CLAIMS

1. An apparatus for reverse vending of recyclables, comprising

a loader unit for receiving one or more items inserted by a user;

an identification unit for identifying characteristics of each item;

a transport unit for transporting the items;

an ejector unit for ejecting at least one item from the transport unit based on its identified characteristics; and

a disintegrator unit for disintegrating the ejected item into disintegrated recyclable matter, which comprises a shredder that is partitioned to form two or more shredding sections that are adjacently sealed therebetween, with the shredder having perforated panels each fitted below each shredding section;

wherein each shredding section is configured to receive the ejected items of the same characteristics accordingly with perforated panel confining the ejected items within the shredder until the ejected items become disintegrated matter that is smaller than perforations of the perforated panel, so that the apparatus produces one or more groups of disintegrated recyclable matter.

2. The apparatus according to claim 1, wherein the shredder is configured to form a first shredding section, a second shredding section, and a third shredding section.

3. The apparatus according to claim 1 or 2, wherein the disintegrator unit further comprises an input chute and an output chute that are joined with the shredder in a sealed manner.

4. The apparatus according to claim 3, wherein

the input chute is configured to have two or more compartments that include a first compartment, a second compartment, and a third compartment; and

the output chute is configured to have two or more exits that include a first exit, a second exit, and a third exit.

5. The apparatus according to claim 4, wherein the disintegration unit defines two or more collateral paths in which the ejected item correspondingly travels amongst for disintegration that includes

a first path defined to include the first compartment, the first shredding section and the first exit;

a second path defined to include the second compartment, the second shredding section and the second exit; and

a third path defined to include the third compartment, the third shredding section and the third exit.

6. The apparatus according to any one of the preceding claims, wherein the shredding sections of the shredder each have a set of blades that radially rotate about a shared shaft.

7. The apparatus according to claim 6, wherein the set of blades for each shredding section includes any one or a combination of

blades of irregular lengths;

blades of varying lengths; and

blades of a fixed length.

8. The apparatus according to any one of the preceding claims, wherein the perforated panels fitted below each shredding section ensures the item is separated into disintegrated recyclable material.

9. The apparatus according to any one of the preceding claims, wherein the transport unit further comprises one or more moving belts, each with protrusions, the belts being laterally aligned to each other via said protrusions, for defining carriers that transport the items.

10. The apparatus according to claim 9, wherein the transport unit further comprises retaining walls for accommodating the item within the carrier as it is made to ascend, descend, or move at an under-side of the transport unit.

11. The apparatus according to claim 10, wherein the retaining walls of the transport unit are formed with one or more exposed sections for exposing the carriers for any one or a combination of

receipt of items from the loader unit;

ejection of items from the transport unit to the disintegrator unit by the ejection unit; and

a discarding of items from the transport unit.

12. The apparatus according to any one of the preceding claims, wherein the ejector unit comprises one or more displacers that correspondingly displace the item off the transport unit for it to exit the transport unit based on its identified characteristics.

13. The apparatus according to any one of the preceding claims, wherein the characteristics identified by the identification include material composition of the item and colouration of the item.

14. The apparatus according to claim 13, further comprising a control unit for exerting control over at least any one or a combination of the transport unit and the ejector unit based on any one or both the material composition of the item and the colouration of the item.

15. The apparatus according to claim 13 or 14, wherein the item is of a material composition that includes metals, polyethene terephthalate, high-density polyethene, polyvinyl chloride, low-density polyethene, polypropylene, and polystyrene, or any other known plastic polymers.

16. The apparatus according to any one of claims 13 to 15, wherein the item is of a colouration that includes clear colour, blue colour, green colour, or any other colour.

17. A method for reverse vending of recyclables, comprising the steps of

receiving one or more items inserted by a user, by a loader unit;

identifying characteristics of each item, by an identification unit;

transporting the items, by a transport unit;

ejecting the items from the transport unit, by an ejector unit; and

disintegrating the ejected item into disintegrated recyclable matter, by a disintegrator unit, which comprises a shedder that is partitioned to form two or more shredding sections that are adjacently sealed therebetween, with the shredder having perforated panels each fitted below each shredding section;

wherein each shredding section is configured to receive the ejected items of the same characteristics accordingly with perforated panel confining the ejected items within the shredder until the ejected items become disintegrated matter that is smaller than the perforations of the perforated panel, so that the apparatus produces one or more groups of disintegrated recyclable matter.

18. The method according to claim 17, wherein the step of identifying characteristics of each item, by an identification unit, further comprises the steps of

identifying the material composition of the items; and

identifying the colouration of the items.

19. The method according to claim 18, further comprising the steps of

determining the acceptability of the items for their collection based on their material composition; and

instructing the ejector unit to correspondingly eject items from the transport unit based on their colouration for their disintegration.