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Mobile stacker unit

Abstract

A mobile stacking apparatus for stacking an article array includes a stacker unit having a pair of stacker arms for containing at least one article array therebetween, each stacker arm includes a plurality of supports for supporting the at least one article array, the plurality of supports are configured to move in and out of the stacker arm caused by a movement of a movable handle attached on the stacker arm, and a vertical frame containing a lifting arrangement, the lifting arrangement includes at least a motor to move the stacker unit in a vertical direction.

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Background/Summary

TECHNICAL FIELD

(1) The present disclosure relates to an apparatus for stacking or unstacking article arrays, more particularly, a mobile stacker unit for stacking or unstacking article arrays from half-high unit loads into full-high unit loads.

BACKGROUND

(2) In many manufacturing instances, it may be desirable to transport large quantities of articles, such as, empty or filled bottles, to different locations of a facility. To reduce the amount of handling required and/or to reduce the amount of shipping material consumed, the articles may be arranged in a tight grouping, or array, of articles and stacked. Further, each layer of article arrays is typically loaded on a pallet and ready for transport.

(3) Conventionally, in order to stack the article arrays, this required a group of personnel (at least 2 or more) to pile the article arrays into a stacked arrangement, which is inefficient and time consuming, as well as potentially hazardous for the personnel. In addition, there is a limit as to how

high the personnel can stack the article arrays. Furthermore, there may be damage or breakage to the article itself during the stacking process, leading to costly replacement costs of damaged article(s).
(4) Accordingly, there is a need for improved apparatus for stacking article arrays that do not suffer from these shortcomings.
SUMMARY
(5) In an exemplary embodiment, a mobile stacking apparatus for stacking an article array includes a stacker unit having a pair of stacker arms for containing at least one article array therebetween, each stacker arm includes a plurality of supports for supporting the at least one article array, the plurality of supports are configured to move in and out of the stacker arm caused by a movement of a movable handle attached on the stacker arm, and a vertical frame containing a lifting arrangement, the lifting arrangement includes at least a motor to move the stacker unit in a vertical direction.
(6) In a further exemplary embodiment, a stacking apparatus for stacking an article array includes a stacker unit having a pair of stacker arms for containing at least one article array therebetween, each stacker arm includes a plurality of supports for supporting the at least one article array, the plurality of supports are configured to move from a first position to a second position caused by a movement of a movable handle, wherein in the second position, the plurality of supports face towards each other, and a vertical frame containing a lifting arrangement, the lifting arrangement includes at least a motor to move the stacker unit in a vertical direction.
(7) Other features and advantages of the present invention will be apparent from the following more detailed description of the preferred embodiment, taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the invention.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
(1) FIG. **1** is a perspective view of an exemplary stacking system, according to an example embodiment.
(2) FIG. **2** is a back perspective view of an exemplary stacking system of FIG. **1**, according to an example embodiment.
(3) FIG. **3**A is a top perspective view of an exemplary stacking system, according to an example embodiment.
(4) FIG. **3**B is a bottom perspective view of an exemplary stacking system, according to an example embodiment.
(5) FIG. **4** is a partial perspective view of a movable handle with a leverage member, according to an example embodiment.
(6) FIG. **5** is a perspective view of an exemplary stacking system with an article arrays, according to an example embodiment.
(7) FIGS. **5**A-**5**C are perspective views of an exemplary stacking system with half-high loaded stacked article arrays, according to an example embodiment.
(8) FIG. **6**A is a top perspective view of an exemplary stacking system with stacked article arrays, according to an example embodiment.
(9) FIG. **6**B is a bottom perspective view of an exemplary stacking system with stacked article arrays, according to an example embodiment.
(10) FIGS. **7**A and **7**B are perspective views of an exemplary stacking system with full-high loaded stacked article arrays, according to an example embodiment.
(11) FIG. **8** is a partial perspective view of an exemplary vertical frame, according to an example embodiment.

