. Based on an English translation of the abstract, this document describes a unit which is designed to enable the structure and the major part of its fittings to be fabricated under factory conditions. Before transport to site the unit is provided with bathroom fittings, domestic fluid supply located centrally, and service connections to the majority of appliances and fittings, including those outside the unit. The framework permits transport of single, double or four unit combinations of the base unit and service distribution gear is provided for domestic hot and cold water supply, waste disposal, ventilation, electricity and gas.

**[0008]** Despite these known conventional systems, there is always a need to continue innovating and finding better and/or different ways of providing dwellings for people, in a quicker, easier, simpler, faster, more efficient, more economical, more reliable, more adjustable, more versatile, more adaptable, more environmentally-friendly, more sustainable and/or more desirable manner.

**[0009]** Therefore, it would be particularly useful to be able to provide an improved system which would be able to overcome or at the very least minimize some of known drawbacks associated with the conventional ways of providing living spaces and/or building systems, for example.

### SUMMARY

**[0010]** An object of the present invention is to provide a service block system which, by virtue of its design and components, would be an improvement over other related conventional systems.

**[0011]** In accordance with the present invention, the above object is achieved, as will be easily understood from the present description, with a service block system (also referred to herein simply as “system”) such as the one briefly described herein and such as the one exemplified in the accompanying drawing(s).

**[0012]** More particularly, according to one aspect of the present invention, an object is to provide a service block system defining a living space for a user of said service block system, the service block system comprising:

**[0013]** a base frame contained in the living space and delimiting a pair of corresponding rooms of the living space, the base frame supporting at least one service unit selected from the group comprising a bathroom unit and a kitchen unit;

**[0014]** a displacement mechanism operatively connected to the base frame for displacement of the base frame within the living space in order to adjustably vary corresponding sizes of the rooms in accordance with a displacement of the base frame about the living space of the service block system; and

**[0015]** at least one connection selected from the group comprising plumbing and electrical connections, for connecting the mobile service block system to a corresponding infrastructure of a building associated to the service block system.

**[0016]** According to another aspect of the invention, there is also provided a living space (ex. apartment, condo, building, and/or etc.) comprising the above-mentioned service block system. Optionally, the mobile service block system may be displaceable between a daytime location for operational use during a daytime period, and a nighttime location for operational use during a nighttime period, for example.

**[0017]** According to yet another aspect of the invention, there is also provided a method of manufacturing components of the above-mentioned service block system.

**[0018]** According to yet another aspect of the invention, there is also provided a method of assembling components of the above-mentioned service block system.

**[0019]** According to yet another aspect of the invention, there is also provided a method of using the above-mentioned service block system and/or component(s) thereof.

**[0020]** According to yet another aspect of the invention, there is also provided a kit with components for assembling the above-mentioned service block system.

**[0021]** According to yet another aspect of the present invention, there is also provided a set of components for interchanging with components of the above-mentioned kit.

**[0022]** According to yet another aspect of the present invention, there is also provided a method of assembling components of the above-mentioned kit and/or set.

**[0023]** According to yet another aspect of the present invention, there is also provided a method of creating and/or adjusting a living space with the above-mentioned service block system, component(s) thereof, kit, set and/or method (s).

**[0024]** According to yet another aspect of the present invention, there is also provided an infrastructure (ex. apartment, condo, building, and/or etc.) provided with the above-mentioned living space and associated service block system, and/or component(s) thereof.

**[0025]** According to yet another aspect of the present invention, there is also provided a method of doing business with the above-mentioned service block system, component (s) thereof, kit, set and/or method(s).

**[0026]** The objects, advantages, and other features of the present invention will become more apparent upon reading of the following non-restrictive description of preferred embodiments thereof, given for the purpose of exemplification only, with reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0027]** Further aspects and advantages of the present invention will become better understood with reference to the description in association with the following Figures, in which similar references used in different Figures denote similar components, wherein:

**[0028]** FIG. 1 is a front perspective view of a mobile service block system according to an embodiment of the present invention.

