

(12) **Patent Application Publication**
Pate et al.

(43) **Pub. Date:** **Aug. 14, 2025**

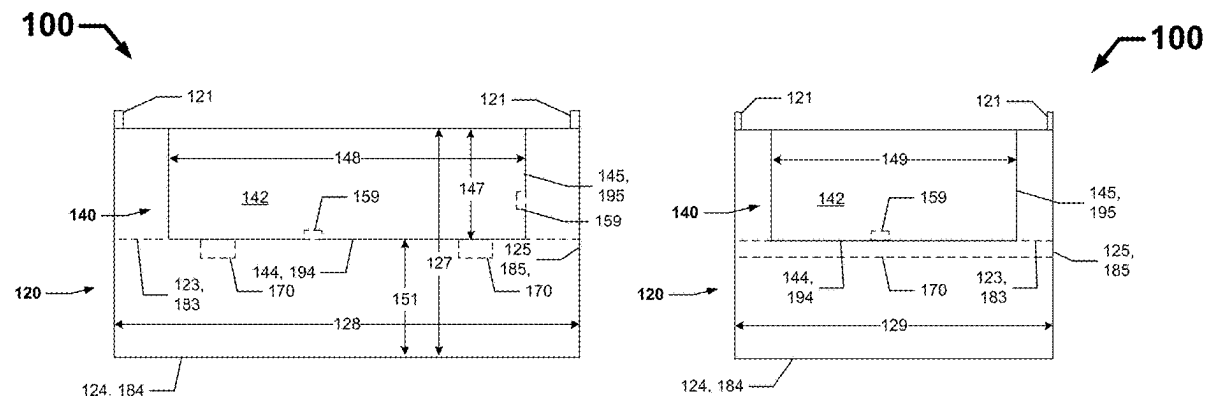
CPC *B63C 11/52* (2013.01)

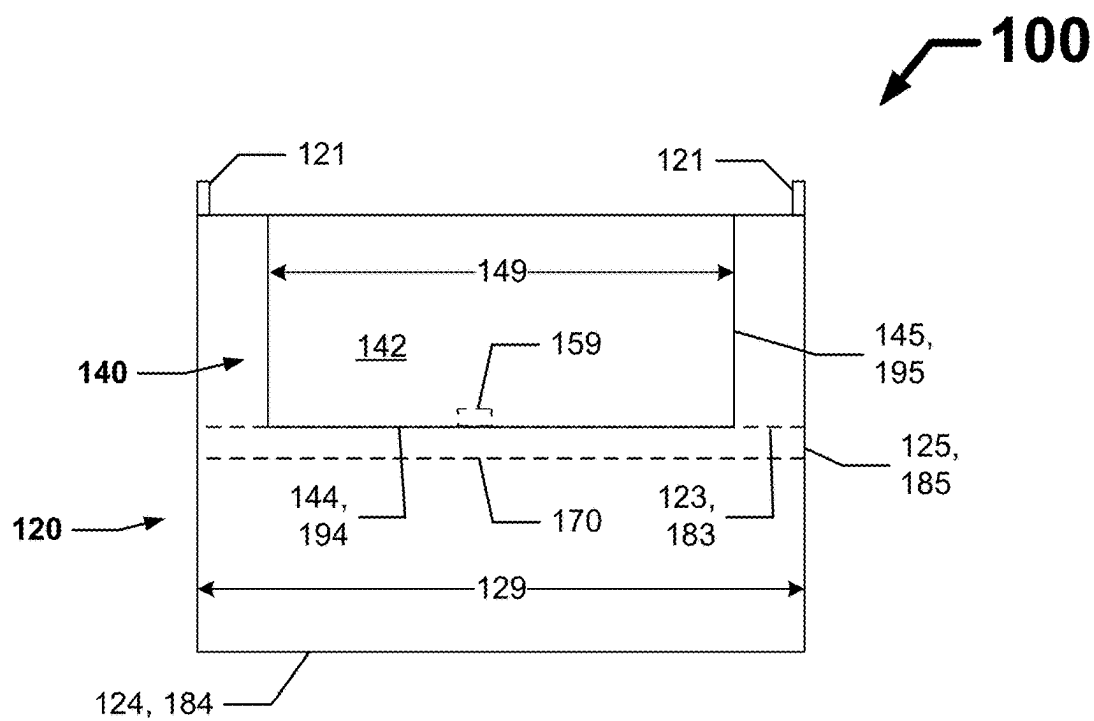
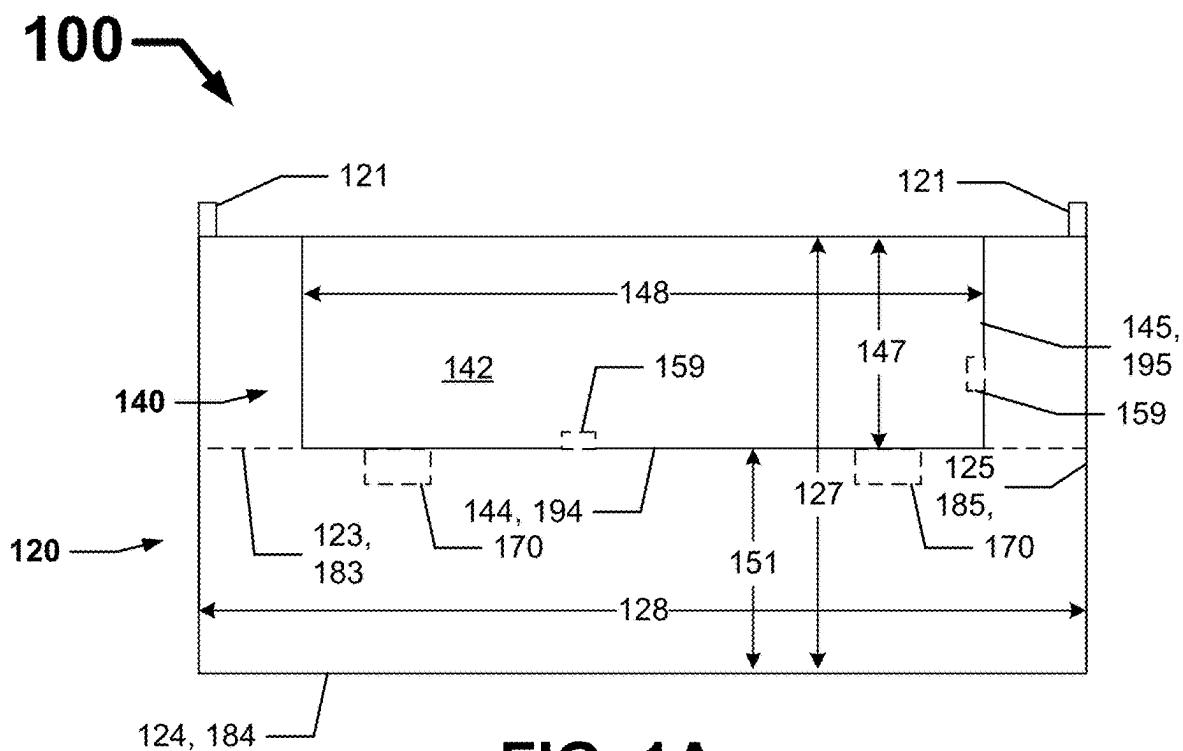
A subsea basket can include a frame having a base and a side, where the base of the frame comprises a horizontal support segment, and wherein the side of the frame includes a vertical support segment. The subsea basket can also include a basket portion having a bottom wall and a side wall, where the bottom wall and the side wall have apertures that traverse therethrough, where the bottom wall is positioned a distance above the horizontal support segment of the bottom of the frame, and where the bottom wall is coupled to the vertical support segment of the side of the frame.

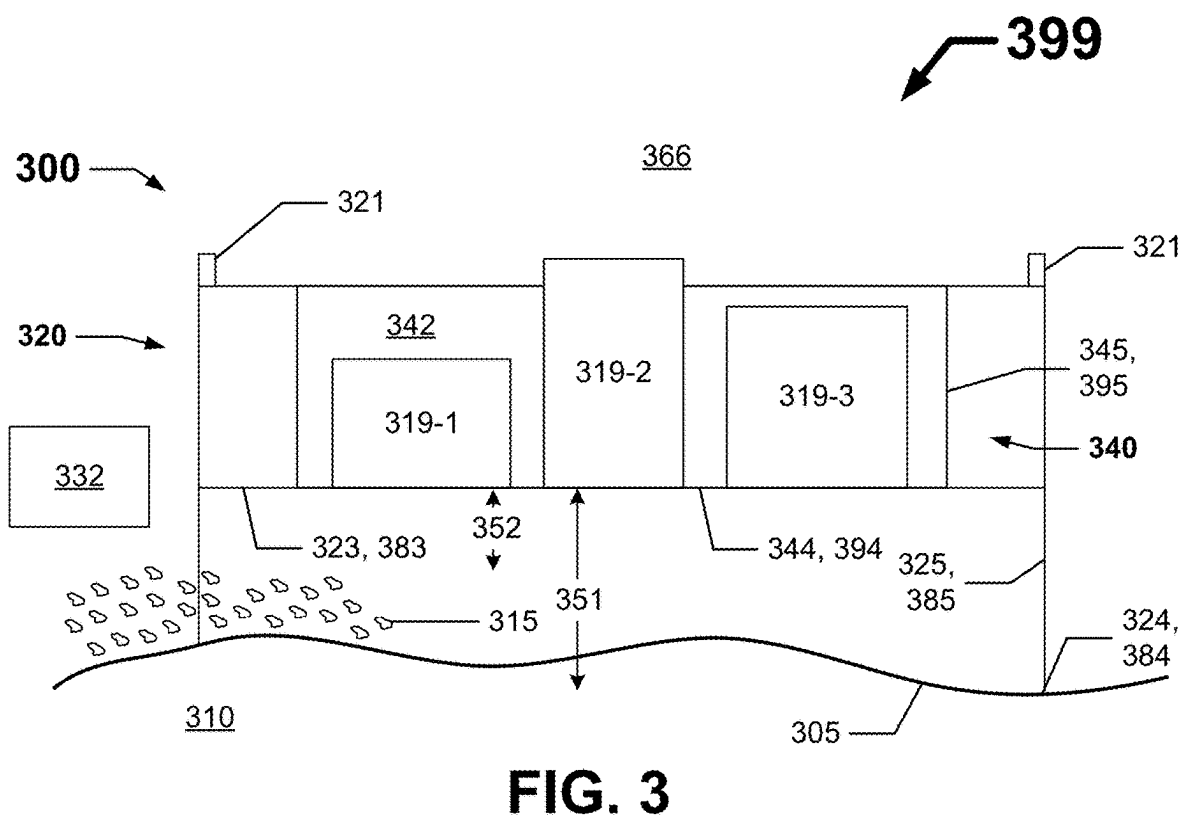
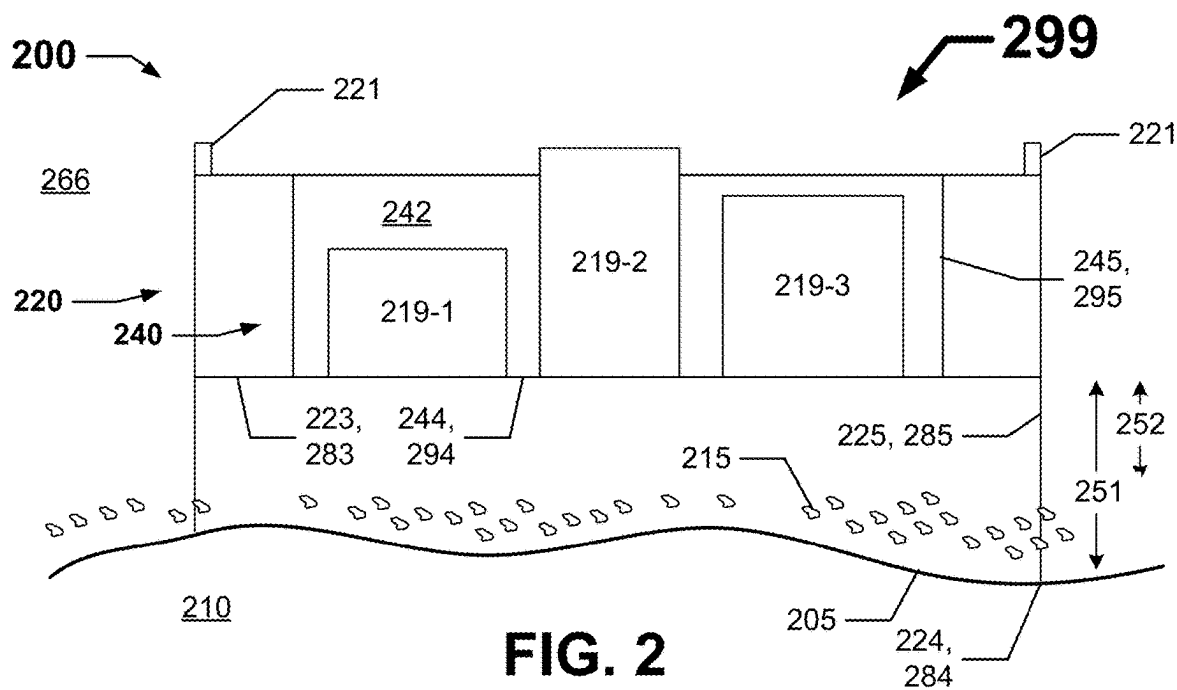
(22) Filed: **Feb. 8, 2024**

Publication Classification

(51) **Int. Cl.**
B63C 11/52 (2006.01)