(12) It should be noted that these Figures are intended to illustrate the general characteristics of structure and/or materials utilized in certain example embodiments and to supplement the written description provided below. These drawings are not, however, to scale and may not precisely reflect the precise structural or performance characteristics of any given embodiment, and should not be interpreted as defining or limiting the range of values or properties encompassed by example embodiments. For example, the relative thicknesses and positioning of layers, regions and/or structural elements may be reduced or exaggerated for clarity. The use of similar or identical reference numbers in the various drawings is intended to indicate the presence of a similar or identical element or feature.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

(13) The present disclosure describes an apparatus for stacking (or unstacking) a half-high stacked article arrays into a full-high stacked article arrays. The present apparatus is mobile or transportable that can be moved to any location in a facility for stacking or unstacking. This creates an efficient and time-saving process in stacking or unstacking of the article arrays. There is also no need for more than one operator to operate the stacking process, unlike conventionally, more than typically four operators were required (i.e., manually lifting), resulting in possible injuries to the operators and/or damage to the article itself.

(14) For purposes herein, the term “article array” may refer to two or more article rows packaged in a packing material. The terms “transported” and “moved” and the like in the context of the interaction between a stacking apparatus and the article array(s) may be used interchangeably. Finally, the terms “stacked” and “lifted” and “raised” and the like in the context of the movements of the article array(s) may be used interchangeably.

(15) Referring to FIGS. **1** and **2**, a stacking apparatus **10** for stacking an article array is shown. More specifically, the stacking apparatus **10** is designed to stack half-high unit loads of article arrays into full unit loads of article arrays. While this disclosure may describe the operation of the stacking apparatus **10** in a stacking process, it should be fully appreciated that the stacking apparatus **10** can also operate in an unstacking process, i.e., from full unit loads of article arrays to half-high unit loads of article arrays or lower. The stacking apparatus **10** can be a fully battery-operated unit that is configured to be mobile or transportable to any location in a facility to stack (or unstack) a plurality of article arrays.

(16) The stacking apparatus **10** includes a frame **15** that supports a stacking unit **20** and a vertical frame member **30** which will be described in detail later. The frame **15** includes a plurality of wheels **17** for transporting the stacking apparatus **10** for operation, i.e., stacking process. In one implementation, there are four wheels **17** at substantially each corner of the frame **15**. It should be appreciated that more or less wheels can be employed depending on the load required. For example, there may be an extra wheel between each corner wheel. In some implementations, the wheels **17** can be multi- or omni-directional so as to provide better maneuverability, control and/or tracking. In some implementations, the wheels **17** can be made from, for example, but are not limited to, rubber (e.g., hard rubber, thermoplastic rubber) and/or plastic (e.g., polyolefin, polypropylene, polyurethane), and the like.

(17) As shown in FIG. **2**, the frame **15** includes a brake member **19** near a back end thereof to hold and lock the stacking apparatus **10** in its place. In one implementation, the brake member **19** is an adjustable foot pedal where the user can apply pressure to the brake member **19** to lock the brake member **19** to the floor. In addition to holding the stacking apparatus **10** in a stationary position, the brake member **19** acts to stabilize the stacking apparatus **10** for safety purpose. In other implementations, additional brake members **19** can be employed. For example, the brake member **19** can be mounted on the frame **15** between two wheels **17**.

(18) The stacking unit **20** includes a pair of stacker arms **21** connected to each other by at least two horizontal bar members **25** forming a carriage assembly to support at least one article array **65** (FIG. **5**). In other words, the stacking unit **20** is configured to contain (or surround) the article

array(s) **65** therebetween as a three-sided structure to support the article array(s), as shown in FIG. **5**. This configuration of the carriage assembly enables a better stabilization to hold the article array **65** during stacking and/or transport. In one implementation, the stacker arms **21** are spaced apart from each other to contain a conventional sized pallet supporting the article arrays **65**. For example, the stacker arms **21** can be spaced apart 45″ designed to support at least a 45″×56″ sized pallet. Each stacker arm **21** includes a first arm portion **22***a* and a second arm portion **22***b* forming a substantially L-shaped structure. To describe differently, the first arm portion **22***a* is in a horizontal direction and the second arm portion **22***b* is in a vertical direction. As shown, the horizontal bar members **25** are interconnected at the second arm portion **22***b* of the stacker arm **21**.

