# A Conveyor

## Field of the invention

[0001] The present invention concerns a conveyor, and in particular, concerns a conveyor which comprises at least one belt which moves in a closed loop to convey components, and wherein the conveyor comprises a means to prevent the belt from hanging. ~~The present invention also concerns a puck which can cooperate with the conveyor.~~

## Description of related art

[0002] Conveyor belts are commonly used in assemblies to move components between processing stations, or to deliver components from a loading station to an assembling station. These conveyors are typically defined by a belt which moves along a closed loop and which comprises pucks (or pallets) which hold a component as it is transported. A puck loaded with a component is moved by the belt along an outgoing part of the closed loop, the components are unloaded from the puck at some point along the outgoing part of the closed loop and the puck is then moved along a return part of the closed loop to be reloaded. The gravitational forces acting on the pucks will cause the pucks to frictionally engage the belt; thus ensuring that the pucks move with the belt along the closed loop.

[0003] In the return portion of the closed loop, the belt will hang under its own weight. The pucks will further pull on the belt increasing the amount the belt will hang.

[0004] As the belt hangs, this causes the gravitational forces acting on the pucks to increase so that they are greater than the frictional forces which exist between the pucks and the belt; this will cause the belt to slip, so that the puck are no longer moved by the belt. The pucks will thus collect on the portion belt which hangs and will not return with the belt for reloading. Consequently, no further components can be conveyed

5. A conveyor according to any one of the preceding claims, wherein the support element comprises a first part and second part, wherein a gap is interposed between the first part and second part.

6. A conveyor according to claim 5, wherein the support element further comprises a means for selectively adjusting and fixing the distance between the first part and second part so that the length of the support element can be adjusted to fit belts of various sizes.

7. A conveyor according to any one of the claims 1-6, wherein the conveyor further comprises one or more wheels (11a, 11b) which cooperate with the first belt (7a) and second belt (7b) to rotate the first and second belts around their closed loops, wherein at least the portion of the one or more wheels which cooperates with the first and second belt comprises flexible material.

8. A conveyor according to any one of the claims 1-7, wherein the conveyor further comprises one or more wheels which cooperate with the first belt and second belt to rotate the first and second belts around their closed loops, wherein said first and second belt comprises flexible material to allow the pucks easily pass the wheels (11a, 11b).

~~9. A puck (5a-c) suitable for receiving a component (8) to be conveyed and suitable for cooperating with the first belt (7a) of a conveyor according to any one of the preceding claims, the puck (5a-c) comprising:~~

~~a body member (45) which comprises an n-shaped cross section wherein an under-surface (47) of the body member (45) defines a first surface which is configured to cooperate with a second surface (17b) of the first belt (7a) during an outgoing part of the closed loop (19), and wherein the body member (45) further comprises:~~

~~one or more projections (49a-d), which extending parallel to the under-surface (47) of the body member, the one or more projections (49a-d) being configured such that they can cooperate with the first surface (17a) of the first belt (7a) during a returning part of the closed loop (19), so that the puck (5a-c) is moved by the first belt (7a) along the~~

~~closed loop, and wherein,~~

~~the one or more projections (49a-d) are arranged on the body member (45) such that the one or more projections (49a-d) and the under-surface (47) of the body member (45) define an area which can receive both a portion of the first belt (7a) and at least a portion of a support element (15) which comprises a surface (16b) which can cooperate with a second surface (17b) of the first belt (7a) to support the first belt (7a) during a return part of a closed loop (19).~~

~~10. A puck according to claim 10, wherein the under-surface (47) of the body member (45) may define a first surface which is configured to cooperate with the second surface (17b) of the first belt (7a) and a second surface (18b) of a second belt (7b) , during an outgoing part of the closed loop (19), and wherein the one or more projections (49a-d) are configured such that they can cooperate with the first surface (17a) of the first belt (7a) and a first surface (18a) of the second belt (7b) during a returning part of the closed loop (19), and wherein the one or more projections (49a-d) are arranged on the body member (45) such that the one or more projections (49a-d) and the under-surface (47) of the body member (45) define an area which can receive, a portion of the first belt (7a), a portion of a second belt (7b), at least a portion of a support element (15) which comprises a surface (16b) which can cooperate with a second surface (17b) of the first belt (7a) to support the first belt (7a) during a return part of a closed loop (19), and at least a portion of the support element (15) which comprises another surface (16d) which can cooperate with a second surface (18b) of the second belt (7b) to support the second belt (7b) during a return part of a closed loop (19).~~

~~11. A puck according to claim 10 or 11, wherein the one or more projections may comprise a circular cross section.~~

~~12. A puck according to any one of claims 10-12, wherein the puck comprises one or more shock absorbing members which are arranged on an outer surface of the body member.~~

~~13. A puck according to any one of claims 10-13, further comprising a cut-out region which is configured to receive a stopper member, wherein the cut out region is provided in an under-surface of the puck, and extends in a direction along a central axis of the puck.~~

~~14. A puck according to any one of claims 10-14, further comprising one or more shock absorbing members which are arranged on an outer surface of the puck such that the one or more shock absorbing members can dissipate shock which is imparted on the puck by a stopper member when the stopper member engages the puck to stop the puck.~~

~~15. A conveyor assembly (1) comprising a conveyor (3) according to any one of claims 1-9, and one or more pucks (5a-c) according to any one of claims 10-15, wherein the one or more pucks (5a-c) are arranged to cooperate with a belt (7a,b) of the conveyor (3).~~