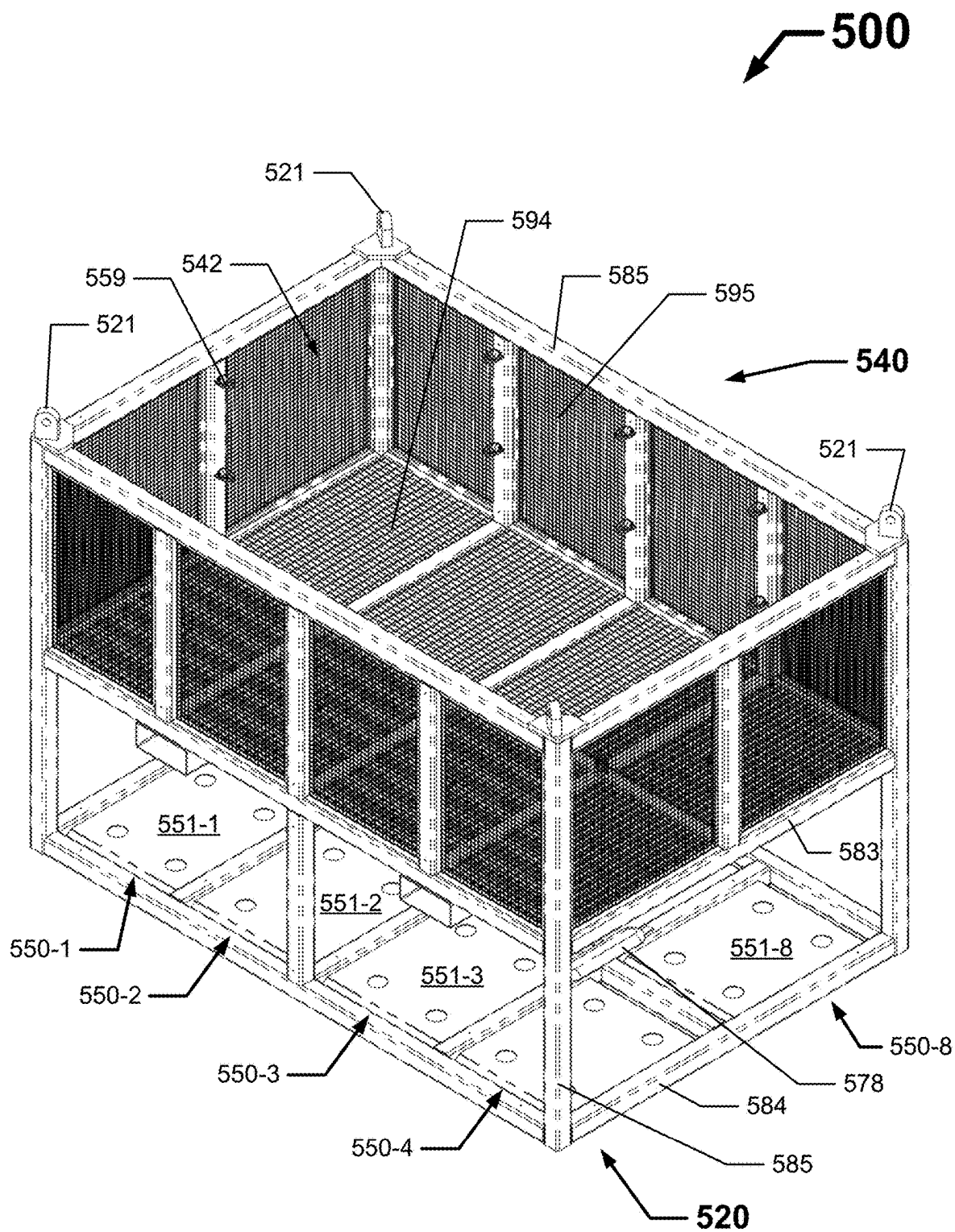


FIG. 5A

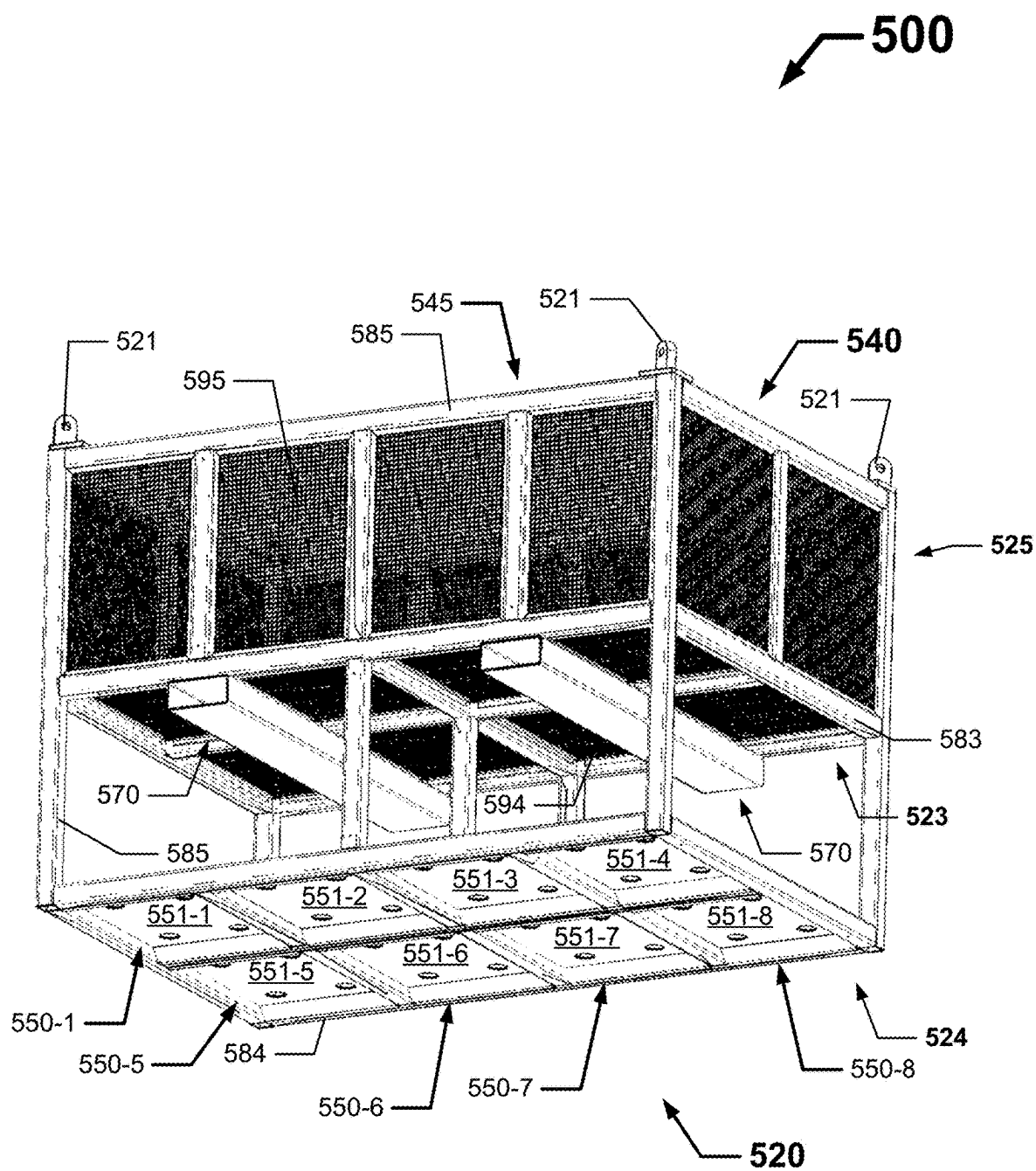


FIG. 5B

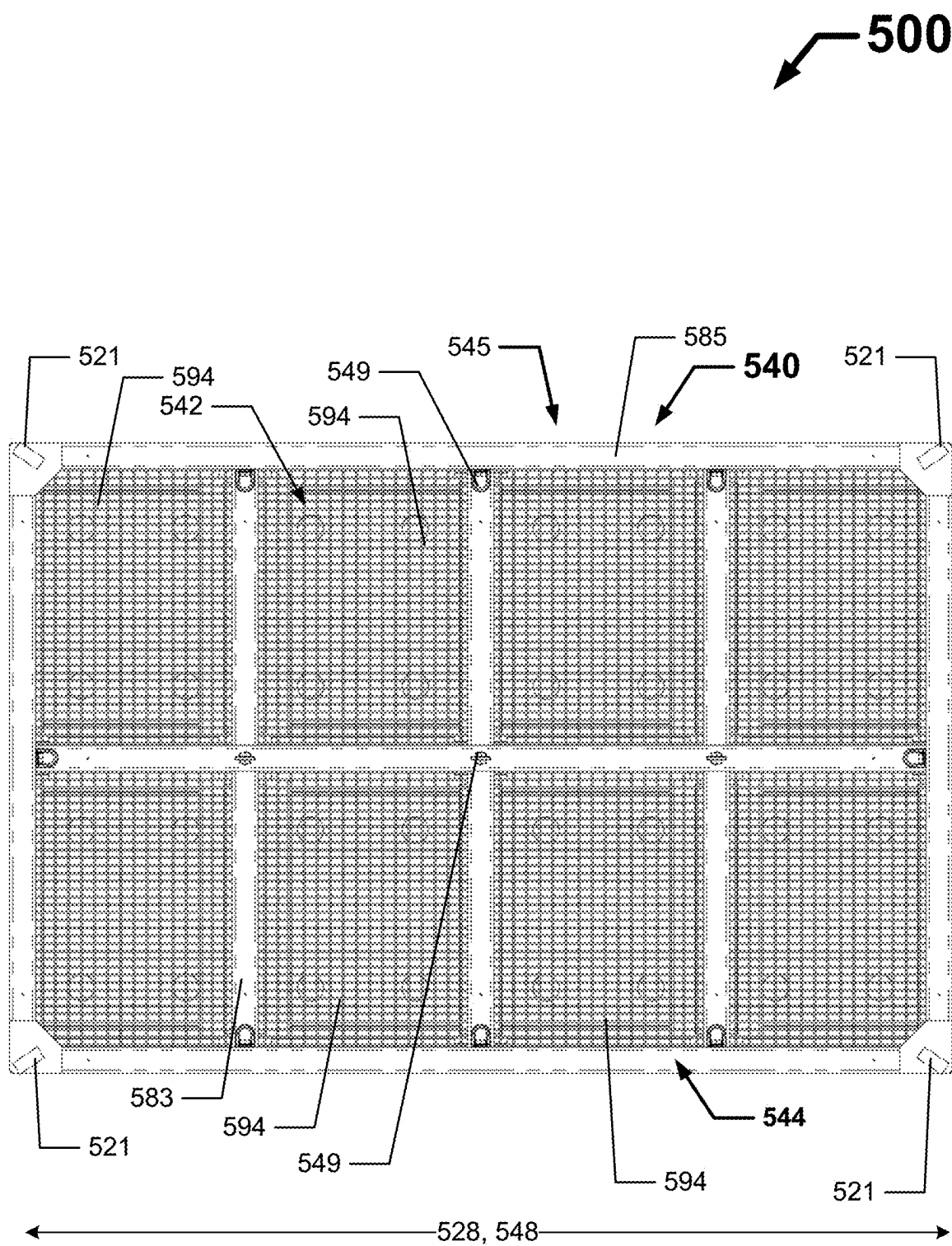


FIG. 5C

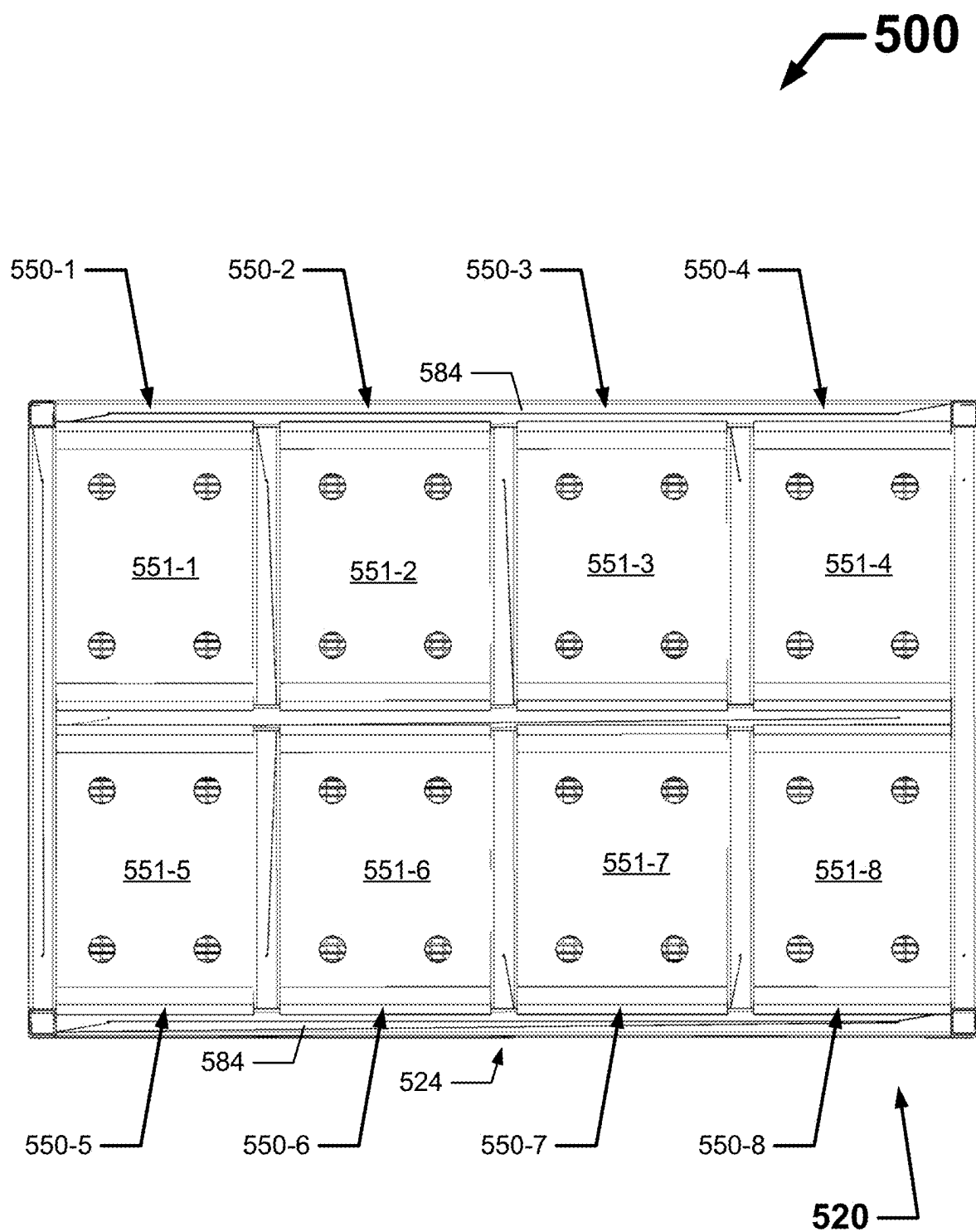


FIG. 5D

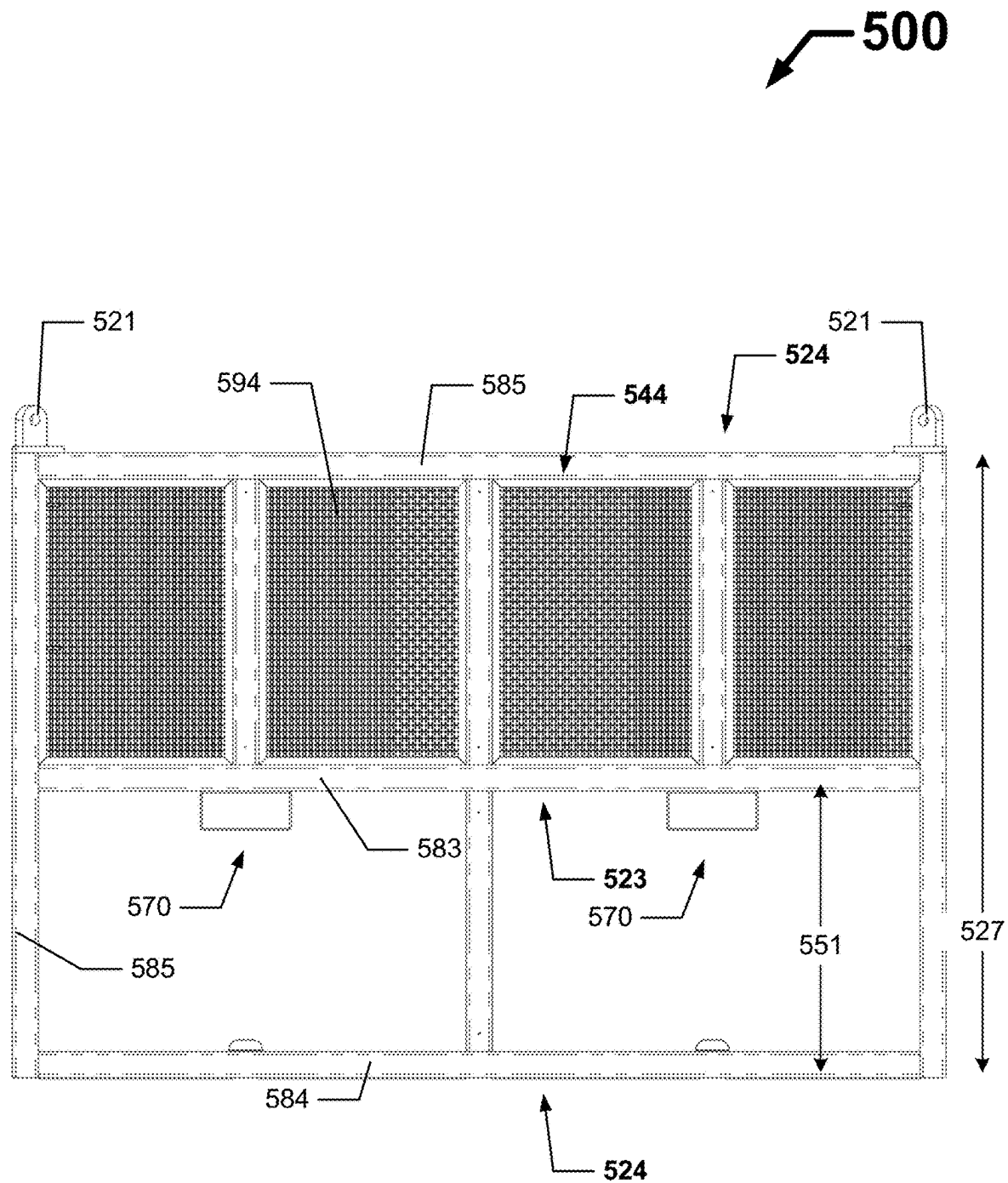


FIG. 5E

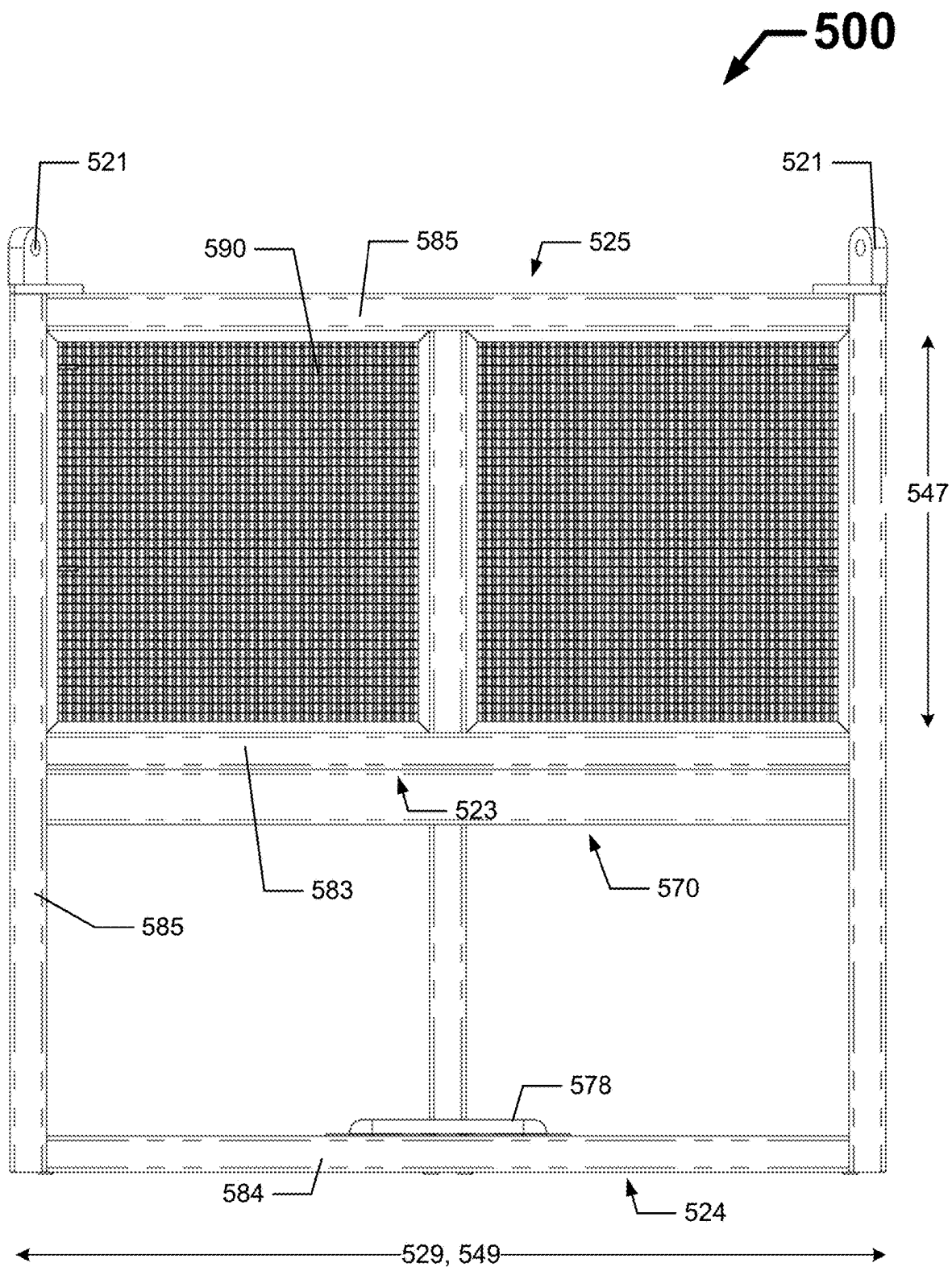


FIG. 5F

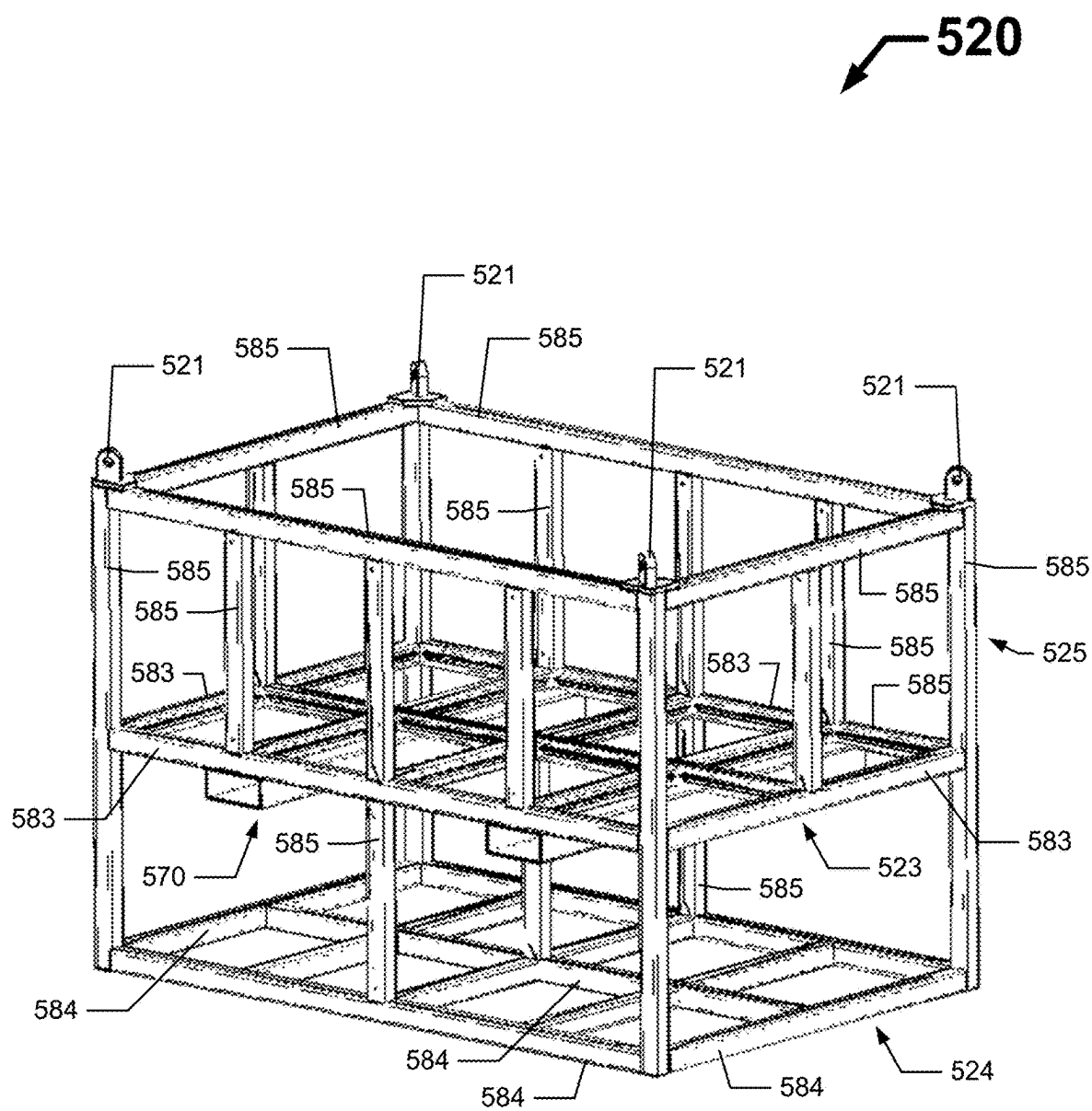


FIG. 6

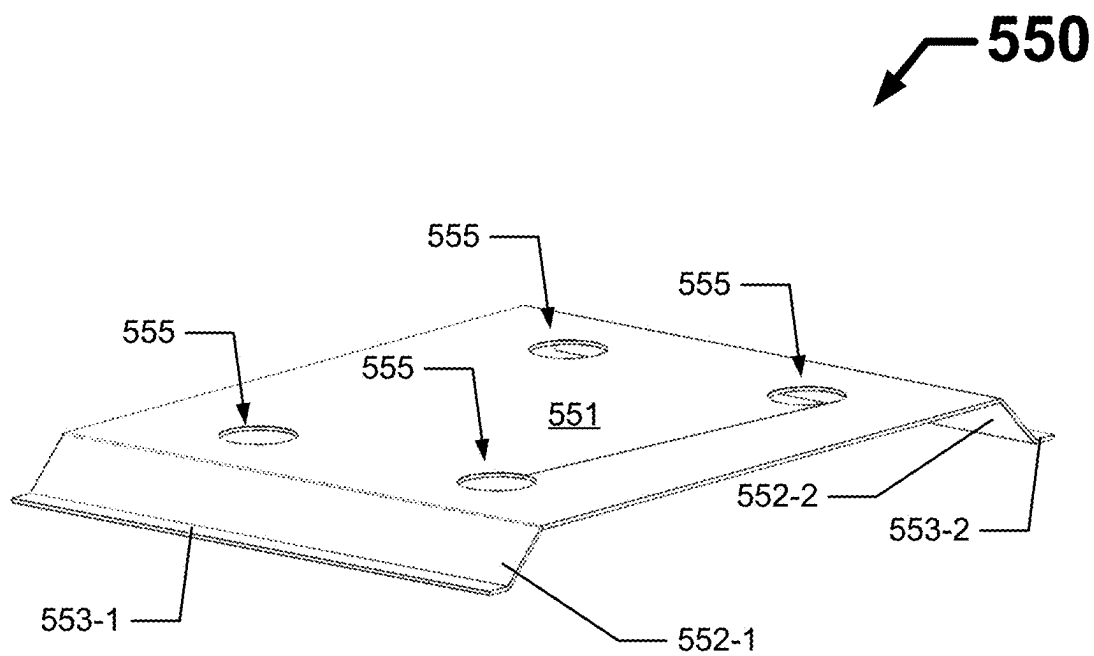


FIG. 7A

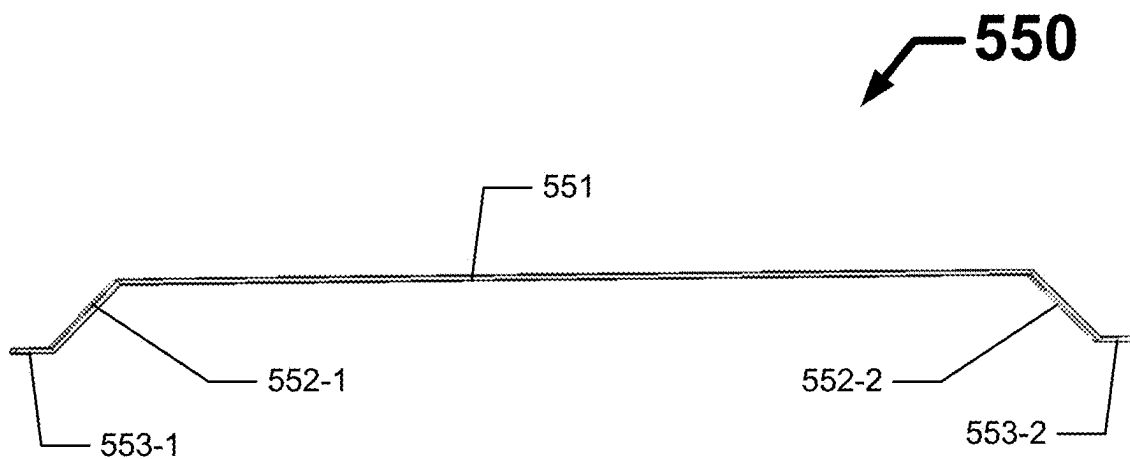


FIG. 7B

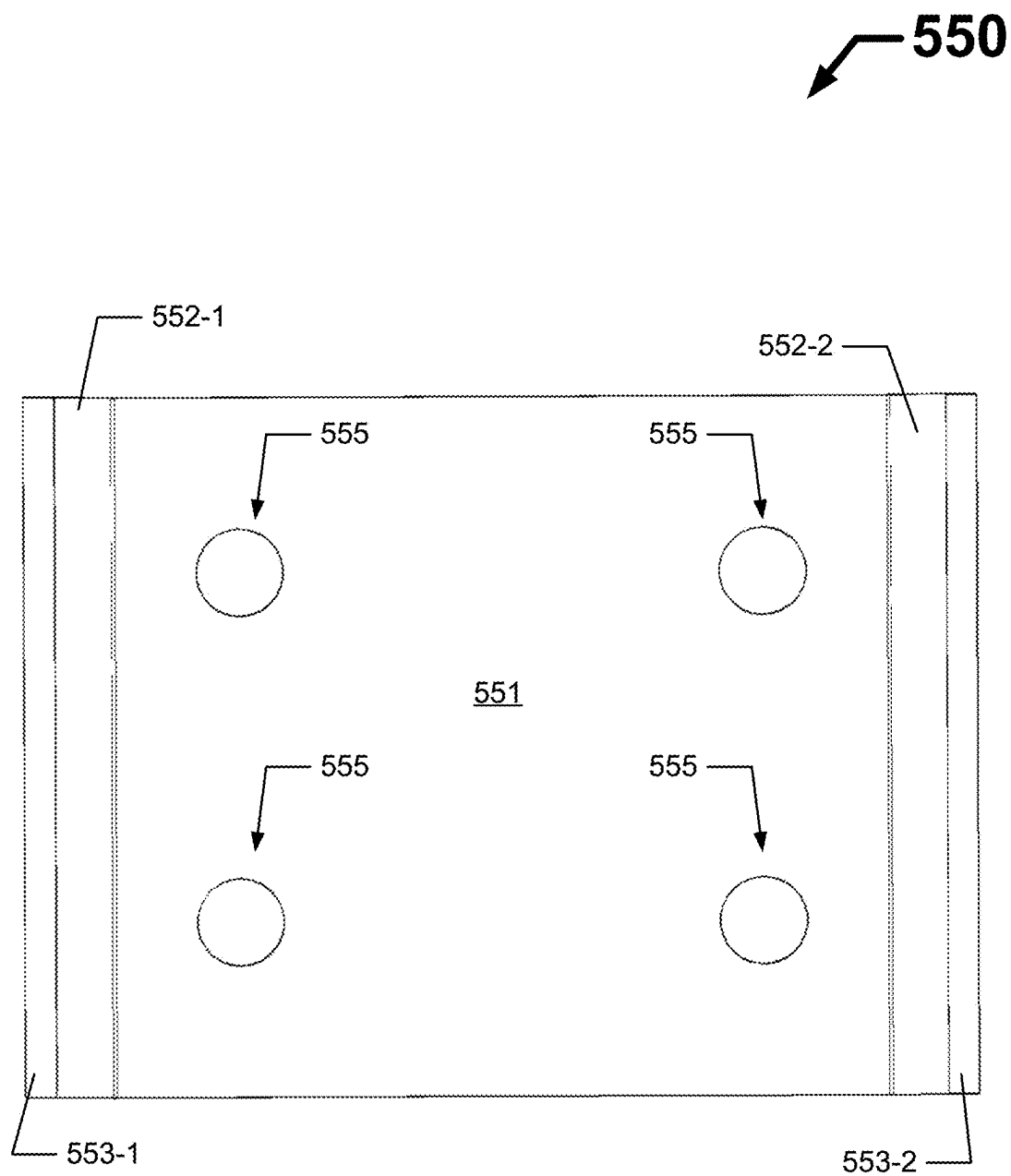
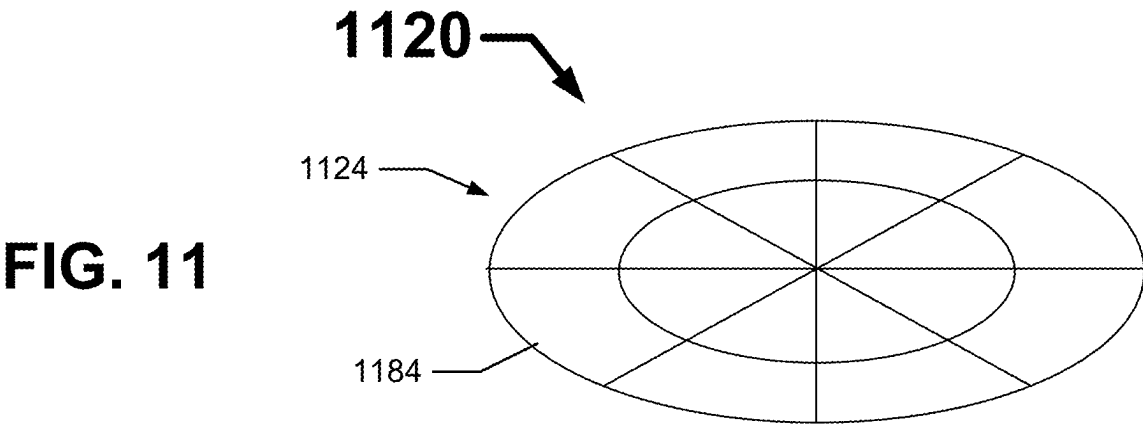
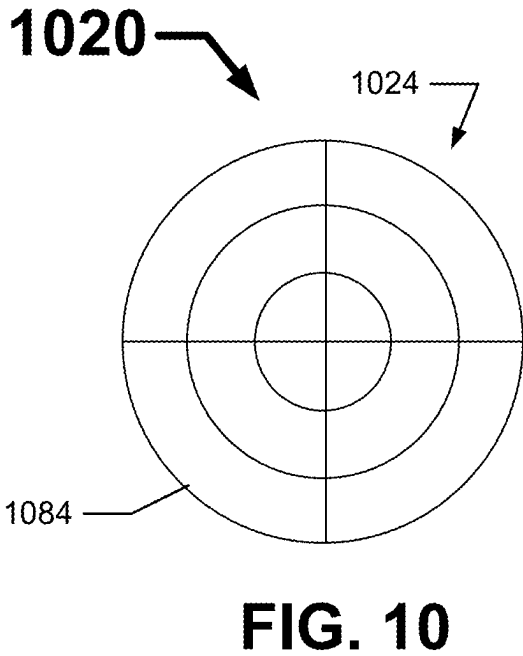
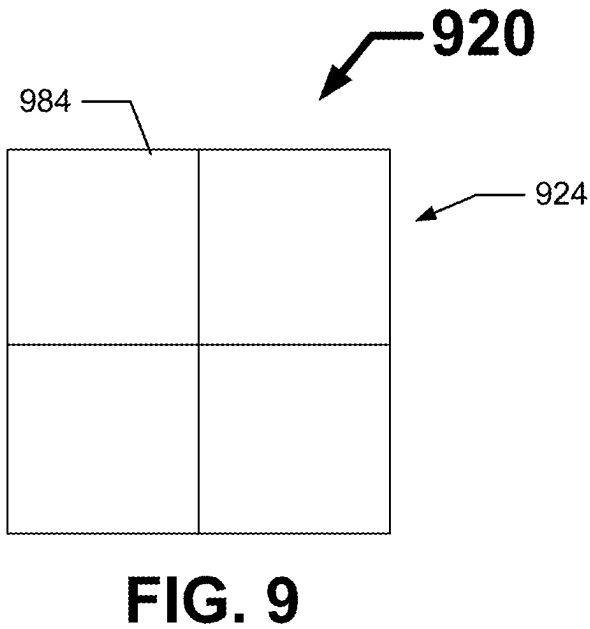
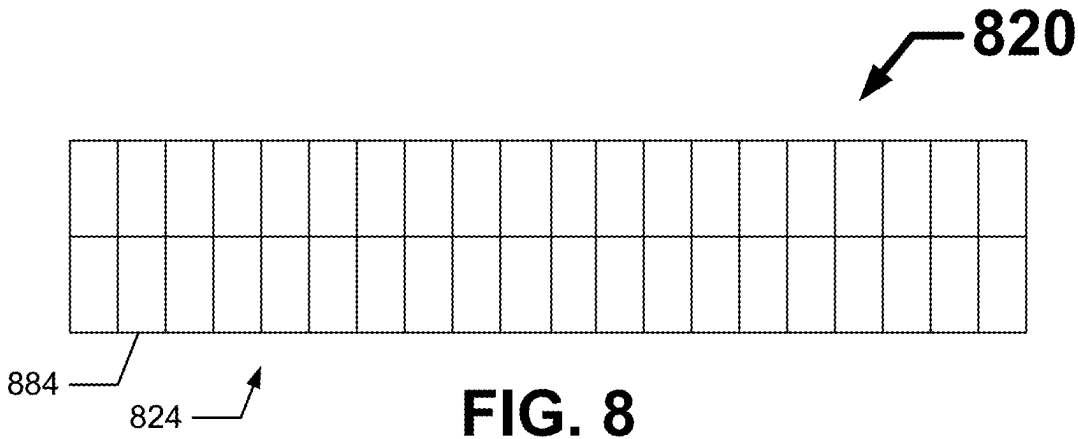


FIG. 7C



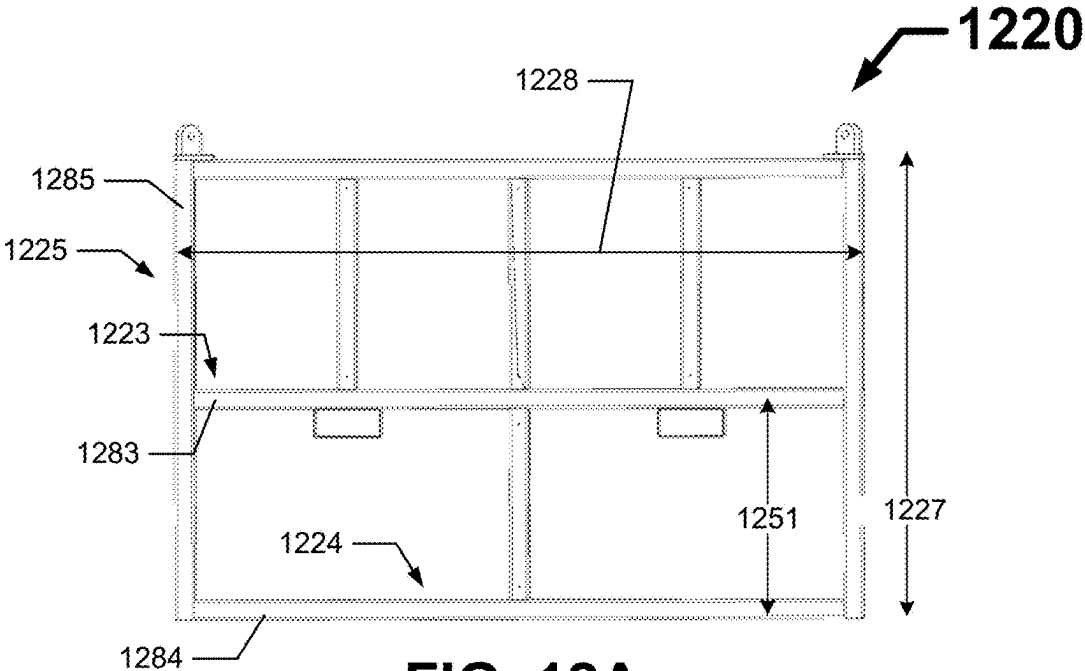


FIG. 12A

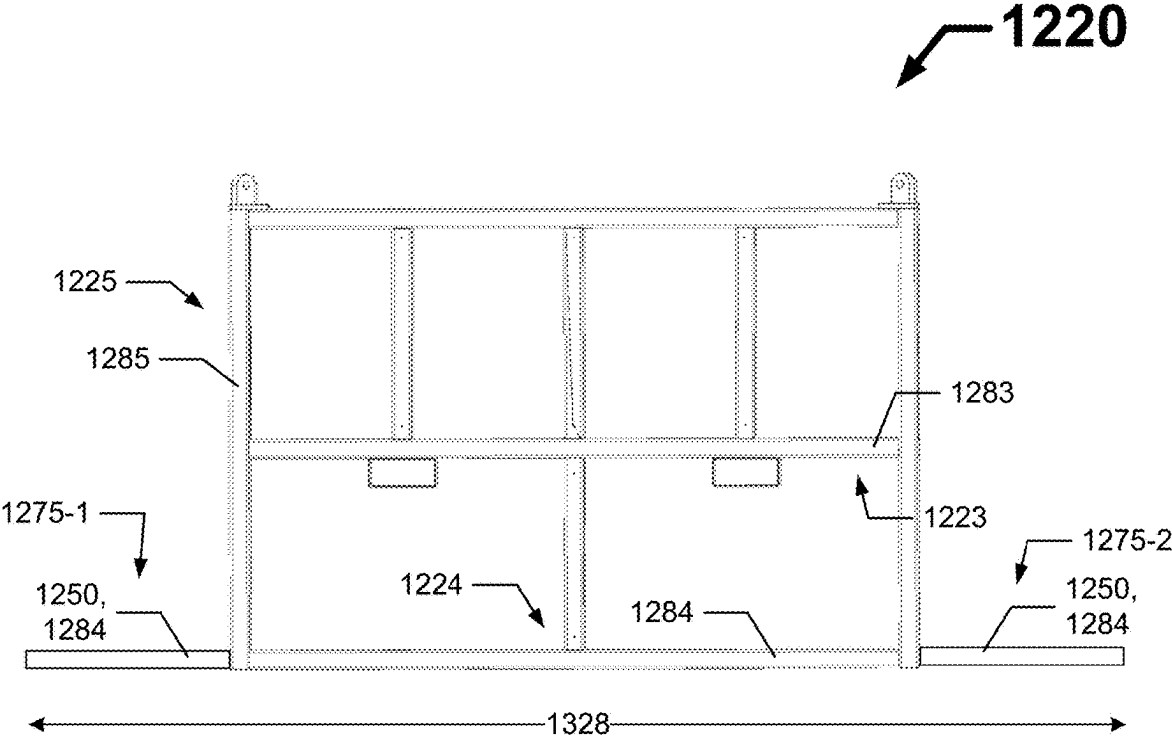


FIG. 12B

SUBSEA BASKET

TECHNICAL FIELD

[0001] The present disclosure relates generally to subsea field operations, and more particularly to systems, methods, and devices for subsea baskets used in subsea field operations.

BACKGROUND

[0002] In some cases, subsea equipment (e.g., polypacks, metal endcaps, actuators, remotely-operated vehicle (ROV) interface hardware) is lowered to the seabed and subsequently retrieved from the seabed using a basket that is moved with a crane. Oftentimes, this subsea equipment has seals and other components that fail easily when exposed to dirt, sediment, and other solids that may be stirred up on the seabed. When subsea baskets currently available are used, the equipment stored in those baskets are subjected to dirt, sediment, and/or other solids that get stirred up from the seabed. As a result, the equipment may be unusable and/or be subject to premature failures and require service or replacement, costing the operator time and money to get replacement equipment in place for use. Additionally, production will be lost/delayed while the equipment is being replaced. This basket could also be used to retrieve items from subsea to keep the contents that go into the baskets from stirring up the seabed and to keep the ROV at a higher elevation to keep from stirring up the seabed.

SUMMARY