**[0029]** FIG. 2 is a front view of the mobile service block system shown in FIG. 1.

**[0030]** FIG. 3 is a rear view of the mobile service block system shown in FIG. 1.

**[0031]** FIGS. 4A and 4B are top views of a room unit including the mobile service block system shown in FIG. 1 in a daytime configuration and a nighttime configuration respectively.

**[0032]** FIG. 5 is a schematic view of manufacturing and installation of a mobile service block system.

**[0033]** FIGS. 6A to 6E are rear, front, top and side views respectively of the mobile service block system shown in FIG. 1.

**[0034]** FIG. 7A is a side cross-sectional view of the kitchen and laundry unit of the mobile service block system shown in FIG. 1.

**[0035]** FIGS. 7B and 7C are front and side cross-sectional views respectively of a bathroom unit of the mobile service block system shown in FIG. 1.

**[0036]** FIGS. 8A to 8C are top, front and side cross-sectional views respectively of a kitchen unit of the mobile service block system shown in FIG. 1.

**[0037]** FIGS. 9A to 9C are top, front and side views respectively of a bathroom unit of the mobile service block system shown in FIG. 1.

#### DETAILED DESCRIPTION

**[0038]** In the following description, the same numerical references refer to similar elements. Furthermore, for sake of simplicity and clarity, namely so as to not unduly burden the figures with several reference numbers, only some figures have been provided with reference numbers, and components and features of the present invention illustrated in other figures can be easily inferred therefrom. The embodiments, geometrical configurations, materials mentioned and/or dimensions shown in the figures are preferred, for exemplification purposes only.

**[0039]** Moreover, although the present invention was primarily designed creating and/or adjusting a living space, within a given floor layout, for example, it may be used with other objects and/or in other types of applications, as apparent to a person skilled in the art. For this reason, expressions such as “creating”, “adjusting”, “living”, “space”, “floor”, “layout”, etc., used herein should not be taken so as to limit the scope of the present invention and include all other kinds of objects and/or applications with which the present invention could be used and may be useful, as can be easily understood by a person skilled in the art.

**[0040]** Moreover, in the context of the present invention, the expressions “service block system”, “system”, “device”, “assembly”, “apparatus”, “product”, “unit”, “equipment”, “method” and “kit”, as well as any other equivalent expression(s) and/or compound word(s) thereof known in the art will be used interchangeably, as apparent to a person skilled in the art. This applies also for any other mutually equivalent expressions, such as, for example: a) “varying”, “adjusting”, “creating”, “selecting”, “modifying”, “altering”, “displacing”, “configuring”, etc.; b) “space”, “room”, “floor”, “layout”, “footprint”, “configuration”, “disposition”, “area”, etc.; c) “connection”, “wiring”, “piping”, “conduit”, “link”, “channel”, “cable”, etc.; as well as for any other mutually equivalent expressions, pertaining to the aforementioned expressions and/or to any other structural and/or functional aspects of the present invention, as also apparent to a person skilled in the art. Also, in the context of the present description, expressions such as “can”, “may”, “might”, “will”, “could”, “should”, “would”, etc., may also be used interchangeably, whenever appropriate, as also apparent to a person skilled in the art.

**[0041]** Furthermore, in the context of the present description, it will be considered that all elongated objects will have an implicit “longitudinal axis” or “centerline”, such as the

longitudinal axis of shaft for example, or the centerline of a coiled spring, for example, and that expressions such as “connected” and “connectable”, or “mounted” and “mountable”, may be interchangeable, in that the present invention also relates to a kit with corresponding components for assembling a resulting fully-assembled and fully-operational service block system.

[0042] Moreover, components of the present system(s) and/or steps of the method(s) described herein could be modified, simplified, altered, omitted and/or interchanged, without departing from the scope of the present invention, depending on the particular application(s) which the present invention is intended for, and the desired end result(s), as briefly exemplified herein and as also apparent to a person skilled in the art.

