CLAIMS

[Claim 1] A conveying and sorting apparatus including a plurality of tilting conveyor units arranged in a row in a conveying direction, each of the tilting conveyor units supported above a frame so as to be swingable left and right about a support shaft parallel to the conveying direction between a horizontal conveying orientation and a tilted orientation for discharging a conveyed object to a lateral direction with respect to the conveying direction by gravity, wherein

a reflective photoelectric sensor detecting a conveyed object passing between the tilting conveyor units adjacent to each other in the conveying direction via a light beam vertically passing through a gap between the tilting conveyor units is arranged, and the photoelectric sensor is attached to a support member supported by the frame and arranged at a position around the support shaft,

wherein the support shaft has a connection portion connected by a shaft joint at a position between the tilting conveyor units adjacent to each other in the conveying direction, and the connection portion is provided with a pair of bearings supporting end portions of each support shaft at both sides of the shaft joint and a bearing support base installed above the frame and supporting the pair of bearing, and the photoelectric sensor arranged at the position between the tilting conveyor units where the connection portion is located is attached to the support member composed of a portal plate material straddling the shaft joint, and the portal plate material has both leg portions attached on the bearing support base.

[Claim 2] A conveying and sorting apparatus including a plurality of tilting conveyor units arranged in a row in a conveying direction, each of the tilting conveyor units supported above a frame so as to be swingable left and right about a support shaft parallel to the conveying direction between a horizontal conveying orientation and a tilted orientation for discharging a conveyed object to a lateral direction with respect to the conveying direction by gravity, wherein

a reflective photoelectric sensor detecting a conveyed object passing between the tilting conveyor units adjacent to each other in the conveying direction via a light beam

vertically passing through a gap between the tilting conveyor units is arranged, and the photoelectric sensor is attached to a support member supported by the frame and arranged at a position around the support shaft,

wherein the photoelectric sensor is attached such that a projection direction of its light beam is tilted on a tilting direction side toward the tilted orientation of the tilting conveyor unit with respect to a vertical direction, and a tilt angle of the projection direction is set to an angle capable of detecting both a conveyed object transferring between the tilting conveyor units when the tilting conveyor units are in the horizontal orientation and a conveyed object transferring between the tilting conveyor units when the tilting conveyor units are in the tilted orientation.

[Claim 3] The conveying and sorting apparatus according to claim 1 or 2, wherein the support member is composed of a portal plate material straddling the support shaft, and the portal plate material has both leg portions attached on a support base installed on the frame so as to be located below the support shaft.

[Claim 4] The conveying and sorting apparatus according to claim 1 or 2, wherein the photoelectric sensor is arranged higher than the support shaft in side view.

[Claim 5] A conveying and sorting apparatus including a plurality of tilting conveyor units arranged in a row in a conveying direction, each of the tilting conveyor units supported above a frame so as to be swingable left and right about a support shaft parallel to the conveying direction between a horizontal conveying orientation and a tilted orientation for discharging a conveyed object to a lateral direction with respect to the conveying direction by gravity, wherein

a reflective photoelectric sensor detecting a conveyed object passing between the tilting conveyor units adjacent to each other in the conveying direction via a light beam vertically passing through a gap between the tilting conveyor units is arranged, and the photoelectric sensor is attached such that a projection direction of its light beam is tilted on a tilting direction side toward the tilted orientation of the tilting conveyor unit with respect to a vertical direction, and a tilt angle of the projection direction is set to an angle capable of detecting both a conveyed object transferring between the tilting

conveyor units when the tilting conveyor units are in the horizontal orientation and a conveyed object transferring between the tilting conveyor units when the tilting conveyor units are in the tilted orientation.