[0003] In general, in one aspect, the disclosure relates to a subsea basket that includes a frame comprising a base and a side, where the base of the frame comprises a first support segment, and where the side of the frame includes a second support segment. The subsea basket can also include a basket portion having a bottom wall and a side wall, where the bottom wall and the side wall have apertures that traverse therethrough, where the bottom wall is positioned a distance above the first support segment of the base of the frame, and where the side wall is coupled to the second support segment of the side of the frame.

[0004] These and other aspects, objects, features, and embodiments will be apparent from the following description and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The drawings illustrate only example embodiments and are therefore not to be considered limiting in scope, as the example embodiments may admit to other equally effective embodiments. The elements and features shown in the drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the example embodiments. Additionally, certain dimensions or positions may be exaggerated to help visually convey such principles. In the drawings, the same reference numerals used in different figures may designate like or corresponding but not necessarily identical elements.

[0006] FIGS. 1A and 1B show a block diagram of a side view and a front view, respectively, of an example subsea basket according to certain example embodiments.

[0007] FIGS. 2 through 4 show examples of systems that include an example subsea basket in a subsea environment according to certain example embodiments.

[0008] FIGS. 5A through 5F show various views of a subsea basket according to certain example embodiments.

[0009] FIG. 6 shows a frame of the subsea basket of FIGS. 5A through 5F according to certain example embodiments.

[0010] FIGS. 7A through 7C show various views of a plate of the frame of the subsea basket of FIGS. 5A through 5F according to certain example embodiments.

[0011] FIGS. 8 through 11 schematic bottom views of various frames of subsea baskets according to certain example embodiments.