[0043] In addition, although the preferred embodiments of the present invention as illustrated in the accompanying drawings comprise various components, and although the preferred embodiments of the present service block system and corresponding portion(s)/part(s)/component(s) as shown consist of certain geometrical configurations, as explained and illustrated herein, not all of these components and geometries are essential to the invention and thus should not be taken in their restrictive sense, i.e. should not be taken so as to limit the scope of the present invention. It is to be understood, as also apparent to a person skilled in the art, that other suitable components and cooperation thereinbetween, as well as other suitable geometrical configurations may be used for the present service block system and corresponding portion(s)/part(s)/component(s) according to the present invention, as will be briefly explained herein and as can be easily inferred here from by a person skilled in the art, without departing from the scope of the present invention.

#### LIST OF NUMERICAL REFERENCES FOR SOME OF THE CORRESPONDING POSSIBLE COMPONENTS ILLUSTRATED IN THE ACCOMPANYING DRAWINGS

|        |                                                |
|--------|------------------------------------------------|
| [0044] | 10. transportable service block system         |
| [0045] | 12. base frame                                 |
| [0046] | 14. service unit                               |
| [0047] | 16. bathroom unit                              |
| [0048] | 18. kitchen unit                               |
| [0049] | 20. laundry unit                               |
| [0050] | 22. closet unit                                |
| [0051] | 24. displacement mechanism                     |
| [0052] | 30. bathroom sink                              |
| [0053] | 32. toilet                                     |
| [0054] | 34. glass window                               |
| [0055] | 36. wheel element                              |
| [0056] | 40. electronic display system                  |
| [0057] | 42. counter top                                |
| [0058] | 44. kitchen sink                               |
| [0059] | 46. appliance                                  |
| [0060] | 50. room unit                                  |
| [0061] | 102. cupboard                                  |
| [0062] | 104. steel plate                               |
| [0063] | 106. headboard                                 |
| [0064] | 108. counter top                               |
| [0065] | 112. lighting system (ex. DEL lighting system) |
| [0066] | 114. storage space (or “storage area”)         |
| [0067] | 120. shower                                    |
| [0068] | 122. structural wall (and/or structural door)  |

|        |                                                                            |
|--------|----------------------------------------------------------------------------|
| [0069] | 124. closet space                                                          |
| [0070] | 126. dryer                                                                 |
| [0071] | 201. service block system (ex. mobile and/or movable service block system) |
| [0072] | 203. living space                                                          |
| [0073] | 205. base frame                                                            |
| [0074] | 207. room                                                                  |
| [0075] | 207a. first room                                                           |
| [0076] | 207b. second room                                                          |
| [0077] | 209. service unit                                                          |
| [0078] | 209a. bathroom unit                                                        |
| [0079] | 209b. kitchen unit                                                         |
| [0080] | 209c. laundry unit                                                         |
| [0081] | 209d. closet unit                                                          |
| [0082] | 211. displacement mechanism                                                |
| [0083] | 213. connection                                                            |
| [0084] | 213a. plumbing connection                                                  |
| [0085] | 213b. electrical connection                                                |
| [0086] | 215. infrastructure.                                                       |
| [0087] | 217. footprint (ex. floor layout)                                          |
| [0088] | 217a. first side (of footprint)                                            |
| [0089] | 217b. second side (of footprint)                                           |
| [0090] | 219. bathroom sink                                                         |
| [0091] | 221. toilet                                                                |
| [0092] | 223. window                                                                |
| [0093] | 225. wheel element                                                         |
| [0094] | 227. wall element                                                          |
| [0095] | 229. electronic display system                                             |
| [0096] | 231. adjustable base                                                       |
| [0097] | 233. external face                                                         |
| [0098] | 235. kitchen countertop                                                    |
| [0099] | 237. kitchen sink                                                          |

[0100] Broadly described, and as better exemplified in and/or can be easily understood from, when referring to the accompanying drawings, the present invention relates to a service block system (201) defining a living space (203) for a user of said service block system (201), the service block system (201) comprising:

