

CLAIMS

We claim:

1. An apparatus for component removal during recycling of an electronic device comprising in combination:

- a. an isothermal system;
- b. at least one inlet to the said isothermal system;
- c. at least one means for heating to achieve desired range of temperature within the said isothermal system;
- d. at least one system for mechanical handling of the object being recycled;
- e. at least one system for selective separation of components being removed;
- f. at least one system for enabling uninterrupted movement of the said object being recycled;
- g. a conveyor system; and
- h. at least one outlet;

wherein, the said means for heating comprises plurality of heating sources [10a];

the said system for mechanical handling of the object being recycled comprises gravity effect in combination with vibration system by virtue of pulley [18] and lever [20] system;

the said system for selective separation of components being removed comprises mesh table [4] allowing the components separated from the said object to drop down through the mesh;

the said system for enabling uninterrupted movement of the said object being recycled comprises slant or inclined platform arrangement of mesh table [4];

the said means for heating is so arranged in the said apparatus that the resultant distance of the heating rods [10a] from the said object being recycled on the mesh table [4] is in the range of 5 – 15 centimeter; and

the said conveyor system enables the said object being recycled to enter the said isothermal system and further enables the separated Printed Circuit Board and components be conveyed for further processing from the said outlet.

2. [DELETED]

3. An apparatus for component removal during recycling of an electronic device comprising in combination:

- a. an isothermal system;
- b. at least one inlet to the said isothermal system;
- c. at least one means for heating to achieve desired range of temperature within the said isothermal system;
- d. at least one system for mechanical handling of the object being recycled;
- e. at least one system for selective separation of components being removed;
- f. at least one system for flipping the object being recycled upside down during processing in the said isothermal system;
- g. a conveyor system; and
- h. at least one outlet;

wherein,

the said means for heating comprises plurality of heating rods [10a];

the said system for mechanical handling of the object being recycled comprises gravity effect in combination with vibration system by virtue of pulley [18] and lever [20] system;

the said system for selective separation of components being removed comprises mesh table [4] allowing the components separated from the said object to drop down through the mesh;

the said system for flipping the object being recycled enables components of both sides of the said object to be removed;

the said means for heating is so arranged in the said apparatus that the resultant distance of the heating rods [10a] from the said object being recycled on the mesh table [4] is in the range of 5 – 15 centimeter; and

the said conveyor system comprises specialized conveyor means for resisting high temperature and enabling the said object being recycled to be conveyed from the inlet of the said isothermal system through the said system and further conveyance of the separated Printed Circuit Board and components for further processing from the said outlet.

4. [DELETED]

5. A process for removal of components during recycling of an electronic device comprising the steps of:

- a. heating the said device being recycled at a desired temperature in an isothermal chamber;
- b. removing mechanically the dislodged components under the effect of gravity; and
- c. separating the said dislodged components on the basis of parameters including but not limited to size, shape, weight, density, melting points, or physical properties known in the state of the art.

6. The process for removal of components as claimed in claim 5, wherein the said temperature desired for heating is in the range of 180 – 400 degree centigrade.

7. The process for removal of components as claimed in claim 5, wherein the said dislodged components are removed mechanically under the effect of vibration and gravity.

8. An apparatus for component removal during recycling of an electronic device and the process thereof as substantially described herein the specification and accompanying drawings.

CLAIMS

We claim:

1. An apparatus for component removal during recycling of an electronic device comprising in combination:
 - a. an isothermal system;
 - b. at least one inlet to the said isothermal system;
 - c. at least one means for heating to achieve desired range of temperature within the said isothermal system;
 - d. at least one system for mechanical handling of the object being recycled;
 - e. at least one system for selective separation of components being removed;
 - f. at least one system for enabling uninterrupted movement of the said object being recycled;
 - g. a conveyor system; and
 - h. at least one outlet;

wherein, the said means for heating comprises plurality of heating sources [10a]; the said system for mechanical handling of the object being recycled comprises gravity effect in combination with vibration system by virtue of pulley [18] and lever [20] system;

the said system for selective separation of components being removed comprises mesh table [4] allowing the components separated from the said object to drop down through the mesh;

the said system for enabling uninterrupted movement of the said object being recycled comprises slant or inclined platform arrangement of mesh table [4];

the said means for heating is so arranged in the said apparatus that the resultant distance of the heating rods [10a] from the said object being recycled on the mesh table [4] is in the range of 5 - 15 centimeter; and

the said conveyor system enables the said object being recycled to enter the said isothermal system and further enables the separated Printed Circuit Board and components be conveyed for further processing from the said outlet.

2. A process for removal of components during recycling of an electronic device comprising the steps of:
 - a. heating the said device being recycled at a desired temperature in an isothermal chamber;
 - b. removing mechanically the dislodged components under the effect of gravity; and
 - c. separating the said dislodged components on the basis of parameters including but not limited to size, shape, weight, density, melting points, or physical properties known in the state of the art.
3. The process for removal of components as claimed in claim 2, wherein the said temperature desired for heating is in the range of 180 - 400 degree centigrade.
4. The process for removal of components as claimed in claim 2, wherein the said dislodged components are removed mechanically under the effect of vibration and gravity.