[0012] FIGS. 12A and 12B show various views of an alternative frame of an example subsea basket according to certain example embodiments.

DETAILED DESCRIPTION

[0013] In general, example embodiments provide systems, methods, and devices for subsea baskets. Example embodiments can provide a number of benefits. Such benefits can include, but are not limited to, minimal interruption time of a field operation, targeted protection of certain equipment that is offline and stored, ability to store equipment proximate to where they may be used, ease of mobility, keeping stored equipment secured, and compliance with industry standards that apply to subsea field operations. While example embodiments described herein are directed for use in subsea operations, in alternative embodiments, an example subsea basket may be used additionally or alternatively with other types of applications. Also, while example embodiments described herein are directed for use in a subsea wellbore environment, in alternative embodiments, an example subsea basket may be used in any of a number of other environments (whether hazardous or otherwise) in which stored equipment may need protection from the surrounding environment from dirt and other debris.

[0014] As defined herein, a user may be any person that interacts with a subsea equipment and/or subsea field operations. Examples of a user may include, but are not limited to, a drilling engineer, a production engineer, a field engineer, a roughneck, a company representative, a mechanic, an operator, an employee, a consultant, a contractor, and a manufacturer's representative. Example subsea baskets can be made of one or more of a number of suitable materials to allow the subsea baskets to meet certain standards and/or regulations while also maintaining durability in light of the one or more conditions under which the subsea baskets, including components or portions thereof, may be exposed. Examples of such materials can include, but are not limited to, aluminum, stainless steel, fiberglass, glass, plastic (e.g., polytetrafluoroethylene (PTFE), nylon), ceramic, and rubber.

