CLAIMS

WHAT IS CLAIMED IS:

1. A transfer guard member for a transfer guard system, the transfer guard member comprising:

a unitary, one-piece body configured to connect to an elongate mounting member;

an upper surface of the body;

an array of protrusions of the body to support an object, each protrusion having a curved surface projecting upwardly from the upper surface and a height above the upper surface;

the array of protrusions including columns of the protrusions, each column of the protrusions comprising a plurality of the protrusions aligned in a first direction;

the array of protrusions including first spacings extending in the first direction between the protrusions of each of the columns, wherein the first spacings are each less than twice the height of the protrusions;

the array of protrusions includes second spacings extending in a second direction transverse to the first direction between adjacent columns, wherein the second spacings are each less than twice the height of the protrusions;

wherein the curved surfaces of the protrusions each have a first radius of curvature from a first axis extending along the first direction below the upper surface; and

wherein the curved surfaces of the protrusions have a second radius of curvature from a second axis extending along the second direction below the upper surface, the second radius of curvature being larger than the first radius of curvature.

2. The transfer guard member of claim 1 wherein the first spacings are each substantially the same as the height of the protrusions.

3. The transfer guard member of claim 1 wherein the protrusions have lengths along the first direction and widths along the second direction.

4. The transfer guard member of claim 3 wherein the length of each protrusion is greater than the width.

5. The transfer guard member of claim 3 wherein the curved surfaces of the protrusions include peaks; and

wherein the array of protrusions includes peak spacings in the second direction between the peaks of the protrusions of the adjacent columns that are each less than twice the width of the protrusions.

6. The transfer guard member of claim 3 wherein the curved surfaces of the protrusions include peaks;

wherein the columns include alternating columns having protrusions with peaks aligned along the second direction; and

wherein the array of protrusions includes peak spacings between the aligned peaks that are each less than three times the width of the protrusions.

7. The transfer guard member of claim 1 wherein the protrusions have widths along the second direction; and

wherein the array of protrusions includes spacings extending in the second direction between the adjacent columns that are each one-half or less of the width of the protrusions.

8. The transfer guard member of claim 1 wherein the curved outer surfaces of the protrusions include peaks; and

wherein the adjacent columns of protrusions are offset from one another in the first direction so that the peak of one of the protrusions of one column is aligned in the second direction with one of the first spacings of an adjacent column.

9. The transfer guard member of claim 1 wherein the upper surface includes a flat base surface portion extending between the protrusions.

10. The transfer guard member of claim 1 wherein the protrusions of at least one of the columns of protrusions include conjoined protrusions having a juncture between curved surfaces of the conjoined protrusions so that the curved surfaces meet at the juncture.

11. The transfer guard member of claim 10 wherein the body includes an outboard edge to be positioned adjacent a conveying surface and inboard resilient legs configured to connect to the elongate mounting member; and

wherein the conjoined protrusions include an inboard conjoined protrusion having a first length in the first direction and an outboard conjoined protrusion having a second length in the first direction longer than the first length.

12. A transfer guard member of claim 1 for a transfer guard system, the transfer guard member comprising:

a unitary, one-piece body configured to connect to an elongate mounting member;

an upper surface of the body;

an array of protrusions of the body to support an object, each protrusion having a curved surface projecting upwardly from the upper surface and a height above the upper surface;

the array of protrusions including columns of the protrusions, each column of the protrusions comprising a plurality of the protrusions aligned in a first direction;

the array of protrusions including first spacings extending in the first direction between the protrusions of each of the columns, wherein the first spacings are each less than twice the height of the protrusions;

the array of protrusions includes second spacings extending in a second direction transverse to the first direction between adjacent columns, wherein the second spacings are each less than twice the height of the protrusions; and

wherein the columns of protrusions include alternating first columns with conjoined protrusions and second columns without conjoined protrusions.

13. A transfer guard member for a transfer guard system, the transfer guard member comprising:

a unitary, one-piece body configured to connect to an elongate mounting member;

an upper surface of the body;

an array of protrusions of the body to support an object, each protrusion having a curved surface projecting upwardly from the upper surface and a height above the upper surface;

the array of protrusions including columns of the protrusions, each column of the protrusions comprising a plurality of the protrusions aligned in a first direction;

the array of protrusions including first spacings extending in the first direction between the protrusions of each of the columns, wherein the first spacings are each less than twice the height of the protrusions;

the array of protrusions includes second spacings extending in a second direction transverse to the first direction between adjacent columns, wherein the second spacings are each less than twice the height of the protrusions; and

wherein the body includes an outboard edge to be positioned adjacent a conveying surface;

wherein the body has an inboard end surface portion opposite the outboard edge to contact an adjacent transfer guard member connected to the elongate mounting member, the body having an overall length between the outboard edge and the inboard end surface portion;

wherein the upper surface is longitudinally spaced by a first longitudinal distance from the inboard end surface portion; and

wherein the first spacings of at least one of the columns of protrusions include first spacings between the protrusions of the column that are each less than the first longitudinal distance.

14. The transfer guard member of claim 1 wherein the body includes resilient leg portions configured to be deflected relative to one another to facilitate connecting of the body to the mounting member.

15. The transfer guard member of claim 14 wherein the leg portions include projecting distal interference portions configured to engage the elongate mounting member and resist separation of the leg portions from the elongate mounting member.

16. The transfer guard member of claim 1 wherein the body includes a bridge portion and leg portions depending from the bridge portion; and

wherein the bridge portion includes a plurality of the protrusions.

17. The transfer guard member of claim 1 wherein the body includes an outboard end surface portion to be positioned adjacent a conveying surface, an inboard end surface portion

opposite the outboard surface portion, and an overall longitudinal length extending between the inboard and outboard end surface portions; and

wherein the first direction is a longitudinal direction and the second direction is a lateral direction.