(19) In some implementations, each horizontal bar member **25** includes a first horizontal portion **26** and a second horizontal portion **27** that are co-axially aligned. That is, the second horizontal portion **27** overlaps the first horizontal portion **26** and share a common axis. Further, the horizontal bar members **25** can be adjustable (or telescoping) to accommodate different size dunnage (e.g., pallets, slips, trays, bundles) that holds the article arrays. To describe differently, the movement of the horizontal bar members **25** enables the stacker arms **21** to be closer or farther with respect to each other. As an example, the horizontal bar members **25** can be adjusted up to 7″ accommodating a pallet of 38″ to 45″ wide. In some implementations, the horizontal bar members **25** have a substantially rectangular cross-sectional profile. This profile provides a stronger attachment to the vertical frame **30** and/or reduces stress (tensional or sheer) applied at attachment point **29**.

(20) Located below the horizontal bar members **25**, the stacking unit **20** further includes a support member **28** positioned between the pair of stacker arms **21**. The support member **28** is configured to support the article arrays **65**, more specifically, an edge of the article arrays **65**. This further stabilizes the article arrays **65** and reduces tilting or tipping.

(21) Referring to FIG. **3**A, each stacking arm **21** includes a plurality of support arms **35** that are configured to support a dunnage **60** (e.g., tray) containing the article arrays **65**. Each support arm **35** is designed to move by retracting in and out (in a rotational direction) of the stacking arm **21**. For example, the support arms **35** are configured to move or rotate up to 90 degrees. In use, the support arms **35** move to extend in a horizontal direction with respect to the stacking arms **21**. To describe differently, the support arms **35** face each other to create a larger surface area to support the dunnage **60** containing the article arrays **65**. When not in use, the support arms **35** detract back to their initial position in the respective stacking arm **21** (FIG. **3**B). To describe differently, the support arms **35** are in a vertical direction with respect to the stacking arms **21**. As further shown in FIG. **3**B, one end **36** of each support arm **35** is attached to the stacking arm **21** at a bottom surface of the stacking arm **21** via a fastener **38**, providing a fixed-pin rotation. In one implementation, the fastener **38** is a bolt. Other fasteners can be employed besides the one described herein.

(22) The movement (i.e., retractable/detractable) of the support arms **35** is controlled by a movable handle **50**. As shown in FIG. **3**A, there are two movable handles **50**, one on each stacker arm **21** controlling a respective set of support arms **35**. In other implementations, there can be only one movable handle **50** controlling the supports arms **35** on both stacker arms **21**. In one implementation, the movable handle **50** is configured to rotate 90 degrees in a clockwise or counter-clockwise directions. As shown, when the movable handle **50** is positioned (via rotation) in a vertical direction with respect to the stacker arm **21**, the support arms **35** concurrently rotate and extend between the two stacker arms **21**. In other words, the rotation (i.e., counterclockwise) of the movable handle **50** allows the support arms **35** to rotate and extend between the two stacker arms **21** to support and hold the dunnage **60** containing the article arrays **65** therebetween. Conversely, when the movable handle **50** is positioned (via rotation) in a horizontal direction with respect to the stacker arm **21**, the support arms **35** concurrently rotate and extend into the stacker arms **21**. In other words, the rotation (i.e., clockwise) of the movable handle **50** allows the support arms **35** to rotate and extend back into the stacker arm **21** in its initial position. Each movable handle **50** can be configured to operate one set of support arms **35** for each respective stacker arm **21**.