[0101] a base frame (205) contained in the living space (203) and delimiting a pair of corresponding rooms (207a, 207b) of the living space (203), the base frame (201) supporting at least one service unit (209) selected from the group comprising a bathroom unit (209a) and a kitchen unit (209b);

[0102] a displacement mechanism (211) operatively connected to the base frame (205) for displacement of the base frame (205) within the living space (203) in order to adjustably vary corresponding sizes of the rooms (207) in accordance with a displacement of the base frame (205) about the living space (203) of the service block system (201); and

[0103] at least one connection (213) selected from the group comprising plumbing and electrical connections (213a, 213b), for connecting the mobile service block system (201) to a corresponding infrastructure (215) of a building associated to the service block system.

[0104] The base frame (205) may support an integrated bathroom unit (209a), kitchen unit (209b), laundry unit (209c) and closet unit (209d), for example.

[0105] According to one possible embodiment, the base frame (205) occupies a substantially rectangular footprint (217), the bathroom unit (209a) occupies a first side portion (217a) of the rectangular footprint (217), the laundry unit (209c) and the closet unit (209d) are in a side-by-side

configuration and the kitchen unit (209b) is in a back-to-back configuration with respect to the side-by-side configuration of the laundry and closet units (209c, 209d), and wherein the kitchen, laundry and closet units (209b, 209c, 209d) occupy a second side portion (217b) of the rectangular footprint (217).

[0106] The substantially rectangular footprint (217) may occupy a surface of about 55 ft<sup>2</sup>, for example, although various other square footages are also contemplated, for the present system (201).

[0107] According to one possible embodiment, the base frame (205) comprises FSC™-certified wood components (FSC™ being a trademark for “Forest Stewardship Council”, and being referred herein also as simply “FSC”).

[0108] According to one possible embodiment, the service block system (201) comprises a bathroom unit (209a), the bathroom unit (209a) comprising a bathroom sink (219) and a toilet (221). The bathroom unit (209a) may further comprise an openable glass window (223) for controlling humidity within the bathroom unit (209a), for example.

[0109] The displacement mechanism (211) may comprise a plurality of 360° pivotable wheel elements (225) distributed about the base frame (205), the wheel elements (225) being selectively lockable during operational use of the at least one service unit (209) and unlocked during displacement of the mobile service block system (201), for example.

[0110] The at least one service unit (209) may comprise a wall element (227) configured to support an electronic display system (229) mounted on a pivotable and adjustable base (231) on an external face (233) of the mobile service block system (201), for example. The service block system (201) may also comprise a kitchen unit (209b), the kitchen unit (209b) comprising a stainless steel counter top (235) with an integrated kitchen sink (237), for example.

[0111] Other possible aspect(s), object(s), embodiment(s), variant(s), and/or resulting advantage(s) of the present service block system (1), all being preferred and/or optional, are briefly explained hereinbelow, and can be easily understood and/or inferred from the accompanying drawings, as well.

[0112] Namely, and when referring to the accompanying figures, a mobile service block system (10) is shown. The mobile service block system (10) includes a base frame (12) supporting at least one service unit (14) selected from the group comprising bathroom units (16), kitchen units (18), laundry units (20), and closet units (22). The mobile service block system (10) also includes a displacement mechanism (24) operatively connected to the base frame (12) for displacement of the base frame (12) and of the mobile service block system (10) from one location to another.

[0113] In the embodiment illustrated in the accompanying figures, the base frame (12) supports an integrated bathroom unit (16), kitchen unit (18), laundry unit (20) and closet unit (22).

[0114] In some implementations, the base frame (12) occupies a substantially rectangular footprint, the bathroom unit (16) occupies a first side portion of the rectangular footprint, the laundry unit (20) and the closet (22) unit are in a side-by-side configuration and the kitchen unit (18) is in a back-to-back configuration with respect to the side-by-side configuration of the laundry and closet units (20, 22), and wherein the kitchen, laundry and closet units occupy a second side portion of the rectangular footprint.