18. The transfer guard member of claim 1 wherein the first and second directions are perpendicular to one another.

19. The transfer guard member of claim 1 wherein the adjacent columns each include a column width defined by a width of a majority of the protrusions of the column in the second direction; and

wherein the second spacings extend between the column widths of the adjacent columns.

20. A transfer guard member comprising:

a body to be positioned in a gap of a conveyor system;

an upper surface of the body;

an inboard end surface portion and an outboard end surface portion of the body, the body having an overall longitudinal length extending longitudinally between the inboard and outboard end surface portions of the body;

an inboard attachment portion of the body configured to be detachably fixed to an elongate mounting member extending laterally in the gap and including the inboard end surface portion thereon;

an outboard portion of the body extending longitudinally outward from the inboard attachment portion and having the outboard end surface portion thereon with the outboard end surface portion positioned proximate a conveying surface of the conveying system with the inboard attachment portion detachably fixed to the mounting member;

a receiving recess of the body adjacent the inboard attachment portion configured for receiving an inboard attachment portion of another transfer guard member fixed to the elongate mounting member so that the upper surfaces of the transfer guard members are adjacent one another;

protrusions of the body projecting upward from the upper surface to support an object being conveyed longitudinally by the conveyor system, the protrusions being arranged in

columns of the protrusions, each column of the protrusions comprising a plurality of the protrusions aligned in a first direction;

a longitudinally inboard endmost protrusion of each of the columns of the protrusions longitudinally spaced from the inboard end surface portion of the body by a longitudinal distance so that the longitudinally inboard endmost protrusions are longitudinally spaced from the other transfer guard member when the transfer guard members are fixed to the elongate mounting member; and

at least one of the columns of the protrusions having first spacings extending in the first direction between the protrusions of the at least one column that are each less than the longitudinal distance between the longitudinally inboard endmost protrusion of the at least one column and the inboard end surface portion of the body.

21. The transfer guard member of claim 20 wherein the attachment portion includes an inclined surface and junctures between the inclined surface, the inboard end surface portion, and the upper surface;

wherein the inclined surface has a length extending transverse to the longitudinal distance; and

wherein the first spacings between the protrusions of the at least one column are each less than the length of the inclined surface.

22. The transfer guard member of claim 20 wherein the inboard endmost protrusions include partial protrusions each having a flat tapered surface and a curved outer surface.

23. The transfer guard member of claim 20 wherein the upper surface includes a flat base surface portion interconnecting the protrusions; and

wherein the flat base surface portion is longitudinally spaced from the inboard end surface portion by the longitudinal distance.

24. The transfer guard member of claim 20 wherein the protrusions each have a height;

wherein the columns of the protrusions include adjacent columns of the protrusions;

wherein the first spacings between the protrusions of the at least one column are each less than twice the height of the protrusions; and

wherein the adjacent columns of the protrusions have second spacings between the adjacent columns extending in a second direction transverse to the first direction between the

adjacent columns of protrusions, wherein the second spacings are each less than twice the height of the protrusions.

25. The transfer guard member of claim 20 wherein at least one of the columns includes conjoined protrusions having curved outer surfaces and a juncture therebetween.

26. The transfer guard member of claim 25 wherein the conjoined protrusions include an inboard protrusion having a first length and an outboard protrusion having a second length greater than the first length.

27. The transfer guard member of claim 20 wherein the columns of protrusions include alternating columns having conjoined protrusions and columns without conjoined protrusions.

28. The transfer guard member of claim 20 wherein the outboard portion has a lateral width that is greater than a lateral width of the inboard attachment portion due to the receiving recess adjacent the inboard attachment portion.

29. The transfer guard member of claim 20 wherein the body has a unitary, one-piece construction.

30. The transfer guard member of claim 20 wherein the first direction is a longitudinal direction.

31. A transfer guard system comprising:

an elongate mounting member;

at least one mount to position the elongate mounting member to extend laterally in a gap between conveying surfaces;

transfer guard members configured to be connected to the elongate mounting member;

the transfer guard members including outboard portions to be positioned proximate conveying surfaces;

upper surfaces of the transfer guard members;

a plurality of columns of protrusions of the transfer guard members, the protrusions having rounded surfaces that project upward from the upper surfaces;

at least one of the outboard portions including conjoined protrusions of the columns of protrusions, the conjoined protrusions having a juncture between the rounded surfaces of the conjoined protrusions so that the rounded surfaces of the conjoined protrusions meet at the juncture; and

the conjoined protrusions include an inboard conjoined protrusion having a first length and an outboard conjoined protrusion having a second length longer than the first length.

32. The transfer guard system of claim 31 wherein the inboard conjoined protrusion has a first width perpendicular to the first length and the outboard conjoined protrusion has a second width perpendicular to the second length, wherein the second width is larger than the first width.

33. The transfer guard system of claim 31 wherein the outboard portions of the transfer guard members include an upstream outboard portion to be positioned adjacent an upstream conveying surface and a downstream outboard portion to be positioned adjacent a downstream conveying surface; and

wherein the conjoined protrusions include an upstream pair of conjoined protrusions of the upstream outboard portion and a downstream pair of conjoined protrusions of the downstream outboard portion.

34. The transfer guard system of claim 31 wherein the columns include a first plurality of columns including conjoined protrusions and a second plurality of columns without conjoined protrusions; and

wherein columns of the first and second pluralities of columns alternate across the transfer guard members.

35. The transfer guard system of claim 31 wherein the transfer guard members include pairs of upstream and downstream transfer guard members; and

wherein each of the columns of protrusions include protrusions of one of the upstream transfer guard members and protrusions of one of the downstream transfer guard members.