[0015] Example subsea baskets, or portions or components thereof, described herein can be made from a single piece (e.g., from a mold, using injection molding, using a die cast process, using a milling and/or lathing process, using an extrusion process, 3D printing). In addition, or in the alternative, example subsea baskets (including portions or components thereof) can be made from multiple pieces that are mechanically coupled to each other. In such a case, the multiple pieces can be mechanically coupled to each other using one or more of a number of coupling methods, including but not limited to epoxy, welding, fastening devices, compression fittings, mating threads, snap fittings, and slotted fittings. One or more pieces that are mechanically coupled to each other can be coupled to each other in

one or more of a number of ways, including but not limited to fixedly, hingedly, removably, slidably, rotatably, and threadably.

[0016] Components and/or features described herein can include elements that are described as coupling, fastening, securing, abutting against, in communication with, or other similar terms. Such terms are merely meant to distinguish various elements and/or features within a component or device and are not meant to limit the capability or function of that particular element and/or feature. For example, a feature described as a “coupling feature” can couple, secure, fasten, abut against, and/or perform other functions aside from merely coupling.

[0017] A coupling feature (including a complementary coupling feature) as described herein can allow one or more components and/or portions of an example subsea basket to become coupled, directly or indirectly, to one or more other components of the subsea basket and/or an external component (e.g., a strap or other securing device, a line for a crane). A coupling feature can include, but is not limited to, a clamp, a portion of a hinge, a channel, an aperture, a recessed area, a protrusion, a hole or other type of aperture, a slot, a tab, a detent, and mating threads. One portion of an example subsea basket can be coupled to another component or feature of the subsea basket and/or to an external component by the direct use of one or more coupling features.

[0018] In addition, or in the alternative, a portion of an example subsea basket can be coupled to another component or feature of the subsea basket and/or to an external component using one or more independent devices that interact with one or more coupling features disposed on a component or feature of the subsea basket. Examples of such devices can include, but are not limited to, a pin, a hinge, a fastening device (e.g., a bolt, a screw, a rivet), epoxy, glue, adhesive, and a spring. One coupling feature described herein can be the same as, or different than, one or more other coupling features described herein. A complementary coupling feature as described herein can be a coupling feature that mechanically couples, directly or indirectly, with another coupling feature.

[0019] The use of the terms “substantially”, “about”, “approximately”, and similar terms applies to all numeric values, whether or not explicitly indicated. These terms generally refer to a range of numbers that one of ordinary skill in the art would consider as a reasonable amount of deviation to the recited numeric values (i.e., having the equivalent function or result). For example, this term may be construed as including a deviation of ± 10 percent of the given numeric value provided such a deviation does not alter the end function or result of the value. Therefore, an angle that is substantially perpendicular may be construed to be within a range from 81° to 99° . Furthermore, a range may be construed to include the start and the end of the range. For example, a range of 10% to 20% (i.e., range of 10%-20%) includes 10% and also includes 20%, and includes percentages in between 10% and 20%, unless explicitly stated otherwise herein. Similarly, a range of between 10% and 20% (i.e., range between 10%-20%) includes 10% and also includes 20%, and includes percentages in between 10% and 20%, unless explicitly stated otherwise herein.

[0020] A “subterranean formation” refers to practically any volume under a surface. For example, it may be practically any volume under a terrestrial surface (e.g., a land surface), practically any volume under a seafloor, etc. Each

subsurface volume of interest may have a variety of characteristics, such as petrophysical rock properties, reservoir fluid properties, reservoir conditions, hydrocarbon properties, or any combination thereof. For example, each subsurface volume of interest may be associated with one or more of: temperature, porosity, salinity, permeability, water composition, mineralogy, hydrocarbon type, hydrocarbon quantity, reservoir location, pressure, etc. Those of ordinary skill in the art will appreciate that the characteristics are many, including, but not limited to: shale gas, shale oil, tight gas, tight oil, tight carbonate, carbonate, vuggy carbonate, unconventional (e.g., a permeability of less than 25 millidarcy (mD) such as a permeability of from 0.000001 mD to 25 mD)), diatomite, geothermal, mineral, etc. The terms “formation”, “subsurface formation”, “hydrocarbon-bearing formation”, “reservoir”, “subsurface reservoir”, “subsurface area of interest”, “subsurface region of interest”, “subsurface volume of interest”, and the like may be used synonymously. The term “subterranean formation” is not limited to any description or configuration described herein.

[0021] A “well” or a “wellbore” refers to a single hole, usually cylindrical, that is drilled into a subsurface volume of interest. A well or a wellbore may be drilled in one or more directions. For example, a well or a wellbore may include a vertical well, a horizontal well, a deviated well, and/or other type of well. A well or a wellbore may be drilled in the subterranean formation for exploration and/or recovery of resources. A plurality of wells (e.g., tens to hundreds of wells) or a plurality of wellbores are often used in a field depending on the desired outcome.

[0022] A well or a wellbore may be drilled into a subsurface volume of interest using practically any drilling technique and equipment known in the art, such as geosteering, directional drilling, etc. Drilling the well may include using a tool, such as a drilling tool that includes a drill bit and a drill string. Drilling fluid, such as drilling mud, may be used while drilling in order to cool the drill tool and remove cuttings. Other tools may also be used while drilling or after drilling, such as measurement-while-drilling (MWD) tools, seismic-while-drilling tools, wireline tools, logging-while-drilling (LWD) tools, or other downhole tools. After drilling to a predetermined depth, the drill string and the drill bit may be removed, and then the casing, the tubing, and/or other equipment may be installed according to the design of the well. The equipment to be used in drilling the well may be dependent on the design of the well, the subterranean formation, the hydrocarbons, and/or other factors.

[0023] A well may include a plurality of components, such as, but not limited to, a casing, a liner, a tubing string, a sensor, a packer, a screen, a gravel pack, artificial lift equipment (e.g., an electric submersible pump (ESP)), and/or other components. If a well is drilled offshore, the well may include one or more of the previous components plus other offshore components, such as a riser. A well may also include equipment to control fluid flow into the well, control fluid flow out of the well, or any combination thereof. For example, a well may include a wellhead, a choke, a valve, and/or other control devices. These control devices may be located on the surface (e.g., on the seabed), in the subsurface (e.g., downhole in the well), or any combination thereof. In some embodiments, the same control devices may be used to control fluid flow into and out of the well. In some embodiments, different control devices may be used to control fluid flow into and out of a well. In some embodi-

ments, the rate of flow of fluids through the well may depend on the fluid handling capacities of the surface facility that is in fluidic communication with the well. The equipment to be used in controlling fluid flow into and out of a well may be dependent on the well, the subsurface region, the surface facility, and/or other factors. Moreover, sand control equipment and/or sand monitoring equipment may also be installed (e.g., downhole and/or on the surface). A well can on occasion use wireline services for wellbore evaluation (“logging”), equipment retrieval (“fishing”), conveyance of downhole tools, and the like. A well may also include any completion hardware that is not discussed separately. The term “well” may be used synonymously with the terms “borehole,” “wellbore,” or “well bore.” The term “well” is not limited to any description or configuration described herein.

[0024] It is understood that when combinations, subsets, groups, etc. of elements are disclosed (e.g., combinations of components in a composition, or combinations of steps in a method), that while specific reference of each of the various individual and collective combinations and permutations of these elements may not be explicitly disclosed, each is specifically contemplated and described herein. By way of example, if an item is described herein as including a component of type A, a component of type B, a component of type C, or any combination thereof, it is understood that this phrase describes all of the various individual and collective combinations and permutations of these components. For example, in some embodiments, the item described by this phrase could include only a component of type A. In some embodiments, the item described by this phrase could include only a component of type B. In some embodiments, the item described by this phrase could include only a component of type C. In some embodiments, the item described by this phrase could include a component of type A and a component of type B. In some embodiments, the item described by this phrase could include a component of type A and a component of type C. In some embodiments, the item described by this phrase could include a component of type B and a component of type C. In some embodiments, the item described by this phrase could include a component of type A, a component of type B, and a component of type C. In some embodiments, the item described by this phrase could include two or more components of type A (e.g., A1 and A2). In some embodiments, the item described by this phrase could include two or more components of type B (e.g., B1 and B2). In some embodiments, the item described by this phrase could include two or more components of type C (e.g., C1 and C2). In some embodiments, the item described by this phrase could include two or more of a first component (e.g., two or more components of type A (A1 and A2)), optionally one or more of a second component (e.g., optionally one or more components of type B), and optionally one or more of a third component (e.g., optionally one or more components of type C). In some embodiments, the item described by this phrase could include two or more of a first component (e.g., two or more components of type B (B1 and B2)), optionally one or more of a second component (e.g., optionally one or more components of type A), and optionally one or more of a third component (e.g., optionally one or more components of type C). In some embodiments, the item described by this phrase could include two or more of a first component (e.g., two or more components of type C (C1 and C2)), optionally one or more of a second

component (e.g., optionally one or more components of type A), and optionally one or more of a third component (e.g., optionally one or more components of type B).

[0025] In the foregoing figures showing example embodiments of subsea baskets, one or more of the components shown may be omitted, repeated, and/or substituted. Accordingly, example embodiments of subsea baskets should not be considered limited to the specific arrangements of components shown in any of the figures. For example, features shown in one or more figures or described with respect to one embodiment can be applied to another embodiment associated with a different figure or description.

[0026] In certain example embodiments, subsea field operations that include the use of subsea baskets may be subject to meeting certain standards and/or requirements. Examples of entities that set such standards and/or requirements can include, but are not limited to, the Society of Petroleum Engineers, the American Petroleum Institute (API), the International Standards Organization (ISO), and the Occupational Safety and Health Administration (OSHA). Use of example embodiments described herein meet (and/or allow the subsea field operations to meet) such standards and/or requirements when applicable.

[0027] If a component of a figure is described but not expressly shown or labeled in that figure, the label used for a corresponding component in another figure can be inferred to that component. Conversely, if a component in a figure is labeled but not described with respect to that figure, the description for such component can be substantially the same as the description for a corresponding component in another figure. The numbering scheme for the various components in the figures herein is such that each component is a three-digit number or a four-digit number, and corresponding components in other figures have the identical last two digits.

[0028] In addition, a statement that a particular embodiment (e.g., as shown in a figure herein) does not have a particular feature or component does not mean, unless expressly stated, that such embodiment is not capable of having such feature or component. For example, for purposes of present or future claims herein, a feature or component that is described as not being included in an example embodiment shown in one or more particular drawings is capable of being included in one or more claims that correspond to such one or more particular drawings herein.

[0029] Example embodiments of subsea baskets will be described more fully hereinafter with reference to the accompanying drawings, in which example embodiments of subsea baskets are shown. Subsea baskets may, however, be embodied in many different forms and should not be construed as limited to the example embodiments set forth herein. Rather, these example embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of subsea baskets to those of ordinary skill in the art. Like, but not necessarily the same, elements (also sometimes called components) in the various figures are denoted by like reference numerals for consistency.

[0030] Terms such as “first”, “second”, “above”, “below”, “inner”, “outer”, “distal”, “proximal”, “end”, “top”, “bottom”, “upper”, “lower”, “side”, “left”, “right”, “front”, “rear”, and “within”, when present, are used merely to distinguish one component (or part of a component or state of a component) from another. Such terms are not meant to denote a preference or a particular orientation. Such terms

are not meant to limit embodiments of subsea baskets. In the following detailed description of the example embodiments, numerous specific details are set forth in order to provide a more thorough understanding of the invention. However, it will be apparent to one of ordinary skill in the art that the invention may be practiced without these specific details. In other instances, well-known features have not been described in detail to avoid unnecessarily complicating the description.

[0031] FIGS. 1A and 1B show a block diagram of a side view and a front view, respectively, of an example subsea basket 100 according to certain example embodiments. The subsea basket 100 of FIGS. 1A and 1B includes a frame 120 and a basket portion 140, where the basket portion 140 is positioned within the frame 120. The frame 120 of the subsea basket 100 may include a base 124 and one or more sides 125. The frame 120 may lack a top portion, allowing for access to the basket portion 140 through the top of the frame 120. The base 124 of the frame 120 may include one or more support segments 184. The support segments 184 of the base 124 of the frame 120 may be solid or have a cavity therein. The support segments 184 of the base 124 of the frame 120 may be enclosed or open-ended. The support segments 184 of the base 124 of the frame 120 may be configured (e.g., made of certain material, have a certain cross-sectional shape, have a thickness, have a certain texture or lack of texture along its bottom outer surface) that the support segments 184 of the base 124 of the frame 120 are able to withstand the pressure and corrosive environment at or near the seabed.

[0032] The base 124 of the frame 120 may have an overall length 128 and depth 129. In certain example embodiments, all of the support segments 184 of the base 124 of the frame 120 are horizontally oriented or situated in a horizontal plane. In some alternative cases, rather than being horizontally oriented or situated in a horizontal plane, one or more of the support segments 184 of the base 124 of the frame 120 may have some other orientation (e.g., vertical, substantially horizontal). Overall, the collection of the support segments 184 of the base 124 of the frame 120 has a horizontal or substantially horizontal configuration. Whatever the configuration of the individual support segments 184 of the base 124 of the frame 120 of the subsea basket 100, the overall configuration of the support segments 184 of the base 124 of the frame 120 is generally horizontally oriented (or situated in a horizontal plane) and may serve one or more of a number of purposes, including but not limited to providing stability on the seabed and providing a relatively reduced amount of resistance when the subsea basket 100 is being lifted and/or set into place.

[0033] Each side 125 of the frame 120 of the subsea basket 100 may form one or more wall structures or outlies thereof, depending in part on the cross-sectional shape of the subsea basket 100 when viewed from above, as shown in FIGS. 8 through 11 below. Each side 125 of the frame 120 may include one or more support segments 185. The support segments 185 of a side 125 of the frame 120 may be the same as, or different than, the support segments 184 of the base 124 of the frame 120. For example, the support segments 185 of a side 125 of the frame 120 may be solid or have a cavity therein. The support segments 185 of a side 125 of the frame 120 may be enclosed or open-ended. The support segments 185 of a side 125 of the frame 120 may be configured (e.g., made of certain material, have a certain

cross-sectional shape, have a thickness, have a certain texture or lack of texture along its outward-facing surface) that the support segments 185 of the side 125 of the frame 120 are able to withstand the pressure and corrosive environment at or near the seabed.

[0034] Collectively, the one or more sides 125 of the frame 120 in this case has substantially the same overall length 128 and depth 129 as the base 124 of the frame 120. In alternative embodiments, the overall length 128 and/or depth 129 of the base 124 of the frame 120 may differ from that of the collective sides 125 of the frame 120. In certain example embodiments, all of the support segments 185 of a side 125 of the frame 120 are vertically oriented or lie in a vertical plane. In some alternative cases, rather than being vertically oriented or lying in a vertical plane, one or more of the support segments 185 of a side 125 of the frame 120 may have some other orientation (e.g., horizontal, substantially vertical, inclined). Overall, the collection of the support segments 185 of a side 125 of the frame 120 may have a vertical or substantially vertical configuration.

[0035] Whatever the configuration of the individual support segments 185 of a side 125 of the frame 120 of the subsea basket 100, the overall configuration of the support segments 185 of a side 125 of the frame 120 may be generally vertically oriented and may serve one or more of a number of purposes, including but not limited to providing structural support for the basket portion 140 and providing structural support for the subsea basket 100 when the subsea basket 100 is being lifted from and/or set into place onto the seabed. When there are multiple sides 125 of the frame 120, the configuration of one side 125 may be the same as, or different than, the configuration of one or more of the other sides 125 of the frame 120.

[0036] In some cases, the frame 120 of the subsea basket 100 may also include an optional intermediate platform 123. In such cases, the intermediate platform 123 of the frame 120 may include one or more support segments 183 located above the base 124 of the frame 120 by a distance 151. The vertical position of the intermediate platform 123 dictates the amount of the distance 151 and may vary. For example, the distance 151 may be approximately one half the height 127 of the frame 120. As another example, the distance 151 may be approximately two-thirds the height 127 of the frame 120. As yet another example, the distance 151 may be approximately three-eighths the height 127 of the frame 120. In any case, the height 127 of the intermediate platform 123 (and so also the bottom wall of the basket portion 140) relative to the base 124 of the frame 120 is configured to be high enough that equipment that is positioned within the basket portion 140 is clear or substantially clear of debris and/or other materials that may be stirred up at or near the seabed.