(23) In other implementations, the movable handle **50** can actuate the support arms **35** to move in a linear direction. That is, rather than moving the support arms **35** in a rotational manner, the support arms **35** can extend along a straight or nearly straight line.
(24) As shown in FIG. **1**, the movable handle **50** includes a first handle portion **51***a* and a second handle portion **51***b* connected therebetween by a connecting member **52**. The first handle portion **51***a* is positioned lower than the second handle portion **51***b*. The first handle portion **51***a* and the second handle portion **51***b* are configured to permit the user to operate the movable handle **50** at varying heights or elevation. For example, during a loading of a first unit load of article arrays (FIG. **5**), the user can operate the movable handle **50** by using the first handle portion **51***a* rather than the second handle portion **51***b*. This is contributed to the first handle portion **51***a* being at a lower elevation than the second handle portion **51***b*. As such, this permits the user to operate the movable handle **50** without having to use a stepper or ladder or tiptoeing to reach the movable handle **50**. As the unit load of article arrays increases and continues to stack (FIGS. **5**A-**5**C), and the stacking unit **20** is lowered, the user can operate the movable handle **50** using the second handle portion **51***b*, which is at a higher elevation than the first handle portion **51***a*. This permits the user to operate the movable handle **50** without having to kneel or be in an awkward position, which can cause bodily injury.
(25) In some implementations, as shown in FIG. **4**, a leverage member **53** can be used to operate the movable handle **50**. More specifically, the leverage member **53** is a device that can apply force to rotate the movable handle **50** with ease. As an example, the leverage member **53** can be a tube piece member that can be inserted into one of the first handle portion **51***a* or the second handle portion **51***b* to rotate the movable handle **50**. In some implementations, the leverage member **53** can be attached to the first handle portion **51***a* or the second handle portion **51***b* and can be removable. In other implementations, the leverage member **53** can be a separate piece and attached to a part of the stacking apparatus **10** to be used at a proper time.
(26) Referring back to FIG. **1**, the stacking unit **20** is attached to the vertical frame member **30**. More specifically, the horizontal bar members **25** of the stacking unit **20** are attached to the vertical frame member **30** at attachment point **29**. In one implementation, the horizontal bar members **25** are attached to vertical frame member **30** via fastening members **33**. As an example, the fastening member **33** is a bolt. It should be appreciated that other fastening members are, such as, but are not limited to, screws, bolts, nails, rivets, welding, etc.
(27) The vertical frame member **30** includes a driving system to move the stacking unit **20** in a vertical direction, i.e., up and down. For example, the driving system can move the stacking unit **20** up to 66″ from the ground to the bottom of the dunnage (i.e., tray). The driving system has a lifting capacity to lift up to 300 lb. In one implementation, the driving system can be a screw mast driven by a DC motor (not shown). The DC motor is powered by a replaceable or rechargeable battery **71** located on the rear end of the stacking apparatus **10**. It is to be understood that the operation and movement of the driving system in the vertical frame member **30** operates in a known manner and not fully described herein, and is driven by any appropriate drive mechanism known in the art, and not limited to those disclosed in the exemplary embodiments herein.
(28) Referring to FIG. **8**, the vertical frame member **30** includes a plurality of markings **66** located along a length of the vertical frame member **30**. Correspondingly, the attachment point **29** contains a marker **67** (i.e., pointer) to determine the position of the stacker unit **20** by aligning the marker **67** to one of the markings **66** on the vertical frame member **30** and set for the appropriate height. In addition to setting the appropriate height, the markings **66** can be an indicator to allow the user to easily target the set height. This avoids having to lay the article arrays down and estimating or "eyeing" the appropriate height. In one implementation, the markings **66** can be a colored (e.g., yellow) indicator arrows located along the entire length of the vertical frame member **30**. In some implementations, the markers can be set to the approximate height of a half-tall unit load, as a result this can be set at 48″ from the ground, for example. In other implementations, there may be

