CLAIMS

[Claim 1] A conveying and sorting apparatus including a plurality of tilting conveyor units arranged in a row in a conveying direction, wherein

each of the tilting conveyor units, which supports and conveys a tray loaded with a conveyed object, having side guides for regulating a conveying path width erected on both left and right sides,

each of the tilting conveyor units is swingable left and right about a support shaft parallel to the conveying direction of the conveyed object between a horizontal conveying orientation and a tilted orientation, in the horizontal orientation each of the tilting conveyor units supports and conveys the tray horizontally between the both left and right side guides, and in the tilted orientation each of the tilting conveyor units tilts the tray so that only the conveyed object passes over the side guide on the lower side of the tilt from the tray, and then the conveyed object is discharged laterally with respect to the conveying direction of the conveyed object by gravity,

of the side guides, at least the side guide on the side of swinging to the tilted orientation is openable to the swinging direction side toward the tilted orientation with respect to a structure of the tilting conveyor unit, and is juxtaposed with an orientation holding means holding the side guide in a standing orientation so as to regulate the width of the conveying path of the tray, and

the orientation holding means is configured to release the side guide from the holding in the standing orientation by receiving a load at the time of collision of the tray moving from above the tilting conveyor unit on an upper stream side of the conveying direction and to open the side guide.

[Claim 2] The conveying and sorting apparatus according to claim 1, wherein both of the left and right side guides are openable outward with respect to the structure of the tilting conveyor unit and are juxtaposed with the orientation holding means on both of the side guides.

[Claim 3] The conveying and sorting apparatus according to claim 1 or claim 2, wherein the orientation holding means is formed by plate portions provided to the structure and the side guide and overlapping each other in a left-right lateral direction, and a bolt and nut penetrating through and linking the both plate portions in the left-right lateral direction, and the bolt and nut is configured such that at least a bolt thereof is made of synthetic resin and a synthetic resin portion of the bolt and nut is broken when load of a certain level or more in the opening direction acts on the side guide.

[Claim 4] The conveying and sorting apparatus according to claim 3, wherein the bolt and nut is arranged in an orientation in which a bolt head portion is located on a structure interior side of the plate portion on the structure side of the both plate portions, and a bolt and nut part located outside the plate portion on the side guide side of the bolt and nut is linked to one end side of a scatter preventing cord-like body, and the other end side of the cord-like body is locked to the structure or the side guide.

[Claim 5] The conveying and sorting apparatus according to claim 4, wherein the one end side of the scatter preventing cord-like body is attached with a

mounting plate through which the bolt of the bolt and nut penetrates and which is sandwiched and fixed by a double nut used for the bolt and nut part.

[Claim 6] The conveying and sorting apparatus according to claim 4 or claim 5, wherein the side guide is pivotally supported by a pair of concentric front and rear support shafts so as to be swingable left and right, and the bolt and nut is provided in a front and rear pair between the both support shafts, and the scatter preventing cord-like body linked to the bolt and nut parts located outside the plate portion on the side guide side of the both bolts and nuts is connected so as to form a single cord on the side opposite to the side where the bolt and nut parts are located of the structure or the side guide, through two through holes provided to the structure or the side guide.

[Claim 7] The conveying and sorting apparatus according to claim 1, wherein an opening restricting means to receive, at a certain angle, the side guide released from the holding in the standing orientation by the orientation holding means and opened is provided.

[Claim 8] The conveying and sorting apparatus according to claim 7, wherein a detecting means to detect the side guide released from the holding in the standing orientation by the orientation holding means and opened is juxtaposed.

[Claim 9] The conveying and sorting apparatus according to claim 8, wherein the detecting means is formed by a photoelectric sensor irradiating a detection light beam detecting the side guide in an opened state from one end to the other end of a

group of the plurality of tilting conveyor units arranged in a row in the conveying direction.