I claim:

1. A method of at least partially filling at least one opening in a workpiece made of a metal, said at least one opening being at least partially defined by at least one opening wall having at least one opening wall surface, the method comprising the steps of:

   (a) providing an insert comprising an insert material that is metallically bondable with the metal, the insert being formed to at least partially fit into said at least one opening, the insert having at least one insert engagement surface formed for engagement with said at least one opening wall surface;

   (b) positioning at least one opening surface heating element proximal to said at least one opening wall surface;

   (c) positioning at least one insert heating element proximal to said at least one insert engagement surface;

   (d) with said at least one opening surface heating element, heating said at least one opening wall surface in a first non-oxidizing atmosphere to a hot working temperature, to uniformly heat an opening wall heated layer of said at least one opening wall to a first distance from said at least one opening wall surface to the hot working temperature, at which said hot working temperature the opening heated layer is plastically deformable, the hot working temperature being less than a melting temperature of the metal;

   (e) with said at least one insert heating element, heating said at least one insert engagement surface in a second non-oxidizing atmosphere to the hot working temperature, to uniformly heat an insert heated layer of said at least one insert to a second distance from the insert engagement surface to the hot working temperature, at which said hot working temperature the insert heated layer is plastically deformable;

   (f) moving said at least one opening surface heating element away from said at least one opening wall surface, to permit engagement of said at least one insert engagement surface with said at least one opening wall surface;

(g) moving said at least one insert heating element away from said at least one insert engagement surface, to permit engagement of said at least one insert engagement surface with said at least one opening wall surface;

(h) subjecting the insert to an engagement motion, to move said at least one insert engagement surface relative to said at least one opening wall surface;

(i) while the insert is subjected to the engagement motion, and while the insert heated layer and the opening wall heated layer are at the hot working temperature, subjecting the insert to a translocation motion to move the insert at least partially into said at least one opening, for engaging said at least one insert engagement surface with said at least one opening wall surface while the insert is subjected to the engagement motion, to cause plastic deformation of the opening wall heated layer and of the insert heated layer as they engage each other, for at least partially creating a metallic bond between the insert and the workpiece; and

(j) allowing the insert and the workpiece to cool, to solidify the insert and the workpiece together.

2. A method according to claim 1 in which the engagement motion is an oscillating motion relative to the workpiece.

3. A method according to claim 2 in which the oscillating motion is a linear motion of the insert in which the insert is moved relative to the workpiece.

4. A method according to claim 1 in which the engagement motion is a rotation of the insert relative to the workpiece, about an axis of the insert.

5. A method according to claim 1 in which the engagement motion is a vibrating motion relative to the workpiece.

6. A method according to claim 1 in which said at least one opening wall surface is planar, and said at least one insert engagement surface is planar.

7. A method according to claim 6 in which the translocation motion is in a predetermined linear direction into said at least one opening and said at least one opening wall surface is located at a predetermined angle relative to the predetermined linear direction.

8. A method according to claim 1 in which the translocation motion is in a predetermined linear direction, into said at least one opening.

9. A method according to claim 1 in which:

the insert extends between an inner end and an outer end thereof; and

the insert comprises at least one chamfered insert surface located proximal to said at least one insert engagement surface at one or more of the inner and outer ends.

10. A method according to claim 9 in which:

said at least one opening wall surface extends between an internal end and an external end; and

the workpiece comprises at least one chamfered workpiece surface located proximal to said at least one opening wall surface at one or more of the internal and external ends.

11. A method according to claim 9 in which the insert comprises at least one notch formed at the inner end thereof in which the extruded material is partially receivable.