[0115] In preferred embodiments, the substantially rectangular footprint occupies a surface of about 55 ft<sup>2</sup>. However, the overall surface and shape of the footprint can vary according to the number of units located on the base frame (12). More units will result in a larger footprint, and less units will result in a smaller footprint.

[0116] In some implementations, the base frame (12) comprises FSC-certified wood components.

[0117] In some implementations, the mobile service block system (10) further includes plumbing and electrical connections for connecting the mobile service block system to a plumbing and electrical infrastructure of a building.

[0118] In some implementations, as shown in the accompanying figures, the bathroom unit (16) includes a bathroom sink (30) and a toilet (32), the toilet (32) being configured to recycle water from the bathroom sink (30). The bathroom unit (16) can also include a shower (120) with a controller limiting shower time to 7 minutes, for example. Structural walls or doors (122) of the bathroom unit can be made with flexible, durable materials that perform well under the repetitive displacements of the mobile service block system

[0119] In some implementations, the bathroom unit (16) further includes an openable glass window (34) for controlling humidity within the bathroom unit (16).

[0120] In some implementations, the displacement mechanism (24) comprises a plurality of 360° pivotable wheel elements (36) distributed about the base frame (12), the wheel elements (36) being selectively lockable during operational use of the at least one service unit (14) and unlocked during displacement of the mobile service block system (10).

[0121] In some implementations, as shown in the accompanying figures, at least one service unit (14) comprises a wall element (38) configured to support an electronic display system (40) mounted on a pivotable and adjustable base on an external face of the mobile service block system (10). The closet unit (22) can include a deep closet space (124) that can accommodate full length clothing. The laundry unit (20) can also include optimized storage space (114), as well as a combined washer-condensation dryer (126), which reduces water and energy consumption.

[0122] In some implementations, as shown in the accompanying FIG. 2, the kitchen unit (18) includes a stainless steel counter top (42) with an integrated kitchen sink (44). As better shown in FIGS. 8A to 8C, the kitchen units can have wood cupboards (102) with for example a clear varnish. Stainless steel plates (104) can be used to cover lateral walls. A wooden headboard (106) can be provided above the counter top (42), and can provide an aperture to receive an electrical outlet. In some embodiments, the stainless steel counter top (42) can be a 304 stainless steel caliber 16 counter top (108) configured to receive a cooking surface (110). The kitchen unit (18) can also include a DEL lighting system (112). In the kitchen unit, storage areas (114) can be optimized for space usage.

[0123] In some implementations, the mobile service block system (10) is configured to receive energy and water efficient appliances (46) for use within the mobile service block system (10).

[0124] According to the present invention, as better shown in FIG. 5, there is also provided a method of installing a mobile service block system in a building comprising:

[0125] a) prefabricating a mobile service block system as described and/or illustrated in the present patent specification, a manufacturing location (step 200);

[0126] b) transporting the prefabricated mobile service block system from the manufacturing location to a building location (step 300); and

[0127] c) connecting the prefabricated mobile service block system to a plumbing and electrical infrastructure of the building (step 400).

#### [0128] Prefabrication Step

[0129] In all respects, prefabrication assists in installation at the worksite. First, this type of prefabrication construction encourages a better use of materials and generating much less losses. Skilled workers perform repetitive tasks and ensure a greater quality of assembly and in less time, thus resulting in cost savings. In the end, prefabrication offers better working conditions for workers and generates a minimal environmental impact.

[0130] In some implementations, the prefabricating step further comprises a step of storing a plurality of mobile service block systems at the manufacturing location, thus avoiding further transport.

#### [0131] Transporting Step

[0132] In some implementations, the prefabricated mobile service block system is wrapped in recycled cardboard during the transporting step. Such packaging minimally protects the contents until delivery. The distribution is done by truck, where the modules are stored and protected by reusable blankets in the semi-trailer box, until delivery at the building directly to the accommodation of the user. As shown in step 400 of FIG. 5, a “forklift” can be used to introduce the system on different floors and where the system is readily connectable for use.

