Claims

1. A transfer apparatus for conveying workpieces between a production line and a printing unit, the transfer apparatus comprising: a rotary table supporting first and second platens at spatially separated locations thereon, each platen being rotatable with respect to the rotary table and also rotatable relative to the other platen about respective first and second platen rotation axes and configured to support a respective workpiece thereon in use; the rotary table being rotatable about a table rotation axis, parallel to the first and second platen rotation axes, so that each platen can be moved between a loading position proximate the production line in use and a printing position proximate a printing unit in use, through rotation of said table; and a table drive device for rotating the rotary table about the table rotation axis; wherein the transfer apparatus is operable to cyclically perform first and second movement operations, such that in the first movement operation the rotary table rotates to move the first platen from the loading position to the printing position while the second platen moves from the printing position to the loading position, and in the second movement operation the rotary table rotates to move the first platen from the printing position to the loading position while the second platen moves from the loading position to the printing position wherein each platen comprises a belt for transporting a workpiece thereon, and a belt drive for driving the belt, and the belt drive is operable to sequentially drive the belt in a first direction and in a second direction opposite to the first direction.

2. The transfer apparatus according to claim 1, wherein in each of the first and second movement operations, one of said first and second platens rotates relative to the other of said first and second platens, while the other of said first and second platens does not rotate.

3. The transfer apparatus according to claim 2, wherein in the first movement operation the second platen rotates relative to the rotary table with the first platen being stationary with respect to the rotary table, and in the second movement operation the first

platen rotates relative to the rotary table with the second platen being stationary with respect to the rotary table.

4. The transfer apparatus according to claim 1, wherein the table comprises first and second platen drive devices for respectively rotating the first and second platens about their respective platen rotation axes.

5. The transfer apparatus according to claim 4, wherein the first and second platen drive devices are operable to selectively rotate respective first and second platens about their respective platen rotation axes by an angle θ.

6. The transfer apparatus according to claim 1, wherein the first and seconds platens are positioned at approximately 180° to each other about the axis of table rotation.

7. The transfer apparatus according to claim 1, further comprising a first feed conveyor positioned proximate the loading position for transporting workpieces from the production line to a platen at the loading position and a second feed conveyor positioned proximate the loading position for transporting workpieces from a platen at the loading position to the production line.

8. The transfer apparatus according to claim 7, further comprising respective drive actuators to sequentially move each feed conveyor to effect relative movement of each feed conveyor away from or towards the rotary table during each of the first and second movement operations.

9. A printing apparatus for printing workpieces, comprising an input for receiving workpieces from a production line, a transfer apparatus according to claim 1, a printing unit, and an output for outputting printed workpieces to the production line.

10. A printing assembly comprising the printing apparatus of claim 9, and a production line, the printing apparatus coupled with said production line.

11. The printing assembly according to claim 10, comprising a second production line and a second printing apparatus in accordance with claim 9 coupled therewith, the production line and the second production lines arranged in parallel, with said printing apparatus and said second printing apparatuses located between the first and second production lines.

12. A method for printing workpieces on a production line, the method comprising: a) providing a transfer apparatus including a rotary table supporting first and second platens at spatially separated locations thereon, each platen configured to support a respective workpiece thereon; b) loading a first workpiece onto the first platen at a loading position proximate the production line while the second platen is located at a printing position proximate a printing unit; c) performing a first movement operation, comprising rotating the rotary table to move the first platen to the printing position while the second platen moves from the printing position to the loading position; d) printing the first workpiece using the printing unit; e) performing a second movement operation, comprising rotating the rotary table to move the first platen from the printing position to the loading position, while the second platen moves from the loading position to the printing position; and f) unloading the first workpiece from the first platen to the production line; wherein in each of the first and second movement operations, one of said first and second platens rotates relative to the other of said first and second platens, wherein each platen comprises a belt for transporting a workpiece thereon, and a belt drive for driving the belt, and the belt drive is operable to sequentially drive the belt in a first direction and in a second direction opposite to the first direction.

13. The method according to claim 12, wherein in step b), a second workpiece, supported on the second platen is printed using the printing unit, and in step d) the second

workpiece is unloaded from the second platen to the production line and a third workpiece is loaded to the second platen from the production line.

14. The method according to claim 12, wherein each platen comprises a belt for transporting a workpiece thereon, and a belt drive for driving the belt, and wherein in step b) the first workpiece is loaded onto the first platen by driving the belt in a first direction, and in step f) the first workpiece is unloaded from the first platen by driving the belt in a second direction opposite to the first direction.