[0037] The support segments 183 of the optional intermediate platform 123 of the frame 120 may be the same as, or different than, the support segments 183 of the base 124 of the frame 120. For example, the support segments 183 of the optional intermediate platform 123 of the frame 120 may be solid or have a cavity therein. The support segments 183 of the optional intermediate platform 123 of the frame 120 may be enclosed or open-ended. The support segments 183 of the optional intermediate platform 123 of the frame 120 may be configured (e.g., made of certain material, have a certain cross-sectional shape, have a thickness, have a certain texture or lack of texture along its top outer surface) that the

support segments **183** of the intermediate platform **123** of the frame **120** are able to withstand the pressure and corrosive environment at or near the seabed.

[0038] The optional intermediate platform **123** of the frame **120** in this case has substantially the same overall length **128** and depth **129** as the base **124** and the side **125** of the frame **120**. In alternative embodiments, the overall length **128** and/or depth **129** as the base **124** of the frame **120** and/or the side **125** of the frame **120** may differ from that of the optional intermediate platform **123** of the frame **120**. In certain example embodiments, all of the support segments **183** of the optional intermediate platform **123** of the frame **120** are horizontally oriented or situated in a horizontal plane. In some alternative cases, rather than being horizontally oriented or situated in a horizontal plane, one or more of the support segments **183** of the optional intermediate platform **123** of the frame **120** may have some other orientation (e.g., vertical, substantially horizontal). Overall, the collection of the support segments **183** of the optional intermediate platform **123** of the frame **120** has a horizontal or substantially horizontal configuration. Whatever the configuration of the individual support segments **183** of the optional intermediate platform **123** of the frame **120** of the subsea basket **100**, the overall configuration of the support segments **183** of the optional intermediate platform **123** of the frame **120** is generally horizontally oriented (or situated in a horizontal plane) and may serve one or more of a number of purposes, including but not limited to providing stability to the basket portion **140**, regardless of whether the subsea basket **100** is resting on the seabed or is being lifted and/or set into place.

[0039] The support segments **184** of the base **124**, the support segments **185** of the one or more sides **125**, and/or the support segments **183** of the optional intermediate platform **123** of the frame **120** may have no other material between them. In some cases, as when the basket portion **140** is integrated with and/or coupled to one or more of the sides **125** and/or the optional intermediate platform **123** of the frame **120**, the support segments **185** of one or more of the sides **125** and/or the support segments **183** of the optional intermediate platform **123** of the frame **120** may have a mesh and/or some other material between them. Such material may exist in places unrelated to the basket portion **140**. For example, as discussed below with respect to FIGS. 5A through 5F, one or more plates may fill one or more gaps between adjacent support segments **184** of the base **124** of the frame **120**.

[0040] In certain example embodiments, the frame **120** may include one or more coupling features **121** positioned atop one or more of the sides **125** of the frame **120**. In such cases, each coupling feature **121** may be configured to couple to a coupling feature (e.g., an eye bolt at the end of a line) of a lifting apparatus (e.g., a crane) that is configured to move the frame **120** and the basket portion **140** of the subsea basket **100** simultaneously. Each coupling feature **121** of the frame **120** may have any of a number of configurations. For example, a coupling feature **121** may be or include an extension at the top of a support segment **185** of a side **125** of the frame **120** with an aperture that traverses its thickness. In any case, a coupling feature **121** may be configured to complement a coupling feature of a lifting apparatus. Also, each coupling feature **121** may be configured to maintain its structural integrity and perform its function in light of the conditions (e.g., low temperatures,

high pressure, salt water, torque and other stresses) that the coupling feature **121** is subjected to over time.

[0041] In addition, or in the alternative, the frame **120** may include one or more engagement features **170** that are configured to receive an engaging member (e.g., a tyne) of a mobility apparatus (e.g., a forklift, a ROV). Such a mobility apparatus may be configured to lift and move the frame **120** and the basket portion **140** (including any equipment disposed therein) simultaneously. Each engagement feature **170** of the frame **120** may have any of a number of configurations. For example, an engagement feature **170** may be or include a tubular component (e.g., with a rectangular cross-sectional shape) that is welded to the underside of the intermediate platform **123** of the frame **120**. In any case, an engagement feature **170** may be configured to receive or otherwise engage an engaging member of a mobility apparatus. Also, each engagement feature **170** may be configured to maintain its structural integrity and perform its function in light of the conditions (e.g., low temperatures, high pressure, salt water, torque and other stresses) that the engagement feature **170** is subjected to over time.

[0042] The basket portion **140** of the subsea basket **100** includes a bottom wall **144** and one or more side walls **145**. The top of the basket portion **140** is open to allow for placing equipment in the basket portion **140** and for retrieving equipment from the basket portion **140**. In some cases, the top of the basket portion **140** is always open (i.e., has no top wall **143**). In alternative embodiments, the basket portion **140** includes an optional top wall **143** that can be moved (e.g., swung open using a hinge, slidable between an extended position and a retracted position) by a ROV and/or other component of a system. In this way, the top wall **143** of the basket portion **140** can be in place to help secure equipment within the basket portion **140**. The bottom wall **144**, the one or more side walls **145**, and the optional top wall **143** form a cavity **142** into which one or more pieces of equipment may be placed.

[0043] The bottom wall **144** of the basket portion **140** may have apertures that traverse therethrough. For example, the bottom wall **144** may be made of or include a mesh (e.g., a metal mesh) that allows for fluid (e.g., water) to flow therethrough while also providing reliable support for any equipment that is placed in the cavity **142** of the basket portion **140**. The bottom wall **144** of the basket portion **140** may be a single piece or multiple pieces (e.g., panels). The bottom wall **144** of the basket portion **140** may be coupled to one or more of the support segments **195** of one or more of the sides **125** of the frame **120**. In addition, or in the alternative, the bottom wall **144** of the basket portion **140** may be coupled to one or more of the support segments **183** of the optional intermediate platform **123** of the frame **120**. In addition, or in the alternative, the bottom wall **144** of the basket portion **140** may include one or more of its own support segments **194**, which may be substantially similar to the support segments (e.g., support segments **184**) discussed above with respect to the frame **120**. The bottom wall **144** of the basket portion **140** may be positioned a distance **151** above the base **124** of the frame **120**.

[0044] Each side wall **145** of the basket portion **140** may be configured similar to the bottom wall **144** of the basket portion **140**. For example, each side wall **145** may have apertures that traverse therethrough. For example, a side wall **145** may be made of or include a mesh (e.g., a metal mesh) that allows for fluid (e.g., water) to flow therethrough

while also providing reliable support for any equipment that is placed in the cavity 142 of the basket portion 140. A side wall 145 of the basket portion 140 may be a single piece or multiple pieces (e.g., panels). A side wall 145 of the basket portion 140 may be coupled to one or more of the support segments 185 of one or more of the sides 125 of the frame 120. In addition, or in the alternative, a side wall 145 of the basket portion 140 may be coupled to one or more of the support segments 183 of the optional intermediate platform 123 of the frame 120. In addition, or in the alternative, a side wall 145 of the basket portion 140 may include one or more of its own support segments 195, which may be substantially similar to the support segments (e.g., support segments 185) discussed above with respect to the frame 120.

[0045] The optional top wall 143 of the basket portion 140 may be configured similar to the bottom wall 144 and/or a side wall 145 of the basket portion 140. For example, the optional top wall 143 may have apertures that traverse therethrough. For example, the optional top wall 143 may be made of or include a mesh (e.g., a metal mesh) that allows for fluid (e.g., water) to flow therethrough while also providing reliable retention of any equipment that is placed in the cavity 142 of the basket portion 140. The optional top wall 143 of the basket portion 140 may be a single piece or multiple pieces (e.g., panels). The optional top wall 143 of the basket portion 140 may be coupled to one or more of the support segments 185 of one or more of the sides 125 of the frame 120.

[0046] The basket portion 140 of the subsea basket 100, bounded by the bottom wall 144, the one or more side walls 145, and the optional top wall 143, has a length 148, a width 149, and a height 147. The length 148 of the basket portion 140 may be less than or substantially the same as the length 128 of the frame 120. The width 149 of the basket portion 140 may be less than or substantially the same as the depth 129 of the frame 120. The height 147 of the basket portion 140 is less than the height 127 of the frame 120. In certain example embodiments, the distance 151 that separates the base 124 of the frame 120 from the intermediate platform 123 of the frame 120 also represents the distance 151 that separates the bottom wall 144 of the basket portion 140 from the base 124 of the frame 120.

[0047] In certain example embodiments, the basket portion 140 may include one or more coupling features 159 disposed on a side wall 145 and/or the bottom wall 144 of the basket portion 140. In such cases, each coupling feature 159 may be configured to couple to a securing device (e.g., a strap, a chain) that is configured to secure equipment within the cavity 142 of the basket portion 140. Each coupling feature 159 of the basket portion 140 may have any of a number of configurations. For example, a coupling feature 159 may be or include a hook or loop that is welded to a side wall 145 and/or the bottom wall 144 of the basket portion 140. In any case, a coupling feature 159 may be configured to complement a securing device. Also, each coupling feature 159 may be configured to maintain its structural integrity and perform its function in light of the conditions (e.g., low temperatures, high pressure, salt water, torque and other stresses) that the coupling feature 159 is subjected to over time.

[0048] FIGS. 2 through 4 show examples of systems that include an example subsea basket in a subsea environment according to certain example embodiments. Referring to the description of FIGS. 1A and 1B above, FIG. 2 shows a

system 299 that includes a subsea basket 200. In this case, the subsea basket 200 of FIG. 2 is substantially the same as the subsea basket 100 of FIGS. 1A and 1B. For example, the subsea basket 200 of FIG. 2 includes a frame 220 and a basket portion 240. The frame 220 of the subsea basket 200 includes a base 224 having one or more support segments 284, one or more sides 225 having one or more support segments 285, and an intermediate platform 223 having one or more support segments 283. The basket portion 240 includes a bottom wall 244 having one or more support segments 294 and a side wall 245 having one or more support segments 295 to form a cavity 242. There are multiple coupling features 221 positioned atop one or more of the sides 225 of the frame 220. The coupling features 221 may be substantially the same as the coupling features 121 discussed above.

[0049] In this case, the subsea basket 200 is positioned on a seabed 205 in a body of water 266. The seabed 205 borders the top of a subterranean formation 210. The seabed 205 is uneven (e.g., undulating) and somewhat soft. As a result, a portion of the base 224 of the frame 220 is hidden from view in FIG. 2 because it is buried in the seabed 205. There are three pieces of equipment 219 (equipment 219-1, equipment 219-2, and equipment 219-3) that are positioned within the cavity 242 of the basket portion 240 of the subsea basket 200. Examples of equipment 219 may include, but are not limited to, a linear actuator override tool (LAOT), a lock open tool (LOT), a linear valve lock-out tool, polypacks, metal endcaps, actuators, remotely-operated vehicle (ROV) interface hardware a tree cap running tool, and a tree handling tool.

[0050] The subsea environment shown in FIG. 2 has natural currents that occur along the seabed 205, causing debris 215 (e.g., dirt, sand, mud, sediment) to be stirred up in the water 266 just above the seabed 205. This debris 215 can cause damage to the equipment 219 if the debris 215 becomes lodged in certain parts of the equipment 219. This would cause the equipment 219 to fail or not function properly when put in operation. As a result, the equipment 219 would need to be replaced. Therefore, keeping as much of the debris 215 away from the equipment 219 is an important objective of the example subsea basket 200. In this case, the bottom wall 244 (and so the bottom of the basket portion 240) is substantially coincident with the intermediate platform 223 of the frame 220. As a result of this configuration of the subsea basket 200, the equipment 219 is maintained at a minimum distance 252 from the debris 215 that get stirred up by the natural currents in the water 266 near the seabed 205. The distance 252 is less than the distance 251 between the intermediate platform 223 and the base 220 of the subsea basket 200.

[0051] FIG. 3 shows a system 399 that includes a subsea basket 300. In this case, the subsea basket 300 of FIG. 3 is substantially the same as the subsea basket 100 of FIGS. 1A and 1B. For example, the subsea basket 300 of FIG. 3 includes a frame 320 and a basket portion 340. The frame 320 of the subsea basket 300 includes a base 324 having one or more support segments 384, one or more sides 325 having one or more support segments 385, and an intermediate platform 323 having one or more support segments 383. The basket portion 340 includes a bottom wall 344 having one or more support segments 394 and a side wall 345 having one or more support segments 395 to form a cavity 342. There

are multiple coupling features 321 positioned atop one or more of the sides 325 of the frame 320.

[0052] In this case, the subsea basket 300 is positioned on a seabed 305 in a body of water 366. The seabed 305 borders the top of a subterranean formation 310. The seabed 305 is uneven (e.g., undulating) and somewhat soft. As a result, a portion of the base 324 of the frame 320 is hidden from view in FIG. 3 because it is buried in the seabed 305. There are three pieces of equipment 319 (equipment 319-1, equipment 319-2, and equipment 319-3) that are positioned within the cavity 342 of the basket portion 340 of the subsea basket 300.

[0053] The subsea environment shown in FIG. 3 has a ROV 332 that is operating near the seabed 305 and the subsea basket 300. The propulsion and other movement of the ROV 332 causes debris 315 (e.g., dirt, sand, mud, sediment) to be stirred up in the water 366 just above the seabed 305 and around the subsea basket 300. This debris 315 can cause damage to the equipment 319 if the debris 315 becomes lodged in certain parts of the equipment 319. This would cause the equipment 319 to fail or not function properly when put in operation. As a result, the equipment 319 would need to be replaced. Therefore, keeping as much of the debris 315 away from the equipment 319 is an important objective of the example subsea basket 300. In this case, the bottom wall 344 (and so the bottom of the basket portion 340) is substantially coincident with the intermediate platform 323 of the frame 320. As a result of this configuration of the subsea basket 300, the equipment 319 is maintained at a minimum distance 352 from the debris 315 that get stirred up by the ROV 332 in the water 366 near the seabed 305. The distance 352 is less than the distance 351 between the intermediate platform 323 and the base 320 of the subsea basket 200.

[0054] FIG. 4 shows a system 499 that includes a subsea basket 400. In this case, the subsea basket 400 of FIG. 4 is substantially the same as the subsea basket 100 of FIGS. 1A and 1B. For example, the subsea basket 400 of FIG. 4 includes a frame 420 and a basket portion 440. The frame 420 of the subsea basket 400 includes a base 424 having one or more support segments 484, one or more sides 425 having one or more support segments 485, and an intermediate platform 423 having one or more support segments 483. The basket portion 440 includes a bottom wall 444 having one or more support segments 494 and a side wall 445 having one or more support segments 495 to form a cavity 442. There are multiple coupling features 421 positioned atop one or more of the sides 425 of the frame 420.

[0055] In this case, the subsea basket 400 is positioned on a seabed 405 in a body of water 466. The seabed 405 borders the top of a subterranean formation 410. The seabed 405 is uneven (e.g., undulating) and somewhat soft. As a result, a portion of the base 424 of the frame 420 is hidden from view in FIG. 4 because it is buried in the seabed 405. There are three pieces of equipment 419 (equipment 419-1, equipment 419-2, and equipment 419-3) that are positioned within the cavity 442 of the basket portion 440 of the subsea basket 400.