[0133] In some implementations, the system consumes about 35% less water and 45% less energy than a similar standard residential development. Its durable design allows it to be moved from one dwelling to another and offers a long term solution. Obsolete components can be easily replaced, thus ensuring an extended life time.

#### [0134] Recycling Step

[0135] In some implementations, the method further includes a step of disassembling and recycling (step 500) the mobile service block system at an end of an operational life of the mobile service block system. Having reached the end of its useful life, the system can be largely disassembled and more than 90% recycled. After-sales service available on site can encourage users to send obsolete parts or the entire system to the appropriate recycling center.

[0136] According to the present invention, as better shown in FIGS. 4A and 4B, there is also provided a room unit (50) including a mobile service block system as defined above.

[0137] In some implementations, the mobile service block system (10) is displaceable between a daytime location for operational use during a daytime period (shown in FIG. 4A) and a nighttime location for operational use during a nighttime period (shown in FIG. 4B).

[0138] In some implementations, this prefabricated system can be pre-fitted with energy and water efficient appliances and can be characterized by various environmental aspects, including its FSC-certified wood structure (see step 100 in FIG. 5), low consumption of water and energy, durability, etc. Operation of the system is simple, flexible

and easily adaptable to various buildings, as small as it is, provided that access to water and electricity connections is possible in the building.

[0139] Unlike prefabricated bathrooms and kitchens already available on the market, the system is distinguished by its mobility and overall ecodesign. Its size, its weight, small footprint, is easy to integrate a multitude of areas, as its low energy and water consumption and sleek design make it a great alternative.

[0140] By its small size, the system requires approximately 47% less raw materials when compared to several traditional kitchens, laundry room and bath designs. The construction of a frame and a trim structure of FSC-certified wood from a regional supply provides a guarantee of concern for resource management. The FSC label thus provides added value to the project. The choice of stainless steel also proves interesting because a large portion of the system comes from recycling local waste.

[0141] In some implementations, the system (10) is a 55 ft<sup>2</sup> mobile service block together with pre-fitted energy and water efficient kitchen, laundry and bathroom amenities. This prefabricated module and equipped with approved appliances is characterized by various environmental aspects, including its FSC-certified wood structure (see step 100 in FIG. 5), low consumption of water and energy, durability, etc. The operation is simple, flexible and easily adaptable to various facilities, as small as it is, if access to water and electricity connections are possible.

[0142] In some implementations, the design of the system is characterized by a comprehensive approach to product life cycle, from raw material extraction to disposal at end of life. Different economic, social and environmental issues were identified considering the stages of life cycle analysis and were addressed to propose a solution to the various problems of production and consumption that were observed. Various strategies were used to minimize adverse environmental and social impacts, including a selection of local materials that are durable and resistant over time. In addition, the small design of the module and its prefabrication ensures optimized production and improved resource management. The selected components of the module are there to reduce the consumption of water and energy.

[0143] In some implementations, the system on wheels fits various floor plans. Through its simple architecture, it gives way to an airy, free expression that everyone can customize. The system is ecologically designed and consumes resources responsibly. The durability of the module allows it to be moved. Thus, in the long term, it can easily be transported by truck, connected and reused in a new space, as if the system was an average piece of furniture, all with maximum comfort in a minimum of space.

[0144] The realization of this type of construction can encourage other companies to create eco minimalist architectural design, thereby seeking to reduce their environmental footprint and lead to rethinking mass residential building. The Applicant encourages other architects, designers, developers and contractors to develop and promote solutions to overconsumption. Oversized houses are outdated. By offering a unique usage scenario based on the sustainability objectives of eco-design, the system provides a long-term solution that follows us over time. Its raw materials and simple designs are timeless. The goal is to educate and inspire corporate actors to undertake such an approach in the context of a more conscious development of the environ-

ment for this growing sector of construction projects. Overall, the Applicant seeks to inspire a better management of resources among the population in the hope a healthier planet.