only one marking that can be adjustable along the vertical frame member **30**.
(29) Referring back to FIG. **2**, the stacking apparatus **10** includes a handle **41** for handling the movement of the stacking unit **20** by the user. As shown, the handle **41** is located at the rear end of the stacking apparatus **10**. Attached to the handle **10** includes a control switch **45** for operating the driving system of the stacking unit **20**. For example, the control switch **45** can include the functions to move the stacking unit **20** in either the up direction or the down direction. In some implementations, the control switch **45** can include speed of the vertical movements of the stacking unit **20**. In some implementations, the control switch **45** can include a GO/STOP function. In some implementations, the control switch **45** can include an ON/OFF function. In some implementations, the control switch **45** can include a warning light or alarm that the stacking unit **20** has reached its height limit. As an example embodiment, the control switch **45** is a spring loaded two-position switch.
(30) The operation of the disclosed stacking apparatus **10** will now be described, with reference to FIGS. **5**-**7**A.
(31) Referring now to FIG. **5**, in its initial stacking process, the user operates the control switch **45** on the handle **41** and raises the stacking unit **20** to an appropriate height for stacking a first article array **65***a*. In one implementation, the stacking unit **20** can be raised to a typical waist height or ergonomic height, which can be approximately 36″, for example. Once the appropriate height is set, the user operates (rotates) the movable handle **50** to extend the plurality of support arms **35**. At this stage, the user may operate the lower handle portion **51***a* of the movable handle **50** for ease in operating the movable handle **50**. It is understood that a second movable handle **50** can be located on other side of the stacking unit **20** to operate the other plurality of support arms **35**. When all of the plurality of support arms **35** are positioned between the pair of stacking arms **21**, the user places the first article array **65***a* on the plurality of support arms **35**.
(32) Referring now to FIG. **5**A, the user operates the control switch **45** and lowers the stacking unit **20** so as to stack a second article array **65***b* on top of the first article array **65***a*.
(33) Referring now to FIG. **5**B, the user operates the control switch **45** and further lowers the stacking unit **20** so as to stack a third article array **65***c* on top of the second article array **65***b*. Further, a fourth article array **65***d* is stacked on top of the third article array **65***c* forming a complete half-high load stacked unit.
(34) Referring now to FIG. **5**C, once the complete half-high load stacked unit is formed, the user moves the stacking apparatus **10** (while supporting the complete half-high load stacked unit) to place the complete half-high load stacked unit onto a pallet **69**. Once placed on the pallet **69**, the movable handle **50** is operated to detract the plurality of support arms **35** into the stacking arms **21** (FIG. **6**A), causing the complete half-high load stacked unit to be entirely on the pallet **69**. For example, the movable handle **50** is rotated (i.e., clockwise direction) which concurrently rotates the support arms **35** back into the respective stacking arms **21** (FIG. **6**B).
(35) Referring now to FIG. **7**A, in its complete stacking process and to form a full-high load stacked unit, the user repeats the process as described in FIGS. **5**-**5**C and forms a secondary half-high load stacked unit (including article arrays **65***e*, **65***f*, **65***g*, **65***h*). Once the secondary half-high load stacked unit is formed, the user moves the stacking apparatus **10** over to the previously-stacked half-high load stacked unit (with pallet **69**) and raises the stacking unit **20** above the previously-stacked half-high load stacked unit.
(36) Referring now to FIG. **7**B, once the secondary half-high load stacked unit is above the previously-stacked half-high load stacked unit, the secondary half-high load stacked unit is lowered to engage the previously-stacked half-high load stacked unit and forms a complete full-high load stacked unit. Once placed on the previously-stacked half-high load stacked unit, the movable handle **50** is operated to detract the plurality of support arms **35** into the stacking arms **21**, forming the complete full-high load stacked unit. Thereafter, the stacking apparatus **10** is removed away from the complete full-high load stacked unit.