[0056] The subsea environment shown in FIG. 4 has a crane 406 on a floating structure 403 (e.g., a semi-submersible rig, a drilling ship) that is floating at the water line 493. The crane 406 has a line 407 that extends into the water 466 and attaches (or otherwise couples) to the coupling features 421 of the subsea basket 400. When the crane 406 lifts,

lowers, and/or otherwise moves the subsea basket 400, the movement of the subsea basket 400 causes debris 415 (e.g., dirt, sand, mud, sediment) to be stirred up in the water 466 just above the seabed 405 and around the subsea basket 400. This debris 415 can cause damage to the equipment 419 if the debris 415 becomes lodged in certain parts of the equipment 419. This would cause the equipment 419 to fail or not function properly when put in operation. As a result, the equipment 419 would need to be replaced. Therefore, keeping as much of the debris 415 away from the equipment 419 is an important objective of the example subsea basket 400. In this case, the bottom wall 444 (and so the bottom of the basket portion 440) is substantially coincident with the intermediate platform 423 of the frame 420. As a result of this configuration of the subsea basket 400, the equipment 419 is maintained at a minimum distance 452 from the debris 415 that get stirred up by the movement of the subsea basket 400 caused by the crane 406. The distance 452 is less than the distance 451 between the intermediate platform 423 and the base 420 of the subsea barrel 400.

[0057] FIGS. 5A through 5F show various views of a subsea basket 500 according to certain example embodiments. Specifically, FIG. 5A shows a top-side perspective view of the subsea basket 500. FIG. 5B shows a bottom-side perspective view of the subsea basket 500. FIG. 5C shows a top view of the subsea basket 500. FIG. 5D shows a bottom view of the subsea basket 500. FIG. 5E shows a side view of the subsea basket 500. FIG. 5F shows a front view of the subsea basket 500. FIG. 6 shows the frame 520 of the subsea basket 500 of FIGS. 5A through 5F according to certain example embodiments. FIGS. 7A through 7C show various views of a plate 550 of the frame 520 of the subsea basket 500 of FIGS. 5A through 5F according to certain example embodiments.

[0058] Referring to the description with respect to FIGS. 1A through 4, the subsea basket 500 of FIGS. 5A through 5F is an example embodiment of the subsea basket 100 discussed above with respect to FIGS. 1A and 1B. In this case, the subsea basket 500 includes a frame 520 and a basket portion 540. The frame 520 has a width 528, a depth 529, and a height 527. The basket portion 540 has a width 548, a depth 549, and a height 547. In this case, the width 528 and the depth 529 of the frame 520 are substantially the same as the width 548 and the depth 549 of the basket portion 540.

[0059] The frame 520 of the subsea basket 500 includes a base 524 having multiple support segments 584, four sides 525 with multiple support segments 585, and an intermediate platform 523 with multiple support segments 583. Specifically, as detailed in FIG. 6, the base 524 of the frame 520 is disposed in a substantially horizontal plane and has a substantially rectangular shape. There are three support segments 584 having a substantially equal length, that are substantially parallel with each other, and that are spaced substantially equidistantly from each adjacent support segment 584. In addition, there are five support segments 584 having a substantially equal length, that are substantially parallel with each other and substantially perpendicular to the other three support segments 584, and that are spaced substantially equidistantly from each adjacent support segment 584.

[0060] In alternative embodiments, the base 524 of the frame 520 may have two sets of five support segments 584 (rather than a single set of five support segments 584), where the support segments 584 are pairs in series with each other

broken by the middle of the three substantially perpendicular support segments **584**. In alternative embodiments, the base **524** of the frame **520** may have any of a number of other overall shapes (e.g., oval, circular, square, octagonal) and/or any other number of support segments **584**. Further, in alternative embodiments, some or all of the support segments **584** may have some other orientation (e.g., not parallel or perpendicular to each other) in the context of the base **524** of the frame **520**.

[0061] Also as detailed in FIG. 6, each of the sides **525** of the frame **520** is disposed in a substantially vertical plane and has a substantially rectangular shape. Each pair of opposing sides **525** are configured substantially the same as each other, but are configured differently than the other pair of opposing sides **525**. The outer vertical support segments **585** of a side **525** may be shared with (e.g., is concurrent with) the adjacent side **525**. Also, the lowest horizontal support segment **585** of a side **525** is shared with (e.g., is concurrent with) a support segment **584** that makes up part of the outer perimeter of the base **524** of the frame **520**. Further, the intermediate horizontal support segment **585** of each side **525** may be shared with (e.g., is concurrent with) a support segment **584** that makes up part of the outer perimeter of the intermediate platform **523** (discussed below) of the frame **520**.

[0062] For the larger of the pair of opposing sides **525** of the frame **520**, there are three support segments **585** having a substantially equal length, that are substantially horizontally oriented, that are substantially parallel with each other, and that are spaced substantially equidistantly from each adjacent support segment **585**. In addition, there are five support segments **585** that are substantially vertically oriented, that are substantially parallel with each other, that are substantially perpendicular to the three horizontally oriented support segments **584**, and that are spaced substantially equidistantly from each adjacent support segment **585**. The first, third, and fifth support segments **585** span the full height of the side **525**, while the second and fourth support segments **585** only span approximately half the full height of the side **525** along the upper half.

[0063] For the smaller of the pair of opposing sides **525** of the frame **520**, there are three support segments **585** having a substantially equal length, that are substantially horizontally oriented, that are substantially parallel with each other, and that are spaced substantially equidistantly from each adjacent support segment **585**. In addition, there are three support segments **585** that are substantially vertically oriented, that are substantially parallel with each other, that are substantially perpendicular to the three horizontally oriented support segments **584**, and that are spaced substantially equidistantly from each adjacent support segment **585**. The first and third support segments **585** span the full height of the side **525**, while the second (middle) support segment **585** only spans approximately half the full height of the side **525** along the upper half.

[0064] In alternative embodiments, a side **525** of the frame **520** may have two sets of three or five support segments **585** (rather than a single set of three or five support segments **585**), where the support segments **585** are pairs in series with each other broken by the middle of the three substantially horizontal support segments **585**. In alternative embodiments, a side **525** of the frame **520** may have any other number of support segments **585**. Further, in alternative embodiments, some or all of the support segments **585** may

have some other orientation (e.g., not parallel or perpendicular to each other) in the context of a side **525** of the frame **520**.

[0065] Further, as detailed in FIG. 6, the intermediate platform **523** of the frame **520** is disposed in a substantially horizontal plane and has a substantially rectangular shape. There are three support segments **583** having a substantially equal length, that are substantially parallel with each other, and that are spaced substantially equidistantly from each adjacent support segment **583**. In addition, there are five support segments **583** having a substantially equal length, that are substantially parallel with each other and substantially perpendicular to the other three support segments **583**, and that are spaced substantially equidistantly from each adjacent support segment **583**. In some cases, the support segments **583** along the outer perimeter of the intermediate platform **523** may also be considered support segments **585** of one or more sides **525** of the frame **520**.

[0066] In alternative embodiments, the intermediate platform **523** of the frame **520** may have two sets of five support segments **583** (rather than a single set of five support segments **583**), where the support segments **583** are pairs in series with each other broken by the middle of the three substantially perpendicular support segments **583**. In alternative embodiments, the intermediate platform **523** of the frame **520** may have any of a number of other overall shapes (e.g., oval, circular, square, octagonal) and/or any other number of support segments **583**. Further, in alternative embodiments, some or all of the support segments **583** may have some other orientation (e.g., not parallel or perpendicular to each other) in the context of the intermediate platform **523** of the frame **520**.

[0067] In addition, while the shape, size, and configuration of the intermediate platform **523** in this case is substantially the same as the shape, size, and configuration of the base **524** of the frame **520**, in alternative embodiments, the shape, size, and/or other configuration of the intermediate platform **523** may differ from the shape, size, and/or other configuration of the base **524** of the frame **520**. In addition, or in the alternative, while the intermediate platform **523** in this case is positioned approximately halfway along the height of the full-length support segments **585** of the sides **525** of the frame **520**, in alternative embodiments the intermediate platform **523** may be positioned at any other point (e.g., one quarter from the top, one quarter from the bottom) along the height of the full-length support segments **585** of the sides **525** of the frame **520**. In addition, or in the alternative, while the intermediate platform **523** and the base **524** of the frame **520** are substantially parallel to each other in this case, in alternative embodiments, the intermediate platform **523** and the base **524** of the frame **520** may be antiparallel with respect to each other.

[0068] The basket portion **540** has a bottom wall **544** and one or more side walls **545** that form a cavity **542** with an open top end. The bottom wall **544** includes a number (e.g., one, three, six, eleven, twenty) of panels **594** that may be coupled to different support segments **583** of the intermediate platform **523** of the frame **520**. In this case, the bottom wall **544** of the basket portion **540** includes eight panels **594** that are horizontally oriented. These eight panels **594** are coupled to various support segments **583** of the intermediate platform **523** of the frame **520** and, in some cases, one or more support segments **585** of one or more sides **525** of the frame **520**.

[0069] Each of the panels 594 may be coupled to the support segments 583 of the intermediate platform 523 of the frame 520 and/or one or more support segments 585 of one or more sides 525 of the frame 520 using one or more of any number of coupling means (e.g., directly or indirectly using coupling features, using welding). When the bottom wall 544 of the basket portion 540 includes multiple panels 594, the configuration (e.g., shape, size, material) of one panel 594 may be the same as, or different than, the configuration of one or more of the other panels 594.

[0070] The basket portion 540 may have any of a number (e.g., one, three, six) of side walls 545. In this example the basket portion 540 has four side walls 545. Each side wall 545 may have any of a number of orientations relative to the bottom wall 544 of the basket portion 540. In this case, each side wall 545 is vertically oriented, making each side wall 545 perpendicular to the bottom wall 544 of the basket portion 540. Each side wall 545 may include any of a number (e.g., one, three, six, eleven, twenty) of panels 595 that are coupled to different support segments 585 of one or more of the sides 525 of the frame 520 and, in some cases, one or more support segments 583 of the intermediate platform 523 of the frame 520. In this case, two of the side walls 545 (in this case, an opposing pair) of the basket portion 540 include two panels 595, while the other two side walls 545 (also an opposing pair in this case) of the basket portion 540 include four panels 595.

[0071] Each of the panels 595 of a side wall 545 of the basket portion 540 may be coupled to the support segments 583 of the intermediate platform 523 of the frame 520 and/or one or more support segments 585 of one or more sides 525 of the frame 520 using one or more of any number of coupling means (e.g., directly or indirectly using coupling features, using welding). When a side wall 545 of the basket portion 540 includes multiple panels 595, the configuration (e.g., shape, size, material) of one panel 595 may be the same as, or different than, the configuration of one or more of the other panels 595. Also, in some alternative embodiments, when there are multiple side walls 545 of the basket portion 540, the configuration (e.g., number of panels 595, size of each panel 595) of one side wall 545 may be substantially the same as the configuration of the other side walls 545.

[0072] In certain example embodiments, there may be no gaps (or no appreciable gaps, aside from the configuration (e.g., a mesh) of a panel 595) between each panel 595 of a side wall 545 of the basket portion 540 and a support segment (e.g., a support segment 583, support segment 585) of the frame 520. Similarly, there may be no gaps (or no appreciable gaps, aside from the configuration (e.g., a mesh) of a panel 595) between each panel 594 of the bottom wall 544 of the basket portion 540 and a support segment (e.g., a support segment 583, support segment 585) of the frame 520. The shape and size of each panel 590 may be substantially the same as, or slightly smaller than, the shape and size of each corresponding space formed between adjacent support segments 585 of one or more of the sides 525 and/or support segments 583 of the intermediate platform 523 of the frame 520.

[0073] In this example, there are four coupling features 521 that are substantially similar to the coupling features 121 discussed above. Each of the coupling features 521 is positioned atop the four corners of the top of the sides 525 of the frame 520. In this case, each of the coupling features

521 is in the form of an eye bolt that may receive, for example, a hook or a cable. In addition, the subsea basket 500 includes a sacrificial anode 578 that is coupled to (e.g., bolted, welded) to one or more of the support segments 584 of the base 524 of the frame 520. The anode 578 is used to reduce the amount of corrosion that occurs with respect to the various support segments of the frame 520 and/or the various panels of the basket portion 540 over time. In alternative embodiments, the anode 578 may be coupled to another location with respect to the frame 520. In addition, or in the alternative, there may be no anodes or multiple anodes 578. In some cases, another component may be used in place of the anode 578 to reduce corrosive effects on the frame 520 and/or the basket portion 540.

[0074] Further, the subsea basket 500 includes two engagement features 570 that are substantially similar to the engagement features 170 discussed above. In this case, each of the engagement features 570 is an elongated tubular component with a rectangular cross-sectional shape that is coupled to (e.g., welded to) the underside of one or more support segments 583 of the intermediate platform 523 of the frame 520. With this configuration, each engagement feature 570 may be configured to receive an engaging member (e.g., a tyne) of a mobility apparatus (e.g., a forklift, a ROV) so that the subsea basket 500 (including any equipment disposed therein) may be lifted and/or otherwise moved. In this case, the two engagement features 570 are configured substantially the same as each other.

[0075] In certain example embodiments, the subsea basket 500 may include one or more of a number of securing features 559 disposed within the cavity 542 of the basket portion 540. In such a case, each securing feature 559 may be configured to receive a securing device (e.g., a strap, a cable) to secure equipment (e.g., equipment 319, equipment 419) within the basket portion 540. A securing feature 559 may have any of a number of configurations (e.g., a hinged eye ring, a non-hinged eye ring) that allow the securing feature 559 to directly or indirectly couple to a securing device.

[0076] A securing feature 559 may be coupled to an upper surface of a support segment 583 of the intermediate platform 523 of the frame 520, to an inner surface of a support segment 585 of a side 525 of the frame 520, and/or to a panel 550 of the basket portion 540 so that the securing feature 559 is disposed in the cavity 542. As such, a securing feature 559 may include one or more of a number of coupling features (e.g., an aperture, an extension, a slot, mating threads) that allow a securing feature 559 to be directly or indirectly coupled to a support segment 583 of the intermediate platform 523 of the frame 520, a support segment 585 of a side 525 of the frame 520, and/or a panel 550 of the basket portion 540. In certain example embodiments, a support segment 583 of the intermediate platform 523 of the frame 520, a support segment 585 of a side 525 of the frame 520, and/or a panel 550 of the basket portion 540 includes a coupling feature that complements a coupling feature of a securing feature 559.

[0077] There may be any number of securing features 559 arranged in any manner within the cavity 542 of the basket portion 540. When a subsea basket 500 includes multiple securing features 559, the characteristics (e.g., shape, size, type of coupling feature, mechanism for receiving a securing device) of one securing feature 559 may be the same as, or different than, the one or more of the corresponding char-

acteristics of one or more of the other securing features 559. A securing feature 559 may be considered part of the basket portion 540, part of the frame 520, or independent components of the subsea basket 500.

[0078] In certain example embodiments, as in this example, the subsea basket 500 includes one or more plates 550 that are coupled to and/or otherwise integrated with the base 524 of the frame 520. The purpose of a plate 550 is to increase the surface area of the base 524 of the frame 520, thereby providing stability for the frame 520 as the frame 520 is positioned on a seabed (e.g., seabed 205, seabed 405). The subsea basket 500 of FIGS. 5A through 5F includes 8 plates 550 (plate 550-1, plate 550-2, plate 550-3, plate 550-4, plate 550-5, plate 550-6, plate 550-7, and plate 550-8).

[0079] In such cases where the subsea basket 550 includes one or more plates 550, each plate 550 may have any of a number of configurations. For example, as shown in FIGS. 7A through 7C, a plate 550 may include a body 551, one or more flanges 553 that extend away from the body 551, and one or more transition portions 552 positioned between a flange 553 and the body 551 of the plate 550. The body 551 provides most of the surface area coverage for a plate 550. Plate 550-1 includes body 551-1, plate 550-2 includes body 551-2, plate 550-3 includes body 551-3, plate 550-4 includes body 551-4, plate 550-5 includes body 551-5, plate 550-6 includes body 551-6, plate 550-7 includes body 551-7, and plate 550-8 includes body 551-8.