**[0145]** The following table shows examples of water and energy consumption of components used in the mobile service block system in contrast with traditional components:

| Components                                     | WATER CONSUMPTION    | ENERGY CONSUMPTION |
|------------------------------------------------|----------------------|--------------------|
| Toilet macerator system according to invention | —                    | 8 kWh/year         |
| Traditional toilet                             | 13 L/flush           | —                  |
| Toilet according to invention                  | less than 6 L/flush* | —                  |
| Traditional bathroom faucet                    | 13.5 L/min           | —                  |
| Bathroom faucet according to invention         | 9 L/min              | —                  |
| Traditional shower                             | 9.5 L/min            | —                  |
| Shower according to invention                  | 6.65 L/min           | —                  |
| Traditional washer-dryer                       | 90 L/wash            | 500 kWh/year       |
| Washer-dryer according to invention            | 40 L/wash            | 216 kWh/year       |
| Traditional fridge                             | —                    | 550 kWh/year       |
| Fridge according to invention                  | —                    | 330 kWh/year       |
| Traditional kitchen faucet                     | 13.5 L/min           | —                  |
| Kitchen faucet according to invention          | 5.7 L/min            | —                  |
| Traditional 4-piece cooking surface            | —                    | 400 kWh/year       |
| 2-piece cooking surface according to invention | —                    | 365 kWh/year       |
| Traditional dish-washer                        | 45 L/wash            | 310 kWh/year       |
| Hand washing of dishes according to invention  | 15 L/wash            | —                  |
| Traditional microwave                          | —                    | 30 kWh/year        |
| Microwave according to invention               | —                    | 25 kWh/year        |
| Traditional water heater                       | —                    | 5 000 kWh/year     |
| Instant water heater according to invention    | —                    | 2 000 kWh/year     |
| Traditional television                         | —                    | 100 kWh/year       |
| Television according to invention              | —                    | 53 kWh/year        |

\*unused faucet water sent to the toilet

**[0146]** Of course, and as can be easily understood by a person skilled in the art, the scope of the claims should not be limited by the possible embodiments set forth in the examples, but should be given the broadest interpretation consistent with the description as a whole.

**[0147]** Furthermore, although preferred embodiments of the present invention have been briefly described herein and illustrated in the accompanying drawings, it is to be understood that the invention is not limited to these embodiments and that various changes and modifications could be made without departing from the scope and spirit of the present invention, as defined in the appended claims and as apparent to a person skilled in the art.

1. A service block system (201) defining a living space (203) for a user of said service block system (201), the service block system (201) comprising:

a base frame (205) contained in the living space (203) and delimiting a pair of corresponding rooms (207a, 207b) of the living space (203), the base frame (201) sup-

porting at least one service unit (209) selected from the group comprising a bathroom unit (209a) and a kitchen unit (209b);

a displacement mechanism (211) operatively connected to the base frame (205) for displacement of the base frame (205) within the living space (203) in order to adjustably vary corresponding sizes of the rooms (207) in accordance with a displacement of the base frame (205) about the living space (203) of the service block system (201); and

at least one connection (213) selected from the group comprising plumbing and electrical connections (213a, 213b), for connecting the mobile service block system (201) to a corresponding infrastructure (215) of a building associated to the service block system.

2. The service block system (201) according to claim 1, wherein the base frame (205) supports an integrated bathroom unit (209a), kitchen unit (209b), laundry unit (209c) and closet unit (209d).

3. The service block system (201) according to claim 2, wherein the base frame (205) occupies a substantially rectangular footprint (217), the bathroom unit (209a) occupies a first side portion (217a) of the rectangular footprint (217), the laundry unit (209c) and the closet unit (209d) are in a side-by-side configuration and the kitchen unit (209b) is in a back-to-back configuration with respect to the side-by-side configuration of the laundry and closet units (209c, 209d), and wherein the kitchen, laundry and closet units (209b, 209c, 209d) occupy a second side portion (217b) of the rectangular footprint (217).