(37) In some implementations, sensors (not shown), such as a laser sensor may be employed for determining positional locations of the article arrays **65**. For example, the laser sensor may emit a beam for determining when the stacking unit **20** properly stacks the article arrays **65** in a half-high load, for determining when the article arrays **65** are centered between the stacking arms **21**, for determining when the article arrays **65** is positioned for stacking to a full-high load, and the like. For purposes herein, sensors are intended to include other types of devices, such as proximity switches that make physical contact with the article array **65**, or other suitable position-determining devices or sensors may be used to determine for positional locations.
(38) The aspects and embodiments of the invention can be used alone or in combinations with other systems and methods.
(39) The articles “a” and “an,” as used herein, mean one or more when applied to any feature in embodiments of the present disclosure described in the specification and claims. The use of “a” and “an” does not limit the meaning to a single feature unless such a limit is specifically stated. The article “the” preceding singular or plural nouns or noun phrases denotes a particular specified feature or particular specified features and may have a singular or plural connotation depending upon the context in which it is used. The adjective “any” means one, some, or all indiscriminately of whatever quantity.
(40) “At least one,” as used herein, means one or more and thus includes individual components as well as mixtures/combinations.
(41) The transitional terms “comprising”, “consisting essentially of” and “consisting of”, when used in the appended claims, in original and amended form, define the claim scope with respect to what unrecited additional claim elements or steps, if any, are excluded from the scope of the claim(s). The term “comprising” is intended to be inclusive or open-ended and does not exclude any additional, unrecited element, method, step or material. The term “consisting of” excludes any element, step or material other than those specified in the claim and, in the latter instance, impurities ordinarily associated with the specified material(s). The term “consisting essentially of” limits the scope of a claim to the specified elements, steps or material(s) and those that do not materially affect the basic and novel characteristic(s) of the claimed disclosure. All materials and methods described herein that embody the present disclosure can, in alternate embodiments, be more specifically defined by any of the transitional terms “comprising,” “consisting essentially of,” and “consisting of.”
(42) Although the terms first, second, etc. may be used herein to describe various elements, these elements should not be limited by these terms. These terms are only used to distinguish one element from another. For example, a first element could be termed a second element, and, similarly, a second element could be termed a first element, without departing from the scope of example embodiments. As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.
(43) It will be understood that, if an element is referred to as being “connected” or “coupled” to another element, it can be directly connected, or coupled, to the other element or intervening elements may be present. In contrast, if an element is referred to as being “directly connected” or “directly coupled” to another element, there are no intervening elements present. Other words used to describe the relationship between elements should be interpreted in a like fashion (e.g., “between” versus “directly between,” “adjacent” versus “directly adjacent,” etc.).
(44) Spatially relative terms (e.g., “beneath,” “below,” “lower,” “above,” “upper” and the like) may be used herein for ease of description to describe one element or a relationship between a feature and another element or feature as illustrated in the figures. It will be understood that the spatially relative terms are intended to encompass different orientations of the device in use or operation in addition to the orientation depicted in the figures. For example, if the device in the figures is turned over, elements described as “below” or “beneath” other elements or features would then be oriented “above” the other elements or features. Thus, for example, the term “below” can encompass both

an orientation that is above, as well as, below. The device may be otherwise oriented (rotated 90 degrees or viewed or referenced at other orientations) and the spatially relative descriptors used herein should be interpreted accordingly.
(45) Example embodiments are described herein with reference to cross-sectional illustrations that are schematic illustrations of idealized embodiments (and intermediate structures). As such, variations from the shapes of the illustrations as a result, for example, of manufacturing techniques and/or tolerances, may be expected. Thus, example embodiments should not be construed as limited to the particular shapes of regions illustrated herein but may include deviations in shapes that result, for example, from manufacturing.
(46) Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in the art to which example embodiments belong. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.
(47) While the disclosure has been described with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the disclosure. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the disclosure without departing from the essential scope thereof. While various aspects and embodiments have been disclosed herein, other aspects and embodiments will be apparent to those skilled in the art. The various aspects and embodiments disclosed herein are for purposes of illustration and are not intended to be limiting, with the true scope and spirit being indicated by the following claims.