[0080] The body 551 of each plate 550 in this case is substantially planar and has a rectangular shape when viewed from above. In alternative embodiments, the body 551 may be three-dimensional (e.g., dome shaped, pyramid shaped) and/or may have any of a number of other shapes (e.g., circular, oval, square, octagonal) when viewed from above. In certain example embodiments, the shape and size of the body 551 when viewed from above is substantially the same as the shape and substantially the same as or slightly smaller than the size of the opening, formed by the support segments 584 of the base 524 and/or the support segments 585 of one or more sides 525 of the frame 520, into which the plate 550 is positioned. When a subsea basket 500 includes multiple plates 550, the characteristics (e.g., cross-sectional shape, thickness, length, width) of the body 551 of one plate 550 may be the same as, or different than, the corresponding characteristics of the body 551 of one or more of the other plates 550 of the subsea basket 500.

[0081] A flange 553 of a plate 550 may be configured to couple to one or more support segments 584 of the base 524 and/or the support segments 585 of one or more sides 525 of the frame 520. In such cases, a flange 553 may include one or more coupling features (e.g., apertures, tabs, detents) that allow the flange 553 to directly or indirectly couple to one or more of the support segments 584 of the base 524 and/or to one or more of the support segments 585 of one or more sides 525 of the frame 520. For example, a flange may overlap with a support segment of the frame 520 and be coupled to the support segment by welding. In some cases, a flange 553 may be continuous (planar) with respect to the body 551. In alternative embodiments, as in this example, a flange 553 may be parallel to but in a different (e.g., lower) plane relative to the body 551. In yet other alternative embodiments, a flange 553 may be non-planar and anti-parallel to the body 551 of the plate 550.

[0082] In this example, each plate 550 of the subsea basket 500 includes two flanges 553 (flange 553-1 and flange 553-2) that are located at opposite ends (e.g., the top end and the bottom end, the left side and the right side) of the body 551 of the plate 550. In this example, one flange 553 of a plate 550 is coupled to an outer support segment 584 among the three parallel support segments 584 of the base 524 of the frame 520, while the other flange 553 of the plate 550 is coupled to the middle support segment 584 among the three parallel support segments 584 of the base 524 of the frame 520.

[0083] The flange 553-1 and the flange 553-2 are planar with respect to each other and parallel to but at a lower level with respect to the body 551 of the plate 550. In other words, the body 551 of a plate 550 is raised in a horizontal plane relative to the flanges 553 of the plate 550. In this case, the characteristics (e.g., shape, length, width, thickness) of the flanges 553 of each plate 550 are substantially the same. In alternative embodiments, one or more of the characteristics of one flange 553 of a plate 550 may be different than one or more of the corresponding characteristics of one or more of the other flanges 553 of the plate 550.

[0084] A transition portion 552 may be used to offset the associated flange 553 relative to the plane or volume of the body 551. In this case, each plate 550 has two transition portions 552, where transition portion 552-1 is positioned between the flange 553-1 and the body 551, and where transition portion 552-2 is positioned between the flange 553-2 and the body 551. In some cases, as in this example, each transition portion 552 of a plate is substantially planar. In alternative embodiments, a transition portion 552 may have some other configuration (e.g., curved, sawtooth-shaped). In this case, the characteristics (e.g., shape, size, curvature) of the transition portions 552 are substantially the same. In alternative embodiments, one or more of the characteristics of one transition portion 552 of a plate 550 may be different than one or more of the characteristics of one or more of the other transition portions 552 of the plate 550.

[0085] Each plate 550 of the subsea basket 500 has any of a number (e.g., one, four, nine, ten, 25) of apertures 555 that traverse the thickness of the body 551. In this case, each plate 550 has four apertures 555 that traverse the thickness of the body 551. Each aperture 555 in the body 551 of a plate 550 may serve one or more of a number of purposes, including but not limited to allowing for the flow of fluids (e.g., water, gas) and/or solids (e.g., sand, silt) therethrough as the subsea basket 500 is moved. In this way, the apertures 555 of the plates 550 may reduce the amount of drag or resistance that the plates 550 would otherwise cause when the subsea basket 500 is moved. In other words, the apertures 555 of the plates 550 provide a counterbalance to the increased surface area (and so also the increased stability) provided by the plates 550.

[0086] In this example, the shape and size of each aperture 555 in the body 551 of a plate 550 are substantially circular having the same diameter. In alternative embodiments, the shape and size of one aperture 555 in the body 551 of a plate 550 may differ from the shape and/or size one or more of the other apertures 555 in the body 551 of a plate 550. Also, the apertures 555 of each plate 550 in this example are spaced equidistantly relative to each other along the body 551 of the plate 550. In alternative embodiments, the number and/or the orientation of the apertures 555 in the body 551 of one

plate 550 may differ from the number and/or the orientation of the apertures 555 in the body 551 of one or more of the other plates 550 of the subsea basket 500.

[0087] As discussed above, while the cross-sectional shape of the subsea basket 500 of FIGS. 5A through 5F when viewed from above is rectangular, other cross-sectional shapes are possible according to example embodiments. FIGS. 8 through 11 show schematic bottom views of various frames of subsea baskets according to certain example embodiments. Referring to the description associated with FIGS. 1A through 7C above, FIG. 8 shows a schematic bottom view of a frame 820 that has a cross-sectional shape of an elongated rectangle. In this case, the base 824 of the frame 820 includes three substantially horizontal and equidistantly spaced support segments 884 and 21 substantially vertical and equidistantly spaced support segments 884.

[0088] FIG. 9 shows a schematic bottom view of a frame 920 that has a cross-sectional shape of a square. In this case, the base 924 of the frame 920 includes three substantially horizontal and equidistantly spaced support segments 984 and three substantially vertical and equidistantly spaced support segments 984. FIG. 10 shows a schematic bottom view of a frame 1020 that has a cross-sectional shape of a circle. In this case, the base 1024 of the frame 1020 includes one substantially horizontal support segment 1084, one substantially vertical support segment 1084, and three substantially circular and concentric support segments 1084. FIG. 11 shows a schematic bottom view of a frame 1120 that has a cross-sectional shape of an oval. In this case, the base 1124 of the frame 1120 includes one substantially horizontal support segment 1184, one substantially vertical support segment 1184, one diagonally-oriented support segment 1184 with a positive slope, one diagonally-oriented support segment 1184 with a negative slope, and two substantially oval and concentric support segments 1184.

[0089] FIGS. 12A and 12B show various views of an alternative frame 1220 of an example subsea basket according to certain example embodiments. Specifically, FIG. 12A shows a side view of the frame 1220 in a normal position, and FIG. 12B shows a side view of the frame 1220 in an expanded position. Referring to the description associated with FIGS. 1A through 11 above, the frame 1220 of FIGS. 12A and 12B is substantially the same as the frame 520 in FIGS. 5A through 6 above, except as discussed below. For example, the frame 1220 includes a base 1224 having one or more support segments 1284, one or more sides 1225 having one or more support segments 1285, and an intermediate platform 1223 having one or more support segments 1283. The frame 1220 in a default or normal position, as shown in FIG. 12A, has a width 1228 that is substantially the same along the height of the frame 1220. In other words, the base 1224, the side 1225, and the intermediate platform 1223 have substantially the same width 1228 when the frame 1220 is in a normal position, as shown in FIG. 12A.

[0090] The frame 1220 differs from the frame 520 of FIGS. 5A through 6 in that the frame 1220 is expandable (e.g., extendable, modular). Specifically, in this case, the base 1224 of the frame 1220 may be converted into an expanded position, as shown in FIG. 12B. When in the expanded position, the base 1224 of the frame 1220 has a width 1328 that exceeds the widths 1228 of the side 1225 and the intermediate platform 1223. For this to occur, the base 1224 of the frame 1220 may include one or more of a number (e.g., one, three, four, six) extensions 1275. In this

case, this case, the base 1224 of the frame 1220 includes two extensions 1275 (extension 1275-1 and extension 1275-2). Each extension 1275 includes one or more support segments 1284.

[0091] When an extension 1275 is part of the frame 1220 (e.g., is hingedly coupled to the frame 1220, is extendable from the frame 1200) when the frame 1220 is in a normal position, each extension 1275 of the base 1224 of the frame 1220 may have a default position (as shown in FIG. 12A) and an enabled position (as shown in FIG. 12B). In the default position, an extension 1275 has no impact on the footprint (e.g., on the width 1228) of the base 1224. When an extension 1275 is in the default position, the frame 1220 is said to be in a normal position. When in the enabled position, an extension 1275 expands the footprint (e.g., increases the width 1328) of the base 1224 of the frame 1220. When an extension 1275 is in the enabled position, the frame 1220 is said to be in an expanded position.

[0092] An extension 1275 may be moved from the default position to the expanded position in one or more of any of a number of ways, depending in part on the configuration of the extension 1275. For example, if an extension 1275 has an accordion-like configuration, a motorized component internal to the frame 1220 or an external component (e.g., the ROV 332) may extend and/or retract the extension 1275 between the default position and the expanded position. In such a case, the extension 1275 may be or may be included in one or more support segments 1284 along the outer perimeter of the base 1224 of the frame 1220.

[0093] As another example, if an extension 1275 is hingedly coupled to one or more support segments 1284 of the base 1224 and/or one or more support segments 1285 of one or more of the sides 1225, a motorized component internal to the frame 1220 or an external component (e.g., the ROV 332) may extend and/or retract the extension 1275 between the default position and the expanded position by forcing the extension 1275 to rotate about the hinge. In certain example embodiments, as with the previous example, an extension 1275 may include one or more coupling features that are configured to complement one or more coupling features disposed on the one or more support segments 1284 of the base 1224 and/or one or more support segments 1285 of one or more of the sides 1225.

[0094] As yet another example, if an extension 1275 is a separate piece (e.g., a modular design) with coupling features (e.g., slotted grooves) that complement one or more coupling features (e.g., tab extensions) disposed on one or more support segments 1284 of the base 1224 and/or on one or more support segments 1285 of one or more of the sides 1225, then an external component (e.g., the ROV 332) may attach the extension 1275 to and/or detach the extension 1275 from the rest of the frame 1220 using the coupling features.

[0095] In some cases, an extension 1275 may be configured to include one or more coupling features that allow the extension 1275 to couple to another extension 1275 (e.g., an additional extension 1275, an adjacent extension 1275). The concept of an expandable base 1224 for a frame 1220 for a subsea basket according to example embodiments may be useful in one or more of a number of situations. For example, if the seabed (e.g., seabed 205, seabed 305, seabed 405) is unstable or is a mixture of different materials, a wider base 1224 may be useful to ensure that the subsea basket is stable (or substantially stable) over time. As another

example, if the seabed is uneven (e.g., has a number of elevation changes, has a number of undulations), then a wider base 1224 may be useful to ensure that the subsea basket is stable (or substantially stable) over time.

[0096] If the frame 1220 has multiple extensions 1275, the characteristics (e.g., number of support segments 1284, orientation of the support segments 1284, overall length, overall width, cross-sectional shape, method for converting between the default position and the enabled position) of one extension 1275 may be the same as, or different than, the corresponding characteristics of one or more of the other extensions 1275. In some cases, an extension 1275 may include one or more plates 1250, where each plate 1250 may be substantially similar (e.g., in terms of configuration, in terms of coupling to one or more support segments 1284 of the base 1224, in terms of the number and/or location of apertures (e.g., apertures 555)) to the plates 550 discussed above. Alternatively, a plate 1250 of an extension 1275 may have one or more features that differ from the plates 550 discussed above.

[0097] Example embodiments can be used to safe and secure storage of subsea equipment at or near the seabed. Such equipment may be sensitive to debris and other elements that may get stirred up at the seabed. Example embodiments may be lifted and/or otherwise moved while posing a minimal risk that the sensitive equipment will become contaminated, thereby compromising the effectiveness of the equipment when it is later put in use. Example embodiments can be placed in an expanded position to help maintain stability and security. Example embodiments may be configured for a single use or multiple uses. Example embodiments may comply with applicable industry standards when used during subsea field operations.

[0098] Although embodiments described herein are made with reference to example embodiments, it should be appreciated by those skilled in the art that various modifications are well within the scope and spirit of this disclosure. Those skilled in the art will appreciate that the example embodiments described herein are not limited to any specifically discussed application and that the embodiments described herein are illustrative and not restrictive. From the description of the example embodiments, equivalents of the elements shown therein will suggest themselves to those skilled in the art, and ways of constructing other embodiments using the present disclosure will suggest themselves to practitioners of the art. Therefore, the scope of the example embodiments is not limited herein.

What is claimed is:

1. A subsea basket comprising:

a frame comprising a base and a side, wherein the base of the frame comprises a first support segment, and wherein the side of the frame comprises a second support segment; and

a basket portion comprising a bottom wall and a side wall, wherein the bottom wall and the side wall have apertures that traverse therethrough, wherein the bottom wall is positioned a distance above the first support segment of the base of the frame, and wherein the side wall is coupled to the second support segment of the side of the frame.

2. The subsea basket of claim 1, wherein the frame further comprises a coupling feature positioned atop the second support segment of the side of the frame, and wherein the

coupling feature is configured to couple to a lifting apparatus that is configured to move the frame and the basket portion simultaneously.

3. The subsea basket of claim 1, wherein the frame further comprises a plate coupled to the first support segment of the base of the frame.

4. The subsea basket of claim 3, wherein the plate has an aperture that traverses therethrough.

5. The subsea basket of claim 3, wherein the plate comprises a flange along its outer perimeter, wherein the flange is coupled to the first support segment of the base of the frame.

6. The subsea basket of claim 5, wherein the plate further comprises a main portion that is raised in a horizontal plane relative to the flange.

7. The subsea basket of claim 6, wherein the main portion of the plate is substantially parallel to the flange.

8. The subsea basket of claim 7, wherein the plate further comprises a transition portion positioned between the flange and the main portion, and wherein the transition portion is substantially planar.

9. The subsea basket of claim 5, wherein the flange is on a top end and a bottom end of the plate.

10. The subsea basket of claim 3, wherein the plate has a shape when viewed from above that is substantially similar to the shape of the base of the frame when viewed from above.

11. The subsea basket of claim 1, wherein the basket portion and the first support segment of the frame have a substantially rectangular shape when viewed from above.

12. The subsea basket of claim 1, wherein the bottom wall and the side wall of the basket portion are a metal mesh.

13. The subsea basket of claim 1, wherein the second support segment of the frame extends to a top end of the side wall of the basket portion.

14. The subsea basket of claim 1, wherein the distance is at least half the height of the frame.

15. The subsea basket of claim 1, wherein the frame further comprises an extension that has a default position and an enabled position, wherein the extension increases a footprint of the base of the frame when in the enabled position, and wherein the extension has no effect on the footprint of the base of the frame when in the default position.

16. The subsea basket of claim 1, wherein the basket portion further comprises a fastening feature disposed on the side of the frame, and wherein the fastening feature is configured to receive a securing device that is configured to secure equipment within the basket portion.

17. The subsea basket of claim 16, wherein the fastening feature comprises a hinged eye ring, and wherein the securing device comprises a strap.

18. The subsea basket of claim 1, wherein the frame further comprises an engagement feature that is configured to receive an engaging member of a mobility apparatus that is configured to lift and move the frame and the basket portion.

19. The subsea basket of claim 18, wherein the engagement feature comprises an elongated tube, and wherein the engaging member is a tyne of a forklift.

20. The subsea basket of claim 1, wherein the frame further comprises an intermediate platform having a third

support segment located above and substantially parallel to the first support segment of the base of the frame, and wherein the third support segment of the intermediate platform directly supports the bottom wall of the basket portion.

* * * * *