4. The service block system (201) according to claim 3, wherein the substantially rectangular footprint (217) occupies a surface of about 55 ft<sup>2</sup>.

5. The service block system (201) according to claim 1, wherein the base frame (205) comprises FSC-certified wood components.

6. The service block system (201) according to claim 1, the block system (201) comprising a bathroom unit (209a), the bathroom unit (209a) comprising a bathroom sink (219) and a toilet (221).

7. The service block system (201) according to claim 6, wherein the bathroom unit (209a) further comprises an openable glass window (223) for controlling humidity within the bathroom unit (209a).

8. The service block system (201) according to claim 1, wherein the displacement mechanism (211) comprises a plurality of 360° pivotable wheel elements (225) distributed about the base frame (205), the wheel elements (225) being selectively lockable during operational use of the at least one service unit (209) and unlocked during displacement of the mobile service block system (201).

9. The service block system (201) according to claim 1, wherein at least one service unit (209) comprises a wall element (227) configured to support an electronic display system (229) mounted on a pivotable and adjustable base (231) on an external face (233) of the mobile service block system (201).

10. The service block system (201) according to claim 1, the block system (201) comprising a kitchen unit (209b), the kitchen unit (209b) comprising a stainless steel counter top (235) with an integrated kitchen sink (237).

11. A living space (203) comprising a mobile service block system (201) as defined in claim 1.

12. The living space (203) according to claim 11, wherein the mobile service block system (201) is displaceable between a daytime location for operational use during a daytime period and a nighttime location for operational use during a nighttime period.

13. A service block system (201) defining a living space (203) for a user of said service block system (201), the service block system (201) comprising:

a base frame (205) contained in the living space (203) and delimiting a pair of corresponding rooms (207a, 207b) of the living space (203), the base frame (201) supporting at least one service unit (209) selected from the group comprising a bathroom unit (209a) and a kitchen unit (209b);

a displacement mechanism (211) operatively connected to the base frame (205) for displacement of the base frame (205) within the living space (203) in order to adjustably vary corresponding sizes of the rooms (207) in accordance with a displacement of the base frame (205) about the living space (203) of the service block system (201); and

at least one connection (213) selected from the group comprising plumbing and electrical connections (213a, 213b), for connecting the mobile service block system (201) to a corresponding infrastructure (215) of a building associated to the service block system;

wherein the base frame (205) supports an integrated bathroom unit (209a), kitchen unit (209b), laundry unit (209c) and closet unit (209d);

wherein the base frame (205) occupies a substantially rectangular footprint (217), the bathroom unit (209a)

occupies a first side portion (217a) of the rectangular footprint (217), the laundry unit (209c) and the closet unit (209d) are in a side-by-side configuration and the kitchen unit (209b) is in a back-to-back configuration with respect to the side-by-side configuration of the laundry and closet units (209c, 209d), and wherein the kitchen, laundry and closet units (209b, 209c, 209d) occupy a second side portion (217b) of the rectangular footprint (217);

wherein the bathroom unit (209a) comprises a bathroom sink (219) and a toilet (221);

wherein the bathroom unit (209a) further comprises an openable glass window (223) for controlling humidity within the bathroom unit (209a);

wherein the displacement mechanism ((211) comprises a plurality of 360° pivotable wheel elements (225) distributed about the base frame (205), the wheel elements (225) being selectively lockable during operational use of the at least one service unit (209) and unlocked during displacement of the mobile service block system (201);

wherein at least one service unit (209) comprises a wall element (227) configured to support an electronic display system (229) mounted on a pivotable and adjustable base (231) on an external face (233) of the mobile service block system (201); and

wherein the kitchen unit (209b) comprises a stainless steel counter top (235) with an integrated kitchen sink (237).

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