- a transfer arrangement comprising a plurality of parallely-arranged transfer members, each said transfer member extending along a loading direction being transverse to the container-facing edge and each said transfer member being configured to extend in the loading direction through said opening independently of the others, upper surfaces of the transfer members defining a receiving surface of the platform unit configured for receipt thereon of at least one of the articles; and
- a positioning arrangement configured to orient the article to a predetermined loading orientation on the receiving surface and position it at a predetermined loading position along an axis perpendicular to the loading direction;

wherein the transfer arrangement is configured to extend a subset of the transfer members in the loading direction through the opening, thereby facilitating placement of the article at a predetermined location within the container.

The subset may be limited to those transfer members supporting the article when extended.

The system may be configured to retract the transfer members one at a time once the article has been placed at the predetermined location.

The system may be configured to lower each of the transfer members before its retraction.

Each of the transfer members may comprise a conveyor arrangement configured to transfer an article thereupon along the loading direction.

The positioning arrangement may comprise a pair of guide members extending in the loading direction and facing one another, the positioning arrangement being configured to selectively extend and retract the guide members in a direction transverse to the loading direction.

The positioning arrangement may comprise an actuating arrangement configured to facilitate the extension and retraction of each of the guide members.

The system may further comprise a track extending in a direction transverse to the loading direction and receiving the guide members therewithin, the actuating arrangement being configured to move the guide members within the track.

The system may further comprise an auxiliary guide member, configured to displace the article toward the opening in the loading direction, independently of the transfer members. When the system comprises the track, it may be formed in the

direction of the retraction. Thus, the net effect on the article 12 of the retraction of the transfer member 32 and the operation of the conveyor arrangement is null, thereby at least partially eliminating the effect of friction, as described above. Such an arrangement may allow more of the transfer members 32 to be retracted at once. According to some examples, once the article 12 has been brought to the depth within the container 14 defined by the loading plan, all of the transfer members 32 retract simultaneously, with the conveyor arrangements operating to maintain the article at its position as described above.

According to some examples, the gate 30 may be closed, i.e., blocking the opening 28, until the article 12 is disposed in the position along the height and length of the container 14 defined by the loading plan, i.e., until the system 10 is ready to deploy the transfer members 32 to bring the article to its location within the container 14, at which point the gate is opened.

The system 10 may be configured to load articles 12 into a container 14 wherein at least a portion thereof is not directly accessible along the depth axis *D* thereof, for example as illustrated in Fig. 4. According to some examples, the container 14 may comprise an annex 14′ extending sidewardly (i.e., in the direction of the length axis *L*), access thereto being blocked along the depth axis *D* by a portion of the wall 15 of the container. Accordingly, loading articles into the annex 14′ is not possible using the transfer members 32 as described above.

Accordingly, reverting to Fig. 2, the platform unit may comprise one or more lateral transfer arrangements, generally indicated at 54, configured to move an article 12, which is disposed on transfer member 32 extended into the cavity, in a lateral direction parallel to the length axis *L* of the container 14. Each lateral transfer arrangements 54 may constitute a portion of one of the transfer members 32.

As illustrated in Fig. 5, according to some examples each of the lateral transfer arrangements 54 comprises a cylindrical roller 56 extending along and configured to rotate about a roller axis extending substantially in the loading direction.

According to some examples, an outer surface of the cylindrical roller 56 is formed with a first half 56a thereof configured to provide friction with an article 12 thereupon, and a second half 56b thereof having a smooth surface configured to move

CLAIMS:

1. A system for facilitating loading of articles into a container, the system comprising a platform unit and an elevator unit configured to adjust its elevation relative to said container, said platform unit comprising:

an opening for facing said container and defining a container-facing edge of the platform unit;

a transfer arrangement comprising a plurality of parallely-arranged transfer members, each said transfer member extending along a loading direction being transverse to said container-facing edge and each said transfer member being configured to extend in the loading direction through said opening independently of the others, upper surfaces of the transfer members defining a receiving surface of the platform unit configured for receipt thereon of at least one of said articles; and

a positioning arrangement configured to orient said article to a predetermined loading orientation on said receiving surface and position it at a predetermined loading position along an axis perpendicular to said loading direction;

wherein said transfer arrangement is configured to extend a subset of said transfer members in the loading direction through said opening, thereby facilitating placement of said article at a predetermined location within said container.

2. The system according to claim 1, wherein said subset is limited to those transfer members supporting the article when extended.

3. The system according to any one of claims 1 and 2, being configured to retract the transfer members one at a time once the article has been placed at the predetermined location.

4. The system according to claim 3, being configured to lower each of said transfer members before its retraction.

5. The system according to any one of the preceding claims, wherein each of said transfer members comprises a conveyor arrangement configured to transfer an article thereupon along said loading direction.

6. The system according to any one of the preceding claims, said positioning arrangement comprising a pair of guide members extending in the loading direction and facing one another, the positioning arrangement being configured to selectively extend

and retract said guide members toward each other in a direction transverse to the loading direction.

7. The system according to claim 6, said positioning arrangement comprising an actuating arrangement configured to facilitate the extension and retraction of each of the guide members.

8. The system according to claim 7, further comprising a track extending in a direction transverse to the loading direction and receiving said guide members therewithin, said actuating arrangement being configured to move the guide members within said track.

9. The system according to any one of the preceding claims, further comprising an auxiliary guide member, configured to displace the article toward said opening in the loading direction, independently of said transfer members.

10. The system according to claim 9 when dependent on claim 8, wherein said track is formed in said auxiliary guide member.

11. The system according to claim 10, wherein said guide members are configured to compress along the loading direction.

12. The system according to claim 11, wherein said guide members are configured to telescopically collapse.

13. The system according to any one of the preceding claims, said platform unit further comprising a gate disposed so as to selectively open and close said opening.

14. The system according to any one of the preceding claims, further comprising a rotating arrangement, configured to rotate the article to a predetermined preliminary orientation and transfer it to said platform unit.

15. The system according to claim 14, wherein said rotating arrangement comprises a plurality of rollers configured to selectively rotate and laterally translate said article.

16. The system according to any one of the preceding claims, further comprising one or more lateral transfer arrangements configured to move an article disposed on said subset of transfer member when extended into the container, in a lateral direction substantially perpendicular to said loading direction.

17. The system according to claim 16, each of said lateral transfer arrangements comprising a cylindrical roller configured to rotate about an axis substantially parallel to the loading direction.

18. The system according to claim 17, an outer surface of said cylindrical roller being formed with a first half configured to provide friction with an article thereupon, and a second half having configured to move with negligible friction with respect to an article thereupon.

19. The system according to any one of claims 16 through 18, wherein at least some of said transfer members comprise one of said lateral transfer arrangements.

20. The system according to claim 19, wherein all of said transfer members comprise one of said lateral transfer arrangements.

21. The system according to any one of the preceding claims, said elevator unit being configured to raise and lower the platform unit.

22. The system according to any one of the preceding claims, said elevator unit being configured to raise and lower the container.

23. The system according to any one of the preceding claims, further comprising a monitoring system configured to detect parameters of an article on the system.

24. The system according to claim 23, said parameters being selected from a group including identity, weight, physical dimensions, position, and orientation.