Claims

1. A mobile stacking apparatus for stacking an article array, comprising: a stacker unit including a pair of stacker arms for containing at least one article array therebetween, each stacker arm includes a plurality of supports for supporting the at least one article array, the plurality of supports is configured to pivotally rotate outwardly in an orthogonal direction with respect to the stacker arms; a movable handle mounted on one of the stacker arm for controlling the movement of the plurality of supports, the movable handle includes a first handle arm portion and a second handle arm portion arranged in a parallel configuration with respect to each other, wherein the first handle arm portion and the second handle arm portion are oriented in an orthogonal direction with respect to the stacker arm when the plurality of supports are inside of the stacker arm, wherein the first handle arm portion and the second handle arm portion are oriented in a parallel direction with respect to the stacker arm when the plurality of supports are outside of the stacker arm in an extended position, wherein the first handle arm portion is positioned in a first height to allow a user to operate the movable handle at a lower height, and wherein the second handle arm portion is positioned in a second height to allow the user to operate the movable handle at a higher height; and a vertical frame containing a lifting arrangement, the lifting arrangement includes at least a motor to drive the stacker unit in a vertical direction.
2. The mobile stacking apparatus of claim 1, wherein the movable handle is configured in a first position to move the plurality of supports inside of the stacker arms.
3. The mobile stacking apparatus of claim 2, wherein the movable handle is configured in a second position to move the plurality of supports outside of the stacker arms.
4. The mobile stacking apparatus of claim 3, wherein the second position is approximately 90 degrees with respect to the first position.
5. The mobile stacking apparatus of claim 1, wherein the pair of stacker arms are connected to each

other by a pair of supporting arms that are supported in a horizontal direction.
6. The mobile stacking apparatus of claim 5, wherein the pair of supporting arms are adjustable to adjust a distance between the pair of stacker arms.
7. The mobile stacking apparatus of claim 5, wherein the pair of supporting arms are connected to the vertical frame, wherein the lifting arrangement of the vertical frame causes the pair of supporting arms to move in the vertical direction.
8. The mobile stacking apparatus of claim 1, wherein the lifting arrangement further includes a switch to operate the movement of the motor.
9. The mobile stacking apparatus of claim 8, wherein the switch is a spring loaded two-way switch.
10. The mobile stacking apparatus of claim 1, wherein the vertical frame includes at least one marking to indicate a height of a stacked article arrays.
11. The mobile stacking apparatus of claim 10, wherein the at least one marking is adjustable along the vertical frame.
12. The mobile stacking apparatus of claim 1, further comprising a plurality of rollers to move the mobile stacking unit.
13. A mobile stacking apparatus for stacking an article array, comprising a base frame; a stacker unit including a pair of stacker arms for containing at least one article array therebetween, each stacker arm includes a plurality of supports for supporting the at least one article array, the plurality of supports is configured to pivotally rotate from a first position to a second position, wherein in the second position, the plurality of supports face towards each other; a movable handle mounted on one of the stacker arm for controlling the movement of the plurality of supports, the movable handle includes a first handle arm portion and a second handle arm portion arranged in a parallel configuration with respect to each other, wherein the first handle arm portion and the second handle arm portion are oriented in an orthogonal direction with respect to the stacker arm when the plurality of supports are in the first position, wherein the first handle arm portion and the second handle arm portion are oriented in a parallel direction with respect to the stacker arm when the plurality of supports are in the second position, wherein the first handle arm portion is positioned in a first height to allow a user to operate the movable handle at a lower height, and wherein the second handle arm portion is positioned in a second height to allow the user to operate the movable handle at a higher height; and a vertical frame containing a lifting arrangement, the lifting arrangement includes at least a motor to move the stacker unit in a vertical direction.
14. The mobile stacking apparatus of claim 13, wherein: in the first position, each of the plurality of supports is positioned inside of the stacker arms; and in the second position, each of the plurality of supports is positioned outside of the stacker arms to support the at least one article array.
15. The mobile stacking apparatus of claim 13, wherein the pair of stacker arms are connected to each other by a pair of supporting arms that are supported in a horizontal direction.
16. The mobile stacking apparatus of claim 15, wherein the pair of supporting arms are adjustable to adjust a distance between the pair of stacker arms.
17. The mobile stacking apparatus of claim 15, wherein the pair of supporting arms are connected to the vertical frame, wherein the lifting arrangement of the vertical frame causes the pair of supporting arms to move in the vertical direction.
18. The mobile stacking apparatus of claim 13, wherein the vertical frame includes at least one marking to indicate a height of a stacked article arrays.
19. The mobile stacking apparatus of claim 13, further comprising a plurality of rollers on the base frame to move the mobile stacking unit.